BOZEMAN MT
COMMUNITY PLAN

ELECTRONICALLY FILED

41H-0094-R-2021

April 10, 2024

Montana Water Court















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SIGNATURE PAGE

This certifies that the Bozeman Community Plan has been duly adopted by the Bozeman City Commission by City of Bozeman Resolution No. 5133, dated November 17, 2020.

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SPECIAL THANKS TO THE COMMUNITY MEMBERS WHO PARTICIPATED IN THE PROCESS AND CONTRIBUTED TO THE DEVELOPMENT OF THE COMMUNITY PLAN.

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Downtown
ANTIQUES
Life is
Downtown
BOZEMAN
OPTICAL
Bitterroot Capital Advisors, LLC
2nd Floor
ANTIQUES
RX EYEGLASSES · SUNGLASSES · SKI GOGGLES



INTRODUCTION

The city of Bozeman is set in an expansive valley, surrounded by mountain ranges, and intersected by blue ribbon waterways. Over the last 150 years, Bozeman has grown from a small town supported by agriculture to one of the most livable micropolitan areas in United States. Desirable attributes such as immediate access to year-round recreation, high-quality schools, a growing high-tech culture, and thoughtful and forward-thinking city policies have all contributed to strong population growth, high employment and rapid development.

Bozeman now has a population of approximately 50,000 people, which is up from 22,660 people in the year 1990 (refer to Appendices C and D for additional information on population). It is the fourth largest city in Montana. Bozeman is home to Montana State University, the largest university in the State with a total enrollment of nearly 17,000 students. Montana State University is one of only 130 universities out of 4,338 institutions to be designated a very high research activity school. Bozeman is a growing regional healthcare hub, serves as the major trading center for much of western Montana, has a sophisticated and growing high-tech industry, and is a renowned summer and winter recreational center that attracts many tens of thousands of visitors annually.

Bozeman's high rate of growth and changing economics, the rapid development in surrounding Gallatin County, and state law mandating that community plans be kept up-to-date, all make it necessary for Bozeman to adopt a new community plan. Without guided growth and development, the community's identity and overall quality of life could be diminished by congestion and pollution. The City has had five community plans dating back to 1958, the most recent being its 2009 plan. Each plan builds upon the others, reflecting the community's vision and needs over time.

This community plan (the Plan) is a fundamental policy document guiding further growth and community development in Bozeman. It sets forth Bozeman's future growth policy for land-use and development. The purpose of the Plan is to guide the City's community planning and to evaluate and prioritize the City's actions moving forward. It reflects the community's shared values and priorities. The Plan is the City's long-range growth policy that meets the statutory requirements of Section 76-1-601 of the Montana Code Annotated.

This Plan helps guide residents, City staff, and elected officials' decisions. It brings land use policy into larger community discussions on many issues addressed by the City. Its measure of success is continuation of the Bozeman tradition— a flourishing, safe, healthy, and a vibrant place to live, work, and raise a family.

The City, as an institution, will undertake many actions to implement the Plan as well as track the progress of the Plan's implementation through established indicators. These indicators will help determine the objectives that are working, where they can be improved, and the objectives that need to be reevaluated. The residents and businesses in the City, through their aspirations and hard work, will carry out the Plan.

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01 | BASICS

ORGANIZATION

he Plan is organized into five main sections: Basics, Themes, Land Use Map, Implementation, and Amendments + Review. Appendices provide additional details.

01 | Basics outlines the organization of the plan, describes the Planning Area and the Planning Period, provides an overview of the public outreach process, summarizes existing conditions, and describes the relationship of the Plan to other City planning documents. Finally, this section describes the basic planning principles employed in developing the Plan. Recommendations are discussed within the context of the issues most important to Bozeman residents.

02 | Themes set forth community desired outcomes and the Plan goals and objectives to achieve these outcomes. The Themes include framework maps that show key opportunity areas related to each Theme.

03 | Future Land Use sets forth and discusses Bozeman's Future Land Use Map.

04 | Implementation details a monitoring program that will be used to track progress toward meeting the community's vision.

05 | Amendments + Review contains information concerning amendment of the Plan, and the principles involved in the City's subdivision and zoning review processes.

APPENDICES

APPENDIX A: ENGAGEMENT AND PROCESS TO CREATE THE PLAN

Appendix A details the outreach and engagement process that helped shape the Community Plan. The four-phase process used in-person and digital approaches to engagement to capture the community's voice.

APPENDIX B: INFRASTRUCTURE AND SPECIAL TOPIC PLANS

Appendix B references the City's key infrastructure plans and special topic plans, with descriptions of, and links to each plan document. Included are future and existing plans for transportation, storm water, wastewater, parks and open lands, public safety, economic development, housing, neighborhood plans, and other topics.

APPENDIX C: INVENTORY REPORT – HISTORY AND CURRENT CONDITIONS

Appendix C details the history of the City of Bozeman, along with a description of existing conditions. Statistics and text in this section are taken directly from the 2018 Demographic and Real Estate Market Assessment prepared by Economic and Planning Systems (EPS report).

APPENDIX D: PROJECTIONS REPORT – TRENDS

The projections shown in Appendix D have been extracted from the EPS report. Projections include population, employment, and housing growth, and demand projections for land, housing, and commercial and industrial space.

APPENDIX E: INFRASTRUCTURE PLAN PER 76-1-601(4)(C) MCA

The law authorizing growth policies allows additional items to be added to a growth policy. The table in this Appendix identifies how infrastructure is expanded, the consequences of that expansion, and how negative effects of the expansion can be mitigated.

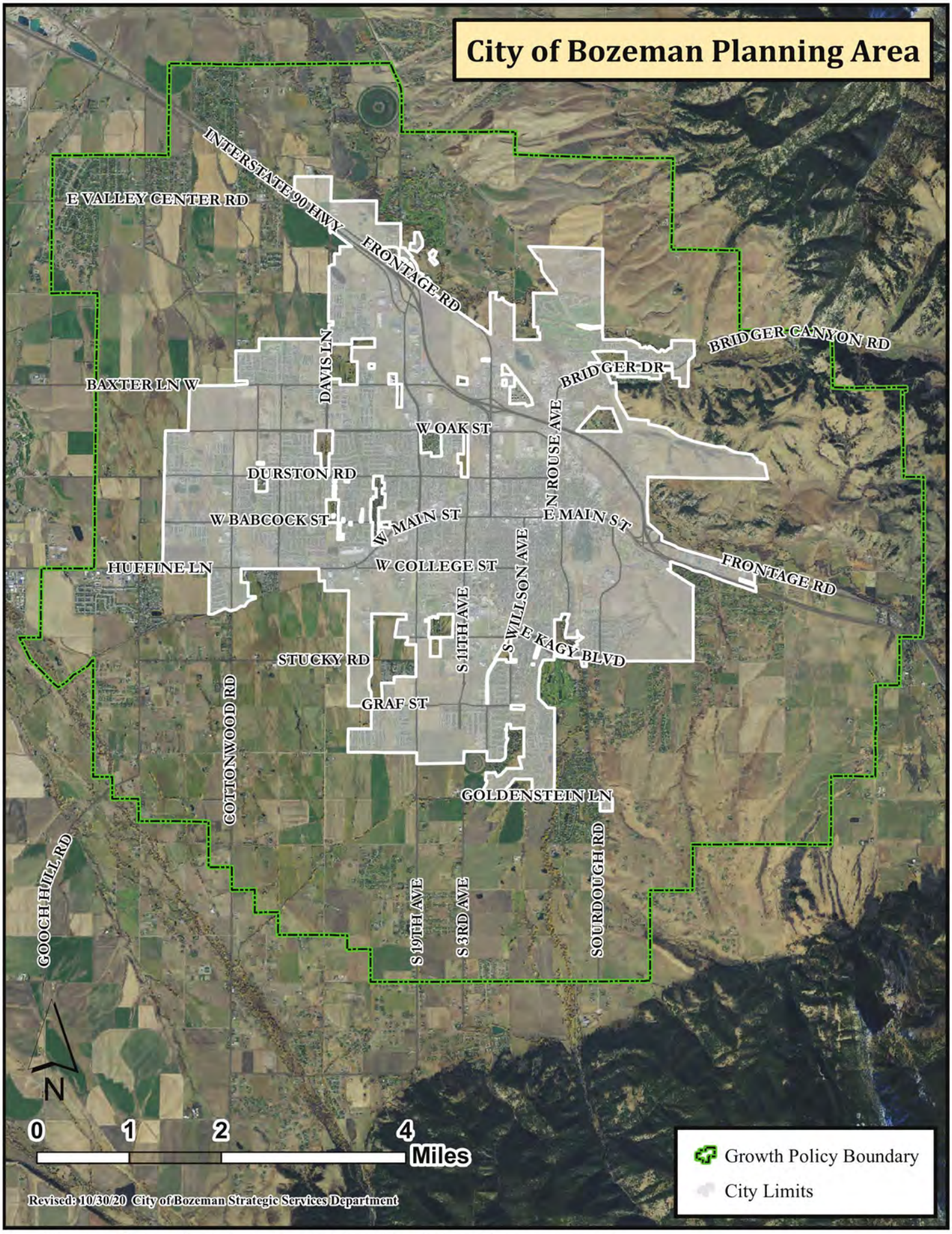
APPENDIX F: GLOSSARY

Defines specific terms used in the Plan.

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PLANNING AREA

Bozeman's Planning Area is generally the area of the City's future municipal water and sewer service boundary. It includes the City of Bozeman as well as a half-mile to two-mile area around the City in the Gallatin County jurisdictional area. The Planning Area is nearly 70.8 square miles. The City's current footprint is 20.9 square miles. Much of the area within the planning area and outside of the City has already been developed. This Plan encourages development within the municipal boundaries where City services are available. Thoughtful development in the Planning Area is guided by the Plan's goals and policies.



City of Bozeman Current City Limits (in grey shade) and Growth Policy Boundary (in green)

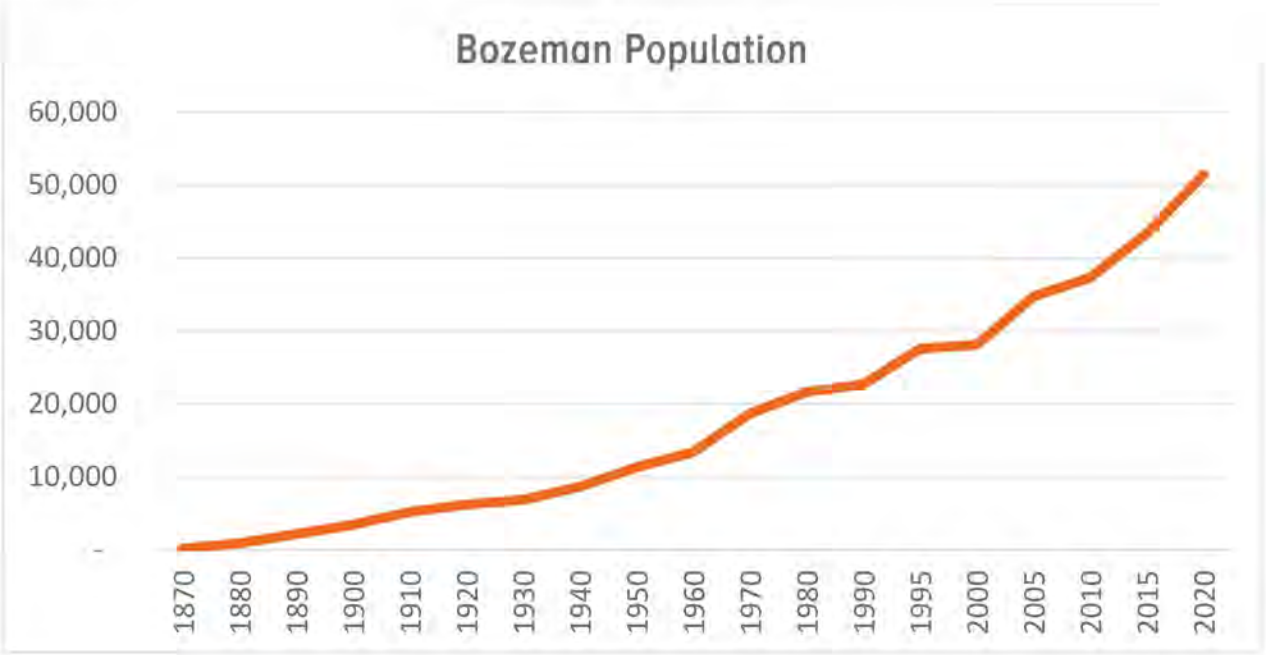
PLANNING TIME HORIZON

The time horizon for this Plan is 20 years—until 2040. This time horizon is referred to in the Plan as the "Planning Period." The future land use map and other elements (i.e. plans for water, sewer, transportation, and parks) look further into the future to envision development that is not predicted to occur over any particular timeframe.

TO GROW OR NOT TO GROW? IF SO, HOW?

Bozeman has seen nearly continuous growth since its founding. The population of the City has expanded by 275% over the past 50 years. Many factors, including but not limited to: nearby extensive outdoor recreation opportunities, Montana State University, people who left the area for careers returning, changing technology enabling remote work, and people becoming familiar with the area during visits to Yellowstone National Park influence the decisions of individuals and businesses to move to Bozeman and the Gallatin Valley. Developing factors that appear to be increasing interest in the local area include climate change, increasing economic opportunities in the local area with technology and other sector growth, and recently, the COVID-19 pandemic.

The increasing number of people and associated impacts cause changes in the community. Those changes stimulate an examination of whether the City should continue to grow or if it should try to "put on the brakes" by attempting to constrain growth in some manner. Such a question reflects the deep concerns of people in many areas and issues.

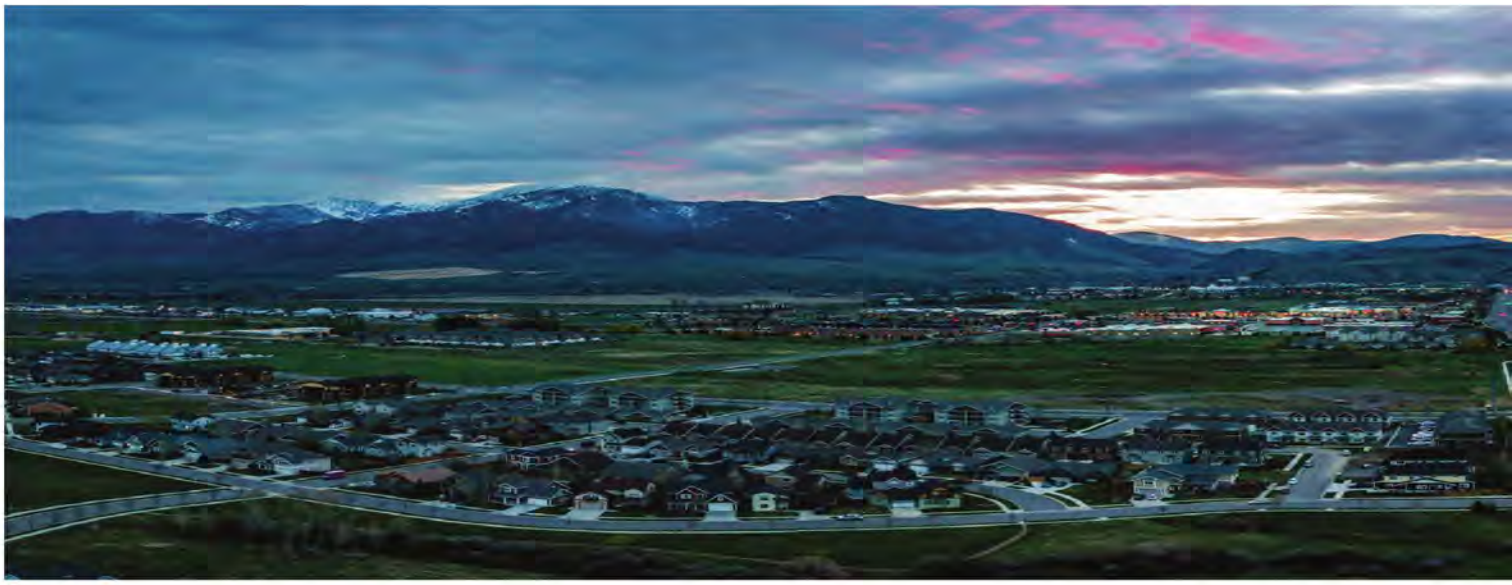


Diverse changes have caused increases in number of homes and expanding areas of development. As household sizes have decreased over time additional houses are required to serve the same population. The number of homes in Bozeman required to house the same 10,000 people increased 47.8% between 1970 and 2010. That increased number of homes requires more streets, water and sewer pipes, and similar expanded municipal and private facilities. The cost of services per person correspondingly increases. Should this household size trend reverse, the City could see large population increases without construction of additional homes. Such shifts in demographics are difficult to predict.

Bozeman has expanded in population and land area from in-migration, change in the demographic makeup of the community, new births, and annexation of new areas to serve new or existing residents. Community change is dynamic and affected by many forces. It is also inevitable. Even if population stayed the same, there are forces that make outward and inward changes in a community.

CONTEXT OF THE GROWTH QUESTION

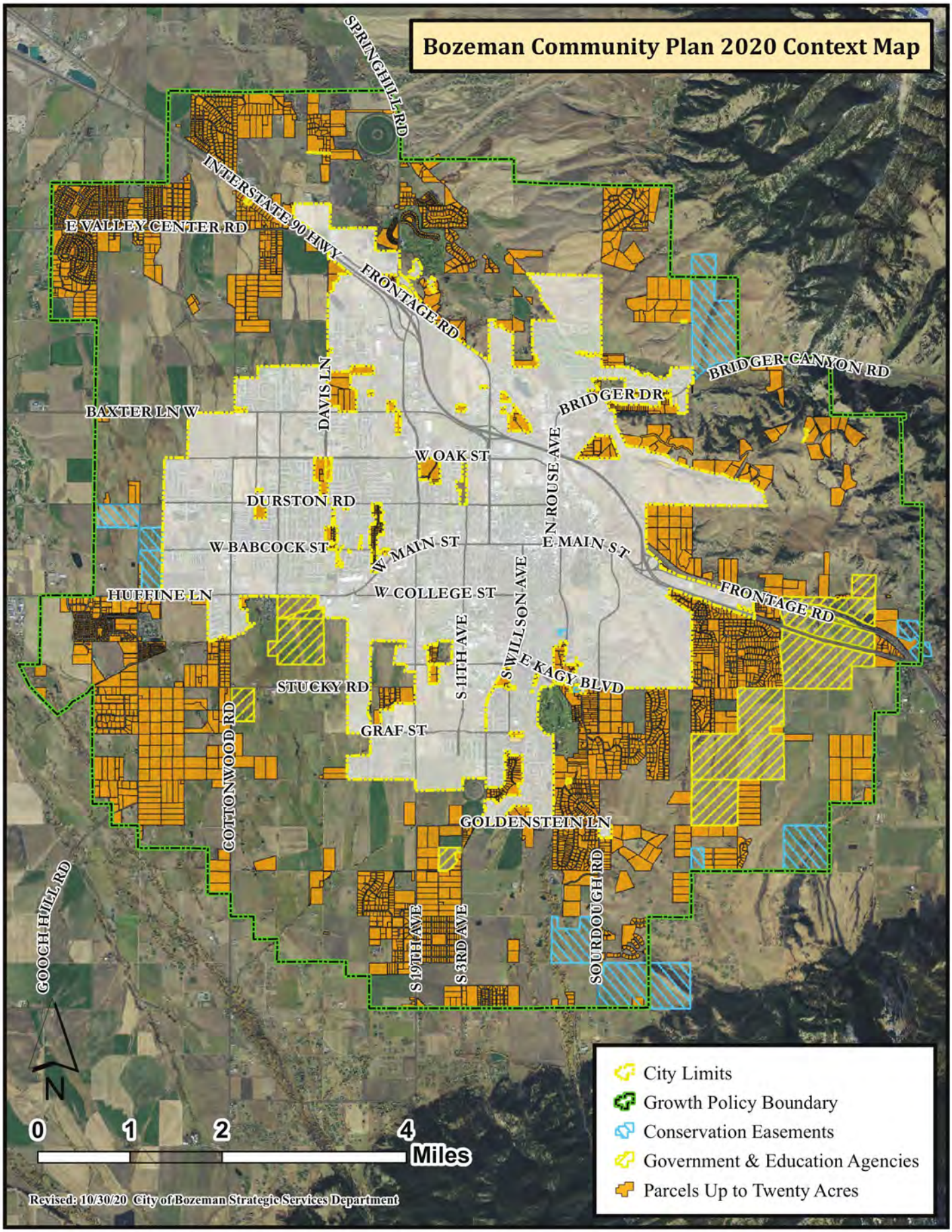
Consideration of Bozeman's growth cannot be separated from the larger context of the Gallatin Valley. Bozeman has been 45-50% of the county population over time. When people discuss growth in Bozeman they are often thinking of more than just the legal boundaries of the City. Rapid growth has also been happening in other valley municipalities and the unincorporated areas of the County.



The Planning Area for the BCP is approximately 70 square miles. Most of that area lies outside of the existing municipal limits. However, it is not free from development pressure or change. As shown on the map on the next page, much of the land within the Planning Area and outside the City has already been subdivided and developed to some degree, mostly as suburban and rural housing.

About 92% of all parcels in the nearly 49 square miles outside of the City Limits are smaller than 20 acres, and they occupy approximately 29 percent of these 49 square miles. Twenty acres is the minimum area generally considered eligible to be classified as agricultural property. This parcel pattern reflects many decades of land use decisions by private property owners as well as various governmental agencies.

The Planning Area outside of the City's legal limits remains under the final authority of Gallatin County. The County and City do not have a shared planning board or regulations at this time. As described in Chapter 2, Theme 7 the City works with Gallatin County on land use planning issues. However, should a land owner outside of the City ask to change zoning or subdivide land the County Commission has the final decision. The City's regulations only apply within its legal limits. Areas that people often describe as being in Bozeman such as the Woodland Park and Middle Creek developments along Huffine Lane are outside of the City limits and were approved by the County.



City of Bozeman Context Map dsiplaying development inside Growth Policy Boundary

DOES THE CITY HAVE TO GROW?

The City is not required to grow in area or population. The undeveloped areas in town would eventually fill in with development. The City could choose to not annex new property. The City could stop acquiring water rights, stop expanding treatment capacity for water or sewer, or could strictly limit development opportunities through regulations on development intensity or rate. All of these would result in fewer homes and businesses than would otherwise be present. There is additional capacity presently in the City's systems due to planned "working room" to account for the fact that expansion of capacity often comes in large increments and therefore some excess capacity is needed at any given time to meet needs while the next increment of expansion is designed and constructed. Such capacity could be used up and not replaced.

A key sub-question and consequence in this subject is whether lack of capacity in municipal land area or systems would cause people to stop seeking to come to the Gallatin Valley. The residents of the City of Bozeman have for many decades been between 40-50% of the total county population. Since half or more of the county population has chosen to locate outside of the Bozeman limits it is highly likely that growth would continue but would locate outside the City within the unincorporated areas or other municipalities. The factors that draw people to the area would be unlikely to be changed by a City decision to restrict development. Therefore, the character of the valley, including areas adjacent to Bozeman, would continue to change but without material influence from the City.



Certain US cities and towns have attempted to artificially constrain growth by limiting annual growth percentages, limiting building permits, establishing greenbelt buffers, building height restrictions, etc. Generally speaking, such artificial growth limits tend to redistribute future growth outside city boundaries, drive up housing prices and rental costs, increase commuting times, and limit employment opportunities within city boundaries.

As the population and development of the Gallatin Valley has occurred the degree of interdependence has increased. The Bozeman economy relies substantially on persons living outside of the city to work at jobs located in the city. Census Data from 2017, the most recent available, shows a total of 33,879 jobs in the City. Of that number 13,667 were serviced by City residents. The number of City residents leaving the City for employment was 9,874 and the number of non-City residents coming into the City for work was 20,212.

A key outcome of this situation is that tens of thousands of people are commuting every day into the City and consuming street capacity, police and fire services, and other municipal services. However, revenue generated by their homes does not come to the City to offset those demands for service.

On a national level, the supply of housing is not keeping up with demand for housing. On a local level, this issue was examined by the 2019 Housing Needs Assessment (HNA) for the City. A similar effort is being conducted at this time by Gallatin County for areas outside of the City. The HNA identified a deficiency of available housing

as a strong contributor to housing price escalation in the area. Housing prices, both nationally and locally, have increased substantially faster than incomes. Housing scarcity is a substantial concern and impacts the ability of businesses to hire workers. As local unemployment has been low for many years, attraction of new employees is dependent on the availability of additional housing in the area.

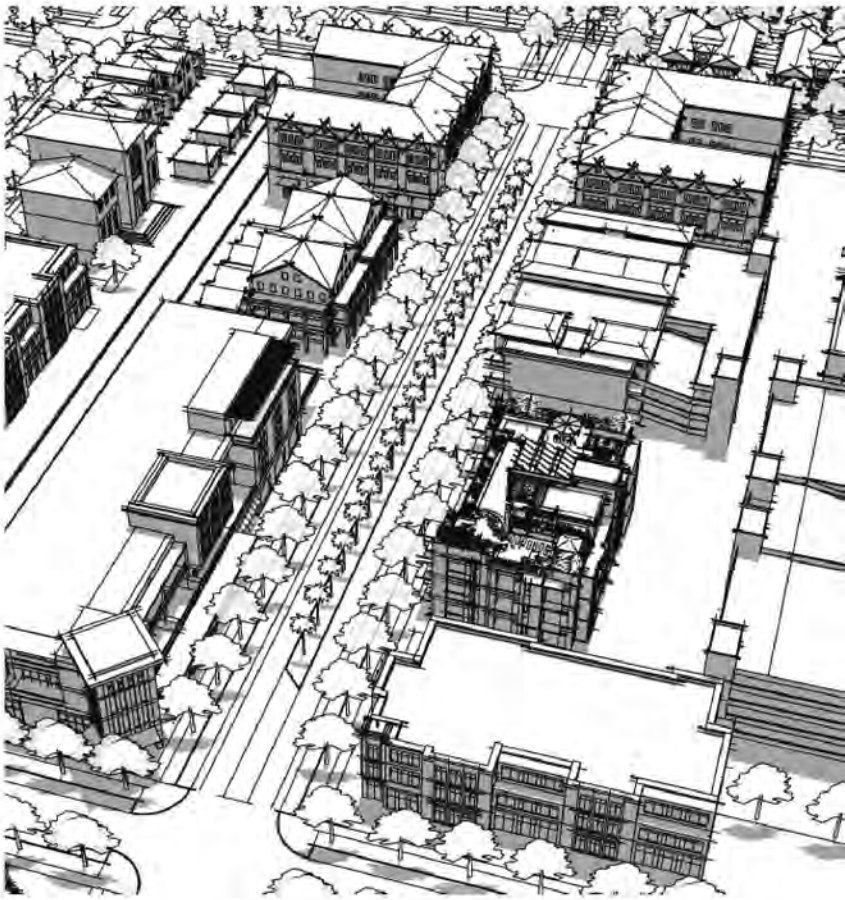
As discussed above, the majority of the Planning Area is outside of the City limits. The City of Bozeman and Gallatin County have worked together to encourage annexation and development within the City limits. Development within the City is more land efficient than rural or suburban development in unannexed areas. Urban intensity development whether more intensive apartment style development or more typical medium density residential is much more land efficient than rural/suburban development. Comparing suburban development with an average density of one home per 1.25 acres and rural at one home per 5.5 acres to the more intensive apartment style development of a recent project downtown; the suburban development consumes 135 times the amount of land and the rural consumes 594 times the amount of land per home. Development within the City also provides for a wide range of housing types to meet a wide range of housing needs. Development within the City lessens likelihood of conversion of agricultural and open spaces to other uses but does convert uses on some land with annexation.

Municipal development enables use of highly effective centralized water and sewer systems. Such centralized systems are more protective of water quality both at the surface and underground. Areas such as the Helena Valley in Lewis and Clark County are experiencing problems with ground water contamination resulting from significant use of on-site water and sewer systems.

Gallatin County has been a good partner in encouraging potential development to annex and develop within the City. The current and proposed County growth policies and the Triangle Community Plan support such action. However, if the City is unable or unwilling to annex and provide services the County will not prohibit development on that parcel. As shown on the context map, there has been considerable rural and suburban development within the Planning Area.

IF WE GROW, HOW?

In many planning efforts and discussions over the decades, the Planning Board and City Commission have considered the various elements of the question of to grow or not grow and the consequences of either approach. After considering this question, they have concluded that having growth within the physical boundaries of Bozeman results in better outcomes than not. Therefore, the BCP approaches growth as



something that overall is positive but recognizes that it does not come without drawbacks and that the community will change over time.

The City has adopted land development regulations and policies to reasonably mitigate negative impacts. These have been adopted to address the question of "If so, how." Regulations can do many things to ensure adequate physical facilities and a visually appealing and functional development of sites. They support expansion of employment and tax base for the community. They ensure provision of new parks and walking trails, keep the water flowing if there is a home fire to be put out, and provide a framework within which people may pursue dreams of their own homes and businesses.

For all they can accomplish, there are some things they cannot do. They cannot make there be fewer people on a favorite walking trail, make certain you see people you know as you walk down the street, or control things that happen outside of the City limits. They don't set school service boundaries; or change the floodplain or water quality or wetland standards established by federal and state agencies. They can't assure that buying a house will work out well for you. They can't change the flight path of aircraft headed to the Bozeman Yellowstone International Airport. They cannot assure you of a neighbor you want to have. They don't change any state or federal policy. They do not prevent change or guarantee that change will happen in the way any particular person prefers.

MITIGATING IMPACTS

For new people and businesses to come and establish in the community the City must be able to provide land area, utility services, and other functions. It is the long standing policy of the City to balance the interests of new and existing residents. Therefore, the City has established standards and procedures to strive to ensure that new development proportionately contributes to the services and facilities needed to support new development. The following examples identify significant policies but it is not an exhaustive list.

- Annexation: Annexation is almost entirely initiated by the landowner. The City has limited ability to start an annexation process. Annexation is often motivated by a desire to develop property or to address a failed on-site septic system. At the time of annexation, land owners commit to provide or do provide easements for major roadways, and to follow the City's land development standards requiring the landowner to provide needed infrastructure for development of the land.
- Water Rights: All water in the state not reserved to the Federal Government or Tribal Government is controlled by the State of Montana. No one can use water without the State's permission. Such permission is called a water right. When new development occurs, the City requires that new development to provide either water rights to the City or to pay an equal amount of money so the City can acquire water rights adequate to serve the



new development. Existing water users are not required to pay for water rights for new development.

- Impact Fees: Impact fees are costs charged to new development to construct fire, water, sewer, and transportation facilities to support new development. There are strict rules to ensure that the impact fees don't fix existing problems. Impact fees enable the City to more closely keep up with water and sewer treatment capacity and other infrastructure needed for new development to be functional and safe.
- Utility planning: The City conducts long range planning for water, sewer, transportation, parks, and other services. This planning work examines the needs for existing users and future users. This enables the City to construct facilities before big bottlenecks occur. Since a water line can have a service life of at least 70 years, sizing them correctly is a significant concern to avoid future service limits and failures. Knowing what services are needed enables the City to work effectively and cost efficiently to serve existing and future users. Recent expansion and upgrades at the City's water and sewer treatment facilities were required both for maintaining legal compliance with treatment standards for existing users and to enable new users.
- Regulations: The City adopts standards for development to correlate timing of new development with the services needed to serve it. This protects the public health and safety. The regulations also provide predictability in decision making to both existing and new members of the community. Predictability is a very important element in the complex and difficult public and private decisions relating to growth.





PUBLIC OUTREACH

Developing Bozeman's Community Plan involved a lengthy public outreach period. The Planning Board and City Commission provided guidance throughout the process. Development of the Plan included four distinct phases. The community was provided many opportunities throughout the process to voice their opinion including large-scale community events, small group listening sessions, stakeholder interviews, and a series of progressive, easy-to-use online surveys. Events were advertised through print and social media, as well as on the City's website and calendar. Additionally, postcards and flyers were handed out and posted throughout the community to encourage high levels of participation and to increase overall awareness. Appendix A details the City and its residents' process to develop this Plan.



For the Love of Bozeman

Foundation

- Project Branding
- One-on-One Interviews
- Listening Sessions
- Community Social + Questionnaire

Bozeman Talks

Analysis + Vision

- Existing Plans Review
- Existing Conditions Analysis
- Community Values Identification
- Community Workshop + Questionnaire

Bozeman Thinks Big

Opportunities + Choices

- Opportunities Identification
- Land Use Options Development + Refinement
- Community Events + Open House

Bozeman The Plan

Plan Development + Approval

- Draft Plan Development
- Community Open Houses + Questionnaire
- Draft Plan Review
- Final Plan Development
- Formal Adoption Hearings

Community Plan Process and Outreach, 2018 - 2020

EXISTING CONDITIONS

POPULATION

Bozeman's estimated 2018 population (48,105) was more than double the City's population in 1990 (22,660). The median age of Bozeman residents is 27.9 years old, which can partially be attributed to the enrollment of over 16,900 students at Montana State University. Over 55 percent of residents have a bachelor's degree or higher, in comparison to the national average of 30 percent. The City is projected to grow by nearly 27,000 people through the year 2045.

Net migration accounted for 75 percent of Gallatin County's population change between 2010 and 2017. A high rate of net migration indicates that an area is a desirable place to live and is a sign of a thriving economy.

EMPLOYMENT

Bozeman's largest employer is Montana State University (MSU), with over 3,000 full and part-time employees. Gallatin County has experienced an employment growth rate of over four percent per year since 2010—adding 12,000 jobs. Eighty percent of this growth occurred in the City of Bozeman.

INCOME

The median household income in Bozeman is $49,217; however, the Bozeman median household income is $79,662 for homeowners and $35,012 for renters. This disparity may reflect, to some extent, the impact of MSU students on Bozeman statistical averages.

HOUSING

Figures in this section are from the 2019 Housing Needs Assessment performed after the EPS report was completed. About 45 percent of households in the City own their homes, up from 43.5 percent in 2010. The median sale price of homes, including single-detached homes, townhomes, and condominiums, was $385,000 in 2018, an increase of 75 percent since 2012. During this same period, the consumer price index rose 10 percent and the cost of homes nationwide rose 38 percent.

According to the American Community Survey there are 18,539 total households in Bozeman. Twenty-four percent of homeowners are "cost burdened", which means they are paying 30 percent or more of their income towards mortgage payments. Fifty-five percent of renters in Bozeman are cost-burdened. In the United States as a whole, 22.5 percent of homeowners were cost-burdened in 2017, the last year statistics are available.

Between 2010 and the fall of 2018, 43 percent of homes built were multi-unit (3+), 41 percent were single-detached, 14 percent were townhomes and duplexes, and two percent were accessory dwelling units (ADUs). Forty-one percent of homes in Bozeman are single-detached, compared to nearly 70 percent in Montana and 62 percent nationally. There is an estimated demand for over 12,700 new residences in Bozeman by the year 2045 to compensate for current shortfall in housing stock and the projected population increase.

TRANSPORTATION

Bozeman residents have access to a range of transportation options, including an extensive sidewalk and trail system, the six citywide routes offered by Streamline Bus service, Skyline Bus service to Big Sky, Galavan transportation service for seniors and people with disabilities, taxi service and rideshare, and the bike network, which consists of 18 miles of bike routes, 33 miles of bike lanes, and 23 miles of shared-use paths

Seventy percent of Bozeman commuters drive alone, 16 percent walk or ride a bike, six percent work from home, and less than one percent use public transit. The average commute time, which has been increasing, is approximately 14.5 minutes, compared to the state average of 18 minutes and the national average of 26 minutes.

GROWTH

Bozeman's land area and its population is growing. Since 1988, Bozeman has annexed, at landowners' request, more than 6,650 acres of land, about 10.3 square miles– more than doubling its size.



The projected land demand over the Planning Period, based on estimated population growth, ranges from 3,820 acres to 5,716 acres, depending largely on levels of density in future residential developments. Faster rates of population growth will require additional land area.

A more detailed description of Bozeman's existing conditions can be found in Appendix C. For complete details on projections, see Appendix D.

COMPARISON TO OTHER CITIES

Table 2 below presents descriptive statistics of Bozeman compared to five other communities around the West.

TABLE 1. COMPARISON TO OTHER CITIES

City	Median Household Income (ACS,2018)	Median Housing Price (Zillow, 2019)	Median House Price to Median Income Ratio	Population (ACS, 2019)	City Land Area (Sq. Miles)	Pop. / Sq. Mile	Growth % 2010 - 2019 (ACS, 2019)	Annualized Growth Rate (2010 - 2019)	Persons in poverty, % (2019)
Bend, OR	$63,468	$443,400	7.0	100,421	33.3	3016	31%	3.1%	10.3%
Billings, MT	$57,172	$243,700	4.3	109,557	43.5	2519	5.1%	0.5%	10.2%
Boulder, CO	$66,117	$793,578	12.0	107,673	25.7	4190	8.3%	0.8%	21.3%
Bozeman, MT	$51,896	$440,200	8.5	49,831	20.9	2384	33.7%	3.3%	18.6%
Fort Collins, CO	$62,132	$393,500	6.3	170,243	47.1	3615	17.5%	1.8%	16.8%
Meridian, ID	$68,131	$326,400	4.8	114,161	26.8	4260	48.3%	4.8%	8.8%
Missoula, MT	$45,010	$308,800	6.9	75,516	29.	2604	12.1%	1.2%	18.3%

Sources: (ACS, 2018 and 2019) U.S. Census Bureau, American Community Survey, 5-Year Estimates. (Zillow 2019) Zillow.com, Accessed December 1, 2019. City Land Area: Wikipedia

RELATIONSHIP TO OTHER PLANS

The Bozeman Strategic Plan is the overarching policy statement for the City. It was first adopted by the City Commission on March 5, 2018 after a 24-month process of community discussion and evaluation. The Strategic Plan provides direction for this Plan primarily through its Vision Statement #4 entitled A Well-Planned City. This Vision Statement focuses on five goals listed in the table below. The Strategic Plan also provides direction on related issues through its Vision Statements entitled A Sustainable Environment, An Innovative Economy, and A High Performance Organization. The seven Themes in this Plan further the goals of the Strategic Plan.

TABLE 2. STRATEGIC PLAN ALIGNMENT

Strategic Plan Vision Statement	A Resilient City	A City of Neighborhoods	A City Bolstered by Downtown and Complementary Districts	A City Influenced by our Natural Environment, Parks, and Open Lands	A City that Prioritizes Accessibility and Mobility	A City Powered by its Creative, Innovative, and Entrepreneurial Economy	A City Engaged in Regional Coordination	Covered by Other Plans	Future Land Use Map
1 Informed Conversation on Growth		•	•	•	•		•		•
2 High Quality Urban Approach	•	•	•	•	•	•	•	•	•
3 Strategic Infrastructure Choices	•	•	•	•	•	•	•	•	•
4 Vibrant Downtown, Districts & Centers		•	•		•	•	•	•	•
5 Housing and Transportation Choices	•	•	•		•		•	•	•

The Themes reflect community priorities in prior plans, demonstrating a level of consistency in community values over time. This Community Plan is also influenced by, and will influence, a number of other local plans, guidelines, policies, and manuals. These are intended to be used together to achieve a set of community goals while minimizing redundancies. They include the Transportation Master Plan, neighborhood plans such as the Downtown Bozeman Improvement Plan, and the City's various water-related plans. See Appendix B for a more detailed description of individual plans. Given the City's extensive operations, several plans are reviewed and updated each year. Please consult the most recent version of each plan.

EXISTING PLANS

Bozeman Creek Enhancement Plan – 2012

Bozeman Creek Neighborhood Plan – 2005

Climate Action Plan – 2020

Community Housing Action Plan - 2020

Community Transportation Safety Plan – 2013

Downtown Improvement Plan – 2019

Downtown Strategic Parking Management Plan – 2016

Drought Management Plan – 2017

Economic Development Strategy Update – 2016

Fire and EMS Master Plan – 2017

Gallatin County Hazard Mitigation Plan and Community Wildfire Protection Plan – 2019

Housing Needs Assessment – 2019

Integrated Water Resources Implementation Plan – 2013

Integrated Water Resources Plan – 2013

Midtown Action Plan – 2017

Neighborhood Conservation Overlay District (NCOD) – 2019

Parks, Recreation, Open Space, and Trails Plan – 2007

Stormwater Facilities Plan – 2008

Stormwater Management Plan – 2019

Transportation Master Plan – 2017:

Triangle Community Plan – 2020

Urban Forestry Management Plan – 2016

Wastewater Collection Facilities Plan Update – 2015

Water Facility Plan Update – 2017

BASIC PLANNING PRECEPTS

PRINCIPLES APPLIED IN THIS PLAN

Drawing on best land use practices, community input, Bozeman's land use planning experience, and the ideas discussed in the Themes, the City used the following principles to prepare the policies, goals, objectives, land use designations, and future land use map in this Plan:

- The health and well-being of the public is an essential focus and influences and is influenced in turn by urban design and land development.
- Urban design should integrate residential and commercial land use activities, multimodal transportation, and open spaces.
- Variety in housing and employment opportunities are essential.
- Land use designations must respond to a broad range of factors, including infrastructure, natural, and economic constraints, other community priorities, and expectations of all affected parties concerning private development.
- Transportation infrastructure is vital in supporting desired land use patterns. Therefore, the two must be coordinated. Future infrastructure should favor interconnected multimodal transportation networks (i.e. infrastructure for bicycle, pedestrian, and transit modes of transport in addition to automobiles).
- Diverse uses of land should occur relatively close to one another.
- The City intends to create a healthy, safe, resilient, and sustainable community by incorporating a holistic approach to the design, construction, and operation of buildings, neighborhoods, and the City as a whole. Developments should contribute to these goals and be integrated into their neighborhood and the larger community.
- The needs of new and existing development coexist and they should remain in balance; neither should overwhelm the other.
- Infill development and redevelopment should be prioritized, but incremental compact outward growth is a necessary part of the City's growth.
- Gathering places and open spaces, including parks and trails, should be in convenient locations to those they serve. Quality and function is superior to quantity alone.



Subdivision/ Site Plan
Apply development standards to a specific piece of property prior to physical construction

Zoning Map Amendment
Selection of a zoning district and associated development standards on one or more distinct properties

Growth Policy
Broad policy and coarse geographic detail dealing with multiple zoning districts

The growth policy forms the foundation of the land development process

CITY RESPONSIBILITIES

The City's primary function is to provide a safe, healthy, and high-quality environment that supports the physical, social, and economic welfare of its residents. For the Bozeman community to continue to prosper, all residents need equitable access to opportunities to advance their well-being regardless of their circumstances. The way a community is shaped through development patterns, infrastructure, transportation systems, housing options, economic opportunities, and green spaces can contribute to the well-being of residents or can make it harder for people to live healthy and successful lives.

COMMUNITY DESIRES

People who have participated in this Plan have consistently stated a desire for safe and accessible streets that support and encourage a variety of transportation preferences including walking, bicycling, transit, and driving. They want to live in walkable neighborhoods where they have easy access to everyday services, employment opportunities, healthy and affordable food, recreation, and social gathering places. Housing affordability is a concern; residents of all ages, abilities, and income levels require a diversity of housing types to meet their specific needs. Open space, parks, trails, and the preservation of local agricultural lands and view sheds were also priorities. A description of public participation is presented in Appendix A.

CITY'S ROLE

Development occurs most efficiently, and with best results, when the public and private sectors work together to achieve mutually compatible goals. It is worth emphasizing that the vast majority of the future built environment will be designed, paid for, and constructed by the private sector. The City provides foundational work by providing infrastructure, public services, and implementing design standards to shape the fabric of the community.

GROWTH

Bozeman's employment, population, and built environment have been growing rapidly. This has created community benefits including a strong local economy, increased diversity, and innovation. It has also led to growing pains—higher housing costs and increased traffic to name two. The City's response to this is to pursue policies that mitigate these growing pains. These policies are described throughout this Plan.

HOUSING AFFORDABILITY

Housing affordability is a critical issue for the community and has been an ongoing concern since it was identified as an issue in the 1972 community master plan. Housing instability and homelessness a public health issues and are exacerbated by the rapid rise in housing prices. The positive attributes that make Bozeman a desirable place to live contributed to ever-increasing housing demand. Comparatively low wages have not increased at the same rate as housing costs. Home price increase exceeding wage increase is a national trend. The sale price of homes has more than fully recovered from the 2008 recession for all housing types. The median sale price of homes, including single-households, townhomes and condominiums, has increased 90% since 2012. This is an average increase of almost 12% per year.

According to the most recent Bozeman Housing Needs Assessment, an estimated 5,405 to 6,340 housing units for residents and employees are needed by 2025, or an average of about 770 to 905 units per year. This figure includes housing for employees, units needed to open up the current tight rental and ownership markets, provides choice to households, housing for employees filling jobs vacated by retirees, workers filling new jobs, plus related non-employee citizen housing needs.

Bozeman has taken the issue of housing seriously. It developed a housing needs assessment in 2019, hired a Community Housing Program Manager,





and released the Community Housing Action Plan (CHAP) in October 2019. The CHAP was updated in April 2020.

At the time of publication, the availability of affordable housing, whether for rent or for purchase, is one of Bozeman's most serious problems, as demonstrated by both the 2018 EPS Study and the CHAP. Mitigating this shortage is a top priority of the Bozeman City Commission, the Planning Board, and the Community Development Department, in conjunction with local and regional authorities. The three top action items in the Community Affordable Housing Action Plan are:

- Ensuring community housing serves the full range of incomes without losing sight of safety net programs for extremely low income and homeless families. This includes safety net rentals below 30% AMI (about $20,000 per year), additional resident and employee rentals up to 80% AMI (about $55,000 per year), and ownership housing up to 150% AMI (about $104,000 per year).
- Producing community housing at a rate that exceeds, or at least matches, job growth so that new employees can find homes.
- Striving to produce community housing at a rate that matches the spectrum of community housing needs, while also preserving what we have through a target of no net loss of existing community housing stock below 80% AMI.

The CHAP identifies 19 priority action strategies to be evaluated and, where appropriate, utilized over the next five years in an effort to accomplish the objectives. Because housing, including affordability, is the subject of the detailed CHAP, this Plan does not address housing affordability issues in detail. For additional, up-to-date detail, see CAHAB and the Community Housing Action Plan.

However, zoning and land use regulations are processes that influence the cost of housing and are addressed in this Plan. This Plan supports housing regulations that allow for a range of housing types intermixed with one another in a given neighborhood, denser development, and efficiencies of various types that can help reduce housing costs while not jeopardizing public safety and other community priorities.

More housing, in a variety of type, size, and cost, is needed at prices that residents can afford. This will provide choices, the ability to move as life circumstances change, allows employers to fill jobs, recruit, and retain employees, supports businesses, and supports citizen and student growth.

02



02 | THEMES

Seven Themes describe community-derived desired outcomes. The Themes contain objectives and actions to guide the City towards its Vision. Application of the Themes evolve as the City grows, and allow the City to incorporate new objectives as needed. The Themes are:

- A RESILIENT CITY;
- A CITY OF UNIQUE NEIGHBORHOODS;
- A CITY BOLSTERED BY DOWNTOWN AND COMPLEMENTARY DISTRICTS;
- A CITY INFLUENCED BY OUR NATURAL ENVIRONMENT, PARKS, AND OPEN LANDS;
- A CITY THAT PRIORITIZES ACCESSIBILITY AND MOBILITY;
- A CITY POWERED BY ITS CREATIVE, INNOVATIVE, AND ENTREPRENEURIAL ECONOMY;
- A CITY ENGAGED IN REGIONAL COORDINATION.



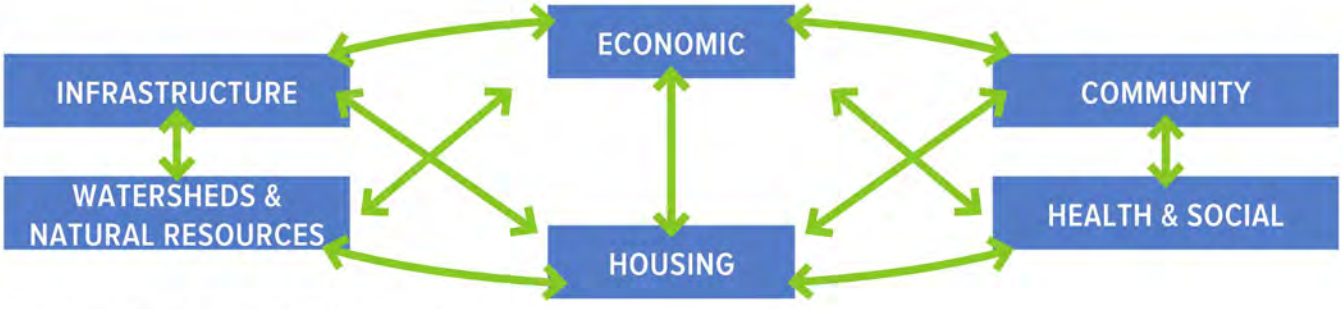
THEME 1 | A RESILIENT CITY

Our City desires to be forward thinking, collaborative, and deliberate in planning and execution of plans and policies to enable our community to successfully ride the waves of change.

IMPORTANCE

Communities and the world around them are constantly changing. Resilient communities rebound, positively adapt to, and thrive amidst changing conditions or challenges and maintain quality of life, healthy growth, durable systems and conservation of resources for present and future generations. Resiliency addresses both short-term or one-time shocks as well as long-term stressors.

Resiliency is needed to address a wide range of circumstances affecting all elements of the community and its operations. Stressors include natural disasters, climate change, economic shocks and transitions, and in 2020, a pandemic. Long term systems and adaptations, not just initial responses, are needed to maintain a healthy community. Resiliency takes a holistic approach towards protecting and improving a community. Bozeman is well positioned with diverse subject plans to address many of the likely areas where stressors occur. The staff and elected officials work to coordinate between plans and actions. The process of coordination is integrated with the constant process of updating plans, capital improvement programs, budgets, and ordinances.



THEME 1: OTHER RELEVANT PLANS

Climate Vulnerability Assessment & Resiliency Strategy – 2019

Climate Action Plan – 2020

Community Transportation Safety Plan – 2013

Drought Management Plan – 2017

Economic Development Strategy Update – 2016

Fire and EMS Master Plan – 2017

Gallatin County Hazard Mitigation Plan and Community Wildfire Protection Plan – 2019

Housing Needs Assessment – 2019

Integrated Water Resources Implementation Plan – 2013

Integrated Water Resources Plan – 2013

Stormwater Management Plan – 2019

Transportation Master Plan – 2017

Urban Forestry Management Plan – 2016

Wastewater Collection Facilities Plan Update – 2015

Water Facility Plan Update – 2017

During the development of the 2020 Community Plan, and at the time of publication, the world has been beset by the COVID Pandemic and the subsequent COVID Financial Crisis.

The impacts of COVID reach into the trillions of dollars worldwide.

Southwest Montana has fared better with COVID than most communities on a global scale. At the time of publication, it appears that this reduced initial COVID impact is creating significant in-migration of citizens to Bozeman and its environs.

Mitigation of the impacts of both COVID and an influx of new citizens to our community will require unprecedented resilience, agility, and outside-the-box thinking, by all participants, the development community, including the City of Bozeman Commission and staff at all stages of the development process.

THEME 1 | GOALS, OBJECTIVES, AND ACTIONS

Goal R-1: Continue to strengthen and develop resilience as a community.

- ***R-1.1*** Be reflective: use past experience to inform future decisions.
- ***R-1.2*** Be resourceful: recognize alternative ways to use resources.
- ***R-1.3*** Be inclusive: prioritize broad consultation to create a sense of shared ownership in decision making.
- ***R-1.4*** Be integrated: bring together a range of distinct systems and institutions.
- ***R-1.5*** Be robust: well-conceived, constructed, and managed systems.
- ***R-1.6*** Be redundant: spare capacity purposefully created to accommodate disruption.
- ***R-1.7*** Be flexible: willingness and ability to adopt alternative strategies in response to changing circumstances.

Goal R-2: Pursue community decisions in a manner that supports resilience.

- ***R-2.1*** Co-Benefits: Provide solutions that address problems across multiple sectors, creating maximum benefit.
- ***R-2.2*** High Risk and Vulnerability: Ensure that strategies directly address the reduction of risk to human well-being, physical infrastructure, and natural systems.
- ***R-2.3*** Economic Benefit-Cost: Make good financial investments

that have the potential for economic benefit to the investor and the broader community both through direct and indirect returns.

R-2.4 Social Equity: Provide solutions that are inclusive with consideration to populations that are often most fragile and vulnerable to sudden impacts.

R-2.5 Technical Soundness: Identify solutions that reflect best practices that have been tested and proven to work in similar local or regional contexts.

R-2.6 Innovation: Advance new approaches and techniques that will encourage continual improvement and advancement of best practices.

R-2.7 Adaptive Capacity: Include flexible and adaptable measures that consider future unknowns of changing climate, economic, and social conditions.

R-2.8 Harmonize with Existing Activity: Expand, enhance, or leverage work being done to build on existing efforts.

R-2.9 Long-Term and Lasting Impact: Create long-term gains to the community with solutions that are replicable and sustainable, creating benefit for present and future generations.





THEME 2 | A CITY OF UNIQUE NEIGHBORHOODS

Our City desires to be diverse, healthy, and inclusive, defined by our vibrant neighborhoods, quality housing, walkability, excellent schools, numerous parks and trails, and thriving areas of commerce.

IMPORTANCE

Bozeman is indeed a city of unique neighborhoods. From the traditional neighborhoods north and south of Bozeman's downtown, to the developments of more recent times, Bozeman's neighborhoods are as diverse as the periods of time in which they were built. This eclectic mix of housing opportunities within differing geographic parts of town helps define who we are, where we came from, and where we're going.

Neighborhoods or communities that offer a mix of housing, needed services, and opportunities within close proximity of each other are considered "complete communities". They promote walking or short commutes to the things in life we value and depend on including jobs, schools, places of worship, friends, goods and services, open spaces, trails, appropriately scaled urban agriculture such as community gardens, and more. Neighborhoods help improve community safety and overall community health.

The City supports policies that maintain and build neighborhoods designed to provide equitable access to amenities and opportunities for all. Housing type diversity within neighborhoods helps ensure community benefits are available to households of different size, income, and age. Mixed neighborhoods can help provide the density of people needed to support nearby commercial activities.

The need for a path to the emergence of small-scale neighborhood commercial development and its ability to bring pedestrian access to coffee shops, groceries, and other daily experiences, and related employment opportunities, is a critical part of Bozeman's municipal maturation.


Neighborhood Elements
Services
Sense of Identity
Social Networks
Homes
Jobs
Parks and Recreation
Geography
Schools
Services

THEME 2: OTHER RELEVANT PLANS

Bozeman Creek Neighborhood Plan – 2005

Downtown Improvement Plan – 2019

Housing Needs Assessment – 2019

Midtown Action Plan – 2017

Neighborhood Conservation Overlay District (NCOD) – 2019

Northeast Neighborhood Urban Renewal Plan – 2005





Such a path is dependent on sufficient population density in such neighborhoods to make neighborhood commercial viable. Typically, this viability cannot be achieved co-emergently with construction of neighborhood housing—for this reason other subsidy approaches must be developed and deployed to make co-emergence possible.

THEME 2 | GOALS, OBJECTIVES, AND ACTIONS

Goal N-1: Support well-planned, walkable neighborhoods.

N-1.1 Promote housing diversity, including missing middle housing.

N-1.2 Increase required minimum densities in residential districts.

N-1.3 Revise the zoning map to lessen areas exclusively zoned for single-type housing.

N-1.4 Promote development of accessory dwelling units (ADUs)

N-1.5 Encourage neighborhood focal point development with functions, activities, and facilities that can be sustained over time. Maintain standards for placement of community focal points and services within new development.

N-1.6 Encourage urban agriculture as part of focal point development, in close proximity to schools, and near dense or multi-unit housing.

N-1.7 Review and where appropriate, revise block and lot design standards, including orientation for solar power generation throughout city neighborhoods.

N-1.8 Install, replace, and maintain missing or damaged sidewalks, trails, and shared use paths.

N-1.9 Ensure multimodal connections between adjacent developments

N-1.10 Increase connectivity between parks and neighborhoods through continued trail and sidewalk development. Prioritize closing gaps within the network.

N-1.11 Enable a gradual and predictable increase in density in developed areas over time.

N-1.12 Encourage major employers to provide employee housing within walking/biking distance of place of employment.

Goal N-2: Pursue simultaneous emergence of commercial nodes and residential development through diverse mechanisms in appropriate locations.

N-2.1 Ensure the zoning map identifies locations for

neighborhood and community commercial nodes early in the development process.

N-2.2 Revise the zoning map to support higher intensity residential districts near schools, services, and transportation.

N-2.3 Investigate and encourage development of commerce concurrent with, or soon after, residential development. Actions, staff, and budgetary resources relating to neighborhood commercial development should be given a high priority

N-2.4 Evaluate design standards. Encourage development in appropriate districts of buildings that are capable of serving an initial residential purpose and be readily converted to commercial uses when adequate market support for commercial services exists.

N-2.5 Ensure that new development includes opportunities for urban agriculture, including rooftop and home gardens, community gardens, or urban farms.

Goal N-3: Promote a diverse supply of quality housing units.

N-3.1 Establish standards for provisions of diversity of housing types in a given area.

N-3.2 Review zoning districts to assess the range of housing types in each district.

N-3.3 Encourage distribution of affordable housing units throughout the City with priority given to locations near commercial, recreational, and transit assets.

N-3.4 Require development of affordable housing through coordination of funding for affordable housing and infrastructure.

N-3.5 Strongly discourage private covenants that restrict housing diversity or are contrary to City land development policies or climate action plan goals.

N-3.6 Include adequate residentially-designated areas for anticipated future housing in the future land use map.

N-3.7 Support compact neighborhoods, small lot sizes, and small floor plans, especially through mechanisms such as density bonuses.

N-3.8 Promote the development of "Missing Middle" housing (side by side or stacked duplex, triplex, live-work, cottage housing, group living, rowhouses/ townhouses, etc.) as one of the most critical components of affordable housing.

N-3.9 Ensure an adequate supply of appropriately designated land to accommodate Low Income Housing Tax Credit development in qualifying census tracts.

Goal N-4: Continue to encourage Bozeman's sense of place.

N-4.1 Continue to recognize and honor the unique history, neighborhoods, neighborhood character, and buildings that contribute to Bozeman's sense of place through programs and policy led by both City and community efforts.

N-4.2 Incorporate features, in both public and private projects, to provide organization, structure, and landmarks as Bozeman grows.

N-4.3 Revise Design Guidelines within the Conservation Overlay District to distinguish Downtown from the residential neighborhoods, to encourage neighborhoods and neighborhoods near transition areas, both north and south of Downtown.

N-4.4 Ensure an adequate supply of off-leash facilities to meet the demand of Bozeman dog owners.



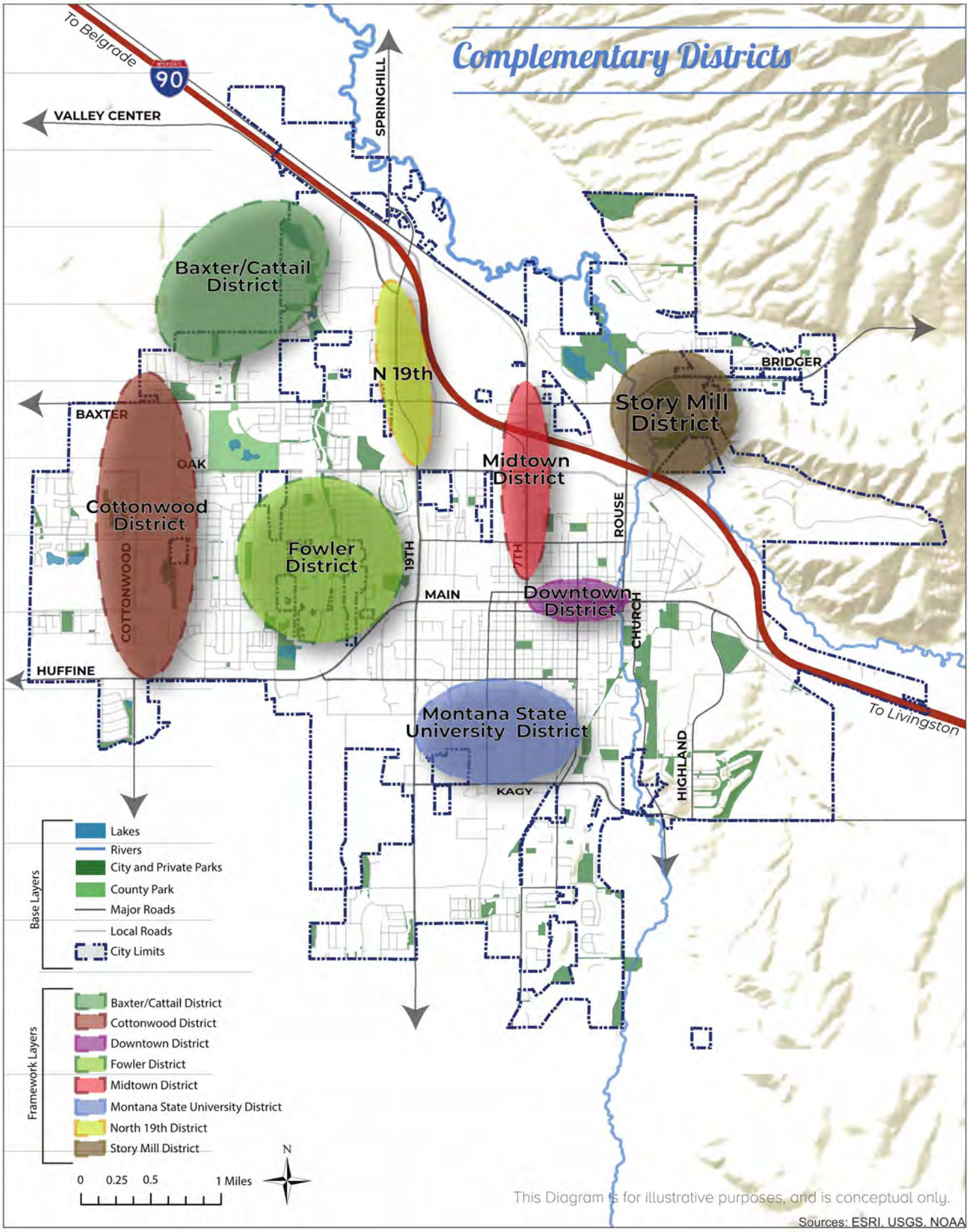
THEME 3 | A CITY BOLSTERED BY DOWNTOWN AND COMPLEMENTARY DISTRICTS

Our City is bolstered by our Downtown, Midtown, University and other commercial districts and neighborhood centers that are characterized by higher densities and intensities of use.

IMPORTANCE

Thoughtful city planning provides a host of advantages from economic vitality to environmental health to overall quality of life. Many of Bozeman's neighborhoods have a concentration of housing with a variety of housing types that support nearby commercial centers. The City intends to look inward by prioritizing infill. Concentrated development uses land more efficiently, may reduce infrastructure costs, and reduces the overall amount of road surface and need for parking lots, improving overall access to parks, schools, and shops. Access is ultimately improved and places are connected through a variety of transportation options.

Concentrated development makes sense for our pocketbooks and overall health. When it comes to promoting a walkable, bikeable, safe, affordable, and energy-efficient community, density and design matter. Preventing sprawl and increasing resource efficiency depend on an intensity of urban life found in our commercial centers. Innovative design and planning include ideas like pocket neighborhoods, smaller housing, green alleys, urban agriculture, and creativity in our public spaces.


Complementary Districts
To Belgrade
90
VALLEY CENTER
SPRINGHILL
Baxter/Cattail District
N 19th
BRIDGER
Story Mill District
BAXTER
OAK
Midtown District
Cottonwood District
COTTONWOOD
Fowler District
19TH
7TH
ROUSE
MAIN
Downtown District
CHURCH
HUFFINE
To Livingston
Montana State University District
HIGHLAND
KAGY
Base Layers
Lakes
Rivers
City and Private Parks
County Park
Major Roads
Local Roads
City Limits
Framework Layers
Baxter/Cattail District
Cottonwood District
Downtown District
Fowler District
Midtown District
Montana State University District
North 19th District
Story Mill District
N
0 0.25 0.5 1 Miles
This Diagram is for illustrative purposes, and is conceptual only.
Sources: ESRI, USGS, NOAA

THEME 3 | GOALS, OBJECTIVES, AND ACTIONS

Goal DCD-1: Support urban development within the City.

DCD-1.1 Evaluate alternatives for more intensive development in proximity to high visibility corners, services, and parks.

DCD-1.2 Remove regulatory barriers to infill.

DCD-1.3 Work with state regulatory agencies and the legislature to remove disincentives in state law and regulations to municipal development.

DCD-1.4 Update the Unified Development Code (UDC) to reflect density increases or minimums within key districts.

DCD-1.5 Identify underutilized sites, vacant, and undeveloped sites for possible development or redevelopment, including evaluating possible development incentives.

DCD-1.6 Investigate expansion of existing or creation of new urban renewal areas to encourage redevelopment of key properties.

DCD-1.7 Coordinate infrastructure construction, maintenance, and upgrades to support infill development, reduce costs, and minimize disruption to the public.

DCD-1.8 Collaborate with the Montana State University School of Architecture and the Sustainable Foods and Bioenergy Systems department to develop educational materials and opportunities for local architects, community planners, and citizens on how to do quality urban design for infill and greenfield sites.

DCD-1.9 Promote mixed-use developments with access to parks, open space, and transit options.

DCD-1.10 Support University efforts to attract development near campus.

DCD-1.11 Pursue annexations consistent with the future land use map and adopted facility plans for development at urban intensity.

DCD-1.12 Prioritize the acquisition and/or preservation of open space that supports community values, addresses gaps in functionality and needs, and does not impede development of the community.

DCD-1.13 Pursue acquisition and development of diverse water sources and resources.

Goal DCD-2: Encourage growth throughout the City, while enhancing the pattern of community development oriented on centers of employment and activity. Support an increase in development intensity within developed areas.

DCD-2.1 Coordinate infrastructure development, land use development, and other City actions and priorities through community planning.

DCD-2.2 Support higher density development along main corridors and at high visibility street corners to accommodate population growth and support businesses.

DCD-2.3 Review and update minimum development intensity requirements in residential and non-residential zoning districts.

DCD-2.4 Evaluate revisions to maximum building height limits in all zoning districts to account for contemporary building methods and building code changes.

DCD-2.5 Identify and zone appropriate locations for neighborhood-scale commercial development.

DCD-2.6 Evaluate and pursue joint mitigation of development impacts across multiple developments.

DCD-2.7 Encourage the location of higher density housing and public transit routes in proximity to one another.

DCD-2.8 Revise the zoning ordinance, reducing the number of zoning districts to be more consistent with the designated land use classifications, to simplify the development process, and support affordability objectives of the plan.

DCD-2.9 Evaluate increasing the number of stories allowed in centers of employment and activity while also directing height transitions down to adjacent neighborhoods.

THEME 3: OTHER RELEVANT PLANS

Downtown Improvement Plan – 2019

Integrated Water Resources Plan – 2013

Midtown Action Plan – 2017

Goal DCD-3: Ensure multimodal connectivity within the City.

DCD-3.1 Expand multimodal accessibility between districts and throughout the City as a means of promoting personal and environmental health, as well as reducing automobile dependency.

DCD-3.2 Identify missing links in the multimodal system, prioritize those most beneficial to complete, and pursue funding for completion of those links.

DCD-3.3 Identify major existing and future destinations for biking and walking to aid in prioritization of route planning and completion.

DCD-3.4 Support implementation of the Bozeman Transportation Master Plan strategies.

DCD-3.5 Encourage increased development intensity in commercial centers and near major employers.

DCD-3.6 Evaluate parking requirements and methods of providing parking as part of the overall transportation system for and between districts.

Goal DCD-4: Implement a regulatory environment that supports the Community Plan goals.

DCD-4.1 Ensure that the Planning Department is supported with the resources required to effectively implement this plan, to dedicate staff to long range and regional planning efforts, and to process development applications expeditiously.

DCD-4.2 Continuously invite and give due consideration to the input of design and development professionals in the improvement of the city's project evaluation processes and development code.

DCD-4.3 Complete the transition to a form-based code and simplification so that it can be understood by the general public and consistently applied by planning staff.

DCD-4.4 Differentiate between development and redevelopment. Allow relaxations of code provisions for developed parcels to allow redevelopment to the full potential of their zoning district.



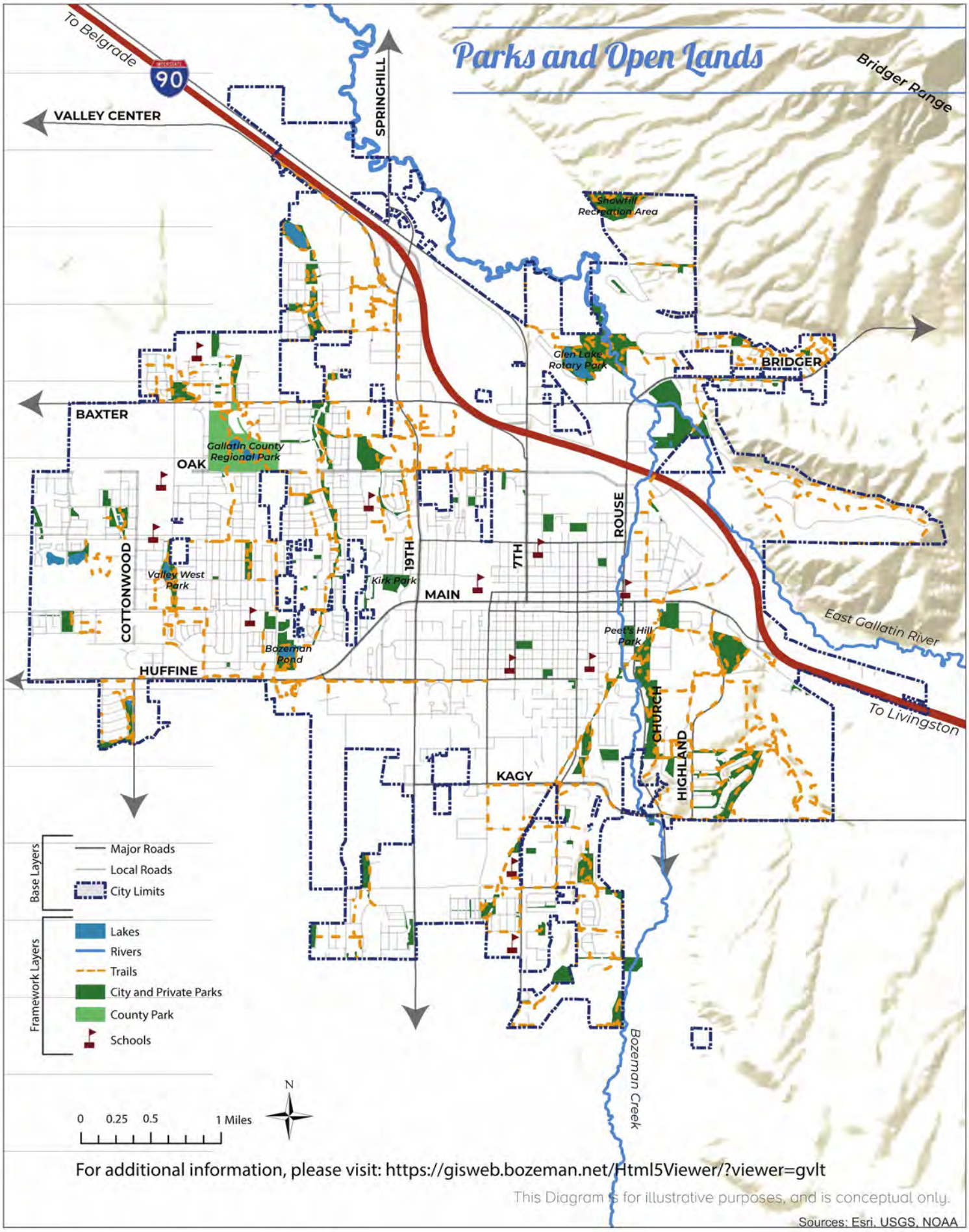
THEME 4 | A CITY INFLUENCED BY OUR NATURAL ENVIRONMENT, PARKS, AND OPEN LANDS

Our City is home to an outdoor-conscious population that honors and protects our natural environment and our well-managed open space and parks system.

IMPORTANCE

Surrounded by mountains, within close proximity to world-class rivers and Yellowstone National Park, Bozeman's natural environment is hard to beat. It's the foundation of our healthy tourist economy and the reason why many people move here, start businesses, and raise their families. It's also the reason behind the City's prioritization of parks, trails, and open space. And while Bozeman residents value and enjoy many forms of outdoor recreation, community members also understand and appreciate the need for maintaining and protecting the natural resources that support a healthy ecosystem.

Protecting our immediate and regional ecosystem requires diligence and careful planning as Bozeman and Gallatin County continue to grow. Responding to climate change, protecting the health of our water systems and our air quality, and grappling with the impacts of increased human population and invasive plants and animals are some of our challenges.



For additional information, please visit: https://gisweb.bozeman.net/Html5Viewer/?viewer=gvlt

This Diagram is for illustrative purposes, and is conceptual only.

Sources: Esri, USGS, NOAA

THEME 4 | GOALS, OBJECTIVES, AND ACTIONS

Goal EPO-1: Prioritize strategic acquisition of parks to provide a variety of recreational opportunities throughout the City.

EPO-1.1 Coordinate the location of existing and future parks to create opportunities for linear parks to connect larger parks. Prioritize quality locations and features in parks over quantity of parks.

EPO-1.2 Collaborate with partner agencies and organizations to establish sustainable funding sources for ongoing acquisition, construction, and operations of City parks, trails, gardens, and open space.

EPO-1.3 Incorporate unique and inclusive recreational and artistic elements into parks.

EPO-1.4 Research and implement multi-use features within parks to promote increased use and visitation. Wherever possible, parks are connected to multi-modal transportation options and accessible for people with disabilities.

EPO-1.5 Work with partner organizations to identify and reduce impacts on at-risk, environmentally sensitive areas that contribute to water quality, wildlife corridors, or wildlife habitat, specifically wildlife habitat as we continue outward growth.

EPO-1.6 Upon completion of an update to the City's park master plan, review standards of the UDC for adequacy and update, as needed, to coordinate with development review standards and practices.

Goal EPO-2: Work to ensure that development is responsive to natural features.

EPO-2.1 Where appropriate, activate connections to waterways by creating locations, adjacent trails, and amenities encouraging people to access them.

EPO-2.2 Work with the U.S. Army Corps of Engineers to keep wetlands mitigation within the Gallatin Valley rather than locating to other watersheds.

EPO-2.3 Identify, prioritize, and preserve key wildlife habitat and corridors.

Goal EPO-3: Address climate change in the City's plans and operations.

EPO-3.1 Support development of maintenance standards including sidewalk clearing, sidewalk surfaces, bike lanes, and procedures for consistent implementation.

EPO-3.2 Ensure complete streets and identify long-term resources for the maintenance of year-round bike and multi-use paths to improve utilization and reduce annual per capita vehicle miles traveled.

EPO-3.3 Support water conservation, use of native plants in landscaping, and development of water reuse systems.

EPO-3.4 Review and update landscape and open space standards for public and private open spaces to reduce water use. Likewise, review and update standards for reuse systems.

EPO-3.5 Update land development standards to implement the Integrated Water Resources Plan.

EPO-3.6 Review and revise stormwater standards to address changing storm profiles.

EPO-3.7 Review and update development regulations to implement facility and service plans when

those plans are updated.

EPO-3.8 In coordination with the Sustainability Division, provide public education on energy conservation and diversified power generation alternatives.

EPO-3.9 Integrate climate change considerations into development standards.

EPO-3.10 Inclusion of community gardens, edible landscaping, and urban micro-farms as part of open spaces outside of watercourses and wetlands in subdivisions is encouraged where appropriate.

EPO-3.11 Support resource conservation through recycling, composting, and other appropriate means.

Goal EPO-4: Promote uses of the natural environment that maintain and improve habitat, water quantity, and water quality, while giving due consideration to the impact of City regulations on economic viability.

EPO-4.1 Eliminate reliance on private maintenance of public infrastructure, including public parks, trail systems, and stormwater facilities. Identify a sustainable and reliable public funding source for this infrastructure.

EPO-4.2 Update floodplain and other regulations that protect the environment.

EPO-4.3 Pursue an inter-jurisdictional effort to establish baseline information on air quality trends and enhance monitoring facilities.

EPO-4.4 Collaborate with other Montana cities working with regulatory agencies to establish fair and technologically feasible water treatment standards.

EPO-4.5 Complete the update for an integrated Hazard Management and Mitigation Plan.

EPO-4.6 Develop a plan to mitigate conflicts between humans and wildlife through the use of proactive, non-lethal measures.

THEME 4: OTHER RELEVANT PLANS

Bozeman Creek Enhancement Plan – 2012

Cemetery Master Plan - 2018

Climate Action Plan – 2020

Drought Management Plan – 2017

Integrated Water Resources Implementation Plan – 2013

Integrated Water Resources Plan – 2013

Parks, Recreation, Open Space, and Trails Plan – 2007

Stormwater Facilities Plan – 2008

Stormwater Management Plan – 2019

Transportation Master Plan – 2017:

Urban Forestry Management Plan – 2016

Wastewater Collection Facilities Plan Update – 2015

Water Facility Plan Update – 2017





THEME 5 | A CITY THAT PRIORITIZES ACCESSIBILITY AND MOBILITY CHOICES

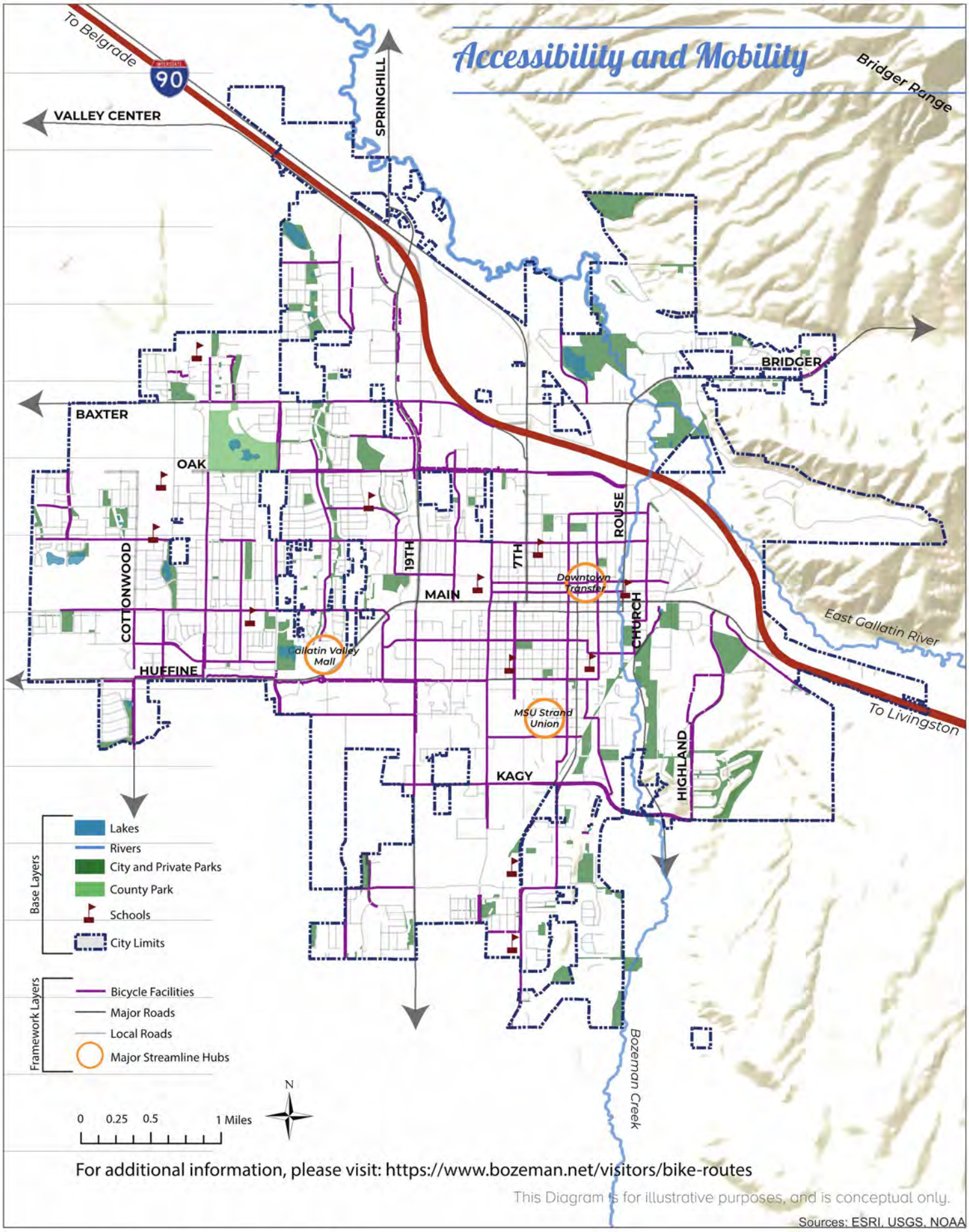
Our City fosters the close proximity of housing, services, and jobs, and desires to provide safe, efficient mobility for pedestrians, cyclists, transit users, and drivers.

IMPORTANCE

The best transportation plan is a good land use plan. Transportation systems impact the following: 1) livability (in terms of traffic congestion, but also noise, pollution, physical activity, accessibility, safety, and aesthetics); 2) affordability (after housing, transportation is the second largest expense for most households); and 3) sustainability (transportation accounted for more than one third of Bozeman's 2016 greenhouse gas emissions). Notably, the Bozeman Yellowstone International Airport is the busiest airport in the state. An affordable, livable, sustainable city should grow with reduced reliance on driving alone to reach daily destinations.

Active transportation increases daily physical activity, improving health and lowering healthcare costs. Motor vehicle accidents are one of the leading causes of preventable deaths in our country. Designing streets to prioritize safety (rather than speed) significantly reduces fatal injuries for all users and promotes active transportation.

Living in housing that's far from daily destinations usually means the only reasonable transportation choice is your personal car. Thoughtful community planning provides residents and visitors with a wide range of transportation options. Appropriately designed trails, sidewalks, crossings, bike lanes, and transit networks help us move around our neighborhoods and promote safe, efficient passage to our destinations.


Accessibility and Mobility
To Belgrade
90
VALLEY CENTER
SPRINGHILL
Bridger Range
BRIDGER
BAXTER
OAK
COTTONWOOD
HUFFINE
19TH
7TH
ROUSE
CHURCH
MAIN
Downtown Transfer
Gallatin Valley Mall
MSU Strand Union
KAGY
HIGHLAND
East Gallatin River
To Livingston
Bozeman Creek
Base Layers
Lakes
Rivers
City and Private Parks
County Park
Schools
City Limits
Framework Layers
Bicycle Facilities
Major Roads
Local Roads
Major Streamline Hubs
N
0 0.25 0.5 1 Miles
For additional information, please visit: https://www.bozeman.net/visitors/bike-routes
This Diagram is for illustrative purposes, and is conceptual only.
Sources: ESRI, USGS, NOAA





Anticipating Changes in Multimodal Transportation
OHM Advisors

THEME 5 | GOALS, OBJECTIVES, AND ACTIONS

Goal M-1: Ensure multimodal accessibility.

M-1.1 Prioritize mixed-use land use patterns. Encourage and enable the development of housing, jobs, and services in close proximity to one another.

M-1.2 Make transportation investment decisions that recognize active transportation modes and transit as a priority.

M-1.3 Develop service standard levels for multimodal travel.

M-1.4 Develop safe, connected, and complementary transportation networks for pedestrians, bicyclists, and users of other personal mobility devices (e-bikes, electric scooters, powered wheelchairs, etc.).

M-1.5 Identify locations for key mobility hubs (e.g. rideshare drop off/ pick up areas, bike/scooter share, transit service, bike, and pedestrian connections).

M-1.6 Integrate consideration of rideshare and other mobility choices into community planning regulations.

M-1.7 Develop a trunk network of high-frequency, priority transit service connecting major commercial nodes and coinciding with increased density.

M-1.8 Establish standards and procedures for placement of bus shelters in City rights of way.

M-1.9 Prioritize and construct key bicycle infrastructure, to include wayfinding signage, connections, and enhancements with emphasis on completing network connectivity.

M-1.10 In conjunction with the transportation plan, work to develop a core network of "AAA" (appropriate for all ages and abilities) bike routes covering at least 75 percent of households and 75 percent of jobs within ½ mile of the network.

M-1.11 Prioritize and construct key sidewalk connections and enhancements.

M-1.12 Eliminate parking minimum requirements in commercial districts and affordable housing areas and reduce parking minimums elsewhere, acknowledging that demand for parking will still result in new supply being built.

M-1.13 Work with community partners to expand the Main Street to the Mountains network and integrate the larger community recreational travel network.

M-1.14 Identify possible routes for future bicycle and pedestrian beltway/greenway.

Goal M-2: Ensure multimodal safety.

M-2.1 Work with the Public Works Department, Police Department, and other partners to provide education on safe travel behaviors and rules.

M-2.2 Review and, as appropriate, update the City's complete streets policy.

M-2.3 Work with School District #7 and other community partners in planning and operating safe routes to local schools.

M-2.4 Encourage the design of school sites to support walking and biking.

M-2.5 Develop safe crossings along priority and high utilization pedestrian and biking corridors.

THEME 5: OTHER RELEVANT PLANS

Bozeman Community Transportation Safety Plan – 2013

Downtown Strategic Parking Management Plan – 2016

Transportation Master Plan – 2017







THEME 6 | A CITY POWERED BY ITS CREATIVE, INNOVATIVE, AND ENTREPRENEURIAL ECONOMY

Our City benefits from and desires to further an expanding economy that is powered by the talents of its residents, a dedicated and engaged business community, and strong regional partnerships.

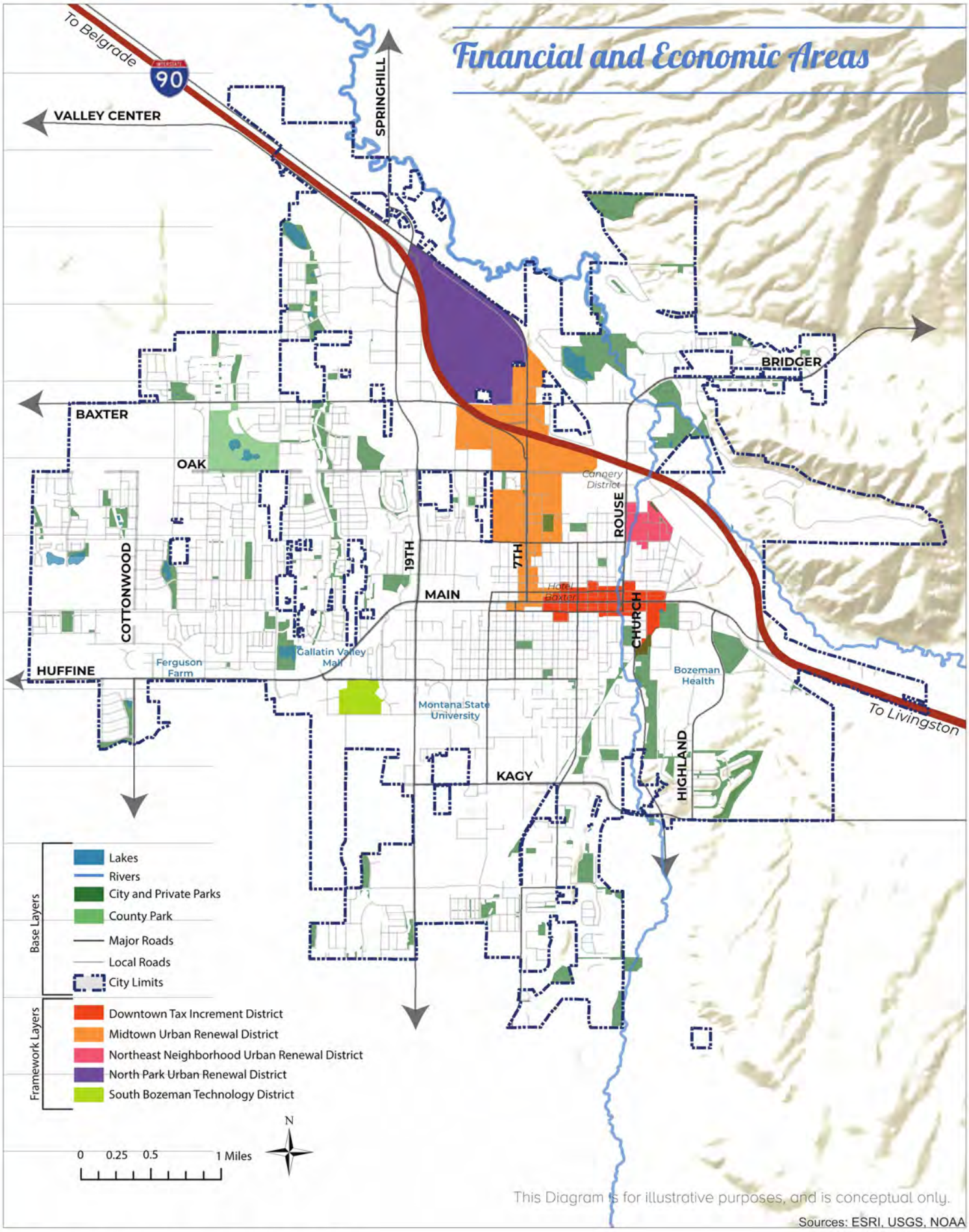
IMPORTANCE

Bozeman's economy is diverse and expanding, with a mix of businesses and industries centered on technology, healthcare, education, recreation, and tourism, and regional services. This is one of the City's great strengths. The City also has many lower wage jobs in service roles. Bozeman has access to cutting edge education and research at opportunities from Montana State University. With an enrollment of nearly 17,000 students, the University hosts ten colleges that includes subjects such as Engineering, Agriculture, Business, and Nursing. Graduates have created offshoot industries that foster competencies in several national industries, including businesses in opto-electronics, biofilm, and outdoor gear and other industries. Continued investment in job training and education is needed to support continued economic growth.

The City's commitment to broadband availability through its Economic Development Division has improved availability of national-level broadband speeds in key areas of the City, making state of the art communications and information from distant consultants available locally. Immediate and short-distance proximity to outdoor recreation opportunities provides significant daily mental and physical health benefits to residents and employers, making Bozeman one of the most desirable innovation centers in the country.

Bozeman's growing economy makes possible its increasing dynamism, diversity, and wealth. Each of the major sectors of our economy – education, technology, outdoor recreations, tourism, health care, and regional services – benefits from and reinforces the others. The growing economy provides resources the money that enables the City to pursue its priorities.

Financial and Economic Areas



This Diagram is for illustrative purposes, and is conceptual only.

Sources: ESRI, USGS, NOAA

THEME 6: OTHER RELEVANT PLANS

Economic Development Strategy Update – 2016

Transportation Master Plan – 2017

Wastewater Collection Facilities Plan Update –2015

Water Facility Plan Update – 2017

THEME 6 | GOALS, OBJECTIVES, AND ACTIONS

Goal EE-1: Promote the continued development of Bozeman as an innovative and thriving economic center.

EE-1.1 Support the goals and objectives outlined in the Bozeman Economic Development Strategy.

EE-1.2 Invest in those infrastructure projects that will strengthen business and higher education communities as coordinated through the annual capital improvement plan.

EE-1.3 Continue to facilitate live/work opportunities as a way to support small, local businesses in all zoning districts.

EE-1.4 Support employee retention and attraction efforts by encouraging continued development of affordable housing in close proximity to large employers.

EE-1.5 Support expansion of current and emerging infrastructure technologies including fiber optic service and other communication infrastructure.

EE-1.6 Update the zoning map to correct deficiencies identified in the annual land use inventory report.

Goal EE-2: Survey and revise land use planning and regulations to promote and support economic diversification efforts.

EE-2.1 Ensure the future land use map contains adequate areas of land for anticipated diverse users.

EE-2.2 Review and revise, or possibly replace, the Business Park Mixed Use zoning district to include urban standards and consider possible alterations to the allowed uses.

EE-2.3 Adopt zoning regulations that establish and define the range of urban agricultural practices, including vertical farms and other forms of urban farming, as a permitted or conditional use in appropriate locations. Urban agriculture can be compatible with a variety of land use designations shown on the Future Land Use Map.



THEME 7 | A CITY ENGAGED IN REGIONAL COORDINATION

Our City, in partnership with Gallatin County, Montana State University, and other regional authorities, desires to address the needs of a rapidly growing and changing regional population through strategic infrastructure choices and coordinated decision-making.

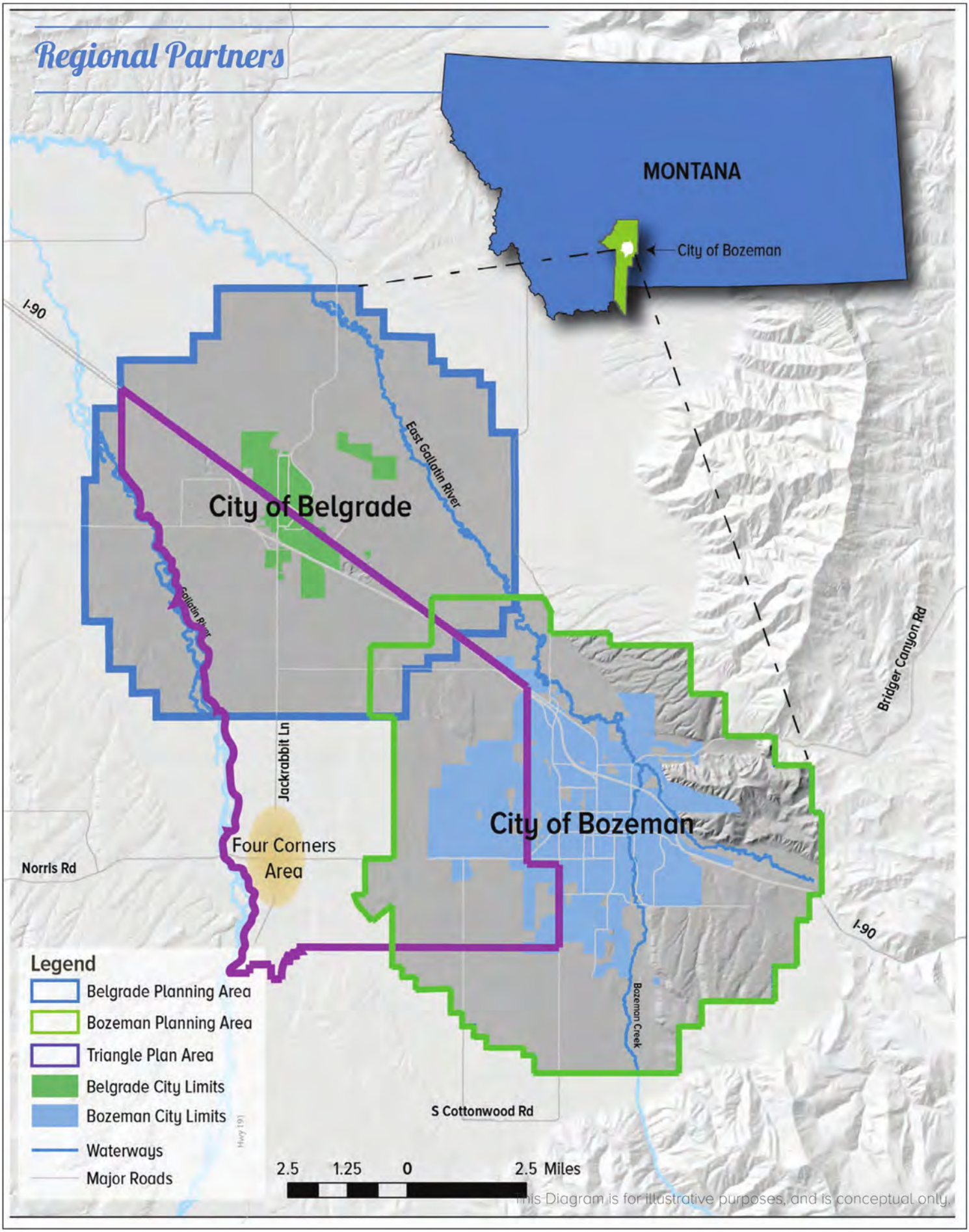
IMPORTANCE

Cooperation between agencies makes sense. Conflicting decisions and lack of trust between agencies can create complications and uncertainty, adversely affect our overall public health and safety, and drive up costs. A good working relationship between city and county officials and staff can reduce conflicts, improve our overall infrastructure, lower taxpayer costs and ultimately create a safer, healthier community. Regional coordination creates and maintains a coherent land use pattern that supports the needs of existing and future residents and the desire to protect community character and amenities. Cooperation between jurisdictions supports development patterns that do not compromise the ability of municipalities to grow in the future or expand necessary infrastructure. The jurisdictional lines between City and County, state land and local land, are important in helping define the roles of various public agencies.

Belgrade, Bozeman, and Gallatin County have mutually agreed they will coordinate land use in the area of overlapping jurisdictions known as the triangle, and pursuant to the Triangle Community Plan, to achieve:

- Compact, contiguous development and infill to achieve an efficient use of land and infrastructure, reducing sprawl and preserving open space, agricultural lands, wildlife habitat, and water resources;
- Well-planned transportation systems, consistent with the overall growth management vision, support the development of multi-modal and public transportation networks;
- Community cores that have adequate transportation, utility, health, educational, and recreational facilities. Residential areas that provide healthy surroundings; and
- Opportunities for agriculture, industry, and business, while minimizing conflict between adjacent land uses.

Regional Partners



Bozeman commits to Gallatin County and the City of Belgrade to work together in pursuit of these goals. The Planning Coordinating Committee will play a key role in coordinating this work.

THEME 7 | GOALS, OBJECTIVES AND ACTIONS

Goal RC-1: Improve communication and coordination with Gallatin County, the City of Belgrade, public schools, and other regional public entities regarding community planning and associated matters.

RC-1.1 Consider regional impacts when making policy decisions affecting areas outside the City.

RC-1.2 Coordinate planning activities to promote consistency throughout the region for parks, transportation, bus service, and other community infrastructure.

RC-1.3 Research, understand, and collaboratively construct infrastructure and transportation improvements that benefit the region.

RC-1.4 Participate in regularly scheduled coordination meetings with Gallatin County and the City of Belgrade planning departments and planning boards to coordinate planning issues.

RC-1.5 Implement the Triangle Community Plan in coordination between Bozeman, Belgrade, and Gallatin County.

RC-1.6 Prepare for establishment of a Metropolitan Planning Organization, anticipated to be required by federal law after the completion of the 2020 US Census.

Goal RC-2: Continue and build on successful collaboration with Gallatin County, neighboring municipalities, and other agencies to identify and mitigate potential hazards and develop coordinated response plans.

RC-2.1 Prohibit development in environmentally-sensitive or hazard-prone areas.

RC-2.2 Identify effective, affordable, and regionally-appropriate hazard mitigation techniques through the Gallatin County Hazard Mitigation and Community Wildfire Protection Plan and other tools. As a group, annually review the Gallatin County Hazard Mitigation Plan, and determine the need for updates and enhancements.

RC-2.3 Along with non-profit and agency partners, identify, map, and utilize geographic information systems (GIS) data to locate and monitor developments on environmentally sensitive and hazard-prone areas.

RC-2.4 Review and revise land use regulations and standards that affect the wildland urban interface to provide adequate public safety measures, mitigate impacts on public health, and encourage fiscal responsibility.

RC-2.5 Through coordination with non-profit and agency partners, identify and prioritize lands for acquisition or placement of conservation easements with the goal of lessening or eliminating development in environmentally sensitive areas and/or preserving areas consistent with the other priorities of this Growth Policy.

Goal RC-3: Collaborate with Gallatin County regarding annexation and development patterns adjacent to the City to provide certainty for landowners and taxpayers.

RC-3.1 Work with Gallatin County to create compact, contiguous development and infill to achieve an

efficient use of land and infrastructure, reducing sprawl and preserving open space, agricultural lands, wildlife habitat, and water resources.

RC-3.2 Work with Gallatin County to keep rural areas rural and maintain a clear edge to urban development that evolves as the City expands outwards.

RC-3.3 Prioritize annexations that enable the incremental expansion of the City and its utilities.

RC-3.4 Encourage annexation of land adjacent to the City prior to development and encourage annexation of wholly surrounded areas.

RC-3.5 Establish standard practices for sharing development application information and exchanging comments between the City and County.

RC-3.6 Develop shared information on development processes.

RC-3.7 Provide education and information on the value and benefits of annexation, including existing un-annexed pockets surrounding the City, to individual landowners and the community at large. Establish interlocal agreements, when appropriate, to formalize working relationships and procedures.

RC-3.8 Coordinate with Gallatin County for siting, development, and redevelopment of regional parks, emergency services, fairgrounds, transportation facilities, interchanges, or other significant regional services.

THEME 7: OTHER RELEVANT PLANS

Bozeman Strategic Plan – 2018

Fire and EMS Master Plan – 2017

Gallatin County Hazard Mitigation Plan and Community Wildfire Protection Plan – 2019

Triangle Community Plan – 2020

Wastewater Collection Facilities Plan Update – 2015

Water Facility Plan Update – 2017

Goal RC-4: Ensure that all City actions support continued development of the City, consistent with its adopted Plans and standards.

RC-4.1 Enhance collaboration between City agencies to ensure quality design and innovation across public and private areas.

RC-4.2 Further develop reasonable and relevant metrics for community development within the City's Planning Area to determine whether the intent of this Plan is being accomplished.

RC-4.3 Prioritize human well-being and health in the creation and implementation of land development standards.

RC-4.4 Update the Unified Development Code (UDC) to:

- Implement a twice-yearly code revision cycle. Identify and make revisions to optimize the UDC current conditions.
- Incorporate development minimums in designated growth areas.
- Revise the zoning map to harmonize with the future land use map.

03



03 | FUTURE LAND USE

IMPORTANCE

Future land use is the community's fundamental building block. It is an illustration of the City's desired outcome to accommodate the complex and diverse needs of its residents. Part of Bozeman's appeal is its distinct character. Its character comes from the natural setting and includes the sense of place created by constructed landmarks such as Downtown and the MSU campus. Continuing Bozeman's character as a unique place rather than "Anywhere, USA" is important. There is increasing evidence that sense of place is an important influence on economic development and overall community health.

Bozeman's physical landscape provides residents and visitors variety when moving amongst its streets, bike paths, and trails. This variety is often noted as an important part of Bozeman's unique character – to experience open, agricultural, and recreational spaces just minutes from dense, urban corridors from the seat of a bike or a car, a bus, or when walking. As Bozeman continues to evolve, promoting this landscape diversity will be important to maintaining the community character that people know and love.

Community development oriented on centers of employment and activity shorten travel distances and encourage multi-modal transportation, increase business synergies, and permit greater efficiencies in the delivery of public services.

City activities all require continuous thoughtfulness and planning. Capital improvements, maintenance programs, and plan implementation tools must be regularly evaluated and updated. Ensuring a consistent set of guiding principles provides a higher level of service to residents, minimizes contradictory or conflicting policies that waste resources, and enable a more accurate evaluation of public policies.

All of these are reflected in, and shaped by, the way land is used. The character of our well-planned City is defined by urban edges, a varied skyline, centers of employment and activity, pedestrian-friendly streetscapes, and easy access to the natural world.

The land use map sets generalized expectations for what goes where in the community. Each category has its own descriptions. Understanding the future land use map is not possible without understanding the category descriptions. Land use categories are not regulatory. Each category description can be implemented by multiple zoning districts. The land use categories and descriptions provide a guide for appropriate development and redevelopment locations for civic, residential, commercial, industrial, and other uses. The Future land use designations are important because they aim to further the vision and goals of the City through promoting sustainability, citizen and visitor safety, and a high quality of life that will shape Bozeman's future development.









FUTURE LAND USE MAP - LAND USE DESCRIPTIONS

The Future Land Use Map for the Planning Area is an indispensable part of this Plan. It utilizes ten land use categories to illustrate and guide the intent, type of use, density, and intensity of future development. The map does not always represent existing uses but does reflect the uses that are desired. Although Gallatin County has final approval authority on land development outside the City of Bozeman, land annexed by the City is under the City's authority. The City has adopted facility plans that enable coordination with Gallatin County. If one or more intergovernmental agreements are developed that address areas outside City limits, development would need to meet the terms of these agreements. Land use categories are not regulatory in and of themselves. The Correlation with Zoning table shows the existing zoning districts that implement the intent of each district.

The future land use map is not limited to conditions or needs expected within a certain number of years. It depicts what, at whatever time the land changes use, what the City sees as the best long term use. It may take many plan update cycles before the depicted conditions on the future land use map occur. The Planning Area boundary and development opportunities are coordinated with the City's water and sewer plans. These plans are periodically updated. The Planning Area boundary and capacity should be reviewed to accommodate changes in these plans. Amendments to the FLUM follow the procedures in Chapter 5. Due to limitations of scale and ability to predict the nuances of land development, the water bodies and streams are not depicted nor are the locations of future parks.

The categories are as follows:

1. URBAN NEIGHBORHOOD.

This category primarily includes urban density homes in a variety of types, shapes, sizes, and intensities. Large areas of any single type of housing are discouraged. In limited instances, an area may develop at a lower gross density due to site constraints and/or natural features such as floodplains or steep slopes. Complementary uses such as parks, home-based occupations, fire stations, churches, schools, and some neighborhood-serving commerce provide activity centers for community gathering and services. The Urban Neighborhood designation indicates that development is expected to occur within municipal boundaries. This may require annexation prior to development.

Applying a zoning district to specific parcels sets the required and allowed density. Higher density residential areas are encouraged to be, but are not required or restricted to, proximity to commercial mixed use areas to facilitate the provision of services and employment opportunities without requiring the use of a car.



Near Enterprise Blvd. and Graf St.



Near N. Black Ave. and E. Beall St.



Northeast Neighborhoods

2. RESIDENTIAL MIXED USE.

This category promotes neighborhoods substantially dominated by housing, yet integrated with small-scale commercial and civic uses. The housing can include single-attached and small single-detached dwellings, apartments, and live-work units. If buildings include ground floor commercial uses, residences should be located on upper floor. Variation in building mass, height, and other design characteristics should contribute to a complete and interesting streetscape.

Secondary supporting uses, such as retail, office, and civic uses, are permitted on the ground floor. All uses should complement existing and planned residential uses. Non-residential uses are expected to be pedestrian oriented and emphasize the human scale with modulation in larger structures. Stand alone, large, non-residential uses are discouraged. Non-residential spaces should provide an interesting pedestrian experience with quality urban design for buildings, sites, and open spaces.

This category is appropriate near commercial centers. Larger areas should be well served by multimodal transportation routes. Multi-unit, higher density, urban development is expected. Any development within this category should have a well-integrated transportation and open space network that encourages pedestrian activity and provides ready-access within and adjacent development.



Cannery District



Near Enterprise Blvd. and Graf St.



Northeast Neighborhoods

3. COMMUNITY COMMERCIAL MIXED USE.

The Community Commercial Mixed Use category promotes commercial areas necessary for economic health and vibrancy. This includes professional and personal services, retail, education, health services, offices, public administration, and tourism establishments. Density is expected to be higher than it is currently in most commercial areas in Bozeman and should include multi-story buildings. Residences on upper floors, in appropriate circumstances, are encouraged. The urban character expected in this designation includes urban streetscapes, plazas, outdoor seating, public art, and hardscaped open space and park amenities. High density residential areas are expected in close proximity.

Developments in this land use area should be located on one or two quadrants of intersections of the arterial and/or collector streets and integrated with transit and non-automotive routes. Due to past development patterns, there are also areas along major streets where this category is organized as a corridor rather than a center. Although a broad range of uses may be appropriate in both types of locations, the size and scale is to be smaller within the local service areas. Building and site designs made to support easy reuse of the building and site over time is important. Mixed use areas should be developed in an integrated, pedestrian friendly manner and should not be overly dominated by any single use. Higher intensity uses are encouraged in the core of the area or adjacent to significant streets and intersections. Building height or other methods of transition may be required for compatibility with adjacent development.

Smaller neighborhood scale areas are intended to provide local service to an area of approximately one half-mile to one mile radius as well as passersby. These smaller centers support and help give identity to neighborhoods by providing a visible and distinct focal point as well as employment and services. Densities of nearby homes needed to support this scale are an average of 14 to 22 dwellings per net acre.



Northeast Neighborhoods



Cannery District



Ferguson Farms

4. TRADITIONAL CORE.

The traditional core of Bozeman is Downtown. This area exemplifies high quality urban design including an active streetscape supported by a mix of uses on multiple floors, a high level of walkability, and a rich architectural and local character. Additionally, essential government services and flexible spaces for events and festivals support opportunities for civic and social engagement. The intensity of development in this district is high with a Floor Area Ratio (FAR) well over 1. As Bozeman grows, continued evolution is necessary for long-term resilience. Challenges do exist, particularly around keeping local identity intact, balancing growth sensitively, and welcoming more transportation modes and residents. Underdevelopment and a lack of flexibility can threaten the viability of the land use designation. Future development should be intense while providing areas of transition to adjacent neighborhoods and preserving the character of the Main Street Historic District through context-sensitive development.



Main St.



Babcock St.



Main St.

5. REGIONAL COMMERCIAL AND SERVICES.

Regionally significant developments in this land use category may be developed with physically large and economically prominent facilities requiring substantial infrastructure and location near significant transportation facilities. Due to the scale of these developments, location, and transition between lower-density uses is important. Residential space should be located above the first floor to maintain land availability for necessary services. Development within this category needs well-integrated utilities, transportation, and open space networks that encourage pedestrian activity and provide ready-access within and adjacent to development. Large community scale areas in this land use category are generally 75 acres or larger and are activity centers for several surrounding square miles. These are intended to service the overall community as well as adjacent neighborhoods and are typically distributed by a one-to two-mile separation.



1001 Oak Street



Kenyon Noble



Highland Blvd.

6. MAKER SPACE MIXED USE

This classification provides areas for dynamic mixed uses including technology industries, manufacturing, research and development, offices, and supportive uses to provide employment and services to the community. Opportunity for live/work may be provided or housing elements integrated on upper floors of mixed use buildings. Careful consideration is given to public policies supporting compatibility to enable mixed uses to coexist in harmony. Development within these areas is often intensive and the area is connected to significant transportation corridors. Although use in these areas may be intense, they are part of the larger community and standards for architecture and site design apply.



S&S Building



Offices



Employment with on site residential

7. INDUSTRIAL.

This classification provides areas for manufacturing, warehousing, technology industries, and transportation hubs. Development within these areas is intensive and is connected to significant transportation corridors. Uses that would be harmed by industrial activities are discouraged from locating in these areas. Although use in these areas is intense, they are part of the larger community and standards for architecture and site design apply. In some circumstances, uses other than those typically considered industrial have been historically present in areas that were given an industrial designation in prior growth policies. Careful consideration must be given to public policies to allow these mixed uses to coexist in harmony.



Multi-Modal Freight Terminal



Straightaway Motors



Northwestern Energy

8. PARKS AND OPEN LANDS.

All recreational lands, including parks, are included within this category, as well as certain private lands. These areas are generally open in character and may or may not be developed for active recreational purposes. This category includes conservation easements or other private property which may not be open for public use.


Story Mill Park


Sourdough Trail Area


Meyers Lake

9. PUBLIC INSTITUTIONS.

The land in this classification is owned by a public entity. A variety of activities are undertaken in this land use classification. Schools are a dominant use including Montana State University. Other typical uses are libraries, fire stations, and publicly operated utilities. A significant portion of Bozeman's employment occurs within this category.


Bozeman Public Library, Main St.


City Hall


Meadowlark Elementary School

10. NO CITY SERVICES.

This category designates areas where development is considered inappropriate over the 20-year planning horizon of this growth policy because of natural features, negative impacts on the desired development pattern, or difficulty providing urban services. As a result, the City does not anticipate building infrastructure to serve these lands at any time during the Planning Period. As the City's growth policy is updated, some areas currently classified as No City Services may be reclassified.

Suburban or rural density subdivisions in these areas are discouraged because they impede an orderly and cost effective expansion of the City.







CORRELATION WITH ZONING

The zoning districts which implement each future land use category are shown in relation to each future land use category in chart below. For zoning district intent, see 38.300. For permitted uses, see 38.310.

Urban Neighborhood



R-S, R-1, R-2, R-3, R-4, R-5, R-O, REMU

RMH, B-1, PLI

Residential Mixed Use



R-3, R-4, R-5, R-O, REMU, B-1, PLI

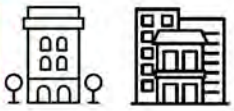
Community Commercial Mixed Use



R-O, REMU, B-1, B-2, B-2M, UMU, NEHMU

PLI

Traditional Core



B-2M, B-3, PLI

Regional Commercial & Services



B-2, B-2M, UMU, PLI

Maker Space Mixed Use



BP, M-1, NEHMU, PLI

Industrial



M-1, M-2, BP, PLI

Parks & Open Lands



PLI

Public Institutions



PLI

LEGEND

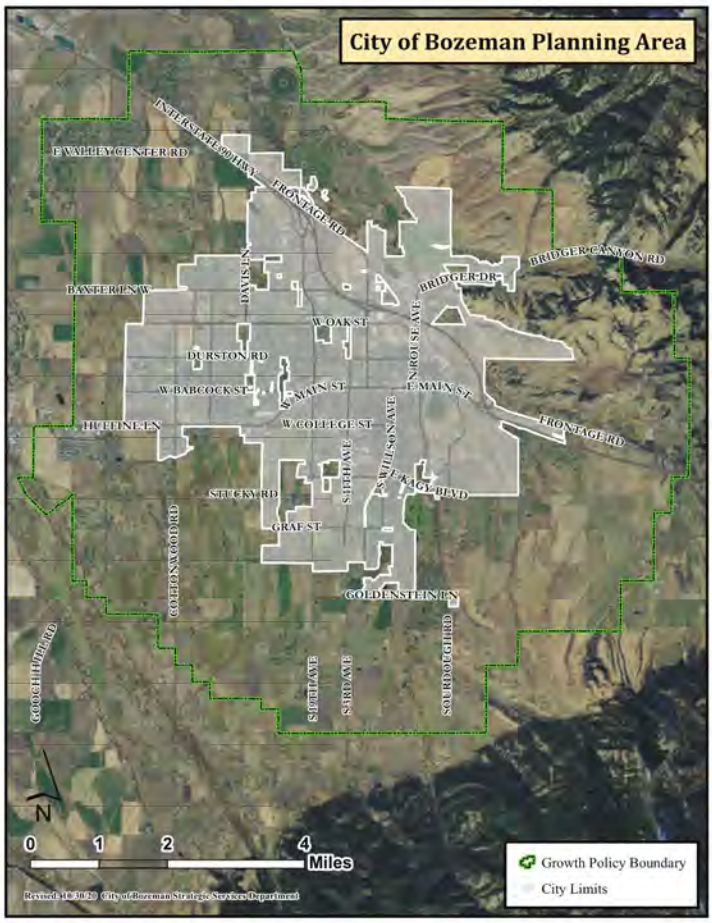


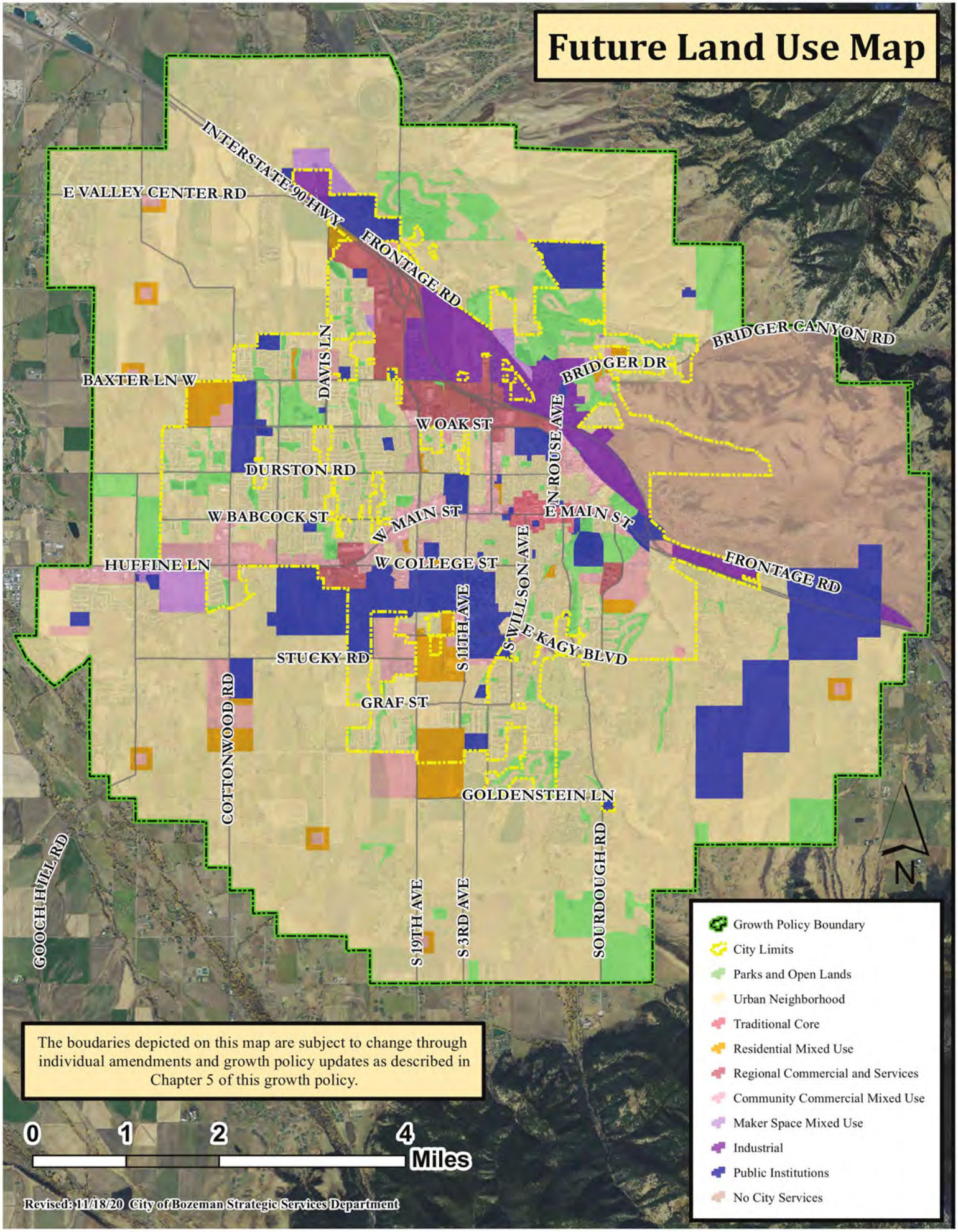
THE FUTURE LAND USE MAP

The Future Land Use Map on the following page identifies the land use catergories that are detailed on the previous pages in Chapter 3. Due to the large scale of the map, any useful review will require access to its digital version, which can be expanded to show details. The City's web viewer displays the most current digital version of the map at all times. It is available at https://gisweb.bozeman.net/Html5Viewer/?viewer=planning.

Outward development of the City is strongly connected to locations of municipal water and sewer systems. The City has planned for eventual utility services to the Planning Area. The inset map at right shows the location of current City boundaries and where utility services are presently available. New development regularly expands this area.

Many mapping resources for utilities, land use, zoning, parks, transportation, floodplains, and other land use related subjects are available through the City's web portal at https://www.bozeman.net/government/gis-mapping.




Future Land Use Map
INTERSTATE 90 HWY
FRONTAGE RD
E VALLEY CENTER RD
DAVIS LN
BAXTER LN W
BRIDGER CANYON RD
BRIDGER DR
W OAK ST
N ROUSE AVE
DURSTON RD
W BABCOCK ST
W MAIN ST
E MAIN ST
HUFFINE LN
W COLLEGE ST
FRONTAGE RD
S WILLSON AVE
S 11TH AVE
E KAGY BLVD
STUCKY RD
GRAF ST
COTTONWOOD RD
GOLDENSTEIN LN
GOOCH HILL RD
S 19TH AVE
S 3RD AVE
SOURDOUGH RD
N
Growth Policy Boundary
City Limits
Parks and Open Lands
Urban Neighborhood
Traditional Core
Residential Mixed Use
Regional Commercial and Services
Community Commercial Mixed Use
Maker Space Mixed Use
Industrial
Public Institutions
No City Services
The boudaries depicted on this map are subject to change through individual amendments and growth policy updates as described in Chapter 5 of this growth policy.
0 1 2 4 Miles
Revised: 11/18/20 City of Bozeman Strategic Services Department

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04 | IMPLEMENTATION

IMPORTANCE

Implementation of the goals, objectives, and actions of this Plan will require work in coordination with action items listed below and referred to in more detail in Chapter 2. Implementation will proceed in coordination with the City's Strategic Plan, Capital Improvements Program, and other relevant plans and documents guiding the City. Some of the actions are already underway while others will occur in the future. Not all factors needed for success are controlled by the City. Successful implementation of this Plan will require dedication, engagement, and hard work from the community.

This Plan is intended to be a living document used daily by the City. Measuring and reporting on the Plan's efficacy (or outcomes) is a main tenant of the Plan. Successful implementation of the Plan will be enhanced by periodic reporting and by objective monitoring. These activities can determine how well the City's initial objectives are working, where they can be improved, and what is not working.

To that end, the Department of Community Development will annually provide a report to the Planning Board and the City Commission summarizing the actions taken to date to achieve each of the Objectives and Actions described in Chapter 2 and the success of these actions.

In addition, objective monitoring will take place at specified intervals based on information availability. Indicators have been identified for each Theme in order to track progress and setbacks. For example, one indicator under the neighborhoods-based Theme evaluates housing stock diversity by looking at square footages, the number of bedrooms and bathrooms, and the taxable value of homes. A diverse housing stock is indicative of a City that is more accessible and affordable to those of all incomes.

SHORT-TERM ACTION LIST

This Plan identifies many actions and objectives to address the listed goals. Many actions are ongoing. Some are specific shorter term actions to implement this Plan. The following list is not listed in any order of priority and is drawn from those shorter term actions listed in Chapter 2.

1. Review potential upzoning to implement objectives N-1.1, N-1.2, and N-1.4 .
2. Evaluate zoning map changes needed to implement objectives N-1.3, N-2.1, N-2.2, and N-3.9 consistent with factors identified in Chapter 5, Zoning Amendment Review.
3. Evaluate design standards as identified in objectives N-1.7 and N-2.4. Buildings are to be capable of serving an initial residential purpose and be readily converted to commercial uses when adequate market support for commercial services exists.
4. Evaluate revisions to maximum building height limits in multi-household, commercial, industrial, and mixed-use zoning districts to account for revised building methods, building code changes, and the effect of incremental changes on meeting goals of this plan as noted in objective DCD-2.4.
5. Update land development standards to implement the Integrated Water Resources Plan as identified in objective EPO-3.5.
6. Identify missing links in the multimodal system, prioritize those most beneficial to complete, and pursue funding for completion of those links as noted in objectives M-1.4, M-1.9, and M-1.11.
7. Evaluate parking requirements and methods of providing parking as part of the overall transportation system for and between districts as noted in objective M-1.12.
8. Revise current intersection level of service design standards to multimodal level of service or traffic stress for people walking, biking, and using transit as identified in objective M-1.3.
9. Prepare for establishment of a Metropolitan Planning Organization, anticipated to be required after the completion of the 2020 US Census and noted in objective RC-1.6.
10. Establish standard practices for sharing development application information and exchanging comments between the City and County as identified in objective RC-3.5.
11. Revise the zoning map to harmonize with the future land use map as noted in objectives N-1.3, N-2.1, N-2.2, EE-1.6, and RC-4.4.
12. Update the UDC to reflect density increases or minimums within key districts as noted in objectives DCD-1.4, EPO-1.6, and RC-4.4.
13. Retain firm that specializes in form-based development codes to evaluate the City's UDC, especially with regard to completing the transition to a form-based code and simplification so that it can be understood by the general public and consistently applied by planning staff.
14. Work with partner organizations to implement EPO-1.5 to identify and reduce impacts on environmentally sensitive areas.

MONITORING AND UPDATES

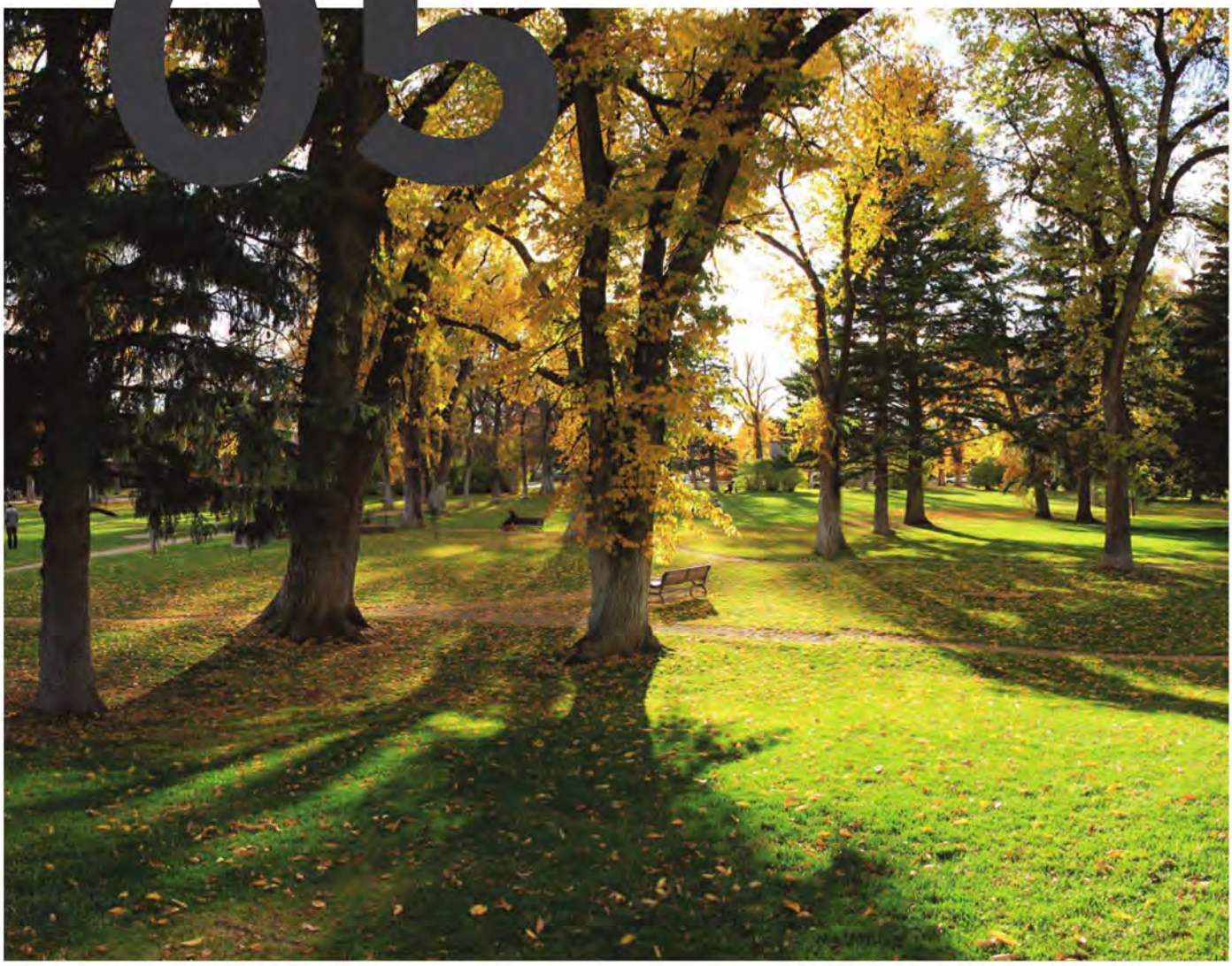
Tracking and monitoring the accomplishment of the Plan's intent is critical. Each Theme has one or more identified indicators, which use data to measure success towards the goal. Each indicator listed below identifies a source—from where the data should be drawn, description, frequency—defines how often the data is available, and set forth notes describing key considerations.

The development of indicators requires the City to establish where we are now in relation to each indicator. This provides a baseline from which to track changes over time. Indicators were selected to be replicable, effective, and where possible, of a similar scope and nature as for indicators for with peer cities. A target, or where we want to go, will be established for each indicator. In some cases the process of setting a target will itself require substantial effort. The targets listed below are to give a general indication of intended trends; further refinement will follow. If an indicator shows over time that the City is getting farther from, rather than closer to, the intended target, it may be necessary to modify targets, policies, or standards. The process for revising the growth policy is described in Chapter 5. Development

of specific targets for each indicator should be completed within six months of Plan adoption. After that first year, an annual report on the status of each indicator should be provided to the community.

TABLE 5. MONITORING AND UPDATES

Indicator	Source	Frequency	Notes	Target
QUALITATIVE CITY MEASURES				
Community Perception of City Performance	Citizen Satisfaction Survey	3 year cycle	Intent to capture citizen quality of life measures such as ICMA National Citizen Survey	Maintain or improve land use related scores
A CITY OF UNIQUE NEIGHBORHOODS				
Housing Stock Diversity	State of Montana Department of Revenue, MLS	2 years	Type, Square footage, number of bedrooms, and number of baths	Maintain or increase
Residential Density	State of Montana, Department of Revenue	Real-time data analyzed and published annually	Gross dwelling units per acre of residentially-zoned and developed land by zoning district	Increase
Walk Score	Walk Score®	Annually	Ability to meet basic needs within walking distance	Increase
A CITY BOLSTERED BY DOWNTOWN AND COMPLEMENTARY DISTRICTS				
Location of Development	City of Bozeman, CDD	Real-time data analyzed and published annually	Development within subdivisions platted more than and less than 35 years ago	Increase redevelopment
A CITY INFLUENCED BY OUR NATURAL ENVIRONMENT, PARKS, AND OPEN LANDS				
Park Accessibility	City of Bozeman, GIS	2 years	Percentage of residents/ households within ½-mile walking distance to open space or trails.	Increase
Vehicle Miles Traveled	MDOT	2 years	Per capita	Reduce
A CITY THAT PRIORITIZES ACCESSIBILITY AND MOBILITY CHOICES				
Transit Accessibility	Streamline	Annually	Increase ridership.	Increase
A CITY POWERED BY ITS CREATIVE, INNOVATIVE, AND ENTREPRENEURIAL ECONOMY				
Land Use Availability	City of Bozeman, Community Development Division, GIS Division	Monthly data analyzed and published annually	Availability of land not for economic activity based on annual land use inventory	Maintain
A CITY ENGAGED IN REGIONAL COORDINATION				
City Expansion	City of Bozeman, Community Development Division; Gallatin County Planning Staff	2 years	Number of projects within the Planning Area but outside of City limits that conform to adopted interlocal agreements	Maintain



05 | AMENDMENTS + REVIEW

PLAN AMENDMENTS

NEED FOR BALANCE

A growth policy must balance consistency with responsiveness to the needs of the community. If the policy is not consistent, it will have little value as a planning tool, nor provide an adequate basis for implementation actions, nor have the confidence of the community. If the policy is not responsive, policies and actions are continued that no longer address community needs, and less than optimal guidance for future actions is provided.

This Plan was prepared based on information and circumstances as understood at this time. The nature of planning for the future is imprecise. As situations change it is important that the Plan be reviewed, and when necessary updated, to accommodate future events.

State law requires review and consideration of the need for amendments through Section 76-1-601(3)(f), of the Montana Code Annotated which reads:

"(f) an implementation strategy that includes:

(i) a timetable for implementing the growth policy;

(ii) a list of conditions that will lead to a revision of the growth policy; and

(iii) a timetable for reviewing the growth policy at least once every 5 years and revising the policy if necessary;"

Assumptions regarding population growth, land use, and other subjects are embedded in the Plan. Significant changes in the rates or the interaction of these items necessitate a review of the Plan; although, a review may find that no changes are needed. Reviews, if properly done, will help to ensure that the information upon which the Plan is based remains accurate and timely and that the goals and objectives of the Plan reflect the desires of the community.

Evaluating the existing growth policy text and maps is an essential part of any review. New inventory maps should be made available for consideration during the review process if the new map would display materially changed information. Any review of the growth policy should consider the triggers presented below. Periodic formal and informal reviews of the implementation policies as well as the growth policies themselves are desirable.

REVIEW TRIGGERS, AMENDMENTS, AND AMENDMENT CRITERIA

REVIEW TRIGGERS

The following events require a formal review of the plan: Five years after the plan is adopted it must be reviewed.

If a review of the plan is required it should consider:

1. Are the community's goals current and valid?
2. Have the community conditions or legal framework materially changed?
3. Where have problems appeared since the last review?
4. Can this Plan be modified to better serve the needs and desires of the community?

This Plan provides progress indicators as described in Chapter 4. The annual review of those indicators may suggest conducting a review prior to the required five year period.

AMENDMENT PROCESS

The Bozeman Community Plan was formed on the basis of significant community outreach efforts and the input of many persons and groups. Alterations, whether the result of a review as triggered above or another reason, to the growth policy must provide a significant opportunity for public participation and understanding of the proposed changes. Amendments to the growth policy must meet the same statutory standards as the original adoption. Therefore, prior to the adoption of any amendment to the Plan, a public process must be provided.

A fundamental requirement for public participation is time for individuals to become aware of proposed amendments and to study the proposed changes. A minimum active public review period of three months is to be expected.

This Plan has been prepared to balance a wide variety of interests. Changes to the Plan must continue the balance of needs and interests.

This Plan has been prepared to be internally consistent. Internal consistency meets one of the fundamental purposes of community planning—coordination between government programs and policies. All amendments must be carefully evaluated to ensure that changes do not create conflicts between goals, maps, or implementation tools. If a proposed amendment would cause conflicts within the Plan, additional amendments must be identified and reviewed so that conflicts are resolved.

WHO MAY INITIATE AMENDMENTS

1. City Commission; independently or at the suggestion of the Planning Board or the City Staff;
2. One or more landowner of property that are the subject of the amendment to the future land use map; and
3. Interested members of the public may suggest modifications to the text.

Any proposed changes to either the text or maps contained in this Plan must comply with all of the criteria described below. The burden of proof for the desirability of a proposed amendment and its compliance with the criteria lies with the applicant. Unless all criteria are successfully met by demonstrable facts, an amendment may not be approved.

AMENDMENT CRITERIA

When an amendment to either the text of the Plan or the future land use map is requested it must be reviewed against the following criteria:

1. The proposed amendment must cure a deficiency in the growth policy or improve the growth policy to better respond to the needs of the general community;
2. The proposed amendment does not create inconsistencies within the growth policy, either between the goals and the maps or between different goals and objectives;
3. The proposed amendment must be consistent with the overall intent of the growth policy; and
4. The proposed amendment may must not adversely affect the community as a whole or any significant portion thereof by :
    a. Significantly altering land use patterns and principles in a manner contrary to those established by this Plan,
    b. Requiring unmitigated improvements to streets, water, sewer, or other public facilities or services, thereby impacting development of other lands,
    c. Adversely impacting existing uses because of inadequately mitigated impacts on facilities or services, or
    d. Negatively affecting the health and safety of the residents.

SUBDIVISION REVIEW

Subdivisions set the "bones" for a community by establishing the locations for roads, parks, and lots for development. How a subdivision is designed and reviewed can impact Bozeman's residents for many years to come. Review must be fair to all, allow for identification and resolution of concerns, and provide meaningful opportunities for participation.

INTENT AND BACKGROUND

Local governments in Montana must review proposed subdivisions. Section 76-3-101 et seq. Montana Code Annotated governs the review of subdivisions. Section 76-3-501 et seq. MCA requires all municipal and county governments to establish subdivision review regulations and establishes the minimum requirements for those regulations. In addition, Section 76-1-601 MCA requires that a growth policy discuss and address various elements of the subdivision review process. This section meets the requirement. Title 76, Chapter 3 MCA contains the requirements and restrictions upon both public and private parties for subdivision review and platting. For full information on this subject interested parties are referred to Title 76, Montana Code Annotated, and Division 38.240 Unified Development Code, City of Bozeman municipal code.

Creation of a subdivision often precedes or accompanies a change in the use of that land. A subdivision generally remains in perpetuity and continues to influence the location and intensity of land uses within and adjacent to the subdivision. Therefore, subdivisions are strongly connected to the planning process and may significantly advance or hinder public goals. Because of this strong influence, all subdivisions must comply with the Bozeman growth policy. The subdivision regulations adopted by the City are to direct and

govern the review and use of land to ensure they conform to the Bozeman growth policy.

REVIEW PARTICIPANTS

Many agencies and review bodies review subdivisions. Reviews are to be conducted by each agency, as needed. The purpose of these reviews is to verify compliance with the law and identify concerns which may require mitigation. These entities may include, but are not limited to the following:

- City staff
- Recreation and Parks Advisory Board
- Private utilities such as power and telecommunications
- Montana Fish, Wildlife, and Parks
- Montana Department of Transportation
- Pedestrian and Traffic Safety Committee
- Irrigation companies
- Planning Board
- Gallatin County

DEFINITIONS AND REVIEW PROCEDURES

This section defines the six state established primary criteria for subdivision review and provides an overview of how those criteria are used during the review of subdivisions

AGRICULTURE

Agriculture is defined as follows: The cultivation or tilling of soil or use of other growing medium for the purpose of producing vegetative materials for sale or for use in a commercial operation and/or the raising or tending of animals for commercial sale or use. Agriculture does not include gardening for personal use, keeping of house pets or animals as authorized under Chapter 8 of the municipal code, service animals as defined by the Americans with Disabilities Act, or landscaping for aesthetic purposes.

The following presumptions apply:

1. Property annexed or seeking to be annexed within the depicted urban area shown on the future land use map will generally not be utilized for agricultural purposes over the long term.
2. Agriculture may be appropriate within the City in limited areas where physical constraints make an area undesirable for the construction of buildings, or in support of a commercial business such as a plant nursery or a common community garden.
3. Urban density development within the City of Bozeman facilitates the preservation of agriculture in Gallatin County. It provides a location for the development of residential and employment activities in a compact and efficient manner. This reduces pressure to convert agricultural lands to non-agricultural uses in the county.
4. Undeveloped lands within the City not constrained by physical features should be developed at urban densities. This enables infill development and reduces outward expansion of the City.

AGRICULTURAL WATER USER FACILITIES

Agricultural water user facilities are defined as follows: Those facilities, which include but are not limited to ditches, pipes, and other water-conveying facilities that provide water for irrigation and stock watering on agricultural lands, with said lands being defined in MCA 15-7-202

The following presumptions apply:

1. Agricultural uses are not generally urban uses. The transition of agricultural lands to urban uses will often remove the need for agricultural water user facilities within the urbanized area. Where a need for protection due to ongoing use for water conveyance can be demonstrated, provision for protection of the facility must be made.
2. The formal abandonment and removal of all agricultural water user facilities within the City must occur in accordance with Montana law. Should the beneficial use cease in the future, an easement for protection of agricultural water user facilities may be removed.
3. The use of agricultural water user facilities

for stormwater does not constitute beneficial use for the purposes of presumption 2 above unless agreed to by the facility owner. Stormwater facilities may require separate easements or other procedures.

4. Agricultural Water User Facilities are subject to Section 70-17-112, and Section 85-7-2211 and 85-7-2212, MCA.

LOCAL SERVICES

Local Services mean all services provided by governmental bodies for the benefit of residents. This includes, but is not limited to, police, fire, water, recreation, streets, parks, libraries, schools, wastewater, and solid waste collection and disposal. Those criteria to which a specific response and evaluation of impact must be made are listed within the City subdivision regulations.

The following presumptions apply:

1. When the City assessed needs and the means of addressing those needs, subdividers will not be required to duplicate that work without good cause. If the City has completed a portion of a required assessment, the subdivider may be required to submit the remaining portion of the necessary information.
2. Capacity and capability in local services is limited. All development shall equitably participate in providing adequate services for itself, including replacement of consumed reserve capacity. Development shall meet levels of service and facility design standards established by the City.
3. Response times, physical space within facilities, compliance with applicable facility Plans, and general design of local service facilities within proposed subdivisions shall be addressed during the preliminary plat review and necessary mitigation is to be provided.
4. Lack of adequate service capacity and capability within local services is grounds for denial of subdivision approval when impacts of proposed subdivisions are not mitigated.

EFFECT ON THE NATURAL ENVIRONMENT

The natural environment is defined as the physical conditions which exist within a given area, including land, water, mineral, flora, fauna, noise, light, and objects of historic or aesthetic significance.

The following presumptions apply:

1. The natural environment is fundamentally linked with our economic development, as an attraction to new and expanding businesses, a tourist destination, and a basic component of Bozeman's character.
2. The natural environment should be conserved and development should respect significant natural features and systems. Impacts to consider include road locations, stormwater treatment and discharges, potential contamination of ground or surface water, building placement, and others that may be identified through subdivision, zoning, data inventories, and other implementation tools. Mitigation of negative development impacts is required.

WILDLIFE AND WILDLIFE HABITAT

Wildlife means animals that are neither human, domesticated, nor feral descendants of commonly domesticated animals. Wildlife habitat means the place or type of habitat where wildlife naturally thrives. Habitat excludes areas developed for human use including agriculture.

The following presumptions apply:

1. Lands within the designated urban area are typically utilized for development purposes and will have a minor impact on wildlife habitat. Watercourse corridors and wetlands are an exception to this presumption. The designated urban area includes all lands except the No City Services category shown on the future land use map.
2. The habitat needs of larger and/or predatory wildlife species such as deer, moose, bears, coyotes, or similar species will not be met within urban density development and will likely be in conflict with people. Therefore,

these types of animals are found to be undesirable within the City boundaries.

3. Smaller species, especially birds, are compatible within urban density development and should be preserved, including the encouragement of suitable habitats.
4. High value wetlands, stream corridors, and similar high value habitats should be preserved in accordance with the City's adopted standards. These provide a variety of recreational, environmental sustainability, and safety values such as flood control as well as habitat.

PUBLIC HEALTH AND SAFETY

Public health and safety means a condition of optimal well-being, free from danger or injury, for a community at large, as well as for an individual or small groups.

The following presumptions apply:

1. Health is a comprehensive subject and threats to health include chronic as well as acute hazards.
2. Subdivision design should encourage physical activity and a healthy community.
3. The creation of hazards to public health and safety are not acceptable and appropriate mitigation must be provided.
4. Some level of risk is always present despite efforts to prevent harm. Developments are not solely responsible for the correction of risks common to all. They should equitably participate in common solutions to common problems. However, the presence of common risks, such as inadequate public services, may prevent approval of a development until the hazard has been removed or corrected. The developer of a subdivision may not accept hazards to public health and safety on behalf of future residents or owners of a subdivision by declaring that necessary infrastructure improvements or other actions are unnecessary.

PUBLIC HEARING PROCEDURES

An important part of the subdivision review process is the opportunity to offer comments on the proposal. Comments may be given by any interested person. This opportunity is formally provided by the public comment/hearing process. Persons for, against, or seeking information about the proposal may send written comments to the City for transmittal to the appointed or elected officials who review the subdivision, or they may speak at a public hearing. The public hearing, when one is required by state law, on a subdivision proposal may be held by either the Planning Board and/or the City Commission. Planning Board makes the recommendation to the City Commission regarding the proposed subdivision's compliance with the Bozeman Community Plan. Regardless of which body holds a hearing, a similar procedure is required. Generally, the format for a subdivision public hearing is as follows:

1. The public hearing will be advertised as required by state law and Divisions 38.220 and 38.240 of the City of Bozeman Municipal Code.
2. The public hearing will be conducted at the time and place advertised.
3. A report on the project by the Department of Community Development, including an analysis of compliance with the Plan, regulatory standards and a recommendation of approval, denial, or approval with conditions is given.
4. Presentation by the applicant and the applicant's representative(s).
5. Questions from the Commission or Planning Board to staff or the applicant.
6. The public hearing/comment is opened with persons able to speak for, against, or to seek additional information from applicant or staff. A time limit may be established for each speaker. The public is encouraged to provide a factual basis for their support or opposition to a subdivision and base their

comments on subdivision review criteria.

7. When all persons have had opportunity to speak, the public hearing/comment will be closed and the Commission or Planning Board will then return to its discussion of the project. They will evaluate the application materials, the staff report, public testimony, and the requirements of subdivision law and regulations. The Commission or Planning Board may inquire of staff, applicants, or the public for clarification or additional information in order to complete their evaluation.
8. The Planning Board will forward a recommendation to the City Commission.
9. The City Commission will make their decision on record during the review of the subdivision. The record includes all application materials, staff review, public comments, and other materials provided prior to the Commission's action.
10. When the City Commission has rendered their decision, the City will prepare findings of fact which establish the official record and decision.
11. An approval or denial of a subdivision may be appealed to the District Court after a final decision has been rendered. Appeals are subject to state law requirements.

ZONING AMENDMENT REVIEW

Zoning establishes many of the standards and review processes for the use of land. Amendments to zoning change the rules with consequence. Therefore, zoning amendments are reviewed deliberately and in public. Review must be fair to all, allow for identification and resolution of concerns, and provide meaningful opportunities for participation.

INTENT AND BACKGROUND

Sections 76-2-301, et seq., Montana Code Annotated, authorizes local governments to adopt zoning. As each community uses zoning differently, the authorization identifies certain purposes and processes but leaves most of the details to each community. Chapter 38, Unified Development Code, City of Bozeman municipal code outlines local details.

"76-2-301. Municipal zoning authorized. For the purpose of promoting health, safety, morals, or the general welfare of the community, the City or town council or other legislative body of cities and incorporated towns is hereby empowered to regulate and restrict the height, number of stories, and size of buildings and other structures; the percentage of lot that may be occupied; the size of yards, courts, and other open spaces; the density of population; and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes."

WHAT DOES IT MEAN TO BE ZONED?

It means the City has adopted standards and procedures for the development and use of property within the City. Zoning indicates the character of an area by applying use and development standards to an individual property. Essentially, zoning addresses public safety, public welfare, and compatibility between uses. Chapter 38 of the Bozeman Municipal Code is the zoning code. The City applies standards and procedures to individual properties through the zoning map. The City will not modify those standards and procedures without public notice and participation. The City does not represent or commit to anyone that the standards and procedures will not change.

HOW IS ZONING APPLIED TO PROPERTY?

The zoning map shows the designation that applies to each property. The zoning map covers the entire area within City boundaries. The zoning district map assigns a designation to each property in the City. Once applied, the standards and procedures for each district apply to land designated within each district until the City amends the map or text of Chapter 38. Since 1935, the City has adopted a change to the zoning map or text over 500 times including replacing

the entire code 19 times. The most recent overall replacement took effect in March 2018.

WHO CAN CHANGE THE ZONING TEXT OR MAP?

Only the City Commission can approve an amendment and only after notifying the public of the possible change and giving people a chance to participate in the change. As a legislative action, amendments are made through a process called a "map" or a "text" amendment. There is a defined public process for amendments to occur. See below for a summary of that process. The process to initiate amendments is established in 38.260, BMC. The City has created a process for anyone to suggest potential changes.

WHAT IS NEEDED TO JUSTIFY A CHANGE IN A ZONING DISTRICT MAP OR TEXT?

A change to the zoning text or map is a legislative action. The City Commission can initiate or approve amendments when they believe they are appropriate. In determining whether to begin a City initiated amendment, the Commission can consider broad legislative factors such as the passage of time, changes in the needs of the community, outside actions like court decisions or new laws, whether the existing map or text is reaching the intended outcome, and changes like installation of new infrastructure. Some examples include the following:

a. Changes to state or federal law that the zoning must address or if it is in conflict with the changes, zoning must address.
b. Court decisions changing the interpretation of meaning of the law that interacts with zoning.
c. Change in circumstances including the current zoning does not comply with the City's adopted Community Plan (i.e. its growth policy), policies within the Growth Policy have changed, land is annexed, or infrastructure is newly available.
d. An owner requests the change and the request meets required standards.

Items a and b are most likely to generate changes in the text; items c and d are more likely to generate changes in the zoning map.

In considering zoning map amendments, the City's longstanding practice is to consider item d as an adequate justification for consideration of a zoning map change. In doing so, the applicant/property owner must demonstrate the requested change meets the required criteria and guidelines for an amendment.

The City's zoning establishes what responsibilities exist, such as controlling stormwater, and requires people to meet those responsibilities. Zoning also addresses the balance of interests between adjacent properties by defining districts where similar uses can be compatible and providing for transitions and buffers between zoning districts where the City determines it is necessary to control impacts and prevent the use of one person's property right from inappropriately impacting another. When such protections are in place it is appropriate for the property owner to have an opportunity to ask for changes to zoning. If an owner does not show that criteria and guidelines are successfully met the City Commission can choose not to approve the change. This does not prevent the City from initiating a change on its own.

To provide transparency in decision making, accountability, and public participation the zoning map or text amendment process requires public notice and hearings. Before any action to approve an amendment, the Commission must address the criteria, which provide guidance in deciding whether an amendment is acceptable.

WHEN DOES THE CITY INITIATE ZONING CHANGES TO INCREASE DEVELOPMENT OPPORTUNITIES?

The City Commission may initiate an amendment to the zoning map to enable additional development in a specific area. In examining whether to do so, the Commission may consider many factors including but not limited to the following:

- The existing zone district does not match the

growth policy future land use map in Chapter 3.

- Forty percent or more of the existing uses within an area are not principal uses within the zone district presently in place.
- There is 40% or more available sewer capacity and there is less than 10% vacant land within the sewer drainage area.
- Proximity to parks that are larger than 1 acre.
- Vacant annexed areas which are 10 acres or larger in size.
- Areas within ¼ mile of MSU (roughly 4 blocks) and not in a National Register Historic District.
- Revising zoning boundaries to better follow preferred dividing lines such as streets or watercourses.
- Request of multiple landowners in the area.
- Available capacity in the water plant and water reclamation facilities and permits.

REVIEW CRITERIA FOR ZONING AMENDMENTS AND THEIR APPLICATION

This section includes the four criteria and five guidelines for zoning amendments. These are from state law. This section gives an overview of how those criteria and guidelines apply during the review of individual zoning map amendments.

Section 76-2-304 of state law establishes the criteria, section (1), and guidelines, section (2), for the creation and amendment of zoning. Due to the range of subjects, the applicability of any individual criterion may be of more or less importance. The City Commission must evaluate whether the applicable criteria are met, not applicable, or if the benefits of the change offset negative impacts. Below is the state statute that provide the criteria and guidelines for zoning decisions:

76-2-304. CRITERIA AND GUIDELINES FOR ZONING REGULATIONS.

1. Zoning regulations must be:
   a. Made in accordance with a growth policy; and
   b. Designed to:
      i. Secure safety from fire and other dangers;
      ii. Promote public health, public safety, and the general welfare; and
      iii. Facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements
2. In the adoption of zoning regulations, the municipal governing body shall consider:
   a. Reasonable provision of adequate light and air;
   b. The effect on motorized and nonmotorized transportation systems;
   c. Promotion of compatible urban growth;
   d. The character of the district and its peculiar suitability for particular uses; and
   e. Conserving the value of buildings and encouraging the most appropriate use of land throughout the jurisdictional area.

HOW THE CRITERIA AND GUIDELINES ARE APPLIED

76-2-304(1) criteria.

Under state law, (1) zoning regulations must be "(a) made in accordance with a growth policy."

This criterion gives the Commission latitude. Zoning map amendments' are to correlate to the future land use map. Beyond that, policy statements such as goals and objectives are weighed. In a text amendment, policy statements weigh heavily as the standards being created or revised implement the growth policy's aspirations and intent. The City must balance many issues in approving urban development. Therefore, it is not unusual if there is some tension between competing priorities, even if there is no explicit contradiction of policy.

As shown in the state statute, zoning must also "(b) be designed to":

i. Secure safety from fire and other dangers;
ii. Promote public health, public safety, and the general welfare; and
iii. Facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.

For a map amendment, all three of the above elements are addressed primarily by the City's long range facility Plans, the City's capital improvements program, and development standards adopted by the City. The standards set minimum sizing and flow requirements, require dedication of parks, provision of right of way for people and vehicles, keep development out of floodplains, and other items to address public safety, etc. It is often difficult to assess these issues in detail on a specific site.

For example, at the time of annexation, the final intensity of development is unknown and it may be many years before development occurs and the impacts are experienced. The availability of other planning and development review tools must be considered when deciding the degree of assurance needed to apply an initial zoning at annexation.

The City's building codes reduce reliance on zoning to address other elements of public safety. For example, requirements for fire sprinklers for larger buildings are addressed in the building codes, but not in the zoning code. In addition, the subdivision review process outline's the backbone for public infrastructure. This includes most water, sewer, stormwater, and street facilities. Development review under zoning procedures gives a final check on infrastructure capacity when there is a known intended intensity of use and condition of facilities.

Considering what infrastructure is already present, such as in infill situations, or whether placing one zoning district next to another may reduce travel distances and increase walkability, are also factors that can play into this criterion. It is not only about production of more, but also of best use of public facilities. If a proposed change to the map is contrary to the facility plans, or causes substantial inadequacy over the long term, then denial of the amendment may be warranted.

(2) In the adoption of zoning regulations, the municipal governing body shall consider the following:

(a) Reasonable provision of adequate light and air;

Bozeman has established generally applicable standards for setbacks, park dedication, on-site open space, and building design standards to address this requirement. This is done during the creation of the zoning text. Therefore, when considering changes to the map, this issue is addressed for all districts. In addition, the building codes have standards for ingress and egress, ventilation, and related subjects that further support delivery of adequate light and air. Care is needed if the City revises the standards themselves.

(b) The effect on motorized and nonmotorized transportation systems;

This guideline looks at the anticipated change that may occur due to the amendment. It does not require there be less of an impact than from the existing condition, whether it be text or map that is the focus. The City relies upon its long-range transportation plan to evaluate transportation needs over the long term for motorized vehicles as well as bikes and pedestrians. The park and trail plan also considers options for extending the trail network. Plans are periodically updated to ensure they are applicable to current conditions.

Review of development proposals such as subdivisions or site development look at the transportation, park and trail, and facility plans, consider existing conditions, and requires the additional on and off-site improvements needed to meet the additional demand expected from new development. Development creates or funds many of the City's local streets, intersection upgrades, and trails. Therefore, although a text or map

amendment may allow more intense development than before, compliance with the adopted Plans and standards will provide adequate capacity to offset that increase. The City's development standards require on-site parking for bicycles and motor vehicles and pedestrian circulation within each site. Articles 38.4 and 38.5 of the UDC regulate parking and circulation. If the Commission considers a substantial change to the standards it must examine the cumulative impacts.

The capacity of a street to handle traffic can be viewed differently by local residents, traffic engineers, and Planners. The long-range transportation plan establishes the standards for what is "too much" on each class of road. The impact of additional development is not excessive so long as the planned capacity of the road is not exceeded. New development contributes to the creation of additional capacity through dedication of right of way, construction or reconstruction of streets, payment of impact fees, and other contributions as may be applicable to a specific project. These requirements may mitigate the impacts of additional development. Development that is more intense requires greater transportation capacity. Therefore, it is good, but not required, to have more intensive districts near arterial and collector roads.

(c) Promotion of compatible urban growth; This guideline focuses on what happens at the edge of the City, as well as what occurs in the heart of the City. Section 38.700.040, BMC defines the factors considered in determining compatibility. This definition explicitly rejects uniformity as being necessary for compatibility. Compatibility is considered within and between districts. The determination of compatibility takes place at several levels, including 1) what uses are allowed within each district, 2) creation of standards for new development to lessen impacts to adjacent land/persons, 3) creation of building and site design standards, and 4) application of future land use areas through the community plan and development of the zoning map.

When the Commission considers a text amendment, the majority of the focus is on items 1 through 3, above. What combination of uses under what conditions can work well together? There is a wide range of possible answers for each community to consider. Some communities take a highly prescriptive worst-case view and try to restrain all possible points of perceived conflict. This tends to create a very homogenous community with little interest or scope for creativity. Bozeman takes a different approach. The worst-case scenario is recognized as unlikely, but possible. Development standards deal with the majority of cases, while restraining extraordinary problems. An example is stormwater management where a certain minimum level of control is required, but there are many acceptable alternative methods to address the issue.

When considering zoning map amendments, the Commission first looks at the future land use map created by the growth policy. See discussion under Criterion 1(a) above. The planning process refers to high level various policies to identify community priorities. In Bozeman's case, those policies consistently emphasize quality of development, infill in a manner that allows for additional intensification over time, connecting land development to other community priorities like multi-modal transportation, cost efficient user-pays provision of facilities,

and reasonable incremental development at the City edge. These and other policies influence the layout of the future land use map.

The City creates standards under items 1 through 3; when one district is adjacent to another and is consistent with the growth policy, any physical conflicts will be minimal, if present at all. The City's zoning policy encourages continued development of mixed uses. This is seen in the older areas of the City, which were built before zoning. The City uses the broad scope of its development standards to enable differing uses to be successful near each other. This shows on the zoning map where districts providing a wide diversity of uses are intermixed.

(d) The character of the district and its peculiar suitability for particular uses; and

The second element of this guideline reflects the application of the statutory criteria to a wide diversity of purposes and communities. Some land has a unique physical attribute that makes it more appropriate for one use than another. That attribute may be inherent in the land itself or due to proximity to something else. For example, the City's land adjacent to the East Gallatin River is well suited for the Parks and Open Lands and the Public Institutions districts because it supports both recreational functions in Story Mill Park and an essential water treatment role at the Water Reclamation Facility.

The character of a district is seen from two different viewpoints. First, when considering an amendment to the text, the integration of a proposed change is evaluated with the other standards, purposes, and criteria of site review. If the new change conflicts with other text, then the new change should be rejected, or other revisions made, so that the overall standards for a given district support one another. Second, when considering an amendment to the zoning map both the actual and possible built environment are evaluated. If the amendment is accompanying an annexation request there is often a substantial change in use that will occur. In this case, the Commission must look at what the growth policy recommends for the area, as there is less built context to provide guidance. A zoning district change for land already within the City requires greater consideration of the current actual and possible environment. Most of Bozeman has zoning that allows more development than the current owners utilize. This reflects many personal preferences and economic decisions.

There is no specified distance in state law or local code outside of the boundary of a map amendment that describes the "district" to be considered. The City provides direct notice to landowners out to 200 feet from the outer boundary of the area to be given a new zoning designation by the map amendment. This is notice, not the distance that dictates the extent of the analysis. Impacts from a zoning change may be less or more than 200 feet depending on the nature of the change and what already exists. State law recognizes that persons owning land within 150 feet have a unique interest in the decision to rezone and gives them the ability to protest the zoning. It is notable that the protest does not stop a rezoning, but requires a greater majority of the Commission to approve. If there is adequate reason for the change, it can go forward.

Nothing in the zoning amendment or site review criteria requires the Commission

restrict one owner because an adjacent owner chooses to not use all zoning potential. The City is not obligated to enforce or recognize any privately imposed restrictions, such as a covenant, on land. Such restrictions are not subject to the same public notice or participation requirements as City actions.

Landowners have both rights and obligations. To find that an amendment application should be approved, the application materials and review need show the amendment meets the required criteria for approval. This is a very site specific evaluation and may consider but is not obligated to give preference to what adjacent owners have chosen to do with their property. When evaluating compliance with criteria, it is appropriate to consider all the options allowed by the requested district and not only what the present applicant describes as their intensions.

The City Commission must consider several items in its decision on a zone map amendment. First, the Commission must consider the nature of the dominant uses allowed in a district compared with adjacent properties. For example, are they both residential or is one residential and another non-residential. Bozeman has an existing pattern of diverse zoning districts in proximity to each other. Second, the Commission should consider differences in allowed intensity between the districts such as differences in height, setbacks, or lot coverage. The greater the difference the more likely conflict is possible. An incremental change between two similar districts may, for example, have the same setbacks and very similar maximum heights. Next, the Commission must decide whether a larger community benefit exists such as locating a fire station where it will serve the adjacent property but is different from the surrounding zoning. Finally, the Commission must ask what separates one zone from another. The City strives to locate zoning boundaries along visible and natural dividing lines such as streets, trail corridors, creeks, or parks. At a minimum, zoning boundaries should follow property boundaries. The greater the physical separation, the less likely there may be a conflict. For example, a local street, typically 60 feet wide, when combined with the standards for site development, is generally considered an adequate separation—even for substantially different districts.

(e) Conserving the value of buildings and encouraging the most appropriate use of land throughout the jurisdictional area. There are two elements to this guideline. First, conserving the value of buildings applies to changes that may lessen the functional utility of a property. Changes that increase opportunities on a property are unlikely to fail this test. Some reduction in value can happen with adequate justification. Requiring a development to mitigate impacts on its site that lowers development potential is acceptable. The need for that mitigation must be demonstrated.

Assertions that allowing a more intensive zoning may lessen values on adjacent properties is best addressed under the guideline regarding the character of the district. The financial value of land changes constantly based on many factors. Properties considered undesirable at one time may be sought after as circumstances change or the reverse. Value may be primarily in the eye of the beholder and not supported by neutral and objective evaluation. There is no defined decline in financial value or utility that proves an automatic failure of this guideline.

Encouraging the most appropriate use of land connects back to criterion 1(a) and the growth policy and guideline 2(d) and peculiar suitability for particular uses. The future land use map and policies of the growth policy should merge to establish priorities for land use that consider whether a given location is genuinely unique. There are circumstances where combinations of uses, such as high density housing close to employment, community amenities, and transportation, reinforce each other.

PUBLIC REVIEW AND HEARING PROCEDURES

An amendment to the zoning text or map can be initiated by a property owner or by the City Commission. Division 38.260, BMC has the requirements for initiating an amendment. A general outline of the public hearing process for an application follows. As a legislative process, the City Commission has discretion in making their decision.

An important part of the amendment review process is the opportunity to offer comments on the proposal. Any interested person or group may give comments. The public hearing process formally provides this opportunity. Persons for, against, or merely seeking information about the proposal may submit comments to the appointed or elected officials who must review the request. The required public hearings on a zoning amendment are by the Zoning Commission and the City Commission. The Zoning Commission gives a recommendation to the City Commission regarding the proposed amendment's compliance with the review criteria. The typical format for a public hearing on a zoning amendment follows:

1. The public hearing is advertised as required by state law and Division 38.220 of the City of Bozeman Municipal Code. Written public comments may be submitted to the City prior to the beginning of the public hearing.
2. The public hearing will be conducted at the time and place advertised.
3. A report on the review by the Department of Community Development, including an analysis of compliance with the growth policy, review criteria, and a recommendation of approval or denial is provided.
4. Presentation by applicant and applicant's representative(s). In the event the amendment is initiated by the City, this is usually the same as step 3 above.
5. Questions from the City Commission or Zoning Commission to staff or applicant
6. The public hearing is opened with persons able to speak for, against, or to seek additional information from the applicant or staff. A time limit may be established for each speaker. Commenters may also submit comments in writing. The public is encouraged to provide in their comments a factual basis related to specific review criteria for their support or opposition to an amendment.
7. When all persons have had opportunity to speak, the public hearing will be closed and the City Commission or Zoning Commission will then return discussion of the project to themselves. They will evaluate the application materials, the staff report, public written and spoken testimony, and the amendment review criteria and procedures. The City Commission or Zoning Commission may inquire of staff, applicants, or the public for clarification or additional information in order to complete their evaluation.
8. A majority of a Zoning Commission quorum is adequate to render a decision. The Zoning Commission forwards a recommendation to the City Commission.
9. After the City Commission has conducted their public hearing, they make their decision on the record established during the public hearing. This includes the application materials, staff report, Zoning Commission

recommendation, public comments, and all other relevant material presented during the review.

10. When the City Commission has rendered their decision the process for a formal two-step ordinance adoption as required in state law is required before any amendment is final.

An approval or denial of amendment may be appealed to District Court after a final decision has been rendered. Appeals are subject to the requirements of state law.


BISTRO
DISTILLERY


THE DOWNTOWNER
BLDG.
LARK
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Life is
DOWNTOWN
FISH. HIKE. CLIM


BOZEMAN MT
COMMUNITY PLAN
Shaping Our Future Together

COMMUNITY PLAN

PLAN APPENDICES



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SUMMARY BY APPENDIX

APPENDIX A: ENGAGEMENT AND PROCESS TO CREATE THE PLAN

Appendix A details the outreach and engagement process that helped shape the Community Plan. The four-phase process used in-person and digital approaches to engagement to capture the voice of the community.

- Phase One (Foundation) engaged the community and determined what people love about Bozeman, what people believe could be improved about Bozeman, and their vision for Bozeman's future.
- Phase Two (Analysis and Vision) built upon the engagement in Phase One and refined the plan themes that were developed based upon Phase One comments from the community. Furthermore, participants were asked to consider opportunities that can help the City realize its vision.
- Phase Three (Opportunities and Choices) outreach involved a community event held at the Bozeman Public Library and an online questionnaire that were designed to gather community input on the specific opportunities that coincide with each of the six Themes.
- Phase Four (Draft and Final Plan), the final phase in the Community Plan Update process was conducted over the course of several months to ensure community opportunity to review the document, satisfaction with, and acceptance of the Plan. Community comments provided throughout the first three phases were incorporated into this final Plan which includes specific goals, objectives, and designated indicators to measure success of each goal.

APPENDIX B: INFRASTRUCTURE AND SPECIAL TOPIC PLANS

Appendix B includes references to the City's key infrastructure plans, with descriptions of, and links to each plan document. Included plans detail future and existing plans for topics including but not limited to transportation, storm water, wastewater, parks and open space, public safety, economic development, housing, and parking.

APPENDIX C: INVENTORY REPORT

Appendix C details the history of the City of Bozeman, along with existing conditions text that highlight where the City currently is, and the direction is has been trending in. Statistics and text in this section are taken directly from the Demographic and Real Estate Market Assessment prepared by Economic and Planning Systems (EPS) in 2018. Demographic information included highlights existing population characteristics such as total count, income, and age, as well as housing, employment, and commercial and industrial statistics.

APPENDIX D: PROJECTIONS REPORT

As with Appendix C, projections shown in Appendix D have been extracted from the Demographic and Real Estate Market Assessment prepared by Economic and Planning Systems (EPS). Projections include population, employment, and housing growth, as well as demand projections for land, housing, commercial, and industrial space.

APPENDIX E: INFRASTRUCTURE PLAN PER 76-1-601(4)(C) MCA

The law authorizing growth policies allows additional items to be added to a growth policy. One of those items is a discussion on how infrastructure is expanded, the consequences of that expansion, and how negative effects of the expansion can be mitigated.

APPENDIX F: GLOSSARY

Defines specific terms used in the Plan.

A



ENGAGEMENT + PROCESS TO CREATE THE PLAN

Residents, property owners, stakeholders, and public officials shaped this Community Plan throughout a progressive four-phase update process.

PHASE ONE | FOUNDATION

The Foundation Phase engaged the community and determined what people love about Bozeman, what people believe could be improved about Bozeman, and their vision for Bozeman's future. Outreach efforts consisted of an ice cream social event at Dinosaur Park, one-on-one interviews, group sessions, Planning Board and City Staff meetings, and an online questionnaire.

Responses indicated that Bozeman's outdoor lifestyle, sense of place and belonging while in a City environment, and high quality of life were the three aspects of the City that people loved the most.

Areas where participants felt Bozeman could improve were; multimodal transportation, the preservation of farmland and open space, and housing affordability.

When asked about the desired future of Bozeman, people envisioned a larger city with a dynamic, modern economy, a variety of attainable housing options, and a multimodal transportation system.

SUMMARY

Background

What is the Community Plan and what is its purpose?

Imagine what Bozeman will look and feel like in twenty years. How will the community accept a large increase of residents? How will transportation be addressed? Will we grow upward or outward in relation to density? What will Bozeman be known for?

The Community Plan builds on the overarching vision and vision statements within the Strategic Plan and specifically guides land use planning decisions.

The passage of time, as well as a high rate of development, changing economic conditions, and maturing nearby communities make it necessary to update the Plan and through its process, identify the community supported answers to those questions above.

Notification and Interview Process

Stakeholders were contacted directly through email and in-person interviews were conducted at the Community Development building. The interviews focused on the aspects of Bozeman that the participants loved, areas where improvement is needed in the future, and a vision for Bozeman in the year 2040. Stakeholders were asked to complete the online survey as well as invite their colleagues in the community to participate. In addition, everyone interested had access to multiple listening sessions provided throughout the community. Participation was recruited by direct email, news releases, and other broadly applicable outreach.

Overall Summary

What do you LOVE most about Bozeman?

Top 10 List (LOVES)

1. Small Town Feel
2. Outdoor Lifestyle
3. The People
4. Bike/Trail Network
5. Parks & Recreation
6. Architecture
7. Connectivity
8. Central Location
9. Downtown
10. Climate

What would you like to IMPROVE about Bozeman in the future?

Top 10 List (IMPROVES)

1. Growth Management
2. Improve Transparency
3. Multimodal Transportation
4. Improve Infrastructure
5. Neighborhood Identity
6. Reduce Regulations
7. City Leadership
8. Increase Walkability
9. Historic Preservation
10. Alleviate Traffic

In 2040, Bozeman will be...

Top 10 List (2040)

1. Multimodal Transportation
2. Well-Preserved
3. Small Town Feel
4. High Quality of Life
5. Bikeable
6. Walkable
7. Distinct Neighborhoods
8. Regional Growth
9. Vibrant
10. Model City

Key Takeaways

The stakeholders of Bozeman are very passionate about the City and take pride in the sense of place, belonging, and outdoor lifestyle that Bozeman provides. The close-knit community, access to nature, the high quality of architectural design, and Downtown were also frequently mentioned as aspects that interviewees loved about the City.

Stakeholders were most concerned about the potential for Bozeman to become sprawled and cited its issues with the transportation system, the need for government transparency, and absence of neighborhood identity. These are areas Bozeman should improve in the future.

In 2040, Stakeholders imagined Bozeman to be a well-preserved city that has maintained its sense of place and belonging with a multimodal transportation system that provides access to a series of distinct and vibrant neighborhoods. Several comments highlighted that Bozeman will be a model city for others to base their future development upon.

PHASE TWO | ANALYSIS + VISION

Phase Two built upon the engagement in Phase One and refined the seven themes that were developed based upon Phase One comments from the community. Furthermore, participants were asked to consider opportunities that can help the City realize its vision.

Outreach efforts consisted of a community event, one-on-one interviews, group sessions, City Commission presentations, and an online questionnaire.

People stated that they would like to see increased corner-commercial developments in or near neighborhoods, improved multimodal transportation options and access throughout the community, increased density, historic preservation, and greater regional planning efforts.

SUMMARY

Notification

This Community Event was publicized at two public events; at updates to the City Commission and Bozeman Planning Board; direct emails to those who have supplied their contact info as part of this process; social media outlets, including the City's existing Facebook, Nextdoor, and Twitter accounts; postcards at highly trafficked locations and other ongoing City and community events.

Purpose

Each step in the Community Plan update process is built to collect a greater level of detail than the previous step, through thought provoking questions and exercises. The purpose of the Community Event was to begin defining specific opportunities that can help the City realize the seven themes that were developed through previous outreach efforts.

The Event

The Community Event took place at the Bozeman Public Library on Thursday, November 29th, between 5 and 7pm. Members from City staff and consultant team provided an overview of the Community Plan, progress to-date, and instructions for the opportunities exercise. Participants were asked to choose four themes to provide opportunities for, and given a chance to physically locate areas for opportunities by drawing on a large-scale map of Bozeman. Approximately 45 people attended the event.

Identified Opportunities, Summarized by Theme

The Shape of the City:

Support the development of an additional regional park within the City

- Strengthen the viability of other areas to distribute goods and services and alleviate congestion Downtown
- Integrate walkable areas throughout the City
- Foster increased development within the northeast area of the City
- Encourage appropriately-sized commercial nodes within neighborhoods
- Maintain and improve the City's infrastructure
- Reduce the prevalence of large parking lots to promote walkability

A City of Unique Neighborhoods:

Define specific neighborhoods through the identification of unique features

- Facilitate increased community engagement through additional parks, community centers, and commercial nodes
- Coordinate improved public transportation access throughout neighborhoods
- Increase neighborhood density through the rezoning / up-zoning of vacant lots
- Permit farmers' markets and food trucks to use vacant lots
- Locate affordable housing near public transit and necessary amenities
- Expand workforce housing near Montana

State University
- Consider implementing a resort tax
- Preserve the unique identity of northeast Bozeman

A City Bolstered by Downtown and Complementary Districts:

- Identify a district at the west end of the City to promote a cohesive, walkable destination
- Investigate North 7th as the primary location for taller buildings
- Establish and enforce density minimums on North 7th
- Emphasize affordable housing along North 7th
- Reassess the historical significance of structures on North 7th
- Promote compatible infill Downtown
- Develop parklets and additional greenspace throughout districts
- Promote commercial development near Montana State University

A City Influenced by Our Natural Environment, Parks, and Open Space:

Maintain healthy urban forests

- Establish public transit connections to parks
- Implement trail corridors
- Preserve and utilize creek corridors as a way to support walkability and water quality
- Enhance wayfinding throughout parks and open space
- Create connections between parks and the neighborhoods around them
- Retain the mountain views through the development of wide streets
- Ensure parks and open space are accessible to all ages
- Improve lighting in parks to promote year-round use
- Incentivize trail construction in fringe developments

A City Influenced by Regional Cooperation and Defined Edges:

- Expand the City's planning jurisdiction
- Focus on long-term water conservation to avoid additional infrastructure costs in the future
- Explore the annexation of inholdings to promote efficiency of services
- Adjust tax policy for inholdings to be commensurate with the surrounding zoning district
- Encourage school districts to stay within City limits

A City that Prioritizes Mobility Choices:

- Coordinate with the Streamline to develop a circulator transit route between Downtown, The Cannery, and North 7th
- Expand access to public transportation and frequency of service
- Increase infrastructure funding for multimodal transportation options
- Amplify winter maintenance of bike routes
- Reduce the frequency of large delivery vehicles on Main Street
- Further develop east/west bicycle corridors
- Explore commercial nodes to the west to reduce congestion Downtown
- Improve wayfinding to promote pedestrian activity
- Designate key locations for protected bike routes

A City Powered by its Creative, Innovative, and Entrepreneurial Economy:

- Attract high-paying jobs through the promotion of Bozeman's high quality of life
- Consider a sales tax as an alternative to property tax increases
- Collaborate with local educational institutions to increase the qualified workforce base
- Foster Bozeman's local agriculture industry through the support of agri-hoods and food distribution centers
- Recognize the potential benefit of attracting and promoting the sustainability industry and "green" start-up companies
- Encourage the use of live/work spaces to support small businesses and housing affordability

PHASE THREE | OPPORTUNITIES + CHOICES

Phase Three outreach involved an online questionnaire that was designed to gather community input on the specific opportunities that coincide with each of the seven Themes. Multiple tools were used to encourage participation including news posts on the City website, direct emails to those who had supplied their contact info as part of this process; and social media outlets, including the City's existing Facebook, Nextdoor, and Twitter accounts.

Increasing walkability and access to neighborhood commercial uses, along with strategically locating affordable housing were just some of the many proposed opportunities from the public event.

230 people took part in the online survey and, in addition to the objectives mentioned above, increasing density, preserving open space, and establishing multimodal connections were suggested.

SUMMARY

Overview

The Opportunities Survey was opened to the public on December 12, 2018 and closed on January 25, 2019. A total of 230 people took part in the survey, designed to identify and confirm opportunities related to the seven vision statements. Later in the year, at the Sweet Pea Festival and SLAM festival, a follow-up questionnaire was held with similar results from approximately 200 responses. As shown in the chart below, the three most selected visions were:

1. A City Influenced by our Mountains, Open Space, and Parks;
2. A City that Prioritizes Mobility Choices; and
3. A City of Neighborhoods.

The Shape of the City

Participants indicated that commercial nodes are needed in the northwest neighborhoods, North 7th, and south of Kagy and generally felt that the seven story height was appropriate and used the Baxter Hotel as an example. However, some responses indicated a desire to see shorter buildings in the future in areas where mountain views could be diminished.

Downtown, North 7th, 19th, and the Cannery District were all said to be areas where more intense development should take place. Additionally, responses showed that there was a preference for more intense development in those areas if open space in town was maintained and continually expanded through new developments.

When asked about additional opportunities to fulfill this vision, responses included:

- Increasing density in appropriate areas
- Incentivizing infill as a way to increase density
- Preserving open space
- Promoting affordable housing along transit corridors
- Reducing parking minimums
- Focusing on alternative transportation options

Participants in the questionnaire indicated that pedestrian-friendly streetscapes and the integration with surrounding natural landscapes were the two items within the theme that they were most excited about.

**It is important to note that this theme was removed and its components were consolidated into the other six themes, where appropriate.*

A City of Unique Neighborhoods

It was recognized that a neighborhood is a concept without a simple definition. Characteristics of neighborhoods included: proximity to parks; walkability; cohesiveness amongst neighbors; and diversity of ages, specific boundaries, and historic or cookie-cutter nature. While 60% of respondents stated that their neighborhood included walkable centers, commercial nodes, inclusivity, housing variety, schools, and parks, the remaining 40% of people indicated that walkability and commercial nodes were missing from their communities.

When asked about additional opportunities to fulfill this vision, responses included:

- Encouraging small grocery store development
- Maintaining housing character in new developments
- Increasing connectivity to parks and neighborhoods
- Encouraging affordable housing development
- Developing community gardens
- Improving pedestrian and bike access
- Enhancing traffic calming measures
- Promoting accessory dwelling units

Participants in the questionnaire indicated that they were most excited about convenient and accessible neighborhoods, with strategic growth in developed areas also being of importance.

A City Bolstered by Downtown and Complementary Districts

Participants were asked about building height preferences in each of the three named districts (Downtown, Midtown, and University) and responses were quite varied. In Downtown, height preferences ranged from a maximum of three stories to a maximum of thirty stories with five to seven being the most common answer. In Midtown, height maximums ranged from three stories to thirty with the most common again between five and seven stories. Responses for height preferences in the University district had the same results as Midtown and Downtown. In remaining areas of the City, the preferred height limit was much lower, typically up to three stories with several comments stating that five story developments are appropriate.

More mixed-use areas are desired within Bozeman along with strategic preservation of trees, open space, and wetlands.

When asked about additional opportunities to fulfill this vision, responses included:

- Encouraging mixed-use development
- Expanding public transportation
- Reducing car-dependency
- Promoting commercial activity near the university
- Locating affordable housing developments in Midtown
- Defining additional districts on the west and northeast parts of Bozeman

Responses to the questionnaire indicated that multimodal connectivity between districts, and diversity in housing and employment opportunities were the two most exciting components of this theme.

A City Influenced by Our Natural Environment, Parks, and Open Space

Over 94% of respondents indicated they live within a ten-minute walk of a park or open space. Of those 94%, 67% said that they walk to local parks or open space multiple times a week.

Connecting existing trail systems, along with expanding the trail systems in the west side of Bozeman were frequently mentioned as important components of this vision.

When asked about additional opportunities to fulfill this vision, responses included:

- Researching sustainable funding options for Bozeman's green spaces
- Increasing density in the city core
- Improving pedestrian safety
- Continuing partnerships with the Gallatin Valley Land Trust, Trust for Public Land, and others
- Creating more stringent development requirements that emphasize trail connectivity

Responses to the questionnaire showed an equal level of interest in natural environment protection regulations, open space acquisition, and climate change impact considerations.

A City Engaged in Regional Coordination

Responses showed a strong desire to protect wetlands, floodplain, wildlife habitat, and key corridors for north/south wildlife migration. Additionally, limiting sprawl, promoting sustainable practices, and preserving agricultural land were mentioned. Participants also stated that greater

coordination between the City and regional authorities is needed in relation to transportation, water, sewer, growth management, and more.

When asked about additional opportunities to fulfill this vision, responses included:

- Increasing public engagement efforts
- Expanding education and training sessions for elected officials
- Restoring and naturalizing regional waterways
- Coordinating planning efforts and documents

Questionnaire responses showed a substantial interest in the efficient use of land and thoughtful expansion of the City's area.

A City that Prioritizes Mobility Choices

46% of participants said that they have used public transit in the past year. For those that have not used public transit, reasons comprised of: long commute times using public transit; inconvenient scheduling; and lack of bus stops.

For those that are that said they are employed, 46% drive a car, 30% ride a bike, 17% walk, and 6% work from home, and only 1% use public transit.

When asked about additional opportunities to fulfill this vision, responses included:

- Funding winter maintenance of trails and paths
- Enhancing traffic calming measures
- Developing protected bike-paths along main roads
- Establishing more east-west connections
- Promoting safe pedestrian access to all public schools
- Increase funding for alternative transit options (bus, bicycle, walking)
- Researching the feasibility of an affordable airport shuttle
- Creating connectivity requirements for new development

Questionnaire respondents chose safe and functional walking and biking and interconnected systems as the most exciting aspects of this theme.

A City Powered by its Creative, Innovative, and Entrepreneurial Economy

Low wages and rising housing costs are seen as the largest deterrents for those starting a business in Bozeman, due to the difficulty for prospective employees to live in town. The high quality of life in Bozeman, its excellent location, and Montana State University are seen as some of the most attractive reasons why a business would locate here.

When asked about additional opportunities to fulfill this vision, responses included:

- Increasing minimum wage within the City
- Reducing regulatory restrictions on small businesses

Support for local companies and growing from within, as well as economic diversification were chosen as the most exciting components of this theme.

PHASE FOUR | DRAFT + FINAL PLAN

The final phase in the Community Plan Update process was conducted over the course of several months to ensure community awareness, satisfaction, and acceptance of the Plan. Community comments provided throughout the first three phases were incorporated into this final Plan which includes specific goals, objectives, and designated indicators that measure success of each goal.

COMMUNITY OPEN HOUSE 1 | SUMMARY

Notification

The Community Open House was publicized through television; at updates to the City Commission and Bozeman Planning Board; direct emails to those who have supplied their contact info as part of this process; and social media outlets, including the City's existing Facebook, Nextdoor, and Twitter accounts.

Purpose

Each step in the Community Plan update process is built to collect a greater level of detail than the previous step, through thought provoking questions and exercises. The purpose of the Open House was to present Future Land Use Categories and Maps to the public for feedback. Public input and comments will be integrated into the final Community Plan.

Event

The Community Open House took place at the Bozeman City Hall Commission Room on Thursday, October 17th, between 4 and 6pm. Members from City staff provided summaries of the draft Future Land Use Categories, and presented the Future Land Use Map (shown to the right). Participants were asked to assess whether the Future Land Use Categories match the needs of the community, and to provide input on the Future Land Use categories' spatial placement in the City. Meeting participants wrote their answers to three main questions about the categories on white boards. Approximately 73 people attended the event.

COMMUNITY OPEN HOUSE 2 | SUMMARY

Notification

The Community Open House was publicized through television; at updates to the City Commission and Bozeman Planning Board; direct emails to those who have supplied their contact info as part of this process; and social media outlets, including the City's existing Facebook, Nextdoor, and Twitter accounts.

Purpose

The purpose of the Open House was to present the initial public draft of the Community Plan including Future Land Use Categories and Maps to the public for feedback. Public input and comments will be integrated into the final Community Plan.

Event

The Community Open House 2 took place at the Bozeman City Hall Commission Room on Tuesday, December 3rd, between 4 and 6pm. Members from City staff were available to answer questions on the text of the plan, provided summaries of the draft Future Land Use Categories, presented the Future Land Use Map, and metrics for success. Approximately 20 people attended the event.

PUBLIC HEARINGS | SUMMARY

Notification

The City conducted multiple public hearings to share and receive information from the community prior to making a decision on whether or not to adopt the draft Community Plan. The public hearings were publicized through television; through newspaper articles and paid advertisements; posting dates on the project website; at updates to the City Commission and Bozeman Planning Board; direct emails to those who have supplied their contact info as part of this process; and social media outlets, including the City's existing Facebook, Nextdoor, and Twitter.

Purpose

The purpose of the public hearing is the formal opportunity for community participation in the adoption process. Public hearings are required by state law prior to any final decision by the Planning Board or the City Commission. Public input and comments were considered and many were integrated into the final Community Plan.

Events

After developing the document draft for public review the Planning Board held three public hearings on July 21st, July 28th, and August 10th, 2020. The Planning Board considered the draft document, heard and considered public comments, and made several revisions to the map and text. On August 17th the Planning Board formally passed Resolution 20-1 transmitting the recommended document to the City Commission.

On August 18th the City Commission was formally presented the Planning Board's recommended document and the subsequent review process was outlined. The City Commission formally passed a resolution of intent to adopt a growth policy on August 25, 2020. Adoption of the Resolution of Intent is the formal initiation of the City Commission's review.

To help encourage public understanding of the document and participation in the public review process the City hosted three online workshops to present aspects of the plan and answer questions. There were 116 attendees at the three workshops. Recordings of the workshops were posted on the project website so those not able to attend could still obtain the information.

- Sept 16 - Public work session 1 focused on text of Plan with Q&A.
- Sept 23 - Public work session 2 focused on future land use with Q&A.
- Sept 30 - Public work session 3 focused on overall Plan and open Q&A.

On October 6, 2020 the City Commission conducted their first work session and public hearing on the draft. They asked questions, heard public comments, and suggested possible revisions for consideration at their following meeting. On October 20th the City Commission held their second work session and public hearing. After considering a staff presentation and public comments the Commission directed several amendments to be included in a revised draft of the growth policy.

On November 17, 2020 the City Commission conducted their final public hearing. After consideration of all matters and public comment they adopted Resolution 5133 adopting the Bozeman Community Plan 2020.

B



INFRASTRUCTURE + SPECIAL TOPIC PLANS

STRATEGY FOR DEVELOPMENT, MAINTENANCE, AND REPLACEMENT OF PUBLIC INFRASTRUCTURE.

The City of Bozeman actively manages its infrastructure. In 2018 alone, the City performed 27,442 maintenance operations. During 2015-2019, the City invested $107,206,000 in expansions and upgrades to its water, sewer, streets, and stormwater systems. In the upcoming five years the City's Capital Improvement Program anticipates an expenditure of $126,913,000 for the same four programs. The City prepares facility plans to evaluate current conditions, consider future needs, identify future locations and sizing for needed construction, and maximize operational effectiveness and efficiency.

Facility Plans presently in place include:

- 2017 Fire Master Plan
- 2007 Parks, Recreation, Open Space and Trails
- 2017 Transportation Master Plan
- 2008 Stormwater Master Plan
- 2015 Wastewater Collection Facilities Plan
- 2017 Water Facility Plan
- 2013 Integrated Water Resources Plan
- 2013 Transportation Safety Plan

The planning area for each facility plan generally matches the planning area for this growth policy. Minor mismatches do occur at fringe locations. Over time, these will be corrected as each plan is updated and matched to the growth policy boundary. The water plans rely on geographical features and facilities located well outside of the land use planning area. This is reflective of the realities of watershed operation.

Each plan contains analysis of existing and future needs. For detailed evaluation of each facility please consult the appropriate facility plan. A summary is provided later in this Appendix. Some facilities, such as transportation, address the demands placed by many thousands of daily commuters and of persons passing through the community. Others, like stormwater, primarily address needs by residents. A comparison of individual plans will therefore show differences in the size of anticipated service populations now and in the future. For a generalized discussion of existing conditions please see Appendix B and for generalized future needs please see Appendix D. Collectively, these plans provide an infrastructure plan that meets the requirements of 76-1-601(3)(c)(v) and (4)(c), MCA.

The City has a highly robust web presence to share infrastructure information. Using web viewers, anyone can see existing and future infrastructure. They can select individual segments to obtain basic information on age, size, and type. This greatly facilitates infrastructure management and design by both public and private parties to upkeep and expand systems.

MAINTENANCE AND REPLACEMENT

City staff conduct daily maintenance and operations on all facilities and local services. Local services are all services provided by the City for the benefit of citizens and visitors. These services include, but are not limited to, police, fire, water, recreation, streets, parks, libraries, wastewater, and solid waste collection and disposal. Daily maintenance is supported by the annual budget funded by the taxes and fees assessed for services. The City's adopted budgeting principles commit to adequate maintenance and orderly replacement. Operational expenses from the water, sewer, sanitation, and stormwater functions are paid by the monthly service fees assessed to users of the service. Maintenance of streets is primarily funded by a city-wide special district that is billed with the semi-annual property tax bills. Where appropriate, special improvement districts help reconstruct some local streets. Parks is presently supported by the general fund but creation of a special district may be voted on in the spring of 2020. For a more extensive discussion of budgeting and accounting principles, individual operations, and expenditures please see the most current City budget.

The City maintains a substantial inventory of various facilities including, but not limited to:

- 287.7 miles of water main
- 2,656 fire hydrants
- 231.2 miles of sewer main
- 9 sewer lift stations
- 109.6 miles of stormwater mains
- 98.6 miles of stormwater urban waterways
- 215.1 miles of City maintained streets with an overall network of 286.1 miles
- 1,025.4 acres of City park
- 82.2 miles of trails
- 50 playgrounds

Each facility element is entered into the City's robust asset management software, Cityworks. The City has received three awards for its asset management program. These are:

- 2008 Special Achievement in Geographic Information Systems
- 2013 Exemplary Cityworks User
- 2017 Special Achievement in Geographic Information Systems

The characteristics of each item are included in the asset management program as well as its geographic location. This asset list enables departments to consider age, condition, and other factors to determine when maintenance or replacement is required. There are adopted standards for expected service life of each type of facility. The City includes maintenance concerns in its design process and standards. The operating departments prepare budget requests each year to provide needed funding to replace deficient items or those reaching the end of their service life. Substantial projects become part of the City's Capital Improvement Program (CIP) which provides public disclosure of substantial projects. The City has found that adequate maintenance reduces the frequency of required replacement is less expensive over the long run.

INFRASTRUCTURE DEVELOPMENT

The facility plans look forward to construction of additional infrastructure needed to service an expanding City. Each considers where new work can best be located. Most facilities operate as networks of connections and therefore, placement of one new improvement can facilitate further expansion or improve function of existing work. The water, sewer, and transportation plans specifically identify needed improvements to expand or upgrade service in areas not currently annexed to the City.

The facility planning process provides an essential opportunity to coordinate between plans and agencies. As the City considers extensions of sewer and water it enable a change in land use from rural to urban uses. The City prioritizes identification of larger scale facilities such as collector and arterial streets. Local service items such as local streets and minimum sized water mains are most effectively designed during the land development process when greater information on uses is available.

The City has established design standards and performance standards for all levels of infrastructure. These standards guide the individual project designer during preparation of development applications.

The City uses a Capital Improvement Program system to plan for major projects over a five year period. The facility plans provide the basic material from which to construct the CIP, having identified major needed projects to service an expanded city. The CIP is updated annually through a public process. This provides transparency in City operations and enables participation by the public in decision making. Individual projects are identified, benefits and costs are described, funding sources are assigned and an overall picture of the revenue needed to construct the projects is determined. The CIP process ensures that a longer term vision of the community's development is always considered in prioritizing individual projects for construction. The annual update enables the City to be responsive to changing conditions including needs identified for proposed development.

It is expected that the City will become part of a new Metropolitan Planning Organization [MPA] during the effective period of this plan. An MPO is a federally required multi-community organization for areas over 50,000 in population that supports multi-jurisdiction coordination in transportation planning and road development. As described in Theme 6 the City is committed to Regional Coordination and will take many different actions to participate in shared decision making. The Gallatin Triangle Planning Study in 2014 documented 10 different types of formal interlocal cooperation tools in place in the valley. In 2016, the City of Bozeman, City of Belgrade, and Gallatin County established the Planning Coordinating Committee to provide a forum for exchange of information and discussion regarding common

issues of land use and development. The City and County staff regularly communicate on operations issues. Additional interlocal agreements will be adopted as needed to formalize coordination.

The City does not extend municipal services outside of its boundaries. Therefore, development desiring access to water or sewer service must first annex. This policy enables a clear delineation in service provision and supports a rational expansion of infrastructure. All services within the City are provided by the City. Services outside the City are provided by another government agency. The City of Bozeman and Gallatin County are presently developing an interlocal agreement to document long standing informal agreements on annexation and development; and to establish a new agreement on how development occurs within the planning area but not yet ready for annexation. The City hopes to extend its boundaries incrementally and avoid unannexed areas surrounded by the City. Such inholdings complicate efficient delivery of service and can cause difficulties with extensions of utilities.

SUMMARY OF PLANS

Per the growth policy statute 76-1-601(2)(e), MCA, this element must include at a minimum: "a strategy for development, maintenance, and replacement of public infrastructure, including drinking water systems, wastewater treatment facilities, sewer systems, solid waste facilities, fire protection facilities, roads, and bridges." This statement does not mean that a fully developed capital improvements plan must be included in the growth policy. The public facilities element in the growth policy is intended to be more general and includes a summary of past completed public facility projects.

Integrated Water Resources Plan – September 2013: https://www.bozeman.net/home/showdocument?id=836

In 2012-2013 the City of Bozeman developed an Integrated Water Resources Plan to guide its water supply and water use policy and practices for the next 50 years. The Plan's purpose was to project the City's water demand decades into the future, examine the potential means to meet the demand, and recommend the most promising measures for further study or implementation. Recommendations include making a vigorous water conservation program the cornerstone of the City's water management, as well as acquiring additional water rights, conducting feasibility studies for water source optimization, and more. Long-term recommended actions include constructing one or more impoundments on Sourdough Creek above the treatment plant, developing a new well field to supply the city, and to work with the owners of the "Salar Project" to develop a well field or impoundment.

Recommended ancillary activities to supplement the short, medium, and long term actions include: continuous public engagement related to this process and water resource possibilities, developing a plan to address conveyance loss of Hyalite Reservoir Water, monitor creeks to better understand water yields and hydrographs.

This plan was followed by the Integrated Water Resources Implementation Plan in December of 2013. This plan provides additional detail on how the recommendations adopted within the IWRP would be implemented. Included in the plan are tables that list specific tasks and their subsequent implementation highlights and milestones.

2008 Storm Water Facilities Plan – May 2008: http://weblink.bozeman.net/WebLink8/0/doc/46890/Electronic.aspx

The 2008 Storm Water Facilities Plan was developed in response to Bozeman's rapid growth and development. The Plan outlines seven goals, which include; Inventory the Existing System; Plan for Future Growth; Evaluate Existing Problem Areas; Storm Water System Analysis; NPDES Permit Application and Implementation; Financial Plan; Recommended Plan. The most significant recommendations from the Plan were: moving forward with establishing a funding source for storm water, guidance for development of a uniform approach to development submittals, and

continuing to rely upon development-based storm water management until the Phase 2 program and creation of a utility are more advanced.

Bozeman Transportation Master Plan – April 2017: https://mdt.mt.gov/publications/docs/brochures/bozeman_tranplan_study.pdf

The Bozeman Transportation Master Plan (TMP) serves as a guide for development of and investment in the community's transportation systems in a comprehensive manner. The TMP was developed through a collaborative approach with city and state staff, elected officials, and local residents and provides the blueprint for a transportation system that will serve the community's citizens well into the future. The TMP provides for guiding transportation infrastructure investments based on system needs and associated decision-making principles. The Plan incorporates all applicable background information, includes detailed analysis of options and alternatives, incorporates meaningful input from citizens and local officials, and provides a framework for future efforts within the context of State and Federal rules, regulations, and funding allocations.

This comprehensive plan identifies community goals and improvements to the transportation infrastructure and services within the city of Bozeman and that portion within Gallatin County that is likely to include future urban area expansion. The Plan addresses regional transportation issues, overall travel convenience, traffic safety, sustainability, complete streets, funding, transportation demand management (TDM), and multi-modal connections. The Plan includes recommendations for short-term improvements as well as recommended modifications and capital improvements to major roadways. The Plan also includes policy suggestions to align with the community's vision for the Bozeman area.

Bozeman Community Transportation Safety Plan – July 2013: https://www.mdt.mt.gov/pubinvolve/bozemanctsp/docs/boz_ctsp_final_07_2013.pdf

The Bozeman Community Transportation Safety Plan (CTSP) was developed as the City began working to reduce the number of severe injury crashes in the urban area. A Transportation Safety Advisory Committee (TSAC) was established and they identified three focus areas to reduce fatal and incapacitating crashes in Bozeman: inattentive driving crashes, lack of occupant protection usage, and bicycle and pedestrian crashes. The Plan is focused on strategies that could reduce severe injury crashes with these contributing circumstances. These strategies are accompanied by guidance on their implementation, including action steps, stakeholder groups involved, leaders, and resources. The plan used crash data provided by the Montana Department of Transportation (MDT) and worked with a consultant to facilitate planning meetings and to develop materials. This plan emphasized implementation of these efforts as its most important component. Many of the identified strategies involve little or no cost, and can be implemented quickly.

2015 Wastewater Collection Facilities Plan Update – June 2015: https://www.bozeman.net/home/showdocument?id=832

The Wastewater Collection Facilities Plan Update is an update to the City's previous document, guided by the intent to update and evaluate the City's existing wastewater collection system, and to estimate and plan for future expansion based on current population and land use trends. The main goals of the Plan are: define and evaluate the existing infrastructure in order to determine capacity and existing flows, estimate location and nature of future population growth and associated increases in wastewater quantities, and to develop a comprehensive plan to address deficiencies and meet present and future requirements, while continuing to plan for and accommodate the City's growth.

Recommendations are made related to:

updates to the City's wastewater database, flow monitoring, capacity increases, existing system, future system, and policies.

2017 Water Facility Plan – July 2017: https://www.bozeman.net/home/showdocument?id=4977
The Water Facility Plan contains information on the City's three water supplies, treatment and distribution system, and future construction needed to provide continued quality service to a growing community. The City recently replaced its water treatment plant to address both demand for additional capacity and more strict regulatory standards. Climate change and its associated impacts pose a challenge to Bozeman's water supply and the City is undertaking conservation and efficiency efforts based upon the recommendations of the plan. This plan replaces the 2007 water facility plan.

Drought Management Plan – January 2017: https://www.bozeman.net/Home/ShowDocument?id=4791

The Drought Management Plan is designed to maximize available water supplies and reduce water use during times of shortage and provide guidelines the City of Bozeman will use to manage water supply and water use during drought. The guidelines are designed to maintain the health, safety, and economic vitality of the community; to avoid adverse impacts to public activity and quality of life for the community; and to consider individual customer needs as much as possible to the greatest extent possible in the face of water shortages.

Because each drought is different, it is not practical to develop a set of hard-and-fast rules to apply to all droughts. Rather, these guidelines are intended to provide a framework for timely drought response while maintaining flexibility to respond to unique drought conditions. These guidelines are intended to assist the Bozeman City Commission (the Commission) in making decisions throughout the course of a drought. The Commission may adjust or refine the response based on actual drought conditions.

The Plan is based on an analysis of Bozeman's climate and available water supplies, a review of other drought plans from across the United States and lessons learned from past drought events in communities throughout the Western United States. As this is the City of Bozeman's first Drought Management Plan, it will be updated regularly to ensure that it addresses current conditions and will be administered by the City of Bozeman's Public Works Division (Bozeman Water).

Parks, Recreation, Open Space, and Trails (PROST) Plan – December 2007: https://www.bozeman.net/home/showdocument?id=3284

The Parks, Recreation, Open Space, and Trails (PROST) Plan provides a comprehensive look at recreation needs in Bozeman. The PROST Plan was prepared by the Bozeman Recreation and Parks Advisory Board with the assistance of City staff and includes an inventory of existing facilities, forecasts needed facilities, and proposes policies to carry out the plan. In general, this plan provides a framework for integrating existing facilities and programs and further developing a system of parks, recreation facilities and programs, open spaces, and trails. Additionally, the plan is used for evaluating grant applications, public funding expenditures, and influencing the preparation of individual park master plans.

Fire & EMS Master Plan – August 2017: https://www.bozeman.net/Home/ShowDocument?id=5495
This analysis includes a thorough review of the organization structure, training, performance measures, prevention activities, and interactions with mutual aid partners. Specifically, the Center for Public Safety Management, LLC (CPSM) was tasked with providing recommendations and alternatives regarding fire department operations, staffing levels, and alternative modes of operation referencing both the current service demand and options that can position the department to best manage the community's anticipated growth. Forty-two recommendations were included in

the Plan and are derived from industry best practices. These recommendations are listed in five categories; I. Organization, Management and Personnel; II. Facilities and Capital; III. Planning and Risk Management; IV. Operations, Dispatch and V. Deployment; Training and Prevention. There is a page reference after each recommendation which indicates the page of the report on which the recommendation is found.

Bozeman Climate Action Plan – December 2020: https://www.bozeman.net/city-projects/bzn-climate-plan

The Bozeman Climate Action Plan (CAP) reaffirms and expands past commitments made in the 2011 Community Climate Action Plan and in a 2017 resolution to uphold the goals of the Paris Climate Agreement through local action. The plan's vision and guiding principles will advance innovative solutions to cultivate a more equitable and resilient low-carbon community for current and future generations.

The recommendations in the CAP delivers a robust set of 16 innovative, actionable solutions organized into six focus areas: Healthy, Adaptive and Efficient Buildings; Responsible and Reliable Renewable Energy Supply; Vibrant and Resilient Neighborhoods; Diverse and Accessible Transportation Options; Comprehensive and Sustainable Waste Reduction, and; Regenerative Greenspace, Food Systems, and Natural Environment. Each solution includes a suite of supporting actions that ultimately help Bozeman achieve its climate vision and goals.

Urban Forestry Management Plan – February 2016: https://www.bozeman.net/home/showdocument?id=3621

The Bozeman Urban Forest Management Plan (UFMP) aims to sustainably and efficiently manage Bozeman's urban forest and to illustrate the full expanse of benefits urban trees can provide. This plan focuses on finding the most cost-effective ways to accomplish these goals in Bozeman. The City of Bozeman and the public have given the urban forest in Bozeman more attention and priority in recent years, resulting in more effective management and an increase in the maintenance of public trees. This plan emphasizes strategies to maximize the benefits the urban forest provides, ranging from the environmental, psychological, sociological, and economic areas.

The UFMP contains three major components: Tree Infrastructure, Management of the Urban Forest, and Community Engagement. These three components work together to build the most efficient urban forest in Bozeman. The UFMP presents the most cost-effective management possible, yet it preserves the existing canopy cover, substantially grows canopy, and maximizes benefits. Every opportunity to "do more with less" is stressed in this plan, and the budget recommendations will result in greater overall efficiency while gaining a remarkable return on investment. This plan represents an impartial overview of the current structure and offers a management strategy that focuses on increasing work productivity while addressing issues related to risk and liability

Economic Development Strategy Update – November 2016: http://weblink.bozeman.net/WebLink8/0/doc/120846/Electronic.aspx

The Economic Development Strategy Update (EDS) includes an economic profile of Bozeman, highlighting population and employment growth patterns, industry clusters (photonics, IT, tourism, etc.), and the key strategies to expand Bozeman's economic base, support local businesses, and enhance regional connections. Additionally, the document compares Bozeman to other communities, and to itself through a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, and outlines the process and survey results gathered in the development of the EDS.

Within the EDS, three economic development pillar strategies are defined, including: Support retention and a mechanism to drive economic development; and Support education and workforce development initiatives to provide businesses with qualified workers. The specific actions and metrics that follow the development

pillar strategies are proposed with the acknowledgement that they are flexible, due to the ever-changing nature of the economy. As new opportunities arise, the document may be revised. This document should be updated every three to five years to stay current and provide the most up-to-date recommendations.

Community Housing Needs Assessment – February 2019: https://www.bozeman.net/home/showdocument?id=8773
The Community Housing Needs Assessment (CHNA) provides an updated housing needs assessment of the City of Bozeman. It is part one of a two-part process that is intended to help the City of Bozeman understand and devise a plan to address the housing needs of residents and the workforce. The goal is to ensure that the City has the housing necessary to support a thriving community, through housing to support businesses, economic development, and community vibrancy. The report evaluates the spectrum of housing needs in the City, providing an overview of special needs programs and emergency housing options, as well as affordable rentals through home purchase opportunities.

Community Housing Action Plan – October 2019: https://www.bozeman.net/Home/ShowDocument?id=9443

The Community Housing Action Plan (CHAP) was completed in October of 2019 and is an action plan guided at identifying Bozeman's top community housing priorities and designing a plan to get housing built for a range of resident and employee needs in Bozeman over, at minimum, a five-year span.

Neighborhood Conservation Overlay District Report – 2015: https://www.bozeman.net/Home/ShowDocument?id=5513
The City of Bozeman established the Neighborhood Conservation Overlay District (NCOD) in 1991 as a locally-adopted zoning district that prioritizes conservation of neighborhood character and preservation of historic properties. The boundary was initially based on the City's 1957 census boundary. The boundary does not necessarily reflect the historical integrity of structures either adjacent to, within or outside the boundary. Substantial reinvestment has occurred in the NCOD area over 24 years as Bozeman has grown significantly since 1991. Therefore, the City evaluated the NCOD and what recommendations were needed to update the district and its associated regulations. The City is also conducting evaluations and revisions of land development standards which interact with this report. Some recommendations from the draft report have been removed as they have already been completed.

Best practices were studied from six communities across the country, along with three cities in Montana to determine what unique preservation nor infill strategies could be implemented in Bozeman. The analysis concluded that the NCOD has affected affordable housing, infill development and the historical integrity of properties within the district. The District has had several successes including preserving potential historical buildings, creating historic districts, and preserving neighborhood context in certain areas. However, the NCOD has also had challenges including affordable housing and application of design guidelines and code enforcement.

Recommendations are listed for each focus area and in some instances these recommendations are in conflict with each other. This was done on purpose to encourage the public and City Commission to determine what is the most critical aspect moving forward whether it be affordable housing, historic preservation, infill development, or creating new design guidelines. However, a preferred set of recommendations is provided that tries to achieve a balance between the four focus areas. It should be noted that these can and will likely change pending input from City Commission on what direction the NCOD should take moving forward.

Design and Connectivity Plan for North 7th Ave Corridor - October 2006: https://www.bozeman.net/Home/ShowDocument?id=556

This plan should serve as a formal policy document related to improvements along North 7th Avenue. It should be used when planning improvements along the corridor, and as a means for recruiting businesses in the area. In addition it should serve as a roadmap for private property owners, investors, and individual businesses in planning individual projects, such that they will help to reinforce the overall vision for the area.

The purpose of this plan is: To provide a design framework plan for improvement projects along the corridor that will enhance connectivity for the pedestrian, bicyclist and automobile; To illustrate the vision for the plan; To provide implementation strategies and funding mechanisms.

Downtown Bozeman Improvement Plan – May 2019: https://www.bozeman.net/home/showdocument?id=9041

The 2019 Downtown Bozeman Improvement Plan (the DBIP) builds on Bozeman's planning history and recent energy. A successful downtown contains a diverse mix of uses, encourages interaction, and creates unique experiences that cannot be duplicated. Downtown's success is tied to its strong sense of place, which has been strengthened in recent years by a healthy economy, a careful balance of tourism with local livability, and a clear framework for investment laid out in the 2009 Downtown Improvement Plan. Yet, as Bozeman grows, Downtown cannot be content with today's successes; evolution is necessary for long-term resilience. Challenges do exist, particularly around keeping Downtown's local identity intact, balancing growth sensitively, and welcoming more transportation modes and residents. This plan has been shaped by many people in the Bozeman community who worked hard to create an inspired vision for the next decade.

This plan is guided by five main principles: The Heart of a Thriving Bozeman; More than Main Street; Walkable and Accessible; Welcoming to Everyone; Connected to Nature and Culture. Within the plan are public engagement summaries, up-to-date statistics, suggested code amendments, and a memorandum related to the market analysis.

Cemetery Master Plan (Sunset Hills) – June 2017: https://www.bozeman.net/home/showdocument?id=5408

This twenty-year plan outlines short-term policy considerations related to the management, physical grounds, and general environment of the Sunset Hills Cemetery; and the long term planning for perpetual care of the future Sunset Hills Cemetery.

Downtown Strategic Parking Management Plan – July 2016: https://www.bozeman.net/Home/ShowDocument?id=1762

This plan reflects an overall evaluation of the downtown parking system. The evaluation entailed review of existing parking operations and assets, previous study findings, and municipal code; in-depth discussions and three topic-specific work sessions with the Bozeman Parking Commission (BPC); and six public forums to allow for community input and discussion. From this process, the consultant developed a comprehensive parking management plan that responds to the unique environment, goals, and objectives of Downtown Bozeman. Within the plan are policy, organizational, code-related, and parking management action strategies.

Midtown Action Plan – August 2017: https://www.midtownbozeman.org//uploads/Documents/Action-Plan-V10.pdf

The intent of this Plan is to attract targeted private investment by leveraging the market potential of the Midtown District, and removing barriers to development through strategic infrastructure investments and incentives. This is especially important for this District as the city does not own any property and is reliant on cooperation and collaboration with property owners to realize the vision for this area.

Gallatin County Hazard Mitigation and Community Wildfire Protection Plan – June 2019: https://www.readygallatin.com/wp-content/uploads/2019/07/FINAL-DRAFT-Gallatin-County-Hazard-Mit-Plan_07-05-2019_plus-MSU-Annex-CWPP.pdf

The City participates in disaster and response planning on a cooperative basis with other local governments. In 2000 the Federal Emergency Management Agency (FEMA) began a pre-disaster program. This required every county in the nation to prepare an all-risk assessment and mitigation plan for any anticipated natural disaster (i.e. flooding, earthquake, winter storm, wildfires). The City Fire Department provides the staffing for the Gallatin County Disaster and Emergency Services function under an Interlocal agreement. The County and the five municipalities jointly prepared a Hazard Mitigation Plan which was completed in 2006, 2012, and 2018. The plan examines a wide range of possible emergency circumstances or events. Each event is rated for likelihood of occurrence, breadth of impact, and resources needed to respond.

After the 2000 fire season in the United Stated, it was evident that something must be done to better prepare and protect communities and residents that live in or near forested lands. The National Fire Plan was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient fire fighting capacity for the future.

In Montana, the Forest Service and Bureau of Land Management has worked with the Montana Department of Commerce to award grants to communities for the development of community fire plans. The Healthy Forests Initiative (HFI) was launched in August, 2002 with the intent to reduce the risks severe wildfires pose to people, communities, and the environment. By protecting forests, woodlands, shrub lands, and grasslands from unnaturally intensive and destructive fires, HFI helps improve the condition of our public lands, increases firefighter safety, and conserves landscape attributes valued by society. The Bozeman Fire Department, cooperation with Gallatin County and the other fire service providers prepared a local plan for wildfire which made recommendations to the local governments. This plan meets the requirement for a growth policy to delineate the wildland-urban interface and make recommendations regarding regulations. Implementation occurs through other actions such as subdivision regulations.

This plan has multiple but basic objectives. These objectives are as follows:

1. Identify and prioritize current WUI areas within and around each of the 19 fire districts and departments to include adjacent public lands.
2. Identify potential areas that are currently under development or in planning stages within these fire districts and fire service areas.
3. Identify local fire protection resources.
4. Provide detailed mapping of Gallatin County, fire departments, and WUI areas
5. Inform and educate public and private land owners of hazardous or potentially hazardous WUI areas.
6. Provide ideas and recommendations for possible hazard mitigation in high risk areas.
7. Continue to bring local, state, federal, and interested party decision makers to the table for future planning and education.

Triangle Community Plan - August 2020: https://gallatincomt.virtualtownhall.net/sites/g/files/vyhlif606/f/uploads/triangle_community_plan_final.pdf

The Triangle Community Plan is a joint effort between the City of Bozeman, City of Belgrade, and Gallatin County to establish shared priorities for land management. The area of the plan is generally bounded by western Bozeman, southern Belgrade, and south of the Four Corners area. The plan sets a shared vision, values, and key issues and goals and implementation steps to address those issues. The Triangle Community Plan is a

formally adopted neighborhood plan under the growth policies for Gallatin County and City of Belgrade. It was not formally adopted by the City as part of the growth policy but is a recognized plan of the City.

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INVENTORY REPORT

This Appendix includes the history of Bozeman and additional demographic data that was not included in the main body of the Community Plan.

HISTORICAL PERSPECTIVE

Prior to the establishment of permanent settlements in southwestern Montana, a variety of nomadic Native American bands frequented and utilized the region now known as the Gallatin Valley. Archeological evidence documents that prehistoric peoples enjoyed the Valley's once-plentiful natural resources for more than 10,000 years. Later, members of the Bannock, Blackfeet, Crow, Flathead, Gros Ventres, Shoshone, and several other historic tribes seasonally camped in the well-watered region en route to and from the buffalo hunting grounds to the east of the Bridger Mountains.

Meriwether Lewis arrived at the Three Forks of the Missouri River on July 28, 1805. Lewis described



the Gallatin Valley as "a smooth extensive green meadow of fine grass in its course meandering in several streams...and a distant range of lofty mountains ran their snow clad tops above the irregular and broken mountains which lie adjacent to this beautiful spot." Nearly one year later, William Clark's expedition, with the navigational assistance of Sacajawea, a Bannock/Shoshone Indian, ascended the Gallatin River and observed: "several leading roads which appear to a gap in the mountains," which is now known as Flathead Pass. At the recommendation of his native guide, Clark traveled east through what later became known as Bozeman Pass, eventually making his way to the Yellowstone River drainage and beyond.

Thanks in large measure to the lavish descriptions of the Lewis and Clark Expedition; others were soon attracted to southwestern Montana. Fur trappers harvested in the region until the 1850s, when local beaver populations had been substantially depleted. The first permanent white settlements in the vicinity, however, were established following the discovery of gold in Bannock, Virginia City, and Last Chance Gulch between 1862 and 1865. John Bozeman and others guided immigrant trains along the infamous Bozeman Trail, which entered the Gallatin Valley via Bozeman Pass. Perceiving the economic potential of having a community at the mouth of this important gateway, John Bozeman and two friends – Daniel Rouse and William Beall – planned a town site directly west of the opening.

Possessing exceptionally fertile and well-watered soil, as well as geographic proximity to several nearby mining camps that provided a ready market for goods and services, Bozeman, Montana, became one of the earliest and most successful agricultural communities in the Rocky Mountain West. Early resident William Alderson described the community's surroundings as "one of the most beautiful and picturesque valleys the eye ever beheld, abounding in springs of clear water, flowers and grass in abundance." In sharp contrast to many other more arid regions of the West, this comparatively fruitful local environment served as a powerful magnet for settlement and economic development. As Alderson's diary noted, for example, farmers came to the Bozeman area "expecting to make money," and most were not disappointed.

The draw of the Gallatin Valley was strong enough that by September of 1864, The Montana Post reported that the area was "being fast settled up with farmers, many of whom came to Montana as a better class of miners and after...quitting their original pursuits secured 160 acres of land on which they...go to work in true farmer fashion." Valley residents soon marketed potatoes, beets, carrots, rutabagas, and parsnips in the mining camps they had formerly occupied. Soon, focus had expanded to include the cultivation of wheat, oats, and barley; and the roots of an extensive agricultural industry in the region were planted. Thanks to the safety guaranteed by the nearby establishment of Fort Ellis in August of 1867, the town of Bozeman grew quickly, becoming the county seat that same year.



Main Street in Bozeman, circa 1868

Following the prevailing economic stagnation of the 1870s, the Northern Pacific Railroad desperately sought local markets and natural resources to help offset the huge costs of its transcontinental expansion. Eventually, the Gallatin Valley's established reputation as "the granary of Montana," together with its proximity to Bozeman Pass and the large coal reserves of the neighboring Trail Creek area, attracted the attention of the railroad. On January 9, 1882, the Northern Pacific purchased a large tract of land located northeast of Bozeman from Perry and William McAdow and began construction of a six-stall, masonry roundhouse to accommodate helper engines for pushing eastbound trains over Bozeman Pass–the highest point on the railroad. In a matter of months, Bozeman became the first town on Montana's Northern Pacific line.

Although Bozeman was unusual in that it did not owe its life to the railroad, the Northern Pacific dramatically changed the Gallatin Valley, even prior to its arrival there. Until the coming of the railroad, the Valley's commerce with the rest of the nation was possible only by freighter – south to Corinne, Utah, on the Union Pacific Railroad, or North to Fort Benton, Montana, on the Missouri River. Thus, following confirmation that the railroad would traverse the Valley on its trek to the West Coast, local anticipation reached a fevered pitch. Area farmers and ranchers, many of whom had become painfully aware of the economic disadvantages of their geographic isolation from eastern population centers, perceived the railroad as nothing less than the key to progress for the Bozeman area.

Almost immediately, local expectations were fulfilled as railroad optimism sparked a prolonged redefinition of the region's character, appearance, and quality of life. Confident that the railroad's arrival would spark a major building and settlement boom in Bozeman, Nelson Story and local partners Walter Cooper and John Dickerson platted Park Addition, one of the largest subdivisions on Bozeman's affluent southern side. The East Side (later Hawthorne) School at 114 North Rouse, the Masonic Lodge at 137 East Main, the Lamme Building at 29 East Main, and the Spieth and Krug Brewery at 240-246 East Main were constructed in 1883. The City of Bozeman was incorporated later that same year in celebration of the fact that the region was no longer circumscribed by the

limitations of geographic isolation. "We may now feel that we are part of the great world's business activities," proclaimed Judge H.N. Maguire. And, indeed, to many local residents the possibilities seemed endless.

As is the case in other communities, the advent of the Northern Pacific marks a watershed in the developmental history of the Gallatin Valley. With the railroad's assistance, Bozeman rapidly moved toward economic and demographic stabilization. Population in the Bozeman area increased dramatically from 867 in 1880 to approximately 3,000 in 1883. "Under the impetus of the near approach of the track of the Northern Pacific road," the Avant Courier reported, "Bozeman has doubled its population during the past year."

The arrival of the railroad also impacted the ethnic composition of the City's population. Construction of the railroad resulted in an influx of Chinese workers. In 1870 there were 4 Chinese-born residents of Bozeman and by 1910 that number had swelled to 62. There we also a few African-American families in Bozeman, many of which moved West during the Civil War. By the time of the 1910 Census there were 38 African Americans residing in Bozeman. During the late 1800s Native Americans sometimes camped near the fledgling City. While they did not reside in the City, they did come to town for trade and supplies.

The establishment of Yellowstone National Park in 1872, combined with the completion of the railroad line through Bozeman, was also an economic boon for Bozeman. Bozeman became the main point of departure for park-bound visitors. The importance of Yellowstone National Park to the local economy expanded even more with the use of private automobiles.

The ongoing transformation sparked by the railroad boom was truly remarkable. Fred M. Wilson, traveling correspondent for the Helena Herald, reported that

"Bozeman has indeed made a proud record during the past twelve months. Her wonderful growth, resulting from the advent of the iron horse...has exceeded the anticipations of the most sanguine. Business houses have nearly doubled in number, large and handsome houses now cover tracts of land which a few years ago were beyond the limits of town, the streets are thronged with a busy, hungry crowd, and one who has been absent but a season finds difficulty in recognizing the staid and sober town of the past in the bustling, ambitious city of the present."

While the effects of the railroad boom quickly subsided and local population levels actually declined in the mid-1880s, Montana's attainment of statehood in 1889 served as the impetus for yet another pivotal surge in local development. In an effort to impress Montana voters enough to choose Bozeman as the site of the state capital in an 1892 special election, area promoters set out to redefine their community. Local residents erected several prominent public and private buildings in the years immediately following the declaration of statehood, including the impressive Bozeman City Hall and Opera House (1890), the gothic-styled Saint James Episcopal Church (1890-91) at 9 West Olive Street, the Victorian Commercial Bozeman Hotel (1891-92) at 307-21 East Main Street, and the gothic City High School building (c. 1892) which once occupied the present site of the Emerson Cultural Center at 111 South Grand Avenue. Several notable local residences, such as the Julia Martin House (1892) at 419 South Grand Avenue, were also constructed in this period.

In addition to these ambitious projects, Bozeman also witnessed other significant steps toward sophistication between 1889 and 1892. Community boundaries were officially extended into surrounding farmlands in an effort to make the City look larger on paper than it was in actuality and, therefore, more impressive to Montana's voters. In a further effort to make Bozeman appear ready for the capital designation, the "Capitol Hill Addition" was platted in 1890, and South Eighth Avenue was laid out as a boulevard leading up to the intended site of the capitol. Electric lights



Main Street in Bozeman, circa 1893

were installed on the City's main thoroughfares in 1891, and an extensive local streetcar system was established the following year. The Northern Pacific Railroad also constructed a brick passenger depot at 829 Front Street in 1892.

By September of 1892 – less than two months before the special election to settle the capital question – a regional promotional magazine, The Rockies, boasted that the Gallatin Valley possessed the economic stability of "the largest and most productive agricultural region in the entire northwest." Bozeman, in particular, was praised as having "every convenience found in eastern cities of ten times its population."

Despite this and other bold efforts at self-promotion, when the ballots were counted in 1892, Bozeman took fourth place with 7,636 votes, behind Butte, Anaconda, and Helena with 7,757, 10,147, and 14,032 votes respectively. Although a great deal of time and effort went into Bozeman's bid for the capital, local residents were not discouraged following their defeat. The Bozeman Weekly Chronicle positively asserted that "the capital contest has been the means of attracting a great deal of favorable attention to Bozeman and the money spent is by no means wasted."

The paper's emphatic outlook was soon justified. Within a year, Helena got around to allocating other state institutions, among which were the units of the higher education system. Due no doubt in part to Bozeman's impressive growth during its bid for the capital, the College of Agriculture and Mechanic Arts was located in Bozeman on February 16, 1893 – the first of the units to be established. The school opened in April of that year and classes were held in the local skating rink, where Holy Rosary Church is now located. When the legislature finally appropriated the necessary funds, Montana or "Old Main" Hall was built in 1896 and the foundation of what is now Montana State University was laid.

The advent of dry land farming techniques, which were aggressively promoted by the new agricultural college, coupled with an ongoing homestead boom, dramatically increased Bozeman's population from 3,419 in 1900 to 5,107 in 1910. These demographic changes, in turn, reaffirmed Bozeman's advantageous position as a regional supply center, inspiring numerous



Bird's eye view of Bozeman, circa 1900

changes in the architectural character of the community. As early as 1907, a surplus of hard milling wheat was, for the first time, available for shipment to markets outside of Montana. This reality prompted the Chicago, Milwaukee and Saint Paul Railroad to gain access to Bozeman in 1911–a development that further bolstered the local agricultural economy.

The volume of agricultural and railroad activity in the Valley continued to intensify during the 1913 1929 Progressive era thanks in large measure to the growth of Montana State College's Agricultural Experiment Station– which encouraged the application of "industrial principles to agricultural expansion." In advocating the scientific management of farming, the Agriculture Experiment Station also promoted crop diversification; and, following 1911 soil tests, 17,000 acres of peas were planted in the Valley. The obvious success of the experiment, coupled with the fact that legume cultivation was a natural soil enricher and pea vines could be used as animal fodder, stimulated the development of four local seed pea companies. The incredible success of Bozeman's seed pea industry stimulated the incorporation of the Bozeman Canning Company on North Rouse Avenue. Soon the Gallatin Valley was producing seventy-five percent of the seed peas raised in the United States and Bozeman was referred to as the "Sweet Pea Capital of the Nation." The industry thrived in the Gallatin Valley until the mid-1950s, employing hundreds of local residents, particularly women.

Drought conditions prevailed throughout the 1920s, but Gallatin County fared relatively well in comparison to other counties in eastern Montana. The community also reaped the rewards of an active tourist economy during the era as thousands of pleasure seekers flooded through area train stations. With the advent of the automobile, Bozeman's role as a gateway to Yellowstone National Park became even more pronounced; and, for the first time, recreational tourism began to rival agriculture as a major industry in the area.

Due largely to the established relationship between agricultural pursuits and the Valley's two transcontinental railroads, the Bozeman area survived the Great Depression better than most, and continued its historic precedent of

economic expansion throughout its 1930-1950 Nationalization Phase of Development. Like other places across the nation, Bozeman faced many challenges following the Stock Market Crash of 1929; but, for the most part, the town of nearly 7,000 fared comparatively well. Local newspaper headlines on January 1, 1930 optimistically proclaimed: "All signs point toward continuance of prosperity...Nothing in the present situation that is menacing or pessimistic...Agriculture in better condition than ever."

Several factors contributed to this positive outlook. As in years past, an abundance of water in the region caused agriculture in the Gallatin Valley to flourish at a time when most farmers and ranchers were ravaged by natural disasters and financial ruin. Drought-stricken cattle from other regions were brought into the Bozeman area. By 1932, local dairy farmers were constructing a $25,000 cooperative creamery that was expected to double the farm population of the County. The success of the local farm economy is further evidenced by the development of the Gallatin Valley Auction Yards and Vollmer slaughterhouse complex in the mid-1930s.

When Montana's economy was at its lowest point, Bozeman also witnessed a new relationship with the federal government, which further bolstered the local economy. While drought conditions continued to hinder agricultural pursuits and forced many Montana counties to seek federal assistance during the Depression years, many area farmers and related businesses, such as the Montana Flour Mills Company, profited by providing flour and cereal products for Roosevelt's New Deal assistance programs. Flourishing agribusiness, coupled with the presence of MSC's Agricultural Extension Service, made Bozeman the principle actor in Montana's New Deal farm policy activity and underscored Bozeman's role as the de facto capital of rural Montana.

Thanks in large measure to its growing role in New Deal Farm policy, as well as the fact that many unemployed students were flocking to Bozeman, Montana State College expanded dramatically during the period, having obvious ripple effects on the town and its built environment. In 1932, MSC had 1,056 students, many of whom were attracted to Bozeman because they could not find jobs. By 1939, student population had jumped nearly sixty percent to 1,801 students. This dramatic increase helped to further bolster Bozeman during the worst years of the Great Depression and generated increasing opportunities for local housing and business development.

While Bozeman's population actually decreased during the era of the Great Depression, dropping from 8,855 in 1930 to 8,665 in 1940, construction activity in the City continued to grow. In 1932, for example, the total value of local building permits was a less than impressive $98,883. By 1940, the total building permit valuation had grown more than four times to $428,780, a solid indication that local growth and development accelerated toward the end of the decade.

As expected, Bozeman's economy continued to expand, especially after the bombing of Pearl Harbor in December of 1941. Mechanisms were already in place to provide the nation's armed forces with locally produced agricultural commodities, such as flour, wool, and meat. Major local employers, such as Montana Flour Mills and the Bozeman Canning Company, operated at maximum capacity during the era.

Throughout WWII, and for more than a century after, the Bozeman Armory Building was home to Charlie Company and the 163rd Infantry Regiment of the Montana National Guard. This Guard unit drew members from all over the state. The Armory Building was dedicated just 4 months after the bombing of Pearl Harbor.

The end of the war and the return of veterans brought ever-increasing activity to Bozeman. The effects of the 1944 G.I. Bill of Rights stimulated further growth at the college and in the housing industry. Local responses to shortages in housing supply prompted the development of wood



Main Street in Bozeman, circa 1940

product industries such as the Idaho Pole plant, which was established in 1946, and the pulpwood industry, started at Gallatin Gateway in 1947. Together these and other developments helped ensure the continuing expansion of Bozeman and its institution of higher learning, Montana State College.

In the years immediately following World War II, the major factors influencing Bozeman's earlier development continued to exert an important influence on Bozeman's character and appearance. The agricultural heritage that had shaped daily life in the Gallatin Valley from day one continued to play a major role, as evidenced by the establishment of the Winter Fair in 1946. Likewise, the ever-growing Montana State College remained the largest local employer and continued to ensure the economic vitality of the community. But even as these historic forces continued to shape the growth of the area, a succession of new technological and transportation-related developments further linked Bozeman with the outside world and profoundly altered local life in the coming decades.

Radio, television, and Hollywood soon wedded the Gallatin Valley with the broader culture of the nation. As music and other mass-produced popular amusements were instantly made available to area residents for the first time, local values and aspirations changed. More than ever, Bozeman youth embraced the possibility of leaving the Gallatin Valley for more sophisticated pastures.

Meanwhile, others discovered the Bozeman area. Northwest Airlines made its first landing at Gallatin Field on June 22, 1947, and for the first time, commercial plane service conveniently connected the Gallatin Valley with the rest of the world. Like

the railroads, airlines further encouraged tourism and the more recent phenomenon of living in Bozeman and working elsewhere.

In 1966 the interstate highway was completed through the Bozeman area. Prior to this time, all east-west traffic coming through the area traveled down Main Street. With the completion of the interstate, however, Main Street was bypassed–a transition which had dramatic economic impacts for Downtown Bozeman and paved the way for modern day strip development on Bozeman's periphery.

Together with already existing transportation systems, the interstate and airlines triggered Bozeman's emergence as a nationally recognized recreational mecca. Yellowstone Park and dude ranch tourism flourished in the summer months; and with the establishment of Bridger Bowl (1955) and later Big Sky (1973), a year-round tourism industry was established.

With growing frequency, the fertile farmland of the Gallatin Valley was subdivided for residential development to accommodate a burgeoning local population. Between 1960 and 1970, Bozeman's City limits almost doubled in area, from 2,640 acres to more than 5,000. Many subdivision proposals were brought before the Bozeman City Commission, which in turn increased from three to five members in 1970 to handle the heavier workload. That year, Bozeman's first City-County planner was hired.

Despite brief declines, population in the Bozeman area increased during the last thirty years. From 1971 to 1975, the number of Bozeman residents increased four to five percent. Even more pronounced growth was witnessed in the area immediately adjacent to the City limits. Within a four-and-a-half mile radius from the City limits, population jumped eighteen percent during the period, with four thousand acres of farmland turned into housing tracts. Between 1980 and 1990, Gallatin County's population increased another 17.7 percent to 50,463. During the next five years, the County's population grew again to 59,406, with an average annual increase of 3.4 percent, the highest increase in Montana. Between 1980 and 1990, Bozeman's population grew a healthy 4.7 percent.

During the early 1980s, as Bozeman prepared for its centennial as an incorporated City, efforts were undertaken to survey the town's historic and architectural resources. Under the direction of paid and volunteer professionals, more than eighty local residents documented roughly 4,000 properties in Bozeman's historic core. Since that time, nine historic districts containing more than eight hundred buildings, as well as an additional forty individual landmarks, have been listed on the National Register of Historic Places.

Under these development pressures, farming in the Bozeman area has steadily declined. Local agribusiness has been increasingly supplanted by new economic stimuli – especially recreational tourism and real estate development. In 1950, 1,129 farms and ranches dotted the Gallatin Valley. By 1992 that number had dropped to 798. Between 1978 and 1992 alone, Gallatin County saw a 21.3 percent decrease in acreage devoted to farmland, according to the United States Census of Agriculture. In the five-year period between April of 1993 and April of 1998, an estimated 9,230 acres were developed in the Gallatin Valley and outside the City limits of Bozeman.

The start of the ongoing boom in Bozeman's growth and development roughly coincides with the making of Robert Redford's A River Runs through It in 1992. The movie's imagery and story line had a tremendous impact in popularizing western Montana as "The Last Best Place" and, likewise, affiliated the region with a simpler, recreation-oriented quality of life, which now epitomizes the local mindset. The movie also promoted the rapid expansion of the region's fly-fishing industry, which further advanced the local tourist economy.

With the advent of the Internet, fax machines, and other high-tech means of communication,



North 7th Avenue, circa 1970

Bozeman attracted increasing numbers of residents who live in the Gallatin Valley but work elsewhere. Studies during the 1990s confirmed that, despite unparalleled population and economic growth in the area, more than forty percent of local residents were employed elsewhere. Telecommuters, retirees, and the independently wealthy were settling in the Gallatin Valley, creating increased demands for local services and lower-paying service industry jobs. Thus, despite an apparently booming local economy, Gallatin County residents averaged $17,032 in annual wages during the 1990s and ranked thirty-third among Montana's fifty-six counties in per capita income. Due to the City's continued economic expansion, the annual average wage in the City had increased to $28,901 in 2005, and ranked eleventh among Montana's counties in annual average wage earned per capita. The larger concern now is the rapid increase in the cost of living – and specifically the cost of housing – in the City relevant to increases in wages and per capita income. Recent data from the US Census Bureau shows that median household income is approximately $46,000 and the median home price was $398,000 as of August 2017. According to the EPS report, a household needs to earn at least $68,400 annually to afford a home in Bozeman at the 30 percent of income affordability standard.

As the 2018 Economic and Planning Systems, Inc. (EPS) Report states, "Bozeman has a level of economic diversity and strength that exceeds many other small western cities, especially those that are not part of a larger metropolitan region."

A key component of Bozeman's healthy local economy has been the establishment of many high-tech businesses in the Gallatin Valley.



Main Street, 2019

Providing generally higher wages, these clean industries are widely regarded as examples of desirable economic development that is in many ways compatible with the much-cherished natural amenities that southwest Montana offers to its residents and visitors. The local economy has also been fueled in recent years by the construction industry and businesses that support that industry such as building supplies, banking and financial services, and landscaping material suppliers and installers.

EPS found that in-migration, or those moving from other areas made up a significant part of the City and County's population increase. Job growth has increased as well, but according to EPS, nearly half of all new jobs created from 2010 through 2016 paid less than $16.00 per hour ($34,000 per year). In an already competitive and high-cost housing market, low-paying job growth could likely increase the demand for more affordable and attainable housing development in the community.

The community continues to be interested in high quality development that protects and reflects Bozeman's unique character. Bozeman possesses many of the qualities people seek in the communities where they live and work. These include: clean air, good schools, access to recreational activities, low crime, and an attractive downtown. These amenities will continue to attract people to our community. The challenge is accommodating growth and change while protecting the very qualities that brought people to Bozeman.

EXISTING CONDITIONS

The following information can be found in the 2018 Demographic and Real Estate Market Assessment developed by Economic & Planning

Systems, Inc. (EPS). Population and demographic details can change quickly. The US Census Bureau annually conducts the American Community Survey (ACS) which provides updated information about community trends. Those seeking the most current information are to be directed to the ACS. The 2020 US Census will provide the most comprehensive information.

http://weblink.bozeman.net/WebLink8/0/doc/204534/Electronic.aspx (EPS Report)

POPULATION GROWTH

Bozeman is one of the fastest growing places in the nation. Between 2000 and 2016 the City added approximately 17,000 new residents, which translates to a growth rate of nearly 1,100 new residents per year or an annual growth rate of 3.0 percent. While regional population growth slowed during the Great Recession between 2008 and 2010, it has quickly surpassed pre-recession levels. Growth rates since 2014 have averaged approximately 4.7 per year or roughly 1,800 new residents per year, leading to an estimated 2016 population of 45,250.

The Gallatin Valley is evolving from a rural to a more urban region. The surrounding communities, such as Belgrade and unincorporated areas in Gallatin County, have also experienced significant growth. The Gallatin Valley (a roughly 10-mile east and south to 15-mile west distance of Bozeman, depending on topography) has a population of approximately 100,000 people. Every 10 years, the U.S. Census updates the urbanized and metropolitan area designations, defined as areas with more than 50,000 people and a population density in a core area of at least 1,000 people per square mile. Based on the region's growth, the Gallatin Valley may be designated as an urbanized area in 2020. This designation may make the region eligible to form a metropolitan planning organization (MPO) to carry out regional transportation planning and to receive federal transportation planning and construction funding.

HOUSEHOLD CHARACTERISTICS

Approximately 43 percent of the Gallatin County population resides in Bozeman. Bozeman is also the economic hub of the County and represents approximately 77 percent of total County employment. The median household income in Bozeman is nearly $46,000 per year, which is lower than the countywide average of approximately $55,500. Some of the differences are attributed to the large student population in Bozeman which brings down the median. When income figures are examined for renters and owners, Bozeman's household income is more similar to countywide figures. Owner households in Bozeman have a median household income of $68,000 compared to the County median of $71,000. Just outside of Bozeman in the unincorporated area, there are neighborhoods with large high-end homes and luxury ranches where household incomes are higher.

The presence of Montana State University directly impacts the general demographics of Bozeman. Incomes, the average age, and average household size in Bozeman are all lower than the County as a whole. In addition, the proportion of renter households is significantly higher than in the rest of the County.

AGE DISTRIBUTION

The population of Bozeman is younger when compared to the County and State. The median age in Bozeman is 27.2 compared to a median age of 33.2 in Gallatin County and 39.9 in Montana. The primary driver of this is the large number of students attending MSU. The proportion of the total population between the age of 20 and 24 in Bozeman is 21.1 percent compared to 7.2 percent in Montana. Bozeman also has a higher proportion of people between the ages of 25 and 39 compared to Montana, due to the large number of students that remain in the area following graduation and the appeal of the City to those in the early stages of their careers.

HOUSING

The U.S. Department of Housing and Urban Development (HUD) defines a household as being "cost burdened" when it is paying 30 percent or more of its income to rent or mortgage payments. In Bozeman, 22 percent of owner households are paying more than 35 percent of their income in rent and nine percent are paying between 30 and 35 percent. For renters, 44 percent are paying more than 35 percent of their income to rent. Another eight percent pay between 30 and 35 percent of their income in rent. Unfortunately, the Census does not allow us to differentiate between students and the resident employee population. Nevertheless, this is a large proportion of cost-burdened households.

As of August 2017, the median home price in Bozeman was $398,000, up from $245,000 as the recovery from the Great Recession began with annual appreciation rates over 10 percent per year over the past five years. To afford the median priced home in Bozeman at the 30 percent of income affordability standard, a household needs to earn at least $68,400 per year or $32.00 per hour for one earner. The median household income for owner households is currently about $68,000 indicating that overall home prices are still in line with incomes at this broad statistical level. These figures however do not account for the quality of the housing available at this price. In addition, it is the rapid increase in home values that people are experiencing especially since wages in incomes have not kept pace with housing cost increases .

Home prices in Belgrade, Livingston, and Three Forks have also increased at 10 to 12 percent per year over the same time period. Living in outlying areas may reduce amounts paid for housing, but increases transportation costs that may offset much of the perceived cost savings of locating outside of Bozeman.

EMPLOYMENT

Bozeman continues to be the economic hub of the region with approximately 77 percent of total Gallatin County employment. While Gallatin County employment has historically been concentrated in Bozeman, the growth in the technology and outdoor industries in the late 1990s accelerated this trend. This concentration of high-tech employment in Bozeman has also translated to a high number of startups in the City. Since 2005, Bozeman has captured roughly 80 percent of total employment growth in the County. This means that for every 10 jobs created in Gallatin County, eight were in Bozeman.

From 2005 through 2014, employment growth in Education and Health Services, and Leisure and Hospitality represented approximately 65 percent of the total job growth that occurred in Bozeman. Employment in Construction and Information both experienced contraction in total employment. While many service related jobs have surpassed their pre-recession levels there are others, such as Information that have experienced a slower recovery and have not fully recovered to their pre-recession levels.

RETAIL

Retail located in Bozeman serves the City population of 49 ,000 plus the Gallatin Valley with another 60,000 people, and outlying areas of Southwest Montana. At least a third of retail sales in Bozeman are estimated to come from outside this Gallatin Valley local trade area from Southwest Montana and from visitors/ tourists. The city's trade area has however shrunk since Walmart, Costco, and Target located in Helena several years ago.

With the contraction in the retail market due to the growth of e-commerce, there are fewer opportunities to expand retail. In addition, demographic changes are favoring less retail consumption and a shift to the food and beverage market. Most of the national ' big box' retailers that are still active and expanding are already present in Bozeman-such as Costco, Walmart, Lowes, Home Depot, Target, and Kohl's. Thus, there are few other store chains left that would expand

to Bozeman. Looking further out however, new stores and concepts do appear in the market from time to time, and Bozeman will be an attractive location for them. However, we do not expect the demand for these types of sites and properties to increase substantially over the next 10 years.

It is likely that as Belgrade and other surrounding communities grow, they will reach a large enough size and support their own retail base at least for community-serving retail (less so for regional retail). Given that there is no sales tax in Montana and therefore not a large fiscal benefit to siting new retailers - and that Bozeman already has the largest share of the regional retail market - retail development and recruitment does not need to be a priority for the City.

OFFICE SPACE

Gallatin County added over 1,600 jobs in professional services since 2005, with at least 80 percent of that occurring in Bozeman. Similarly, Bozeman accounted for 80 percent of the total office construction in Bozeman, Belgrade, and Four Corners combined. There is demand for office space, but it is difficult for the market to respond. The bulk of the market is small firms looking for about 1,000 to 5,000 square feet. Building large speculative office buildings is therefore risky due to the large number of tenants needed to fill a building. Building smaller buildings is costlier as some costs decrease per square foot with larger buildings.

Land and construction costs in Bozeman require high rents (over $20.00 per square foot) to make an office building financially feasible, which is high for small local businesses.

INDUSTRIAL SPACE

Over past 16 years, the Greater Bozeman market added 1.9 million square feet of industrial space. Over half of this was in Belgrade and nearly 40 percent was in the Four Corners area. Bozeman captured only 10 percent of the industrial market. The land consumptive nature of many industrial uses coupled with land values and development costs dictate that Bozeman is no longer competitive for many larger heavier industrial uses.

PHYSIOGRAPHY

GEOLOGY AND STRUCTURE

The Gallatin Valley is near the southern border of the northern Rocky Mountains physiographic province and is part of the Three Forks structural basin. This structural basin is one of the high intermountain basins that are characteristic of this province.

The Three Forks structural basin was probably formed in pre-Oligocene time. In the Oligocene and Miocene time, there was either a continuation of down-faulting along one or more of the basic boundaries or a down warping of the basin. During the formation of the basin, through-drainage was interrupted and many hundreds of feet of sediments, derived from the adjoining highlands and from falling volcanic ash, were deposited under lacustrine and terrestrial conditions. These Tertiary strata constitute most of the valley fill. Resumption of through-drainage in late Tertiary time resulted in extensive erosion of these materials. A mantle of alluvium was deposited in much of the basin during Quaternary time.

The Bridger Range, a high linear mountain range that bounds the Gallatin Valley on the east, extends from Bridger Creek to the head of Dry Creek. The mountains are composed of rocks ranging in age from Precambrian to Cretaceous. The Paleozoic and Mesozoic rocks strike north-northwest, parallel to the axis of the range. They dip steeply to the east and in places are overturned to the east. Several high- angle thrust faults transect the Bridger Range. Most of them have an eastward trend. Normal faulting along the west side of the Bridger Range is believed to have elevated the range with respect to the valley.

Available subsurface information indicates that a fault system exists along the front of both the Bridger and Gallatin Ranges. The mountains of the Gallatin Range are composed of Precambrian gneiss and some infaulted blocks of Paleozoic and Mesozoic rocks. The rocks are tightly folded and severely crumpled in places; yet, a general east-west trend is recognizable. The Gallatin River Canyon separates the Madison Range on the west from the Gallatin Range on the east. Structurally, however, the two ranges are segments of the same mountain unit. This unit bonds the Gallatin Valley on the south.

The Tertiary strata in the Gallatin Valley form a homocline that dips from one to five degrees in a general direction of the Bridger Range.

HYDROLOGY

Bozeman and Gallatin County are crossed with numerous creeks and irrigation canals. Most of the creeks flow from the southeast to northwest to the Gallatin River. Major creeks and rivers within the planning area include:

- East Gallatin River, in the northeastern portion of the City and planning area;
- Bozeman (Sourdough) Creek, flowing south to north through the City and joining with Rocky Creek to form the East Gallatin River. Bozeman Creek has been channelized and rerouted into a storm pipe as it flows through the center of town;
- Nash Spring Creek, Matthew Bird, and Figgins Creeks in the southern portion of the City of Bozeman;
- Hyalite Creek, southwest of the City;
- Rocky Creek, flowing northwest along the Interstate through the northeast sections of the City of Bozeman, and joining with Bozeman Creek to form the East Gallatin River;
- Bridger Creek, flowing west from Bridger Canyon, into the East Gallatin River;
- Baxter Creek and Aajker Creek, flowing south to north, through the western part of the City; and
- East and West Catron Creeks, flowing south to north, through the middle of the City.

Groundwater is another abundant resource in the Gallatin Valley. Generally, groundwater is near the surface, and flows from south to north to the

East Gallatin River. Locally high water tables of less than ten feet below the surface are prevalent throughout the valley. Groundwater aquifers are recharged through many sources. Recharge is received from infiltration from the many rivers, streams, and irrigation ditches. In addition, faults located along the mountain fronts aid in recharge by distributing the rain and snow runoff along their corridors.

The future quality and quantity of groundwater is uncertain. Changes in agricultural irrigation patterns in the Gallatin Valley, prolonged drought, and increases in residential and landscaping irrigation will all impact groundwater resources. The quality of groundwater resources may also be in jeopardy due to the proliferation of on-site septic systems.

WEATHER AND CLIMATE

The weather and climate of the Bozeman area is a significant factor to consider when planning for park and recreation facilities and programs. The weather impacts a wide-range of considerations such as:

- The scheduling of warm verses cold weather recreation programs
- Maintenance of park and recreational facilities, which varies seasonally
- Installation of vegetation, new equipment, parking lot improvements, etc.
- Provision of seasonal activities such as ice skating/hockey and Nordic skiing in the winter and outdoor swimming and tennis in the summer

Bozeman is located at an elevation of 4,793 feet above sea level. The average growing season is 107 days.

The MSU weather station recorded that 23.75 inches of precipitation fell during 2018 which was 5.08 inches above average and the eighth wettest year on record.

SAND AND GRAVEL RESOURCES

Bozeman rests on an alluvial plain. As a consequence, sand and gravel are widely present within the planning area. Many areas are not available for extraction due to other uses covering the surface or the presence of significant buried infrastructure. Relocating such uses or infrastructure would not be financially feasible.

The majority of commercial sand or gravel operations serving Bozeman are located outside the planning area. The Montana Department of Environmental Quality reviews and issues permits for commercial sand and gravel mining. Removal of gravel in order to create ponds or incidental to other activities does not require a DEQ permit or review.

TABLE A-1: AVERAGE TEMPERATURES IN FAHRENHEIT SCALE BY MONTH – 1892 THROUGH 2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Maximum Temperature	31.7	35.5	42.7	53.9	63.0	71.6	81.4	80.3	69.4	57.6	42.2	33.6	55.2
Minimum Temperature	12.0	15.3	21.4	30.4	38.4	45.2	51.1	49.5	41.2	32.9	22.2	14.5	31.2

Source: Montana State University Station, Montana Climate Summaries, Western Regional Climate Center.

TABLE A-2: AVERAGE PRECIPITATION IN INCHES BY MONTH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Precipitation 1892-2016	0.87	0.73	1.34	1.89	2.89	2.91	1.35	1.24	1.70	1.54	1.12	0.88	18.48
Total Snowfall 1948-2016	12.6	10.2	15.7	13.1	4.0	0.5	0.0	0.0	0.8	5.8	11.6	11.9	86.0
Snow Depth 1931-2016	5	5	3	1	0	0	0	0	0	0	2	3	2

Source: Montana State University Station, Montana Climate Summaries, Western Regional Climate Center.

Removal of sand and gravel can have substantial impacts to groundwater, air quality, adjacent owners, public streets, and other interests. Establishment of new or expanded extraction operations should be carefully reviewed and adequate mitigation provided for identified negative impacts.

SOCIOECONOMICS

Bozeman has five economic segments that make it unique and create both opportunities and challenges.

HIGHER EDUCATION

Montana State University is one of the primary economic anchors in the City of Bozeman. In 2016, the University had a student headcount of 16,440. Since 2009, the rate of growth in the number of students grew at just under four percent per year, which is significantly higher than the historical growth rate since 1990, which was closer to one percent per year. While this rate of growth may not be maintained over the long-term, the University will continue to be a major driver in the local economy. The University also employs roughly 3,100 employees and has $514 million in annual operations spending. The vast majority of operations spending is paid to employees and Montana vendors.

TOURISM AND RECREATION

Tourism and recreation continue to be a major driver in Bozeman and Montana. The Bozeman area benefits from its proximity to some of the State's most beautiful natural amenities, such as hiking trails and rivers and streams that are often used for fishing and rafting, as well as its proximity to Yellowstone National Park and two popular ski areas: Bridger Bowl and Big Sky. During the summer months, Yellowstone National Park is the top destination for nonresident visitors in Montana, many of whom pass through or spend time in Bozeman. Since 2000, park visitation has increased at approximately 2.6% per year or roughly by 89,000 visitors per year. Walking around Downtown Bozeman one often hears foreign, mostly European, languages being spoken indicating the global draw of the region.

HEALTHCARE

The Health Care sector is one of the largest employers in Bozeman and Gallatin County and is a significant contributor to the regional economy. Bozeman Health, which is composed of two hospitals (one in Bozeman), several treatment centers and urgent care centers, and retirement and assisted living facilities, is one of the primary drivers of the regional health care sector. In addition, there are many smaller local technology firms that are part of the healthcare field and contribute to economic growth in the region.

TECHNOLOGY

Bozeman continues to be a hub for technological companies that are both started in or moved into Montana. The city includes a diverse set of technology companies that range from software and hardware companies to optics and photonics firms. The presence of larger and more established firms, such as Oracle, and the influence of Montana State University creates a business environment that is strongly entrepreneurial.

REGIONAL TRADE CENTER

Bozeman is a regional trade and service center in Southwest Montana. Bozeman's retail, services, and healthcare businesses serve a trade area of approximately 150 miles or more. Serving this large of a trade area has increased the amount of retail that Bozeman can support. The influx of visitors has helped the community diversify the retail and food and beverage mix and strengthen downtown through the additional injection of spending in addition to the local and regional population.

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PROJECTIONS REPORT

This Appendix includes projected trends for the community for the life of the Growth Policy. The following information can be primarily found in the 2018 Demographic and Real Estate Market Assessment developed by Economic & Planning Systems, Inc. (EPS).

POPULATION PROJECTIONS

If current trends continue, even at a more moderate pace, Gallatin County will grow by nearly 55,000 people from 2017 through 2045 with about half of the growth likely to occur in the City of Bozeman.

Job growth will drive most of the population growth, and 42,000 new jobs are projected over this time period. Projected job growth is 1,500 jobs per year over the roughly 25-year projection tapering from 1,700 jobs per year in the near term down to 1,300 per year in the outer years of the projection. To support the projected job growth in all of Gallatin County, a population increase of nearly 55,000 is

required or almost 2,000 people per year at an annual rate of 1.52 percent. This is a lower rate than has been experienced in the recent past. From 2000 through 2016, Gallatin County added an average of 2,200 people each year. This period included a severe national recession which limited job creation. If job creation is higher than projected then population will likewise increase.

As a municipality, Bozeman has the tools to provide water and sewer service at the City scale. Smaller districts in the unincorporated County do not have the same financial resources to provide these services which will limit the amount of growth that occurs in unincorporated areas.

HOUSING AND COMMERCIAL BUILDING SPACE PROJECTIONS

Bozeman has consistently accounted for about half of the population and housing growth in Gallatin County, and the projections in this report assume that this trend continues. Bozeman is also expected to continue to account for a large share of the retail, office, major employer, and hospitality markets going forward.

With Bozeman capturing approximately half of the countywide housing demand, this projection estimates demand for 12,700 new homes in Bozeman over the 2017 through 2045 time period. On an annual basis, construction is projected at approximately 450 homes per year on average compared to 600 homes per year over the past 10 years. Actual residential construction in the period since the projection exceeded even the 600 home per year rate. An affordable housing needs assessment prepared in 2018 found a deficiency of 728 dwellings to meet existing demand and support a healthy housing market. The 2010 US Census found that one-third of housing in Bozeman was occupied by an individual resident. Most homes are capable of servicing more than an individual person. Personal choices in housing occupancy affect the type and number of homes necessary in the future.

Nonresidential construction demand in Bozeman is projected to be 6.3 million square feet from 2017 through 2045. For office development, Bozeman is projected to maintain its current market share of 80 percent of the Gallatin County office market totaling 1.7 million square feet from during this time. The estimated share of the industrial and warehousing market is lower, at 10 percent based on the higher land costs in the city and the growth in industrial space in Four Corners, Belgrade, and Manhattan. Industrial demand in Bozeman is estimated at nearly 500,000 square feet for the planning projection period. In the retail, restaurant, and hotel markets, Bozeman is expected to continue to be a major regional trade and services hub for Southwest Montana, and capture 70 percent of the retail market countywide with 1.4 million square feet of retail demand projected. Likewise, for government, education, and health care, Bozeman is projected to capture 75 percent of the demand in these sectors.

LAND DEMAND PROJECTIONS

Projected land demand for the 2017 to 2045 time period ranges from 3,820 to 5,716 acres, with housing demand being the primary driver of land demand. Residential development formats will have the most influence on the form of the city and the amount of land needed to meet market demand.

Not including the existing deficiency in homes, the baseline projection of land demand projects residential land demand at 3,100 acres on current estimated development densities (units per acre) ranging from 3.0 units per acre (gross density including right of way and public spaces) for single household detached units to 20 units per acre on average for multifamily development. Three units per acre for single household detached homes is an average net lot size of 7,100 square feet (0.16 ac.). A more compact development scenario was also prepared with higher residential densities; single household detached homes are assumed to be 5.0 units per acre gross density which translates to an average lot size of 4,300 square feet. The compact scenario projects residential land demand at 1,800 acres. In all cases, a 50 percent planning adjustment is added to allow for healthy market competition and land use planning flexibility. Residential land demand comprises 70 to 80 percent of total land demand in the higher density and lower density scenarios, respectively.

Over the projection period, non-residential land demand is estimated at approximately 500 acres, or 18 acres per year. Commercial development densities were held constant as they will be dependent on market preferences for surface parking-which is costly to develop. On average, commercial rents and values do not make structured parking financially feasible in Bozeman. Some high value areas such as Downtown and around major employers could support structured parking that will allow for higher commercial development densities. Additional access using good bicycle and pedestrian facilities can also reduce parking demand. The 0.30 FAR assumption for office space is still higher than typical suburban densities and reflects the influence of high land costs in Bozeman.

After adjusting for planning flexibility and market competition, the baseline scenario totals to 3,900 acres of land and the higher density scenario totals to 2,600 acres. In both cases, residential land demand comprises 70 to 80 percent of the total land demand, highlighting the importance of housing on the physical form of a community.

Very roughly, these acreages translate to about 4 to 6 sections of land area (4 to 6 square miles) assuming that all development was on undeveloped land. There are however opportunities in Bozeman to fill in existing undeveloped enclaves (land surrounded or nearly surrounded by incorporated Bozeman that has not been annexed), or to redevelop areas not constructed to their full potential such as along N. 7th Avenue. Infill and redevelopment will reduce the amount of new land that is consumed by growth. In particular, The Midtown (North 7th corridor) has several large properties that can support a large amount of additional housing and employment. Infill and redevelopment in that type of setting has the most potential to affect net land demand. In other cases where, for example, one housing unit is replaced by only one or two units, there is much less of an impact on net land consumption.

The amount of land available for infill development can be estimated, but it is uncertain as to how much land will actually be redeveloped as it varies widely according to the economic conditions (e.g. existing profitable businesses) of each individual property and the desires of individual property owners. The 2018 annual land use inventory prepared by the City found that approximately 6% of the City is vacant property. Vacant property is land ready for development but currently has no structures. Approximately 11.7% of the City area is undeveloped meaning it has been annexed but is not subdivided and is not ready for construction of structures. Infill tends to be more intensive

in use than development on the edge of the City. However, there is much less area available for it. It is estimated that 10-15% of new construction in the next 20 years may be located within infill areas.

LOCAL SERVICES PROJECTIONS

The demand for local services is analyzed in the various facility plans such as fire, transportation, water, and sewer. The future service demand and other information in those plans, as may be updated from time to time, is available and meets any state law requirements for such information.

NATURAL RESOURCES PROJECTIONS

The natural setting of Bozeman is one of its greatest assets. Many people enjoy the outdoors as reflected in Theme 3 of the Plan. As an example, it is estimated that up to 50,000 people per month visit Hyalite Canyon south of town during the summer. In town trails see heavy use year round as well.

Use of natural resources is expected to increase as the population increases. Demand for water is described in the various water plans prepared by the City. The City strives to minimize demand for natural resources by efficient operations of its utilities and other functions. Per person water use in Bozeman has decreased over time due to higher efficiency standards and active maintenance.

The City is crossed by many watercourses and wetlands are also present. The City has adopted regulations to limit impact on both. No changes in numbers of water courses are expected. Wetlands may be modified as allowed by federal wetland standards. The City strives to have any wetland mitigation resulting from wetland modification located within the Gallatin Valley.

There are no known forestry, commercial mining, or mineral resources known within the planning area. Therefore, there are no expected changes to these natural resources.

E



76-1-601(4) (C) INFRASTRUCTURE PLAN

Section 76-1-601(4)(c), MC authorizes a growth policy to include an infrastructure plan to consider how and where infrastructure may be provided, coordinate with adjacent communities, and consider impacts and mitigation of impacts of infrastructure extension. The following table outlines the required information and where the required information in provided.

(4) A growth policy may :	Where Data is Provided
(c) establish an infrastructure plan that, at a minimum, includes:	
(i) projections, in maps and text, of the jurisdiction's growth in population and number of residential, commercial, and industrial units over the next 20 years;	Appendix D – Projections report
(ii) for a city, a determination regarding if and how much of the city's growth is likely to take place outside of the city's existing jurisdictional area over the next 20 years and a plan of how the city will coordinate infrastructure planning with the county or counties where growth is likely to take place;	Chapter 3, Appendices B and D
(iii) for a county, a plan of how the county will coordinate infrastructure planning with each of the cities that project growth outside of city boundaries and into the county's jurisdictional area over the next 20 years;	Not applicable to the City
(iv) for cities, a land use map showing where projected growth will be guided and at what densities within city boundaries;	Ch 3 – Future Land Use
(v) for cities and counties, a land use map that designates infrastructure planning areas adjacent to cities showing where projected growth will be guided and at what densities;	Ch 3 – Future Land Use, Appendix B -
(vi) using maps and text, a description of existing and future public facilities necessary to efficiently serve projected development and densities within infrastructure planning areas, including, whenever feasible, extending interconnected municipal street networks, sidewalks, trail systems, public transit facilities, and other municipal public facilities throughout the infrastructure planning area. For the purposes of this subsection (4)(c)(vi), public facilities include but are not limited to drinking water treatment and distribution facilities, sewer systems, wastewater treatment facilities, solid waste disposal facilities, parks and open space, schools, public access areas, roads, highways, bridges, and facilities for fire protection, law enforcement, and emergency services;	Appendices B and C addresses the majority of these subjects. The City does not control placement of public schools. The City does work with School District 7 on annexation and site design of properties to provide school services. The City's facility plans address density of development in determining future pipe and road sizing. The municipal standards are expected to be adequate to service any future school building. School District 7's service area is much larger than the City of Bozeman.

(vii) a description of proposed land use management techniques and incentives that will be adopted to promote development within cities and in an infrastructure planning area, including land use management techniques and incentives that address issues of housing affordability;	Appendix B – infrastructure report, cross references to main document. The City requires annexation prior to extension of services. This ensures that new development is under a cohesive and comprehensive development review program. These include both subdivision and zoning based development review addressing all identified purposes in 76-1-102, 76-2-301 and 304, and 76-3-101, MCA. The City's development standards support affordable housing and urban scale development by facilitating intensity of land use and efficiency of infrastructure. The City provides financial support in various ways for affordable housing.
(viii) a description of how and where projected development inside municipal boundaries for cities and inside designated joint infrastructure planning areas for cities and counties could adversely impact:	
(A) threatened or endangered wildlife and critical wildlife habitat and corridors;	There are no known threatened or endangered wildlife or habitat that are uniquely located within the planning area. Various species migrate through or seasonally inhabit the planning area. Application materials for subdivision or zoning development requires identification of wildlife habitat in the area to be developed. Effects and necessary mitigation can then be identified and required during the review. The City has adopted standards to protect watercourse corridors and wetlands.
(B) water available to agricultural water users and facilities;	Transitions from agricultural to other uses may affect agricultural water user facilities. The City has adopted standards applicable both with subdivision and zoning authorized changes in land use to protect water user facilities. The standards require coordination and contact with water facility owners and protection of facilities. Water sources primarily arise outside of the planning area.
(C) the ability of public facilities, including schools, to safely and efficiently service current residents and future growth;	The City's facility plans, summarized in Appendix B, demonstrate the City's plans and ability to serve current users and future growth. School District 7 has their own facility plans and they indicate they are capable of providing services as growth continues.
(D) a local government's ability to provide adequate local services, including but not limited to emergency, fire, and police protection;	The City's facility plans, summarized in Appendix B, demonstrate the City's plans and ability to serve current users and future growth. City voters approved a bond in 2019 to build a new public safety center which will provide municipal courts, police, and fire facilities.

(E) the safety of people and property due to threats to public health and safety, including but not limited to wildfire, flooding, erosion, water pollution, hazardous wildlife interactions, and traffic hazards;	The City's adopted development standards require development to stay out of designated floodplains, control stormwater runoff and erosion, and provide for a multifunction transportation system that protects safety of the traveler. The City's development standards require multiple access points, adequate water flow for fire fighting, and separation of buildings to lessen potential impacts from fire and wildfire. The City applies the state adopted building codes which address fire resistance and suppression. The City's water and sewer services are subject to intensive monitoring to ensure that citizens are not exposed to water pollution.
(F) natural resources, including but not limited to forest lands, mineral resources, sand and gravel resources, streams, rivers, lakes, wetlands, and ground water; and	The City has setback and other standards adopted to protect streams, wetlands, and rivers from pollution, encroachment, and streambank disruption. There are no commercially viable forest lands within the planning area. There are no known mineral resources other than possible gravel within the planning area. There are no functioning gravel mining operations that would be negatively affected by the planned growth depicted in chapter 3.
G) agricultural lands and agricultural production; and	Bozeman is located in an area with good soils for agriculture. Agricultural industries are disrupted when land coverts to either suburban or urban purposes. Substantial portions of the planning area outside of the City limits have been converted from functional agricultural operations to hobby or non-agriculture uses. Loss of small scale farms is a national trend.
(ix) a description of measures, including land use management techniques and incentives, that will be adopted to avoid, significantly reduce, or mitigate the adverse impacts identified under subsection (4)(c)(viii).	The City has robust standards for land development. Intensive development is allowed with provision for adequate services to new users. The municipal codes, design standards, and topic plans as described in Appendix B, ensure that mitigation of negative impacts is provided or impacts are avoided all together. Development at true urban intensities is less land consumptive than suburban or rural residential uses and therefore displaces less agriculture. Detailed standards are in Chapters 2, 16, 18, 26, 32, 34, 38, 40, and 42.

F



GLOSSARY

These terms are defined to help the reader understand what the terms mean when used in this plan. If terms are not defined here they may be defined in an adopted topic plan. If not, they have standard dictionary meanings.

Bozeman Planning Area. See Figure 3-1.

Compatible Development. The use of land and the construction and use of structures which is in harmony with adjoining development, existing neighborhoods, and the goals and objectives of this plan. Elements of compatible development include, but are not limited to: variety of architectural design; rhythm; scale; intensity; materials; building siting; lot and building size; hours of operation; and integration with existing community systems including water and sewer services, natural elements in the area, motorized and non-motorized transportation, and open spaces and parks. Compatible development does not require uniformity or monotony of architectural or site design.

Commercial Center. A mix of commercial land uses typically serving more than one residential neighborhood, usually a subarea of the city with services and retail goods. This term also includes small commercial areas providing limited retail goods and services, such as grocery stores and dry cleaners for nearby residential customers.

Compatible Land Use. A land use which may by virtue of the characteristics of its discernible outward effects, exist in harmony with an adjoining land use of differing character. Effects often measured to determine compatibility include, but are not limited to, noise, odor, light, and the presence of physical hazards such as combustible or explosive materials.

Complete Street. Complete streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are traveling as drivers, pedestrians, bicyclists, or public transportation riders.

Connectivity. The degree to which roads and paths are connected and allow for direct travel between destinations.

Density. For residential areas, the number of homes per net acre of land. For non-residential areas, by floor area ratio: the number of square feet of building area per net acre of land.

Downtown. The area subject to the Downtown Bozeman Improvement Plan bound by the B-3 zoning district which generally extends to Broadway Avenue, Lamme Street, 5th Avenue, and Olive Street. Downtown is mixed-use district but primarily commercial in function and character, Downtown, and particularly Main Street, is distinguished by its historic architecture but also includes notable recent development especially in the areas outside of the historic core.

Goal. A statement of general purpose or intent relating to a defined topic. A goal generally seeks an improvement in the status of a subject under the heading of a theme.

Growth. An increase in Bozeman's population and/or area. The increase may be the result of natural population growth through births exceeding deaths, in-migration, or annexation.

Growth rate. A measure over time of the increase or decrease in City population compared to the City's population at a specified date. Growth rates are usually expressed as a percentage and applied to time increments of one, five, or ten years.

Health. A state of physical, mental, and social well-being, and not merely the absence of disease or infirmity. Health is a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities.

Human Scale. The proportional relationship of a particular building, structure, or streetscape element to the human form and function. Human scale does not prohibit multistory structures.

Infill. The development or redevelopment of vacant, abandoned, or under-utilized properties within or wholly surrounded by the City, and where water, sewer, streets, and fire protection have already been developed and are provided. Infill is located within land subdivided for at least 35 years.

Missing Middle Housing. Missing middle housing is housing constructed in buildings which are of a size and design compatible in scale and form with detached individual homes. Example housing types include duplex, triplex, live-work, cottage housing, group living, row houses, townhouses, horizontally layered apartments, flats, and other similar configurations.



IMAGE COPYRIGHT OPTICOS DESIGN, INC. MISSING MIDDLE HOUSING IS A CONCEPT CREATED BY OPTICOS DESIGN. MISSING MIDDLE HOUSING IS A RANGE OF HOUSE-SCALE BUILDINGS WITH MULTIPLE UNITS—COMPATIBLE IN SCALE AND FORM WITH DETACHED SINGLE-HOUSEHOLD HOMES—LOCATED IN A WALKABLE NEIGHBORHOOD. FOR MORE INFORMATION ON THIS TOPIC VISIT WWW.MISSINGMIDDLEHOUSING.COM OR WWW.OPTICOSDESIGN.COM. A COMPREHENSIVE BOOK ON THIS TOPIC TITLED, "MISSING MIDDLE HOUSING: THINKING BIG AND BUILDING SMALL TO RESPOND TO TODAY'S HOUSING CRISIS," IS AVAILABLE AT EITHER OF THESE SITES AS WELL.

Mitigate/Mitigation. Measures required or taken to avoid, minimize, compensate for, or offset definable negative impacts of development on the environment, public facilities and services, or other issues of community concern defined by ordinance.

Neighborhood. A walkable area of Bozeman with a distinct character that may have some boundaries defined by physical barriers, such as major roads or railroads or by natural features, such as watercourses or topography. A neighborhood includes both geographic (place-oriented) and social (people-oriented) components and is often characterized by residents sharing common amenities such as an elementary school, park, shops, community center or other similar elements. As a distinct and identified area, often with its own name, neighborhoods are recognized as fostering community spirit and a sense of place, factors recognized as important in community planning.

Net acres. The area of land measured in acres, minus any dedications to the public, such as public or private streets and parks.

Objective. A more specific statement than a goal which seeks to advance the intent of a goal. Objectives bridge the distance between goals which are general in nature and policies which call for a specified and distinct action to be accomplished. An example is: "Support and encourage creative site development design."

Open Space. Land and water areas retained for use as active or passive recreation areas, agriculture, or resource protection in an essentially undeveloped state.

Pedestrian Oriented. Development designed with an emphasis on pedestrian safety, convenience and accessibility that is equal to or greater than the emphasis given to automotive access and convenience.

Policy. A definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions.

Sprawl. A pattern of development generally characterized by a combination of:

- Low population density,
- Forced reliance on individual automotive transportation,
- Distribution of land uses which require driving in order to satisfy basic needs, and,
- Development which leaves large undeveloped areas surrounded by development.

Special Topic Plan. A formal plan prepared for a specific physical resource or function or area of the City which examines the current state, future needs, and recommended means of meeting identified future needs. Examples of topic plans are the Wastewater Facility Plan, Affordable Housing Action Plan, various Neighborhood Plans, and the Transportation Plan.

Walkable. A walkable area has:

- A center, whether it's a main street or a public space.
- People: Enough people for businesses to flourish and for public transit to run frequently.
- Parks and public space: Functional and pleasant public places to gather and play.
- Pedestrian design: Buildings are close to the street, parking lots are relegated to the back.
- Schools and workplaces: Close enough that walking to and from home to these destinations is realistic.
- Complete streets: Streets designed for bicyclists, pedestrians, and transit.

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BOZEMAN MT
COMMUNITY PLAN
Shaping Our Future Together

After Recording Return to:
Peter G. Scott
c/o Peter G. Scott, Law Offices, PLLC
682 South Ferguson Avenue, Suite 4
Bozeman, MT 59718
(406) 585-3295

2643543
Page: 1 of 2 04/30/2019 03:43:49 PM Fee: $14.00
Eric Semerad - Gallatin County, MT WR

QUITCLAIM DEED
FOR TRANSFER OF AN INTEREST IN WATER RIGHTS

BOZEMAN CREEK RESERVOIR COMPANY of Post Office Box 1230, Bozeman, Montana 59715 ("Grantor"), for valuable consideration, does hereby bargain, sell, quitclaim, and convey unto **CITY OF BOZEMAN**, of 121 North Rouse Avenue, Bozeman, Montana 59715 ("Grantee"), Grantor's right, title and interest in the following described water right claims, with points of diversion and places of use located in Gallatin County, Montana:

> All of Grantor's interest in the following water right claims, as indexed by the Montana Department of Natural Resources and Conservation:
>
> All of Grantor's interest in water right claims **41H 30459-00 and 41H 30460-00**

TO HAVE AND TO HOLD the water rights unto Grantee and Grantee's successors and assigns forever, **SUBJECT TO** terms of an unrecorded common interest agreement between the parties dated 30th day of April, 2019, and the process of general adjudication of all Montana water rights by the Montana Water Court.

EXHIBIT A

DATED this 30th day of April, 2019.

GRANTOR:

BOZEMAN CREEK RESERVOIR COMPANY

By: _____
Steve Liebmann, President

STATE OF MONTANA)
) ss.
COUNTY OF GALLATIN)

This instrument was signed and sworn to before me on the 30th day of April, 2019, by Steve Liebmann, as President of Bozeman Creek Reservoir Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

(SEAL)

DIANA TYRRELL NOTARIAL SEAL STATE OF MONTANA
DIANA TYRRELL
Notary Public
for the State of Montana
Residing at:
Bozeman, Montana
My Commission Expires:
June 13, 2020

_____
Notary Public - State of Montana
Printed Name Diana Tyrrell
Residing at: Bozeman, Montana
My Commission Expires: June 13, 2020

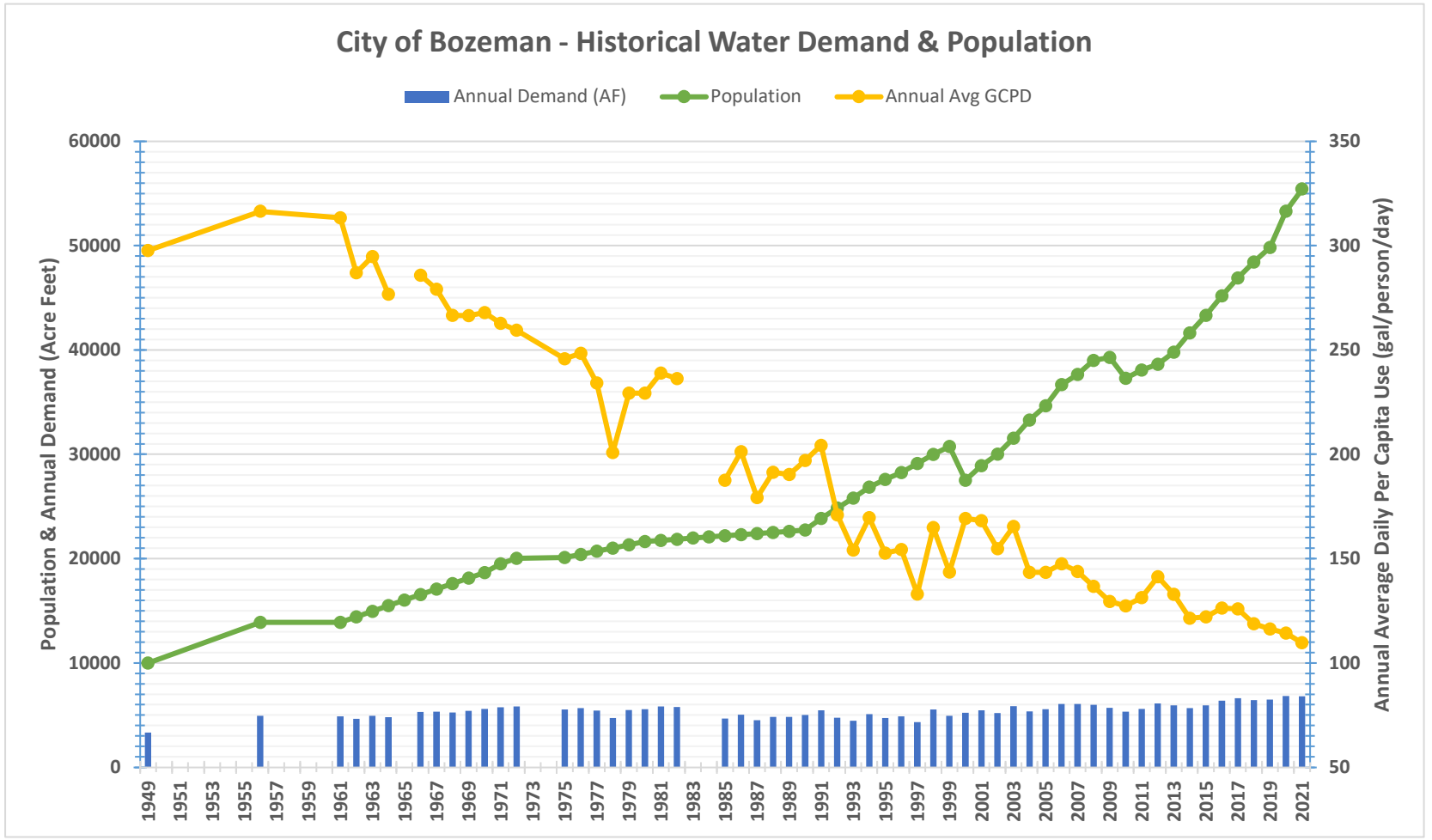
Year	Population	Population Source	Annual Demand (AF)	Annual Avg GCPD	Demand Source	Notes
1880	894	u.s. census bureau - decennial census				
1890	2143	u.s. census bureau - decennial census				
1900	3419	u.s. census bureau - decennial census				
1910	5107	u.s. census bureau - decennial census				
1920	6183	u.s. census bureau - decennial census				
1930	6855	u.s. census bureau - decennial census				
1940	8665	u.s. census bureau - decennial census				
1949	10000	1949 Morrison Maierle Water Supply Study	3334.668299	297.7	calculated value using info from 1949 MM Study	
1950	11325	u.s. census bureau - decennial census				
1956	13900	1956 Morrison Maierle Water Supply Study	4927.904932	316.5	calculated value using info from 1956 MM Study	
1960	13361	u.s. census bureau - decennial census				
1961	13892	1973 Area Wide Water Plan	4876.461941	313.376379	1973 Area Wide Water Plan	
1962	14423	1973 Area Wide Water Plan	4637.088731	287.0225354	1973 Area Wide Water Plan	
1963	14954	1973 Area Wide Water Plan	4937.839687	294.7852868	1973 Area Wide Water Plan	
1964	15485	1973 Area Wide Water Plan	4799.739758	276.7149827	1973 Area Wide Water Plan	

1965	16016	1973 Area Wide Water Plan			1973 Area Wide Water Plan	
1966	16547	1973 Area Wide Water Plan	5296.899503	285.7779128	1973 Area Wide Water Plan	
1967	17078	1973 Area Wide Water Plan	5339.863926	279.1382649	1973 Area Wide Water Plan	
1968	17609	1973 Area Wide Water Plan	5257.003968	266.5200003	1973 Area Wide Water Plan	
1969	18140	1973 Area Wide Water Plan	5413.517221	266.4209874	1973 Area Wide Water Plan	
1970	18670	u.s. census bureau - decennial census	5603.788234	267.9560646	1973 Area Wide Water Plan	
1971	19508	1973 Area Wide Water Plan	5741.888164	262.7653987	1973 Area Wide Water Plan	
1972	20024	1973 Area Wide Water Plan	5818.610346	259.4147297	1973 Area Wide Water Plan	
1975	20103	exponential growth interpolated b/w 1970 & 1980 decennial census values	5533	245.7117874	1979 Water Report for Valley Unit Subdivision	
1976	20402	exponential growth interpolated b/w 1970 & 1980 decennial census values	5677.44153	248.4311906	1976 MSU Student Report on Bozeman Water Supply	
1977	20706	exponential growth interpolated b/w 1970 & 1980 decennial census values	5430.242657	234.1257712	WTP Records	
1978	21014	exponential growth interpolated b/w 1970 & 1980 decennial census values	4726.393352	200.7924267	WTP Records	

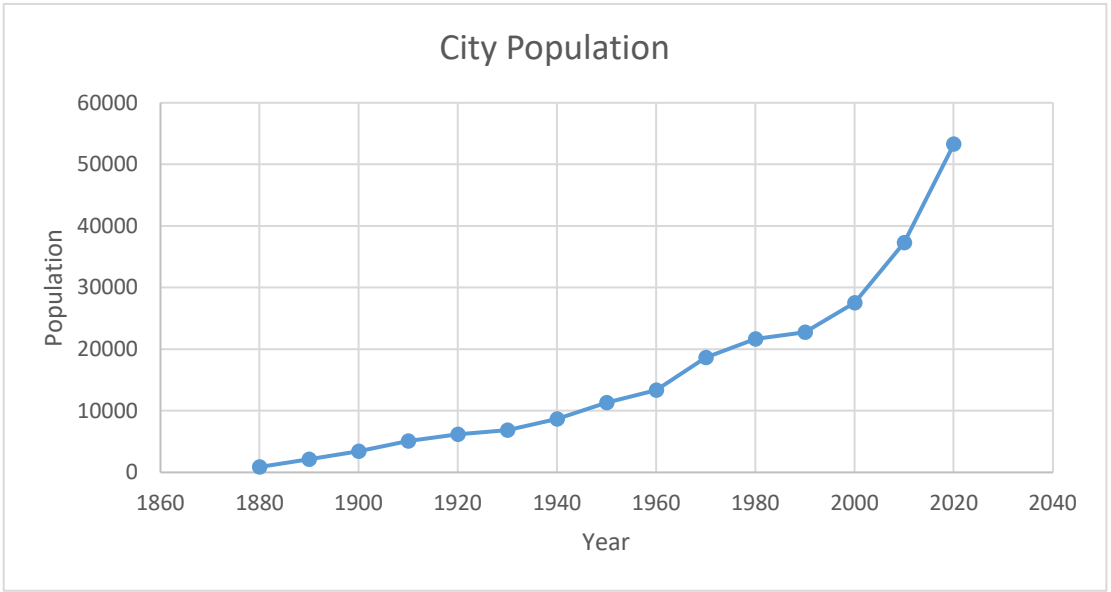
1979	21327	exponential growth interpolated b/w 1970 & 1980 decennial census values	5478.761765	229.3394893	WTP Records	
1980	21645	u.s. census bureau - decennial census	5560.424857	229.3382951	WTP Records	
1981	21751	exponential growth interpolated b/w 1980 & 1990 decennial census values	5821.556478	238.9384711	WTP Records	
1982	21858	exponential growth interpolated b/w 1980 & 1990 decennial census values	5784.269497	236.245906	WTP Records	
1983	21966	exponential growth interpolated b/w 1980 & 1990 decennial census values			WTP Records	incomplete record kept during WTP construction
1984	22074	exponential growth interpolated b/w 1980 & 1990 decennial census values			WTP Records	incomplete record kept during WTP construction
1985	22182	exponential growth interpolated b/w 1980 & 1990 decennial census values	4659.635846	187.5329003	WTP Records	
1986	22291	exponential growth interpolated b/w 1980 & 1990 decennial census values	5025.855376	201.2827832	WTP Records	
1987	22401	exponential growth interpolated b/w 1980 & 1990 decennial census values	4497.733627	179.2472572	WTP Records	

1988	22511	exponential growth interpolated b/w 1980 & 1990 decennial census values	4825.745509	191.3796786	WTP Records	
1989	22622	exponential growth interpolated b/w 1980 & 1990 decennial census values	4822.259253	190.3030509	WTP Records	
1990	22733	u.s. census bureau - decennial census	5017.004705	197.0216492	WTP Records	
1991	23844	postcensal estimate	5454.993233	204.2402327	WTP Records	
1992	24856	postcensal estimate	4760.215559	170.970654	WTP Records	
1993	25789	postcensal estimate	4450.532163	154.0648749	WTP Records	
1994	26841	postcensal estimate	5102.067816	169.6968296	WTP Records	
1995	27591	postcensal estimate	4719.218051	152.6963995	WTP Records	
1996	28254	postcensal estimate	4884.146948	154.3245342	WTP Records	
1997	29125	postcensal estimate	4338.013396	132.9692283	WTP Records	
1998	29998	postcensal estimate	5542.701818	164.951173	WTP Records	
1999	30745	postcensal estimate	4944.694873	143.5790891	WTP Records	
2000	27509	u.s. census bureau - decennial census	5214.821173	169.2352435	WTP Records	
2001	28917	intercensal estimate	5447.115946	168.166536	WTP Records	
2002	30018	intercensal estimate	5205.239014	154.8050474	WTP Spreadsheet	
2003	31545	intercensal estimate	5845.174073	165.4219406	WTP Spreadsheet	
2004	33269	intercensal estimate	5345.155798	143.4322513	WTP Spreadsheet	
2005	34648	intercensal estimate	5566.274294	143.4209605	WTP Spreadsheet	
2006	36668	intercensal estimate	6059.972899	147.5399571	WTP Spreadsheet	
2007	37643	intercensal estimate	6066.561192	143.8747389	WTP Spreadsheet	
2008	39004	intercensal estimate	5973.980126	136.735354	WTP Spreadsheet	
2009	39282	intercensal estimate	5695.874295	129.4473006	WTP Spreadsheet	
2010	37280	u.s. census bureau - decennial census	5316.264685	127.3083488	WTP Spreadsheet	
2011	38077	intercensal estimate	5598.211026	131.2540567	WTP Spreadsheet	
2012	38629	intercensal estimate	6115.658328	141.3370239	WTP Spreadsheet	

2013	39773	intercensal estimate	5921.710813	132.9183796	WTP Spreadsheet	
2014	41631	intercensal estimate	5664.430479	121.4690407	WTP Spreadsheet	
2015	43327	intercensal estimate	5925.53038	122.0941354	WTP Spreadsheet	
2016	45187	intercensal estimate	6394.017511	126.3241853	WTP Spreadsheet	
2017	46907	intercensal estimate	6615.747688	125.9121006	WTP Spreadsheet	
2018	48437	intercensal estimate	6443.546283	118.7610173	WTP Spreadsheet	
2019	49831	intercensal estimate	6491.687919	116.3012077	WTP Spreadsheet	
2020	53293	u.s. census bureau - decennial census	6823.357915	114.3020916	WTP Spreadsheet	
2021	55425	assumed 4% increase from 2020 decennial census	6809.086365	109.6759812	WTP Spreadsheet	


City of Bozeman - Historical Water Demand & Population
Annual Demand (AF)
Population
Annual Avg GCPD
Population & Annual Demand (Acre Feet)
Annual Average Daily Per Capita Use (gal/person/day)
60000
50000
40000
30000
20000
10000
0
350
300
250
200
150
100
50
1949
1951
1953
1955
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021

Year	City Population	City Geographic Area (acres)
1880	894	
1890	2,143	
1900	3,419	
1910	5,107	
1920	6,183	
1930	6,855	
1940	8,665	
1950	11,325	
1960	13,361	
1970	18,670	
1980	21,645	
1990	22,733	
2000	27,509	
2010	37,280	
2020	53,293	



Date	Bozeman Creek MI	MI >263	test	MI>263
1/1/1985	210	-53	0	0
1/2/1985	210	-53	0	0
1/3/1985	210	-53	0	0
1/4/1985	210	-53	0	0
1/5/1985	210	-53	0	0
1/6/1985	210	-53	0	0
1/7/1985	210	-53	0	0
1/8/1985	210	-53	0	0
1/9/1985	210	-53	0	0
1/10/1985	210	-53	0	0
1/11/1985	210	-53	0	0
1/12/1985	210	-53	0	0
1/13/1985	210	-53	0	0
1/14/1985	210	-53	0	0
1/15/1985	210	-53	0	0
1/16/1985	210	-53	0	0
1/17/1985	210	-53	0	0
1/18/1985	210	-53	0	0
1/19/1985	210	-53	0	0
1/20/1985	210	-53	0	0
1/21/1985	210	-53	0	0
1/22/1985	210	-53	0	0
1/23/1985	210	-53	0	0
1/24/1985	210	-53	0	0
1/25/1985	210	-53	0	0
1/26/1985	210	-53	0	0
1/27/1985	210	-53	0	0
1/28/1985	210	-53	0	0
1/29/1985	210	-53	0	0
1/30/1985	210	-53	0	0
1/31/1985	210	-53	0	0
2/1/1985	210	-53	0	0
2/2/1985		-263	0	0
2/3/1985	210	-53	0	0
2/4/1985	210	-53	0	0
2/5/1985	210	-53	0	0
2/6/1985	210	-53	0	0
2/7/1985	210	-53	0	0
2/8/1985	210	-53	0	0
2/9/1985	210	-53	0	0
2/10/1985	210	-53	0	0
2/11/1985	210	-53	0	0
2/12/1985	210	-53	0	0
2/13/1985	210	-53	0	0
2/14/1985	210	-53	0	0
2/15/1985	210	-53	0	0

2/16/1985	210	-53	0	0
2/17/1985	210	-53	0	0
2/18/1985	210	-53	0	0
2/19/1985	210	-53	0	0
2/20/1985	210	-53	0	0
2/21/1985	210	-53	0	0
2/22/1985	210	-53	0	0
2/23/1985	210	-53	0	0
2/24/1985	210	-53	0	0
2/25/1985	210	-53	0	0
2/26/1985	210	-53	0	0
2/27/1985		-263	0	0
2/28/1985	210	-53	0	0
3/1/1985	210	-53	0	0
3/2/1985	210	-53	0	0
3/3/1985	210	-53	0	0
3/4/1985	210	-53	0	0
3/5/1985	210	-53	0	0
3/6/1985	210	-53	0	0
3/7/1985	210	-53	0	0
3/8/1985	210	-53	0	0
3/9/1985	210	-53	0	0
3/10/1985	210	-53	0	0
3/11/1985	210	-53	0	0
3/12/1985	210	-53	0	0
3/13/1985	210	-53	0	0
3/14/1985	210	-53	0	0
3/15/1985	210	-53	0	0
3/16/1985	210	-53	0	0
3/17/1985	210	-53	0	0
3/18/1985	210	-53	0	0
3/19/1985	210	-53	0	0
3/20/1985		-263	0	0
3/21/1985	210	-53	0	0
3/22/1985	210	-53	0	0
3/23/1985	210	-53	0	0
3/24/1985	210	-53	0	0
3/25/1985	210	-53	0	0
3/26/1985	210	-53	0	0
3/27/1985	210	-53	0	0
3/28/1985	210	-53	0	0
3/29/1985	210	-53	0	0
3/30/1985	210	-53	0	0
3/31/1985	210	-53	0	0
4/1/1985	210	-53	0	0
4/2/1985	210	-53	0	0
4/3/1985	210	-53	0	0

4/4/1985	210	-53	0	0
4/5/1985	210	-53	0	0
4/6/1985	210	-53	0	0
4/7/1985	210	-53	0	0
4/8/1985	210	-53	0	0
4/9/1985	220	-43	0	0
4/10/1985	210	-53	0	0
4/11/1985	210	-53	0	0
4/12/1985	210	-53	0	0
4/13/1985	210	-53	0	0
4/14/1985		-263	0	0
4/15/1985	210	-53	0	0
4/16/1985	210	-53	0	0
4/17/1985	210	-53	0	0
4/18/1985	210	-53	0	0
4/19/1985	210	-53	0	0
4/20/1985	210	-53	0	0
4/21/1985	210	-53	0	0
4/22/1985	210	-53	0	0
4/23/1985	210	-53	0	0
4/24/1985	210	-53	0	0
4/25/1985	210	-53	0	0
4/26/1985		-263	0	0
4/27/1985		-263	0	0
4/28/1985		-263	0	0
4/29/1985	210	-53	0	0
4/30/1985	210	-53	0	0
5/1/1985	210	-53	0	0
5/2/1985	210	-53	0	0
5/3/1985	210	-53	0	0
5/4/1985	210	-53	0	0
5/5/1985	210	-53	0	0
5/6/1985	210	-53	0	0
5/7/1985	210	-53	0	0
5/8/1985	210	-53	0	0
5/9/1985	210	-53	0	0
5/10/1985	210	-53	0	0
5/11/1985	210	-53	0	0
5/12/1985	210	-53	0	0
5/13/1985	210	-53	0	0
5/14/1985	210	-53	0	0
5/15/1985	210	-53	0	0
5/16/1985	210	-53	0	0
5/17/1985	210	-53	0	0
5/18/1985	210	-53	0	0
5/19/1985	210	-53	0	0
5/20/1985	210	-53	0	0

5/21/1985	308	45	1	45
5/22/1985	308	45	1	45
5/23/1985	308	45	1	45
5/24/1985	250	-13	0	0
5/25/1985	250	-13	0	0
5/26/1985	250	-13	0	0
5/27/1985	250	-13	0	0
5/28/1985	250	-13	0	0
5/29/1985	300	37	1	37
5/30/1985	300	37	1	37
5/31/1985	300	37	1	37
6/1/1985	300	37	1	37
6/2/1985	300	37	1	37
6/3/1985	300	37	1	37
6/4/1985	300	37	1	37
6/5/1985	300	37	1	37
6/6/1985	300	37	1	37
6/7/1985	300	37	1	37
6/8/1985	300	37	1	37
6/9/1985	300	37	1	37
6/10/1985	300	37	1	37
6/11/1985	250	-13	0	0
6/12/1985	250	-13	0	0
6/13/1985	200	-63	0	0
6/14/1985	150	-113	0	0
6/15/1985	150	-113	0	0
6/16/1985	150	-113	0	0
6/17/1985	150	-113	0	0
6/18/1985	150	-113	0	0
6/19/1985	150	-113	0	0
6/20/1985	150	-113	0	0
6/21/1985	150	-113	0	0
6/22/1985	150	-113	0	0
6/23/1985	150	-113	0	0
6/24/1985	150	-113	0	0
6/25/1985	150	-113	0	0
6/26/1985	150	-113	0	0
6/27/1985	150	-113	0	0
6/28/1985	200	-63	0	0
6/29/1985	200	-63	0	0
6/30/1985	200	-63	0	0
7/1/1985	200	-63	0	0
7/2/1985	200	-63	0	0
7/3/1985	200	-63	0	0
7/4/1985	200	-63	0	0
7/5/1985	200	-63	0	0
7/6/1985	200	-63	0	0

7/7/1985	200	-63	0	0
7/8/1985	200	-63	0	0
7/9/1985	200	-63	0	0
7/10/1985	200	-63	0	0
7/11/1985	200	-63	0	0
7/12/1985	200	-63	0	0
7/13/1985	200	-63	0	0
7/14/1985	200	-63	0	0
7/15/1985	200	-63	0	0
7/16/1985	200	-63	0	0
7/17/1985	200	-63	0	0
7/18/1985	200	-63	0	0
7/19/1985	200	-63	0	0
7/20/1985	200	-63	0	0
7/21/1985	200	-63	0	0
7/22/1985	200	-63	0	0
7/23/1985	200	-63	0	0
7/24/1985	200	-63	0	0
7/25/1985	200	-63	0	0
7/26/1985	200	-63	0	0
7/27/1985	200	-63	0	0
7/28/1985	200	-63	0	0
7/29/1985	200	-63	0	0
7/30/1985	200	-63	0	0
7/31/1985	200	-63	0	0
8/1/1985	200	-63	0	0
8/2/1985	200	-63	0	0
8/3/1985	200	-63	0	0
8/4/1985	200	-63	0	0
8/5/1985	200	-63	0	0
8/6/1985	200	-63	0	0
8/7/1985	200	-63	0	0
8/8/1985	200	-63	0	0
8/9/1985	200	-63	0	0
8/10/1985	200	-63	0	0
8/11/1985	200	-63	0	0
8/12/1985	200	-63	0	0
8/13/1985	200	-63	0	0
8/14/1985	200	-63	0	0
8/15/1985	200	-63	0	0
8/16/1985	200	-63	0	0
8/17/1985	200	-63	0	0
8/18/1985	200	-63	0	0
8/19/1985	200	-63	0	0
8/20/1985	200	-63	0	0
8/21/1985		-263	0	0
8/22/1985	200	-63	0	0

8/23/1985	200	-63	0	0
8/24/1985	200	-63	0	0
8/25/1985	200	-63	0	0
8/26/1985	200	-63	0	0
8/27/1985	200	-63	0	0
8/28/1985	200	-63	0	0
8/29/1985	200	-63	0	0
8/30/1985	200	-63	0	0
8/31/1985	200	-63	0	0
9/1/1985	200	-63	0	0
9/2/1985	200	-63	0	0
9/3/1985	250	-13	0	0
9/4/1985	250	-13	0	0
9/5/1985	250	-13	0	0
9/6/1985	250	-13	0	0
9/7/1985	250	-13	0	0
9/8/1985	250	-13	0	0
9/9/1985	250	-13	0	0
9/10/1985	250	-13	0	0
9/11/1985	200	-63	0	0
9/12/1985	250	-13	0	0
9/13/1985	250	-13	0	0
9/14/1985	250	-13	0	0
9/15/1985	250	-13	0	0
9/16/1985	250	-13	0	0
9/17/1985	250	-13	0	0
9/18/1985	250	-13	0	0
9/19/1985	250	-13	0	0
9/20/1985	250	-13	0	0
9/21/1985	250	-13	0	0
9/22/1985	250	-13	0	0
9/23/1985	250	-13	0	0
9/24/1985	250	-13	0	0
9/25/1985	250	-13	0	0
9/26/1985	250	-13	0	0
9/27/1985	250	-13	0	0
9/28/1985	250	-13	0	0
9/29/1985	250	-13	0	0
9/30/1985	250	-13	0	0
10/1/1985	250	-13	0	0
10/2/1985	250	-13	0	0
10/3/1985	250	-13	0	0
10/4/1985	250	-13	0	0
10/5/1985	250	-13	0	0
10/6/1985	250	-13	0	0
10/7/1985	250	-13	0	0
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3/15/1987	250	-13	0	0
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4/17/1987	388	125	1	125
4/18/1987	388	125	1	125
4/19/1987	388	125	1	125
4/20/1987	386.7	123.7	1	123.7
4/21/1987	380	117	1	117
4/22/1987	380	117	1	117
4/23/1987	386	123	1	123
4/24/1987	380	117	1	117
4/25/1987	380	117	1	117

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4/27/1987	380	117	1	117
4/28/1987	453	190	1	190
4/29/1987	453	190	1	190
4/30/1987	460	197	1	197
5/1/1987	455	192	1	192
5/2/1987	455	192	1	192
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5/6/1987	435	172	1	172
5/7/1987	435	172	1	172
5/8/1987	450	187	1	187
5/9/1987	450	187	1	187
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5/11/1987	450 to 300	37	1	37
5/12/1987	293	30	1	30
5/13/1987	300	37	1	37
5/14/1987	300	37	1	37
5/15/1987	285	22	1	22
5/16/1987	285	22	1	22
5/17/1987	285	22	1	22
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5/26/1987	285	22	1	22
5/27/1987	285	22	1	22
5/28/1987	275	12	1	12
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8/9/1988	200	-63	0	0
8/10/1988	200	-63	0	0
8/11/1988	200	-63	0	0
8/12/1988	200	-63	0	0
8/13/1988	200	-63	0	0
8/14/1988	200	-63	0	0
8/15/1988	200	-63	0	0
8/16/1988	200	-63	0	0
8/17/1988	200	-63	0	0
8/18/1988	200	-63	0	0
8/19/1988	200	-63	0	0
8/20/1988	200	-63	0	0
8/21/1988	200	-63	0	0
8/22/1988	200	-63	0	0
8/23/1988	200	-63	0	0
8/24/1988	200	-63	0	0
8/25/1988	200	-63	0	0
8/26/1988	200	-63	0	0
8/27/1988	200	-63	0	0
8/28/1988	200	-63	0	0
8/29/1988	200	-63	0	0
8/30/1988	200	-63	0	0
8/31/1988	200	-63	0	0
9/1/1988	200	-63	0	0
9/2/1988	200	-63	0	0
9/3/1988	200	-63	0	0
9/4/1988	200	-63	0	0
9/5/1988	200	-63	0	0
9/6/1988	200	-63	0	0
9/7/1988	200	-63	0	0
9/8/1988	200	-63	0	0
9/9/1988	200	-63	0	0
9/10/1988	200	-63	0	0
9/11/1988	200	-63	0	0
9/12/1988	200	-63	0	0
9/13/1988	200	-63	0	0
9/14/1988		-263	0	0
9/15/1988	200	-63	0	0
9/16/1988	250	-13	0	0
9/17/1988	250	-13	0	0
9/18/1988	250	-13	0	0
9/19/1988	250	-13	0	0
9/20/1988	250	-13	0	0
9/21/1988	250	-13	0	0
9/22/1988	250	-13	0	0
9/23/1988	250	-13	0	0

9/24/1988	250	-13	0	0
9/25/1988	250	-13	0	0
9/26/1988	250	-13	0	0
9/27/1988	250	-13	0	0
9/28/1988	250	-13	0	0
9/29/1988	250	-13	0	0
9/30/1988	250	-13	0	0
10/1/1988	250	-13	0	0
10/2/1988	250	-13	0	0
10/3/1988	250	-13	0	0
10/4/1988	0	-263	0	0
10/5/1988	0	-263	0	0
10/6/1988	250	-13	0	0
10/7/1988	250	-13	0	0
10/8/1988	250	-13	0	0
10/9/1988	250	-13	0	0
10/10/1988	250	-13	0	0
10/11/1988	250	-13	0	0
10/12/1988	250	-13	0	0
10/13/1988	250	-13	0	0
10/14/1988	250	-13	0	0
10/15/1988	250	-13	0	0
10/16/1988	250	-13	0	0
10/17/1988	250	-13	0	0
10/18/1988	250	-13	0	0
10/19/1988	250	-13	0	0
10/20/1988	250	-13	0	0
10/21/1988	250	-13	0	0
10/22/1988	250	-13	0	0
10/23/1988	250	-13	0	0
10/24/1988	250	-13	0	0
10/25/1988	250	-13	0	0
10/26/1988	250	-13	0	0
10/27/1988	250	-13	0	0
10/28/1988	250	-13	0	0
10/29/1988	250	-13	0	0
10/30/1988	250	-13	0	0
10/31/1988	250	-13	0	0
11/1/1988	250	-13	0	0
11/2/1988	250	-13	0	0
11/3/1988	370	107	1	107
11/4/1988	370	107	1	107
11/5/1988	360	97	1	97
11/6/1988	360	97	1	97
11/7/1988	250	-13	0	0
11/8/1988	260	-3	0	0
11/9/1988	250	-13	0	0

11/10/1988	250	-13	0	0
11/11/1988	250	-13	0	0
11/12/1988	250	-13	0	0
11/13/1988	250	-13	0	0
11/14/1988	250	-13	0	0
11/15/1988	250	-13	0	0
11/16/1988	250	-13	0	0
11/17/1988	250	-13	0	0
11/18/1988	250	-13	0	0
11/19/1988	250	-13	0	0
11/20/1988	250	-13	0	0
11/21/1988	250	-13	0	0
11/22/1988	250	-13	0	0
11/23/1988	250	-13	0	0
11/24/1988	250	-13	0	0
11/25/1988		-263	0	0
11/26/1988	250	-13	0	0
11/27/1988	250	-13	0	0
11/28/1988	250	-13	0	0
11/29/1988	250	-13	0	0
11/30/1988	250	-13	0	0
12/1/1988	250	-13	0	0
12/2/1988	250	-13	0	0
12/3/1988	250	-13	0	0
12/4/1988	250	-13	0	0
12/5/1988	250	-13	0	0
12/6/1988	250	-13	0	0
12/7/1988	250	-13	0	0
12/8/1988	250	-13	0	0
12/9/1988	250	-13	0	0
12/10/1988	250	-13	0	0
12/11/1988	250	-13	0	0
12/12/1988	250	-13	0	0
12/13/1988	250	-13	0	0
12/14/1988	250	-13	0	0
12/15/1988	250	-13	0	0
12/16/1988	250	-13	0	0
12/17/1988		-263	0	0
12/18/1988		-263	0	0
12/19/1988	250	-13	0	0
12/20/1988	250	-13	0	0
12/21/1988	250	-13	0	0
12/22/1988	250	-13	0	0
12/23/1988		-263	0	0
12/24/1988	250	-13	0	0
12/25/1988	250	-13	0	0
12/26/1988	250	-13	0	0

12/27/1988	250	-13	0	0
12/28/1988	250	-13	0	0
12/29/1988	250	-13	0	0
12/30/1988		-263	0	0
12/31/1988	250	-13	0	0

	SD Creek	SD Creek	SD Creek	SD Creek Rights		MI Over	Yearly Total Over	
Date	Gallons	gpm	Used MI	Requested MI	diff	263 Right	MI	ac-ft
5/1/1988	6,051,000	4,202	374		110.52	110.52		
5/2/1988	5,971,000	4,147	369		105.58	105.58		
5/3/1988	5,991,000	4,160	370		106.81	106.81		
5/4/1988	5,978,000	4,151	369		106.01	106.01		
5/5/1988	6,131,000	4,258	378		115.46	115.46		
5/6/1988	6,093,000	4,231	376		113.11	113.11		
5/7/1988	6,234,000	4,329	385		121.81	121.81		
5/8/1988	5,938,000	4,124	367		103.54	103.54		
5/9/1988	5,676,000	3,942	350		87.37	87.37		
5/10/1988	5,059,000	3,513	312		49.28	49.28		
5/11/1988	5,484,000	3,808	339		75.52	75.52		
5/12/1988	6,313,000	4,384	390		126.69	126.69		
5/13/1988	5,156,000	3,581	318		55.27	55.27		
5/14/1988	7,461,000	5,181	461		197.56	197.56		
5/15/1988	6,783,000	4,710	419		155.70	155.70		
5/16/1988	6,923,000	4,808	427		164.35	164.35		
5/17/1988	6,862,000	4,765	424		160.58	160.58		
5/18/1988	6,737,000	4,678	416		152.86	152.86		
5/19/1988	6,581,000	4,570	406		143.23	143.23		
5/20/1988	5,550,000	3,854	343		79.59	79.59		
5/21/1988	7,623,000	5,294	471		207.56	207.56		
5/22/1988	6,672,000	4,633	412		148.85	148.85		
5/23/1988	6,241,000	4,334	385		122.25	122.25		
5/24/1988	6,518,000	4,526	402		139.35	139.35		
5/25/1988	6,761,000	4,695	417		154.35	154.35		
5/26/1988	6,718,000	4,665	415		151.69	151.69		
5/27/1988	6,657,000	4,623	411		147.93	147.93		
5/28/1988	6,505,000	4,517	402		138.54	138.54		
5/29/1988	6,517,000	4,526	402		139.28	139.28		
5/30/1988	6,606,000	4,588	408		144.78	144.78		
5/31/1988	6,503,000	4,516	401		138.42	138.42		
6/1/1988	6,338,000	4,401	391		128.23	128.23		
6/2/1988	6,333,000	4,398	391		127.93	127.93		
6/3/1988	6,331,000	4,397	391		127.80	127.80		
6/4/1988	6,338,000	4,401	391		128.23	128.23		
6/5/1988	6,254,000	4,343	386		123.05	123.05		
6/6/1988	6,211,000	4,313	383		120.40	120.40		
6/7/1988	6,136,000	4,261	379		115.77	115.77		
6/8/1988	6,049,000	4,201	373		110.40	110.40		
6/9/1988	5,917,000	4,109	365		102.25	102.25		

6/10/1988	5,900,000	4,097	364	101.20	101.20
6/11/1988	5,730,000	3,979	354	90.70	90.70
6/12/1988	5,694,000	3,954	351	88.48	88.48
6/13/1988	5,578,000	3,874	344	81.32	81.32
6/14/1988	5,490,000	3,813	339	75.89	75.89
6/15/1988	5,416,000	3,761	334	71.32	71.32
6/16/1988	5,386,000	3,740	332	69.47	69.47
6/17/1988	5,354,000	3,718	330	67.49	67.49
6/18/1988	5,313,000	3,690	328	64.96	64.96
6/19/1988	5,276,000	3,664	326	62.68	62.68
6/20/1988	5,227,000	3,630	323	59.65	59.65
6/21/1988	4,298,000	2,985	265	2.31	2.31
6/22/1988	4,050,000	2,813	250	-13.00	
6/23/1988	3,964,000	2,753	245	-18.31	
6/24/1988	3,915,000	2,719	242	-21.33	
6/25/1988	3,935,000	2,733	243	-20.10	
6/26/1988	3,918,000	2,721	242	-21.15	
6/27/1988	3,884,000	2,697	240	-23.25	
6/28/1988	3,912,000	2,717	241	-21.52	
6/29/1988	3,891,000	2,702	240	-22.81	
6/30/1988	3,830,000	2,660	236	-26.58	
7/1/1988	4,464,000	3,100	276	12.56	12.56
7/2/1988	4,500,000	3,125	278	14.78	14.78
7/3/1988	4,472,000	3,106	276	13.05	13.05
7/4/1988	4,444,000	3,086	274	11.32	11.32
7/5/1988	4,461,000	3,098	275	12.37	12.37
7/6/1988	4,456,000	3,094	275	12.06	12.06
7/7/1988	4,449,000	3,090	275	11.63	11.63
7/8/1988	4,391,000	3,049	271	8.05	8.05
7/9/1988	4,401,000	3,056	272	8.67	8.67
7/10/1988	3,333,000	2,315	206	-57.26	
7/11/1988	3,208,000	2,228	198	-64.98	
7/12/1988	3,208,000	2,228	198	-64.98	
7/13/1988	3,193,000	2,217	197	-65.90	
7/14/1988	3,200,000	2,222	198	-65.47	
7/15/1988	3,132,000	2,175	193	-69.67	
7/16/1988	3,166,000	2,199	195	-67.57	
7/17/1988	3,171,000	2,202	196	-67.26	
7/18/1988	3,151,000	2,188	195	-68.49	
7/19/1988	3,140,000	2,181	194	-69.17	
7/20/1988	3,144,000	2,183	194	-68.93	
7/21/1988	3,130,000	2,174	193	-69.79	
7/22/1988	3,117,000	2,165	192	-70.59	
7/23/1988	3,116,000	2,164	192	-70.65	

7/24/1988	3,111,000	2,160	192	-70.96
7/25/1988	3,109,000	2,159	192	-71.09
7/26/1988	3,094,000	2,149	191	-72.01
7/27/1988	3,106,000	2,157	192	-71.27
7/28/1988	3,098,000	2,151	191	-71.77
7/29/1988	3,053,000	2,120	188	-74.54
7/30/1988	3,067,000	2,130	189	-73.68
7/31/1988	3,096,000	2,150	191	-71.89
8/1/1988	3,046,000	2,115	188	-74.98
8/2/1988	3,073,000	2,134	190	-73.31
8/3/1988	3,080,000	2,139	190	-72.88
8/4/1988	3,323,000	2,308	205	-57.88
8/5/1988	3,262,000	2,265	201	-61.64
8/6/1988	3,343,000	2,322	206	-56.64
8/7/1988	3,255,000	2,260	201	-62.07
8/8/1988	3,269,000	2,270	202	-61.21
8/9/1988	3,268,000	2,269	202	-61.27
8/10/1988	3,243,000	2,252	200	-62.81
8/11/1988	3,256,000	2,261	201	-62.01
8/12/1988	3,290,000	2,285	203	-59.91
8/13/1988	3,262,000	2,265	201	-61.64
8/14/1988	3,253,000	2,259	201	-62.20
8/15/1988	3,280,000	2,278	202	-60.53
8/16/1988	3,222,000	2,238	199	-64.11
8/17/1988	3,234,000	2,246	200	-63.37
8/18/1988	3,225,000	2,240	199	-63.93
8/19/1988	3,227,000	2,241	199	-63.80
8/20/1988	3,236,000	2,247	200	-63.25
8/21/1988	3,230,000	2,243	199	-63.62
8/22/1988	3,213,000	2,231	198	-64.67
8/23/1988	3,243,000	2,252	200	-62.81
8/24/1988	3,217,000	2,234	199	-64.42
8/25/1988	3,202,000	2,224	198	-65.35
8/26/1988	3,215,000	2,233	198	-64.54
8/27/1988	3,229,000	2,242	199	-63.68
8/28/1988	3,221,000	2,237	199	-64.17
8/29/1988	3,243,000	2,252	200	-62.81
8/30/1988	3,186,000	2,213	197	-66.33
8/31/1988	3,223,000	2,238	199	-64.05
9/1/1988	3,220,000	2,236	199	-64.23
9/2/1988	3,222,000	2,238	199	-64.11
9/3/1988	3,208,000	2,228	198	-64.98
9/4/1988	3,275,000	2,274	202	-60.84
9/5/1988	3,169,000	2,201	196	-67.38

9/6/1988	3,210,000	2,229	198	-64.85
9/7/1988	3,226,000	2,240	199	-63.86
9/8/1988	3,234,000	2,246	200	-63.37
9/9/1988	3,243,000	2,252	200	-62.81
9/10/1988	3,269,000	2,270	202	-61.21
9/11/1988	3,316,000	2,303	205	-58.31
9/12/1988	3,454,000	2,399	213	-49.79
9/13/1988	3,520,000	2,444	217	-45.72
9/14/1988	3,496,000	2,428	216	-47.20
9/15/1988	3,481,000	2,417	215	-48.12
9/16/1988	4,196,000	2,914	259	-3.99
9/17/1988	4,218,000	2,929	260	-2.63
9/18/1988	4,247,000	2,949	262	-0.84
9/19/1988	4,227,000	2,935	261	-2.07
9/20/1988	4,239,000	2,944	262	-1.33
9/21/1988	4,253,000	2,953	263	-0.47
9/22/1988	4,205,000	2,920	260	-3.43
9/23/1988	4,229,000	2,937	261	-1.95
9/24/1988	4,207,000	2,922	260	-3.31
9/25/1988	4,203,000	2,919	259	-3.56
9/26/1988	4,223,000	2,933	261	-2.32
9/27/1988	4,177,000	2,901	258	-5.16
9/28/1988	4,206,000	2,921	260	-3.37
9/29/1988	4,151,000	2,883	256	-6.77
9/30/1988	4,145,000	2,878	256	-7.14
10/1/1988	4,136,000	2,872	255	-7.69
10/2/1988	4,078,000	2,832	252	-11.27
10/3/1988	165,000	115	10	-252.81
10/4/1988	20,000	14	1	-261.77
10/5/1988	11,000	8	1	-262.32
10/6/1988	3,058,000	2,124	189	-74.23
10/7/1988	3,995,000	2,774	247	-16.40
10/8/1988	3,957,000	2,748	244	-18.74
10/9/1988	3,942,000	2,738	243	-19.67
10/10/1988	3,925,000	2,726	242	-20.72
10/11/1988	4,021,000	2,792	248	-14.79
10/12/1988	3,998,000	2,776	247	-16.21
10/13/1988	3,973,000	2,759	245	-17.75
10/14/1988	3,911,000	2,716	241	-21.58
10/15/1988	3,908,000	2,714	241	-21.77
10/16/1988	3,940,000	2,736	243	-19.79
10/17/1988	3,870,000	2,688	239	-24.11
10/18/1988	3,854,000	2,676	238	-25.10
10/19/1988	3,870,000	2,688	239	-24.11

10/20/1988	3,933,000	2,731	243	-20.22	
10/21/1988	3,919,000	2,722	242	-21.09	
10/22/1988	3,889,000	2,701	240	-22.94	
10/23/1988	3,903,000	2,710	241	-22.07	
10/24/1988	3,887,000	2,699	240	-23.06	
10/25/1988	3,950,000	2,743	244	-19.17	
10/26/1988	4,018,000	2,790	248	-14.98	
10/27/1988	4,006,000	2,782	247	-15.72	
10/28/1988	3,986,000	2,768	246	-16.95	
10/29/1988	4,155,000	2,885	256	-6.52	
10/30/1988	3,984,000	2,767	246	-17.07	
10/31/1988	3,964,000	2,753	245	-18.31	
11/1/1988	3,928,000	2,728	242	-20.53	
11/2/1988	3,946,000	2,740	244	-19.42	
11/3/1988	5,859,000	4,069	362	98.67	98.67
11/4/1988	5,825,000	4,045	360	96.57	96.57
11/5/1988	5,889,000	4,090	364	100.52	100.52
11/6/1988	5,866,000	4,074	362	99.10	99.10
11/7/1988	4,784,000	3,322	295	32.31	32.31
11/8/1988	4,333,000	3,009	267	4.47	4.47
11/9/1988	4,199,000	2,916	259	-3.80	
11/10/1988	4,160,000	2,889	257	-6.21	
11/11/1988	4,160,000	2,889	257	-6.21	
11/12/1988	4,152,000	2,883	256	-6.70	
11/13/1988	4,157,000	2,887	257	-6.40	
11/14/1988	3,382,000	2,349	209	-54.23	
11/15/1988	4,063,000	2,822	251	-12.20	
11/16/1988	4,162,000	2,890	257	-6.09	
11/17/1988	4,035,000	2,802	249	-13.93	
11/18/1988	3,912,000	2,717	241	-21.52	
11/19/1988	3,807,000	2,644	235	-28.00	
11/20/1988	4,025,000	2,795	248	-14.54	
11/21/1988	3,992,000	2,772	246	-16.58	
11/22/1988	3,996,000	2,775	247	-16.33	
11/23/1988	4,038,000	2,804	249	-13.74	
11/24/1988	3,975,000	2,760	245	-17.63	
11/25/1988	4,232,000	2,939	261	-1.77	
11/26/1988	3,733,000	2,592	230	-32.57	
11/27/1988	4,026,000	2,796	249	-14.48	
11/28/1988	4,025,000	2,795	248	-14.54	
11/29/1988	4,075,000	2,830	252	-11.46	
11/30/1988	3,967,000	2,755	245	-18.12	
12/1/1988	3,946,000	2,740	244	-19.42	
12/2/1988	4,051,000	2,813	250	-12.94	

12/3/1988	4,049,000	2,812	250	-13.06		
12/4/1988	4,013,000	2,787	248	-15.28		
12/5/1988	4,033,000	2,801	249	-14.05		
12/6/1988	4,067,000	2,824	251	-11.95		
12/7/1988	4,028,000	2,797	249	-14.36		
12/8/1988	4,017,000	2,790	248	-15.04		
12/9/1988	4,013,000	2,787	248	-15.28		
12/10/1988	4,011,000	2,785	248	-15.41		
12/11/1988	4,007,000	2,783	247	-15.65		
12/12/1988	4,023,000	2,794	248	-14.67		
12/13/1988	4,004,000	2,781	247	-15.84		
12/14/1988	3,192,000	2,217	197	-65.96		
12/15/1988	3,248,000	2,256	200	-62.51		
12/16/1988	4,104,000	2,850	253	-9.67		
12/17/1988	4,143,000	2,877	256	-7.26		
12/18/1988	4,117,000	2,859	254	-8.86		
12/19/1988	4,118,000	2,860	254	-8.80		
12/20/1988	4,048,000	2,811	250	-13.12		
12/21/1988	4,044,000	2,808	250	-13.37		
12/22/1988	4,016,000	2,789	248	-15.10		
12/23/1988	4,036,000	2,803	249	-13.86		
12/24/1988	4,005,000	2,781	247	-15.78		
12/25/1988	4,008,000	2,783	247	-15.59		
12/26/1988	4,095,000	2,844	253	-10.22		
12/27/1988	3,850,000	2,674	238	-25.35		
12/28/1988	4,055,000	2,816	250	-12.69		
12/29/1988	4,058,000	2,818	250	-12.51		
12/30/1988	4,055,000	2,816	250	-12.69		
12/31/1988	4,170,000	2,896	257	-5.59	6419.49	320.97
1/1/1989	3,812,000	2,647	235	-27.69		
1/2/1989	4,019,000	2,791	248	-14.91		
1/3/1989	3,989,000	2,770	246	-16.77		
1/4/1989	3,988,000	2,769	246	-16.83		
1/5/1989	4,003,000	2,780	247	-15.90		
1/6/1988	3,844,000	2,669	237	-25.72		
1/7/1989	3,837,000	2,665	237	-26.15		
1/8/1989	4,040,000	2,806	249	-13.62		
1/9/1989	4,013,000	2,787	248	-15.28		
1/10/1989	3,989,000	2,770	246	-16.77		
1/11/1989	3,951,000	2,744	244	-19.11		
1/12/1989	3,957,000	2,748	244	-18.74		
1/13/1989	3,924,000	2,725	242	-20.78		
1/14/1989	3,939,000	2,735	243	-19.85		
1/15/1989	3,955,000	2,747	244	-18.86		

1/16/1989	3,936,000	2,733	243	-20.04
1/17/1989	3,949,000	2,742	244	-19.23
1/18/1989	3,946,000	2,740	244	-19.42
1/19/1989	3,977,000	2,762	245	-17.51
1/20/1989	3,917,000	2,720	242	-21.21
1/21/1989	3,978,000	2,763	246	-17.44
1/22/1989	3,974,000	2,760	245	-17.69
1/23/1989	3,950,000	2,743	244	-19.17
1/24/1989	3,772,000	2,619	233	-30.16
1/25/1989	4,030,000	2,799	249	-14.23
1/26/1989	4,063,000	2,822	251	-12.20
1/27/1989	3,950,000	2,743	244	-19.17
1/28/1989	3,975,000	2,760	245	-17.63
1/29/1989	3,997,000	2,776	247	-16.27
1/30/1989	3,984,000	2,767	246	-17.07
1/31/1989	3,713,000	2,578	229	-33.80
2/1/1989	3,641,000	2,528	225	-38.25
2/2/1989	4,062,000	2,821	251	-12.26
2/3/1989	4,126,000	2,865	255	-8.31
2/4/1989	4,080,000	2,833	252	-11.15
2/5/1989	4,207,000	2,922	260	-3.31
2/6/1989	4,235,000	2,941	261	-1.58
2/7/1989	4,210,000	2,924	260	-3.12
2/8/1989	4,083,000	2,835	252	-10.96
2/9/1989	4,215,000	2,927	260	-2.81
2/10/1989	4,172,000	2,897	258	-5.47
2/11/1989	4,111,000	2,855	254	-9.23
2/12/1989	4,049,000	2,812	250	-13.06
2/13/1989	4,010,000	2,785	248	-15.47
2/14/1989	4,015,000	2,788	248	-15.16
2/15/1989	4,024,000	2,794	248	-14.60
2/16/1989	3,991,000	2,772	246	-16.64
2/17/1989	4,023,000	2,794	248	-14.67
2/18/1989	3,941,000	2,737	243	-19.73
2/19/1989	3,996,000	2,775	247	-16.33
2/20/1989	4,007,000	2,783	247	-15.65
2/21/1989	4,001,000	2,778	247	-16.02
2/22/1989	4,006,000	2,782	247	-15.72
2/23/1989	4,008,000	2,783	247	-15.59
2/24/1989	4,010,000	2,785	248	-15.47
2/25/1989	3,988,000	2,769	246	-16.83
2/26/1989	4,206,000	2,921	260	-3.37
2/27/1989	4,021,000	2,792	248	-14.79
2/28/1989	3,946,000	2,740	244	-19.42

3/1/1989	3,942,000	2,738	243	-19.67
3/2/1989	3,991,000	2,772	246	-16.64
3/3/1989	3,979,000	2,763	246	-17.38
3/4/1989	4,070,000	2,826	251	-11.77
3/5/1989	3,935,000	2,733	243	-20.10
3/6/1989	3,987,000	2,769	246	-16.89
3/7/1989	3,968,000	2,756	245	-18.06
3/8/1989	4,013,000	2,787	248	-15.28
3/9/1989	4,044,000	2,808	250	-13.37
3/10/1989	4,146,000	2,879	256	-7.07
3/11/1989	4,037,000	2,803	249	-13.80
3/12/1989	4,092,000	2,842	253	-10.41
3/13/1989	4,115,000	2,858	254	-8.99
3/14/1989	3,672,000	2,550	227	-36.33
3/15/1989	4,069,000	2,826	251	-11.83
3/16/1989	3,150,000	2,188	194	-68.56
3/17/1989	4,049,000	2,812	250	-13.06
3/18/1989	4,065,000	2,823	251	-12.07
3/19/1989	3,711,000	2,577	229	-33.93
3/20/1989	3,377,000	2,345	208	-54.54
3/21/1989	4,103,000	2,849	253	-9.73
3/22/1989	4,107,000	2,852	254	-9.48
3/23/1989	3,949,000	2,742	244	-19.23
3/24/1989	4,046,000	2,810	250	-13.25
3/25/1989	4,153,000	2,884	256	-6.64
3/26/1989	4,167,000	2,894	257	-5.78
3/27/1989	4,138,000	2,874	255	-7.57
3/28/1989	4,119,000	2,860	254	-8.74
3/29/1989	4,136,000	2,872	255	-7.69
3/30/1989	4,156,000	2,886	257	-6.46
3/31/1989	4,108,000	2,853	254	-9.42
4/1/1989	3,973,000	2,759	245	-17.75
4/2/1989	4,105,000	2,851	253	-9.60
4/3/1989	4,114,000	2,857	254	-9.05
4/4/1989	4,107,000	2,852	254	-9.48
4/5/1989	4,106,000	2,851	253	-9.54
4/6/1989	4,228,000	2,936	261	-2.01
4/7/1989	4,247,000	2,949	262	-0.84
4/8/1989	4,250,000	2,951	262	-0.65
4/9/1989	3,455,000	2,399	213	-49.73
4/10/1989	3,942,000	2,738	243	-19.67
4/11/1989	4,074,000	2,829	251	-11.52
4/12/1989	4,203,000	2,919	259	-3.56
4/13/1989	4,260,000	2,958	263	-0.04

4/14/1989	6,060,000	4,208	374	111.07	111.07
4/15/1989	6,249,000	4,340	386	122.74	122.74
4/16/1989	6,285,000	4,365	388	124.96	124.96
4/17/1989	6,155,000	4,274	380	116.94	116.94
4/18/1989	6,125,000	4,253	378	115.09	115.09
4/19/1989	6,250,000	4,340	386	122.80	122.80
4/20/1989	6,402,000	4,446	395	132.19	132.19
4/21/1989	6,376,000	4,428	394	130.58	130.58
4/22/1989	6,391,000	4,438	395	131.51	131.51
4/23/1989	6,334,000	4,399	391	127.99	127.99
4/24/1989	6,226,000	4,324	384	121.32	121.32
4/25/1989	6,195,000	4,302	382	119.41	119.41
4/26/1989	6,176,000	4,289	381	118.23	118.23
4/27/1989	6,166,000	4,282	381	117.62	117.62
4/28/1989	6,037,000	4,192	373	109.65	109.65
4/29/1989	6,003,000	4,169	371	107.56	107.56
4/30/1989	6,052,000	4,203	374	110.58	110.58
5/1/1989	6,044,000	4,197	373	110.09	110.09
5/2/1989	6,230,000	4,326	385	121.57	121.57
5/3/1989	6,410,000	4,451	396	132.68	132.68
5/4/1989	6,289,000	4,367	388	125.21	125.21
5/5/1989	6,309,000	4,381	389	126.44	126.44
5/6/1989	6,450,000	4,479	398	135.15	135.15
5/7/1989	6,563,000	4,558	405	142.12	142.12
5/8/1989	6,647,000	4,616	410	147.31	147.31
5/9/1989	6,503,000	4,516	401	138.42	138.42
5/10/1989	6,557,000	4,553	405	141.75	141.75
5/11/1989	6,546,000	4,546	404	141.07	141.07
5/12/1989	6,472,000	4,494	400	136.51	136.51
5/13/1989	6,441,000	4,473	398	134.59	134.59
5/14/1989	6,435,000	4,469	397	134.22	134.22
5/15/1989	6,434,000	4,468	397	134.16	134.16
5/16/1989	6,591,000	4,577	407	143.85	143.85
5/17/1989	6,537,000	4,540	404	140.52	140.52
5/18/1989	6,546,000	4,546	404	141.07	141.07
5/19/1989	6,506,000	4,518	402	138.60	138.60
5/20/1989	6,466,000	4,490	399	136.14	136.14
5/21/1989	6,403,000	4,447	395	132.25	132.25
5/22/1989	6,387,000	4,435	394	131.26	131.26
5/23/1989	6,356,000	4,414	392	129.35	129.35
5/24/1989	6,401,000	4,445	395	132.12	132.12
5/25/1989	6,280,000	4,361	388	124.65	124.65
5/26/1989	6,333,000	4,398	391	127.93	127.93
5/27/1989	6,364,000	4,419	393	129.84	129.84

5/28/1989	6,221,000	4,320	384	121.01	121.01
5/29/1989	6,432,000	4,467	397	134.04	134.04
5/30/1989	6,353,000	4,412	392	129.16	129.16
5/31/1989	6,296,000	4,372	389	125.64	125.64
6/1/1989	6,327,000	4,394	391	127.56	127.56
6/2/1989	6,339,000	4,402	391	128.30	128.30
6/3/1989	6,420,000	4,458	396	133.30	133.30
6/4/1989	6,355,000	4,413	392	129.28	129.28
6/5/1989	6,375,000	4,427	394	130.52	130.52
6/6/1989	6,361,000	4,417	393	129.65	129.65
6/7/1989	6,366,000	4,421	393	129.96	129.96
6/8/1989	6,406,000	4,449	395	132.43	132.43
6/9/1989	6,410,000	4,451	396	132.68	132.68
6/10/1989	6,432,000	4,467	397	134.04	134.04
6/11/1989	6,409,000	4,451	396	132.62	132.62
6/12/1989	6,348,000	4,408	392	128.85	128.85
6/13/1989	6,307,000	4,380	389	126.32	126.32
6/14/1989	6,294,000	4,371	389	125.52	125.52
6/15/1989	6,322,000	4,390	390	127.25	127.25
6/16/1989	6,356,000	4,414	392	129.35	129.35
6/17/1989	6,298,000	4,374	389	125.77	125.77
6/18/1989	6,258,000	4,346	386	123.30	123.30
6/19/1989	6,175,000	4,288	381	118.17	118.17
6/20/1989	6,147,000	4,269	379	116.44	116.44
6/21/1989	6,232,000	4,328	385	121.69	121.69
6/22/1989	6,174,000	4,288	381	118.11	118.11
6/23/1989	6,152,000	4,272	380	116.75	116.75
6/24/1989	6,204,000	4,308	383	119.96	119.96
6/25/1989	6,118,000	4,249	378	114.65	114.65
6/26/1989	6,125,000	4,253	378	115.09	115.09
6/27/1989	6,129,000	4,256	378	115.33	115.33
6/28/1989	6,061,000	4,209	374	111.14	111.14
6/29/1989	6,104,000	4,239	377	113.79	113.79
6/30/1989	6,022,000	4,182	372	108.73	108.73
7/1/1989	6,105,000	4,240	377	113.85	113.85
7/2/1989	5,992,000	4,161	370	106.88	106.88
7/3/1989	6,020,000	4,181	372	108.60	108.60
7/4/1989	5,404,000	3,753	334	70.58	70.58
7/5/1989	4,050,000	2,813	250	-13.00	
7/6/1989	4,050,000	2,813	250	-13.00	
7/7/1989	4,050,000	2,813	250	-13.00	
7/8/1989	4,050,000	2,813	250	-13.00	
7/9/1989	4,050,000	2,813	250	-13.00	
7/10/1989	4,050,000	2,813	250	-13.00	

7/11/1989	3,240,000	2,250	200	-63.00
7/12/1989	3,240,000	2,250	200	-63.00
7/13/1989	3,240,000	2,250	200	-63.00
7/14/1989	3,240,000	2,250	200	-63.00
7/15/1989	3,240,000	2,250	200	-63.00
7/16/1989	3,240,000	2,250	200	-63.00
7/17/1989	3,240,000	2,250	200	-63.00
7/18/1989	3,240,000	2,250	200	-63.00
7/19/1989	3,240,000	2,250	200	-63.00
7/20/1989	3,240,000	2,250	200	-63.00
7/21/1989	3,240,000	2,250	200	-63.00
7/22/1989	3,240,000	2,250	200	-63.00
7/23/1989	3,240,000	2,250	200	-63.00
7/24/1989	3,240,000	2,250	200	-63.00
7/25/1989	3,240,000	2,250	200	-63.00
7/26/1989	3,240,000	2,250	200	-63.00
7/27/1989	3,240,000	2,250	200	-63.00
7/28/1989	3,240,000	2,250	200	-63.00
7/29/1989	3,240,000	2,250	200	-63.00
7/30/1989	3,240,000	2,250	200	-63.00
7/31/1989	3,240,000	2,250	200	-63.00
8/1/1989	3,240,000	2,250	200	-63.00
8/2/1989	3,240,000	2,250	200	-63.00
8/3/1989	3,240,000	2,250	200	-63.00
8/4/1989	3,240,000	2,250	200	-63.00
8/5/1989	3,240,000	2,250	200	-63.00
8/6/1989	3,240,000	2,250	200	-63.00
8/7/1989	3,240,000	2,250	200	-63.00
8/8/1989	3,240,000	2,250	200	-63.00
8/9/1989	3,029,400	2,104	187	-76.00
8/10/1989	3,029,400	2,104	187	-76.00
8/11/1989	3,029,400	2,104	187	-76.00
8/12/1989	3,240,000	2,250	200	-63.00
8/13/1989	3,240,000	2,250	200	-63.00
8/14/1989	3,240,000	2,250	200	-63.00
8/15/1989	3,240,000	2,250	200	-63.00
8/16/1989	3,240,000	2,250	200	-63.00
8/17/1989	3,240,000	2,250	200	-63.00
8/18/1989	3,240,000	2,250	200	-63.00
8/19/1989	3,240,000	2,250	200	-63.00
8/20/1989	3,240,000	2,250	200	-63.00
8/21/1989	3,240,000	2,250	200	-63.00
8/22/1989	3,240,000	2,250	200	-63.00
8/23/1989	3,240,000	2,250	200	-63.00

8/24/1989	3,240,000	2,250	200	-63.00
8/25/1989	3,240,000	2,250	200	-63.00
8/26/1989	3,240,000	2,250	200	-63.00
8/27/1989	3,240,000	2,250	200	-63.00
8/28/1989	3,240,000	2,250	200	-63.00
8/29/1989	3,240,000	2,250	200	-63.00
8/30/1989	3,240,000	2,250	200	-63.00
8/31/1989	3,240,000	2,250	200	-63.00
9/1/1989	3,240,000	2,250	200	-63.00
9/2/1989	3,240,000	2,250	200	-63.00
9/3/1989	3,240,000	2,250	200	-63.00
9/4/1989	3,240,000	2,250	200	-63.00
9/5/1989	3,240,000	2,250	200	-63.00
9/6/1989	4,050,000	2,813	250	-13.00
9/7/1989	4,050,000	2,813	250	-13.00
9/8/1989	4,050,000	2,813	250	-13.00
9/9/1989	4,050,000	2,813	250	-13.00
9/10/1989	4,050,000	2,813	250	-13.00
9/11/1989	4,050,000	2,813	250	-13.00
9/12/1989	4,050,000	2,813	250	-13.00
9/13/1989	4,050,000	2,813	250	-13.00
9/14/1989	4,050,000	2,813	250	-13.00
9/15/1989	4,050,000	2,813	250	-13.00
9/16/1989	4,050,000	2,813	250	-13.00
9/17/1989	4,050,000	2,813	250	-13.00
9/18/1989	4,050,000	2,813	250	-13.00
9/19/1989	4,050,000	2,813	250	-13.00
9/20/1989	4,050,000	2,813	250	-13.00
9/21/1989	4,050,000	2,813	250	-13.00
9/22/1989	4,050,000	2,813	250	-13.00
9/23/1989	4,050,000	2,813	250	-13.00
9/24/1989	4,050,000	2,813	250	-13.00
9/25/1989	4,050,000	2,813	250	-13.00
9/26/1989	4,050,000	2,813	250	-13.00
9/27/1989	4,107,000	2,852	254	-9.48
9/28/1989	4,079,000	2,833	252	-11.21
9/29/1989	3,869,000	2,687	239	-24.17
9/30/1989	4,068,000	2,825	251	-11.89
10/1/1989	4,114,000	2,857	254	-9.05
10/2/1989	3,983,000	2,766	246	-17.14
10/3/1989	3,937,000	2,734	243	-19.98
10/4/1989	3,938,000	2,735	243	-19.91
10/5/1989	3,973,000	2,759	245	-17.75
10/6/1989	3,970,000	2,757	245	-17.94

10/7/1989	3,977,000	2,762	245	-17.51	
10/8/1989	3,972,000	2,758	245	-17.81	
10/9/1989	3,920,000	2,722	242	-21.02	
10/10/1989	3,919,000	2,722	242	-21.09	
10/11/1989	3,873,000	2,690	239	-23.93	
10/12/1989	3,840,000	2,667	237	-25.96	
10/13/1989	3,792,000	2,633	234	-28.93	
10/14/1989	3,776,000	2,622	233	-29.91	
10/15/1989	3,751,000	2,605	232	-31.46	
10/16/1989	3,615,000	2,510	223	-39.85	
10/17/1989	3,637,000	2,526	225	-38.49	
10/18/1989	3,628,000	2,519	224	-39.05	
10/19/1989	4,074,000	2,829	251	-11.52	
10/20/1989	4,059,000	2,819	251	-12.44	
10/21/1989	4,075,000	2,830	252	-11.46	
10/22/1989	4,077,000	2,831	252	-11.33	
10/23/1989	4,053,000	2,815	250	-12.81	
10/24/1989	4,145,000	2,878	256	-7.14	
10/25/1989	4,173,000	2,898	258	-5.41	
10/26/1989	4,138,000	2,874	255	-7.57	
10/27/1989	4,178,000	2,901	258	-5.10	
10/28/1989	4,091,000	2,841	253	-10.47	
10/29/1989	3,705,000	2,573	229	-34.30	
10/30/1989	3,681,000	2,556	227	-35.78	
10/31/1989	1,942,000	1,349	120	-143.12	
11/1/1989	4,027,000	2,797	249	-14.42	
11/2/1989	4,158,000	2,888	257	-6.33	
11/3/1989	4,255,000	2,955	263	-0.35	
11/4/1989	4,238,000	2,943	262	-1.40	
11/5/1989	4,228,000	2,936	261	-2.01	
11/6/1989	4,122,000	2,863	254	-8.56	
11/7/1989	4,021,000	2,792	248	-14.79	
11/8/1989	4,018,000	2,790	248	-14.98	
11/9/1989	4,297,000	2,984	265	2.25	2.25
11/10/1989	4,408,000	3,061	272	9.10	9.10
11/11/1989	4,294,000	2,982	265	2.06	2.06
11/12/1989	4,348,000	3,019	268	5.40	5.40
11/13/1989	4,286,000	2,976	265	1.57	1.57
11/14/1989	4,288,000	2,978	265	1.69	1.69
11/15/1989	4,231,000	2,938	261	-1.83	
11/16/1989	4,183,000	2,905	258	-4.79	
11/17/1989	4,308,000	2,992	266	2.93	2.93
11/18/1989	4,131,000	2,869	255	-8.00	
11/19/1989	4,244,000	2,947	262	-1.02	

11/20/1989	4,073,000	2,828	251	-11.58			
11/21/1989	4,072,000	2,828	251	-11.64			
11/22/1989	3,062,000	2,126	189	-73.99			
11/23/1989	4,077,000	2,831	252	-11.33			
11/24/1989	3,932,000	2,731	243	-20.28			
11/25/1989	3,988,000	2,769	246	-16.83			
11/26/1989	4,121,000	2,862	254	-8.62			
11/27/1989	2,582,000	1,793	159	-103.62			
11/28/1989	3,755,000	2,608	232	-31.21			
11/29/1989	4,002,000	2,779	247	-15.96			
11/30/1989	4,124,000	2,864	255	-8.43			
12/1/1989	4,032,000	2,800	249	-14.11			
12/2/1989	4,125,000	2,865	255	-8.37			
12/3/1989	4,190,000	2,910	259	-4.36			
12/4/1989	4,172,000	2,897	258	-5.47			
12/5/1989	4,117,000	2,859	254	-8.86			
12/6/1989	4,110,000	2,854	254	-9.30			
12/7/1989	4,058,000	2,818	250	-12.51			
12/8/1989	4,083,000	2,835	252	-10.96			
12/9/1989	4,095,000	2,844	253	-10.22			
12/10/1989	2,369,000	1,645	146	-116.77			
12/11/1989	2,920,000	2,028	180	-82.75			
12/12/1989	4,144,000	2,878	256	-7.20			
12/13/1989	4,143,000	2,877	256	-7.26			
12/14/1989	4,147,000	2,880	256	-7.01			
12/15/1989	4,004,000	2,781	247	-15.84			
12/16/1989	4,006,000	2,782	247	-15.72			
12/17/1989	3,811,000	2,647	235	-27.75			
12/18/1989	3,706,000	2,574	229	-34.23			
12/19/1989	4,217,000	2,928	260	-2.69			
12/20/1989	4,279,000	2,972	264	1.14	1.14		
12/21/1989	4,130,000	2,868	255	-8.06			
12/22/1989	4,332,000	3,008	267	4.41	4.41		
12/23/1989	4,251,000	2,952	262	-0.59			
12/24/1989	4,205,000	2,920	260	-3.43			
12/25/1989	4,228,000	2,936	261	-2.01			
12/26/1989	4,078,000	2,832	252	-11.27			
12/27/1989	4,187,000	2,908	258	-4.54			
12/28/1989	4,083,000	2,835	252	-10.96			
12/29/1989	4,126,000	2,865	255	-8.31			
12/30/1989	4,167,000	2,894	257	-5.78			
12/31/1989	4,109,000	2,853	254	-9.36		10305.95	515.30
1/1/1990	4,152,000	2,883	256	-6.70			
1/2/1990	2,079,000	1,444	128	-134.67			

1/3/1990	3,946,000	2,740	244	-19.42
1/4/1990	4,141,000	2,876	256	-7.38
1/5/1990	4,127,000	2,866	255	-8.25
1/6/1990	4,011,000	2,785	248	-15.41
1/7/1990	4,081,000	2,834	252	-11.09
1/8/1990	4,097,000	2,845	253	-10.10
1/9/1990	4,087,000	2,838	252	-10.72
1/10/1990	4,179,000	2,902	258	-5.04
1/11/1990	2,365,000	1,642	146	-117.01
1/12/1990	4,067,000	2,824	251	-11.95
1/13/1990	4,063,000	2,822	251	-12.20
1/14/1990	4,044,000	2,808	250	-13.37
1/15/1990	4,055,000	2,816	250	-12.69
1/16/1990	3,760,000	2,611	232	-30.90
1/17/1990	2,388,000	1,658	147	-115.59
1/18/1990	3,244,000	2,253	200	-62.75
1/19/1990	4,130,000	2,868	255	-8.06
1/20/1990	4,195,000	2,913	259	-4.05
1/21/1990	4,198,000	2,915	259	-3.86
1/22/1990	4,107,000	2,852	254	-9.48
1/23/1990	3,991,000	2,772	246	-16.64
1/24/1990	4,045,000	2,809	250	-13.31
1/25/1990	4,150,000	2,882	256	-6.83
1/26/1990	3,815,000	2,649	235	-27.51
1/27/1990	4,026,000	2,796	249	-14.48
1/28/1990	4,118,000	2,860	254	-8.80
1/29/1990	3,998,000	2,776	247	-16.21
1/30/1990	3,983,000	2,766	246	-17.14
1/31/1990	4,130,000	2,868	255	-8.06
2/1/1990	4,071,000	2,827	251	-11.70
2/2/1990	4,022,000	2,793	248	-14.73
2/3/1990	4,003,000	2,780	247	-15.90
2/4/1990	3,884,000	2,697	240	-23.25
2/5/1990	3,663,000	2,544	226	-36.89
2/6/1990	4,056,000	2,817	250	-12.63
2/7/1990	3,990,000	2,771	246	-16.70
2/8/1990	4,008,000	2,783	247	-15.59
2/9/1990	4,024,000	2,794	248	-14.60
2/10/1990	4,018,000	2,790	248	-14.98
2/11/1990	4,043,000	2,808	250	-13.43
2/12/1990	3,416,000	2,372	211	-52.14
2/13/1990	3,306,000	2,296	204	-58.93
2/14/1990	4,020,000	2,792	248	-14.85
2/15/1990	4,210,000	2,924	260	-3.12

2/16/1990	4,018,000	2,790	248	-14.98
2/17/1990	4,018,000	2,790	248	-14.98
2/18/1990	4,037,000	2,803	249	-13.80
2/19/1990	4,088,000	2,839	252	-10.65
2/20/1990	4,066,000	2,824	251	-12.01
2/21/1990	3,985,000	2,767	246	-17.01
2/22/1990	3,986,000	2,768	246	-16.95
2/23/1990	4,016,000	2,789	248	-15.10
2/24/1990	3,974,000	2,760	245	-17.69
2/25/1990	3,995,000	2,774	247	-16.40
2/26/1990	3,979,000	2,763	246	-17.38
2/27/1990	3,820,000	2,653	236	-27.20
2/28/1990	3,472,000	2,411	214	-48.68
3/1/1990	3,860,000	2,681	238	-24.73
3/2/1990	4,113,000	2,856	254	-9.11
3/3/1990	4,051,000	2,813	250	-12.94
3/4/1990	4,032,000	2,800	249	-14.11
3/5/1990	4,054,000	2,815	250	-12.75
3/6/1990	3,892,000	2,703	240	-22.75
3/7/1990	3,972,000	2,758	245	-17.81
3/8/1990	3,930,000	2,729	243	-20.41
3/9/1990	3,986,000	2,768	246	-16.95
3/10/1990	4,191,000	2,910	259	-4.30
3/11/1990	4,016,000	2,789	248	-15.10
3/12/1990	4,162,000	2,890	257	-6.09
3/13/1990	3,976,000	2,761	245	-17.57
3/14/1990	4,066,000	2,824	251	-12.01
3/15/1990	3,101,000	2,153	191	-71.58
3/16/1990	4,055,000	2,816	250	-12.69
3/17/1990	4,015,000	2,788	248	-15.16
3/18/1990	4,069,000	2,826	251	-11.83
3/19/1990	4,048,000	2,811	250	-13.12
3/20/1990	4,128,000	2,867	255	-8.19
3/21/1990	4,092,000	2,842	253	-10.41
3/22/1990	2,289,000	1,590	141	-121.70
3/23/1990	3,865,000	2,684	239	-24.42
3/24/1990	4,081,000	2,834	252	-11.09
3/25/1990	4,275,000	2,969	264	0.89
3/26/1990	4,078,000	2,832	252	-11.27
3/27/1990	4,071,000	2,827	251	-11.70
3/28/1990	3,584,000	2,489	221	-41.77
3/29/1990	3,696,000	2,567	228	-34.85
3/30/1990	4,128,000	2,867	255	-8.19
3/31/1990	4,011,000	2,785	248	-15.41

4/1/1990	4,239,000	2,944	262	-1.33	
4/2/1990	2,359,000	1,638	146	-117.38	
4/3/1990	3,919,000	2,722	242	-21.09	
4/4/1990	3,991,000	2,772	246	-16.64	
4/5/1990	3,805,000	2,642	235	-28.12	
4/6/1990	3,863,000	2,683	238	-24.54	
4/7/1990	3,855,000	2,677	238	-25.04	
4/8/1990	3,880,000	2,694	240	-23.49	
4/9/1990	3,876,000	2,692	239	-23.74	
4/10/1990	3,790,000	2,632	234	-29.05	
4/11/1990	3,841,000	2,667	237	-25.90	
4/12/1990	3,860,000	2,681	238	-24.73	
4/13/1990	6,832,000	4,744	422	158.73	158.73
4/14/1990	6,601,000	4,584	407	144.47	144.47
4/15/1990	6,720,000	4,667	415	151.81	151.81
4/16/1990	6,652,000	4,619	411	147.62	147.62
4/17/1990	6,635,000	4,608	410	146.57	146.57
4/18/1990	6,726,000	4,671	415	152.19	152.19
4/19/1990	6,761,000	4,695	417	154.35	154.35
4/20/1990	6,793,000	4,717	419	156.32	156.32
4/21/1990	6,798,000	4,721	420	156.63	156.63
4/22/1990	6,808,000	4,728	420	157.25	157.25
4/23/1990	6,787,000	4,713	419	155.95	155.95
4/24/1990	6,755,000	4,691	417	153.98	153.98
4/25/1990	6,732,000	4,675	416	152.56	152.56
4/26/1990	6,637,000	4,609	410	146.69	146.69
4/27/1990	6,622,000	4,599	409	145.77	145.77
4/28/1990	6,678,000	4,638	412	149.22	149.22
4/29/1990	6,540,000	4,542	404	140.70	140.70
4/30/1990	6,436,000	4,469	397	134.28	134.28
5/1/1990	6,457,000	4,484	399	135.58	135.58
5/2/1990	6,354,000	4,413	392	129.22	129.22
5/3/1990	6,479,000	4,499	400	136.94	136.94
5/4/1990	6,502,000	4,515	401	138.36	138.36
5/5/1990	6,648,000	4,617	410	147.37	147.37
5/6/1990	6,784,000	4,711	419	155.77	155.77
5/7/1990	6,782,000	4,710	419	155.64	155.64
5/8/1990	6,659,000	4,624	411	148.05	148.05
5/9/1990	6,542,000	4,543	404	140.83	140.83
5/10/1990	6,523,000	4,530	403	139.65	139.65
5/11/1990	6,501,000	4,515	401	138.30	138.30
5/12/1990	6,511,000	4,522	402	138.91	138.91
5/13/1990	6,408,000	4,450	396	132.56	132.56
5/14/1990	6,539,000	4,541	404	140.64	140.64

5/15/1990	6,589,000	4,576	407	143.73	143.73
5/16/1990	6,618,000	4,596	409	145.52	145.52
5/17/1990	6,419,000	4,458	396	133.23	133.23
5/18/1990	6,663,000	4,627	411	148.30	148.30
5/19/1990	6,484,000	4,503	400	137.25	137.25
5/20/1990	6,629,000	4,603	409	146.20	146.20
5/21/1990	6,570,000	4,563	406	142.56	142.56
5/22/1990	6,608,000	4,589	408	144.90	144.90
5/23/1990	6,680,000	4,639	412	149.35	149.35
5/24/1990	6,763,000	4,697	417	154.47	154.47
5/25/1990	6,748,000	4,686	417	153.54	153.54
5/26/1990	6,800,000	4,722	420	156.75	156.75
5/27/1990	6,770,000	4,701	418	154.90	154.90
5/28/1990	6,746,000	4,685	416	153.42	153.42
5/29/1990	6,864,000	4,767	424	160.70	160.70
5/30/1990	6,805,000	4,726	420	157.06	157.06
5/31/1990	6,784,000	4,711	419	155.77	155.77
6/1/1990	6,704,000	4,656	414	150.83	150.83
6/2/1990	6,677,000	4,637	412	149.16	149.16
6/3/1990	6,803,000	4,724	420	156.94	156.94
6/4/1990	6,576,000	4,567	406	142.93	142.93
6/5/1990	6,648,000	4,617	410	147.37	147.37
6/6/1990	6,641,000	4,612	410	146.94	146.94
6/7/1990	6,651,000	4,619	411	147.56	147.56
6/8/1990	6,548,000	4,547	404	141.20	141.20
6/9/1990	6,663,000	4,627	411	148.30	148.30
6/10/1990	6,684,000	4,642	413	149.59	149.59
6/11/1990	6,678,000	4,638	412	149.22	149.22
6/12/1990	6,619,000	4,597	409	145.58	145.58
6/13/1990	6,565,000	4,559	405	142.25	142.25
6/14/1990	6,475,000	4,497	400	136.69	136.69
6/15/1990	6,518,000	4,526	402	139.35	139.35
6/16/1990	6,506,000	4,518	402	138.60	138.60
6/17/1990	6,511,000	4,522	402	138.91	138.91
6/18/1990	6,493,000	4,509	401	137.80	137.80
6/19/1990	6,488,000	4,506	400	137.49	137.49
6/20/1990	6,470,000	4,493	399	136.38	136.38
6/21/1990	6,470,000	4,493	399	136.38	136.38
6/22/1990	6,560,000	4,556	405	141.94	141.94
6/23/1990	6,755,000	4,691	417	153.98	153.98
6/24/1990	6,984,000	4,850	431	168.11	168.11
6/25/1990	7,420,000	5,153	458	195.02	195.02
6/26/1990	7,227,000	5,019	446	183.11	183.11
6/27/1990	7,168,000	4,978	442	179.47	179.47

6/28/1990	7,143,000	4,960	441	177.93	177.93
6/29/1990	7,127,000	4,949	440	176.94	176.94
6/30/1990	4,050,000	2,813	250	-13.00	
7/1/1990	4,050,000	2,813	250	-13.00	
7/2/1990	4,050,000	2,813	250	-13.00	
7/3/1990	4,050,000	2,813	250	-13.00	
7/4/1990	4,050,000	2,813	250	-13.00	
7/5/1990	4,050,000	2,813	250	-13.00	
7/6/1990	4,050,000	2,813	250	-13.00	
7/7/1990	4,050,000	2,813	250	-13.00	
7/8/1990	4,050,000	2,813	250	-13.00	
7/9/1990	4,050,000	2,813	250	-13.00	
7/10/1990	4,050,000	2,813	250	-13.00	
7/11/1990	4,050,000	2,813	250	-13.00	
7/12/1990	3,240,000	2,250	200	-63.00	
7/13/1990	2,855,000	1,983	200	-63.00	
7/14/1990	2,838,000	1,971	200	-63.00	
7/15/1990	2,825,000	1,962	200	-63.00	
7/16/1990	2,799,000	1,944	200	-63.00	
7/17/1990	3,188,000	2,214	197	-66.21	
7/18/1990	3,162,000	2,196	195	-67.81	
7/19/1990	3,142,000	2,182	194	-69.05	
7/20/1990	3,134,000	2,176	193	-69.54	
7/21/1990	3,115,000	2,163	192	-70.72	
7/22/1990	3,130,000	2,174	193	-69.79	
7/23/1990	3,102,000	2,154	191	-71.52	
7/24/1990	3,078,000	2,138	190	-73.00	
7/25/1990	3,127,000	2,172	193	-69.98	
7/26/1990	3,056,000	2,122	189	-74.36	
7/27/1990	3,070,000	2,132	190	-73.49	
7/28/1990	3,064,000	2,128	189	-73.86	
7/29/1990	3,080,000	2,139	190	-72.88	
7/30/1990	3,101,000	2,153	191	-71.58	
7/31/1990	3,087,000	2,144	191	-72.44	
8/1/1990	3,187,000	2,213	197	-66.27	
8/2/1990	3,250,000	2,257	201	-62.38	
8/3/1990	3,227,000	2,241	199	-63.80	
8/4/1990	3,212,000	2,231	198	-64.73	
8/5/1990	3,203,000	2,224	198	-65.28	
8/6/1990	3,196,000	2,219	197	-65.72	
8/7/1990	3,197,000	2,220	197	-65.65	
8/8/1990	3,231,000	2,244	199	-63.56	
8/9/1990	3,175,000	2,205	196	-67.01	
8/10/1990	3,172,000	2,203	196	-67.20	

8/11/1990	3,213,000	2,231	198	-64.67
8/12/1990	3,190,000	2,215	197	-66.09
8/13/1990	3,188,000	2,214	197	-66.21
8/14/1990	3,190,000	2,215	197	-66.09
8/15/1990	3,187,000	2,213	197	-66.27
8/16/1990	3,191,000	2,216	197	-66.02
8/17/1990	3,208,000	2,228	198	-64.98
8/18/1990	3,139,000	2,180	194	-69.23
8/19/1990	3,235,000	2,247	200	-63.31
8/20/1990	3,060,000	2,125	189	-74.11
8/21/1990	3,085,000	2,142	190	-72.57
8/22/1990	3,123,000	2,169	193	-70.22
8/23/1990	3,091,000	2,147	191	-72.20
8/24/1990	3,114,000	2,163	192	-70.78
8/25/1990	3,083,000	2,141	190	-72.69
8/26/1990	3,073,000	2,134	190	-73.31
8/27/1990	3,091,000	2,147	191	-72.20
8/28/1990	3,068,000	2,131	189	-73.62
8/29/1990	3,076,000	2,136	190	-73.12
8/30/1990	3,053,000	2,120	188	-74.54
8/31/1990	3,015,000	2,094	186	-76.89
9/1/1990	3,002,000	2,085	185	-77.69
9/2/1990	2,995,000	2,080	185	-78.12
9/3/1990	3,053,000	2,120	188	-74.54
9/4/1990	3,063,000	2,127	189	-73.93
9/5/1990	3,084,000	2,142	190	-72.63
9/6/1990	3,102,000	2,154	191	-71.52
9/7/1990	3,012,000	2,092	186	-77.07
9/8/1990	3,076,000	2,136	190	-73.12
9/9/1990	3,044,000	2,114	188	-75.10
9/10/1990	3,033,000	2,106	187	-75.78
9/11/1990	3,030,000	2,104	187	-75.96
9/12/1990	3,050,000	2,118	188	-74.73
9/13/1990	4,132,000	2,869	255	-7.94
9/14/1990	4,103,000	2,849	253	-9.73
9/15/1990	4,084,000	2,836	252	-10.90
9/16/1990	4,111,000	2,855	254	-9.23
9/17/1990	4,053,000	2,815	250	-12.81
9/18/1990	4,051,000	2,813	250	-12.94
9/19/1990	4,044,000	2,808	250	-13.37
9/20/1990	4,030,000	2,799	249	-14.23
9/21/1990	3,985,000	2,767	246	-17.01
9/22/1990	3,975,000	2,760	245	-17.63
9/23/1990	3,977,000	2,762	245	-17.51

9/24/1990	3,950,000	2,743	244	-19.17	
9/25/1990	3,863,000	2,683	238	-24.54	
9/26/1990	3,912,000	2,717	241	-21.52	
9/27/1990	3,730,000	2,590	230	-32.75	
9/28/1990	3,801,000	2,640	235	-28.37	
9/29/1990	3,744,000	2,600	231	-31.89	
9/30/1990	3,703,000	2,572	229	-34.42	
10/1/1990	4,070,000	2,826	251	-11.77	
10/2/1990	4,005,000	2,781	247	-15.78	
10/3/1990	3,961,000	2,751	245	-18.49	
10/4/1990	3,905,000	2,712	241	-21.95	
10/5/1990	3,864,000	2,683	239	-24.48	
10/6/1990	3,850,000	2,674	238	-25.35	
10/7/1990	3,947,000	2,741	244	-19.36	
10/8/1990	3,945,000	2,740	244	-19.48	
10/9/1990	3,993,000	2,773	246	-16.52	
10/10/1990	3,998,000	2,776	247	-16.21	
10/11/1990	3,951,000	2,744	244	-19.11	
10/12/1990	3,938,000	2,735	243	-19.91	
10/13/1990	3,858,000	2,679	238	-24.85	
10/14/1990	3,769,000	2,617	233	-30.35	
10/15/1990	3,712,000	2,578	229	-33.86	
10/16/1990	3,695,000	2,566	228	-34.91	
10/17/1990	3,687,000	2,560	228	-35.41	
10/18/1990	4,358,000	3,026	269	6.01	6.01
10/19/1990	4,431,000	3,077	274	10.52	10.52
10/20/1990	4,399,000	3,055	272	8.54	8.54
10/21/1990	4,406,000	3,060	272	8.98	8.98
10/22/1990	4,422,000	3,071	273	9.96	9.96
10/23/1990	4,354,000	3,024	269	5.77	5.77
10/24/1990	4,380,000	3,042	270	7.37	7.37
10/25/1990	4,482,000	3,113	277	13.67	13.67
10/26/1990	4,335,000	3,010	268	4.59	4.59
10/27/1990	4,555,000	3,163	281	18.17	18.17
10/28/1990	4,349,000	3,020	268	5.46	5.46
10/29/1990	4,334,000	3,010	268	4.53	4.53
10/30/1990	4,340,000	3,014	268	4.90	4.90
10/31/1990	4,356,000	3,025	269	5.89	5.89
11/1/1990	4,353,000	3,023	269	5.70	5.70
11/2/1990	4,082,000	2,835	252	-11.02	
11/3/1990	4,271,000	2,966	264	0.64	
11/4/1990	4,302,000	2,988	266	2.56	2.56
11/5/1990	4,328,000	3,006	267	4.16	4.16
11/6/1990	2,203,000	1,530	136	-127.01	

11/7/1990	4,278,000	2,971	264	1.07	1.07
11/8/1990	4,382,000	3,043	270	7.49	7.49
11/9/1990	4,401,000	3,056	272	8.67	8.67
11/10/1990	4,491,000	3,119	277	14.22	14.22
11/11/1990	4,340,000	3,014	268	4.90	4.90
11/12/1990	4,395,000	3,052	271	8.30	8.30
11/13/1990	4,390,000	3,049	271	7.99	7.99
11/14/1990	4,437,000	3,081	274	10.89	10.89
11/15/1990	3,336,000	2,317	206	-57.07	
11/16/1990	4,235,000	2,941	261	-1.58	
11/17/1990	4,315,000	2,997	266	3.36	3.36
11/18/1990	4,337,000	3,012	268	4.72	4.72
11/19/1990	4,331,000	3,008	267	4.35	4.35
11/20/1990	4,140,000	2,875	256	-7.44	
11/21/1990	4,319,000	2,999	267	3.60	3.60
11/22/1990	4,284,000	2,975	264	1.44	1.44
11/23/1990	4,449,000	3,090	275	11.63	11.63
11/24/1990	4,359,000	3,027	269	6.07	6.07
11/25/1990	4,418,000	3,068	273	9.72	9.72
11/26/1990	3,015,000	2,094	186	-76.89	
11/27/1990	4,055,000	2,816	250	-12.69	
11/28/1990	4,307,000	2,991	266	2.86	2.86
11/29/1990	4,370,000	3,035	270	6.75	6.75
11/30/1990	2,287,000	1,588	141	-121.83	
12/1/1990	3,854,000	2,676	238	-25.10	
12/2/1990	4,373,000	3,037	270	6.94	6.94
12/3/1990	4,336,000	3,011	268	4.65	4.65
12/4/1990	4,371,000	3,035	270	6.81	6.81
12/5/1990	4,333,000	3,009	267	4.47	4.47
12/6/1990	4,243,000	2,947	262	-1.09	
12/7/1990	4,224,000	2,933	261	-2.26	
12/8/1990	4,297,000	2,984	265	2.25	2.25
12/9/1990	4,338,000	3,013	268	4.78	4.78
12/10/1990	4,318,000	2,999	267	3.54	3.54
12/11/1990	4,278,000	2,971	264	1.07	1.07
12/12/1990	4,051,000	2,813	250	-12.94	
12/13/1990	4,360,000	3,028	269	6.14	6.14
12/14/1990	4,217,000	2,928	260	-2.69	
12/15/1990	4,137,000	2,873	255	-7.63	
12/16/1990	4,491,000	3,119	277	14.22	14.22
12/17/1990	4,485,000	3,115	277	13.85	13.85
12/18/1990	4,050,000	2,813	250	-13.00	
12/19/1990	3,436,000	2,386	212	-50.90	
12/20/1990	4,330,000	3,007	267	4.28	4.28

12/21/1990	4,538,000	3,151	280	17.12	17.12		
12/22/1990	4,483,000	3,113	277	13.73	13.73		
12/23/1990	4,461,000	3,098	275	12.37	12.37		
12/24/1990	4,514,000	3,135	279	15.64	15.64		
12/25/1990	4,357,000	3,026	269	5.95	5.95		
12/26/1990	4,235,000	2,941	261	-1.58			
12/27/1990	4,187,000	2,908	258	-4.54			
12/28/1990	4,179,000	2,902	258	-5.04			
12/29/1990	4,193,000	2,912	259	-4.17			
12/30/1990	4,244,000	2,947	262	-1.02			
12/31/1990	4,218,000	2,929	260	-2.63		11999.14	599.96
1/1/1991	4,198,000	2,915	259	-3.86			
1/2/1991	4,244,000	2,947	262	-1.02			
1/3/1991	4,172,000	2,897	258	-5.47			
1/4/1991	4,152,000	2,883	256	-6.70			
1/5/1991	4,169,000	2,895	257	-5.65			
1/6/1991	4,200,000	2,917	259	-3.74			
1/7/1991	4,144,000	2,878	256	-7.20			
1/8/1991	4,177,000	2,901	258	-5.16			
1/9/1991	4,176,000	2,900	258	-5.22			
1/10/1991	4,191,000	2,910	259	-4.30			
1/11/1991	4,193,000	2,912	259	-4.17			
1/12/1991	4,192,000	2,911	259	-4.23			
1/13/1991	4,209,000	2,923	260	-3.19			
1/14/1991	4,200,000	2,917	259	-3.74			
1/15/1991	4,190,000	2,910	259	-4.36			
1/16/1991	4,215,000	2,927	260	-2.81			
1/17/1991	4,197,000	2,915	259	-3.93			
1/18/1991	4,216,000	2,928	260	-2.75			
1/19/1991	4,194,000	2,913	259	-4.11			
1/20/1991	4,016,000	2,789	248	-15.10			
1/21/1991	4,090,000	2,840	252	-10.53			
1/22/1991	4,176,000	2,900	258	-5.22			
1/23/1991	4,167,000	2,894	257	-5.78			
1/24/1991	4,097,000	2,845	253	-10.10			
1/25/1991	4,201,000	2,917	259	-3.68			
1/26/1991	4,437,000	3,081	274	10.89	10.89		
1/27/1991	4,364,000	3,031	269	6.38	6.38		
1/28/1991	3,921,000	2,723	242	-20.96			
1/29/1991	3,921,000	2,723	242	-20.96			
1/30/1991	4,254,000	2,954	263	-0.41			
1/31/1991	4,160,000	2,889	257	-6.21			
2/1/1991	4,154,000	2,885	256	-6.58			
2/2/1991	4,183,000	2,905	258	-4.79			

2/3/1991	4,155,000	2,885	256	-6.52	
2/4/1991	4,194,000	2,913	259	-4.11	
2/5/1991	4,149,000	2,881	256	-6.89	
2/6/1991	4,154,000	2,885	256	-6.58	
2/7/1991	4,142,000	2,876	256	-7.32	
2/8/1991	4,146,000	2,879	256	-7.07	
2/9/1991	4,156,000	2,886	257	-6.46	
2/10/1991	4,248,000	2,950	262	-0.78	
2/11/1991	4,248,000	2,950	262	-0.78	
2/12/1991	100,000	69	0	-263.00	
2/13/1991	37,000	26	2	-260.72	
2/14/1991	13,000	9	1	-262.20	
2/15/1991	0	0	0	-263.00	
2/16/1991	21,000	15	1	-261.70	
2/17/1991	27,000	19	2	-261.33	
2/18/1991	0	0	0	-263.00	
2/19/1991	0	0	0	-263.00	
2/20/1991	12,000	8	1	-262.26	
2/21/1991	83,000	58	5	-257.88	
2/22/1991	0	0	0	-263.00	
2/23/1991	0	0	0	-263.00	
2/24/1991	0	0	0	-263.00	
2/25/1991	20,000	14	1	-261.77	
2/26/1991	0	0	0	-263.00	
2/27/1991	7,000	5	0	-262.57	
2/28/1991	0	0	0	-263.00	
3/1/1991	3,192,000	2,217	197	-65.96	
3/2/1991	4,320,000	3,000	267	3.67	3.67
3/3/1991	4,110,000	2,854	254	-9.30	
3/4/1991	4,320,000	3,000	267	3.67	3.67
3/5/1991	3,732,000	2,592	230	-32.63	
3/6/1991	4,320,000	3,000	267	3.67	3.67
3/7/1991	4,320,000	3,000	267	3.67	3.67
3/8/1991	3,600,000	2,500	222	-40.78	
3/9/1991	4,320,000	3,000	267	3.67	3.67
3/10/1991	4,320,000	3,000	267	3.67	3.67
3/11/1991	4,320,000	3,000	267	3.67	3.67
3/12/1991	4,320,000	3,000	267	3.67	3.67
3/13/1991	4,320,000	3,000	267	3.67	3.67
3/14/1991	4,032,000	2,800	249	-14.11	
3/15/1991	4,320,000	3,000	267	3.67	3.67
3/16/1991	4,248,000	2,950	262	-0.78	
3/17/1991	4,140,000	2,875	256	-7.44	
3/18/1991	4,140,000	2,875	256	-7.44	

3/19/1991	3,864,000	2,683	239	-24.48	
3/20/1991	3,960,000	2,750	244	-18.56	
3/21/1991	3,960,000	2,750	244	-18.56	
3/22/1991	3,855,000	2,677	238	-25.04	
3/23/1991	3,896,000	2,706	240	-22.51	
3/24/1991	3,858,000	2,679	238	-24.85	
3/25/1991	4,189,000	2,909	259	-4.42	
3/26/1991	3,286,000	2,282	203	-60.16	
3/27/1991	4,111,000	2,855	254	-9.23	
3/28/1991	4,270,000	2,965	264	0.58	
3/29/1991	3,813,000	2,648	235	-27.63	
3/30/1991	3,999,000	2,777	247	-16.15	
3/31/1991	4,064,000	2,822	251	-12.14	
4/1/1991	4,108,000	2,853	254	-9.42	
4/2/1991	4,183,000	2,905	258	-4.79	
4/3/1991	3,985,000	2,767	246	-17.01	
4/4/1991	3,992,000	2,772	246	-16.58	
4/5/1991	4,675,000	3,247	289	25.58	25.58
4/6/1991	4,583,000	3,183	283	19.90	19.90
4/7/1991	4,667,000	3,241	288	25.09	25.09
4/8/1991	5,427,000	3,769	335	72.00	72.00
4/9/1991	5,885,000	4,087	363	100.27	100.27
4/10/1991	5,874,000	4,079	363	99.59	99.59
4/11/1991	5,535,000	3,844	342	78.67	78.67
4/12/1991	5,754,000	3,996	355	92.19	92.19
4/13/1991	5,735,000	3,983	354	91.01	91.01
4/14/1991	5,727,000	3,977	354	90.52	90.52
4/15/1991	6,155,000	4,274	380	116.94	116.94
4/16/1991	6,251,000	4,341	386	122.86	122.86
4/17/1991	6,258,000	4,346	386	123.30	123.30
4/18/1991	6,280,000	4,361	388	124.65	124.65
4/19/1991	6,407,000	4,449	395	132.49	132.49
4/20/1991	7,021,000	4,876	433	170.40	170.40
4/21/1991	7,324,000	5,086	452	189.10	189.10
4/22/1991	7,318,000	5,082	452	188.73	188.73
4/23/1991	7,542,000	5,238	466	202.56	202.56
4/24/1991	7,448,000	5,172	460	196.75	196.75
4/25/1991	7,438,000	5,165	459	196.14	196.14
4/26/1991	7,394,000	5,135	456	193.42	193.42
4/27/1991	7,234,000	5,024	447	183.54	183.54
4/28/1991	7,227,000	5,019	446	183.11	183.11
4/29/1991	7,100,000	4,931	438	175.27	175.27
4/30/1991	7,066,000	4,907	436	173.17	173.17
5/1/1991	7,180,000	4,986	443	180.21	180.21

5/2/1991	7,163,000	4,974	442	179.16	179.16
5/3/1991	7,122,000	4,946	440	176.63	176.63
5/4/1991	7,151,000	4,966	441	178.42	178.42
5/5/1991	7,169,000	4,978	443	179.53	179.53
5/6/1991	7,351,000	5,105	454	190.77	190.77
5/7/1991	7,552,000	5,244	466	203.17	203.17
5/8/1991	7,870,000	5,465	486	222.80	222.80
5/9/1991	8,061,000	5,598	498	234.59	234.59
5/10/1991	7,982,000	5,543	493	229.72	229.72
5/11/1991	8,183,000	5,683	505	242.12	242.12
5/12/1991	8,235,000	5,719	508	245.33	245.33
5/13/1991	8,262,000	5,738	510	247.00	247.00
5/14/1991	8,239,000	5,722	509	245.58	245.58
5/15/1991	8,364,000	5,808	516	253.30	253.30
5/16/1991	8,391,000	5,827	518	254.96	254.96
5/17/1991	8,188,000	5,686	505	242.43	242.43
5/18/1991	6,880,000	4,778	425	161.69	161.69
5/19/1991	6,499,000	4,513	401	138.17	138.17
5/20/1991	6,466,000	4,490	399	136.14	136.14
5/21/1991	6,386,000	4,435	394	131.20	131.20
5/22/1991	6,369,000	4,423	393	130.15	130.15
5/23/1991	6,277,000	4,359	387	124.47	124.47
5/24/1991	6,279,000	4,360	388	124.59	124.59
5/25/1991	6,252,000	4,342	386	122.93	122.93
5/26/1991	6,178,000	4,290	381	118.36	118.36
5/27/1991	6,071,000	4,216	375	111.75	111.75
5/28/1991	5,970,000	4,146	369	105.52	105.52
5/29/1991	5,773,000	4,009	356	93.36	93.36
5/30/1991	6,707,000	4,658	414	151.01	151.01
5/31/1991	6,736,000	4,678	416	152.80	152.80
6/1/1991	6,689,000	4,645	413	149.90	149.90
6/2/1991	6,763,000	4,697	417	154.47	154.47
6/3/1991	6,946,000	4,824	429	165.77	165.77
6/4/1991	6,741,000	4,681	416	153.11	153.11
6/5/1991	6,766,000	4,699	418	154.65	154.65
6/6/1991	6,703,000	4,655	414	150.77	150.77
6/7/1991	6,663,000	4,627	411	148.30	148.30
6/8/1991	6,581,000	4,570	406	143.23	143.23
6/9/1991	6,550,000	4,549	404	141.32	141.32
6/10/1991	6,519,000	4,527	402	139.41	139.41
6/11/1991	6,555,000	4,552	405	141.63	141.63
6/12/1991	6,435,000	4,469	397	134.22	134.22
6/13/1991	6,416,000	4,456	396	133.05	133.05
6/14/1991	6,502,000	4,515	401	138.36	138.36

6/15/1991	6,394,000	4,440	395	131.69	131.69
6/16/1991	6,365,000	4,420	393	129.90	129.90
6/17/1991	6,333,000	4,398	391	127.93	127.93
6/18/1991	6,245,000	4,337	385	122.49	122.49
6/19/1991	6,159,000	4,277	380	117.19	117.19
6/20/1991	6,155,000	4,274	380	116.94	116.94
6/21/1991	6,216,000	4,317	384	120.70	120.70
6/22/1991	6,080,000	4,222	375	112.31	112.31
6/23/1991	6,055,000	4,205	374	110.77	110.77
6/24/1991	5,988,000	4,158	370	106.63	106.63
6/25/1991	5,997,000	4,165	370	107.19	107.19
6/26/1991	5,976,000	4,150	369	105.89	105.89
6/27/1991	5,925,000	4,115	366	102.74	102.74
6/28/1991	5,939,000	4,124	367	103.60	103.60
6/29/1991	5,778,000	4,013	357	93.67	93.67
6/30/1991	5,438,000	3,776	336	72.68	72.68
7/1/1991	5,762,000	4,001	356	92.68	92.68
7/2/1991	5,764,000	4,003	356	92.80	92.80
7/3/1991	5,757,000	3,998	355	92.37	92.37
7/4/1991	5,741,000	3,987	354	91.38	91.38
7/5/1991	5,686,000	3,949	351	87.99	87.99
7/6/1991	5,750,000	3,993	355	91.94	91.94
7/7/1991	3,841,000	2,667	237	-25.90	
7/8/1991	3,817,000	2,651	236	-27.38	
7/9/1991	3,728,000	2,589	230	-32.88	
7/10/1991	3,980,000	2,764	246	-17.32	
7/11/1991	4,065,000	2,823	251	-12.07	
7/12/1991	3,925,000	2,726	242	-20.72	
7/13/1991	3,978,000	2,763	246	-17.44	
7/14/1991	3,931,000	2,730	243	-20.35	
7/15/1991	3,956,000	2,747	244	-18.80	
7/16/1991	2,886,000	2,004	178	-84.85	
7/17/1991	2,860,000	1,986	177	-86.46	
7/18/1991	2,844,000	1,975	176	-87.44	
7/19/1991	2,800,000	1,944	173	-90.16	
7/20/1991	2,822,000	1,960	174	-88.80	
7/21/1991	2,848,000	1,978	176	-87.20	
7/22/1991	2,768,000	1,922	171	-92.14	
7/23/1991	2,810,000	1,951	173	-89.54	
7/24/1991	2,795,000	1,941	173	-90.47	
7/25/1991	2,821,000	1,959	174	-88.86	
7/26/1991	2,732,000	1,897	169	-94.36	
7/27/1991	2,786,000	1,935	172	-91.02	
7/28/1991	2,796,000	1,942	173	-90.41	

7/29/1991	2,775,000	1,927	171	-91.70
7/30/1991	2,789,000	1,937	172	-90.84
7/31/1991	2,777,000	1,928	171	-91.58
8/1/1991	2,800,000	1,944	173	-90.16
8/2/1991	2,722,000	1,890	168	-94.98
8/3/1991	2,734,000	1,899	169	-94.23
8/4/1991	2,746,000	1,907	170	-93.49
8/5/1991	2,791,000	1,938	172	-90.72
8/6/1991	2,724,000	1,892	168	-94.85
8/7/1991	2,705,000	1,878	167	-96.02
8/8/1991	3,156,000	2,192	195	-68.19
8/9/1991	3,044,000	2,114	188	-75.10
8/10/1991	3,031,000	2,105	187	-75.90
8/11/1991	3,049,000	2,117	188	-74.79
8/12/1991	3,036,000	2,108	187	-75.59
8/13/1991	3,049,000	2,117	188	-74.79
8/14/1991	3,051,000	2,119	188	-74.67
8/15/1991	3,061,000	2,126	189	-74.05
8/16/1991	3,072,000	2,133	190	-73.37
8/17/1991	2,981,000	2,070	184	-78.99
8/18/1991	3,024,000	2,100	187	-76.33
8/19/1991	2,972,000	2,064	183	-79.54
8/20/1991	3,008,000	2,089	186	-77.32
8/21/1991	3,009,000	2,090	186	-77.26
8/22/1991	2,976,000	2,067	184	-79.30
8/23/1991	3,038,000	2,110	188	-75.47
8/24/1991	2,963,000	2,058	183	-80.10
8/25/1991	2,996,000	2,081	185	-78.06
8/26/1991	3,076,000	2,136	190	-73.12
8/27/1991	3,090,000	2,146	191	-72.26
8/28/1991	3,130,000	2,174	193	-69.79
8/29/1991	2,977,000	2,067	184	-79.23
8/30/1991	3,013,000	2,092	186	-77.01
8/31/1991	3,042,000	2,113	188	-75.22
9/1/1991	2,988,000	2,075	184	-78.56
9/2/1991	3,040,000	2,111	188	-75.35
9/3/1991	2,930,000	2,035	181	-82.14
9/4/1991	2,970,000	2,063	183	-79.67
9/5/1991	2,962,000	2,057	183	-80.16
9/6/1991	2,961,000	2,056	183	-80.22
9/7/1991	2,956,000	2,053	182	-80.53
9/8/1991	2,999,000	2,083	185	-77.88
9/9/1991	2,998,000	2,082	185	-77.94
9/10/1991	3,177,000	2,206	196	-66.89

9/11/1991	3,244,000	2,253	200	-62.75
9/12/1991	3,153,000	2,190	195	-68.37
9/13/1991	3,196,000	2,219	197	-65.72
9/14/1991	3,263,000	2,266	201	-61.58
9/15/1991	3,208,000	2,228	198	-64.98
9/16/1991	3,214,000	2,232	198	-64.60
9/17/1991	3,168,000	2,200	196	-67.44
9/18/1991	4,231,000	2,938	261	-1.83
9/19/1991	3,999,000	2,777	247	-16.15
9/20/1991	4,082,000	2,835	252	-11.02
9/21/1991	4,059,000	2,819	251	-12.44
9/22/1991	4,069,000	2,826	251	-11.83
9/23/1991	4,042,000	2,807	250	-13.49
9/24/1991	4,019,000	2,791	248	-14.91
9/25/1991	4,042,000	2,807	250	-13.49
9/26/1991	3,992,000	2,772	246	-16.58
9/27/1991	4,004,000	2,781	247	-15.84
9/28/1991	3,957,000	2,748	244	-18.74
9/29/1991	4,052,000	2,814	250	-12.88
9/30/1991	4,014,000	2,788	248	-15.22
10/1/1991	3,910,000	2,715	241	-21.64
10/2/1991	3,815,000	2,649	235	-27.51
10/3/1991	3,715,000	2,580	229	-33.68
10/4/1991	3,710,000	2,576	229	-33.99
10/5/1991	3,654,000	2,538	226	-37.44
10/6/1991	3,615,000	2,510	223	-39.85
10/7/1991	3,622,000	2,515	224	-39.42
10/8/1991	3,455,000	2,399	213	-49.73
10/9/1991	3,595,000	2,497	222	-41.09
10/10/1991	3,261,000	2,265	201	-61.70
10/11/1991	3,343,000	2,322	206	-56.64
10/12/1991	3,296,000	2,289	203	-59.54
10/13/1991	3,192,000	2,217	197	-65.96
10/14/1991	3,875,000	2,691	239	-23.80
10/15/1991	3,784,000	2,628	234	-29.42
10/16/1991	3,882,000	2,696	240	-23.37
10/17/1991	4,104,000	2,850	253	-9.67
10/18/1991	4,096,000	2,844	253	-10.16
10/19/1991	3,991,000	2,772	246	-16.64
10/20/1991	4,075,000	2,830	252	-11.46
10/21/1991	4,039,000	2,805	249	-13.68
10/22/1991	3,986,000	2,768	246	-16.95
10/23/1991	3,889,000	2,701	240	-22.94
10/24/1991	3,908,000	2,714	241	-21.77

10/25/1991	3,929,000	2,728	243	-20.47	
10/26/1991	4,060,000	2,819	251	-12.38	
10/27/1991	2,820,000	1,958	174	-88.93	
10/28/1991	3,672,000	2,550	227	-36.33	
10/29/1991	1,858,000	1,290	115	-148.31	
10/30/1991	2,776,000	1,928	171	-91.64	
10/31/1991	3,478,000	2,415	215	-48.31	
11/1/1991	3,782,000	2,626	233	-29.54	
11/2/1991	3,848,000	2,672	238	-25.47	
11/3/1991	4,053,000	2,815	250	-12.81	
11/4/1991	3,869,000	2,687	239	-24.17	
11/5/1991	3,848,000	2,672	238	-25.47	
11/6/1991	3,765,000	2,615	232	-30.59	
11/7/1991	3,563,000	2,474	220	-43.06	
11/8/1991	3,514,000	2,440	217	-46.09	
11/9/1991	3,803,000	2,641	235	-28.25	
11/10/1991	3,757,000	2,609	232	-31.09	
11/11/1991	3,794,000	2,635	234	-28.80	
11/12/1991	3,771,000	2,619	233	-30.22	
11/13/1991	3,586,000	2,490	221	-41.64	
11/14/1991	2,486,000	1,726	153	-109.54	
11/15/1991	1,983,000	1,377	122	-140.59	
11/16/1991	4,085,000	2,837	252	-10.84	
11/17/1991	4,289,000	2,978	265	1.75	1.75
11/18/1991	3,867,000	2,685	239	-24.30	
11/19/1991	3,788,000	2,631	234	-29.17	
11/20/1991	3,840,000	2,667	237	-25.96	
11/21/1991	3,789,000	2,631	234	-29.11	
11/22/1991	1,844,000	1,281	114	-149.17	
11/23/1991	2,849,000	1,978	176	-87.14	
11/24/1991	3,244,000	2,253	200	-62.75	
11/25/1991	775,000	538	48	-215.16	
11/26/1991	0	0	0	-263.00	
11/27/1991	2,672,000	1,856	165	-98.06	
11/28/1991	3,939,000	2,735	243	-19.85	
11/29/1991	3,012,000	2,092	186	-77.07	
11/30/1991	3,036,000	2,108	187	-75.59	
12/1/1991	4,139,000	2,874	255	-7.51	
12/2/1991	4,155,000	2,885	256	-6.52	
12/3/1991	4,081,000	2,834	252	-11.09	
12/4/1991	4,028,000	2,797	249	-14.36	
12/5/1991	3,987,000	2,769	246	-16.89	
12/6/1991	3,903,000	2,710	241	-22.07	
12/7/1991	3,706,000	2,574	229	-34.23	

12/8/1991	3,806,000	2,643	235	-28.06		
12/9/1991	3,806,000	2,643	235	-28.06		
12/10/1991	1,711,000	1,188	106	-157.38		
12/11/1991	4,189,000	2,909	259	-4.42		
12/12/1991	3,657,000	2,540	226	-37.26		
12/13/1991	3,133,000	2,176	193	-69.60		
12/14/1991	3,609,000	2,506	223	-40.22		
12/15/1991	3,540,000	2,458	219	-44.48		
12/16/1991	3,649,000	2,534	225	-37.75		
12/17/1991	3,625,000	2,517	224	-39.23		
12/18/1991	3,772,000	2,619	233	-30.16		
12/19/1991	3,619,000	2,513	223	-39.60		
12/20/1991	3,195,000	2,219	197	-65.78		
12/21/1991	3,632,000	2,522	224	-38.80		
12/22/1991	3,656,000	2,539	226	-37.32		
12/23/1991	3,571,000	2,480	220	-42.57		
12/24/1991	3,593,000	2,495	222	-41.21		
12/25/1991	3,547,000	2,463	219	-44.05		
12/26/1991	3,536,000	2,456	218	-44.73		
12/27/1991	3,501,000	2,431	216	-46.89		
12/28/1991	3,544,000	2,461	219	-44.23		
12/29/1991	3,586,000	2,490	221	-41.64		
12/30/1991	3,504,000	2,433	216	-46.70		
12/31/1991	3,606,000	2,504	223	-40.41	13310.46	665.52
1/1/1992	3,551,000	2,466	219	-43.80		
1/2/1992	3,587,000	2,491	221	-41.58		
1/3/1992	3,631,000	2,522	224	-38.86		
1/4/1992	3,602,000	2,501	222	-40.65		
1/5/1992	3,567,000	2,477	220	-42.81		
1/6/1992	3,556,000	2,469	220	-43.49		
1/7/1992	3,515,000	2,441	217	-46.02		
1/8/1992	3,487,000	2,422	215	-47.75		
1/9/1992	3,518,000	2,443	217	-45.84		
1/10/1992	3,518,000	2,443	217	-45.84		
1/11/1992	3,499,000	2,430	216	-47.01		
1/12/1992	3,536,000	2,456	218	-44.73		
1/13/1992	3,458,000	2,401	213	-49.54		
1/14/1992	3,400,000	2,361	210	-53.12		
1/15/1992	3,491,000	2,424	215	-47.51		
1/16/1992	3,484,000	2,419	215	-47.94		
1/17/1992	3,457,000	2,401	213	-49.60		
1/18/1992	3,454,000	2,399	213	-49.79		
1/19/1992	3,503,000	2,433	216	-46.77		
1/20/1992	3,493,000	2,426	216	-47.38		

1/21/1992	3,488,000	2,422	215	-47.69
1/22/1992	3,472,000	2,411	214	-48.68
1/23/1992	3,503,000	2,433	216	-46.77
1/24/1992	3,508,000	2,436	217	-46.46
1/25/1992	3,586,000	2,490	221	-41.64
1/26/1992	3,512,000	2,439	217	-46.21
1/27/1992	3,551,000	2,466	219	-43.80
1/28/1992	3,585,000	2,490	221	-41.70
1/29/1992	3,561,000	2,473	220	-43.19
1/30/1992	3,548,000	2,464	219	-43.99
1/31/1992	3,609,000	2,506	223	-40.22
2/1/1992	3,540,000	2,458	219	-44.48
2/2/1992	3,557,000	2,470	220	-43.43
2/3/1992	3,202,000	2,224	198	-65.35
2/4/1992	3,549,000	2,465	219	-43.93
2/5/1992	3,672,000	2,550	227	-36.33
2/6/1992	3,616,000	2,511	223	-39.79
2/7/1992	3,684,000	2,558	227	-35.59
2/8/1992	3,516,000	2,442	217	-45.96
2/9/1992	3,522,000	2,446	217	-45.59
2/10/1992	3,529,000	2,451	218	-45.16
2/11/1992	3,518,000	2,443	217	-45.84
2/12/1992	3,521,000	2,445	217	-45.65
2/13/1992	3,518,000	2,443	217	-45.84
2/14/1992	3,535,000	2,455	218	-44.79
2/15/1992	3,493,000	2,426	216	-47.38
2/16/1992	3,479,000	2,416	215	-48.25
2/17/1992	3,208,000	2,228	198	-64.98
2/18/1992	3,350,000	2,326	207	-56.21
2/19/1992	3,502,000	2,432	216	-46.83
2/20/1992	3,463,000	2,405	214	-49.23
2/21/1992	3,491,000	2,424	215	-47.51
2/22/1992	3,521,000	2,445	217	-45.65
2/23/1992	3,460,000	2,403	214	-49.42
2/24/1992	3,484,000	2,419	215	-47.94
2/25/1992	3,503,000	2,433	216	-46.77
2/26/1992	3,511,000	2,438	217	-46.27
2/27/1992	3,485,000	2,420	215	-47.88
2/28/1992	3,541,000	2,459	219	-44.42
2/29/1992	3,506,000	2,435	216	-46.58
3/1/1992	3,570,000	2,479	220	-42.63
3/2/1992	3,546,000	2,463	219	-44.11
3/3/1992	3,562,000	2,474	220	-43.12
3/4/1992	3,611,000	2,508	223	-40.10

3/5/1992	3,589,000	2,492	222	-41.46	
3/6/1992	3,639,000	2,527	225	-38.37	
3/7/1992	3,621,000	2,515	224	-39.48	
3/8/1992	3,575,000	2,483	221	-42.32	
3/9/1992	3,291,000	2,285	203	-59.85	
3/10/1992	3,541,000	2,459	219	-44.42	
3/11/1992	3,554,000	2,468	219	-43.62	
3/12/1992	3,559,000	2,472	220	-43.31	
3/13/1992	4,035,000	2,802	249	-13.93	
3/14/1992	4,062,000	2,821	251	-12.26	
3/15/1992	4,135,000	2,872	255	-7.75	
3/16/1992	4,084,000	2,836	252	-10.90	
3/17/1992	4,153,000	2,884	256	-6.64	
3/18/1992	4,080,000	2,833	252	-11.15	
3/19/1992	4,117,000	2,859	254	-8.86	
3/20/1992	3,984,000	2,767	246	-17.07	
3/21/1992	3,305,000	2,295	204	-58.99	
3/22/1992	3,320,000	2,306	205	-58.06	
3/23/1992	3,926,000	2,726	242	-20.65	
3/24/1992	3,942,000	2,738	243	-19.67	
3/25/1992	4,050,000	2,813	250	-13.00	
3/26/1992	4,050,000	2,813	250	-13.00	
3/27/1992	4,050,000	2,813	250	-13.00	
3/28/1992	4,050,000	2,813	250	-13.00	
3/29/1992	4,050,000	2,813	250	-13.00	
3/30/1992	4,050,000	2,813	250	-13.00	
3/31/1992	4,050,000	2,813	250	-13.00	
4/1/1992	4,050,000	2,813	250	-13.00	
4/2/1992	4,050,000	2,813	250	-13.00	
4/3/1992	4,050,000	2,813	250	-13.00	
4/4/1992	3,904,000	2,711	241	-22.01	
4/5/1992	4,040,000	2,806	249	-13.62	
4/6/1992	3,629,000	2,520	224	-38.99	
4/7/1992	3,877,000	2,692	239	-23.68	
4/8/1992	3,963,000	2,752	245	-18.37	
4/9/1992	4,000,000	2,778	247	-16.09	
4/10/1992	4,096,000	2,844	253	-10.16	
4/11/1992	4,067,000	2,824	251	-11.95	
4/12/1992	4,069,000	2,826	251	-11.83	
4/13/1992	4,171,000	2,897	257	-5.53	
4/14/1992	4,253,000	2,953	263	-0.47	
4/15/1992	4,390,000	3,049	271	7.99	7.99
4/16/1992	4,210,000	2,924	260	-3.12	
4/17/1992	4,256,000	2,956	263	-0.28	

4/18/1992	4,204,000	2,919	260	-3.49	
4/19/1992	4,174,000	2,899	258	-5.35	
4/20/1992	4,138,000	2,874	255	-7.57	
4/21/1992	4,267,000	2,963	263	0.40	
4/22/1992	4,323,000	3,002	267	3.85	3.85
4/23/1992	4,296,000	2,983	265	2.19	2.19
4/24/1992	4,280,000	2,972	264	1.20	1.20
4/25/1992	4,372,000	3,036	270	6.88	6.88
4/26/1992	4,488,000	3,117	277	14.04	14.04
4/27/1992	4,650,000	3,229	287	24.04	24.04
4/28/1992	4,504,000	3,128	278	15.02	15.02
4/29/1992	4,623,000	3,210	285	22.37	22.37
4/30/1992	4,641,000	3,223	286	23.48	23.48
5/1/1992	4,457,000	3,095	275	12.12	12.12
5/2/1992	4,487,000	3,116	277	13.98	13.98
5/3/1992	4,575,000	3,177	282	19.41	19.41
5/4/1992	4,524,000	3,142	279	16.26	16.26
5/5/1992	4,577,000	3,178	283	19.53	19.53
5/6/1992	4,833,000	3,356	298	35.33	35.33
5/7/1992	5,130,000	3,563	317	53.67	53.67
5/8/1992	5,168,000	3,589	319	56.01	56.01
5/9/1992	5,120,000	3,556	316	53.05	53.05
5/10/1992	5,085,000	3,531	314	50.89	50.89
5/11/1992	5,005,000	3,476	309	45.95	45.95
5/12/1992	4,958,000	3,443	306	43.05	43.05
5/13/1992	4,894,000	3,399	302	39.10	39.10
5/14/1992	4,894,000	3,399	302	39.10	39.10
5/15/1992	4,944,000	3,433	305	42.19	42.19
5/16/1992	4,949,000	3,437	305	42.49	42.49
5/17/1992	4,892,000	3,397	302	38.98	38.98
5/18/1992	4,898,000	3,401	302	39.35	39.35
5/19/1992	4,927,000	3,422	304	41.14	41.14
5/20/1992	4,937,000	3,428	305	41.75	41.75
5/21/1992	4,894,000	3,399	302	39.10	39.10
5/22/1992	4,907,000	3,408	303	39.90	39.90
5/23/1992	4,875,000	3,385	301	37.93	37.93
5/24/1992	4,872,000	3,383	301	37.74	37.74
5/25/1992	4,864,000	3,378	300	37.25	37.25
5/26/1992	4,536,000	3,150	280	17.00	17.00
5/27/1992	4,842,000	3,363	299	35.89	35.89
5/28/1992	4,664,000	3,239	288	24.90	24.90
5/29/1992	4,680,000	3,250	289	25.89	25.89
5/30/1992	4,573,000	3,176	282	19.28	19.28
5/31/1992	4,535,000	3,149	280	16.94	16.94

6/1/1992	4,541,000	3,153	280	17.31	17.31
6/2/1992	4,523,000	3,141	279	16.20	16.20
6/3/1992	4,514,000	3,135	279	15.64	15.64
6/4/1992	4,481,000	3,112	277	13.60	13.60
6/5/1992	4,529,000	3,145	280	16.57	16.57
6/6/1992	4,505,000	3,128	278	15.09	15.09
6/7/1992	4,371,000	3,035	270	6.81	6.81
6/8/1992	4,438,000	3,082	274	10.95	10.95
6/9/1992	4,402,000	3,057	272	8.73	8.73
6/10/1992	4,411,000	3,063	272	9.28	9.28
6/11/1992	4,336,000	3,011	268	4.65	4.65
6/12/1992	4,328,000	3,006	267	4.16	4.16
6/13/1992	4,317,000	2,998	266	3.48	3.48
6/14/1992	4,369,000	3,034	270	6.69	6.69
6/15/1992	4,684,000	3,253	289	26.14	26.14
6/16/1992	5,428,000	3,769	335	72.06	72.06
6/17/1992	5,172,000	3,592	319	56.26	56.26
6/18/1992	4,936,000	3,428	305	41.69	41.69
6/19/1992	4,698,000	3,263	290	27.00	27.00
6/20/1992	4,637,000	3,220	286	23.23	23.23
6/21/1992	4,608,000	3,200	284	21.44	21.44
6/22/1992	4,472,000	3,106	276	13.05	13.05
6/23/1992	4,411,000	3,063	272	9.28	9.28
6/24/1992	4,441,000	3,084	274	11.14	11.14
6/25/1992	4,372,000	3,036	270	6.88	6.88
6/26/1992	4,310,000	2,993	266	3.05	3.05
6/27/1992	4,316,000	2,997	266	3.42	3.42
6/28/1992	4,343,000	3,016	268	5.09	5.09
6/29/1992	4,384,000	3,044	271	7.62	7.62
6/30/1992	4,359,000	3,027	269	6.07	6.07
7/1/1992	4,367,000	3,033	270	6.57	6.57
7/2/1992	4,284,000	2,975	264	1.44	1.44
7/3/1992	4,263,000	2,960	263	0.15	
7/4/1992	4,215,000	2,927	260	-2.81	
7/5/1992	4,138,000	2,874	255	-7.57	
7/6/1992	4,150,000	2,882	256	-6.83	
7/7/1992	4,134,000	2,871	255	-7.81	
7/8/1992	4,134,000	2,871	255	-7.81	
7/9/1992	4,143,000	2,877	256	-7.26	
7/10/1992	4,111,000	2,855	254	-9.23	
7/11/1992	4,132,000	2,869	255	-7.94	
7/12/1992	4,128,000	2,867	255	-8.19	
7/13/1992	4,102,000	2,849	253	-9.79	
7/14/1992	4,080,000	2,833	252	-11.15	

7/15/1992	4,056,000	2,817	250	-12.63
7/16/1992	4,036,000	2,803	249	-13.86
7/17/1992	4,073,000	2,828	251	-11.58
7/18/1992	4,013,000	2,787	248	-15.28
7/19/1992	4,013,000	2,787	248	-15.28
7/20/1992	4,003,000	2,780	247	-15.90
7/21/1992	4,016,000	2,789	248	-15.10
7/22/1992	4,003,000	2,780	247	-15.90
7/23/1992	3,974,000	2,760	245	-17.69
7/24/1992	3,973,000	2,759	245	-17.75
7/25/1992	3,946,000	2,740	244	-19.42
7/26/1992	3,971,000	2,758	245	-17.88
7/27/1992	3,909,000	2,715	241	-21.70
7/28/1992	3,949,000	2,742	244	-19.23
7/29/1992	3,926,000	2,726	242	-20.65
7/30/1992	3,920,000	2,722	242	-21.02
7/31/1992	3,945,000	2,740	244	-19.48
8/1/1992	3,918,000	2,721	242	-21.15
8/2/1992	3,901,000	2,709	241	-22.20
8/3/1992	3,911,000	2,716	241	-21.58
8/4/1992	3,921,000	2,723	242	-20.96
8/5/1992	3,929,000	2,728	243	-20.47
8/6/1992	3,892,000	2,703	240	-22.75
8/7/1992	3,894,000	2,704	240	-22.63
8/8/1992	3,884,000	2,697	240	-23.25
8/9/1992	4,085,000	2,837	252	-10.84
8/10/1992	3,770,000	2,618	233	-30.28
8/11/1992	3,880,000	2,694	240	-23.49
8/12/1992	3,912,000	2,717	241	-21.52
8/13/1992	3,928,000	2,728	242	-20.53
8/14/1992	3,893,000	2,703	240	-22.69
8/15/1992	3,882,000	2,696	240	-23.37
8/16/1992	3,879,000	2,694	239	-23.56
8/17/1992	3,947,000	2,741	244	-19.36
8/18/1992	3,997,000	2,776	247	-16.27
8/19/1992	3,911,000	2,716	241	-21.58
8/20/1992	3,944,000	2,739	243	-19.54
8/21/1992	3,966,000	2,754	245	-18.19
8/22/1992	3,860,000	2,681	238	-24.73
8/23/1992	3,891,000	2,702	240	-22.81
8/24/1992	3,875,000	2,691	239	-23.80
8/25/1992	3,866,000	2,685	239	-24.36
8/26/1992	3,840,000	2,667	237	-25.96
8/27/1992	3,871,000	2,688	239	-24.05

8/28/1992	3,991,000	2,772	246	-16.64
8/29/1992	3,710,000	2,576	229	-33.99
8/30/1992	3,881,000	2,695	240	-23.43
8/31/1992	3,838,000	2,665	237	-26.09
9/1/1992	3,796,000	2,636	234	-28.68
9/2/1992	3,876,000	2,692	239	-23.74
9/3/1992	3,826,000	2,657	236	-26.83
9/4/1992	3,915,000	2,719	242	-21.33
9/5/1992	3,879,000	2,694	239	-23.56
9/6/1992	3,831,000	2,660	236	-26.52
9/7/1992	3,819,000	2,652	236	-27.26
9/8/1992	3,802,000	2,640	235	-28.31
9/9/1992	3,894,000	2,704	240	-22.63
9/10/1992	3,740,000	2,597	231	-32.14
9/11/1992	3,829,000	2,659	236	-26.64
9/12/1992	3,911,000	2,716	241	-21.58
9/13/1992	3,711,000	2,577	229	-33.93
9/14/1992	3,986,000	2,768	246	-16.95
9/15/1992	3,971,000	2,758	245	-17.88
9/16/1992	3,984,000	2,767	246	-17.07
9/17/1992	3,870,000	2,688	239	-24.11
9/18/1992	3,897,000	2,706	241	-22.44
9/19/1992	3,857,000	2,678	238	-24.91
9/20/1992	3,752,000	2,606	232	-31.40
9/21/1992	3,923,000	2,724	242	-20.84
9/22/1992	3,908,000	2,714	241	-21.77
9/23/1992	3,971,000	2,758	245	-17.88
9/24/1992	3,825,000	2,656	236	-26.89
9/25/1992	3,907,000	2,713	241	-21.83
9/26/1992	3,875,000	2,691	239	-23.80
9/27/1992	3,839,000	2,666	237	-26.02
9/28/1992	3,794,000	2,635	234	-28.80
9/29/1992	3,817,000	2,651	236	-27.38
9/30/1992	3,887,000	2,699	240	-23.06
10/1/1992	3,725,000	2,587	230	-33.06
10/2/1992	3,821,000	2,653	236	-27.14
10/3/1992	3,765,000	2,615	232	-30.59
10/4/1992	4,025,000	2,795	248	-14.54
10/5/1992	3,855,000	2,677	238	-25.04
10/6/1992	3,793,000	2,634	234	-28.86
10/7/1992	3,760,000	2,611	232	-30.90
10/8/1992	3,719,000	2,583	230	-33.43
10/9/1992	3,732,000	2,592	230	-32.63
10/10/1992	3,730,000	2,590	230	-32.75

10/11/1992	3,752,000	2,606	232	-31.40
10/12/1992	3,809,000	2,645	235	-27.88
10/13/1992	3,815,000	2,649	235	-27.51
10/14/1992	3,827,000	2,658	236	-26.77
10/15/1992	3,785,000	2,628	234	-29.36
10/16/1992	3,834,000	2,663	237	-26.33
10/17/1992	3,807,000	2,644	235	-28.00
10/18/1992	3,811,000	2,647	235	-27.75
10/19/1992	3,908,000	2,714	241	-21.77
10/20/1992	3,974,000	2,760	245	-17.69
10/21/1992	3,994,000	2,774	247	-16.46
10/22/1992	4,027,000	2,797	249	-14.42
10/23/1992	3,953,000	2,745	244	-18.99
10/24/1992	4,182,000	2,904	258	-4.85
10/25/1992	4,023,000	2,794	248	-14.67
10/26/1992	3,971,000	2,758	245	-17.88
10/27/1992	4,008,000	2,783	247	-15.59
10/28/1992	3,975,000	2,760	245	-17.63
10/29/1992	3,993,000	2,773	246	-16.52
10/30/1992	3,964,000	2,753	245	-18.31
10/31/1992	3,969,000	2,756	245	-18.00
11/1/1992	3,944,000	2,739	243	-19.54
11/2/1992	3,929,000	2,728	243	-20.47
11/3/1992	3,099,000	2,152	191	-71.70
11/4/1992	3,944,000	2,739	243	-19.54
11/5/1992	3,944,000	2,739	243	-19.54
11/6/1992	3,987,000	2,769	246	-16.89
11/7/1992	3,961,000	2,751	245	-18.49
11/8/1992	3,979,000	2,763	246	-17.38
11/9/1992	3,956,000	2,747	244	-18.80
11/10/1992	3,254,000	2,260	201	-62.14
11/11/1992	4,062,000	2,821	251	-12.26
11/12/1992	4,043,000	2,808	250	-13.43
11/13/1992	3,982,000	2,765	246	-17.20
11/14/1992	3,977,000	2,762	245	-17.51
11/15/1992	3,974,000	2,760	245	-17.69
11/16/1992	4,044,000	2,808	250	-13.37
11/17/1992	3,956,000	2,747	244	-18.80
11/18/1992	3,997,000	2,776	247	-16.27
11/19/1992	3,928,000	2,728	242	-20.53
11/20/1992	3,198,000	2,221	197	-65.59
11/21/1992	3,678,000	2,554	227	-35.96
11/22/1992	3,994,000	2,774	247	-16.46
11/23/1992	3,825,000	2,656	236	-26.89

11/24/1992	3,416,000	2,372	211	-52.14		
11/25/1992	3,793,000	2,634	234	-28.86		
11/26/1992	4,047,000	2,810	250	-13.19		
11/27/1992	4,067,000	2,824	251	-11.95		
11/28/1992	4,034,000	2,801	249	-13.99		
11/29/1992	3,991,000	2,772	246	-16.64		
11/30/1992	3,919,000	2,722	242	-21.09		
12/1/1992	3,797,000	2,637	234	-28.62		
12/2/1992	3,846,000	2,671	237	-25.59		
12/3/1992	3,748,000	2,603	231	-31.64		
12/4/1992	3,697,000	2,567	228	-34.79		
12/5/1992	3,939,000	2,735	243	-19.85		
12/6/1992	3,986,000	2,768	246	-16.95		
12/7/1992	3,788,000	2,631	234	-29.17		
12/8/1992	3,807,000	2,644	235	-28.00		
12/9/1992	3,726,000	2,588	230	-33.00		
12/10/1992	3,707,000	2,574	229	-34.17		
12/11/1992	3,664,000	2,544	226	-36.83		
12/12/1992	3,385,000	2,351	209	-54.05		
12/13/1992	3,497,000	2,428	216	-47.14		
12/14/1992	3,626,000	2,518	224	-39.17		
12/15/1992	3,424,000	2,378	211	-51.64		
12/16/1992	3,477,000	2,415	215	-48.37		
12/17/1992	3,704,000	2,572	229	-34.36		
12/18/1992	3,672,000	2,550	227	-36.33		
12/19/1992	3,821,000	2,653	236	-27.14		
12/20/1992	3,648,000	2,533	225	-37.81		
12/21/1992	3,604,000	2,503	222	-40.53		
12/22/1992	3,549,000	2,465	219	-43.93		
12/23/1992	3,559,000	2,472	220	-43.31		
12/24/1992	3,514,000	2,440	217	-46.09		
12/25/1992	3,527,000	2,449	218	-45.28		
12/26/1992	3,507,000	2,435	216	-46.52		
12/27/1992	2,273,000	1,578	140	-122.69		
12/28/1992	3,052,000	2,119	188	-74.60		
12/29/1992	3,628,000	2,519	224	-39.05		
12/30/1992	3,605,000	2,503	223	-40.47		
12/31/1992	3,512,000	2,439	217	-46.21	1686.80	84.34
1/1/1993	3,411,000	2,369	211	-52.44		
1/2/1993	3,339,000	2,319	206	-56.89		
1/3/1993	3,324,000	2,308	205	-57.81		
1/4/1992	3,293,000	2,287	203	-59.73		
1/5/1993	3,297,000	2,290	204	-59.48		
1/6/1992	3,357,000	2,331	207	-55.78		

1/7/1993	3,339,000	2,319	206	-56.89
1/8/1993	3,286,000	2,282	203	-60.16
1/9/1993	3,311,000	2,299	204	-58.62
1/10/1993	3,292,000	2,286	203	-59.79
1/11/1993	3,338,000	2,318	206	-56.95
1/12/1993	3,349,000	2,326	207	-56.27
1/13/1993	3,347,000	2,324	207	-56.40
1/14/1993	3,308,000	2,297	204	-58.80
1/15/1993	3,390,000	2,354	209	-53.74
1/16/1993	3,335,000	2,316	206	-57.14
1/17/1993	3,357,000	2,331	207	-55.78
1/18/1993	3,334,000	2,315	206	-57.20
1/19/1993	3,336,000	2,317	206	-57.07
1/20/1993	3,430,000	2,382	212	-51.27
1/21/1993	3,576,000	2,483	221	-42.26
1/22/1993	3,531,000	2,452	218	-45.04
1/23/1993	3,569,000	2,478	220	-42.69
1/24/1993	3,616,000	2,511	223	-39.79
1/25/1993	3,626,000	2,518	224	-39.17
1/26/1993	3,603,000	2,502	222	-40.59
1/27/1993	3,540,000	2,458	219	-44.48
1/28/1993	3,613,000	2,509	223	-39.98
1/29/1993	3,417,000	2,373	211	-52.07
1/30/1993	3,526,000	2,449	218	-45.35
1/31/1993	3,786,000	2,629	234	-29.30
2/1/1993	3,875,000	2,691	239	-23.80
2/2/1993	3,762,000	2,613	232	-30.78
2/3/1993	3,596,000	2,497	222	-41.02
2/4/1993	3,832,000	2,661	237	-26.46
2/5/1993	3,859,000	2,680	238	-24.79
2/6/1993	3,867,000	2,685	239	-24.30
2/7/1993	3,819,000	2,652	236	-27.26
2/8/1993	3,810,000	2,646	235	-27.81
2/9/1993	3,815,000	2,649	235	-27.51
2/10/1993	3,846,000	2,671	237	-25.59
2/11/1993	3,777,000	2,623	233	-29.85
2/12/1993	3,783,000	2,627	234	-29.48
2/13/1993	3,885,000	2,698	240	-23.19
2/14/1993	3,554,000	2,468	219	-43.62
2/15/1993	3,469,000	2,409	214	-48.86
2/16/1993	4,025,000	2,795	248	-14.54
2/17/1993	4,047,000	2,810	250	-13.19
2/18/1993	4,147,000	2,880	256	-7.01
2/19/1993	3,753,000	2,606	232	-31.33

2/20/1993	3,869,000	2,687	239	-24.17
2/21/1993	3,848,000	2,672	238	-25.47
2/22/1993	3,811,000	2,647	235	-27.75
2/23/1993	3,887,000	2,699	240	-23.06
2/24/1993	3,708,000	2,575	229	-34.11
2/25/1993	3,826,000	2,657	236	-26.83
2/26/1993	3,795,000	2,635	234	-28.74
2/27/1993	3,823,000	2,655	236	-27.01
2/28/1993	3,812,000	2,647	235	-27.69
3/1/1993	3,799,000	2,638	235	-28.49
3/2/1993	3,788,000	2,631	234	-29.17
3/3/1993	3,801,000	2,640	235	-28.37
3/4/1993	3,867,000	2,685	239	-24.30
3/5/1993	3,875,000	2,691	239	-23.80
3/6/1993	3,722,000	2,585	230	-33.25
3/7/1993	3,832,000	2,661	237	-26.46
3/8/1993	3,853,000	2,676	238	-25.16
3/9/1993	3,782,000	2,626	233	-29.54
3/10/1993	3,836,000	2,664	237	-26.21
3/11/1993	3,836,000	2,664	237	-26.21
3/12/1993	3,836,000	2,664	237	-26.21
3/13/1993	3,836,000	2,664	237	-26.21
3/14/1993	3,836,000	2,664	237	-26.21
3/15/1993	3,836,000	2,664	237	-26.21
3/16/1993	3,836,000	2,664	237	-26.21
3/17/1993	3,836,000	2,664	237	-26.21
3/18/1993	3,836,000	2,664	237	-26.21
3/19/1993	3,836,000	2,664	237	-26.21
3/20/1993	3,836,000	2,664	237	-26.21
3/21/1993	3,836,000	2,664	237	-26.21
3/22/1993	3,836,000	2,664	237	-26.21
3/23/1993	3,836,000	2,664	237	-26.21
3/24/1993	3,836,000	2,664	237	-26.21
3/25/1993	3,836,000	2,664	237	-26.21
3/26/1993	3,836,000	2,664	237	-26.21
3/27/1993	3,836,000	2,664	237	-26.21
3/28/1993	3,836,000	2,664	237	-26.21
3/29/1993	3,836,000	2,664	237	-26.21
3/30/1993	3,836,000	2,664	237	-26.21
3/31/1993	3,836,000	2,664	237	-26.21
4/1/1993	3,836,000	2,664	237	-26.21
4/2/1993	3,836,000	2,664	237	-26.21
4/3/1993	3,836,000	2,664	237	-26.21
4/4/1993	3,836,000	2,664	237	-26.21

4/5/1993	3,836,000	2,664	237	-26.21	
4/6/1993	3,836,000	2,664	237	-26.21	
4/7/1993	3,836,000	2,664	237	-26.21	
4/8/1993	3,836,000	2,664	237	-26.21	
4/9/1993	3,836,000	2,664	237	-26.21	
4/10/1993	3,836,000	2,664	237	-26.21	
4/11/1993	3,836,000	2,664	237	-26.21	
4/12/1993	3,836,000	2,664	237	-26.21	
4/13/1993	3,836,000	2,664	237	-26.21	
4/14/1993	3,836,000	2,664	237	-26.21	
4/15/1993	6,075,000	4,219	375	112.00	112.00
4/16/1993	6,075,000	4,219	375	112.00	112.00
4/17/1993	6,075,000	4,219	375	112.00	112.00
4/18/1993	6,075,000	4,219	375	112.00	112.00
4/19/1993	6,075,000	4,219	375	112.00	112.00
4/20/1993	6,075,000	4,219	375	112.00	112.00
4/21/1993	6,075,000	4,219	375	112.00	112.00
4/22/1993	6,075,000	4,219	375	112.00	112.00
4/23/1993	6,075,000	4,219	375	112.00	112.00
4/24/1993	6,075,000	4,219	375	112.00	112.00
4/25/1993	6,075,000	4,219	375	112.00	112.00
4/26/1993	6,075,000	4,219	375	112.00	112.00
4/27/1993	6,075,000	4,219	375	112.00	112.00
4/28/1993	6,075,000	4,219	375	112.00	112.00
4/29/1993	6,075,000	4,219	375	112.00	112.00
4/30/1993	6,075,000	4,219	375	112.00	112.00
5/1/1993	6,075,000	4,219	375	112.00	112.00
5/2/1993	6,075,000	4,219	375	112.00	112.00
5/3/1993	6,075,000	4,219	375	112.00	112.00
5/4/1993	6,075,000	4,219	375	112.00	112.00
5/5/1993	6,075,000	4,219	375	112.00	112.00
5/6/1993	6,075,000	4,219	375	112.00	112.00
5/7/1993	6,075,000	4,219	375	112.00	112.00
5/8/1993	6,075,000	4,219	375	112.00	112.00
5/9/1993	6,075,000	4,219	375	112.00	112.00
5/10/1993	6,075,000	4,219	375	112.00	112.00
5/11/1993	6,075,000	4,219	375	112.00	112.00
5/12/1993	6,075,000	4,219	375	112.00	112.00
5/13/1993	6,075,000	4,219	375	112.00	112.00
5/14/1993	6,075,000	4,219	375	112.00	112.00
5/15/1993	6,075,000	4,219	375	112.00	112.00
5/16/1993	6,075,000	4,219	375	112.00	112.00
5/17/1993	6,075,000	4,219	375	112.00	112.00
5/18/1993	6,075,000	4,219	375	112.00	112.00

5/19/1993	5,877,000	4,081	363	99.78	99.78
5/20/1993	5,710,000	3,965	352	89.47	89.47
5/21/1993	5,604,000	3,892	346	82.93	82.93
5/22/1993	5,783,000	4,016	357	93.98	93.98
5/23/1993	5,605,000	3,892	346	82.99	82.99
5/24/1993	5,553,000	3,856	343	79.78	79.78
5/25/1993	5,546,000	3,851	342	79.35	79.35
5/26/1993	5,623,000	3,905	347	84.10	84.10
5/27/1993	5,399,000	3,749	333	70.27	70.27
5/28/1993	5,552,000	3,856	343	79.72	79.72
5/29/1993	5,482,000	3,807	338	75.40	75.40
5/30/1993	5,597,000	3,887	345	82.49	82.49
5/31/1993	5,463,000	3,794	337	74.22	74.22
6/1/1993	5,383,000	3,738	332	69.28	69.28
6/2/1993	5,497,000	3,817	339	76.32	76.32
6/3/1993	5,786,000	4,018	357	94.16	94.16
6/4/1993	4,936,000	3,428	305	41.69	41.69
6/5/1993	5,345,000	3,712	330	66.94	66.94
6/6/1993	5,285,000	3,670	326	63.23	63.23
6/7/1993	5,413,000	3,759	334	71.14	71.14
6/8/1993	5,442,000	3,779	336	72.93	72.93
6/9/1993	4,502,000	3,126	278	14.90	14.90
6/10/1993	6,043,000	4,197	373	110.02	110.02
6/11/1993	6,050,000	4,201	373	110.46	110.46
6/12/1993	5,885,000	4,087	363	100.27	100.27
6/13/1993	5,761,000	4,001	356	92.62	92.62
6/14/1993	5,738,000	3,985	354	91.20	91.20
6/15/1993	6,431,000	4,466	397	133.98	133.98
6/16/1993	5,575,000	3,872	344	81.14	81.14
6/17/1993	5,528,000	3,839	341	78.23	78.23
6/18/1993	5,481,000	3,806	338	75.33	75.33
6/19/1993	5,235,000	3,635	323	60.15	60.15
6/20/1993	5,345,000	3,712	330	66.94	66.94
6/21/1993	8,139,000	5,652	502	239.41	239.41
6/22/1993	8,406,000	5,838	519	255.89	255.89
6/23/1993	8,009,000	5,562	494	231.38	231.38
6/24/1993	8,086,000	5,615	499	236.14	236.14
6/25/1993	7,986,000	5,546	493	229.96	229.96
6/26/1993	7,644,000	5,308	472	208.85	208.85
6/27/1993	6,530,000	4,535	403	140.09	140.09
6/28/1993	6,303,000	4,377	389	126.07	126.07
6/29/1993	6,227,000	4,324	384	121.38	121.38
6/30/1993	6,222,000	4,321	384	121.07	121.07
7/1/1993	6,280,000	4,361	388	124.65	124.65

7/2/1993	6,068,000	4,214	375	111.57	111.57
7/3/1993	6,353,000	4,412	392	129.16	129.16
7/4/1993	5,711,000	3,966	353	89.53	89.53
7/5/1993	5,991,000	4,160	370	106.81	106.81
7/6/1993	5,876,000	4,081	363	99.72	99.72
7/7/1993	5,741,000	3,987	354	91.38	91.38
7/8/1993	5,454,000	3,788	337	73.67	73.67
7/9/1993	5,078,000	3,526	313	50.46	50.46
7/10/1993	5,188,000	3,603	320	57.25	57.25
7/11/1993	5,297,000	3,678	327	63.98	63.98
7/12/1993	5,045,000	3,503	311	48.42	48.42
7/13/1993	4,770,000	3,313	294	31.44	31.44
7/14/1993	4,663,000	3,238	288	24.84	24.84
7/15/1993	4,673,000	3,245	288	25.46	25.46
7/16/1993	4,621,000	3,209	285	22.25	22.25
7/17/1993	4,573,000	3,176	282	19.28	19.28
7/18/1993	4,566,000	3,171	282	18.85	18.85
7/19/1993	4,333,000	3,009	267	4.47	4.47
7/20/1993	4,409,000	3,062	272	9.16	9.16
7/21/1993	4,310,000	2,993	266	3.05	3.05
7/22/1993	4,142,000	2,876	256	-7.32	
7/23/1993	4,239,000	2,944	262	-1.33	
7/24/1993	4,433,000	3,078	274	10.64	10.64
7/25/1993	5,310,000	3,688	328	64.78	64.78
7/26/1993	5,553,000	3,856	343	79.78	79.78
7/27/1993	6,467,000	4,491	399	136.20	136.20
7/28/1993	6,352,000	4,411	392	129.10	129.10
7/29/1993	6,257,000	4,345	386	123.23	123.23
7/30/1993	6,309,000	4,381	389	126.44	126.44
7/31/1993	6,331,000	4,397	391	127.80	127.80
8/1/1993	6,441,000	4,473	398	134.59	134.59
8/2/1993	6,387,000	4,435	394	131.26	131.26
8/3/1993	6,567,000	4,560	405	142.37	142.37
8/4/1993	6,175,000	4,288	381	118.17	118.17
8/5/1993	6,326,000	4,393	390	127.49	127.49
8/6/1993	6,577,000	4,567	406	142.99	142.99
8/7/1993	5,866,000	4,074	362	99.10	99.10
8/8/1993	6,740,000	4,681	416	153.05	153.05
8/9/1993	5,418,000	3,763	334	71.44	71.44
8/10/1993	6,028,000	4,186	372	109.10	109.10
8/11/1993	5,648,000	3,922	349	85.64	85.64
8/12/1993	5,718,000	3,971	353	89.96	89.96
8/13/1993	5,812,000	4,036	359	95.77	95.77
8/14/1993	5,681,000	3,945	351	87.68	87.68

8/15/1993	5,713,000	3,967	353	89.65	89.65
8/16/1993	5,513,000	3,828	340	77.31	77.31
8/17/1993	5,445,000	3,781	336	73.11	73.11
8/18/1993	5,436,000	3,775	336	72.56	72.56
8/19/1993	5,299,000	3,680	327	64.10	64.10
8/20/1993	6,027,000	4,185	372	109.04	109.04
8/21/1993	4,912,000	3,411	303	40.21	40.21
8/22/1993	5,443,000	3,780	336	72.99	72.99
8/23/1993	5,221,000	3,626	322	59.28	59.28
8/24/1993	5,248,000	3,644	324	60.95	60.95
8/25/1993	5,216,000	3,622	322	58.98	58.98
8/26/1993	5,138,000	3,568	317	54.16	54.16
8/27/1993	5,122,000	3,557	316	53.17	53.17
8/28/1993	5,084,000	3,531	314	50.83	50.83
8/29/1993	5,179,000	3,597	320	56.69	56.69
8/30/1993	5,178,000	3,596	320	56.63	56.63
8/31/1993	5,063,000	3,516	313	49.53	49.53
9/1/1993	5,088,000	3,533	314	51.07	51.07
9/2/1993	5,435,000	3,774	335	72.49	72.49
9/3/1993	4,560,000	3,167	281	18.48	18.48
9/4/1993	4,930,000	3,424	304	41.32	41.32
9/5/1993	4,778,000	3,318	295	31.94	31.94
9/6/1993	4,746,000	3,296	293	29.96	29.96
9/7/1993	4,647,000	3,227	287	23.85	23.85
9/8/1993	4,684,000	3,253	289	26.14	26.14
9/9/1993	4,632,000	3,217	286	22.93	22.93
9/10/1993	4,510,000	3,132	278	15.40	15.40
9/11/1993	4,595,000	3,191	284	20.64	20.64
9/12/1993	4,549,000	3,159	281	17.80	17.80
9/13/1993	4,431,000	3,077	274	10.52	10.52
9/14/1993	4,512,000	3,133	279	15.52	15.52
9/15/1993	4,828,000	3,353	298	35.02	35.02
9/16/1993	4,264,000	2,961	263	0.21	
9/17/1993	4,496,000	3,122	278	14.53	14.53
9/18/1993	4,594,000	3,190	284	20.58	20.58
9/19/1993	4,553,000	3,162	281	18.05	18.05
9/20/1993	4,423,000	3,072	273	10.02	10.02
9/21/1993	4,438,000	3,082	274	10.95	10.95
9/22/1993	4,429,000	3,076	273	10.40	10.40
9/23/1993	814,000	565	50	-212.75	
9/24/1993	699,000	485	43	-219.85	
9/25/1993	4,382,000	3,043	270	7.49	7.49
9/26/1993	6,235,000	4,330	385	121.88	121.88
9/27/1993	6,096,000	4,233	376	113.30	113.30

9/28/1993	6,294,000	4,371	389	125.52	125.52
9/29/1993	6,453,000	4,481	398	135.33	135.33
9/30/1993	4,301,000	2,987	265	2.49	2.49
10/1/1993	4,391,000	3,049	271	8.05	8.05
10/2/1993	4,539,000	3,152	280	17.19	17.19
10/3/1993	4,247,000	2,949	262	-0.84	
10/4/1993	4,500,000	3,125	278	14.78	14.78
10/5/1993	4,242,000	2,946	262	-1.15	
10/6/1993	4,427,000	3,074	273	10.27	10.27
10/7/1993	4,359,000	3,027	269	6.07	6.07
10/8/1993	4,307,000	2,991	266	2.86	2.86
10/9/1993	4,477,000	3,109	276	13.36	13.36
10/10/1993	4,538,000	3,151	280	17.12	17.12
10/11/1993	4,752,000	3,300	293	30.33	30.33
10/12/1993	4,830,000	3,354	298	35.15	35.15
10/13/1993	4,811,000	3,341	297	33.98	33.98
10/14/1993	4,789,000	3,326	296	32.62	32.62
10/15/1993	4,814,000	3,343	297	34.16	34.16
10/16/1993	4,775,000	3,316	295	31.75	31.75
10/17/1993	4,761,000	3,306	294	30.89	30.89
10/18/1993	4,770,000	3,313	294	31.44	31.44
10/19/1993	4,742,000	3,293	293	29.72	29.72
10/20/1993	4,622,000	3,210	285	22.31	22.31
10/21/1993	4,500,000	3,125	278	14.78	14.78
10/22/1993	4,522,000	3,140	279	16.14	16.14
10/23/1993	4,529,000	3,145	280	16.57	16.57
10/24/1993	4,525,000	3,142	279	16.32	16.32
10/25/1993	4,459,000	3,097	275	12.25	12.25
10/26/1993	4,440,000	3,083	274	11.07	11.07
10/27/1993	4,430,000	3,076	273	10.46	10.46
10/28/1993	4,503,000	3,127	278	14.96	14.96
10/29/1993	4,329,000	3,006	267	4.22	4.22
10/30/1993	4,363,000	3,030	269	6.32	6.32
10/31/1993	4,608,000	3,200	284	21.44	21.44
11/1/1993	4,494,000	3,121	277	14.41	14.41
11/2/1993	4,438,000	3,082	274	10.95	10.95
11/3/1993	4,465,000	3,101	276	12.62	12.62
11/4/1993	4,399,000	3,055	272	8.54	8.54
11/5/1993	4,158,000	2,888	257	-6.33	
11/6/1993	3,238,000	2,249	200	-63.12	
11/7/1993	4,592,000	3,189	283	20.46	20.46
11/8/1993	4,659,000	3,235	288	24.59	24.59
11/9/1993	3,600,000	2,500	222	-40.78	
11/10/1993	4,687,000	3,255	289	26.32	26.32

11/11/1993	4,554,000	3,163	281	18.11	18.11	
11/12/1993	4,330,000	3,007	267	4.28	4.28	
11/13/1993	4,661,000	3,237	288	24.72	24.72	
11/14/1993	4,584,000	3,183	283	19.96	19.96	
11/15/1993	4,649,000	3,228	287	23.98	23.98	
11/16/1993	4,665,000	3,240	288	24.96	24.96	
11/17/1993	4,630,000	3,215	286	22.80	22.80	
11/18/1993	4,393,000	3,051	271	8.17	8.17	
11/19/1993	2,988,000	2,075	184	-78.56		
11/20/1993	4,630,000	3,215	286	22.80	22.80	
11/21/1993	4,690,000	3,257	290	26.51	26.51	
11/22/1993	4,372,000	3,036	270	6.88	6.88	
11/23/1993	4,175,000	2,899	258	-5.28		
11/24/1993	4,684,000	3,253	289	26.14	26.14	
11/25/1993	4,724,000	3,281	292	28.60	28.60	
11/26/1993	4,896,000	3,400	302	39.22	39.22	
11/27/1993	4,841,000	3,362	299	35.83	35.83	
11/28/1993	4,812,000	3,342	297	34.04	34.04	
11/29/1993	4,734,000	3,288	292	29.22	29.22	
11/30/1993	4,648,000	3,228	287	23.91	23.91	
12/1/1993	4,622,000	3,210	285	22.31	22.31	
12/2/1993	4,643,000	3,224	287	23.60	23.60	
12/3/1993	9,188,000	6,381	567	304.16	304.16	not really possible
12/4/1993	########	17,388	1,546	1,282.56	1282.56	not really possible
12/5/1993	########	8,586	763	500.21	500.21	not really possible
12/6/1993	1,230,101	854	76	-187.07		
12/7/1993	4,915,000	3,413	303	40.40	40.40	
12/8/1993	4,941,000	3,431	305	42.00	42.00	
12/9/1993	4,767,000	3,310	294	31.26	31.26	
12/10/1993	4,886,000	3,393	302	38.60	38.60	
12/11/1993	4,826,000	3,351	298	34.90	34.90	
12/12/1993	4,795,000	3,330	296	32.99	32.99	
12/13/1993	4,206,000	2,921	260	-3.37		
12/14/1993	5,345,000	3,712	330	66.94	66.94	
12/15/1993	5,316,000	3,692	328	65.15	65.15	
12/16/1993	5,295,000	3,677	327	63.85	63.85	

12/17/1993	5,281,000	3,667	326	62.99	62.99		
12/18/1993	4,088,000	2,839	252	-10.65			
12/19/1993	5,396,000	3,747	333	70.09	70.09		
12/20/1993	5,361,000	3,723	331	67.93	67.93		
12/21/1993	5,488,000	3,811	339	75.77	75.77		
12/22/1993	5,437,000	3,776	336	72.62	72.62		
12/23/1993	5,444,000	3,781	336	73.05	73.05		
12/24/1993	5,425,000	3,767	335	71.88	71.88		
12/25/1993	5,315,000	3,691	328	65.09	65.09		
12/26/1993	5,319,000	3,694	328	65.33	65.33		
12/27/1993	5,344,000	3,711	330	66.88	66.88		
12/28/1993	5,312,000	3,689	328	64.90	64.90		
12/29/1993	5,363,000	3,724	331	68.05	68.05		
12/30/1993	5,398,000	3,749	333	70.21	70.21		
12/31/1993	5,360,000	3,722	331	67.86	67.86	16587.67	829.38
1/1/1994	5,257,000	3,651	325	61.51	61.51		
1/2/1994	5,317,000	3,692	328	65.21	65.21		
1/3/1994	5,311,000	3,688	328	64.84	64.84		
1/4/1994	5,328,000	3,700	329	65.89	65.89		
1/5/1994	5,306,000	3,685	328	64.53	64.53		
1/6/1994	4,997,000	3,470	308	45.46	45.46		
1/7/1993	4,963,000	3,447	306	43.36	43.36		
1/8/1994	5,400,000	3,750	333	70.33	70.33		
1/9/1994	5,332,000	3,703	329	66.14	66.14		
1/10/1994	5,332,000	3,703	329	66.14	66.14		
1/11/1994	5,332,000	3,703	329	66.14	66.14		
1/12/1994	5,300,000	3,681	327	64.16	64.16		
1/13/1994	5,352,000	3,717	330	67.37	67.37		
1/14/1994	5,351,000	3,716	330	67.31	67.31		
1/15/1994	5,338,000	3,707	330	66.51	66.51		
1/16/1994	5,439,000	3,777	336	72.74	72.74		
1/17/1994	5,418,000	3,763	334	71.44	71.44		
1/18/1994	5,400,000	3,750	333	70.33	70.33		
1/19/1994	5,387,000	3,741	333	69.53	69.53		
1/20/1994	5,440,000	3,778	336	72.80	72.80		
1/21/1994	5,052,000	3,508	312	48.85	48.85		
1/22/1994	5,404,000	3,753	334	70.58	70.58		
1/23/1994	5,331,000	3,702	329	66.07	66.07		
1/24/1994	5,415,000	3,760	334	71.26	71.26		
1/25/1994	5,303,000	3,683	327	64.35	64.35		
1/26/1994	5,422,000	3,765	335	71.69	71.69		
1/27/1994	5,420,000	3,764	335	71.57	71.57		
1/28/1994	5,434,000	3,774	335	72.43	72.43		
1/29/1994	5,430,000	3,771	335	72.19	72.19		

1/30/1994	5,300,000	3,681	327	64.16	64.16
1/31/1994	5,357,000	3,720	331	67.68	67.68
2/1/1994	5,526,000	3,838	341	78.11	78.11
2/2/1994	5,459,000	3,791	337	73.98	73.98
2/3/1994	5,519,000	3,833	341	77.68	77.68
2/4/1994	5,531,000	3,841	341	78.42	78.42
2/5/1994	5,307,000	3,685	328	64.59	64.59
2/6/1994	5,510,000	3,826	340	77.12	77.12
2/7/1994	5,129,000	3,562	317	53.60	53.60
2/8/1994	5,223,000	3,627	322	59.41	59.41
2/9/1994	5,420,000	3,764	335	71.57	71.57
2/10/1994	5,261,000	3,653	325	61.75	61.75
2/11/1994	5,099,000	3,541	315	51.75	51.75
2/12/1994	5,017,000	3,484	310	46.69	46.69
2/13/1994	4,950,000	3,438	306	42.56	42.56
2/14/1994	4,897,000	3,401	302	39.28	39.28
2/15/1994	4,944,000	3,433	305	42.19	42.19
2/16/1994	4,961,000	3,445	306	43.23	43.23
2/17/1994	4,946,000	3,435	305	42.31	42.31
2/18/1994	4,984,000	3,461	308	44.65	44.65
2/19/1994	4,909,000	3,409	303	40.02	40.02
2/20/1994	4,881,000	3,390	301	38.30	38.30
2/21/1994	4,873,000	3,384	301	37.80	37.80
2/22/1994	4,657,000	3,234	287	24.47	24.47
2/23/1994	4,766,000	3,310	294	31.20	31.20
2/24/1994	4,761,000	3,306	294	30.89	30.89
2/25/1994	4,798,000	3,332	296	33.17	33.17
2/26/1994	4,846,000	3,365	299	36.14	36.14
2/27/1994	4,776,000	3,317	295	31.81	31.81
2/28/1994	4,751,000	3,299	293	30.27	30.27
3/1/1994	4,714,000	3,274	291	27.99	27.99
3/2/1994	4,739,000	3,291	293	29.53	29.53
3/3/1994	4,768,000	3,311	294	31.32	31.32
3/4/1994	4,794,000	3,329	296	32.93	32.93
3/5/1994	4,778,000	3,318	295	31.94	31.94
3/6/1994	4,648,000	3,228	287	23.91	23.91
3/7/1994	3,915,000	2,719	242	-21.33	
3/8/1994	4,483,000	3,113	277	13.73	13.73
3/9/1994	4,414,000	3,065	272	9.47	9.47
3/10/1994	4,713,000	3,273	291	27.93	27.93
3/11/1994	4,606,000	3,199	284	21.32	21.32
3/12/1994	4,418,000	3,068	273	9.72	9.72
3/13/1994	4,471,000	3,105	276	12.99	12.99
3/14/1994	4,569,000	3,173	282	19.04	19.04

3/15/1994	4,543,000	3,155	280	17.43	17.43
3/16/1994	4,630,000	3,215	286	22.80	22.80
3/17/1994	4,734,000	3,288	292	29.22	29.22
3/18/1994	4,794,000	3,329	296	32.93	32.93
3/19/1994	4,803,000	3,335	296	33.48	33.48
3/20/1994	4,384,000	3,044	271	7.62	7.62
3/21/1994	4,666,000	3,240	288	25.02	25.02
3/22/1994	4,722,000	3,279	291	28.48	28.48
3/23/1994	4,713,000	3,273	291	27.93	27.93
3/24/1994	3,913,000	2,717	242	-21.46	
3/25/1994	4,722,000	3,279	291	28.48	28.48
3/26/1994	4,712,000	3,272	291	27.86	27.86
3/27/1994	4,350,000	3,021	269	5.52	5.52
3/28/1994	4,716,000	3,275	291	28.11	28.11
3/29/1994	4,484,000	3,114	277	13.79	13.79
3/30/1994	4,426,000	3,074	273	10.21	10.21
3/31/1994	4,548,000	3,158	281	17.74	17.74
4/1/1994	4,591,000	3,188	283	20.40	20.40
4/2/1994	4,616,000	3,206	285	21.94	21.94
4/3/1994	4,494,000	3,121	277	14.41	14.41
4/4/1994	4,663,000	3,238	288	24.84	24.84
4/5/1994	4,581,000	3,181	283	19.78	19.78
4/6/1994	4,635,000	3,219	286	23.11	23.11
4/7/1994	4,651,000	3,230	287	24.10	24.10
4/8/1994	4,662,000	3,238	288	24.78	24.78
4/9/1994	4,562,000	3,168	282	18.60	18.60
4/10/1994	4,384,000	3,044	271	7.62	7.62
4/11/1994	4,822,000	3,349	298	34.65	34.65
4/12/1994	4,876,000	3,386	301	37.99	37.99
4/13/1994	4,825,000	3,351	298	34.84	34.84
4/14/1994	4,794,000	3,329	296	32.93	32.93
4/15/1994	4,854,000	3,371	300	36.63	36.63
4/16/1994	4,975,000	3,455	307	44.10	44.10
4/17/1994	5,034,000	3,496	311	47.74	47.74
4/18/1994	5,178,000	3,596	320	56.63	56.63
4/19/1994	4,849,000	3,367	299	36.32	36.32
4/20/1994	3,986,000	2,768	246	-16.95	
4/21/1994	5,431,000	3,772	335	72.25	72.25
4/22/1994	5,375,000	3,733	332	68.79	68.79
4/23/1994	4,860,000	3,375	300	37.00	37.00
4/24/1994	4,860,000	3,375	300	37.00	37.00
4/25/1994	4,860,000	3,375	300	37.00	37.00
4/26/1994	4,860,000	3,375	300	37.00	37.00
4/27/1994	4,860,000	3,375	300	37.00	37.00

4/28/1994	4,860,000	3,375	300	37.00	37.00
4/29/1994	4,860,000	3,375	300	37.00	37.00
4/30/1994	4,860,000	3,375	300	37.00	37.00
5/1/1994	4,860,000	3,375	300	37.00	37.00
5/2/1994	4,860,000	3,375	300	37.00	37.00
5/3/1994	4,860,000	3,375	300	37.00	37.00
5/4/1994	4,860,000	3,375	300	37.00	37.00
5/5/1994	4,860,000	3,375	300	37.00	37.00
5/6/1994	4,860,000	3,375	300	37.00	37.00
5/7/1994	4,860,000	3,375	300	37.00	37.00
5/8/1994	4,860,000	3,375	300	37.00	37.00
5/9/1994	4,860,000	3,375	300	37.00	37.00
5/10/1994	5,670,000	3,938	350	87.00	87.00
5/11/1994	5,670,000	3,938	350	87.00	87.00
5/12/1994	5,670,000	3,938	350	87.00	87.00
5/13/1994	5,670,000	3,938	350	87.00	87.00
5/14/1994	5,670,000	3,938	350	87.00	87.00
5/15/1994	5,670,000	3,938	350	87.00	87.00
5/16/1994	5,670,000	3,938	350	87.00	87.00
5/17/1994	6,345,000	4,406	392	128.67	128.67
5/18/1994	6,257,000	4,345	386	123.23	123.23
5/19/1994	6,322,000	4,390	390	127.25	127.25
5/20/1994	6,352,000	4,411	392	129.10	129.10
5/21/1994	6,217,000	4,317	384	120.77	120.77
5/22/1994	6,191,000	4,299	382	119.16	119.16
5/23/1994	6,269,000	4,353	387	123.98	123.98
5/24/1994	6,264,000	4,350	387	123.67	123.67
5/25/1994	6,260,000	4,347	386	123.42	123.42
5/26/1994	5,352,000	3,717	330	67.37	67.37
5/27/1994	4,696,000	3,261	290	26.88	26.88
5/28/1994	4,701,000	3,265	290	27.19	27.19
5/29/1994	4,676,000	3,247	289	25.64	25.64
5/30/1994	4,660,000	3,236	288	24.65	24.65
5/31/1994	4,583,000	3,183	283	19.90	19.90
6/1/1994	4,621,000	3,209	285	22.25	22.25
6/2/1994	4,643,000	3,224	287	23.60	23.60
6/3/1994	4,544,000	3,156	280	17.49	17.49
6/4/1994	4,570,000	3,174	282	19.10	19.10
6/5/1994	4,501,000	3,126	278	14.84	14.84
6/6/1994	4,497,000	3,123	278	14.59	14.59
6/7/1994	4,574,000	3,176	282	19.35	19.35
6/8/1994	4,533,000	3,148	280	16.81	16.81
6/9/1994	4,546,000	3,157	281	17.62	17.62
6/10/1994	4,558,000	3,165	281	18.36	18.36

6/11/1994	4,526,000	3,143	279	16.38	16.38
6/12/1994	4,465,000	3,101	276	12.62	12.62
6/13/1994	4,529,000	3,145	280	16.57	16.57
6/14/1994	4,704,000	3,267	290	27.37	27.37
6/15/1994	4,652,000	3,231	287	24.16	24.16
6/16/1994	4,560,000	3,167	281	18.48	18.48
6/17/1994	4,583,000	3,183	283	19.90	19.90
6/18/1994	4,555,000	3,163	281	18.17	18.17
6/19/1994	4,553,000	3,162	281	18.05	18.05
6/20/1994	4,594,000	3,190	284	20.58	20.58
6/21/1994	4,656,000	3,233	287	24.41	24.41
6/22/1994	4,580,000	3,181	283	19.72	19.72
6/23/1994	3,922,000	2,724	242	-20.90	
6/24/1994	4,079,000	2,833	252	-11.21	
6/25/1994	4,212,000	2,925	260	-3.00	
6/26/1994	4,244,000	2,947	262	-1.02	
6/27/1994	4,267,000	2,963	263	0.40	
6/28/1994	4,217,000	2,928	260	-2.69	
6/29/1994	4,206,000	2,921	260	-3.37	
6/30/1994	4,288,000	2,978	265	1.69	1.69
7/1/1994	4,172,000	2,897	258	-5.47	
7/2/1994	4,214,000	2,926	260	-2.88	
7/3/1994	4,229,000	2,937	261	-1.95	
7/4/1994	4,296,000	2,983	265	2.19	2.19
7/5/1994	4,313,000	2,995	266	3.23	3.23
7/6/1994	4,509,000	3,131	278	15.33	15.33
7/7/1994	4,150,000	2,882	256	-6.83	
7/8/1994	4,728,000	3,283	292	28.85	28.85
7/9/1994	4,312,000	2,994	266	3.17	3.17
7/10/1994	4,283,000	2,974	264	1.38	1.38
7/11/1994	4,257,000	2,956	263	-0.22	
7/12/1994	4,216,000	2,928	260	-2.75	
7/13/1994	4,209,000	2,923	260	-3.19	
7/14/1994	4,164,000	2,892	257	-5.96	
7/15/1994	4,183,000	2,905	258	-4.79	
7/16/1994	4,133,000	2,870	255	-7.88	
7/17/1994	4,150,000	2,882	256	-6.83	
7/18/1994	4,121,000	2,862	254	-8.62	
7/19/1994	4,168,000	2,894	257	-5.72	
7/20/1994	3,643,000	2,530	225	-38.12	
7/21/1994	3,355,000	2,330	207	-55.90	
7/22/1994	3,350,000	2,326	207	-56.21	
7/23/1994	3,317,000	2,303	205	-58.25	
7/24/1994	3,334,000	2,315	206	-57.20	

7/25/1994	3,310,000	2,299	204	-58.68
7/26/1994	3,321,000	2,306	205	-58.00
7/27/1994	3,289,000	2,284	203	-59.98
7/28/1994	3,300,000	2,292	204	-59.30
7/29/1994	3,282,000	2,279	203	-60.41
7/30/1994	3,301,000	2,292	204	-59.23
7/31/1994	3,241,000	2,251	200	-62.94
8/1/1994	3,286,000	2,282	203	-60.16
8/2/1994	3,279,000	2,277	202	-60.59
8/3/1994	3,250,000	2,257	201	-62.38
8/4/1994	3,343,000	2,322	206	-56.64
8/5/1994	3,260,000	2,264	201	-61.77
8/6/1994	3,240,000	2,250	200	-63.00
8/7/1994	3,867,000	2,685	239	-24.30
8/8/1994	2,594,000	1,801	160	-102.88
8/9/1994	3,247,000	2,255	200	-62.57
8/10/1994	3,976,000	2,761	245	-17.57
8/11/1994	3,201,000	2,223	198	-65.41
8/12/1994	3,201,000	2,223	198	-65.41
8/13/1994	3,142,000	2,182	194	-69.05
8/14/1994	3,133,000	2,176	193	-69.60
8/15/1994	3,152,000	2,189	195	-68.43
8/16/1994	3,165,000	2,198	195	-67.63
8/17/1994	3,080,000	2,139	190	-72.88
8/18/1994	3,368,000	2,339	208	-55.10
8/19/1994	3,297,000	2,290	204	-59.48
8/20/1994	3,113,000	2,162	192	-70.84
8/21/1994	3,120,000	2,167	193	-70.41
8/22/1994	3,080,000	2,139	190	-72.88
8/23/1994	3,109,000	2,159	192	-71.09
8/24/1994	3,098,000	2,151	191	-71.77
8/25/1994	3,092,000	2,147	191	-72.14
8/26/1994	3,129,000	2,173	193	-69.85
8/27/1994	3,107,000	2,158	192	-71.21
8/28/1994	3,044,000	2,114	188	-75.10
8/29/1994	3,082,000	2,140	190	-72.75
8/30/1994	3,086,000	2,143	190	-72.51
8/31/1994	3,088,000	2,144	191	-72.38
9/1/1994	3,504,000	2,433	216	-46.70
9/2/1994	3,780,000	2,625	233	-29.67
9/3/1994	3,773,000	2,620	233	-30.10
9/4/1994	3,738,000	2,596	231	-32.26
9/5/1994	3,701,000	2,570	228	-34.54
9/6/1994	3,741,000	2,598	231	-32.07

9/7/1994	3,737,000	2,595	231	-32.32	
9/8/1994	3,911,000	2,716	241	-21.58	
9/9/1994	4,112,000	2,856	254	-9.17	
9/10/1994	4,031,000	2,799	249	-14.17	
9/11/1994	3,987,000	2,769	246	-16.89	
9/12/1994	4,028,000	2,797	249	-14.36	
9/13/1994	4,740,000	3,292	293	29.59	29.59
9/14/1994	3,285,000	2,281	203	-60.22	
9/15/1994	4,005,000	2,781	247	-15.78	
9/16/1994	4,002,000	2,779	247	-15.96	
9/17/1994	3,943,000	2,738	243	-19.60	
9/18/1994	3,967,000	2,755	245	-18.12	
9/19/1994	4,047,000	2,810	250	-13.19	
9/20/1994	3,947,000	2,741	244	-19.36	
9/21/1994	4,024,000	2,794	248	-14.60	
9/22/1994	3,986,000	2,768	246	-16.95	
9/23/1994	3,989,000	2,770	246	-16.77	
9/24/1994	3,944,000	2,739	243	-19.54	
9/25/1994	3,962,000	2,751	245	-18.43	
9/26/1994	4,009,000	2,784	247	-15.53	
9/27/1994	3,942,000	2,738	243	-19.67	
9/28/1994	3,966,000	2,754	245	-18.19	
9/29/1994	3,950,000	2,743	244	-19.17	
9/30/1994	3,948,000	2,742	244	-19.30	
10/1/1994	3,875,000	2,691	239	-23.80	
10/2/1994	3,969,000	2,756	245	-18.00	
10/3/1994	3,917,000	2,720	242	-21.21	
10/4/1994	3,907,000	2,713	241	-21.83	
10/5/1994	3,909,000	2,715	241	-21.70	
10/6/1994	4,002,000	2,779	247	-15.96	
10/7/1994	3,958,000	2,749	244	-18.68	
10/8/1994	3,914,000	2,718	242	-21.40	
10/9/1994	3,888,000	2,700	240	-23.00	
10/10/1994	3,918,000	2,721	242	-21.15	
10/11/1994	3,941,000	2,737	243	-19.73	
10/12/1994	4,003,000	2,780	247	-15.90	
10/13/1994	3,945,000	2,740	244	-19.48	
10/14/1994	3,950,000	2,743	244	-19.17	
10/15/1994	3,959,000	2,749	244	-18.62	
10/16/1994	3,953,000	2,745	244	-18.99	
10/17/1994	3,931,000	2,730	243	-20.35	
10/18/1994	3,985,000	2,767	246	-17.01	
10/19/1994	3,980,000	2,764	246	-17.32	
10/20/1994	3,959,000	2,749	244	-18.62	

10/21/1994	3,985,000	2,767	246	-17.01	
10/22/1994	3,956,000	2,747	244	-18.80	
10/23/1994	3,958,000	2,749	244	-18.68	
10/24/1994	3,925,000	2,726	242	-20.72	
10/25/1994	3,941,000	2,737	243	-19.73	
10/26/1994	3,960,000	2,750	244	-18.56	
10/27/1994	4,004,000	2,781	247	-15.84	
10/28/1994	4,159,000	2,888	257	-6.27	
10/29/1994	4,050,000	2,813	250	-13.00	
10/30/1994	4,121,000	2,862	254	-8.62	
10/31/1994	3,969,000	2,756	245	-18.00	
11/1/1994	3,971,000	2,758	245	-17.88	
11/2/1994	3,989,000	2,770	246	-16.77	
11/3/1994	3,878,000	2,693	239	-23.62	
11/4/1994	3,926,000	2,726	242	-20.65	
11/5/1994	4,025,000	2,795	248	-14.54	
11/6/1994	3,953,000	2,745	244	-18.99	
11/7/1994	4,000,000	2,778	247	-16.09	
11/8/1994	4,000,000	2,778	247	-16.00	
11/9/1994	4,000,000	2,778	247	-16.00	
11/10/1994	4,146,000	2,879	256	-7.07	
11/11/1994	4,078,000	2,832	252	-11.27	
11/12/1994	4,094,000	2,843	253	-10.28	
11/13/1994	4,112,000	2,856	254	-9.17	
11/14/1994	3,909,000	2,715	241	-21.70	
11/15/1994	4,106,000	2,851	253	-9.54	
11/16/1994	4,212,000	2,925	260	-3.00	
11/17/1994	4,160,000	2,889	257	-6.21	
11/18/1994	3,903,000	2,710	241	-22.07	
11/19/1994	4,081,000	2,834	252	-11.09	
11/20/1994	4,259,000	2,958	263	-0.10	
11/21/1994	4,162,000	2,890	257	-6.09	
11/22/1994	4,218,000	2,929	260	-2.63	
11/23/1994	4,324,000	3,003	267	3.91	3.91
11/24/1994	4,358,000	3,026	269	6.01	6.01
11/25/1994	4,309,000	2,992	266	2.99	2.99
11/26/1994	4,269,000	2,965	264	0.52	
11/27/1994	4,207,000	2,922	260	-3.31	
11/28/1994	4,287,000	2,977	265	1.63	1.63
11/29/1994	4,346,000	3,018	268	5.27	5.27
11/30/1994	4,291,000	2,980	265	1.88	1.88
12/1/1994	4,315,000	2,997	266	3.36	3.36
12/2/1994	4,287,000	2,977	265	1.63	1.63
12/3/1994	4,300,000	2,986	265	2.43	2.43

12/4/1994	4,196,000	2,914	259	-3.99			
12/5/1994	4,291,000	2,980	265	1.88	1.88		
12/6/1994	4,254,000	2,954	263	-0.41			
12/7/1994	4,404,000	3,058	272	8.85	8.85		
12/8/1994	4,278,000	2,971	264	1.07	1.07		
12/9/1994	4,357,000	3,026	269	5.95	5.95		
12/10/1994	4,314,000	2,996	266	3.30	3.30		
12/11/1994	4,383,000	3,044	271	7.56	7.56		
12/12/1994	4,370,000	3,035	270	6.75	6.75		
12/13/1994	4,385,000	3,045	271	7.68	7.68		
12/14/1994	4,329,000	3,006	267	4.22	4.22		
12/15/1994	4,327,000	3,005	267	4.10	4.10		
12/16/1994	4,380,000	3,042	270	7.37	7.37		
12/17/1994	4,300,000	2,986	265	2.43	2.43		
12/18/1994	4,292,000	2,981	265	1.94	1.94		
12/19/1994	4,301,000	2,987	265	2.49	2.49		
12/20/1994	4,267,000	2,963	263	0.40			
12/21/1994	4,279,000	2,972	264	1.14	1.14		
12/22/1994	4,292,000	2,981	265	1.94	1.94		
12/23/1994	4,298,000	2,985	265	2.31	2.31		
12/24/1994	4,292,000	2,981	265	1.94	1.94		
12/25/1994	4,314,000	2,996	266	3.30	3.30		
12/26/1994	4,298,000	2,985	265	2.31	2.31		
12/27/1994	4,287,000	2,977	265	1.63	1.63		
12/28/1994	4,276,000	2,969	264	0.95			
12/29/1994	4,252,000	2,953	262	-0.53			
12/30/1994	4,275,000	2,969	264	0.89			
12/31/1994	4,161,000	2,890	257	-6.15		7940.38	397.02
1/1/1995	4,195,000	2,913	259	-4.05			
1/2/1995	4,501,000	3,126	278	14.84	14.84		
1/3/1995	4,587,000	3,185	283	20.15	20.15		
1/4/1995	4,623,000	3,210	285	22.37	22.37		
1/5/1995	4,712,000	3,272	291	27.86	27.86		
1/6/1995	4,694,000	3,260	290	26.75	26.75		
1/7/1995	4,772,000	3,314	295	31.57	31.57		
1/8/1994	4,671,000	3,244	288	25.33	25.33		
1/9/1995	4,477,000	3,109	276	13.36	13.36		
1/10/1995	4,463,000	3,099	275	12.49	12.49		
1/11/1995	4,357,000	3,026	269	5.95	5.95		
1/12/1995	4,331,000	3,008	267	4.35	4.35		
1/13/1995	4,346,000	3,018	268	5.27	5.27		
1/14/1995	4,350,000	3,021	269	5.52	5.52		
1/15/1995	4,368,000	3,033	270	6.63	6.63		
1/16/1995	4,367,000	3,033	270	6.57	6.57		

1/17/1995	4,335,000	3,010	268	4.59	4.59
1/18/1995	4,352,000	3,022	269	5.64	5.64
1/19/1995	4,376,000	3,039	270	7.12	7.12
1/20/1995	3,695,000	2,566	228	-34.91	
1/21/1995	3,845,000	2,670	237	-25.65	
1/22/1995	4,380,000	3,042	270	7.37	7.37
1/23/1995	4,549,000	3,159	281	17.80	17.80
1/24/1995	4,626,000	3,213	286	22.56	22.56
1/25/1995	4,516,000	3,136	279	15.77	15.77
1/26/1995	4,436,000	3,081	274	10.83	10.83
1/27/1995	4,423,000	3,072	273	10.02	10.02
1/28/1995	4,488,000	3,117	277	14.04	14.04
1/29/1995	4,105,000	2,851	253	-9.60	
1/30/1995	4,509,000	3,131	278	15.33	15.33
1/31/1995	4,419,000	3,069	273	9.78	9.78
2/1/1995	4,389,000	3,048	271	7.93	7.93
2/2/1995	4,382,000	3,043	270	7.49	7.49
2/3/1995	4,390,000	3,049	271	7.99	7.99
2/4/1995	4,377,000	3,040	270	7.19	7.19
2/5/1995	4,392,000	3,050	271	8.11	8.11
2/6/1995	4,404,000	3,058	272	8.85	8.85
2/7/1995	4,397,000	3,053	271	8.42	8.42
2/8/1995	4,401,000	3,056	272	8.67	8.67
2/9/1995	3,932,000	2,731	243	-20.28	
2/10/1995	4,322,000	3,001	267	3.79	3.79
2/11/1995	3,225,000	2,240	199	-63.93	
2/12/1995	4,583,000	3,183	283	19.90	19.90
2/13/1995	4,538,000	3,151	280	17.12	17.12
2/14/1995	4,499,000	3,124	278	14.72	14.72
2/15/1995	4,593,000	3,190	284	20.52	20.52
2/16/1995	4,557,000	3,165	281	18.30	18.30
2/17/1995	4,491,000	3,119	277	14.22	14.22
2/18/1995	4,415,000	3,066	273	9.53	9.53
2/19/1995	4,471,000	3,105	276	12.99	12.99
2/20/1995	4,544,000	3,156	280	17.49	17.49
2/21/1995	4,523,000	3,141	279	16.20	16.20
2/22/1995	4,183,000	3,100	276	12.56	12.56
2/23/1995	4,430,000	3,076	273	10.46	10.46
2/24/1995	4,425,000	3,073	273	10.15	10.15
2/25/1995	4,505,000	3,128	278	15.09	15.09
2/26/1995	4,539,000	3,152	280	17.19	17.19
2/27/1995	4,527,000	3,144	279	16.44	16.44
2/28/1995	4,142,000	2,876	256	-7.32	
3/1/1995	4,256,000	2,956	263	-0.28	

3/2/1995	4,521,000	3,140	279	16.07	16.07
3/3/1995	4,686,000	3,254	289	26.26	26.26
3/4/1995	4,643,000	3,224	287	23.60	23.60
3/5/1995	4,594,000	3,190	284	20.58	20.58
3/6/1995	4,637,000	3,220	286	23.23	23.23
3/7/1995	4,620,000	3,208	285	22.19	22.19
3/8/1995	4,544,000	3,156	280	17.49	17.49
3/9/1995	4,522,000	3,140	279	16.14	16.14
3/10/1995	4,504,000	3,128	278	15.02	15.02
3/11/1995	4,673,000	3,245	288	25.46	25.46
3/12/1995	4,672,000	3,244	288	25.40	25.40
3/13/1995	4,617,000	3,206	285	22.00	22.00
3/14/1995	4,583,000	3,183	283	19.90	19.90
3/15/1995	4,602,000	3,196	284	21.07	21.07
3/16/1995	4,586,000	3,185	283	20.09	20.09
3/17/1995	4,568,000	3,172	282	18.98	18.98
3/18/1995	4,565,000	3,170	282	18.79	18.79
3/19/1995	4,661,000	3,237	288	24.72	24.72
3/20/1995	4,586,000	3,185	283	20.09	20.09
3/21/1995	4,613,000	3,203	285	21.75	21.75
3/22/1995	4,614,000	3,204	285	21.81	21.81
3/23/1995	4,593,000	3,190	284	20.52	20.52
3/24/1995	4,683,000	3,252	289	26.07	26.07
3/25/1995	4,726,000	3,282	292	28.73	28.73
3/26/1995	4,700,000	3,264	290	27.12	27.12
3/27/1995	4,607,000	3,199	284	21.38	21.38
3/28/1995	4,565,000	3,170	282	18.79	18.79
3/29/1995	4,497,000	3,123	278	14.59	14.59
3/30/1995	4,587,000	3,185	283	20.15	20.15
3/31/1995	4,560,000	3,167	281	18.48	18.48
4/1/1995	4,582,000	3,182	283	19.84	19.84
4/2/1995	4,453,000	3,092	275	11.88	11.88
4/3/1995	4,558,000	3,165	281	18.36	18.36
4/4/1995	4,714,000	3,274	291	27.99	27.99
4/5/1995	4,778,000	3,318	295	31.94	31.94
4/6/1995	4,802,000	3,335	296	33.42	33.42
4/7/1995	4,851,000	3,369	299	36.44	36.44
4/8/1995	4,915,000	3,413	303	40.40	40.40
4/9/1995	4,875,000	3,385	301	37.93	37.93
4/10/1995	4,848,000	3,367	299	36.26	36.26
4/11/1995	4,716,000	3,275	291	28.11	28.11
4/12/1995	4,758,000	3,304	294	30.70	30.70
4/13/1995	4,679,000	3,249	289	25.83	25.83
4/14/1995	5,016,000	3,483	310	46.63	46.63

4/15/1995	4,929,000	3,423	304	41.26	41.26
4/16/1995	4,860,000	3,375	300	37.00	37.00
4/17/1995	4,903,000	3,405	303	39.65	39.65
4/18/1995	4,848,000	3,367	299	36.26	36.26
4/19/1995	4,776,000	3,317	295	31.81	31.81
4/20/1995	4,836,000	3,358	299	35.52	35.52
4/21/1995	4,643,000	3,224	287	23.60	23.60
4/22/1995	4,757,000	3,303	294	30.64	30.64
4/23/1995	4,777,000	3,317	295	31.88	31.88
4/24/1995	4,751,000	3,299	293	30.27	30.27
4/25/1995	4,771,000	3,313	295	31.51	31.51
4/26/1995	4,771,000	3,313	295	31.51	31.51
4/27/1995	4,764,000	3,308	294	31.07	31.07
4/28/1995	4,729,000	3,284	292	28.91	28.91
4/29/1995	4,291,000	2,980	265	1.88	1.88
4/30/1995	0	0	0	-263.00	
5/1/1995	0	0	0	-263.00	
5/2/1995	0	0	0	-263.00	
5/3/1995	0	0	0	-263.00	
5/4/1995	2,358,000	1,638	146	-117.44	
5/5/1995	4,573,000	3,176	250	-13.00	
5/6/1995	4,723,000	3,280	292	28.54	28.54
5/7/1995	4,719,000	3,277	291	28.30	28.30
5/8/1995	4,716,000	3,275	291	28.00	28.00
5/9/1995	4,706,000	3,268	290	27.49	27.49
5/10/1995	4,668,000	3,242	288	25.15	25.15
5/11/1995	4,703,000	3,266	290	27.31	27.31
5/12/1995	4,744,000	3,294	293	29.84	29.84
5/13/1995	4,711,000	3,272	291	27.80	27.80
5/14/1995	4,571,000	3,174	282	19.16	19.16
5/15/1995	4,554,000	3,163	281	18.11	18.11
5/16/1995	4,550,000	3,160	281	17.86	17.86
5/17/1995	4,594,000	3,190	284	20.58	20.58
5/18/1995	4,604,000	3,197	284	21.20	21.20
5/19/1995	4,607,000	3,199	284	21.38	21.38
5/20/1995	4,598,000	3,193	284	20.83	20.83
5/21/1995	4,643,000	3,224	287	23.60	23.60
5/22/1995	4,657,000	3,234	287	24.47	24.47
5/23/1995	4,584,000	3,183	283	19.96	19.96
5/24/1995	4,568,000	3,172	282	18.98	18.98
5/25/1995	4,540,000	3,153	280	17.25	17.25
5/26/1995	4,472,000	3,106	276	13.05	13.05
5/27/1995	4,426,000	3,074	273	10.21	10.21
5/28/1995	4,417,000	3,067	273	9.65	9.65

5/29/1995	4,446,000	3,088	274	11.44	11.44
5/30/1995	4,483,000	3,113	277	13.73	13.73
5/31/1995	4,586,000	3,185	283	20.09	20.09
6/1/1995	4,602,000	3,196	284	21.07	21.07
6/2/1995	4,526,000	3,143	279	16.38	16.38
6/3/1995	4,516,000	3,136	279	15.77	15.77
6/4/1995	4,478,000	3,110	276	13.42	13.42
6/5/1995	4,451,000	3,091	275	11.75	11.75
6/6/1995	4,525,000	3,142	279	16.32	16.32
6/7/1995	4,429,000	3,076	273	10.40	10.40
6/8/1995	4,313,000	2,995	266	3.23	3.23
6/9/1995	4,290,000	2,979	265	1.81	1.81
6/10/1995	5,530,000	3,840	341	78.36	78.36
6/11/1995	6,327,000	4,394	391	127.56	127.56
6/12/1995	6,328,000	4,394	391	127.62	127.62
6/13/1995	6,328,000	4,394	391	127.62	127.62
6/14/1995	7,535,000	5,233	465	202.12	202.12
6/15/1995	8,140,000	5,653	502	239.47	239.47
6/16/1995	8,146,000	5,657	503	239.84	239.84
6/17/1995	8,150,000	5,660	503	240.09	240.09
6/18/1995	8,130,000	5,646	502	238.85	238.85
6/19/1995	8,068,000	5,603	498	235.02	235.02
6/20/1995	8,007,000	5,560	494	231.26	231.26
6/21/1995	7,989,000	5,548	493	230.15	230.15
6/22/1995	7,951,000	5,522	491	227.80	227.80
6/23/1995	7,759,000	5,388	479	215.95	215.95
6/24/1995	7,780,000	5,403	480	217.25	217.25
6/25/1995	7,700,000	5,347	475	212.31	212.31
6/26/1995	7,712,000	5,356	476	213.05	213.05
6/27/1995	7,492,000	5,203	462	199.47	199.47
6/28/1995	7,241,000	5,028	447	183.98	183.98
6/29/1995	7,293,000	5,065	450	187.19	187.19
6/30/1995	7,219,000	5,013	446	182.62	182.62
7/1/1995	7,295,000	5,066	450	187.31	187.31
7/2/1995	7,332,000	5,092	453	189.59	189.59
7/3/1995	7,309,000	5,076	451	188.17	188.17
7/4/1995	7,541,000	5,237	465	202.49	202.49
7/5/1995	7,484,000	5,197	462	198.98	198.98
7/6/1995	7,444,000	5,169	460	196.51	196.51
7/7/1995	7,356,000	5,108	454	191.07	191.07
7/8/1995	7,364,000	5,114	455	191.57	191.57
7/9/1995	7,321,000	5,084	452	188.91	188.91
7/10/1995	7,309,000	5,076	451	188.17	188.17
7/11/1995	7,269,000	5,048	449	185.70	185.70

7/12/1995	7,263,000	5,044	448	185.33	185.33
7/13/1995	7,344,000	5,100	453	190.33	190.33
7/14/1995	7,192,000	4,994	444	180.95	180.95
7/15/1995	5,226,000	3,629	323	59.59	59.59
7/16/1995	3,886,000	2,699	240	-23.12	
7/17/1995	4,000,000	2,778	247	-16.09	
7/18/1995	3,999,000	2,777	247	-16.15	
7/19/1995	4,006,000	2,782	247	-15.72	
7/20/1995	4,067,000	2,824	251	-11.95	
7/21/1995	4,122,000	2,863	254	-8.56	
7/22/1995	4,138,000	2,874	255	-7.57	
7/23/1995	4,147,000	2,880	256	-7.01	
7/24/1995	4,090,000	2,840	252	-10.53	
7/25/1995	4,001,000	2,778	247	-16.02	
7/26/1995	4,161,000	2,890	257	-6.15	
7/27/1995	4,251,000	2,952	262	-0.59	
7/28/1995	4,219,000	2,930	260	-2.57	
7/29/1995	4,111,000	2,855	254	-9.23	
7/30/1995	4,152,000	2,883	256	-6.70	
7/31/1995	4,097,000	2,845	253	-10.10	
8/1/1995	4,135,000	2,872	255	-7.75	
8/2/1995	4,092,000	2,842	253	-10.41	
8/3/1995	4,122,000	2,863	254	-8.56	
8/4/1995	4,103,000	2,849	253	-9.73	
8/5/1995	4,091,000	2,841	253	-10.47	
8/6/1995	4,048,000	2,811	250	-13.12	
8/7/1995	4,104,000	2,850	253	-9.67	
8/8/1995	4,209,000	2,923	260	-3.19	
8/9/1995	4,136,000	2,872	255	-7.69	
8/10/1995	4,106,000	2,851	253	-9.54	
8/11/1995	4,110,000	2,854	254	-9.30	
8/12/1995	4,084,000	2,836	252	-10.90	
8/13/1995	4,119,000	2,860	254	-8.74	
8/14/1995	4,093,000	2,842	253	-10.35	
8/15/1995	4,082,000	2,835	252	-11.02	
8/16/1995	4,150,000	2,882	256	-6.83	
8/17/1995	4,137,000	2,873	255	-7.63	
8/18/1995	4,188,000	2,908	259	-4.48	
8/19/1995	4,116,000	2,858	254	-8.93	
8/20/1995	4,155,000	2,885	256	-6.52	
8/21/1995	4,075,000	2,830	252	-11.46	
8/22/1995	4,176,000	2,900	258	-5.22	
8/23/1995	4,158,000	2,888	257	-6.33	
8/24/1995	4,104,000	2,850	253	-9.67	

8/25/1995	4,220,000	2,931	260	-2.51
8/26/1995	4,046,000	2,810	250	-13.25
8/27/1995	4,094,000	2,843	253	-10.28
8/28/1995	4,066,000	2,824	251	-12.01
8/29/1995	4,016,000	2,789	248	-15.10
8/30/1995	4,057,000	2,817	250	-12.57
8/31/1995	4,049,000	2,812	250	-13.06
9/1/1995	4,007,000	2,783	247	-15.65
9/2/1995	4,072,000	2,828	251	-11.64
9/3/1995	4,004,000	2,781	247	-15.84
9/4/1995	4,096,000	2,844	253	-10.16
9/5/1995	4,074,000	2,829	251	-11.52
9/6/1995	3,989,000	2,770	246	-16.77
9/7/1995	3,914,000	2,718	242	-21.40
9/8/1995	3,902,000	2,710	241	-22.14
9/9/1995	3,906,000	2,713	241	-21.89
9/10/1995	3,933,000	2,731	243	-20.22
9/11/1995	3,890,000	2,701	240	-22.88
9/12/1995	3,889,000	2,701	240	-22.94
9/13/1995	3,971,000	2,758	245	-17.88
9/14/1995	4,065,000	2,823	251	-12.07
9/15/1995	3,997,000	2,776	247	-16.27
9/16/1995	3,982,000	2,765	246	-17.20
9/17/1995	4,034,000	2,801	249	-13.99
9/18/1995	3,977,000	2,762	245	-17.51
9/19/1995	4,045,000	2,809	250	-13.31
9/20/1995	4,015,000	2,788	248	-15.16
9/21/1995	4,066,000	2,824	251	-12.01
9/22/1995	3,919,000	2,722	242	-21.09
9/23/1995	3,938,000	2,735	243	-19.91
9/24/1995	3,980,000	2,764	246	-17.32
9/25/1995	3,975,000	2,760	245	-17.63
9/26/1995	3,942,000	2,738	243	-19.67
9/27/1995	3,937,000	2,734	243	-19.98
9/28/1995	3,951,000	2,744	244	-19.11
9/29/1995	3,957,000	2,748	244	-18.74
9/30/1995	3,925,000	2,726	242	-20.72
10/1/1995	3,910,000	2,715	241	-21.64
10/2/1995	3,818,000	2,651	236	-27.32
10/3/1995	3,874,000	2,690	239	-23.86
10/4/1995	3,871,000	2,688	239	-24.05
10/5/1995	3,815,000	2,649	235	-27.51
10/6/1995	3,768,000	2,617	233	-30.41
10/7/1995	3,851,000	2,674	238	-25.28

10/8/1995	3,877,000	2,692	239	-23.68
10/9/1995	3,904,000	2,711	241	-22.01
10/10/1995	3,889,000	2,701	240	-22.94
10/11/1995	3,878,000	2,693	239	-23.62
10/12/1995	3,898,000	2,707	241	-22.38
10/13/1995	3,842,000	2,668	237	-25.84
10/14/1995	3,837,000	2,665	237	-26.15
10/15/1995	3,863,000	2,683	238	-24.54
10/16/1995	3,832,000	2,661	237	-26.46
10/17/1995	3,847,000	2,672	237	-25.53
10/18/1995	3,852,000	2,675	238	-25.22
10/19/1995	3,784,000	2,628	234	-29.42
10/20/1995	3,791,000	2,633	234	-28.99
10/21/1995	3,829,000	2,659	236	-26.64
10/22/1995	3,789,000	2,631	234	-29.11
10/23/1995	3,809,000	2,645	235	-27.88
10/24/1995	3,924,000	2,725	242	-20.78
10/25/1995	3,887,000	2,699	240	-23.06
10/26/1995	3,739,828	2,597	231	-32.15
10/27/1995	3,753,145	2,606	232	-31.32
10/28/1995	3,716,450	2,581	229	-33.59
10/29/1995	3,725,543	2,587	230	-33.03
10/30/1995	3,818,101	2,651	236	-27.31
10/31/1995	3,489,171	2,423	215	-47.62
11/1/1995	3,648,974	2,534	225	-37.75
11/2/1995	3,614,432	2,510	223	-39.89
11/3/1995	3,739,648	2,597	231	-32.16
11/4/1995	3,765,776	2,615	232	-30.54
11/5/1995	3,803,150	2,641	235	-28.24
11/6/1995	3,749,066	2,604	231	-31.58
11/7/1995	3,719,580	2,583	230	-33.40
11/8/1995	3,703,180	2,572	229	-34.41
11/9/1995	3,712,989	2,578	229	-33.80
11/10/1995	3,649,956	2,535	225	-37.69
11/11/1995	3,683,120	2,558	227	-35.65
11/12/1995	3,708,510	2,575	229	-34.08
11/13/1995	3,691,232	2,563	228	-35.15
11/14/1995	3,693,096	2,565	228	-35.03
11/15/1995	3,656,582	2,539	226	-37.29
11/16/1995	3,662,016	2,543	226	-36.95
11/17/1995	3,646,290	2,532	225	-37.92
11/18/1995	3,651,726	2,536	225	-37.58
11/19/1995	3,638,716	2,527	225	-38.39
11/20/1995	3,236,506	2,248	200	-63.22

11/21/1995	3,685,612	2,559	228	-35.49		
11/22/1995	3,652,663	2,537	225	-37.53		
11/23/1995	3,643,506	2,530	225	-38.09		
11/24/1995	3,657,252	2,540	226	-37.24		
11/25/1995	3,684,131	2,558	227	-35.58		
11/26/1995	3,687,938	2,561	228	-35.35		
11/27/1995	3,657,071	2,540	226	-37.25		
11/28/1995	3,656,923	2,540	226	-37.26		
11/29/1995	3,624,103	2,517	224	-39.29		
11/30/1995	3,733,608	2,593	230	-32.53		
12/1/1995	3,737,136	2,595	231	-32.31		
12/2/1995	3,702,913	2,571	229	-34.43		
12/3/1995	3,603,148	2,502	222	-40.58		
12/4/1995	3,386,618	2,352	209	-53.95		
12/5/1995	2,975,592	2,066	184	-79.32		
12/6/1995	3,621,908	2,515	224	-39.43		
12/7/1995	3,746,859	2,602	231	-31.71		
12/8/1995	3,342,600	2,321	206	-56.67		
12/9/1995	3,565,020	2,476	220	-42.94		
12/10/1995	3,748,976	2,603	231	-31.58		
12/11/1995	3,740,984	2,598	231	-32.08		
12/12/1995	3,723,140	2,586	230	-33.18		
12/13/1995	3,672,446	2,550	227	-36.31		
12/14/1995	3,590,698	2,494	222	-41.35		
12/15/1995	3,601,798	2,501	222	-40.67		
12/16/1995	3,597,831	2,498	222	-40.91		
12/17/1995	3,451,218	2,397	213	-49.96		
12/18/1995	2,983,455	2,072	184	-78.84		
12/19/1995	3,591,578	2,494	222	-41.30		
12/20/1995	3,589,342	2,493	222	-41.44		
12/21/1995	3,703,539	2,572	229	-34.39		
12/22/1995	3,349,113	2,326	207	-56.26		
12/23/1995	3,598,712	2,499	222	-40.86		
12/24/1995	3,692,262	2,564	228	-35.08		
12/25/1995	3,665,922	2,546	226	-36.71		
12/26/1995	3,698,986	2,569	228	-34.67		
12/27/1995	3,685,132	2,559	227	-35.52		
12/28/1995	3,627,345	2,519	224	-39.09		
12/29/1995	3,738,873	2,596	231	-32.21		
12/30/1995	3,712,773	2,578	229	-33.82		
12/31/1995	3,647,810	2,533	225	-37.83	9742.53	487.13
1/1/1996	3,573,832	2,482	221	-42.39		
1/2/1996	3,553,052	2,467	219	-43.68		
1/3/1996	3,544,768	2,462	219	-44.19		

1/4/1996	3,528,715	2,450	218	-45.18
1/5/1996	3,529,474	2,451	218	-45.13
1/6/1996	3,586,853	2,491	221	-41.59
1/7/1996	3,579,400	2,486	221	-42.05
1/8/1996	3,527,327	2,450	218	-45.26
1/9/1996	3,506,738	2,435	216	-46.53
1/10/1996	3,494,142	2,426	216	-47.31
1/11/1996	3,442,681	2,391	213	-50.49
1/12/1996	3,477,325	2,415	215	-48.35
1/13/1996	3,501,690	2,432	216	-46.85
1/14/1996	3,496,301	2,428	216	-47.18
1/15/1996	3,513,028	2,440	217	-46.15
1/16/1996	3,506,696	2,435	216	-46.54
1/17/1996	3,239,034	2,249	200	-63.06
1/18/1996	3,410,512	2,368	211	-52.47
1/19/1996	3,671,119	2,549	227	-36.39
1/20/1996	3,557,451	2,470	220	-43.40
1/21/1996	3,245,580	2,254	200	-62.66
1/22/1996	3,485,842	2,421	215	-47.82
1/23/1996	3,356,710	2,331	207	-55.80
1/24/1996	3,439,213	2,388	212	-50.70
1/25/1996	3,404,579	2,364	210	-52.84
1/26/1996	3,486,142	2,421	215	-47.81
1/27/1996	3,484,178	2,420	215	-47.93
1/28/1996	3,437,999	2,387	212	-50.78
1/29/1996	3,476,143	2,414	215	-48.42
1/30/1996	3,532,061	2,453	218	-44.97
1/31/1996	3,545,657	2,462	219	-44.13
2/1/1996	3,527,093	2,449	218	-45.28
2/2/1996	3,510,324	2,438	217	-46.31
2/3/1996	3,581,149	2,487	221	-41.94
2/4/1996	3,617,888	2,512	223	-39.67
2/5/1996	3,536,632	2,456	218	-44.69
2/6/1996	3,503,764	2,433	216	-46.72
2/7/1996	3,516,649	2,442	217	-45.92
2/8/1996	3,502,566	2,432	216	-46.79
2/9/1996	3,495,733	2,428	216	-47.21
2/10/1996	3,464,543	2,406	214	-49.14
2/11/1996	3,301,558	2,293	204	-59.20
2/12/1996	3,417,230	2,373	211	-52.06
2/13/1996	3,442,863	2,391	213	-50.48
2/14/1996	3,441,876	2,390	212	-50.54
2/15/1996	3,457,300	2,401	213	-49.59
2/16/1996	3,460,420	2,403	214	-49.39

2/17/1996	3,457,336	2,401	213	-49.58
2/18/1996	3,461,156	2,404	214	-49.35
2/19/1996	3,450,121	2,396	213	-50.03
2/20/1996	3,427,149	2,380	212	-51.45
2/21/1996	3,427,109	2,380	212	-51.45
2/22/1996	3,423,298	2,377	211	-51.69
2/23/1996	3,301,102	2,292	204	-59.23
2/24/1996	3,442,288	2,390	212	-50.51
2/25/1996	3,359,807	2,333	207	-55.60
2/26/1996	2,788,873	1,937	172	-90.85
2/27/1996	3,484,615	2,420	215	-47.90
2/28/1996	3,588,000	2,492	221	-41.52
2/29/1996	3,889,186	2,701	240	-22.93
3/1/1996	3,709,432	2,576	229	-34.02
3/2/1996	3,543,741	2,461	219	-44.25
3/3/1996	3,456,187	2,400	213	-49.66
3/4/1996	3,412,914	2,370	211	-52.33
3/5/1996	3,388,880	2,353	209	-53.81
3/6/1996	3,359,910	2,333	207	-55.60
3/7/1996	3,367,396	2,338	208	-55.14
3/8/1996	3,361,254	2,334	207	-55.52
3/9/1996	3,338,027	2,318	206	-56.95
3/10/1996	3,369,270	2,340	208	-55.02
3/11/1996	3,275,518	2,275	202	-60.81
3/12/1996	3,419,896	2,375	211	-51.90
3/13/1996	3,419,893	2,375	211	-51.90
3/14/1996	3,393,919	2,357	210	-53.50
3/15/1996	3,384,680	2,350	209	-54.07
3/16/1996	3,400,949	2,362	210	-53.06
3/17/1996	3,399,361	2,361	210	-53.16
3/18/1996	3,409,904	2,368	210	-52.51
3/19/1996	3,369,657	2,340	208	-55.00
3/20/1996	3,373,750	2,343	208	-54.74
3/21/1996	3,465,028	2,406	214	-49.11
3/22/1996	3,358,708	2,332	207	-55.67
3/23/1996	3,418,506	2,374	211	-51.98
3/24/1996	3,816,000	2,650	236	-27.44
3/25/1996	2,906,630	2,018	179	-83.58
3/26/1996	3,449,557	2,396	213	-50.06
3/27/1996	3,406,482	2,366	210	-52.72
3/28/1996	3,379,615	2,347	209	-54.38
3/29/1996	3,384,780	2,351	209	-54.06
3/30/1996	3,362,957	2,335	208	-55.41
3/31/1996	3,380,428	2,348	209	-54.33

4/1/1996	3,439,357	2,388	212	-50.69
4/2/1996	3,482,243	2,418	215	-48.05
4/3/1996	3,456,211	2,400	213	-49.65
4/4/1996	3,401,591	2,362	210	-53.03
4/5/1996	3,419,209	2,374	211	-51.94
4/6/1996	3,496,253	2,428	216	-47.18
4/7/1996	3,446,852	2,394	213	-50.23
4/8/1996	3,735,667	2,594	231	-32.40
4/9/1996	3,858,490	2,680	238	-24.82
4/10/1996	3,942,971	2,738	243	-19.61
4/11/1996	3,909,610	2,715	241	-21.67
4/12/1996	3,776,685	2,623	233	-29.87
4/13/1996	3,648,177	2,533	225	-37.80
4/14/1996	3,586,674	2,491	221	-41.60
4/15/1996	2,523,412	0	0	-263.00
4/16/1996	3,458,420	2,402	213	-49.52
4/17/1996	3,469,558	2,409	214	-48.83
4/18/1996	3,459,800	2,403	214	-49.43
4/19/1996	3,338,997	2,319	206	-56.89
4/20/1996	3,278,852	2,277	202	-60.60
4/21/1996	3,237,463	2,248	200	-63.16
4/22/1996	3,203,296	2,225	198	-65.27
4/23/1996	3,265,773	2,268	202	-61.41
4/24/1996	3,687,550	2,561	228	-35.37
4/25/1996	3,870,114	2,688	239	-24.10
4/26/1996	3,877,978	2,693	239	-23.62
4/27/1996	3,876,018	2,692	239	-23.74
4/28/1996	3,836,857	2,664	237	-26.16
4/29/1996	3,820,657	2,653	236	-27.16
4/30/1996	3,822,180	2,654	236	-27.06
5/1/1996	3,714,341	2,579	229	-33.72
5/2/1996	3,713,040	2,579	229	-33.80
5/3/1996	3,701,811	2,571	229	-34.49
5/4/1996	3,685,682	2,560	228	-35.49
5/5/1996	3,688,586	2,562	228	-35.31
5/6/1996	3,691,625	2,564	228	-35.12
5/7/1996	3,614,202	2,510	223	-39.90
5/8/1996	3,742,910	2,599	231	-31.96
5/9/1996	3,770,023	2,618	233	-30.28
5/10/1996	3,793,375	2,634	234	-28.84
5/11/1996	3,824,835	2,656	236	-26.90
5/12/1996	3,976,254	2,761	245	-17.55
5/13/1996	4,063,019	2,822	251	-12.20
5/14/1996	4,179,601	2,903	258	-5.00

5/15/1996	4,156,427	2,886	257	-6.43	
5/16/1996	4,129,660	2,868	255	-8.08	
5/17/1996	4,121,594	2,862	254	-8.58	
5/18/1996	4,135,577	2,872	255	-7.72	
5/19/1996	4,077,245	2,831	252	-11.32	
5/20/1996	4,021,829	2,793	248	-14.74	
5/21/1996	3,867,000	2,685	239	-24.30	
5/22/1996	3,994,080	2,774	247	-16.45	
5/23/1996	4,066,201	2,824	251	-12.00	
5/24/1996	4,048,390	2,811	250	-13.10	
5/25/1996	3,995,223	2,774	247	-16.38	
5/26/1996	4,037,736	2,804	249	-13.76	
5/27/1996	4,109,339	2,854	254	-9.34	
5/28/1996	4,115,132	2,858	254	-8.98	
5/29/1996	3,673,606	2,551	227	-36.23	
5/30/1996	4,130,434	2,868	255	-8.03	
5/31/1996	3,984,114	2,767	246	-17.07	
6/1/1996	4,092,831	2,842	253	-10.36	
6/2/1996	4,065,054	2,823	251	-12.07	
6/3/1996	1,411,216	980	87	-175.89	
6/4/1996	0	0	0	-263.00	
6/5/1996	0	0	0	-263.00	
6/6/1996	0	0	0	-263.00	
6/7/1996	0	0	0	-263.00	
6/8/1996	0	0	0	-263.00	
6/9/1996	0	0	0	-263.00	
6/10/1996	0	0	0	-263.00	
6/11/1996	0	0	0	-263.00	
6/12/1996	0	0	0	-263.00	
6/13/1996	0	0	0	-263.00	
6/14/1996	0	0	0	-263.00	
6/15/1996	0	0	0	-263.00	
6/16/1996	0	0	0	-263.00	
6/17/1996	0	0	0	-263.00	
6/18/1996	0	0	0	-263.00	
6/19/1996	3,344,451	2,323	206	-56.55	
6/20/1996	5,366,298	3,727	331	68.25	68.25
6/21/1996	5,338,590	3,707	330	66.54	66.54
6/22/1996	5,361,357	3,723	331	67.95	67.95
6/23/1996	5,339,250	3,708	330	66.58	66.58
6/24/1996	5,304,496	3,684	327	64.44	64.44
6/25/1996	5,284,596	3,670	326	63.21	63.21
6/26/1996	5,277,839	3,665	326	62.79	62.79
6/27/1996	5,247,724	3,644	324	60.93	60.93

6/28/1996	5,262,751	3,655	325	61.86	61.86
6/29/1996	5,266,096	3,657	325	62.07	62.07
6/30/1996	5,249,456	3,645	324	61.04	61.04
7/1/1996	5,162,146	3,585	319	55.65	55.65
7/2/1996	5,220,720	3,626	322	59.27	59.27
7/3/1996	5,208,876	3,617	322	58.54	58.54
7/4/1996	4,880,131	3,389	301	38.24	38.24
7/5/1996	5,221,985	3,626	322	59.34	59.34
7/6/1996	5,196,784	3,609	321	57.79	57.79
7/7/1996	5,160,869	3,584	319	55.57	55.57
7/8/1996	5,148,825	3,576	318	54.83	54.83
7/9/1996	4,083,205	2,836	252	-10.95	
7/10/1996	3,455,289	2,400	213	-49.71	
7/11/1996	3,903,584	2,711	241	-22.04	
7/12/1996	4,274,006	2,968	264	0.83	
7/13/1996	4,281,625	2,973	264	1.30	1.30
7/14/1996	4,272,408	2,967	264	0.73	
7/15/1996	3,776,508	2,623	233	-29.88	
7/16/1996	3,463,337	2,405	214	-49.21	
7/17/1996	3,469,512	2,409	214	-48.83	
7/18/1996	3,444,334	2,392	213	-50.39	
7/19/1996	3,421,415	2,376	211	-51.80	
7/20/1996	3,410,620	2,368	211	-52.47	
7/21/1996	3,399,749	2,361	210	-53.14	
7/22/1996	3,398,964	2,360	210	-53.19	
7/23/1996	3,379,664	2,347	209	-54.38	
7/24/1996	3,730,614	2,591	230	-32.72	
7/25/1996	4,241,799	2,946	262	-1.16	
7/26/1996	4,301,286	2,987	266	2.51	2.51
7/27/1996	4,288,472	2,978	265	1.72	1.72
7/28/1996	4,120,611	2,862	254	-8.64	
7/29/1996	4,263,047	2,960	263	0.15	
7/30/1996	4,260,566	2,959	263	0.00	
7/31/1996	4,169,693	2,896	257	-5.61	
8/1/1996	4,250,397	2,952	262	-0.63	
8/2/1996	4,246,393	2,949	262	-0.88	
8/3/1996	4,127,741	2,866	255	-8.20	
8/4/1996	4,154,445	2,885	256	-6.55	
8/5/1996	4,206,316	2,921	260	-3.35	
8/6/1996	4,199,664	2,916	259	-3.76	
8/7/1996	4,176,206	2,900	258	-5.21	
8/8/1996	4,165,954	2,893	257	-5.84	
8/9/1996	4,172,115	2,897	258	-5.46	
8/10/1996	4,165,153	2,892	257	-5.89	

8/11/1996	3,736,868	2,595	231	-32.33
8/12/1996	3,437,559	2,387	212	-50.81
8/13/1996	3,410,330	2,368	211	-52.49
8/14/1996	3,402,003	2,363	210	-53.00
8/15/1996	3,400,060	2,361	210	-53.12
8/16/1996	3,389,218	2,354	209	-53.79
8/17/1996	3,308,682	2,298	204	-58.76
8/18/1996	3,398,626	2,360	210	-53.21
8/19/1996	3,384,068	2,350	209	-54.11
8/20/1996	3,378,414	2,346	209	-54.46
8/21/1996	3,372,159	2,342	208	-54.84
8/22/1996	3,373,823	2,343	208	-54.74
8/23/1996	3,360,868	2,334	207	-55.54
8/24/1996	3,349,145	2,326	207	-56.26
8/25/1996	3,344,439	2,323	206	-56.55
8/26/1996	3,355,200	2,330	207	-55.89
8/27/1996	3,350,348	2,327	207	-56.19
8/28/1996	3,360,677	2,334	207	-55.55
8/29/1996	3,370,953	2,341	208	-54.92
8/30/1996	3,349,451	2,326	207	-56.24
8/31/1996	3,198,830	2,221	197	-65.54
9/1/1996	3,332,945	2,315	206	-57.26
9/2/1996	3,329,302	2,312	206	-57.49
9/3/1996	3,322,359	2,307	205	-57.92
9/4/1996	3,322,893	2,308	205	-57.88
9/5/1996	3,325,182	2,309	205	-57.74
9/6/1996	3,312,210	2,300	204	-58.54
9/7/1996	3,307,833	2,297	204	-58.81
9/8/1996	3,297,008	2,290	204	-59.48
9/9/1996	3,842,033	2,668	237	-25.84
9/10/1996	4,128,552	2,867	255	-8.15
9/11/1996	4,111,588	2,855	254	-9.20
9/12/1996	4,094,555	2,843	253	-10.25
9/13/1996	4,080,205	2,833	252	-11.14
9/14/1996	3,971,814	2,758	245	-17.83
9/15/1996	4,070,345	2,827	251	-11.74
9/16/1996	4,070,578	2,827	251	-11.73
9/17/1996	4,084,226	2,836	252	-10.89
9/18/1996	4,077,699	2,832	252	-11.29
9/19/1996	4,060,410	2,820	251	-12.36
9/20/1996	4,067,978	2,825	251	-11.89
9/21/1996	4,072,051	2,828	251	-11.64
9/22/1996	4,071,295	2,827	251	-11.69
9/23/1996	4,062,062	2,821	251	-12.26

9/24/1996	4,061,472	2,820	251	-12.29	
9/25/1996	4,062,914	2,821	251	-12.20	
9/26/1996	4,054,227	2,815	250	-12.74	
9/27/1996	4,049,348	2,812	250	-13.04	
9/28/1996	4,061,982	2,821	251	-12.26	
9/29/1996	4,047,834	2,811	250	-13.13	
9/30/1996	4,252,449	2,953	262	-0.50	
10/1/1996	4,464,516	3,100	276	12.59	12.59
10/2/1996	4,450,833	3,091	275	11.74	11.74
10/3/1996	4,439,116	3,083	274	11.02	11.02
10/4/1996	4,424,416	3,073	273	10.11	10.11
10/5/1996	4,422,333	3,071	273	9.98	9.98
10/6/1996	4,413,706	3,065	272	9.45	9.45
10/7/1996	4,402,554	3,057	272	8.76	8.76
10/8/1996	4,400,804	3,056	272	8.65	8.65
10/9/1996	4,397,868	3,054	271	8.47	8.47
10/10/1996	4,404,204	3,058	272	8.86	8.86
10/11/1996	4,189,077	2,909	259	-4.41	
10/12/1996	4,004,731	2,781	247	-15.79	
10/13/1996	4,006,384	2,782	247	-15.69	
10/14/1996	4,055,403	2,816	250	-12.67	
10/15/1996	3,884,574	2,698	240	-23.21	
10/16/1996	3,922,785	2,724	242	-20.85	
10/17/1996	3,987,913	2,769	246	-16.83	
10/18/1996	3,996,804	2,776	247	-16.28	
10/19/1996	4,030,486	2,799	249	-14.20	
10/20/1996	4,007,948	2,783	247	-15.60	
10/21/1996	3,979,658	2,764	246	-17.34	
10/22/1996	4,007,272	2,783	247	-15.64	
10/23/1996	4,016,295	2,789	248	-15.08	
10/24/1996	4,009,039	2,784	247	-15.53	
10/25/1996	3,907,592	2,714	241	-21.79	
10/26/1996	4,001,588	2,779	247	-15.99	
10/27/1996	4,014,536	2,788	248	-15.19	
10/28/1996	4,018,536	2,791	248	-14.94	
10/29/1996	4,022,152	2,793	248	-14.72	
10/30/1996	3,927,334	2,727	242	-20.57	
10/31/1996	3,725,364	2,587	230	-33.04	
11/1/1996	4,028,241	2,797	249	-14.34	
11/2/1996	4,036,050	2,803	249	-13.86	
11/3/1996	4,029,460	2,798	249	-14.27	
11/4/1996	4,031,476	2,800	249	-14.14	
11/5/1996	4,009,234	2,784	247	-15.52	
11/6/1996	3,991,046	2,772	246	-16.64	

11/7/1996	3,987,108	2,769	246	-16.88
11/8/1996	3,995,402	2,775	247	-16.37
11/9/1996	3,997,818	2,776	247	-16.22
11/10/1996	3,997,728	2,776	247	-16.23
11/11/1996	3,994,162	2,774	247	-16.45
11/12/1996	3,990,910	2,771	246	-16.65
11/13/1996	3,988,710	2,770	246	-16.78
11/14/1996	3,863,983	2,683	239	-24.48
11/15/1996	3,972,340	2,759	245	-17.79
11/16/1996	3,834,052	2,663	237	-26.33
11/17/1996	3,899,197	2,708	241	-22.31
11/18/1996	4,045,706	2,810	250	-13.27
11/19/1996	4,026,200	2,796	249	-14.47
11/20/1996	4,086,322	2,838	252	-10.76
11/21/1996	4,032,627	2,800	249	-14.07
1/22/1996	4,031,965	2,800	249	-14.11
11/23/1996	4,076,654	2,831	252	-11.35
11/24/1996	4,117,768	2,860	254	-8.82
11/25/1996	4,132,733	2,870	255	-7.89
11/26/1996	4,049,769	2,812	250	-13.01
11/27/1996	3,997,727	2,776	247	-16.23
11/28/1996	4,007,470	2,783	247	-15.63
11/29/1996	3,955,609	2,747	244	-18.83
11/30/1996	3,676,317	2,553	227	-36.07
12/1/1996	4,011,194	2,786	248	-15.40
12/2/1996	3,954,840	2,746	244	-18.87
12/3/1996	3,943,567	2,739	243	-19.57
12/4/1996	3,883,536	2,697	240	-23.28
12/5/1996	4,062,180	2,821	251	-12.25
12/6/1996	4,036,926	2,803	249	-13.81
12/7/1996	3,579,215	2,486	221	-42.06
12/8/1996	4,013,711	2,787	248	-15.24
12/9/1996	3,998,755	2,777	247	-16.16
12/10/1996	3,998,523	2,777	247	-16.18
12/11/1996	3,991,406	2,772	246	-16.62
12/12/1996	3,974,473	2,760	245	-17.66
12/13/1996	3,643,664	2,530	225	-38.08
12/14/1996	3,994,149	2,774	247	-16.45
12/15/1996	3,866,497	2,685	239	-24.33
12/16/1996	3,965,591	2,754	245	-18.21
12/17/1996	3,792,913	2,634	234	-28.87
12/18/1996	4,071,789	2,828	251	-11.66
12/19/1996	4,147,872	2,880	256	-6.96
12/20/1996	4,129,075	2,867	255	-8.12

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12/22/1996	3,974,247	2,760	245	-17.68			
12/23/1996	4,025,398	2,795	248	-14.52			
12/24/1996	4,113,066	2,856	254	-9.11			
12/25/1996	3,804,000	2,642	235	-28.19			
12/26/1996	3,704,000	2,572	229	-34.36			
12/27/1996	4,116,642	2,859	254	-8.89			
12/28/1996	4,131,960	2,869	255	-7.94			
12/29/1996	4,057,910	2,818	250	-12.51			
12/30/1996	4,032,272	2,800	249	-14.09			
12/31/1996	3,995,155	2,774	247	-16.39		1250.08	62.50
1/1/1997	3,943,094	2,738	243	-19.60			
1/2/1997	4,086,570	2,838	252	-10.74			
1/3/1997	4,050,613	2,813	250	-12.96			
1/4/1997	3,840,136	2,667	237	-25.95			
1/5/1997	3,321,932	2,307	205	-57.94			
1/6/1997	3,957,163	2,748	244	-18.73			
1/7/1997	4,167,472	2,894	257	-5.75			
1/8/1997	4,119,069	2,860	254	-8.74			
1/9/1997	4,056,585	2,817	250	-12.59			
1/10/1997	3,995,935	2,775	247	-16.34			
1/11/1997	3,932,792	2,731	243	-20.24			
1/12/1997	3,948,729	2,742	244	-19.25			
1/13/1997	4,302,518	2,988	266	2.59	2.59		
1/14/1997	4,509,232	3,131	278	15.35	15.35		
1/15/1997	4,360,458	3,028	269	6.16	6.16		
1/16/1997	4,199,738	2,916	259	-3.76			
1/17/1997	4,128,053	2,867	255	-8.18			
1/18/1997	4,090,526	2,841	253	-10.50			
1/19/1997	4,045,120	2,809	250	-13.30			
1/20/1997	4,009,670	2,784	248	-15.49			
1/21/1997	3,615,081	2,510	223	-39.85			
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1/23/1997	3,979,898	2,764	246	-17.33			
1/24/1997	3,954,775	2,746	244	-18.88			
1/25/1997	3,752,522	2,606	232	-31.36			
1/26/1997	4,042,126	2,807	250	-13.49			
1/27/1997	3,818,920	2,652	236	-27.26			
1/28/1997	4,026,474	2,796	249	-14.45			
1/29/1997	3,678,495	2,555	227	-35.93			
1/30/1997	3,968,861	2,756	245	-18.01			
1/31/1997	3,942,284	2,738	243	-19.65			
2/1/1997	3,969,868	2,757	245	-17.95			
2/2/1997	3,947,537	2,741	244	-19.32			

2/3/1997	3,944,519	2,739	243	-19.51
2/4/1997	3,454,000	2,399	213	-49.79
2/5/1997	3,987,812	2,769	246	-16.84
2/6/1997	4,040,592	2,806	249	-13.58
2/7/1997	4,055,546	2,816	250	-12.66
2/8/1997	4,086,231	2,838	252	-10.76
2/9/1997	3,971,734	2,758	245	-17.83
2/10/1997	4,054,548	2,816	250	-12.72
2/11/1997	4,019,014	2,791	248	-14.91
2/12/1997	3,974,970	2,760	245	-17.63
2/13/1997	3,960,008	2,750	244	-18.56
2/14/1997	3,951,388	2,744	244	-19.09
2/15/1997	3,951,320	2,744	244	-19.09
2/16/1997	3,945,234	2,740	244	-19.47
2/17/1997	3,941,388	2,737	243	-19.70
2/18/1997	3,918,756	2,721	242	-21.10
2/19/1997	3,915,786	2,719	242	-21.28
2/20/1997	3,911,228	2,716	241	-21.57
2/21/1997	3,908,806	2,714	241	-21.72
2/22/1997	3,900,721	2,709	241	-22.21
2/23/1997	3,788,884	2,631	234	-29.12
2/24/1997	3,782,681	2,627	233	-29.50
2/25/1997	3,933,482	2,732	243	-20.19
2/26/1997	3,942,588	2,738	243	-19.63
2/27/1997	3,930,348	2,729	243	-20.39
2/28/1997	3,910,298	2,715	241	-21.62
3/1/1997	3,852,765	2,676	238	-25.18
3/2/1997	3,950,391	2,743	244	-19.15
3/3/1997	3,917,743	2,721	242	-21.16
3/4/1997	3,938,722	2,735	243	-19.87
3/5/1997	3,938,060	2,735	243	-19.91
3/6/1997	3,941,333	2,737	243	-19.71
3/7/1997	3,938,992	2,735	243	-19.85
3/8/1997	3,936,656	2,734	243	-20.00
3/9/1997	3,852,580	2,675	238	-25.19
3/10/1997	3,941,710	2,737	243	-19.68
3/11/1997	3,944,032	2,739	243	-19.54
3/12/1997	3,945,358	2,740	244	-19.46
3/13/1997	3,901,011	2,709	241	-22.20
3/14/1997	3,533,654	2,454	218	-44.87
3/15/1997	3,856,178	2,678	238	-24.96
3/16/1997	3,856,178	2,678	238	-24.96
3/17/1997	3,856,178	2,678	238	-24.96
3/18/1997	3,856,178	2,678	238	-24.96

3/19/1997	3,856,178	2,678	238	-24.96	
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3/21/1997	3,856,178	2,678	238	-24.96	
3/22/1997	3,856,178	2,678	238	-24.96	
3/23/1997	3,856,178	2,678	238	-24.96	
3/24/1997	3,856,178	2,678	238	-24.96	
3/25/1997	3,856,178	2,678	238	-24.96	
3/26/1997	3,856,178	2,678	238	-24.96	
3/27/1997	3,856,178	2,678	238	-24.96	
3/28/1997	3,856,178	2,678	238	-24.96	
3/29/1997	3,780,844	2,626	233	-29.61	
3/30/1997	3,852,281	2,675	238	-25.20	
3/31/1997	3,820,270	2,653	236	-27.18	
4/1/1997	3,768,383	2,617	233	-30.38	
4/2/1997	3,681,227	2,556	227	-35.76	
4/3/1997	3,294,643	2,288	203	-59.63	
4/4/1997	3,985,822	2,768	246	-16.96	
4/5/1997	3,910,864	2,716	241	-21.59	
4/6/1997	3,685,613	2,559	228	-35.49	
4/7/1997	3,810,280	2,646	235	-27.80	
4/8/1997	3,797,894	2,637	234	-28.56	
4/9/1997	3,869,510	2,687	239	-24.14	
4/10/1997	3,772,505	2,620	233	-30.13	
4/11/1997	3,504,718	2,434	216	-46.66	
4/12/1997	3,937,636	2,734	243	-19.94	
4/13/1997	4,073,666	2,829	251	-11.54	
4/14/1997	4,125,221	2,865	255	-8.36	
4/15/1997	3,928,855	2,728	243	-20.48	
4/16/1997	4,421,443	3,070	273	9.93	9.93
4/17/1997	4,652,006	3,231	287	24.16	24.16
4/18/1997	4,746,882	3,296	293	30.02	30.02
4/19/1997	4,883,746	3,391	301	38.47	38.47
4/20/1997	4,883,746	3,391	301	38.47	38.47
4/21/1997	4,977,602	3,457	307	44.26	44.26
4/22/1997	4,922,194	3,418	304	40.84	40.84
4/23/1997	4,912,360	3,411	303	40.23	40.23
4/24/1997	4,933,378	3,426	305	41.53	41.53
4/25/1997	4,952,943	3,440	306	42.74	42.74
4/26/1997	4,750,966	3,299	293	30.27	30.27
4/27/1997	5,075,869	3,525	313	50.33	50.33
4/28/1997	5,142,570	3,571	317	54.44	54.44
4/29/1997	5,086,760	3,532	314	51.00	51.00
4/30/1997	4,841,033	3,362	299	35.83	35.83
5/1/1997	5,067,000	3,519	313	49.78	49.78

5/2/1997	4,710,348	3,271	291	27.76	27.76
5/3/1997	4,958,059	3,443	306	43.05	43.05
5/4/1997	5,020,182	3,486	310	46.89	46.89
5/5/1997	5,092,374	3,536	314	51.34	51.34
5/6/1997	5,127,190	3,561	316	53.49	53.49
5/7/1997	5,295,128	3,677	327	63.86	63.86
5/8/1997	5,232,786	3,634	323	60.01	60.01
5/9/1997	5,238,523	3,638	323	60.37	60.37
5/10/1997	5,318,330	3,693	328	65.29	65.29
5/11/1997	5,397,373	3,748	333	70.17	70.17
5/12/1997	5,390,793	3,744	333	69.77	69.77
5/13/1997	5,467,434	3,797	337	74.50	74.50
5/14/1997	5,515,454	3,830	340	77.46	77.46
5/15/1997	5,675,528	3,941	350	87.34	87.34
5/16/1997	5,624,262	3,906	347	84.18	84.18
5/17/1997	5,793,518	4,023	358	94.62	94.62
5/18/1997	5,227,580	3,630	323	59.69	59.69
5/19/1997	5,144,394	3,572	318	54.56	54.56
5/20/1997	5,155,604	3,580	318	55.25	55.25
5/21/1997	5,129,544	3,562	317	53.64	53.64
5/22/1997	5,320,325	3,695	328	65.42	65.42
5/23/1997	5,337,327	3,706	329	66.46	66.46
5/24/1997	5,446,228	3,782	336	73.19	73.19
5/25/1997	5,865,117	4,073	362	99.04	99.04
5/26/1997	5,526,245	3,838	341	78.13	78.13
5/27/1997	5,490,000	3,813	339	75.89	75.89
5/28/1997	5,145,000	3,573	318	54.59	54.59
5/29/1997	4,936,694	3,428	305	41.73	41.73
5/30/1997	4,915,902	3,414	303	40.45	40.45
5/31/1997	4,956,793	3,442	306	42.97	42.97
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6/2/1997	5,217,392	3,623	322	59.06	59.06
6/3/1997	4,880,378	3,389	301	38.26	38.26
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6/6/1997	5,958,128	4,138	368	104.79	104.79
6/7/1997	2,178,008	1,513	134	-128.56	
6/8/1997	0	0	0	-263.00	
6/9/1997	0	0	0	-263.00	
6/10/1997	0	0	0	-263.00	
6/11/1997	0	0	0	-263.00	
6/12/1997	0	0	0	-263.00	
6/13/1997	0	0	0	-263.00	
6/14/1997	0	0	0	-263.00	

6/15/1997	0	0	0	-263.00	
6/16/1997	0	0	0	-263.00	
6/17/1997	0	0	0	-263.00	
6/18/1997	0	0	0	-263.00	
6/19/1997	0	0	0	-263.00	
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6/21/1997	0	0	0	-263.00	
6/22/1997	0	0	0	-263.00	
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6/24/1997	4,928,784	3,423	300	37.00	37.00
6/25/1997	4,672,238	3,245	300	37.00	37.00
6/26/1997	5,161,784	3,585	350	87.00	87.00
6/27/1997	6,302,962	4,377	350	87.00	87.00
6/28/1997	6,288,535	4,367	350	87.00	87.00
6/29/1997	6,215,307	4,316	350	87.00	87.00
6/30/1997	6,290,782	4,369	350	87.00	87.00
7/1/1997	6,335,576	4,400	350	87.00	87.00
7/2/1997	6,169,894	4,285	350	87.00	87.00
7/3/1997	6,337,206	4,401	350	87.00	87.00
7/4/1997	6,291,164	4,369	350	87.00	87.00
7/5/1997	6,283,554	4,364	350	87.00	87.00
7/6/1997	6,293,014	4,370	350	87.00	87.00
7/7/1997	6,305,329	4,379	350	87.00	87.00
7/8/1997	6,546,838	4,546	375	112.00	112.00
7/9/1997	6,130,266	4,257	378	115.41	115.41
7/10/1997	6,072,042	4,217	375	111.82	111.82
7/11/1997	6,048,514	4,200	373	110.37	110.37
7/12/1997	6,028,760	4,187	372	109.15	109.15
7/13/1997	6,019,672	4,180	372	108.58	108.58
7/14/1997	5,991,167	4,161	370	106.83	106.83
7/15/1997	6,309,729	4,382	389	126.49	126.49
7/16/1997	5,516,740	3,831	341	77.54	77.54
7/17/1997	4,910,664	3,410	303	40.13	40.13
7/18/1997	5,160,736	3,584	319	55.56	55.56
7/19/1997	5,091,396	3,536	314	51.28	51.28
7/20/1997	5,081,792	3,529	314	50.69	50.69
7/21/1997	5,051,302	3,508	312	48.81	48.81
7/22/1997	5,012,236	3,481	309	46.40	46.40
7/23/1997	5,022,905	3,488	310	47.06	47.06
7/24/1997	4,932,456	3,425	304	41.47	41.47
7/25/1997	4,802,484	3,335	296	33.45	33.45
7/26/1997	4,979,524	3,458	307	44.38	44.38
7/27/1997	4,946,760	3,435	305	42.36	42.36
7/28/1997	4,933,086	3,426	305	41.51	41.51

7/29/1997	4,853,780	3,371	300	36.62	36.62
7/30/1997	4,810,836	3,341	297	33.97	33.97
7/31/1997	5,028,508	3,492	310	47.40	47.40
8/1/1997	5,373,086	3,731	332	68.67	68.67
8/2/1997	5,415,264	3,761	334	71.28	71.28
8/3/1997	5,346,001	3,713	330	67.00	67.00
8/4/1997	5,267,402	3,658	325	62.15	62.15
8/5/1997	5,248,350	3,645	324	60.97	60.97
8/6/1997	5,236,711	3,637	323	60.25	60.25
8/7/1997	5,067,938	3,519	313	49.84	49.84
8/8/1997	5,226,244	3,629	323	59.61	59.61
8/9/1997	5,129,748	3,562	317	53.65	53.65
8/10/1997	5,123,664	3,558	316	53.28	53.28
8/11/1997	5,131,242	3,563	317	53.74	53.74
8/12/1997	5,086,029	3,532	314	50.95	50.95
8/13/1997	5,069,022	3,520	313	49.90	49.90
8/14/1997	5,096,870	3,539	315	51.62	51.62
8/15/1997	5,074,260	3,524	313	50.23	50.23
8/16/1997	5,243,241	3,641	324	60.66	60.66
8/17/1997	5,157,980	3,582	318	55.39	55.39
8/18/1997	5,116,956	3,553	316	52.86	52.86
8/19/1997	5,094,205	3,538	314	51.46	51.46
8/20/1997	5,065,256	3,518	313	49.67	49.67
8/21/1997	5,037,566	3,498	311	47.96	47.96
8/22/1997	4,992,987	3,467	308	45.21	45.21
8/23/1997	4,984,060	3,461	308	44.66	44.66
8/24/1997	4,989,442	3,465	308	44.99	44.99
8/25/1997	4,870,062	3,382	301	37.62	37.62
8/26/1997	4,924,174	3,420	304	40.96	40.96
8/27/1997	4,889,012	3,395	302	38.79	38.79
8/28/1997	4,888,571	3,395	302	38.76	38.76
8/29/1997	4,845,882	3,365	299	36.13	36.13
8/30/1997	4,817,570	3,346	297	34.38	34.38
8/31/1997	4,778,450	3,318	295	31.97	31.97
9/1/1997	4,822,890	3,349	298	34.71	34.71
9/2/1997	4,823,426	3,350	298	34.74	34.74
9/3/1997	4,722,286	3,279	291	28.50	28.50
9/4/1997	4,782,496	3,321	295	32.22	32.22
9/5/1997	4,711,000	3,272	291	27.80	27.80
9/6/1997	4,752,810	3,301	293	30.38	30.38
9/7/1997	4,740,148	3,292	293	29.60	29.60
9/8/1997	4,729,218	3,284	292	28.93	28.93
9/9/1997	4,697,882	3,262	290	26.99	26.99
9/10/1997	4,704,694	3,267	290	27.41	27.41

9/11/1997	4,755,326	3,302	294	30.54	30.54
9/12/1997	4,868,907	3,381	301	37.55	37.55
9/13/1997	4,707,314	3,269	291	27.57	27.57
9/14/1997	4,662,154	3,238	288	24.79	24.79
9/15/1997	4,603,245	3,197	284	21.15	21.15
9/16/1997	1,612,211	1,120	100	-163.48	
9/17/1997	0	0	0	-263.00	
9/18/1997	1,536,299	1,067	95	-168.17	
9/19/1997	3,851,000	2,674	238	-25.28	
9/20/1997	3,769,446	2,618	233	-30.32	
9/21/1997	3,747,069	2,602	231	-31.70	
9/22/1997	3,743,566	2,600	231	-31.92	
9/23/1997	3,710,987	2,577	229	-33.93	
9/24/1997	3,912,654	2,717	242	-21.48	
9/25/1997	4,038,282	2,804	249	-13.72	
9/26/1997	3,999,918	2,778	247	-16.09	
9/27/1997	3,949,438	2,743	244	-19.21	
9/28/1997	3,853,698	2,676	238	-25.12	
9/29/1997	3,852,686	2,675	238	-25.18	
9/30/1997	3,828,930	2,659	236	-26.65	
10/1/1997	3,788,895	2,631	234	-29.12	
10/2/1997	3,761,508	2,612	232	-30.81	
10/3/1997	3,711,468	2,577	229	-33.90	
10/4/1997	3,660,400	2,542	226	-37.05	
10/5/1997	3,573,056	2,481	221	-42.44	
10/6/1997	1,382,720	960	85	-177.65	
10/7/1997	0	0	0	-263.00	
10/8/1997	0	0	0	-263.00	
10/9/1997	1,912,288	1,328	118	-144.96	
10/10/1997	3,925,288	2,726	242	-20.70	
10/11/1997	3,963,493	2,752	245	-18.34	
10/12/1997	3,948,564	2,742	244	-19.26	
10/13/1997	3,928,148	2,728	242	-20.52	
10/14/1997	3,926,671	2,727	242	-20.61	
10/15/1997	1,918,389	1,332	118	-144.58	
10/16/1997	287,194	199	18	-245.27	
10/17/1997	336,753	234	21	-242.21	
10/18/1997	224,485	156	14	-249.14	
10/19/1997	260,743	181	16	-246.90	
10/20/1997	2,687,234	1,866	166	-97.12	
10/21/1997	4,154,657	2,885	256	-6.54	
10/22/1997	4,165,608	2,893	257	-5.86	
10/23/1997	4,174,387	2,899	258	-5.32	
10/24/1997	4,156,118	2,886	257	-6.45	

10/25/1997	4,115,830	2,858	254	-8.94	
10/26/1997	4,136,958	2,873	255	-7.63	
10/27/1997	4,347,992	3,019	268	5.39	5.39
10/28/1997	4,156,078	2,886	257	-6.45	
10/29/1997	4,146,481	2,880	256	-7.04	
10/30/1997	4,196,244	2,914	259	-3.97	
10/31/1997	4,232,416	2,939	261	-1.74	
11/1/1997	4,218,920	2,930	260	-2.57	
11/2/1997	4,173,627	2,898	258	-5.37	
11/3/1997	4,161,368	2,890	257	-6.13	
11/4/1997	4,179,986	2,903	258	-4.98	
11/5/1997	4,112,289	2,856	254	-9.16	
11/6/1997	4,145,806	2,879	256	-7.09	
11/7/1997	4,143,789	2,878	256	-7.21	
11/8/1997	4,144,666	2,878	256	-7.16	
11/9/1997	4,114,976	2,858	254	-8.99	
11/10/1997	4,075,524	2,830	252	-11.42	
11/11/1997	3,928,136	2,728	242	-20.52	
11/12/1997	3,822,229	2,654	236	-27.06	
11/13/1997	4,040,100	2,806	249	-13.61	
11/14/1997	3,991,166	2,772	246	-16.63	
11/15/1997	3,860,286	2,681	238	-24.71	
11/16/1997	4,017,032	2,790	248	-15.04	
11/17/1997	4,094,863	2,844	253	-10.23	
11/18/1997	4,099,352	2,847	253	-9.95	
11/19/1997	4,091,529	2,841	253	-10.44	
11/20/1997	4,107,232	2,852	254	-9.47	
11/21/1997	4,111,928	2,856	254	-9.18	
11/22/1997	4,106,611	2,852	253	-9.51	
11/23/1997	4,084,474	2,836	252	-10.87	
11/24/1997	4,099,349	2,847	253	-9.95	
11/25/1997	3,886,227	2,699	240	-23.11	
11/26/1997	4,082,802	2,835	252	-10.98	
11/27/1997	4,094,449	2,843	253	-10.26	
11/28/1997	4,089,965	2,840	252	-10.53	
11/29/1997	4,078,075	2,832	252	-11.27	
11/30/1997	4,080,336	2,834	252	-11.13	
12/1/1997	4,059,624	2,819	251	-12.41	
12/2/1997	4,013,324	2,787	248	-15.26	
12/3/1997	3,794,000	2,635	234	-28.80	
12/4/1997	4,116,694	2,859	254	-8.88	
12/5/1997	4,041,379	2,807	249	-13.53	
12/6/1997	4,166,598	2,893	257	-5.80	
12/7/1997	4,161,556	2,890	257	-6.11	

12/8/1997	4,045,119	2,809	250	-13.30			
12/9/1997	4,075,000	2,830	252	-11.46			
12/10/1997	4,070,000	2,826	251	-11.77			
12/11/1997	4,006,000	2,782	247	-15.72			
12/12/1997	4,106,126	2,851	253	-9.54			
12/13/1997	4,127,478	2,866	255	-8.22			
12/14/1997	4,134,824	2,871	255	-7.76			
12/15/1997	4,095,092	2,844	253	-10.22			
12/16/1997	4,062,017	2,821	251	-12.26			
12/17/1997	4,054,144	2,815	250	-12.74			
12/18/1997	4,074,780	2,830	252	-11.47			
12/19/1997	4,024,582	2,795	248	-14.57			
12/20/1997	3,962,783	2,752	245	-18.38			
12/21/1997	4,167,278	2,894	257	-5.76			
12/22/1997	4,049,574	2,812	250	-13.03			
12/23/1997	4,042,840	2,808	250	-13.44			
12/24/1997	4,266,448	2,963	263	0.36			
12/25/1997	4,092,194	2,842	253	-10.40			
12/26/1997	4,259,504	2,958	263	-0.07			
12/27/1997	4,394,772	3,052	271	8.28	8.28		
12/28/1997	4,260,406	2,959	263	-0.01			
12/29/1997	4,198,933	2,916	259	-3.81			
12/30/1997	4,146,059	2,879	256	-7.07			
12/31/1997	4,084,001	2,836	252	-10.90		7739.86	386.99
1/1/1998	3,989,958	2,771	246	-16.71			
1/2/1998	4,138,168	2,874	255	-7.56			
1/3/1998	4,114,238	2,857	254	-9.03			
1/4/1998	4,121,022	2,862	254	-8.62			
1/5/1998	4,110,670	2,855	254	-9.25			
1/6/1998	3,938,494	2,735	243	-19.88			
1/7/1998	4,169,533	2,896	257	-5.62			
1/8/1998	4,129,074	2,867	255	-8.12			
1/9/1998	3,856,102	2,678	238	-24.97			
1/10/1998	4,188,322	2,909	259	-4.46			
1/11/1998	4,290,905	2,980	265	1.87	1.87		
1/12/1998	4,342,273	3,015	268	5.04	5.04		
1/13/1998	4,457,428	3,095	275	12.15	12.15		
1/14/1998	4,261,472	2,959	263	0.05			
1/15/1998	4,149,103	2,881	256	-6.88			
1/16/1998	4,127,191	2,866	255	-8.24			
1/17/1998	4,120,306	2,861	254	-8.66			
1/18/1998	4,125,415	2,865	255	-8.34			
1/19/1998	4,114,010	2,857	254	-9.05			
1/20/1998	4,127,750	2,866	255	-8.20			

1/21/1998	4,123,296	2,863	255	-8.48
1/22/1998	4,113,129	2,856	254	-9.10
1/23/1998	4,101,020	2,848	253	-9.85
1/24/1998	4,107,606	2,853	254	-9.44
1/25/1998	4,111,181	2,855	254	-9.22
1/26/1998	4,099,894	2,847	253	-9.92
1/27/1998	4,098,822	2,846	253	-9.99
1/28/1998	4,031,610	2,800	249	-14.14
1/29/1998	3,972,564	2,759	245	-17.78
1/30/1998	4,123,218	2,863	255	-8.48
1/31/1998	3,938,293	2,735	243	-19.90
2/1/1998	2,998,735	2,082	185	-77.89
2/2/1998	4,172,080	2,897	258	-5.46
2/3/1998	4,199,386	2,916	259	-3.78
2/4/1998	4,152,672	2,884	256	-6.66
2/5/1998	4,134,402	2,871	255	-7.79
2/6/1998	4,128,341	2,867	255	-8.16
2/7/1998	4,125,930	2,865	255	-8.31
2/8/1998	4,128,947	2,867	255	-8.13
2/9/1998	4,132,615	2,870	255	-7.90
2/10/1998	4,126,602	2,866	255	-8.27
2/11/1998	3,990,317	2,771	246	-16.68
2/12/1998	4,103,730	2,850	253	-9.68
2/13/1998	3,781,117	2,626	233	-29.60
2/14/1998	4,027,904	2,797	249	-14.36
2/15/1998	4,101,061	2,848	253	-9.85
2/16/1998	3,871,840	2,689	239	-24.00
2/17/1998	3,789,334	2,631	234	-29.09
2/18/1998	4,075,198	2,830	252	-11.44
2/19/1998	3,775,448	2,622	233	-29.95
2/20/1998	3,908,400	2,714	241	-21.74
2/21/1998	4,109,355	2,854	254	-9.34
2/22/1998	4,060,000	2,819	251	-12.38
2/23/1998	4,000,498	2,778	247	-16.06
2/24/1998	4,015,000	2,788	248	-15.16
2/25/1998	4,138,544	2,874	255	-7.53
2/26/1998	4,105,704	2,851	253	-9.56
2/27/1998	4,058,584	2,818	251	-12.47
2/28/1998	3,735,000	2,594	231	-32.44
3/1/1998	4,108,647	2,853	254	-9.38
3/2/1998	4,067,572	2,825	251	-11.92
3/3/1998	4,097,385	2,845	253	-10.08
3/4/1998	4,079,791	2,833	252	-11.16
3/5/1998	4,035,955	2,803	249	-13.87

3/6/1998	3,634,437	2,524	224	-38.65	
3/7/1998	6,201,930	4,307	250	-13.00	
3/8/1998	3,778,914	2,624	233	-29.73	
3/9/1998	2,370,057	1,646	250	-13.00	
3/10/1998	4,228,470	2,936	261	-1.98	
3/11/1998	4,204,572	2,920	260	-3.46	
3/12/1998	4,194,586	2,913	259	-4.07	
3/13/1998	4,195,876	2,914	259	-4.00	
3/14/1998	4,211,136	2,924	260	-3.05	
3/15/1998	4,221,349	2,931	261	-2.42	
3/16/1998	4,182,440	2,904	258	-4.82	
3/17/1998	4,241,710	2,946	262	-1.17	
3/18/1998	4,214,239	2,927	260	-2.86	
3/19/1998	4,188,588	2,909	259	-4.45	
3/20/1998	4,079,130	2,833	252	-11.20	
3/21/1998	4,250,810	2,952	262	-0.60	
3/22/1998	4,297,712	2,985	265	2.29	2.29
3/23/1998	4,343,804	3,017	268	5.14	5.14
3/24/1998	4,382,650	3,044	271	7.53	7.53
3/25/1998	4,419,293	3,069	273	9.80	9.80
3/26/1998	4,415,119	3,066	273	9.54	9.54
3/27/1998	4,406,192	3,060	272	8.99	8.99
3/28/1998	4,379,948	3,042	270	7.37	7.37
3/29/1998	4,224,694	2,934	261	-2.22	
3/30/1998	3,892,890	2,703	240	-22.70	
3/31/1998	3,995,834	2,775	247	-16.34	
4/1/1998	4,196,816	2,914	259	-3.94	
4/2/1998	4,213,871	2,926	260	-2.88	
4/3/1998	4,050,982	2,813	250	-12.94	
4/4/1998	4,268,008	2,964	263	0.46	
4/5/1998	4,094,059	2,843	253	-10.28	
4/6/1998	4,259,100	2,958	263	-0.09	
4/7/1998	4,144,676	2,878	256	-7.16	
4/8/1998	4,196,665	2,914	259	-3.95	
4/9/1998	4,191,769	2,911	259	-4.25	
4/10/1998	4,182,936	2,905	258	-4.79	
4/11/1998	4,232,073	2,939	261	-1.76	
4/12/1998	4,282,031	2,974	264	1.32	1.32
4/13/1998	4,248,246	2,950	262	-0.76	
4/14/1998	4,226,236	2,935	261	-2.12	
4/15/1998	4,201,736	2,918	259	-3.63	
4/16/1998	4,188,914	2,909	259	-4.43	
4/17/1998	4,179,428	2,902	258	-5.01	
4/18/1998	4,170,771	2,896	257	-5.55	

4/19/1998	4,171,137	2,897	257	-5.52	
4/20/1998	4,193,226	2,912	259	-4.16	
4/21/1998	4,246,897	2,949	262	-0.85	
4/22/1998	4,344,723	3,017	268	5.19	5.19
4/23/1998	4,488,364	3,117	277	14.06	14.06
4/24/1998	4,446,194	3,088	274	11.46	11.46
4/25/1998	4,252,144	2,953	262	-0.52	
4/26/1998	4,155,154	2,886	256	-6.51	
4/27/1998	3,999,753	2,778	247	-16.10	
4/28/1998	4,107,234	2,852	254	-9.47	
4/29/1998	4,174,896	2,899	258	-5.29	
4/30/1998	4,183,930	2,906	258	-4.73	
5/1/1998	4,146,380	2,879	256	-7.05	
5/2/1998	4,519,638	3,139	279	15.99	15.99
5/3/1998	5,038,284	3,499	311	48.01	48.01
5/4/1998	6,012,958	4,176	371	108.17	108.17
5/5/1998	6,533,890	4,537	403	140.33	140.33
5/6/1998	6,336,448	4,400	391	128.14	128.14
5/7/1998	6,238,546	4,332	385	122.10	122.10
5/8/1998	6,440,266	4,472	398	134.55	134.55
5/9/1998	6,378,436	4,429	394	130.73	130.73
5/10/1998	6,318,186	4,388	390	127.01	127.01
5/11/1998	6,287,143	4,366	388	125.10	125.10
5/12/1998	6,261,249	4,348	386	123.50	123.50
5/13/1998	6,241,397	4,334	385	122.27	122.27
5/14/1998	6,227,658	4,325	384	121.42	121.42
5/15/1998	6,229,840	4,326	385	121.56	121.56
5/16/1998	6,181,806	4,293	382	118.59	118.59
5/17/1998	6,169,622	4,284	381	117.84	117.84
5/18/1998	6,143,546	4,266	379	116.23	116.23
5/19/1998	6,125,528	4,254	378	115.12	115.12
5/20/1998	6,130,892	4,258	378	115.45	115.45
5/21/1998	6,159,816	4,278	380	117.24	117.24
5/22/1998	6,196,642	4,303	383	119.51	119.51
5/23/1998	6,184,888	4,295	382	118.78	118.78
5/24/1998	6,189,953	4,299	382	119.10	119.10
5/25/1998	6,202,224	4,307	383	119.85	119.85
5/26/1998	6,194,000	4,301	382	119.35	119.35
5/27/1998	6,183,000	4,294	382	118.67	118.67
5/28/1998	6,176,844	4,289	381	118.29	118.29
5/29/1998	6,157,691	4,276	380	117.10	117.10
5/30/1998	6,168,061	4,283	381	117.74	117.74
5/31/1998	6,150,000	4,271	380	116.63	116.63
6/1/1998	6,153,246	4,273	380	116.83	116.83

6/2/1998	6,155,954	4,275	380	117.00	117.00
6/3/1998	6,159,476	4,277	380	117.21	117.21
6/4/1998	6,138,136	4,263	379	115.90	115.90
6/5/1998	6,254,938	4,344	386	123.11	123.11
6/6/1998	6,323,973	4,392	390	127.37	127.37
6/7/1998	6,317,164	4,387	390	126.95	126.95
6/8/1998	6,282,516	4,363	388	124.81	124.81
6/9/1998	6,248,311	4,339	386	122.70	122.70
6/10/1998	6,036,192	4,192	373	109.60	109.60
6/11/1998	5,982,314	4,154	369	106.28	106.28
6/12/1998	5,672,130	3,939	350	87.13	87.13
6/13/1998	4,833,920	3,357	298	35.39	35.39
6/14/1998	4,910,308	3,410	303	40.11	40.11
6/15/1998	4,933,526	3,426	305	41.54	41.54
6/16/1998	5,010,303	3,479	309	46.28	46.28
6/17/1998	5,147,897	3,575	318	54.77	54.77
6/18/1998	5,146,494	3,574	318	54.68	54.68
6/19/1998	5,161,345	3,584	319	55.60	55.60
6/20/1998	5,165,030	3,587	319	55.83	55.83
6/21/1998	5,045,091	3,504	311	48.43	48.43
6/22/1998	4,963,032	3,447	306	43.36	43.36
6/23/1998	4,937,582	3,429	305	41.79	41.79
6/24/1998	4,883,512	3,391	301	38.45	38.45
6/25/1998	4,879,615	3,389	301	38.21	38.21
6/26/1998	4,923,461	3,419	304	40.92	40.92
6/27/1998	4,897,736	3,401	302	39.33	39.33
6/28/1998	4,852,240	3,370	300	36.52	36.52
6/29/1998	4,799,240	3,333	296	33.25	33.25
6/30/1998	4,769,700	3,312	294	31.43	31.43
7/1/1998	4,752,146	3,300	293	30.34	30.34
7/2/1998	5,135,824	3,567	317	54.03	54.03
7/3/1998	6,013,746	4,176	371	108.22	108.22
7/4/1998	5,992,528	4,161	370	106.91	106.91
7/5/1998	5,980,364	4,153	369	106.16	106.16
7/6/1998	5,939,381	4,125	367	103.63	103.63
7/7/1998	5,930,688	4,119	366	103.09	103.09
7/8/1998	5,936,322	4,122	366	103.44	103.44
7/9/1998	5,991,427	4,161	370	106.84	106.84
7/10/1998	5,935,520	4,122	366	103.39	103.39
7/11/1998	5,884,122	4,086	363	100.22	100.22
7/12/1998	5,843,177	4,058	361	97.69	97.69
7/13/1998	5,842,252	4,057	361	97.63	97.63
7/14/1998	5,929,725	4,118	366	103.03	103.03
7/15/1998	5,838,209	4,054	360	97.38	97.38

7/16/1998	5,899,944	4,097	364	101.19	101.19
7/17/1998	5,806,000	4,032	358	95.40	95.40
7/18/1998	5,828,688	4,048	360	96.80	96.80
7/19/1998	5,826,540	4,046	360	96.66	96.66
7/20/1998	5,809,138	4,034	359	95.59	95.59
7/21/1998	5,287,708	3,672	326	63.40	63.40
7/22/1998	5,013,336	3,481	309	46.47	46.47
7/23/1998	4,969,386	3,451	307	43.75	43.75
7/24/1998	4,943,516	3,433	305	42.16	42.16
7/25/1998	4,918,662	3,416	304	40.62	40.62
7/26/1998	4,898,206	3,402	302	39.36	39.36
7/27/1998	4,884,272	3,392	301	38.50	38.50
7/28/1998	4,901,000	3,403	303	39.53	39.53
7/29/1998	5,748,000	3,992	355	91.81	91.81
7/30/1998	6,907,898	4,797	426	163.41	163.41
7/31/1998	5,645,588	3,921	348	85.49	85.49
8/1/1998	4,748,986	3,298	293	30.15	30.15
8/2/1998	4,788,056	3,325	296	32.56	32.56
8/3/1998	4,774,951	3,316	295	31.75	31.75
8/4/1998	4,711,824	3,272	291	27.85	27.85
8/5/1998	4,727,600	3,283	292	28.83	28.83
8/6/1998	4,813,520	3,343	297	34.13	34.13
8/7/1998	4,953,724	3,440	306	42.79	42.79
8/8/1998	4,956,362	3,442	306	42.95	42.95
8/9/1998	4,950,798	3,438	306	42.60	42.60
8/10/1998	4,955,136	3,441	306	42.87	42.87
8/11/1998	4,908,087	3,408	303	39.97	39.97
8/12/1998	4,957,100	3,442	306	42.99	42.99
8/13/1998	4,946,256	3,435	305	42.32	42.32
8/14/1998	4,954,106	3,440	306	42.81	42.81
8/15/1998	4,950,381	3,438	306	42.58	42.58
8/16/1998	4,943,558	3,433	305	42.16	42.16
8/17/1998	4,917,422	3,415	304	40.54	40.54
8/18/1998	4,922,236	3,418	304	40.84	40.84
8/19/1998	4,945,637	3,434	305	42.29	42.29
8/20/1998	3,466,000	2,407	214	-49.05	
8/21/1998	5,032,698	3,495	311	47.66	47.66
8/22/1998	4,967,884	3,450	307	43.66	43.66
8/23/1998	4,927,882	3,422	304	41.19	41.19
8/24/1998	4,882,163	3,390	301	38.37	38.37
8/25/1998	4,858,000	3,374	300	36.88	36.88
8/26/1998	4,858,494	3,374	300	36.91	36.91
8/27/1998	4,977,720	3,457	307	44.27	44.27
8/28/1998	5,130,984	3,563	317	53.73	53.73

8/29/1998	5,134,382	3,566	317	53.94	53.94
8/30/1998	5,133,881	3,565	317	53.91	53.91
8/31/1998	5,122,000	3,557	316	53.17	53.17
9/1/1998	5,130,410	3,563	317	53.69	53.69
9/2/1998	5,132,650	3,564	317	53.83	53.83
9/3/1998	5,008,875	3,478	309	46.19	46.19
9/4/1998	5,103,740	3,544	315	52.05	52.05
9/5/1998	5,126,283	3,560	316	53.44	53.44
9/6/1998	5,132,290	3,564	317	53.81	53.81
9/7/1998	5,115,185	3,552	316	52.75	52.75
9/8/1998	4,957,952	3,443	306	43.05	43.05
9/9/1998	5,091,072	3,535	314	51.26	51.26
9/10/1998	5,073,735	3,523	313	50.19	50.19
9/11/1998	5,101,625	3,543	315	51.92	51.92
9/12/1998	5,132,360	3,564	317	53.81	53.81
9/13/1998	4,909,994	3,410	303	40.09	40.09
9/14/1998	5,079,390	3,527	314	50.54	50.54
9/15/1998	5,070,803	3,521	313	50.01	50.01
9/16/1998	5,053,464	3,509	312	48.94	48.94
9/17/1998	5,045,076	3,504	311	48.42	48.42
9/18/1998	4,884,038	3,392	301	38.48	38.48
9/19/1998	5,045,076	3,504	311	48.42	48.42
9/20/1998	5,049,342	3,506	312	48.69	48.69
9/21/1998	5,028,000	3,492	310	47.37	47.37
9/22/1998	4,989,538	3,465	308	45.00	45.00
9/23/1998	5,030,879	3,494	311	47.55	47.55
9/24/1998	5,024,372	3,489	310	47.15	47.15
9/25/1998	5,022,456	3,488	310	47.03	47.03
9/26/1998	5,126,632	3,560	316	53.46	53.46
9/27/1998	5,059,200	3,513	312	49.30	49.30
9/28/1998	5,024,147	3,489	310	47.13	47.13
9/29/1998	5,022,342	3,488	310	47.02	47.02
9/30/1998	5,018,622	3,485	310	46.79	46.79
10/1/1998	5,022,029	3,488	310	47.00	47.00
10/2/1998	4,825,096	3,351	298	34.85	34.85
10/3/1998	4,589,796	3,187	283	20.32	20.32
10/4/1998	4,568,693	3,173	282	19.02	19.02
10/5/1998	4,539,683	3,153	280	17.23	17.23
10/6/1998	4,520,246	3,139	279	16.03	16.03
10/7/1998	4,179,184	2,902	258	-5.03	
10/8/1998	4,468,843	3,103	276	12.85	12.85
10/9/1998	4,482,000	3,113	277	13.67	13.67
10/10/1998	4,496,000	3,122	278	14.53	14.53
10/11/1998	4,450,783	3,091	275	11.74	11.74

10/12/1998	4,433,424	3,079	274	10.67	10.67
10/13/1998	4,417,246	3,068	273	9.67	9.67
10/14/1998	4,413,602	3,065	272	9.44	9.44
10/15/1998	4,429,764	3,076	273	10.44	10.44
10/16/1998	4,333,656	3,009	268	4.51	4.51
10/17/1998	4,398,340	3,054	272	8.50	8.50
10/18/1998	4,386,274	3,046	271	7.76	7.76
10/19/1998	4,355,812	3,025	269	5.88	5.88
10/20/1998	4,375,095	3,038	270	7.07	7.07
10/21/1998	4,393,855	3,051	271	8.23	8.23
10/22/1998	4,391,168	3,049	271	8.06	8.06
10/23/1998	4,406,522	3,060	272	9.01	9.01
10/24/1998	4,412,145	3,064	272	9.35	9.35
10/25/1998	4,401,365	3,057	272	8.69	8.69
10/26/1998	4,399,346	3,055	272	8.56	8.56
10/27/1998	4,383,134	3,044	271	7.56	7.56
10/28/1998	4,387,890	3,047	271	7.86	7.86
10/29/1998	4,393,853	3,051	271	8.23	8.23
10/30/1998	4,384,171	3,045	271	7.63	7.63
10/31/1998	4,377,071	3,040	270	7.19	7.19
11/1/1998	4,377,135	3,040	270	7.19	7.19
11/2/1998	4,383,302	3,044	271	7.57	7.57
11/3/1998	4,386,476	3,046	271	7.77	7.77
11/4/1998	4,389,935	3,049	271	7.98	7.98
11/5/1998	4,397,715	3,054	271	8.46	8.46
11/6/1998	4,392,550	3,050	271	8.15	8.15
11/7/1998	4,234,532	2,941	261	-1.61	
11/8/1998	4,385,185	3,045	271	7.69	7.69
11/9/1998	4,374,150	3,038	270	7.01	7.01
11/10/1998	4,285,000	2,976	265	1.51	1.51
11/11/1998	3,328,125	2,311	205	-57.56	
11/12/1998	4,437,169	3,081	274	10.90	10.90
11/13/1998	4,284,868	2,976	264	1.50	1.50
11/14/1998	4,478,210	3,110	276	13.43	13.43
11/15/1998	4,454,702	3,094	275	11.98	11.98
11/16/1998	4,404,821	3,059	272	8.90	8.90
11/17/1998	4,402,136	3,057	272	8.74	8.74
11/18/1998	4,439,142	3,083	274	11.02	11.02
11/19/1998	4,438,960	3,083	274	11.01	11.01
11/20/1998	4,425,574	3,073	273	10.18	10.18
11/21/1998	4,442,098	3,085	274	11.20	11.20
11/22/1998	4,455,582	3,094	275	12.04	12.04
11/23/1998	4,130,144	2,868	255	-8.05	
11/24/1998	4,341,903	3,015	268	5.02	5.02

11/25/1998	4,342,069	3,015	268	5.03	5.03		
11/26/1998	4,490,097	3,118	277	14.17	14.17		
11/27/1998	4,487,338	3,116	277	14.00	14.00		
11/28/1998	4,489,143	3,117	277	14.11	14.11		
11/29/1998	4,497,516	3,123	278	14.62	14.62		
11/30/1998	4,485,936	3,115	277	13.91	13.91		
12/1/1998	4,486,140	3,115	277	13.92	13.92		
12/2/1998	4,487,030	3,116	277	13.98	13.98		
12/3/1998	4,495,026	3,122	277	14.47	14.47		
12/4/1998	4,506,736	3,130	278	15.19	15.19		
12/5/1998	4,481,174	3,112	277	13.62	13.62		
12/6/1998	4,383,046	3,044	271	7.56	7.56		
12/7/1998	4,491,926	3,119	277	14.28	14.28		
12/8/1998	4,511,909	3,133	279	15.51	15.51		
12/9/1998	4,542,478	3,154	280	17.40	17.40		
12/10/1998	4,276,066	2,969	264	0.95			
12/11/1998	4,395,780	3,053	271	8.34	8.34		
12/12/1998	4,404,758	3,059	272	8.90	8.90		
12/13/1998	4,354,964	3,024	269	5.82	5.82		
12/14/1998	4,330,025	3,007	267	4.29	4.29		
12/15/1998	4,323,593	3,002	267	3.89	3.89		
12/16/1998	4,332,408	3,009	267	4.43	4.43		
12/17/1998	3,466,737	2,407	214	-49.00			
12/18/1998	4,306,311	2,990	266	2.82	2.82		
12/19/1998	3,547,642	2,464	219	-44.01			
12/20/1998	4,339,833	3,014	268	4.89	4.89		
12/21/1998	4,511,536	3,133	278	15.49	15.49		
12/22/1998	4,514,308	3,135	279	15.66	15.66		
12/23/1998	4,403,902	3,058	272	8.85	8.85		
12/24/1998	4,380,061	3,042	270	7.37	7.37		
12/25/1998	4,357,036	3,026	269	5.95	5.95		
12/26/1998	4,325,108	3,004	267	3.98	3.98		
12/27/1998	4,305,064	2,990	266	2.74	2.74		
12/28/1998	4,298,530	2,985	265	2.34	2.34		
12/29/1998	4,326,000	3,004	267	4.04	4.04		
12/30/1998	4,294,830	2,983	265	2.11	2.11		
12/31/1998	4,286,168	2,977	265	1.58	1.58	11899.10	594.96
1/1/1999	4,198,884	2,916	259	-3.81			
1/2/1999	4,268,334	2,964	263	0.48			
1/3/1999	4,269,008	2,965	264	0.52			
1/4/1999	4,273,684	2,968	264	0.81			
1/5/1999	4,286,060	2,976	265	1.57	1.57		
1/6/1999	4,297,096	2,984	265	2.25	2.25		
1/7/1999	4,292,829	2,981	265	1.99	1.99		

1/8/1999	4,290,754	2,980	265	1.86	1.86
1/9/1999	4,288,344	2,978	265	1.71	1.71
1/10/1999	4,292,144	2,981	265	1.95	1.95
1/11/1999	4,282,600	2,974	264	1.36	1.36
1/12/1999	4,274,721	2,969	264	0.87	
1/13/1999	4,274,042	2,968	264	0.83	
1/14/1999	4,283,374	2,975	264	1.41	1.41
1/15/1999	4,292,002	2,981	265	1.94	1.94
1/16/1999	4,201,885	2,918	259	-3.62	
1/17/1999	3,977,493	2,762	246	-17.48	
1/18/1999	4,330,600	3,007	267	4.32	4.32
1/19/1999	4,323,744	3,003	267	3.90	3.90
1/20/1999	4,324,662	3,003	267	3.95	3.95
1/21/1999	4,323,346	3,002	267	3.87	3.87
1/22/1999	4,320,798	3,001	267	3.72	3.72
1/23/1999	4,181,894	2,904	258	-4.86	
1/24/1999	3,669,119	2,548	226	-36.51	
1/25/1999	4,274,346	2,968	264	0.85	
1/26/1999	4,425,791	3,073	273	10.20	10.20
1/27/1999	4,348,334	3,020	268	5.42	5.42
1/28/1999	4,288,988	2,978	265	1.75	1.75
1/29/1999	4,298,246	2,985	265	2.32	2.32
1/30/1999	4,301,626	2,987	266	2.53	2.53
1/31/1999	4,290,552	2,980	265	1.85	1.85
2/1/1999	4,276,208	2,970	264	0.96	
2/2/1999	4,132,154	2,870	255	-7.93	
2/3/1999	4,272,094	2,967	264	0.71	
2/4/1999	4,209,194	2,923	260	-3.17	
2/5/1999	4,244,560	2,948	262	-0.99	
2/6/1999	4,290,176	2,979	265	1.83	1.83
2/7/1999	4,293,180	2,981	265	2.01	2.01
2/8/1999	4,292,859	2,981	265	1.99	1.99
2/9/1999	4,300,698	2,987	265	2.48	2.48
2/10/1999	4,283,564	2,975	264	1.42	1.42
2/11/1999	4,107,701	2,853	254	-9.44	
2/12/1999	4,132,332	2,870	255	-7.92	
2/13/1999	4,383,271	3,044	271	7.57	7.57
2/14/1999	4,336,753	3,012	268	4.70	4.70
2/15/1999	4,311,135	2,994	266	3.12	3.12
2/16/1999	4,199,880	2,917	259	-3.75	
2/17/1999	4,299,218	2,986	265	2.38	2.38
2/18/1999	4,294,448	2,982	265	2.09	2.09
2/19/1999	4,129,957	2,868	255	-8.06	
2/20/1999	4,288,626	2,978	265	1.73	1.73

2/21/1999	4,024,976	2,795	248	-14.54	
2/22/1999	4,319,284	3,000	267	3.62	3.62
2/23/1999	4,317,632	2,998	267	3.52	3.52
2/24/1999	4,322,026	3,001	267	3.79	3.79
2/25/1999	4,333,252	3,009	267	4.48	4.48
2/26/1999	4,355,000	3,024	269	5.83	5.83
2/27/1999	3,997,998	2,776	247	-16.21	
2/28/1999	4,341,000	3,015	268	4.96	4.96
3/1/1999	4,354,287	3,024	269	5.78	5.78
3/2/1999	3,866,598	2,685	239	-24.32	
3/3/1999	4,347,644	3,019	268	5.37	5.37
3/4/1999	4,124,590	2,864	255	-8.40	
3/5/1999	4,320,400	3,000	267	3.69	3.69
3/6/1999	3,828,741	2,659	236	-26.66	
3/7/1999	4,364,458	3,031	269	6.41	6.41
3/8/1999	4,349,042	3,020	268	5.46	5.46
3/9/1999	4,357,710	3,026	269	5.99	5.99
3/10/1999	4,273,482	2,968	264	0.80	
3/11/1999	4,319,116	2,999	267	3.61	3.61
3/12/1999	4,334,266	3,010	268	4.55	4.55
3/13/1999	4,338,094	3,013	268	4.78	4.78
3/14/1999	4,364,392	3,031	269	6.41	6.41
3/15/1999	4,393,368	3,051	271	8.20	8.20
3/16/1999	4,367,047	3,033	270	6.57	6.57
3/17/1999	3,546,509	2,463	219	-44.08	
3/18/1999	4,383,072	3,044	271	7.56	7.56
3/19/1999	4,280,270	2,972	264	1.21	1.21
3/20/1999	4,508,791	3,131	278	15.32	15.32
3/21/1999	4,543,921	3,156	280	17.49	17.49
3/22/1999	4,557,754	3,165	281	18.34	18.34
3/23/1999	4,549,320	3,159	281	17.82	17.82
3/24/1999	4,560,004	3,167	281	18.48	18.48
3/25/1999	4,595,946	3,192	284	20.70	20.70
3/26/1999	4,555,956	3,164	281	18.23	18.23
3/27/1999	4,593,388	3,190	284	20.54	20.54
3/28/1999	3,796,627	2,637	234	-28.64	
3/29/1999	4,403,176	3,058	272	8.80	8.80
3/30/1999	4,530,666	3,146	280	16.67	16.67
3/31/1999	4,511,732	3,133	279	15.50	15.50
4/1/1999	4,509,140	3,131	278	15.34	15.34
4/2/1999	4,431,555	3,077	274	10.55	10.55
4/3/1999	3,400,402	2,361	210	-53.10	
4/4/1999	4,298,220	2,985	265	2.32	2.32
4/5/1999	4,366,814	3,033	270	6.56	6.56

4/6/1999	4,489,277	3,118	277	14.12	14.12
4/7/1999	4,495,176	3,122	277	14.48	14.48
4/8/1999	4,515,515	3,136	279	15.74	15.74
4/9/1999	4,527,004	3,144	279	16.44	16.44
4/10/1999	4,493,897	3,121	277	14.40	14.40
4/11/1999	3,665,836	2,546	226	-36.71	
4/12/1999	4,275,376	2,969	264	0.91	
4/13/1999	4,534,366	3,149	280	16.90	16.90
4/14/1999	4,539,078	3,152	280	17.19	17.19
4/15/1999	4,299,556	2,986	265	2.40	2.40
4/16/1999	4,955,000	3,441	306	42.86	42.86
4/17/1999	5,183,123	3,599	320	56.95	56.95
4/18/1999	5,262,176	3,654	325	61.83	61.83
4/19/1999	5,393,842	3,746	333	69.95	69.95
4/20/1999	5,595,606	3,886	345	82.41	82.41
4/21/1999	5,558,566	3,860	343	80.12	80.12
4/22/1999	5,430,767	3,771	335	72.23	72.23
4/23/1999	5,354,216	3,718	331	67.51	67.51
4/24/1999	5,331,362	3,702	329	66.10	66.10
4/25/1999	5,380,338	3,736	332	69.12	69.12
4/26/1999	5,453,501	3,787	337	73.64	73.64
4/27/1999	5,569,446	3,868	344	80.79	80.79
4/28/1999	5,571,236	3,869	344	80.90	80.90
4/29/1999	5,526,968	3,838	341	78.17	78.17
4/30/1999	5,445,637	3,782	336	73.15	73.15
5/1/1999	5,477,847	3,804	338	75.14	75.14
5/2/1999	5,571,088	3,869	344	80.89	80.89
5/3/1999	5,628,186	3,908	347	84.42	84.42
5/4/1999	5,571,600	3,869	344	80.93	80.93
5/5/1999	5,314,276	3,690	328	65.04	65.04
5/6/1999	5,437,070	3,776	336	72.62	72.62
5/7/1999	5,474,028	3,801	338	74.90	74.90
5/8/1999	5,530,220	3,840	341	78.37	78.37
5/9/1999	5,524,627	3,837	341	78.03	78.03
5/10/1999	5,485,428	3,809	339	75.61	75.61
5/11/1999	5,441,736	3,779	336	72.91	72.91
5/12/1999	5,393,918	3,746	333	69.96	69.96
5/13/1999	5,496,653	3,817	339	76.30	76.30
5/14/1999	5,460,636	3,792	337	74.08	74.08
5/15/1999	5,437,167	3,776	336	72.63	72.63
5/16/1999	5,417,975	3,762	334	71.44	71.44
5/17/1999	5,421,307	3,765	335	71.65	71.65
5/18/1999	5,472,936	3,801	338	74.84	74.84
5/19/1999	5,621,988	3,904	347	84.04	84.04

5/20/1999	5,741,476	3,987	354	91.41	91.41
5/21/1999	5,826,924	4,046	360	96.69	96.69
5/22/1999	5,870,481	4,077	362	99.38	99.38
5/23/1999	5,901,779	4,098	364	101.31	101.31
5/24/1999	5,930,620	4,118	366	103.09	103.09
5/25/1999	4,628,211	3,214	286	22.69	22.69
5/26/1999	4,297,372	2,984	265	2.27	2.27
5/27/1999	2,567,636	1,783	158	-104.50	
5/28/1999	3,815,070	2,649	235	-27.50	
5/29/1999	5,014,669	3,482	310	46.55	46.55
5/30/1999	4,970,094	3,451	307	43.80	43.80
5/31/1999	4,893,128	3,398	302	39.04	39.04
6/1/1999	4,915,013	3,413	303	40.40	40.40
6/2/1999	4,894,908	3,399	302	39.15	39.15
6/3/1999	4,871,068	3,383	301	37.68	37.68
6/4/1999	4,835,378	3,358	298	35.48	35.48
6/5/1999	4,800,888	3,334	296	33.35	33.35
6/6/1999	4,807,847	3,339	297	33.78	33.78
6/7/1999	4,947,358	3,436	305	42.39	42.39
6/8/1999	5,075,630	3,525	313	50.31	50.31
6/9/1999	5,047,108	3,505	312	48.55	48.55
6/10/1999	4,954,406	3,441	306	42.83	42.83
6/11/1999	4,877,930	3,387	301	38.11	38.11
6/12/1999	4,854,556	3,371	300	36.66	36.66
6/13/1999	5,647,588	3,922	349	85.62	85.62
6/14/1999	6,179,740	4,291	381	118.47	118.47
6/15/1999	6,177,342	4,290	381	118.32	118.32
6/16/1999	6,064,946	4,212	374	111.38	111.38
6/17/1999	5,996,962	4,165	370	107.18	107.18
6/18/1999	5,964,368	4,142	368	105.17	105.17
6/19/1999	5,922,842	4,113	366	102.61	102.61
6/20/1999	5,879,772	4,083	363	99.95	99.95
6/21/1999	5,640,680	3,917	348	85.19	85.19
6/22/1999	5,939,566	4,125	367	103.64	103.64
6/23/1999	5,837,792	4,054	360	97.36	97.36
6/24/1999	5,802,128	4,029	358	95.16	95.16
6/25/1999	5,707,960	3,964	352	89.34	89.34
6/26/1999	5,789,656	4,021	357	94.39	94.39
6/27/1999	5,779,496	4,014	357	93.76	93.76
6/28/1999	5,757,512	3,998	355	92.40	92.40
6/29/1999	5,752,301	3,995	355	92.08	92.08
6/30/1999	5,791,748	4,022	358	94.52	94.52
7/1/1999	5,778,686	4,013	357	93.71	93.71
7/2/1999	5,537,306	3,845	342	78.81	78.81

7/3/1999	5,739,584	3,986	354	91.30	91.30
7/4/1999	5,661,720	3,932	349	86.49	86.49
7/5/1999	5,724,198	3,975	353	90.35	90.35
7/6/1999	5,701,896	3,960	352	88.97	88.97
7/7/1999	5,096,770	3,539	315	51.62	51.62
7/8/1999	4,706,266	3,268	291	27.51	27.51
7/9/1999	4,691,427	3,258	290	26.59	26.59
7/10/1999	5,071,314	3,522	313	50.04	50.04
7/11/1999	5,292,944	3,676	327	63.72	63.72
7/12/1999	5,229,591	3,632	323	59.81	59.81
7/13/1999	5,281,882	3,668	326	63.04	63.04
7/14/1999	5,273,292	3,662	326	62.51	62.51
7/15/1999	5,262,894	3,655	325	61.87	61.87
7/16/1999	5,261,238	3,654	325	61.77	61.77
7/17/1999	5,259,490	3,652	325	61.66	61.66
7/18/1999	5,249,308	3,645	324	61.03	61.03
7/19/1999	5,245,450	3,643	324	60.79	60.79
7/20/1999	5,152,503	3,578	318	55.06	55.06
7/21/1999	5,203,990	3,614	321	58.23	58.23
7/22/1999	5,193,877	3,607	321	57.61	57.61
7/23/1999	5,170,480	3,591	319	56.17	56.17
7/24/1999	5,150,473	3,577	318	54.93	54.93
7/25/1999	5,131,544	3,564	317	53.76	53.76
7/26/1999	5,120,948	3,556	316	53.11	53.11
7/27/1999	5,127,322	3,561	317	53.50	53.50
7/28/1999	5,122,730	3,557	316	53.22	53.22
7/29/1999	4,769,010	3,312	294	31.38	31.38
7/30/1999	4,158,745	2,888	257	-6.29	
7/31/1999	3,689,870	2,562	228	-35.23	
8/1/1999	3,674,560	2,552	227	-36.18	
8/2/1999	3,655,322	2,538	226	-37.36	
8/3/1999	3,648,995	2,534	225	-37.75	
8/4/1999	3,520,024	2,444	217	-45.71	
8/5/1999	3,640,880	2,528	225	-38.25	
8/6/1999	3,669,814	2,548	227	-36.47	
8/7/1999	3,674,442	2,552	227	-36.18	
8/8/1999	3,659,820	2,542	226	-37.09	
8/9/1999	3,646,370	2,532	225	-37.92	
8/10/1999	3,635,494	2,525	224	-38.59	
8/11/1999	3,465,903	2,407	214	-49.06	
8/12/1999	3,305,670	2,296	204	-58.95	
8/13/1999	3,740,000	2,597	231	-32.14	
8/14/1999	3,694,214	2,565	228	-34.96	
8/15/1999	3,679,848	2,555	227	-35.85	

8/16/1999	3,672,117	2,550	227	-36.33	
8/17/1999	3,664,570	2,545	226	-36.79	
8/18/1999	3,657,286	2,540	226	-37.24	
8/19/1999	4,291,913	2,980	265	1.93	1.93
8/20/1999	4,609,518	3,201	285	21.54	21.54
8/21/1999	4,599,361	3,194	284	20.91	20.91
8/22/1999	4,578,263	3,179	283	19.61	19.61
8/23/1999	4,567,680	3,172	282	18.96	18.96
8/24/1999	4,524,652	3,142	279	16.30	16.30
8/25/1999	4,601,722	3,196	284	21.06	21.06
8/26/1999	4,613,044	3,204	285	21.76	21.76
8/27/1999	4,602,900	3,196	284	21.13	21.13
8/28/1999	4,640,227	3,222	286	23.43	23.43
8/29/1999	4,638,586	3,221	286	23.33	23.33
8/30/1999	4,606,636	3,199	284	21.36	21.36
8/31/1999	4,607,642	3,200	284	21.42	21.42
9/1/1999	4,609,580	3,201	285	21.54	21.54
9/2/1999	4,602,492	3,196	284	21.10	21.10
9/3/1999	4,622,595	3,210	285	22.35	22.35
9/4/1999	4,615,162	3,205	285	21.89	21.89
9/5/1999	4,584,877	3,184	283	20.02	20.02
9/6/1999	4,580,664	3,181	283	19.76	19.76
9/7/1999	4,572,066	3,175	282	19.23	19.23
9/8/1999	4,567,930	3,172	282	18.97	18.97
9/9/1999	4,568,318	3,172	282	18.99	18.99
9/10/1999	4,564,434	3,170	282	18.76	18.76
9/11/1999	4,524,027	3,142	279	16.26	16.26
9/12/1999	4,358,736	3,027	269	6.06	6.06
9/13/1999	4,550,352	3,160	281	17.89	17.89
9/14/1999	4,555,474	3,164	281	18.20	18.20
9/15/1999	4,559,890	3,167	281	18.47	18.47
9/16/1999	4,556,044	3,164	281	18.24	18.24
9/17/1999	4,543,599	3,155	280	17.47	17.47
9/18/1999	4,532,334	3,147	280	16.77	16.77
9/19/1999	4,530,584	3,146	280	16.67	16.67
9/20/1999	4,516,476	3,136	279	15.79	15.79
9/21/1999	4,533,440	3,148	280	16.84	16.84
9/22/1999	4,539,879	3,153	280	17.24	17.24
9/23/1999	4,509,545	3,132	278	15.37	15.37
9/24/1999	4,484,484	3,114	277	13.82	13.82
9/25/1999	4,422,064	3,071	273	9.97	9.97
9/26/1999	4,422,064	3,071	273	9.97	9.97
9/27/1999	4,341,000	3,015	268	4.96	4.96
9/28/1999	4,287,640	2,978	265	1.67	1.67

9/29/1999	4,215,000	2,927	260	-2.81	
9/30/1999	4,446,373	3,088	274	11.47	11.47
10/1/1999	4,444,918	3,087	274	11.38	11.38
10/2/1999	4,434,560	3,080	274	10.74	10.74
10/3/1999	4,425,185	3,073	273	10.16	10.16
10/4/1999	4,525,454	3,143	279	16.35	16.35
10/5/1999	4,660,168	3,236	288	24.66	24.66
10/6/1999	4,677,640	3,248	289	25.74	25.74
10/7/1999	4,650,634	3,230	287	24.08	24.08
10/8/1999	4,602,788	3,196	284	21.12	21.12
10/9/1999	4,597,806	3,193	284	20.82	20.82
10/10/1999	4,594,138	3,190	284	20.59	20.59
10/11/1999	4,581,872	3,182	283	19.83	19.83
10/12/1999	4,318,142	2,999	267	3.55	3.55
10/13/1999	4,615,744	3,205	285	21.92	21.92
10/14/1999	4,566,460	3,171	282	18.88	18.88
10/15/1999	4,531,656	3,147	280	16.73	16.73
10/16/1999	4,534,117	3,149	280	16.88	16.88
10/17/1999	4,525,958	3,143	279	16.38	16.38
10/18/1999	4,531,452	3,147	280	16.72	16.72
10/19/1999	4,527,820	3,144	279	16.50	16.50
10/20/1999	4,517,758	3,137	279	15.87	15.87
10/21/1999	4,512,314	3,134	279	15.54	15.54
10/22/1999	4,603,622	3,197	284	21.17	21.17
10/23/1999	4,835,675	3,358	298	35.50	35.50
10/24/1999	4,832,894	3,356	298	35.33	35.33
10/25/1999	4,865,000	3,378	300	37.31	37.31
10/26/1999	4,863,672	3,378	300	37.23	37.23
10/27/1999	4,920,064	3,417	304	40.71	40.71
10/28/1999	4,926,437	3,421	304	41.10	41.10
10/29/1999	4,919,060	3,416	304	40.65	40.65
10/30/1999	4,898,522	3,402	302	39.38	39.38
10/31/1999	5,091,934	3,536	314	51.32	51.32
11/1/1999	4,855,602	3,372	300	36.73	36.73
11/2/1999	4,717,647	3,276	291	28.21	28.21
11/3/1999	4,884,906	3,392	302	38.54	38.54
11/4/1999	4,887,132	3,394	302	38.67	38.67
11/5/1999	4,890,070	3,396	302	38.86	38.86
11/6/1999	4,893,936	3,399	302	39.09	39.09
11/7/1999	4,887,509	3,394	302	38.70	38.70
11/8/1999	4,795,576	3,330	296	33.02	33.02
11/9/1999	4,663,566	3,239	288	24.87	24.87
11/10/1999	4,659,826	3,236	288	24.64	24.64
11/11/1999	4,654,720	3,232	287	24.33	24.33

11/12/1999	4,654,054	3,232	287	24.29	24.29
11/13/1999	4,648,931	3,228	287	23.97	23.97
11/14/1999	4,646,928	3,227	287	23.85	23.85
11/15/1999	4,643,166	3,224	287	23.62	23.62
11/16/1999	4,642,022	3,224	287	23.54	23.54
11/17/1999	4,645,924	3,226	287	23.79	23.79
11/18/1999	4,650,690	3,230	287	24.08	24.08
11/19/1999	4,605,328	3,198	284	21.28	21.28
11/20/1999	4,651,334	3,230	287	24.12	24.12
11/21/1999	4,568,292	3,172	282	18.99	18.99
11/22/1999	4,620,316	3,209	285	22.20	22.20
11/23/1999	3,270,012	2,271	202	-61.15	
11/24/1999	4,035,366	2,802	249	-13.90	
11/25/1999	4,128,128	2,867	255	-8.18	
11/26/1999	4,155,432	2,886	257	-6.49	
11/27/1999	4,154,566	2,885	256	-6.55	
11/28/1999	4,137,620	2,873	255	-7.59	
11/29/1999	4,129,681	2,868	255	-8.08	
11/30/1999	4,144,052	2,878	256	-7.19	
12/1/1999	4,115,319	2,858	254	-8.97	
12/2/1999	4,159,000	2,888	257	-6.27	
12/3/1999	3,893,000	2,703	240	-22.69	
12/4/1999	2,158,415	1,499	133	-129.76	
12/5/1999	3,090,435	2,146	191	-72.23	
12/6/1999	3,519,892	2,444	217	-45.72	
12/7/1999	3,778,347	2,624	233	-29.77	
12/8/1999	3,725,434	2,587	230	-33.03	
12/9/1999	3,295,754	2,289	203	-59.56	
12/10/1999	4,108,000	2,853	254	-9.42	
12/11/1999	4,169,225	2,895	257	-5.64	
12/12/1999	4,188,042	2,908	259	-4.48	
12/13/1999	4,140,787	2,876	256	-7.40	
12/14/1999	3,754,171	2,607	232	-31.26	
12/15/1999	4,063,665	2,822	251	-12.16	
12/16/1999	4,197,698	2,915	259	-3.88	
12/17/1999	3,827,310	2,658	236	-26.75	
12/18/1999	4,203,225	2,919	259	-3.54	
12/19/1999	4,188,962	2,909	259	-4.42	
12/20/1999	4,215,574	2,927	260	-2.78	
12/21/1999	4,049,299	2,812	250	-13.04	
12/22/1999	4,210,199	2,924	260	-3.11	
12/23/1999	3,868,772	2,687	239	-24.19	
12/24/1999	4,145,093	2,879	256	-7.13	
12/25/1999	4,179,077	2,902	258	-5.03	

12/26/1999	4,033,109	2,801	249	-14.04			
12/27/1999	4,242,480	2,946	262	-1.12			
12/28/1999	3,980,625	2,764	246	-17.28			
12/29/1999	4,187,543	2,908	258	-4.51			
12/30/1999	4,174,175	2,899	258	-5.33			
12/31/1999	4,211,720	2,925	260	-3.02		9778.84	488.94
1/1/2000	4,107,587	2,852	254	-9.45			
1/2/2000	4,186,670	2,907	258	-4.56			
1/3/2000	4,139,316	2,875	256	-7.49			
1/4/2000	4,051,626	2,814	250	-12.90			
1/5/2000	4,182,265	2,904	258	-4.84			
1/6/2000	4,076,645	2,831	252	-11.36			
1/7/2000	4,180,200	2,903	258	-4.96			
1/8/2000	4,079,958	2,833	252	-11.15			
1/9/2000	4,242,648	2,946	262	-1.11			
1/10/2000	4,219,576	2,930	260	-2.53			
1/11/2000	4,212,240	2,925	260	-2.99			
1/12/2000	4,197,960	2,915	259	-3.87			
1/13/2000	3,553,207	2,468	219	-43.67			
1/14/2000	4,250,805	2,952	262	-0.60			
1/15/2000	4,185,452	2,907	258	-4.64			
1/16/2000	4,195,314	2,913	259	-4.03			
1/17/2000	4,044,024	2,808	250	-13.37			
1/18/2000	3,712,067	2,578	229	-33.86			
1/19/2000	4,096,751	2,845	253	-10.11			
1/20/2000	4,114,891	2,858	254	-8.99			
1/21/2000	4,202,560	2,918	259	-3.58			
1/22/2000	4,194,200	2,913	259	-4.10			
1/23/2000	4,077,758	2,832	252	-11.29			
1/24/2000	3,985,312	2,768	246	-16.99			
1/25/2000	4,018,138	2,790	248	-14.97			
1/26/2000	4,205,610	2,921	260	-3.39			
1/27/2000	4,200,542	2,917	259	-3.71			
1/28/2000	4,093,465	2,843	253	-10.32			
1/29/2000	2,341,808	1,626	145	-118.44			
1/30/2000	4,120,832	2,862	254	-8.63			
1/31/2000	4,278,342	2,971	264	1.10	1.10		
2/1/2000	4,364,004	3,031	269	6.38	6.38		
2/2/2000	4,292,306	2,981	265	1.96	1.96		
2/3/2000	4,169,552	2,896	257	-5.62			
2/4/2000	3,988,094	2,770	246	-16.82			
2/5/2000	4,214,310	2,927	260	-2.86			
2/6/2000	4,187,362	2,908	258	-4.52			
2/7/2000	4,182,083	2,904	258	-4.85			

2/8/2000	4,183,781	2,905	258	-4.74	
2/9/2000	4,179,532	2,902	258	-5.00	
2/10/2000	4,241,850	2,946	262	-1.16	
2/11/2000	4,207,312	2,922	260	-3.29	
2/12/2000	4,196,894	2,915	259	-3.93	
2/13/2000	4,205,782	2,921	260	-3.38	
2/14/2000	4,199,350	2,916	259	-3.78	
2/15/2000	4,211,902	2,925	260	-3.01	
2/16/2000	4,195,017	2,913	259	-4.05	
2/17/2000	3,298,396	2,291	204	-59.40	
2/18/2000	3,802,402	2,641	235	-28.28	
2/19/2000	3,926,669	2,727	242	-20.61	
2/20/2000	4,323,454	3,002	267	3.88	3.88
2/21/2000	4,282,838	2,974	264	1.37	1.37
2/22/2000	4,209,902	2,924	260	-3.13	
2/23/2000	4,184,697	2,906	258	-4.69	
2/24/2000	4,048,800	2,812	250	-13.07	
2/25/2000	4,149,340	2,881	256	-6.87	
2/26/2000	3,661,513	2,543	226	-36.98	
2/27/2000	4,245,038	2,948	262	-0.96	
2/28/2000	4,201,596	2,918	259	-3.64	
2/29/2000	4,196,110	2,914	259	-3.98	
3/1/2000	4,170,210	2,896	257	-5.58	
3/2/2000	4,121,000	2,862	254	-8.62	
3/3/2000	4,163,000	2,891	257	-6.02	
3/4/2000	4,167,882	2,894	257	-5.72	
3/5/2000	4,172,322	2,897	258	-5.45	
3/6/2000	4,196,832	2,914	259	-3.94	
3/7/2000	4,195,502	2,914	259	-4.02	
3/8/2000	4,192,858	2,912	259	-4.18	
3/9/2000	3,806,356	2,643	235	-28.04	
3/10/2000	3,967,890	2,755	245	-18.07	
3/11/2000	4,168,420	2,895	257	-5.69	
3/12/2000	4,165,288	2,893	257	-5.88	
3/13/2000	4,163,048	2,891	257	-6.02	
3/14/2000	4,161,111	2,890	257	-6.14	
3/15/2000	4,015,293	2,788	248	-15.14	
3/17/2000	4,181,582	2,904	258	-4.88	
3/18/2000	4,159,518	2,889	257	-6.24	
3/19/2000	4,152,760	2,884	256	-6.66	
3/20/2000	4,164,770	2,892	257	-5.92	
3/21/2000	2,781,709	1,932	172	-91.29	
3/22/2000	4,128,464	2,867	255	-8.16	
3/23/2000	4,137,079	2,873	255	-7.62	

3/24/2000	4,150,377	2,882	256	-6.80	
3/25/2000	4,014,063	2,788	248	-15.22	
3/26/2000	4,244,309	2,947	262	-1.01	
3/27/2000	4,264,842	2,962	263	0.26	
3/28/2000	4,184,788	2,906	258	-4.68	
3/29/2000	4,280,504	2,973	264	1.23	1.23
3/30/2000	4,264,274	2,961	263	0.23	
3/31/2000	4,166,837	2,894	257	-5.79	
4/1/2000	4,212,804	2,926	260	-2.95	
4/2/2000	4,040,387	2,806	249	-13.59	
4/3/2000	3,680,305	2,556	227	-35.82	
4/4/2000	4,220,049	2,931	260	-2.50	
4/5/2000	4,334,320	3,010	268	4.55	4.55
4/6/2000	4,069,434	2,826	251	-11.80	
4/7/2000	4,241,191	2,945	262	-1.20	
4/8/2000	4,159,592	2,889	257	-6.24	
4/9/2000	4,253,618	2,954	263	-0.43	
4/10/2000	4,274,872	2,969	264	0.88	
4/11/2000	4,317,632	2,998	267	3.52	3.52
4/12/2000	4,402,088	3,057	272	8.73	8.73
4/13/2000	4,487,930	3,117	277	14.03	14.03
4/14/2000	4,457,612	3,096	275	12.16	12.16
4/15/2000	4,412,870	3,064	272	9.40	9.40
4/16/2000	4,392,822	3,051	271	8.16	8.16
4/17/2000	4,347,200	3,019	268	5.35	5.35
4/18/2000	4,452,339	3,092	275	11.84	11.84
4/19/2000	4,483,070	3,113	277	13.73	13.73
4/20/2000	4,495,000	3,122	277	14.47	14.47
4/21/2000	4,516,178	3,136	279	15.78	15.78
4/22/2000	4,587,000	3,185	283	20.15	20.15
4/23/2000	4,673,590	3,246	288	25.49	25.49
4/24/2000	4,578,094	3,179	283	19.60	19.60
4/25/2000	4,506,734	3,130	278	15.19	15.19
4/26/2000	4,495,792	3,122	278	14.52	14.52
4/27/2000	4,499,468	3,125	278	14.74	14.74
4/28/2000	4,603,930	3,197	284	21.19	21.19
4/29/2000	4,668,318	3,242	288	25.17	25.17
4/30/2000	4,575,162	3,177	282	19.42	19.42
5/1/2000	4,472,154	3,106	276	13.06	13.06
5/2/2000	4,408,695	3,062	272	9.14	9.14
5/3/2000	4,415,788	3,067	273	9.58	9.58
5/4/2000	4,433,138	3,079	274	10.65	10.65
5/5/2000	4,379,034	3,041	270	7.31	7.31
5/6/2000	4,378,096	3,040	270	7.25	7.25

5/7/2000	4,363,346	3,030	269		6.34	6.34
5/8/2000	4,331,652	3,008	267		4.39	4.39
5/9/2000	4,326,278	3,004	267		4.05	4.05
5/10/2000	4,335,218	3,011	268		4.61	4.61
5/11/2000	4,359,996	3,028	269		6.14	6.14
5/12/2000	4,339,782	3,014	268		4.89	4.89
5/13/2000	4,320,902	3,001	267		3.72	3.72
5/14/2000	4,321,512	3,001	267		3.76	3.76
5/15/2000	4,336,788	3,012	268		4.70	4.70
5/16/2000	4,362,200	3,029	269		6.27	6.27
5/17/2000	4,455,553	3,094	275		12.03	12.03
5/18/2000	4,452,728	3,092	275		11.86	11.86
5/19/2000	4,347,730	3,019	268		5.38	5.38
5/20/2000	4,435,698	3,080	274		10.81	10.81
5/21/2000	4,463,638	3,100	276		12.53	12.53
5/22/2000	4,513,841	3,135	279		15.63	15.63
5/23/2000	4,527,110	3,144	279		16.45	16.45
5/24/2000	4,390,470	3,049	271		8.02	8.02
5/25/2000	4,498,897	3,124	278	263	14.71	14.71
5/26/2000	4,446,842	3,088	274	263	11.50	11.50
5/27/2000	4,349,714	3,021	269	263	5.50	5.50
5/28/2000	4,424,898	3,073	273	263	10.14	10.14
5/29/2000	4,532,442	3,148	280	263	16.78	16.78
5/30/2000	4,546,000	3,157	281	263	17.62	17.62
5/31/2000	4,434,402	3,079	274	263	10.73	10.73
6/1/2000	4,489,844	3,118	277	263	14.15	14.15
6/2/2000	4,453,194	3,092	275	263	11.89	11.89
6/3/2000	4,419,000	3,069	273	263	9.78	9.78
6/4/2000	4,409,079	3,062	272	263	9.17	9.17
6/5/2000	4,935,862	3,428	305	325	41.68	41.68
6/6/2000	4,590,467	3,188	283	263	20.36	20.36
6/7/2000	4,194,600	2,913	259	263	-4.07	
6/8/2000	4,159,526	2,889	257	263	-6.24	
6/9/2000	4,151,706	2,883	256	263	-6.72	
6/10/2000	4,160,376	2,889	257	263	-6.19	
6/11/2000	4,116,087	2,858	254	263	-8.92	
6/12/2000	4,099,859	2,847	253	263	-9.92	
6/13/2000	4,094,839	2,844	253	263	-10.23	
6/14/2000	3,663,782	2,544	226	200	-36.84	
6/15/2000	3,058,924	2,124	189	200	-74.18	
6/16/2000	3,195,910	2,219	197	200	-65.72	
6/17/2000	3,149,986	2,187	194	200	-68.56	
6/18/2000	3,108,198	2,158	192	200	-71.14	
6/19/2000	3,165,624	2,198	195	200	-67.59	

6/20/2000	3,974,954	2,760	245	263	-17.63	
6/21/2000	4,281,230	2,973	264	263	1.27	1.27
6/22/2000	4,259,986	2,958	263	263	-0.04	
6/23/2000	4,315,926	2,997	266	263	3.42	3.42
6/24/2000	4,249,212	2,951	262	263	-0.70	
6/25/2000	4,231,518	2,939	261	263	-1.80	
6/26/2000	4,175,963	2,900	258	263	-5.22	
6/27/2000	4,144,208	2,878	256	263	-7.18	
6/28/2000	4,254,977	2,955	263	263	-0.35	
6/29/2000	4,303,642	2,989	266	263	2.66	2.66
6/30/2000	4,295,842	2,983	265	263	2.18	2.18
7/1/2000	4,240,814	2,945	262	263	-1.22	
7/2/2000	4,367,296	3,033	270	263	6.59	6.59
7/3/2000	4,216,892	2,928	260	263	-2.70	
7/4/2000	4,293,166	2,981	265	263	2.01	2.01
7/5/2000	4,296,628	2,984	265	263	2.22	2.22
7/6/2000	4,279,900	2,972	264	263	1.19	1.19
7/7/2000	4,269,114	2,965	264	263	0.53	
7/8/2000	4,248,504	2,950	262	263	-0.75	
7/9/2000	4,237,947	2,943	262	263	-1.40	
7/10/2000	4,235,223	2,941	261	263	-1.57	
7/11/2000	4,237,244	2,943	262	263	-1.44	
7/12/2000	3,550,424	2,466	219	200	-43.84	
7/13/2000	3,205,157	2,226	198	200	-65.15	
7/14/2000	2,592,000	1,800	160	200	-103.00	
7/15/2000	2,592,000	1,800	160	200	-103.00	
7/16/2000	2,592,000	1,800	160	200	-103.00	
7/17/2000	2,096,782	1,456	129	200	-133.57	
7/18/2000	2,445,240	1,698	151	200	-112.06	
7/19/2000	2,445,100	1,698	151	200	-112.07	
7/20/2000	2,420,736	1,681	149	200	-113.57	
7/21/2000	2,447,807	1,700	151	200	-111.90	
7/22/2000	2,398,687	1,666	148	200	-114.93	
7/23/2000	2,384,236	1,656	147	200	-115.82	
7/24/2000	2,401,925	1,668	148	200	-114.73	
7/25/2000	2,434,689	1,691	150	200	-112.71	
7/26/2000	2,411,000	1,674	149	200	-114.17	
7/27/2000	2,405,494	1,670	148	200	-114.51	
7/28/2000	2,394,115	1,663	148	200	-115.22	
7/29/2000	2,358,207	1,638	146	200	-117.43	
7/30/2000	2,343,817	1,628	145	200	-118.32	
7/31/2000	2,166,013	1,504	134	200	-129.30	
8/1/2000	2,330,876	1,619	144	200	-119.12	
8/2/2000	2,327,124	1,616	144	200	-119.35	

8/3/2000	2,316,285	1,609	143	200	-120.02
8/4/2000	2,134,378	1,482	132	200	-131.25
8/5/2000	2,305,816	1,601	142	200	-120.67
8/6/2000	2,289,102	1,590	141	200	-121.70
8/7/2000	2,275,853	1,580	140	200	-122.52
8/8/2000	2,255,168	1,566	139	200	-123.79
8/9/2000	2,278,446	1,582	141	200	-122.36
8/10/2000	2,271,154	1,577	140	200	-122.81
8/11/2000	2,178,622	1,513	134	200	-128.52
8/12/2000	2,291,000	1,591	141	200	-121.58
8/13/2000	2,279,057	1,583	141	200	-122.32
8/14/2000	2,206,132	1,532	136	200	-126.82
8/15/2000	2,210,149	1,535	136	200	-126.57
8/16/2000	2,260,318	1,570	140	200	-123.47
8/17/2000	2,266,636	1,574	140	200	-123.08
8/18/2000	2,250,368	1,563	139	200	-124.09
8/19/2000	2,278,819	1,583	141	200	-122.33
8/20/2000	2,275,800	1,580	140	200	-122.52
8/21/2000	2,240,069	1,556	138	200	-124.72
8/22/2000	2,227,202	1,547	137	200	-125.52
8/23/2000	2,211,852	1,536	137	200	-126.47
8/24/2000	2,214,671	1,538	137	200	-126.29
8/25/2000	2,193,578	1,523	135	200	-127.59
8/26/2000	2,197,374	1,526	136	200	-127.36
8/27/2000	2,198,414	1,527	136	200	-127.30
8/28/2000	2,205,616	1,532	136	200	-126.85
8/29/2000	2,200,381	1,528	136	200	-127.17
8/30/2000	2,189,836	1,521	135	200	-127.82
8/31/2000	2,107,262	1,463	130	200	-132.92
9/1/2000	2,191,379	1,522	135	200	-127.73
9/2/2000	2,168,440	1,506	134	200	-129.15
9/3/2000	2,160,385	1,500	133	200	-129.64
9/4/2000	2,080,636	1,445	128	200	-134.57
9/5/2000	2,179,840	1,514	135	200	-128.44
9/6/2000	2,177,970	1,512	134	200	-128.56
9/7/2000	2,180,660	1,514	135	200	-128.39
9/8/2000	2,178,125	1,513	134	200	-128.55
9/9/2000	2,171,124	1,508	134	200	-128.98
9/10/2000	2,173,066	1,509	134	200	-128.86
9/11/2000	2,182,000	1,515	135	200	-128.31
9/12/2000	2,186,976	1,519	135	200	-128.00
9/13/2000	2,162,200	1,502	133	200	-129.53
9/14/2000	2,167,537	1,505	134	200	-129.20
9/15/2000	2,175,000	1,510	134	200	-128.74

9/16/2000	2,086,553	1,449	129	200	-134.20
9/17/2000	2,158,427	1,499	133	200	-129.76
9/18/2000	2,140,891	1,487	132	200	-130.85
9/19/2000	2,094,806	1,455	129	200	-133.69
9/20/2000	2,136,984	1,484	132	200	-131.09
9/21/2000	2,526,837	1,755	156	225	-107.02
9/22/2000	2,821,391	1,959	174	225	-88.84
9/23/2000	2,806,214	1,949	173	225	-89.78
9/24/2000	2,798,534	1,943	173	225	-90.25
9/25/2000	2,810,118	1,951	173	225	-89.54
9/26/2000	3,275,330	2,275	202	263	-60.82
9/27/2000	3,628,840	2,520	224	263	-39.00
9/28/2000	3,614,754	2,510	223	263	-39.87
9/29/2000	3,609,305	2,506	223	263	-40.20
9/30/2000	3,410,362	2,368	211	263	-52.48
10/1/2000	3,674,621	2,552	227	263	-36.17
10/2/2000	3,588,484	2,492	222	263	-41.49
10/3/2000	3,544,138	2,461	219	263	-44.23
10/4/2000	3,500,732	2,431	216	263	-46.91
10/5/2000	3,489,725	2,423	215	263	-47.58
10/6/2000	3,232,710	2,245	200	263	-63.45
10/7/2000	3,416,172	2,372	211	263	-52.13
10/8/2000	3,432,592	2,384	212	263	-51.11
10/9/2000	3,443,022	2,391	213	263	-50.47
10/10/2000	3,431,907	2,383	212	263	-51.15
10/11/2000	3,431,152	2,383	212	263	-51.20
10/12/2000	3,441,471	2,390	212	263	-50.56
10/13/2000	3,467,984	2,408	214	263	-48.93
10/14/2000	3,463,657	2,405	214	263	-49.19
10/15/2000	3,445,787	2,393	213	263	-50.30
10/16/2000	3,423,520	2,377	211	263	-51.67
10/17/2000	3,423,788	2,378	211	263	-51.66
10/18/2000	3,422,974	2,377	211	263	-51.71
10/19/2000	3,416,436	2,373	211	263	-52.11
10/20/2000	3,410,946	2,369	211	263	-52.45
10/21/2000	3,439,223	2,388	212	263	-50.70
10/22/2000	3,422,881	2,377	211	263	-51.71
10/23/2000	3,402,198	2,363	210	263	-52.99
10/24/2000	3,413,034	2,370	211	263	-52.32
10/25/2000	3,427,225	2,380	212	263	-51.44
10/26/2000	3,445,950	2,393	213	263	-50.29
10/27/2000	3,455,854	2,400	213	263	-49.68
10/28/2000	3,455,860	2,400	213	263	-49.68
10/29/2000	3,573,212	2,481	221	263	-42.43

10/30/2000	3,354,674	2,330	207	263	-55.92
10/31/2000	3,385,565	2,351	209	263	-54.01
11/1/2000	3,375,222	2,344	208	263	-54.65
11/2/2000	3,364,376	2,336	208	263	-55.32
11/3/2000	3,226,128	2,240	199	263	-63.86
11/4/2000	3,340,240	2,320	206	263	-56.81
11/5/2000	3,338,147	2,318	206	263	-56.94
11/6/2000	3,323,286	2,308	205	263	-57.86
11/7/2000	2,424,015	1,683	150	263	-113.37
11/8/2000	3,075,124	2,136	190	263	-73.18
11/9/2000	3,340,890	2,320	206	263	-56.77
11/10/2000	3,093,954	2,149	191	263	-72.02
11/11/2000	3,275,056	2,274	202	263	-60.84
11/12/2000	3,357,472	2,332	207	263	-55.75
11/13/2000	3,102,658	2,155	192	263	-71.48
11/14/2000	3,270,281	2,271	202	263	-61.13
11/15/2000	3,345,276	2,323	206	263	-56.50
11/16/2000	3,286,874	2,283	203	263	-60.11
11/17/2000	3,308,048	2,297	204	263	-58.80
11/18/2000	3,299,696	2,291	204	263	-59.32
11/19/2000	3,280,876	2,278	203	263	-60.48
11/20/2000	3,215,543	2,233	198	263	-64.51
11/21/2000	3,296,895	2,290	204	263	-59.49
11/22/2000	3,311,069	2,299	204	263	-58.61
11/23/2000	3,308,172	2,297	204	263	-58.79
11/24/2000	3,315,084	2,302	205	263	-58.37
11/25/2000	3,305,922	2,296	204	263	-58.93
11/26/2000	3,299,535	2,291	204	263	-59.33
11/27/2000	3,304,326	2,295	204	263	-59.03
11/28/2000	3,300,722	2,292	204	263	-59.25
11/29/2000	2,835,111	1,969	175	263	-87.99
11/30/2000	3,283,223	2,280	203	263	-60.33
12/1/2000	3,233,720	2,246	200	263	-63.39
12/2/2000	3,259,432	2,263	201	263	-61.80
12/3/2000	3,269,656	2,271	202	263	-61.17
12/4/2000	3,155,384	2,191	195	263	-68.22
12/5/2000	3,259,655	2,264	201	263	-61.79
12/6/2000	3,115,702	2,164	192	263	-70.67
12/7/2000	3,269,096	2,270	202	263	-61.20
12/8/2000	3,097,574	2,151	191	263	-71.79
12/9/2000	3,263,340	2,266	201	263	-61.56
12/10/2000	3,057,857	2,124	189	263	-74.24
12/11/2000	3,083,649	2,141	190	263	-72.65
12/12/2000	3,292,008	2,286	203	263	-59.79

12/13/2000	3,418,628	2,374	211	263	-51.97		
12/14/2000	3,294,693	2,288	203	263	-59.62		
12/15/2000	3,297,410	2,290	204	263	-59.46		
12/16/2000	3,052,968	2,120	188	263	-74.55		
12/17/2000	3,296,471	2,289	203	263	-59.51		
12/18/2000	3,255,226	2,261	201	263	-62.06		
12/19/2000	3,254,479	2,260	201	263	-62.11		
12/20/2000	3,199,133	2,222	197	263	-65.52		
12/21/2000	2,458,737	1,707	152	263	-111.23		
12/22/2000	3,376,708	2,345	208	263	-54.56		
12/23/2000	3,262,520	2,266	201	263	-61.61		
12/24/2000	3,257,198	2,262	201	263	-61.94		
12/25/2000	3,266,063	2,268	202	263	-61.39		
12/26/2000	3,271,472	2,272	202	263	-61.06		
12/27/2000	3,281,898	2,279	203	263	-60.41		
12/28/2000	3,273,000	2,273	202	263	-60.96		
12/29/2000	2,771,000	1,924	171	263	-91.95		
12/30/2000	3,265,994	2,268	202	263	-61.40		
12/31/2000	3,267,688	2,269	202	263	-61.29	727.22	36.36
1/1/2001	3,272,482	2,273	202	263	-60.99		
1/2/2001	2,915,835	2,025	180	263	-83.01		
1/3/2001	3,258,224	2,263	201	263	-61.88		
1/4/2001	3,249,037	2,256	201	263	-62.44		
1/5/2001	3,256,118	2,261	201	263	-62.01		
1/6/2001	3,256,118	2,261	201	263	-62.01		
1/7/2001	3,147,717	2,186	194	263	-68.70		
1/8/2001	2,268,033	1,575	140	263	-123.00		
1/9/2001	3,061,233	2,126	189	263	-74.04		
1/10/2001	3,325,000	2,309	205	263	-57.75		
1/11/2001	3,275,692	2,275	202	263	-60.80		
1/12/2001	3,301,432	2,293	204	263	-59.21		
1/13/2001	3,296,865	2,289	204	263	-59.49		
1/14/2001	3,284,016	2,281	203	263	-60.28		
1/15/2001	3,283,790	2,280	203	263	-60.30		
1/16/2001	3,125,281	2,170	193	263	-70.08		
1/17/2001	1,941,582	1,348	120	263	-143.15		
1/18/2001	3,332,695	2,314	206	263	-57.28		
1/19/2001	3,288,620	2,284	203	263	-60.00		
1/20/2001	3,281,955	2,279	203	263	-60.41		
1/21/2001	2,982,653	2,071	184	263	-78.89		
1/22/2001	3,278,717	2,277	202	263	-60.61		
1/23/2001	2,850,133	1,979	176	263	-87.07		
1/24/2001	3,072,765	2,134	190	263	-73.32		
1/25/2001	3,306,872	2,296	204	263	-58.87		

1/26/2001	3,269,006	2,270	202	263	-61.21
1/27/2001	2,310,122	1,604	143	263	-120.40
1/28/2001	3,220,672	2,237	199	263	-64.19
1/29/2001	3,381,373	2,348	209	263	-54.27
1/30/2001	3,408,284	2,367	210	263	-52.61
1/31/2001	3,312,353	2,300	204	263	-58.53
2/1/2001	3,283,646	2,280	203	263	-60.31
2/2/2001	3,284,261	2,281	203	263	-60.27
2/3/2001	3,282,458	2,279	203	263	-60.38
2/4/2001	3,049,828	2,118	188	263	-74.74
2/5/2001	3,280,604	2,278	203	263	-60.49
2/6/2001	3,276,000	2,275	202	263	-60.78
2/7/2001	2,486,312	1,727	153	263	-109.52
2/8/2001	2,393,326	1,662	148	263	-115.26
2/9/2001	3,369,748	2,340	208	263	-54.99
2/10/2001	2,932,842	2,037	181	263	-81.96
2/11/2001	3,291,986	2,286	203	263	-59.79
2/12/2001	3,257,545	2,262	201	263	-61.92
2/13/2001	3,272,834	2,273	202	263	-60.97
2/14/2001	3,013,000	2,092	186	263	-77.01
2/15/2001	3,289,079	2,284	203	263	-59.97
2/16/2001	3,208,226	2,228	198	263	-64.96
2/17/2001	3,226,596	2,241	199	263	-63.83
2/18/2001	3,232,726	2,245	200	263	-63.45
2/19/2001	3,205,829	2,226	198	263	-65.11
2/20/2001	3,125,503	2,170	193	263	-70.07
2/21/2001	3,126,948	2,171	193	263	-69.98
2/22/2001	3,121,732	2,168	193	263	-70.30
2/23/2001	3,092,124	2,147	191	263	-72.13
2/24/2001	3,083,640	2,141	190	263	-72.65
2/25/2001	2,712,131	1,883	167	263	-95.58
2/26/2001	3,024,216	2,100	187	263	-76.32
2/27/2001	2,098,966	1,458	130	263	-133.43
2/28/2001	2,774,942	1,927	171	263	-91.71
3/1/2001	3,304,178	2,295	204	263	-59.04
3/2/2001	3,259,100	2,263	201	263	-61.82
3/3/2001	3,200,275	2,222	198	263	-65.45
3/4/2001	3,127,283	2,172	193	263	-69.96
3/5/2001	3,128,804	2,173	193	263	-69.86
3/6/2001	3,098,623	2,152	191	263	-71.73
3/7/2001	3,112,134	2,161	192	263	-70.89
3/8/2001	2,900,026	2,014	179	263	-83.99
3/9/2001	3,199,510	2,222	198	263	-65.50
3/10/2001	3,189,626	2,215	197	263	-66.11

3/11/2001	3,151,585	2,189	195	263	-68.46	
3/12/2001	3,130,373	2,174	193	263	-69.77	
3/13/2001	2,948,664	2,048	182	263	-80.98	
3/14/2001	3,152,422	2,189	195	263	-68.41	
3/15/2001	3,088,092	2,145	191	263	-72.38	
3/16/2001	2,167,968	1,506	134	263	-129.17	
3/17/2001	2,789,111	1,937	172	263	-90.83	
3/18/2001	3,207,048	2,227	198	263	-65.03	
3/19/2001	3,245,128	2,254	200	263	-62.68	
3/20/2001	3,303,715	2,294	204	263	-59.07	
3/21/2001	3,314,203	2,302	205	263	-58.42	
3/22/2001	3,282,852	2,280	203	263	-60.35	
3/23/2001	3,304,679	2,295	204	263	-59.01	
3/24/2001	3,312,363	2,300	204	263	-58.53	
3/25/2001	3,323,971	2,308	205	263	-57.82	
3/26/2001	3,364,188	2,336	208	263	-55.33	
3/27/2001	3,421,037	2,376	211	263	-51.82	
3/28/2001	3,412,044	2,369	211	263	-52.38	
3/29/2001	3,425,477	2,379	211	263	-51.55	
3/30/2001	3,431,864	2,383	212	263	-51.16	
3/31/2001	3,214,585	2,232	198	263	-64.57	
4/1/2001	3,255,684	2,261	201	263	-62.03	
4/2/2001	3,411,884	2,369	211	263	-52.39	
4/3/2001	3,415,718	2,372	211	263	-52.15	
4/4/2001	3,414,196	2,371	211	263	-52.25	
4/5/2001	3,416,990	2,373	211	263	-52.07	
4/6/2001	3,431,038	2,383	212	263	-51.21	
4/7/2001	3,433,152	2,384	212	263	-51.08	
4/8/2001	3,453,630	2,398	213	263	-49.81	
4/9/2001	3,436,144	2,386	212	263	-50.89	
4/10/2001	3,422,000	2,376	211	263	-51.77	
4/11/2001	3,336,882	2,317	206	263	-57.02	
4/12/2001	3,377,525	2,346	208	263	-54.51	
4/13/2001	3,232,508	2,245	200	263	-63.46	
4/14/2001	3,375,119	2,344	208	263	-54.66	
4/15/2001	2,569,602	1,784	159	263	-104.38	
4/16/2001	4,183,576	2,905	258	330	-4.75	
4/17/2001	4,656,733	3,234	287	330	24.45	24.45
4/18/2001	4,871,132	3,383	301	330	37.69	37.69
4/19/2001	5,027,326	3,491	310	330	47.33	47.33
4/20/2001	4,895,252	3,399	302	330	39.18	39.18
4/21/2001	4,726,878	3,283	292	330	28.78	28.78
4/22/2001	4,675,960	3,247	289	330	25.64	25.64
4/23/2001	4,674,926	3,246	289	330	25.58	25.58

4/24/2001	4,734,405	3,288	292	330	29.25	29.25
4/25/2001	4,905,977	3,407	303	330	39.84	39.84
4/26/2001	5,094,414	3,538	314	330	51.47	51.47
4/27/2001	5,180,816	3,598	320	330	56.80	56.80
4/28/2001	5,334,863	3,705	329	330	66.31	66.31
4/29/2001	5,400,084	3,750	333	330	70.34	70.34
4/30/2001	5,164,304	3,586	319	330	55.78	55.78
5/1/2001	5,226,922	3,630	323	330	59.65	59.65
5/2/2001	5,066,310	3,518	313	330	49.74	49.74
5/3/2001	5,025,462	3,490	310	330	47.21	47.21
5/4/2001	5,056,108	3,511	312	330	49.11	49.11
5/5/2001	5,107,418	3,547	315	330	52.27	52.27
5/6/2001	5,114,882	3,552	316	330	52.73	52.73
5/7/2001	5,093,016	3,537	314	330	51.38	51.38
5/8/2001	5,145,310	3,573	318	330	54.61	54.61
5/9/2001	5,239,651	3,639	323	330	60.44	60.44
5/10/2001	5,244,151	3,642	324	330	60.71	60.71
5/11/2001	5,227,664	3,630	323	330	59.70	59.70
5/12/2001	5,267,167	3,658	325	330	62.13	62.13
5/13/2001	5,363,000	3,724	331	330	68.05	68.05
5/14/2001	5,364,162	3,725	331	330	68.12	68.12
5/15/2001	5,723,086	3,974	353	330	90.28	90.28
5/16/2001	5,988,220	4,158	370	330	106.64	106.64
5/17/2001	5,999,791	4,167	370	330	107.36	107.36
5/18/2001	5,926,702	4,116	366	330	102.85	102.85
5/19/2001	5,843,270	4,058	361	330	97.70	97.70
5/20/2001	5,781,773	4,015	357	330	93.90	93.90
5/21/2001	5,749,592	3,993	355	388	91.91	91.91
5/22/2001	5,715,869	3,969	353	388	89.83	89.83
5/23/2001	5,686,502	3,949	351	388	88.02	88.02
5/24/2001	5,676,596	3,942	350	388	87.41	87.41
5/25/2001	5,672,418	3,939	350	388	87.15	87.15
5/26/2001	5,642,502	3,918	348	388	85.30	85.30
5/27/2001	5,632,870	3,912	348	388	84.71	84.71
5/28/2001	5,623,610	3,905	347	388	84.14	84.14
5/29/2001	5,589,294	3,881	345	388	82.02	82.02
5/30/2001	5,549,506	3,854	343	388	79.56	79.56
5/31/2001	5,528,450	3,839	341	388	78.26	78.26
6/1/2001	5,355,152	3,719	331	388	67.56	67.56
6/2/2001	4,144,906	2,878	256	263	-7.14	
6/3/2001	4,178,281	2,902	258	263	-5.08	
6/4/2001	4,156,662	2,887	257	263	-6.42	
6/5/2001	4,137,856	2,874	255	263	-7.58	
6/6/2001	4,140,890	2,876	256	263	-7.39	

6/7/2001	4,111,402	2,855	254	263	-9.21	
6/8/2001	4,087,388	2,838	252	263	-10.69	
6/9/2001	4,070,386	2,827	251	263	-11.74	
6/10/2001	2,916,198	2,025	180	200	-82.99	
6/11/2001	2,363,729	1,641	146	200	-117.09	
6/12/2001	2,475,198	1,719	153	200	-110.21	
6/13/2001	2,432,977	1,690	150	200	-112.82	
6/14/2001	3,218,145	2,235	199	263	-64.35	
6/15/2001	3,872,937	2,690	239	263	-23.93	
6/16/2001	3,872,937	2,690	239	263	-23.93	
6/17/2001	3,895,000	2,705	240	263	-22.57	
6/18/2001	2,785,000	1,934	172	263	-91.09	
6/19/2001	3,820,000	2,653	236	263	-27.20	
6/20/2001	3,265,000	2,267	202	263	-61.46	
6/21/2001	3,622,000	2,515	224	263	-39.42	
6/22/2001	3,866,000	2,685	239	263	-24.36	
6/23/2001	4,135,000	2,872	255	263	-7.75	
6/24/2001	4,108,000	2,853	254	263	-9.42	
6/25/2001	4,122,000	2,863	254	263	-8.56	
6/26/2001	4,055,000	2,816	250	263	-12.69	
6/27/2001	4,033,000	2,801	249	263	-14.05	
6/28/2001	4,226,000	2,935	261	263	-2.14	
6/29/2001	4,431,000	3,077	274	263	10.52	10.52
6/30/2001	4,522,000	3,140	279	263	16.14	16.14
7/1/2001	4,324,000	3,003	267	263	3.91	3.91
7/2/2001	4,352,000	3,022	269	263	5.64	5.64
7/3/2001	4,368,000	3,033	270	263	6.63	6.63
7/4/2001	4,293,000	2,981	265	263	2.00	2.00
7/5/2001	4,319,000	2,999	267	263	3.60	3.60
7/6/2001	4,353,773	3,023	269	263	5.75	5.75
7/7/2001	4,139,519	2,875	256	263	-7.47	
7/8/2001	4,316,000	2,997	266	263	3.42	3.42
7/9/2001	4,142,452	2,877	256	263	-7.29	
7/10/2001	4,341,980	3,015	268	263	5.02	5.02
7/11/2001	4,331,520	3,008	267	263	4.38	4.38
7/12/2001	4,283,302	2,975	264	263	1.40	1.40
7/13/2001	4,264,066	2,961	263	263	0.21	
7/14/2001	4,255,898	2,955	263	263	-0.29	
7/15/2001	4,322,055	3,001	267	263	3.79	3.79
7/16/2001	4,322,000	3,001	267	263	3.79	3.79
7/17/2001	4,272,000	2,967	264	263	0.70	
7/18/2001	4,312,946	2,995	266	263	3.23	3.23
7/19/2001	4,330,962	3,008	267	263	4.34	4.34
7/20/2001	4,308,208	2,992	266	263	2.94	2.94

7/21/2001	4,272,282	2,967	264	263	0.72
7/22/2001	4,265,914	2,962	263	263	0.33
7/23/2001	4,240,984	2,945	262	263	-1.21
7/24/2001	4,195,462	2,914	259	263	-4.02
7/25/2001	4,215,728	2,928	260	263	-2.77
7/26/2001	4,195,492	2,914	259	263	-4.02
7/27/2001	3,678,413	2,554	227	200	-35.94
7/28/2001	3,234,394	2,246	200	200	-63.35
7/29/2001	3,189,728	2,215	197	200	-66.10
7/30/2001	3,182,687	2,210	196	200	-66.54
7/31/2001	3,175,068	2,205	196	200	-67.01
8/1/2001	3,166,260	2,199	195	200	-67.55
8/2/2001	3,153,301	2,190	195	200	-68.35
8/3/2001	3,212,184	2,231	198	200	-64.72
8/4/2001	3,219,072	2,235	199	200	-64.29
8/5/2001	3,245,300	2,254	200	200	-62.67
8/6/2001	2,816,333	1,956	174	200	-89.15
8/7/2001	2,551,193	1,772	157	200	-105.52
8/8/2001	2,527,376	1,755	156	200	-106.99
8/9/2001	2,512,906	1,745	155	200	-107.88
8/10/2001	2,507,945	1,742	155	200	-108.19
8/11/2001	2,507,270	1,741	155	200	-108.23
8/12/2001	2,512,488	1,745	155	200	-107.91
8/13/2001	2,499,272	1,736	154	200	-108.72
8/14/2001	2,484,860	1,726	153	200	-109.61
8/15/2001	2,477,508	1,720	153	200	-110.07
8/16/2001	2,460,060	1,708	152	200	-111.14
8/17/2001	2,467,596	1,714	152	200	-110.68
8/18/2001	2,448,612	1,700	151	200	-111.85
8/19/2001	2,451,713	1,703	151	200	-111.66
8/20/2001	2,468,220	1,714	152	200	-110.64
8/21/2001	2,472,707	1,717	153	200	-110.36
8/22/2001	2,462,141	1,710	152	200	-111.02
8/23/2001	2,452,128	1,703	151	200	-111.63
8/24/2001	2,436,045	1,692	150	200	-112.63
8/25/2001	2,401,694	1,668	148	200	-114.75
8/26/2001	2,401,944	1,668	148	200	-114.73
8/27/2001	2,416,890	1,678	149	200	-113.81
8/28/2001	2,406,826	1,671	149	200	-114.43
8/29/2001	2,406,186	1,671	149	200	-114.47
8/30/2001	2,404,395	1,670	148	200	-114.58
8/31/2001	2,403,977	1,669	148	200	-114.61
9/1/2001	2,385,312	1,656	147	200	-115.76
9/2/2001	2,375,654	1,650	147	200	-116.35

9/3/2001	2,373,758	1,648	147	200	-116.47
9/4/2001	2,385,224	1,656	147	200	-115.76
9/5/2001	2,381,535	1,654	147	200	-115.99
9/6/2001	2,444,780	1,698	151	200	-112.09
9/7/2001	2,461,487	1,709	152	200	-111.06
9/8/2001	2,462,012	1,710	152	200	-111.02
9/9/2001	2,444,329	1,697	151	200	-112.12
9/10/2001	2,428,871	1,687	150	200	-113.07
9/11/2001	2,394,640	1,663	148	200	-115.18
9/12/2001	2,387,402	1,658	147	200	-115.63
9/13/2001	2,399,632	1,666	148	200	-114.87
9/14/2001	2,411,770	1,675	149	200	-114.13
9/15/2001	2,420,124	1,681	149	200	-113.61
9/16/2001	2,413,794	1,676	149	200	-114.00
9/17/2001	2,412,493	1,675	149	200	-114.08
9/18/2001	2,397,227	1,665	148	200	-115.02
9/19/2001	2,401,491	1,668	148	200	-114.76
9/20/2001	2,401,572	1,668	148	200	-114.75
9/21/2001	2,385,562	1,657	147	200	-115.74
9/22/2001	2,379,702	1,653	147	200	-116.10
9/23/2001	2,383,248	1,655	147	200	-115.89
9/24/2001	2,386,173	1,657	147	200	-115.71
9/25/2001	2,383,844	1,655	147	200	-115.85
9/26/2001	2,376,014	1,650	147	200	-116.33
9/27/2001	2,373,412	1,648	147	200	-116.49
9/28/2001	2,329,944	1,618	144	200	-119.18
9/29/2001	2,368,387	1,645	146	200	-116.80
9/30/2001	2,355,145	1,636	145	200	-117.62
10/1/2001	2,345,690	1,629	145	200	-118.20
10/2/2001	2,340,034	1,625	144	200	-118.55
10/3/2001	2,669,185	1,854	165	263	-98.24
10/4/2001	3,487,669	2,422	215	263	-47.71
10/5/2001	3,494,737	2,427	216	263	-47.28
10/6/2001	3,452,088	2,397	213	263	-49.91
10/7/2001	3,426,897	2,380	212	263	-51.46
10/8/2001	3,597,460	2,498	222	263	-40.93
10/9/2001	3,825,000	2,656	236	263	-26.89
10/10/2001	3,729,334	2,590	230	263	-32.79
10/11/2001	3,848,470	2,673	238	263	-25.44
10/12/2001	3,816,424	2,650	236	263	-27.42
10/13/2001	3,821,809	2,654	236	263	-27.09
10/14/2001	3,791,791	2,633	234	263	-28.94
10/15/2001	3,764,830	2,614	232	263	-30.60
10/16/2001	3,716,555	2,581	229	263	-33.58

10/17/2001	3,689,345	2,562	228	263	-35.26
10/18/2001	3,679,179	2,555	227	263	-35.89
10/19/2001	3,800,418	2,639	235	263	-28.41
10/20/2001	3,936,534	2,734	243	263	-20.00
10/21/2001	3,885,326	2,698	240	263	-23.17
10/22/2001	3,846,935	2,671	237	263	-25.53
10/23/2001	1,496,155	1,039	92	263	-170.64
10/24/2001	0	0	0	0	-263.00
10/25/2001	0	0	0	0	-263.00
10/26/2001	0	0	0	0	-263.00
10/27/2001	0	0	0	0	-263.00
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11/8/2001	0	0	0	0	-263.00
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12/4/2001	0	0	0	0	-263.00		
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02/07/02	0	0	0	0	-263.00
02/08/02	0	0	0	0	-263.00
02/09/02	0	0	0	0	-263.00
02/10/02	0	0	0	0	-263.00
02/11/02	1,066,000	740	66	200	-197.20
02/12/02	2,209,121	1,534	136	263	-126.63
02/13/02	2,159,000	1,499	133	263	-129.73
02/14/02	3,298,280	2,290	204	263	-59.40
02/15/02	1,928,385	1,339	119	263	-143.96
02/16/02	3,221,467	2,237	199	263	-64.14
02/17/02	3,177,405	2,207	196	263	-66.86
02/18/02	3,036,638	2,109	187	263	-75.55
02/19/02	2,978,594	2,068	184	263	-79.14
02/20/02	2,956,908	2,053	183	263	-80.47
02/21/02	2,552,902	1,773	158	263	-105.41
02/22/02	3,037,510	2,109	188	263	-75.50
02/23/02	3,052,083	2,120	188	263	-74.60
02/24/02	2,297,093	1,595	142	263	-121.20
02/25/02	2,235,258	1,552	138	263	-125.02

02/26/02	2,956,500	2,053	183	263	-80.50	
02/27/02	3,493,756	2,426	216	263	-47.34	
02/28/02	3,365,947	2,337	208	263	-55.23	
03/01/02	3,082,718	2,141	190	263	-72.71	
03/02/02	2,962,756	2,057	183	263	-80.11	
03/03/02	3,099,399	2,152	191	263	-71.68	
03/04/02	3,116,159	2,164	192	263	-70.64	
03/05/02	3,102,406	2,154	192	263	-71.49	
03/06/02	2,999,957	2,083	185	263	-77.82	
03/07/02	2,236,651	1,553	138	263	-124.94	
03/08/02	2,842,246	1,974	175	263	-87.55	
03/09/02	3,131,861	2,175	193	263	-69.68	
03/10/02	3,105,768	2,157	192	263	-71.29	
03/11/02	3,049,145	2,117	188	263	-74.78	
03/12/02	3,062,599	2,127	189	263	-73.95	
03/13/02	2,955,238	2,052	182	263	-80.58	
03/14/02	2,980,486	2,070	184	263	-79.02	
03/15/02	2,315,604	1,608	143	263	-120.06	
03/16/02	2,520,276	1,750	156	263	-107.43	
03/17/02	2,957,922	2,054	183	263	-80.41	
03/18/02	2,034,285	1,413	126	263	-137.43	
03/19/02	3,401,630	2,362	210	263	-53.02	
03/20/02	3,047,880	2,117	188	263	-74.86	
03/21/02	2,177,208	1,512	134	263	-128.60	
03/22/02	3,117,697	2,165	192	263	-70.55	
03/23/02	3,153,438	2,190	195	263	-68.34	
03/24/02	3,078,011	2,138	190	263	-73.00	
03/25/02	2,940,515	2,042	182	263	-81.49	
03/26/02	2,884,033	2,003	178	263	-84.97	
03/27/02	3,063,626	2,128	189	263	-73.89	
03/28/02	3,115,445	2,164	192	263	-70.69	
03/29/02	3,110,581	2,160	192	263	-70.99	
03/30/02	3,131,018	2,174	193	263	-69.73	
03/31/02	3,156,558	2,192	195	263	-68.15	
04/01/02	3,176,549	2,206	196	263	-66.92	
04/02/02	1,575,039	1,094	97	263	-165.78	
04/03/02	2,095,691	1,455	129	263	-133.64	
04/04/02	3,631,036	2,522	224	263	-38.86	
04/05/02	3,924,673	2,725	242	263	-20.74	
04/06/02	4,537,914	3,151	280	263	17.12	17.12
04/07/02	4,616,296	3,206	285	263	21.96	21.96
04/08/02	4,503,360	3,127	278	263	14.99	14.99
04/09/02	4,173,409	2,898	258	263	-5.38	
04/10/02	4,212,249	2,925	260	263	-2.98	

04/11/02	4,246,193	2,949	262	263	-0.89	
04/12/02	4,313,002	2,995	266	263	3.23	3.23
04/13/02	4,621,824	3,210	285	263	22.30	22.30
04/14/02	5,384,546	3,739	332	263	69.38	69.38
04/15/02	5,493,000	3,815	339	263	76.07	76.07
04/16/02	4,962,350	3,446	306	263	43.32	43.32
04/17/02	4,658,590	3,235	288	263	24.57	24.57
04/18/02	4,500,102	3,125	278	263	14.78	14.78
04/19/02	4,302,416	2,988	266	263	2.58	2.58
04/20/02	4,256,826	2,956	263	263	-0.23	
04/21/02	4,593,728	3,190	284	263	20.56	20.56
04/22/02	5,072,161	3,522	313	263	50.10	50.10
04/23/02	5,147,270	3,574	318	263	54.73	54.73
04/24/02	5,135,000	3,566	317	263	53.98	53.98
04/25/02	4,457,667	3,096	275	263	12.16	12.16
04/26/02	4,218,546	2,930	260	263	-2.60	
04/27/02	4,286,840	2,977	265	263	1.62	1.62
04/28/02	4,394,722	3,052	271	263	8.28	8.28
04/29/02	4,350,767	3,021	269	263	5.57	5.57
04/30/02	4,552,154	3,161	281	263	18.00	18.00
05/01/02	4,505,357	3,129	278	263	15.11	15.11
05/02/02	4,485,981	3,115	277	263	13.91	13.91
05/03/02	4,702,175	3,265	290	263	27.26	27.26
05/04/02	4,191,893	2,911	259	263	-4.24	
05/05/02	4,745,322	3,295	293	263	29.92	29.92
05/06/02	4,743,306	3,294	293	263	29.80	29.80
05/07/02	4,594,268	3,190	284	263	20.60	20.60
05/08/02	4,559,744	3,166	281	263	18.47	18.47
05/09/02	4,511,430	3,133	278	263	15.48	15.48
05/10/02	4,865,173	3,379	300	263	37.32	37.32
05/11/02	4,437,738	3,082	274	263	10.93	10.93
05/12/02	4,621,714	3,210	285	263	22.29	22.29
05/13/02	4,936,797	3,428	305	263	41.74	41.74
05/14/02	5,358,194	3,721	331	263	67.75	67.75
05/15/02	5,439,816	3,778	336	263	72.79	72.79
05/16/02	5,240,792	3,639	324	263	60.51	60.51
05/17/02	5,202,828	3,613	321	263	58.16	58.16
05/18/02	5,435,000	3,774	335	263	72.49	72.49
05/19/02	5,744,564	3,989	355	263	91.60	91.60
05/20/02	6,219,818	4,319	384	263	120.94	120.94
05/21/02	6,286,798	4,366	388	263	125.07	125.07
05/22/02	6,465,866	4,490	399	263	136.13	136.13
05/23/02	5,980,560	4,153	369	263	106.17	106.17
05/24/02	5,815,884	4,039	359	263	96.01	96.01

05/25/02	6,004,398	4,170	371	263	107.64	107.64
05/26/02	6,276,042	4,358	387	263	124.41	124.41
05/27/02	6,494,362	4,510	401	263	137.89	137.89
05/28/02	6,572,682	4,564	406	263	142.72	142.72
05/29/02	6,476,517	4,498	400	263	136.79	136.79
05/30/02	6,516,300	4,525	402	263	139.24	139.24
05/31/02	5,930,160	4,118	366	263	103.06	103.06
06/01/02	4,596,410	3,192	284	263	20.73	20.73
06/02/02	4,731,619	3,286	292	263	29.08	29.08
06/03/02	4,704,549	3,267	290	263	27.40	27.40
06/04/02	4,466,422	3,102	276	263	12.71	12.71
06/05/02	4,211,186	2,924	260	263	-3.05	
06/06/02	4,133,563	2,871	255	263	-7.84	
06/07/02	4,012,038	2,786	248	263	-15.34	
06/08/02	3,968,302	2,756	245	263	-18.04	
06/09/02	3,918,964	2,722	242	263	-21.09	
06/10/02	3,960,000	2,750	244	263	-18.56	
06/11/02	5,181,927	3,599	320	263	56.87	56.87
06/12/02	5,751,734	3,994	355	263	92.05	92.05
06/13/02	5,649,420	3,923	349	263	85.73	85.73
06/14/02	5,910,270	4,104	365	350	101.83	101.83
06/15/02	6,298,464	4,374	389	350	125.79	125.79
06/16/02	6,217,504	4,318	384	350	120.80	120.80
06/17/02	6,180,902	4,292	382	350	118.54	118.54
06/18/02	5,836,790	4,053	360	350	97.30	97.30
06/19/02	6,283,979	4,364	388	350	124.90	124.90
06/20/02	6,192,511	4,300	382	350	119.25	119.25
06/21/02	6,036,109	4,192	373	350	109.60	109.60
06/22/02	5,988,937	4,159	370	350	106.69	106.69
06/23/02	5,962,914	4,141	368	350	105.08	105.08
06/24/02	5,884,933	4,087	363	350	100.27	100.27
06/25/02	5,896,856	4,095	364	350	101.00	101.00
06/26/02	6,153,820	4,273	380	350	116.87	116.87
06/27/02	5,379,734	3,736	332	350	69.08	69.08
06/28/02	4,760,656	3,306	294	300	30.87	30.87
06/29/02	4,689,114	3,256	289	300	26.45	26.45
06/30/02	4,620,617	3,209	285	300	22.22	22.22
07/01/02	4,555,160	3,163	281	300	18.18	18.18
07/02/02	4,509,860	3,132	278	300	15.39	15.39
07/03/02	4,457,004	3,095	275	300	12.12	12.12
07/04/02	4,419,942	3,069	273	300	9.84	9.84
07/05/02	4,390,077	3,049	271	300	7.99	7.99
07/06/02	4,363,542	3,030	269	300	6.35	6.35
07/07/02	4,545,612	3,157	281	300	17.59	17.59

07/08/02	4,864,688	3,378	300	300	37.29	37.29
07/09/02	4,724,873	3,281	292	300	28.66	28.66
07/10/02	4,667,806	3,242	288	300	25.14	25.14
07/11/02	3,735,868	2,594	231	200	-32.39	
07/12/02	3,209,357	2,229	198	200	-64.89	
07/13/02	3,168,662	2,200	196	200	-67.40	
07/14/02	3,140,692	2,181	194	200	-69.13	
07/15/02	3,115,655	2,164	192	200	-70.68	
07/16/02	3,111,005	2,160	192	200	-70.96	
07/17/02	3,179,499	2,208	196	200	-66.73	
07/18/02	3,231,064	2,244	199	200	-63.55	
07/19/02	3,231,338	2,244	199	200	-63.53	
07/20/02	3,089,874	2,146	191	200	-72.27	
07/21/02	3,202,368	2,224	198	200	-65.32	
07/22/02	3,158,570	2,193	195	200	-68.03	
07/23/02	3,125,219	2,170	193	200	-70.09	
07/24/02	3,098,424	2,152	191	200	-71.74	
07/25/02	3,147,530	2,186	194	200	-68.71	
07/26/02	3,178,504	2,207	196	200	-66.80	
07/27/02	3,240,259	2,250	200	200	-62.98	
07/28/02	3,189,950	2,215	197	200	-66.09	
07/29/02	3,115,422	2,163	192	200	-70.69	
07/30/02	3,070,808	2,133	190	200	-73.44	
07/31/02	3,039,018	2,110	188	200	-75.41	
08/01/02	3,001,447	2,084	185	200	-77.73	
08/02/02	2,990,868	2,077	185	200	-78.38	
08/03/02	2,978,603	2,068	184	200	-79.14	
08/04/02	3,092,047	2,147	191	200	-72.13	
08/05/02	3,006,370	2,088	186	200	-77.42	
08/06/02	2,964,324	2,059	183	200	-80.02	
08/07/02	2,949,263	2,048	182	200	-80.95	
08/08/02	3,077,410	2,137	190	200	-73.04	
08/09/02	3,057,742	2,123	189	200	-74.25	
08/10/02	2,978,332	2,068	184	200	-79.15	
08/11/02	2,934,504	2,038	181	200	-81.86	
08/12/02	2,785,766	1,935	172	200	-91.04	
08/13/02	2,907,070	2,019	179	200	-83.55	
08/14/02	3,119,836	2,167	193	200	-70.42	
08/15/02	3,198,742	2,221	197	200	-65.55	
08/16/02	3,175,697	2,205	196	200	-66.97	
08/17/02	3,168,370	2,200	196	200	-67.42	
08/18/02	3,171,329	2,202	196	200	-67.24	
08/19/02	3,114,678	2,163	192	200	-70.74	
08/20/02	2,737,054	1,901	169	200	-94.05	

08/21/02	3,162,894	2,196	195	200	-67.76	
08/22/02	3,175,642	2,205	196	200	-66.97	
08/23/02	3,154,151	2,190	195	200	-68.30	
08/24/02	3,153,000	2,190	195	200	-68.37	
08/25/02	3,133,445	2,176	193	200	-69.58	
08/26/02	3,114,292	2,163	192	200	-70.76	
08/27/02	3,148,386	2,186	194	200	-68.66	
08/28/02	3,101,268	2,154	191	200	-71.56	
08/29/02	3,026,938	2,102	187	200	-76.15	
08/30/03	2,991,625	2,078	185	200	-78.33	
08/31/02	2,987,132	2,074	184	200	-78.61	
09/01/02	2,900,396	2,014	179	200	-83.96	
09/02/02	2,777,679	1,929	171	200	-91.54	
09/03/02	2,757,038	1,915	170	200	-92.81	
09/04/02	2,701,475	1,876	167	200	-96.24	
09/05/02	2,700,833	1,876	167	200	-96.28	
09/06/02	2,828,344	1,964	175	200	-88.41	
09/07/02	2,751,411	1,911	170	200	-93.16	
09/08/02	2,634,568	1,830	163	200	-100.37	
09/09/02	2,768,512	1,923	171	200	-92.10	
09/10/02	3,067,188	2,130	189	200	-73.67	
09/11/02	3,151,996	2,189	195	200	-68.43	
09/12/02	3,157,027	2,192	195	200	-68.12	
09/13/02	3,135,734	2,178	194	200	-69.44	
09/14/02	3,069,648	2,132	189	200	-73.52	
09/15/02	3,055,664	2,122	189	200	-74.38	
09/16/02	3,013,826	2,093	186	200	-76.96	
09/17/02	3,020,392	2,097	186	200	-76.56	
09/18/02	3,243,695	2,253	200	200	-62.77	
09/19/02	3,139,598	2,180	194	200	-69.20	
09/20/02	3,092,297	2,147	191	200	-72.12	
09/21/02	3,071,385	2,133	190	200	-73.41	
09/22/02	3,039,398	2,111	188	200	-75.38	
09/23/02	3,029,909	2,104	187	200	-75.97	
09/24/02	3,016,384	2,095	186	200	-76.80	
09/25/02	3,010,934	2,091	186	200	-77.14	
09/26/02	3,111,492	2,161	192	200	-70.93	
09/27/02	3,164,236	2,197	195	200	-67.68	
09/28/02	3,158,720	2,194	195	200	-68.02	
09/29/02	3,127,768	2,172	193	200	-69.93	
09/30/02	3,116,613	2,164	192	200	-70.62	
10/01/02	3,931,000	2,730	243	263	-20.35	
10/02/02	4,322,295	3,002	267	263	3.81	3.81
10/03/02	4,372,788	3,037	270	263	6.93	6.93

10/04/02	4,387,280	3,047	271	263	7.82	7.82
10/05/02	4,335,276	3,011	268	263	4.61	4.61
10/06/02	4,276,222	2,970	264	263	0.96	
10/07/02	4,226,633	2,935	261	263	-2.10	
10/08/02	4,149,680	2,882	256	263	-6.85	
10/09/02	4,111,527	2,855	254	263	-9.20	
10/10/02	3,983,164	2,766	246	263	-17.13	
10/11/02	3,842,048	2,668	237	263	-25.84	
10/12/02	3,768,722	2,617	233	263	-30.36	
10/13/02	3,632,986	2,523	224	263	-38.74	
10/14/02	3,673,182	2,551	227	263	-36.26	
10/15/02	3,697,675	2,568	228	263	-34.75	
10/16/02	3,655,546	2,539	226	263	-37.35	
10/17/02	3,563,539	2,475	220	263	-43.03	
10/18/02	3,912,531	2,717	242	263	-21.49	
10/19/02	3,829,181	2,659	236	263	-26.63	
10/20/02	3,788,687	2,631	234	263	-29.13	
10/21/02	3,816,257	2,650	236	263	-27.43	
10/22/02	3,731,814	2,592	230	263	-32.64	
10/23/02	3,457,572	2,401	213	263	-49.57	
10/24/02	3,021,516	2,098	187	263	-76.49	
10/25/02	3,143,882	2,183	194	263	-68.93	
10/26/02	3,166,331	2,199	195	263	-67.55	
10/27/02	2,993,053	2,079	185	263	-78.24	
10/28/02	3,716,361	2,581	229	263	-33.60	
10/29/02	3,288,535	2,284	203	263	-60.00	
10/30/02	1,410,265	979	87	263	-175.95	
10/31/02	1,685,658	1,171	104	263	-158.95	
11/01/02	3,134,156	2,176	193	263	-69.53	
11/02/02	3,832,277	2,661	237	263	-26.44	
11/03/02	4,185,762	2,907	258	263	-4.62	
11/04/02	4,158,595	2,888	257	263	-6.30	
11/05/02	3,962,907	2,752	245	263	-18.38	
11/06/02	3,647,238	2,533	225	263	-37.86	
11/07/02	4,532,010	3,147	280	263	16.75	16.75
11/08/02	4,497,740	3,123	278	263	14.64	14.64
11/09/02	4,387,576	3,047	271	263	7.84	7.84
11/10/02	4,332,857	3,009	267	263	4.46	4.46
11/11/02	4,301,111	2,987	266	263	2.50	2.50
11/12/02	4,283,420	2,975	264	263	1.41	1.41
11/13/02	4,343,115	3,016	268	263	5.09	5.09
11/14/02	4,322,888	3,002	267	263	3.84	3.84
11/15/02	4,323,605	3,003	267	263	3.89	3.89
11/16/02	4,307,274	2,991	266	263	2.88	2.88

11/17/02	4,289,710	2,979	265	263	1.80	1.80
11/18/02	4,240,194	2,945	262	263	-1.26	
11/19/02	4,253,552	2,954	263	263	-0.44	
11/20/02	4,309,574	2,993	266	263	3.02	3.02
11/21/02	4,277,780	2,971	264	263	1.06	1.06
11/22/02	4,289,943	2,979	265	263	1.81	1.81
11/23/02	4,307,558	2,991	266	263	2.90	2.90
11/24/02	1,666,519	1,157	103	263	-160.13	
11/25/02	2,296,800	1,595	142	263	-121.22	
11/26/02	4,153,882	2,885	256	263	-6.59	
11/27/02	4,457,400	3,095	275	263	12.15	12.15
11/28/02	4,372,897	3,037	270	263	6.93	6.93
11/29/02	4,344,330	3,017	268	263	5.17	5.17
11/30/02	4,224,289	2,934	261	263	-2.24	
12/01/02	3,957,881	2,749	244	263	-18.69	
12/02/02	4,126,595	2,866	255	263	-8.27	
12/03/02	4,138,384	2,874	255	263	-7.54	
12/04/02	4,071,290	2,827	251	263	-11.69	
12/05/02	4,048,926	2,812	250	263	-13.07	
12/06/02	2,925,134	2,031	181	263	-82.44	
12/07/02	1,954,627	1,357	121	263	-142.34	
12/08/02	3,292,720	2,287	203	263	-59.75	
12/09/02	4,087,541	2,839	252	263	-10.68	
12/10/02	4,120,583	2,862	254	263	-8.64	
12/11/02	4,308,532	2,992	266	263	2.96	2.96
12/12/02	4,122,236	2,863	254	263	-8.54	
12/13/02	4,120,802	2,862	254	263	-8.63	
12/14/02	4,108,305	2,853	254	263	-9.40	
12/15/02	4,047,696	2,811	250	263	-13.14	
12/16/02	3,957,890	2,749	244	263	-18.69	
12/17/02	3,929,893	2,729	243	263	-20.41	
12/18/02	2,003,023	1,391	124	263	-139.36	
12/19/02	3,229,624	2,243	199	263	-63.64	
12/20/02	2,208,619	1,534	136	263	-126.67	
12/21/02	4,519,635	3,139	279	263	15.99	15.99
12/22/02	4,392,058	3,050	271	263	8.11	8.11
12/23/02	3,910,206	2,715	241	263	-21.63	
12/24/02	1,382,536	960	85	263	-177.66	
12/25/02	2,717,580	1,887	168	263	-95.25	
12/26/02	3,842,644	2,669	237	263	-25.80	
12/27/02	4,181,136	2,904	258	263	-4.91	
12/28/02	4,289,508	2,979	265	263	1.78	1.78
12/29/02	3,870,373	2,688	239	263	-24.09	
12/30/02	3,609,903	2,507	223	263	-40.17	

12/31/02	3,588,680	2,492	222	263	-41.48		4967.30	248.36
01/01/03	3,527,769	2,450	218	263	-45.24			
01/02/03	3,519,252	2,444	217	263	-45.76			
01/03/03	3,575,180	2,483	221	263	-42.31			
01/04/03	3,550,370	2,466	219	263	-43.84			
01/05/03	3,686,453	2,560	228	263	-35.44			
01/06/03	3,572,364	2,481	221	263	-42.48			
01/07/03	3,191,586	2,216	197	263	-65.99			
01/08/03	2,646,263	1,838	163	263	-99.65			
01/09/03	3,513,784	2,440	217	263	-46.10			
01/10/03	413,083	287	25	263	-237.50			
01/11/03	3,237,462	2,248	200	263	-63.16			
01/12/03	4,316,528	2,998	266	263	3.45	3.45		
01/13/03	4,233,752	2,940	261	263	-1.66			
01/14/03	3,794,689	2,635	234	263	-28.76			
01/15/03	3,791,368	2,633	234	263	-28.96			
01/16/03	3,486,087	2,421	215	263	-47.81			
01/17/03	2,909,962	2,021	180	263	-83.37			
01/18/03	3,363,196	2,336	208	263	-55.40			
01/19/03	3,771,081	2,619	233	263	-30.22			
01/20/03	3,584,650	2,489	221	263	-41.73			
01/21/03	3,472,088	2,411	214	263	-48.67			
01/22/03	2,896,339	2,011	179	263	-84.21			
01/23/03	3,821,997	2,654	236	263	-27.07			
01/24/03	3,443,411	2,391	213	263	-50.44			
01/25/03	3,433,052	2,384	212	263	-51.08			
01/26/03	3,529,590	2,451	218	263	-45.12			
01/27/03	4,042,999	2,808	250	263	-13.43			
01/28/03	3,871,344	2,688	239	263	-24.03			
01/29/03	3,643,724	2,530	225	263	-38.08			
01/30/03	3,613,590	2,509	223	263	-39.94			
01/31/03	3,678,830	2,555	227	263	-35.91			
02/01/03	4,254,523	2,955	263	263	-0.38			
02/02/03	4,164,115	2,892	257	263	-5.96			
02/03/03	3,934,972	2,733	243	263	-20.10			
02/04/03	3,755,048	2,608	232	263	-31.21			
02/05/03	3,436,842	2,387	212	263	-50.85			
02/06/03	2,402,107	1,668	148	263	-114.72			
02/07/03	3,193,010	2,217	197	263	-65.90			
02/08/03	4,432,047	3,078	274	263	10.58	10.58		
02/09/03	4,265,875	2,962	263	263	0.33			
02/10/03	3,986,555	2,768	246	263	-16.92			
02/11/03	3,351,521	2,327	207	263	-56.12			
02/12/03	3,425,546	2,379	211	263	-51.55			

02/13/03	3,749,149	2,604	231	263	-31.57	
02/14/03	3,723,701	2,586	230	263	-33.14	
02/15/03	3,597,477	2,498	222	263	-40.93	
02/16/03	3,517,636	2,443	217	263	-45.86	
02/17/03	3,533,944	2,454	218	263	-44.86	
02/18/03	3,463,266	2,405	214	263	-49.22	
02/19/03	3,039,663	2,111	188	263	-75.37	
02/20/03	3,225,687	2,240	199	263	-63.88	
02/21/03	3,484,842	2,420	215	263	-47.89	
02/22/03	3,333,408	2,315	206	263	-57.23	
02/23/03	1,510,892	1,049	93	263	-169.74	
02/24/03	2,805,123	1,948	173	263	-89.84	
02/25/03	3,783,598	2,627	234	263	-29.44	
02/26/03	3,818,383	2,652	236	263	-27.30	
02/27/03	3,573,139	2,481	221	263	-42.44	
02/28/03	3,327,410	2,311	205	263	-57.60	
03/01/03	3,350,496	2,327	207	263	-56.18	
03/02/03	3,295,229	2,288	203	263	-59.59	
03/03/03	3,368,284	2,339	208	263	-55.08	
03/04/03	3,299,387	2,291	204	263	-59.33	
03/05/03	3,296,996	2,290	204	263	-59.48	
03/06/03	3,365,598	2,337	208	263	-55.25	
03/07/03	3,354,802	2,330	207	263	-55.91	
03/08/03	3,180,888	2,209	196	263	-66.65	
03/09/03	3,336,068	2,317	206	263	-57.07	
03/10/03	3,347,497	2,325	207	263	-56.36	
03/11/03	3,395,188	2,358	210	263	-53.42	
03/12/03	3,721,657	2,584	230	263	-33.27	
03/13/03	4,203,073	2,919	259	263	-3.55	
03/14/03	4,628,228	3,214	286	263	22.69	22.69
03/15/03	4,650,584	3,230	287	263	24.07	24.07
03/16/03	4,646,656	3,227	287	263	23.83	23.83
03/17/03	4,277,870	2,971	264	263	1.07	1.07
03/18/03	3,802,499	2,641	235	263	-28.28	
03/19/03	3,967,917	2,755	245	263	-18.07	
03/20/03	3,737,298	2,595	231	263	-32.30	
03/21/03	4,334,207	3,010	268	263	4.54	4.54
03/22/03	4,335,816	3,011	268	263	4.64	4.64
03/23/03	4,518,254	3,138	279	263	15.90	15.90
03/24/03	4,074,834	2,830	252	263	-11.47	
03/25/03	4,339,492	3,014	268	263	4.87	4.87
03/26/03	4,085,784	2,837	252	263	-10.79	
03/27/03	3,571,146	2,480	220	263	-42.56	
03/28/03	4,295,526	2,983	265	263	2.16	2.16

03/29/03	4,090,818	2,841	253	263	-10.48	
03/30/03	4,266,109	2,963	263	263	0.34	
03/31/03	4,391,172	3,049	271	263	8.06	8.06
04/01/03	4,490,046	3,118	277	263	14.16	14.16
04/02/03	4,295,118	2,983	265	263	2.13	2.13
04/03/03	3,863,697	2,683	238	263	-24.50	
04/04/03	3,380,104	2,347	209	263	-54.35	
04/05/03	2,786,136	1,935	172	263	-91.02	
04/06/03	3,596,160	2,497	222	263	-41.01	
04/07/03	3,324,264	2,309	205	263	-57.80	
04/08/03	3,971,290	2,758	245	263	-17.86	
04/09/03	4,259,370	2,958	263	263	-0.08	
04/10/03	4,643,148	3,224	287	263	23.61	23.61
04/11/03	4,991,651	3,466	308	263	45.13	45.13
04/12/03	5,779,703	4,014	357	263	93.77	93.77
04/13/03	6,172,639	4,287	381	263	118.03	118.03
04/14/03	6,230,396	4,327	385	263	121.59	121.59
04/15/03	6,130,044	4,257	378	263	115.40	115.40
04/16/03	5,848,578	4,062	361	263	98.02	98.02
04/17/03	5,729,038	3,978	354	263	90.64	90.64
04/18/03	5,677,234	3,943	350	263	87.45	87.45
04/19/03	5,558,777	3,860	343	263	80.13	80.13
04/20/03	5,574,970	3,872	344	263	81.13	81.13
04/21/03	5,797,510	4,026	358	263	94.87	94.87
04/22/03	6,148,881	4,270	380	263	116.56	116.56
04/23/03	6,504,816	4,517	402	263	138.53	138.53
04/24/03	6,674,219	4,635	412	263	148.99	148.99
04/25/03	6,730,146	4,674	415	263	152.44	152.44
04/26/03	6,732,744	4,676	416	263	152.60	152.60
04/27/03	6,346,148	4,407	392	263	128.74	128.74
04/28/03	6,155,237	4,274	380	263	116.95	116.95
04/29/03	6,014,185	4,177	371	263	108.25	108.25
04/30/03	5,981,042	4,154	369	263	106.20	106.20
05/01/03	5,968,064	4,144	368	263	105.40	105.40
05/02/03	6,017,650	4,179	371	263	108.46	108.46
05/03/03	5,999,834	4,167	370	263	107.36	107.36
05/04/03	6,171,056	4,285	381	263	117.93	117.93
05/05/03	6,318,008	4,388	390	263	127.00	127.00
05/06/03	6,189,822	4,298	382	263	119.09	119.09
05/07/03	6,134,434	4,260	379	263	115.67	115.67
05/08/03	6,116,629	4,248	378	263	114.57	114.57
05/09/03	6,066,870	4,213	374	263	111.50	111.50
05/10/03	6,010,941	4,174	371	263	108.05	108.05
05/11/03	5,953,788	4,135	368	263	104.52	104.52

05/12/03	5,990,000	4,160	370	263	106.75	106.75
05/13/03	6,386,284	4,435	394	263	131.22	131.22
05/14/03	6,578,618	4,568	406	263	143.09	143.09
05/15/03	6,879,888	4,778	425	263	161.68	161.68
05/16/03	7,014,887	4,871	433	263	170.02	170.02
05/17/03	6,839,870	4,750	422	263	159.21	159.21
05/18/03	6,721,644	4,668	415	263	151.92	151.92
05/19/03	5,974,453	4,149	369	263	105.79	105.79
05/20/03	5,382,497	3,738	332	263	69.25	69.25
05/21/03	5,599,222	3,888	346	263	82.63	82.63
05/22/03	5,976,826	4,151	369	263	105.94	105.94
05/23/03	5,845,553	4,059	361	263	97.84	97.84
05/24/03	5,607,856	3,894	346	350	83.16	83.16
05/25/03	5,860,935	4,070	362	350	98.79	98.79
05/26/03	4,750,564	3,299	293	300	30.24	30.24
05/27/03	3,714,260	2,579	229	230	-33.72	
05/28/03	3,686,904	2,560	228	230	-35.41	
05/29/03	4,861,891	3,376	300	300	37.12	37.12
05/30/03	7,123,978	4,947	440	440	176.75	176.75
05/31/03	7,121,644	4,946	440	430	176.61	176.61
06/01/03	6,979,993	4,847	431	430	167.86	167.86
06/02/03	6,981,060	4,848	431	430	167.93	167.93
06/03/03	6,697,614	4,651	413	420	150.43	150.43
06/04/03	6,487,474	4,505	400	400	137.46	137.46
06/05/03	6,329,801	4,396	391	390	127.73	127.73
06/06/03	6,317,016	4,387	390	390	126.94	126.94
06/07/03	6,237,169	4,331	385	390	122.01	122.01
06/08/03	6,106,898	4,241	377	380	113.97	113.97
06/09/03	6,261,077	4,348	386	390	123.49	123.49
06/10/03	6,433,054	4,467	397	400	134.10	134.10
06/11/03	6,351,396	4,411	392	390	129.06	129.06
06/12/03	6,214,976	4,316	384	380	120.64	120.64
06/13/03	6,624,348	4,600	409	410	145.91	145.91
06/14/03	6,764,664	4,698	418	420	154.57	154.57
06/15/03	6,684,257	4,642	413	410	149.61	149.61
06/16/03	6,797,407	4,720	420	420	156.59	156.59
06/17/03	6,837,442	4,748	420	420	157.00	157.00
06/18/03	6,803,765	4,725	420	420	157.00	157.00
06/19/03	6,744,955	4,684	416	420	153.36	153.36
06/20/03	6,722,632	4,668	415	420	151.98	151.98
06/21/03	6,898,881	4,791	426	420	162.86	162.86
06/22/03	6,848,350	4,756	423	420	159.74	159.74
06/23/03	6,766,760	4,699	418	420	154.70	154.70
06/24/03	6,716,161	4,664	415	420	151.58	151.58

06/25/03	6,627,714	4,603	409	420	146.12	146.12
06/26/03	6,524,306	4,531	403	420	139.73	139.73
06/27/03	6,427,636	4,464	397	420	133.77	133.77
06/28/03	5,702,406	3,960	352	420	89.00	89.00
06/29/03	4,504,163	3,128	278	276	15.03	15.03
06/30/03	4,469,426	3,104	276	276	12.89	12.89
07/01/03	4,426,145	3,074	273	263	10.22	10.22
07/02/03	4,392,198	3,050	271	263	8.12	8.12
07/03/03	4,360,618	3,028	269	263	6.17	6.17
07/04/03	4,303,232	2,988	266	263	2.63	2.63
07/05/03	4,294,664	2,982	265	263	2.10	2.10
07/06/03	4,275,818	2,969	264	263	0.94	
07/07/03	4,482,854	3,113	277	263	13.72	13.72
07/08/03	4,581,721	3,182	283	263	19.82	19.82
07/09/03	4,524,207	3,142	279	263	16.27	16.27
07/10/03	4,480,488	3,111	277	263	13.57	13.57
07/11/03	4,444,596	3,087	274	263	11.36	11.36
07/12/03	3,569,980	2,479	220	200	-42.63	
07/13/03	3,168,289	2,200	196	200	-67.43	
07/14/03	3,182,095	2,210	196	200	-66.57	
07/15/03	3,176,583	2,206	196	200	-66.91	
07/16/03	3,183,517	2,211	197	200	-66.49	
07/17/03	3,178,066	2,207	196	200	-66.82	
07/18/03	3,188,309	2,214	197	200	-66.19	
07/19/03	3,188,461	2,214	197	200	-66.18	
07/20/03	3,173,117	2,204	196	200	-67.13	
07/21/03	3,155,759	2,191	195	200	-68.20	
07/22/03	3,139,872	2,180	194	200	-69.18	
07/23/03	3,114,824	2,163	192	200	-70.73	
07/24/03	3,149,138	2,187	194	200	-68.61	
07/25/03	3,208,410	2,228	198	200	-64.95	
07/26/03	3,315,840	2,303	205	200	-58.32	
07/27/03	3,192,346	2,217	197	200	-65.94	
07/28/03	3,132,585	2,175	193	200	-69.63	
07/29/03	3,100,192	2,153	191	200	-71.63	
07/30/03	3,084,227	2,142	190	200	-72.62	
07/31/03	3,070,670	2,132	190	200	-73.45	
08/01/03	3,043,863	2,114	188	200	-75.11	
08/02/03	3,015,968	2,094	186	200	-76.83	
08/03/03	3,047,648	2,116	188	200	-74.87	
08/04/03	3,085,084	2,142	190	200	-72.56	
08/05/03	3,032,838	2,106	187	200	-75.79	
08/06/03	3,006,931	2,088	186	200	-77.39	
08/07/03	2,976,390	2,067	184	200	-79.27	

08/08/03	2,958,212	2,054	183	200	-80.39
08/09/03	2,948,260	2,047	182	200	-81.01
08/10/03	2,984,546	2,073	184	200	-78.77
08/11/03	2,955,735	2,053	182	200	-80.55
08/12/03	2,935,545	2,039	181	200	-81.79
08/13/03	2,750,298	1,910	170	200	-93.23
08/14/03	2,877,966	1,999	178	200	-85.35
08/15/03	2,872,069	1,994	177	200	-85.71
08/16/03	2,916,718	2,025	180	200	-82.96
08/17/03	2,925,917	2,032	181	200	-82.39
08/18/03	2,907,868	2,019	179	200	-83.50
08/19/03	2,871,705	1,994	177	200	-85.73
08/20/03	2,857,530	1,984	176	200	-86.61
08/21/03	2,848,857	1,978	176	200	-87.14
08/22/03	2,804,718	1,948	173	200	-89.87
08/23/03	2,773,183	1,926	171	200	-91.82
08/24/03	2,763,834	1,919	171	200	-92.39
08/25/03	2,965,914	2,060	183	200	-79.92
08/26/03	3,122,219	2,168	193	200	-70.27
08/27/03	3,176,794	2,206	196	200	-66.90
08/28/03	3,168,834	2,201	196	200	-67.39
08/29/03	3,171,596	2,202	196	200	-67.22
08/30/03	3,193,938	2,218	197	200	-65.84
08/31/03	3,175,944	2,206	196	200	-66.95
09/01/03	3,158,873	2,194	195	200	-68.01
09/02/03	3,142,964	2,183	194	200	-68.99
09/03/03	3,139,243	2,180	194	200	-69.22
09/04/03	3,128,794	2,173	193	200	-69.86
09/05/03	3,112,233	2,161	192	200	-70.89
09/06/03	3,153,055	2,190	195	200	-68.37
09/07/03	3,169,144	2,201	196	200	-67.37
09/08/03	3,149,689	2,187	194	200	-68.57
09/09/03	3,178,538	2,207	196	200	-66.79
09/10/03	3,144,345	2,184	194	200	-68.90
09/11/03	3,125,130	2,170	193	200	-70.09
09/12/03	3,146,981	2,185	194	200	-68.74
09/13/03	3,185,003	2,212	197	200	-66.39
09/14/03	3,161,997	2,196	195	200	-67.82
09/15/03	3,125,218	2,170	193	200	-70.09
09/16/03	3,201,173	2,223	198	200	-65.40
09/17/03	3,297,065	2,290	204	200	-59.48
09/18/03	3,239,717	2,250	200	200	-63.02
09/19/03	3,201,401	2,223	198	200	-65.38
09/20/03	3,455,052	2,399	213	263	-49.73

09/21/03	4,082,489	2,835	252	263	-10.99	
09/22/03	4,164,866	2,892	257	263	-5.91	
09/23/03	4,143,570	2,877	256	263	-7.22	
09/24/03	4,142,970	2,877	256	263	-7.26	
09/25/03	4,123,446	2,864	255	263	-8.47	
09/26/03	4,105,587	2,851	253	263	-9.57	
09/27/03	4,121,049	2,862	254	263	-8.61	
09/28/03	4,131,695	2,869	255	263	-7.96	
09/29/03	4,131,309	2,869	255	263	-7.98	
09/30/03	4,127,291	2,866	255	263	-8.23	
10/01/03	4,114,619	2,857	254	263	-9.01	
10/02/03	4,102,359	2,849	253	263	-9.77	
10/03/03	3,988,027	2,769	246	263	-16.83	
10/04/03	4,040,868	2,806	249	263	-13.56	
10/05/03	3,936,078	2,733	243	263	-20.03	
10/06/03	4,054,919	2,816	250	263	-12.70	
10/07/03	4,006,058	2,782	247	263	-15.71	
10/08/03	3,815,267	2,649	236	263	-27.49	
10/09/03	3,965,393	2,754	245	263	-18.22	
10/10/03	4,064,990	2,823	251	263	-12.07	
10/11/03	4,014,632	2,788	248	263	-15.18	
10/12/03	3,994,945	2,774	247	263	-16.40	
10/13/03	4,072,953	2,828	251	263	-11.58	
10/14/03	4,241,218	2,945	262	263	-1.20	
10/15/03	4,261,992	2,960	263	263	0.09	
10/16/03	4,223,384	2,933	261	263	-2.30	
10/17/03	4,195,676	2,914	259	263	-4.01	
10/18/03	4,159,527	2,889	257	263	-6.24	
10/19/03	4,141,551	2,876	256	263	-7.35	
10/20/03	4,122,243	2,863	254	263	-8.54	
10/21/03	4,102,273	2,849	253	263	-9.77	
10/22/03	4,111,323	2,855	254	263	-9.21	
10/23/03	4,107,405	2,852	254	263	-9.46	
10/24/03	4,093,782	2,843	253	263	-10.30	
10/25/03	3,846,770	2,671	237	263	-25.55	
10/26/03	4,271,976	2,967	264	263	0.70	
10/27/03	4,146,433	2,879	256	263	-7.05	
10/28/03	4,177,256	2,901	258	263	-5.14	
10/29/03	4,306,018	2,990	266	263	2.80	2.80
10/30/03	3,934,125	2,732	243	263	-20.15	
10/31/03	2,364,996	1,642	146	263	-117.01	
11/01/03	2,108,032	1,464	130	263	-132.87	
11/02/03	3,923,309	2,725	242	263	-20.82	
11/03/03	4,112,944	2,856	254	263	-9.11	

11/04/03	3,644,962	2,531	225	263	-38.00	
11/05/03	1,499,633	1,041	93	263	-170.43	
11/06/03	3,665,698	2,546	226	263	-36.72	
11/07/03	4,234,595	2,941	261	263	-1.61	
11/08/03	4,288,757	2,978	265	263	1.74	1.74
11/09/03	4,287,944	2,978	265	263	1.69	1.69
11/10/03	4,238,294	2,943	262	263	-1.38	
11/11/03	4,130,585	2,868	255	263	-8.03	
11/12/03	4,075,200	2,830	252	263	-11.44	
11/13/03	3,883,517	2,697	240	263	-23.28	
11/14/03	3,797,666	2,637	234	263	-28.58	
11/15/03	4,049,424	2,812	250	263	-13.04	
11/16/03	4,063,256	2,822	251	263	-12.18	
11/17/03	4,056,579	2,817	250	263	-12.59	
11/18/03	4,064,176	2,822	251	263	-12.12	
11/19/03	4,151,213	2,883	256	263	-6.75	
11/20/03	3,930,217	2,729	243	263	-20.39	
11/21/03	3,268,330	2,270	202	263	-61.25	
11/22/03	2,828,662	1,964	175	263	-88.39	
11/23/03	3,360,359	2,334	207	263	-55.57	
11/24/03	4,018,144	2,790	248	263	-14.97	
11/25/03	3,671,816	2,550	227	263	-36.34	
11/26/03	3,476,718	2,414	215	263	-48.39	
11/27/03	3,532,325	2,453	218	263	-44.96	
11/28/03	3,465,161	2,406	214	263	-49.10	
11/29/03	3,539,919	2,458	219	263	-44.49	
11/30/03	3,487,491	2,422	215	263	-47.72	
12/01/03	3,480,542	2,417	215	263	-48.15	
12/02/03	3,459,278	2,402	214	263	-49.46	
12/03/03	3,429,253	2,381	212	263	-51.32	
12/04/03	3,055,745	2,122	189	263	-74.37	
12/05/03	3,518,639	2,443	217	263	-45.80	
12/06/03	3,790,510	2,632	234	263	-29.02	
12/07/03	3,349,888	2,326	207	263	-56.22	
12/08/03	3,546,684	2,463	219	263	-44.07	
12/09/03	2,826,756	1,963	174	263	-88.51	
12/10/03	3,137,016	2,178	194	263	-69.36	
12/11/03	3,834,000	2,663	237	263	-26.33	
12/12/03	2,949,984	2,049	182	263	-80.90	
12/13/03	3,735,995	2,594	231	263	-32.38	
12/14/03	3,440,106	2,389	212	263	-50.65	
12/15/03	3,429,593	2,382	212	263	-51.30	
12/16/03	1,855,990	1,289	115	263	-148.43	
12/17/03	3,903,036	2,710	241	263	-22.07	

12/18/03	1,819,694	1,264	112	263	-150.67		
12/19/03	3,038,514	2,110	188	263	-75.44		
12/20/03	3,796,218	2,636	234	263	-28.67		
12/21/03	3,735,961	2,594	231	263	-32.39		
12/22/03	3,155,260	2,191	195	263	-68.23		
12/23/03	1,961,467	1,362	121	263	-141.92		
12/24/03	3,662,989	2,544	226	263	-36.89		
12/25/03	3,738,925	2,596	231	263	-32.20		
12/26/03	3,341,122	2,320	206	263	-56.76		
12/27/03	2,828,578	1,964	175	263	-88.40		
12/28/03	3,290,036	2,285	203	263	-59.91		
12/29/03	3,796,259	2,636	234	263	-28.66		
12/30/03	3,515,687	2,441	217	263	-45.98		
12/31/03	3,511,967	2,439	217	263	-46.21	9812.05	490.60
01/01/04	3,601,762	2,501	222	263	-40.67		
01/02/04	3,422,454	2,377	211	263	-51.74		
01/03/04	2,328,638	1,617	144	263	-119.26		
01/04/04	2,740,606	1,903	169	263	-93.83		
01/05/04	3,234,379	2,246	200	263	-63.35		
01/06/04	3,211,136	2,230	198	263	-64.78		
01/07/04	3,425,768	2,379	211	263	-51.53		
01/08/04	3,464,592	2,406	214	263	-49.14		
01/09/04	3,386,070	2,351	209	263	-53.98		
01/10/04	3,308,450	2,298	204	263	-58.77		
01/11/04	3,250,896	2,258	201	263	-62.33		
01/12/04	3,206,000	2,226	198	263	-65.10		
01/13/04	3,054,416	2,121	189	263	-74.46		
01/14/04	3,190,320	2,216	197	263	-66.07		
01/15/04	3,155,209	2,191	195	263	-68.23		
01/16/04	3,195,011	2,219	197	263	-65.78		
01/17/04	3,080,659	2,139	190	263	-72.84		
01/18/04	2,909,412	2,020	180	263	-83.41		
01/19/04	3,247,170	2,255	200	263	-62.56		
01/20/04	3,160,943	2,195	195	263	-67.88		
01/21/04	2,888,927	2,006	178	263	-84.67		
01/22/04	2,996,444	2,081	185	263	-78.03		
01/23/04	3,235,545	2,247	200	263	-63.28		
01/24/04	3,195,025	2,219	197	263	-65.78		
01/25/04	2,926,257	2,032	181	263	-82.37		
01/26/04	3,165,946	2,199	195	263	-67.57		
01/27/04	3,233,944	2,246	200	263	-63.37		
01/28/04	3,162,094	2,196	195	263	-67.81		
01/29/04	3,093,023	2,148	191	263	-72.07		
01/30/04	3,135,894	2,178	194	263	-69.43		

01/31/04	2,950,762	2,049	182	263	-80.85
02/01/04	2,624,146	1,822	162	263	-101.02
02/02/04	1,700,755	1,181	105	263	-158.02
02/03/04	3,097,826	2,151	191	263	-71.78
02/04/04	3,104,819	2,156	192	263	-71.34
02/05/04	3,250,551	2,257	201	263	-62.35
02/06/04	2,950,647	2,049	182	263	-80.86
02/07/04	3,045,735	2,115	188	263	-74.99
02/08/04	3,024,000	2,100	187	263	-76.33
02/09/04	2,738,869	1,902	169	263	-93.93
02/10/04	2,636,668	1,831	163	263	-100.24
02/11/04	2,888,451	2,006	178	263	-84.70
02/12/04	1,293,290	898	80	263	-183.17
02/13/04	3,253,117	2,259	201	263	-62.19
02/14/04	3,148,121	2,186	194	263	-68.67
02/15/14	3,113,568	2,162	192	263	-70.80
02/16/04	2,971,308	2,063	183	263	-79.59
02/17/04	3,012,510	2,092	186	263	-77.04
02/18/04	3,157,763	2,193	195	263	-68.08
02/19/04	3,225,890	2,240	199	263	-63.87
02/20/04	3,077,110	2,137	190	263	-73.05
02/21/04	1,930,378	1,341	119	263	-143.84
02/22/04	2,409,112	1,673	149	263	-114.29
02/23/04	3,149,234	2,187	194	263	-68.60
02/24/04	3,406,319	2,365	210	263	-52.73
02/25/04	3,148,250	2,186	194	263	-68.66
02/26/04	3,075,379	2,136	190	263	-73.16
02/27/04	3,081,119	2,140	190	263	-72.81
02/28/04	3,069,046	2,131	189	263	-73.55
02/29/04	3,062,990	2,127	189	263	-73.93
03/01/04	2,806,098	1,949	173	263	-89.78
03/02/04	2,202,928	1,530	136	263	-127.02
03/03/04	3,028,082	2,103	187	263	-76.08
03/04/04	3,116,388	2,164	192	263	-70.63
03/05/04	3,006,017	2,088	186	263	-77.44
03/06/04	2,799,784	1,944	173	263	-90.17
03/07/04	2,807,488	1,950	173	263	-89.70
03/08/04	3,192,854	2,217	197	263	-65.91
03/09/04	3,391,192	2,355	209	263	-53.67
03/10/04	3,703,416	2,572	229	263	-34.39
03/11/04	3,452,630	2,398	213	263	-49.87
03/12/04	3,400,844	2,362	210	263	-53.07
03/13/04	3,452,566	2,398	213	263	-49.88
03/14/04	3,360,347	2,334	207	263	-55.57

03/15/04	3,326,699	2,310	205	263	-57.65	
03/16/04	3,157,079	2,192	195	263	-68.12	
03/17/04	3,078,548	2,138	190	263	-72.97	
03/18/04	4,129,816	2,868	255	263	-8.07	
03/19/04	4,137,695	2,873	255	263	-7.59	
03/20/04	4,060,849	2,820	251	263	-12.33	
03/21/04	4,060,023	2,819	251	263	-12.38	
03/22/04	4,116,341	2,859	254	263	-8.90	
03/23/04	4,206,482	2,921	260	263	-3.34	
03/24/04	4,285,730	2,976	265	263	1.55	1.55
03/25/04	4,343,397	3,016	268	263	5.11	5.11
03/26/04	4,321,692	3,001	267	263	3.77	3.77
03/27/04	4,332,980	3,009	267	263	4.47	4.47
03/28/04	4,209,793	2,923	260	263	-3.14	
03/29/04	4,161,000	2,890	257	263	-6.15	
03/30/04	4,193,638	2,912	259	263	-4.13	
03/31/04	4,280,421	2,973	264	263	1.22	1.22
04/01/04	4,358,560	3,027	269	263	6.05	6.05
04/02/04	4,360,762	3,028	269	263	6.18	6.18
04/03/04	4,305,283	2,990	266	263	2.76	2.76
04/04/04	4,133,937	2,871	255	263	-7.82	
04/05/04	4,352,628	3,023	269	263	5.68	5.68
04/06/04	4,382,794	3,044	271	263	7.54	7.54
04/07/04	4,258,851	2,958	263	263	-0.11	
04/08/04	4,150,585	2,882	256	263	-6.79	
04/09/04	4,123,354	2,863	255	263	-8.47	
04/10/04	3,961,424	2,751	245	263	-18.47	
04/11/04	3,932,701	2,731	243	263	-20.24	
04/12/04	3,911,187	2,716	241	263	-21.57	
04/13/04	3,964,570	2,753	245	263	-18.27	
04/14/04	4,027,821	2,797	249	263	-14.37	
04/15/04	4,675,410	3,247	289	330	25.61	25.61
04/16/04	4,967,198	3,449	307	330	43.62	43.62
04/17/04	5,284,535	3,670	326	330	63.21	63.21
04/18/04	5,290,292	3,674	327	330	63.56	63.56
04/19/04	5,246,464	3,643	324	330	60.86	60.86
04/20/04	5,326,168	3,699	329	330	65.78	65.78
04/21/04	5,388,396	3,742	333	330	69.62	69.62
04/22/04	5,311,777	3,689	328	330	64.89	64.89
04/23/04	5,253,988	3,649	324	330	61.32	61.32
04/24/04	5,311,395	3,688	328	330	64.86	64.86
04/25/04	5,258,112	3,651	325	330	61.57	61.57
04/26/04	5,276,000	3,664	326	330	62.68	62.68
04/27/04	5,428,494	3,770	335	330	72.09	72.09

04/28/04	5,752,298	3,995	355	330	92.08	92.08
04/29/04	5,630,216	3,910	348	330	84.54	84.54
04/30/04	5,632,852	3,912	348	330	84.71	84.71
05/01/04	5,705,044	3,962	352	330	89.16	89.16
05/02/04	5,782,769	4,016	357	330	93.96	93.96
05/03/04	6,721,330	4,668	415	330	151.90	151.90
05/04/04	7,219,904	5,014	446	330	182.67	182.67
05/05/04	7,284,914	5,059	450	440	186.69	186.69
05/06/04	7,250,687	5,035	448	440	184.57	184.57
05/07/04	7,165,132	4,976	442	440	179.29	179.29
05/08/04	7,164,376	4,975	442	440	179.25	179.25
05/09/04	7,019,867	4,875	433	440	170.33	170.33
05/10/04	6,835,677	4,747	422	440	158.96	158.96
05/11/04	6,788,176	4,714	419	440	156.02	156.02
05/12/04	6,725,210	4,670	415	440	152.14	152.14
05/13/04	6,565,730	4,560	405	440	142.29	142.29
05/14/04	6,495,451	4,511	401	440	137.95	137.95
05/15/04	6,394,437	4,441	395	440	131.72	131.72
05/16/04	6,427,600	4,464	397	440	133.77	133.77
05/17/04	6,411,095	4,452	396	440	132.75	132.75
05/18/04	6,371,109	4,424	393	440	130.28	130.28
05/19/04	6,457,926	4,485	399	440	135.64	135.64
05/20/04	6,455,203	4,483	398	440	135.47	135.47
05/21/04	6,671,474	4,633	412	440	148.82	148.82
05/22/04	6,960,177	4,833	430	440	166.64	166.64
05/23/04	7,518,723	5,221	464	440	201.12	201.12
05/24/04	7,439,625	5,166	459	440	196.24	196.24
05/25/04	7,310,080	5,076	451	440	188.24	188.24
05/26/04	7,368,313	5,117	455	440	191.83	191.83
05/27/04	7,324,125	5,086	452	440	189.11	189.11
05/28/04	7,425,807	5,157	458	440	195.38	195.38
05/29/04	7,893,707	5,482	487	440	224.27	224.27
05/30/04	7,929,483	5,507	489	440	226.47	226.47
05/31/04	7,788,783	5,409	481	440	217.79	217.79
06/01/04	7,766,061	5,393	479	440	216.39	216.39
06/02/04	7,541,456	5,237	466	440	202.52	202.52
06/03/04	7,463,962	5,183	461	440	197.74	197.74
06/04/04	7,458,973	5,180	460	440	197.43	197.43
06/05/04	7,435,699	5,164	459	440	195.99	195.99
06/06/04	7,455,727	5,178	460	440	197.23	197.23
06/07/04	7,493,121	5,204	463	440	199.54	199.54
06/08/04	7,434,568	5,163	459	440	195.92	195.92
06/09/04	7,358,801	5,110	454	440	191.25	191.25
06/10/04	7,979,226	5,541	493	440	229.54	229.54

06/11/04	8,153,110	5,662	503	440	240.28	240.28
06/12/04	7,146,021	4,963	441	440	178.11	178.11
06/13/04	7,117,847	4,943	439	440	176.37	176.37
06/14/04	6,747,214	4,686	416	440	153.49	153.49
06/15/04	6,554,024	4,551	405	440	141.57	141.57
06/16/04	6,490,000	4,507	401	440	137.62	137.62
06/17/04	6,332,239	4,397	391	440	127.88	127.88
06/18/04	6,259,359	4,347	386	440	123.38	123.38
06/19/04	6,171,225	4,286	381	440	117.94	117.94
06/20/04	6,119,434	4,250	378	440	114.74	114.74
06/21/04	6,119,002	4,249	378	440	114.72	114.72
06/22/04	6,894,792	4,788	426	440	162.60	162.60
06/23/04	7,344,453	5,100	453	440	190.36	190.36
06/24/04	7,302,025	5,071	451	440	187.74	187.74
06/25/04	7,289,616	5,062	450	440	186.98	186.98
06/26/04	7,274,288	5,052	449	440	186.03	186.03
06/27/04	7,183,934	4,989	443	440	180.45	180.45
06/28/04	7,147,480	4,964	441	440	178.20	178.20
06/29/04	7,104,003	4,933	439	440	175.52	175.52
06/30/04	7,076,086	4,914	437	440	173.80	173.80
07/01/04	7,098,254	4,929	438	440	175.16	175.16
07/02/04	7,021,752	4,876	433	440	170.44	170.44
07/03/04	5,014,767	3,482	310	263	46.55	46.55
07/04/04	3,915,410	2,719	242	220	-21.31	
07/05/04	3,949,406	2,743	244	220	-19.21	
07/06/04	3,787,896	2,630	234	220	-29.18	
07/07/04	3,716,754	2,581	229	220	-33.57	
07/08/04	3,655,389	2,538	226	220	-37.36	
07/09/04	3,616,670	2,512	223	220	-39.75	
07/10/04	3,599,972	2,500	222	220	-40.78	
07/11/04	3,575,692	2,483	221	220	-42.28	
07/12/04	3,575,000	2,483	221	220	-42.32	
07/13/04	3,553,697	2,468	219	220	-43.64	
07/14/04	3,532,540	2,453	218	220	-44.94	
07/15/04	3,512,105	2,439	217	220	-46.20	
07/16/04	3,494,509	2,427	216	220	-47.29	
07/17/04	3,464,937	2,406	214	220	-49.12	
07/18/04	3,497,961	2,429	216	220	-47.08	
07/19/04	3,597,945	2,499	222	220	-40.90	
07/20/04	3,556,415	2,470	220	220	-43.47	
07/21/04	3,405,039	2,365	210	200	-52.81	
07/22/04	3,272,180	2,272	202	200	-61.01	
07/23/04	3,239,973	2,250	200	200	-63.00	
07/24/04	3,216,742	2,234	199	200	-64.44	

07/25/04	3,226,413	2,241	199	200	-63.84
07/26/04	3,229,822	2,243	199	200	-63.63
07/27/04	3,205,542	2,226	198	200	-65.13
07/28/04	3,224,554	2,239	199	200	-63.95
07/29/04	3,231,411	2,244	199	200	-63.53
07/30/04	3,173,980	2,204	196	200	-67.08
07/31/04	3,161,860	2,196	195	200	-67.82
08/01/04	3,116,768	2,164	192	200	-70.61
08/02/04	3,082,871	2,141	190	200	-72.70
08/03/04	3,131,228	2,174	193	200	-69.71
08/04/04	3,110,649	2,160	192	200	-70.98
08/05/04	3,059,027	2,124	189	200	-74.17
08/06/04	3,014,922	2,094	186	200	-76.89
08/07/04	2,998,097	2,082	185	200	-77.93
08/08/04	2,982,691	2,071	184	200	-78.88
08/09/04	2,973,639	2,065	184	200	-79.44
08/10/04	2,977,886	2,068	184	200	-79.18
08/11/04	2,972,732	2,064	184	200	-79.50
08/12/04	2,952,046	2,050	182	200	-80.77
08/13/04	3,068,523	2,131	189	200	-73.59
08/14/04	3,171,658	2,203	196	200	-67.22
08/15/04	3,134,593	2,177	193	200	-69.51
08/16/04	3,134,538	2,177	193	200	-69.51
08/17/04	3,233,445	2,245	200	200	-63.40
08/18/04	3,513,353	2,440	217	200	-46.13
08/19/04	3,452,861	2,398	213	200	-49.86
08/20/04	3,428,560	2,381	212	200	-51.36
08/21/04	3,380,378	2,347	209	200	-54.33
08/22/04	3,335,949	2,317	206	200	-57.08
08/23/04	3,320,562	2,306	205	200	-58.03
08/24/04	3,307,630	2,297	204	200	-58.83
08/25/04	3,432,650	2,384	212	200	-51.11
08/26/04	3,502,590	2,432	216	200	-46.79
08/27/04	3,491,450	2,425	216	200	-47.48
08/28/04	3,397,864	2,360	210	200	-53.26
08/29/04	3,344,470	2,323	206	200	-56.55
08/30/04	3,302,083	2,293	204	200	-59.17
08/31/04	3,285,467	2,282	203	200	-60.19
09/01/04	3,264,624	2,267	202	200	-61.48
09/02/04	3,395,194	2,358	210	200	-53.42
09/03/04	3,436,979	2,387	212	200	-50.84
09/04/04	3,349,363	2,326	207	200	-56.25
09/05/04	3,304,389	2,295	204	200	-59.03
09/06/04	3,269,110	2,270	202	200	-61.20

09/07/04	3,243,450	2,252	200	200	-62.79	
09/08/04	3,200,739	2,223	198	200	-65.42	
09/09/04	3,144,847	2,184	194	200	-68.87	
09/10/04	3,108,081	2,158	192	200	-71.14	
09/11/04	3,110,411	2,160	192	200	-71.00	
09/12/04	3,148,443	2,186	194	200	-68.65	
09/13/04	3,320,292	2,306	205	200	-58.04	
09/14/04	3,696,438	2,567	228	228	-34.82	
09/15/04	3,913,059	2,717	242	244	-21.45	
09/16/04	3,783,790	2,628	234	244	-29.43	
09/17/04	3,690,317	2,563	228	244	-35.20	
09/18/04	3,602,508	2,502	222	244	-40.62	
09/19/04	3,661,481	2,543	226	244	-36.98	
09/20/04	3,906,358	2,713	241	244	-21.87	
09/21/04	4,050,750	2,813	250	244	-12.95	
09/22/04	3,810,000	2,646	235	263	-27.81	
09/23/04	4,305,857	2,990	266	263	2.79	2.79
09/24/04	4,261,014	2,959	263	263	0.03	
09/25/04	4,129,038	2,867	255	263	-8.12	
09/26/04	4,055,979	2,817	250	263	-12.63	
09/27/04	3,996,495	2,775	247	263	-16.30	
09/28/04	3,959,757	2,750	244	263	-18.57	
09/29/04	3,907,447	2,714	241	263	-21.80	
09/30/04	4,023,071	2,794	248	263	-14.66	
10/01/04	4,246,300	2,949	262	263	-0.88	
10/02/04	4,298,286	2,985	265	263	2.33	2.33
10/03/04	4,200,172	2,917	259	263	-3.73	
10/04/04	4,165,134	2,892	257	263	-5.89	
10/05/04	4,232,788	2,939	261	263	-1.72	
10/06/04	4,123,972	2,864	255	263	-8.43	
10/07/04	4,195,326	2,913	259	263	-4.03	
10/08/04	4,142,668	2,877	256	263	-7.28	
10/09/04	4,059,629	2,819	251	263	-12.41	
10/10/04	4,103,806	2,850	253	263	-9.68	
10/11/04	4,100,011	2,847	253	263	-9.91	
10/12/04	4,085,384	2,837	252	263	-10.82	
10/13/04	4,120,631	2,862	254	263	-8.64	
10/14/04	4,121,696	2,862	254	263	-8.57	
10/15/04	4,116,326	2,859	254	263	-8.91	
10/16/04	4,120,083	2,861	254	263	-8.67	
10/17/04	4,089,501	2,840	252	263	-10.56	
10/18/04	4,132,260	2,870	255	263	-7.92	
10/19/04	4,091,642	2,841	253	263	-10.43	
10/20/04	4,112,864	2,856	254	263	-9.12	

10/21/04	4,128,141	2,867	255	263	-8.18	
10/22/04	4,099,986	2,847	253	263	-9.91	
10/23/04	4,106,298	2,852	253	263	-9.52	
10/24/04	4,128,333	2,867	255	263	-8.16	
10/25/04	3,856,470	2,678	238	263	-24.95	
10/26/04	4,074,501	2,830	252	263	-11.49	
10/27/04	4,179,214	2,902	258	263	-5.02	
10/28/04	4,282,294	2,974	264	263	1.34	1.34
10/29/04	4,491,693	3,119	277	263	14.27	14.27
10/30/04	4,376,501	3,039	270	263	7.15	7.15
10/31/04	4,316,890	2,998	266	263	3.47	3.47
11/01/04	4,098,375	2,846	253	263	-10.01	
11/02/04	4,065,768	2,823	251	263	-12.03	
11/03/04	4,217,902	2,929	260	263	-2.64	
11/04/04	4,116,789	2,859	254	263	-8.88	
11/05/04	4,131,655	2,869	255	263	-7.96	
11/06/04	4,190,533	2,910	259	263	-4.33	
11/07/04	4,170,057	2,896	257	263	-5.59	
11/08/04	4,180,760	2,903	258	263	-4.93	
11/09/04	4,242,395	2,946	262	263	-1.12	
11/10/04	4,258,783	2,957	263	263	-0.11	
11/11/04	4,157,655	2,887	257	263	-6.35	
11/12/04	4,014,537	2,788	248	263	-15.19	
11/13/04	3,760,316	2,611	232	263	-30.88	
11/14/04	3,536,585	2,456	218	263	-44.69	
11/15/04	3,794,076	2,635	234	263	-28.80	
11/16/04	4,193,437	2,912	259	263	-4.15	
11/17/04	4,196,048	2,914	259	263	-3.98	
11/18/04	3,404,331	2,364	210	263	-52.86	
11/19/04	4,183,343	2,905	258	263	-4.77	
11/20/04	3,478,581	2,416	215	263	-48.27	
11/21/04	1,187,737	825	73	263	-189.68	
11/22/04	4,131,000	2,869	255	263	-8.00	
11/23/04	5,002,716	3,474	309	263	45.81	45.81
11/24/04	4,604,761	3,198	284	263	21.24	21.24
11/25/04	4,396,595	3,053	271	263	8.39	8.39
11/26/04	4,176,684	2,900	258	263	-5.18	
11/27/04	2,051,188	1,424	127	263	-136.38	
11/28/04	4,217,986	2,929	260	263	-2.63	
11/29/04	919,442	639	57	263	-206.24	
11/30/04	3,622,617	2,516	224	263	-39.38	
12/01/04	4,485,422	3,115	277	263	13.88	13.88
12/02/04	4,453,934	3,093	275	263	11.93	11.93
12/03/04	4,402,303	3,057	272	263	8.75	8.75

12/04/04	4,331,500	3,008	267	263	4.38	4.38		
12/05/04	3,878,549	2,693	239	263	-23.58			
12/06/04	4,197,919	2,915	259	263	-3.87			
12/07/04	4,188,765	2,909	259	263	-4.43			
12/08/04	4,101,336	2,848	253	263	-9.83			
12/09/04	4,113,269	2,856	254	263	-9.09			
12/10/04	4,115,037	2,858	254	263	-8.99			
12/11/04	4,165,735	2,893	257	263	-5.86			
12/12/04	4,187,485	2,908	258	263	-4.51			
12/13/04	2,490,496	1,730	154	263	-109.27			
12/14/04	4,153,647	2,884	256	263	-6.60			
12/15/04	4,111,239	2,855	254	263	-9.22			
12/16/04	3,476,218	2,414	215	263	-48.42			
12/17/04	4,018,423	2,791	248	263	-14.95			
12/18/04	3,622,283	2,515	224	263	-39.40			
12/19/04	4,054,160	2,815	250	263	-12.74			
12/20/04	3,828,680	2,659	236	263	-26.66			
12/21/04	2,882,761	2,002	178	263	-85.05			
12/22/04	3,002,248	2,085	185	263	-77.68			
12/23/04	1,301,870	904	80	263	-182.64			
12/24/04	3,932,462	2,731	243	263	-20.26			
12/25/04	4,188,801	2,909	259	263	-4.43			
12/26/04	4,106,067	2,851	253	263	-9.54			
12/27/04	3,976,020	2,761	245	263	-17.57			
12/28/04	3,148,597	2,187	194	263	-68.64			
12/29/04	3,887,596	2,700	240	263	-23.02			
12/30/04	3,957,803	2,748	244	263	-18.69			
12/31/04	2,961,135	2,056	183	263	-80.21		12005.26	600.26
01/01/05	2,470,813	1,716	153	263	-110.48			
01/02/05	3,343,280	2,322	206	263	-56.62			
01/03/05	3,795,935	2,636	234	263	-28.68			
01/04/05	3,485,213	2,420	215	263	-47.86			
01/05/05	2,543,526	1,766	157	263	-105.99			
01/06/05	2,827,429	1,963	175	263	-88.47			
01/07/05	3,604,159	2,503	222	263	-40.52			
01/08/05	3,811,821	2,647	235	263	-27.70			
01/09/05	3,854,419	2,677	238	263	-25.07			
01/10/05	3,624,716	2,517	224	263	-39.25			
01/11/05	3,516,618	2,442	217	263	-45.92			
01/12/05	3,430,810	2,383	212	263	-51.22			
01/13/05	3,355,423	2,330	207	263	-55.88			
01/14/05	3,403,224	2,363	210	263	-52.92			
01/15/05	3,117,891	2,165	192	263	-70.54			
01/16/05	3,436,283	2,386	212	263	-50.88			

01/17/05	3,335,851	2,317	206	263	-57.08
01/18/05	3,428,343	2,381	212	263	-51.37
01/19/05	3,710,303	2,577	229	263	-33.97
01/20/05	3,806,893	2,644	235	263	-28.01
01/21/05	3,876,125	2,692	239	263	-23.73
01/22/05	3,691,093	2,563	228	263	-35.15
01/23/05	3,575,367	2,483	221	263	-42.30
01/24/05	3,493,796	2,426	216	263	-47.33
01/25/05	3,421,169	2,376	211	263	-51.82
01/26/05	3,375,155	2,344	208	263	-54.66
01/27/05	3,358,990	2,333	207	263	-55.65
01/28/05	3,420,992	2,376	211	263	-51.83
01/29/05	3,337,791	2,318	206	263	-56.96
01/30/05	3,318,834	2,305	205	263	-58.13
01/31/05	3,261,374	2,265	201	263	-61.68
02/01/05	3,267,086	2,269	202	263	-61.33
02/02/05	3,219,716	2,236	199	263	-64.25
02/03/05	3,213,539	2,232	198	263	-64.63
02/04/05	3,272,979	2,273	202	263	-60.96
02/05/05	3,353,688	2,329	207	263	-55.98
02/06/05	2,443,509	1,697	151	263	-112.17
02/07/05	2,916,564	2,025	180	263	-82.97
02/08/05	3,368,497	2,339	208	263	-55.07
02/09/05	2,847,504	1,977	176	263	-87.23
02/10/05	3,022,927	2,099	187	263	-76.40
02/11/05	2,934,727	2,038	181	263	-81.84
02/12/05	3,615,368	2,511	223	263	-39.83
02/13/05	3,447,807	2,394	213	263	-50.17
02/14/05	3,421,713	2,376	211	263	-51.78
02/15/05	3,010,273	2,090	186	263	-77.18
02/16/05	1,734,321	1,204	107	263	-155.94
02/17/05	3,301,322	2,293	204	263	-59.21
02/18/05	3,352,349	2,328	207	263	-56.06
02/19/05	3,466,359	2,407	214	263	-49.03
02/20/05	3,403,840	2,364	210	263	-52.89
02/21/05	3,313,746	2,301	205	263	-58.45
02/22/05	3,146,921	2,185	194	263	-68.75
02/23/05	2,653,325	1,843	164	263	-99.21
02/24/05	3,059,279	2,124	189	263	-74.16
02/25/05	3,143,077	2,183	194	263	-68.98
02/26/05	3,136,177	2,178	194	263	-69.41
02/27/05	3,073,337	2,134	190	263	-73.29
02/28/05	3,080,038	2,139	190	263	-72.87
03/01/05	3,165,658	2,198	195	263	-67.59

03/02/05	3,103,237	2,155	192	263	-71.44	
03/03/05	3,105,498	2,157	192	263	-71.30	
03/04/05	3,105,757	2,157	192	263	-71.29	
03/05/05	3,144,343	2,184	194	263	-68.90	
03/06/05	3,218,859	2,235	199	263	-64.31	
03/07/05	3,276,873	2,276	202	263	-60.72	
03/08/05	3,427,364	2,380	212	263	-51.43	
03/09/05	3,561,152	2,473	220	263	-43.18	
03/10/05	3,661,943	2,543	226	263	-36.95	
03/11/05	3,669,792	2,548	227	263	-36.47	
03/12/05	3,701,690	2,571	228	263	-34.50	
03/13/05	3,473,715	2,412	214	263	-48.57	
03/14/05	3,617,542	2,512	223	263	-39.69	
03/15/05	3,476,728	2,414	215	263	-48.39	
03/16/05	3,613,858	2,510	223	263	-39.92	
03/17/05	3,606,870	2,505	223	263	-40.35	
03/18/05	2,726,482	1,893	168	263	-94.70	
03/19/05	3,536,430	2,456	218	263	-44.70	
03/20/05	3,577,763	2,485	221	263	-42.15	
03/21/05	3,585,989	2,490	221	263	-41.64	
03/22/05	3,579,564	2,486	221	263	-42.04	
03/23/05	3,513,088	2,440	217	263	-46.14	
03/24/05	2,861,745	1,987	177	263	-86.35	
03/25/05	2,156,847	1,498	133	263	-129.86	
03/26/05	3,131,572	2,175	193	263	-69.69	
03/27/05	3,610,119	2,507	223	263	-40.15	
03/28/05	3,675,198	2,552	227	263	-36.14	
03/29/05	3,669,959	2,549	227	263	-36.46	
03/30/05	3,648,305	2,534	225	263	-37.80	
03/31/05	3,626,944	2,519	224	263	-39.11	
04/01/05	3,538,175	2,457	218	263	-44.59	
04/02/05	3,670,495	2,549	227	263	-36.43	
04/03/05	3,580,492	2,486	221	263	-41.98	
04/04/05	3,797,625	2,637	234	263	-28.58	
04/05/05	3,998,893	2,777	247	263	-16.15	
04/06/05	4,229,781	2,937	261	263	-1.90	
04/07/05	4,490,235	3,118	277	263	14.18	14.18
04/08/05	4,675,540	3,247	289	263	25.61	25.61
04/09/05	4,610,513	3,202	285	263	21.60	21.60
04/10/05	4,430,191	3,077	273	263	10.47	10.47
04/11/05	4,560,816	3,167	282	263	18.53	18.53
04/12/05	5,098,852	3,541	315	263	51.74	51.74
04/13/05	5,347,053	3,713	330	263	67.07	67.07
04/14/05	5,581,675	3,876	345	263	81.55	81.55

04/15/05	5,297,805	3,679	327	263	64.03	64.03
04/16/05	5,353,870	3,718	330	263	67.49	67.49
04/17/05	5,530,230	3,840	341	263	78.37	78.37
04/18/05	5,861,636	4,071	362	263	98.83	98.83
04/19/05	5,630,581	3,910	348	263	84.57	84.57
04/20/05	5,408,870	3,756	334	263	70.88	70.88
04/21/05	5,256,166	3,650	324	263	61.45	61.45
04/22/05	5,220,703	3,625	322	263	59.27	59.27
04/23/05	5,510,082	3,826	340	263	77.13	77.13
04/24/05	5,890,100	4,090	364	263	100.59	100.59
04/25/05	6,296,105	4,372	389	263	125.65	125.65
04/26/05	6,243,870	4,336	385	263	122.42	122.42
04/27/05	6,041,655	4,196	373	263	109.94	109.94
04/28/05	5,790,335	4,021	357	263	94.43	94.43
04/29/05	5,376,657	3,734	332	263	68.89	68.89
04/30/05	6,107,240	4,241	377	263	113.99	113.99
05/01/05	5,096,063	3,539	315	263	51.57	51.57
05/02/05	6,066,647	4,213	374	263	111.48	111.48
05/03/05	6,068,535	4,214	375	263	111.60	111.60
05/04/05	6,241,460	4,334	385	263	122.28	122.28
05/05/05	6,528,207	4,533	403	263	139.98	139.98
05/06/05	6,904,009	4,794	426	263	163.17	163.17
05/07/05	7,161,030	4,973	442	263	179.04	179.04
05/08/05	7,452,612	5,175	460	263	197.04	197.04
05/09/05	7,508,031	5,214	463	263	200.46	200.46
05/10/05	7,652,492	5,314	472	263	209.38	209.38
05/11/05	7,659,671	5,319	473	263	209.82	209.82
05/12/05	7,323,966	5,086	452	263	189.10	189.10
05/13/05	7,100,454	4,931	438	263	175.30	175.30
05/14/05	7,078,926	4,916	437	263	173.97	173.97
05/15/05	7,158,478	4,971	442	263	178.88	178.88
05/16/05	7,398,044	5,138	457	263	193.67	193.67
05/17/05	7,591,172	5,272	469	263	205.59	205.59
05/18/05	7,389,492	5,132	456	263	193.14	193.14
05/19/05	7,469,406	5,187	461	263	198.07	198.07
05/20/05	7,706,740	5,352	476	263	212.72	212.72
05/21/05	8,097,319	5,623	500	263	236.83	236.83
05/22/05	7,902,046	5,488	488	263	224.78	224.78
05/23/05	7,960,499	5,528	491	263	228.39	228.39
05/24/05	7,800,433	5,417	482	263	218.51	218.51
05/25/05	7,563,053	5,252	467	263	203.86	203.86
05/26/05	7,370,495	5,118	455	263	191.97	191.97
05/27/05	7,234,410	5,024	447	263	183.57	183.57
05/28/05	7,156,777	4,970	442	263	178.78	178.78

05/29/05	7,105,729	4,935	439	263	175.63	175.63
05/30/05	7,020,658	4,875	433	263	170.37	170.37
05/31/05	6,933,863	4,815	428	263	165.02	165.02
06/01/05	7,193,616	4,996	444	263	181.05	181.05
06/02/05	7,427,607	5,158	458	263	195.49	195.49
06/03/05	8,056,525	5,595	497	263	234.32	234.32
06/04/05	8,478,046	5,888	523	263	260.34	260.34
06/05/05	8,281,716	5,751	511	263	248.22	248.22
06/06/05	8,422,881	5,849	520	263	256.93	256.93
06/07/05	8,592,356	5,967	530	263	267.39	267.39
06/08/05	8,696,618	6,039	537	263	273.83	273.83
06/09/05	8,714,019	6,051	538	263	274.90	274.90
06/10/05	8,572,154	5,953	529	263	266.15	266.15
06/11/05	8,473,561	5,884	523	263	260.06	260.06
06/12/05	8,714,267	6,052	538	263	274.92	274.92
06/13/05	8,952,674	6,217	553	263	289.63	289.63
06/14/05	8,717,853	6,054	538	263	275.14	275.14
06/15/05	8,565,031	5,948	529	263	265.71	265.71
06/16/05	8,448,413	5,867	522	263	258.51	258.51
06/17/05	8,349,667	5,798	515	263	252.41	252.41
06/18/05	8,201,361	5,695	506	263	243.26	243.26
06/19/05	7,990,127	5,549	493	263	230.22	230.22
06/20/05	8,173,652	5,676	505	263	241.55	241.55
06/21/05	8,321,062	5,779	514	263	250.65	250.65
06/22/05	8,230,108	5,715	508	263	245.03	245.03
06/23/05	8,160,793	5,667	504	263	240.75	240.75
06/24/05	8,036,013	5,581	496	263	233.05	233.05
06/25/05	7,863,196	5,461	485	263	222.38	222.38
06/26/05	7,817,922	5,429	483	263	219.59	219.59
06/27/05	6,752,851	4,689	417	263	153.84	153.84
06/28/05	5,722,734	3,974	353	263	90.26	90.26
06/29/05	5,646,828	3,921	349	263	85.57	85.57
06/30/05	5,570,419	3,868	344	263	80.85	80.85
07/01/05	5,489,593	3,812	339	263	75.86	75.86
07/02/05	5,432,649	3,773	335	263	72.35	72.35
07/03/05	5,376,247	3,734	332	263	68.87	68.87
07/04/05	5,321,254	3,695	328	263	65.47	65.47
07/05/05	5,266,681	3,657	325	263	62.10	62.10
07/06/05	5,204,333	3,614	321	263	58.26	58.26
07/07/05	5,178,114	3,596	320	263	56.64	56.64
07/08/05	5,158,523	3,582	318	263	55.43	55.43
07/09/05	5,064,296	3,517	313	263	49.61	49.61
07/10/05	5,082,179	3,529	314	263	50.71	50.71
07/11/05	4,562,900	3,169	282	263	18.66	18.66

07/12/05	4,197,198	2,915	259	263	-3.91	
07/13/05	4,162,704	2,891	257	263	-6.04	
07/14/05	4,105,369	2,851	253	263	-9.58	
07/15/05	4,078,761	2,832	252	263	-11.22	
07/16/05	4,091,876	2,842	253	263	-10.42	
07/17/05	4,066,746	2,824	251	263	-11.97	
07/18/05	4,183,541	2,905	258	263	-4.76	
07/19/05	4,252,007	2,953	262	263	-0.53	
07/20/05	4,300,330	2,986	265	263	2.45	2.45
07/21/05	4,210,617	2,924	260	263	-3.09	
07/22/05	4,240,277	2,945	262	263	-1.25	
07/23/05	4,466,139	3,101	276	263	12.69	12.69
07/24/05	4,357,522	3,026	269	263	5.98	5.98
07/25/05	4,531,755	3,147	280	263	16.74	16.74
07/26/05	4,595,016	3,191	284	263	20.64	20.64
07/27/05	4,502,809	3,127	278	263	14.95	14.95
07/28/05	4,444,646	3,087	274	263	11.36	11.36
07/29/05	4,437,898	3,082	274	263	10.94	10.94
07/30/05	4,413,310	3,065	272	263	9.43	9.43
07/31/05	4,398,490	3,055	272	263	8.51	8.51
08/01/05	4,417,213	3,068	273	263	9.67	9.67
08/02/05	4,435,956	3,081	274	263	10.82	10.82
08/03/05	4,576,384	3,178	282	263	19.49	19.49
08/04/05	4,432,966	3,078	274	263	10.64	10.64
08/05/05	4,364,442	3,031	269	263	6.41	6.41
08/06/05	4,324,086	3,003	267	263	3.92	3.92
08/07/05	4,284,366	2,975	264	263	1.47	1.47
08/08/05	4,291,826	2,980	265	263	1.93	1.93
08/09/05	2,841,994	1,974	175	263	-87.57	
08/10/05	0	0	0	263	-263.00	
08/11/05	0	0	0	263	-263.00	
08/12/05	2,353,416	1,634	145	263	-117.73	
08/13/05	4,331,640	3,008	267	263	4.39	4.39
08/14/05	4,279,355	2,972	264	263	1.16	1.16
08/15/05	4,222,680	2,932	261	263	-2.34	
08/16/05	4,186,705	2,907	258	263	-4.56	
08/17/05	4,204,438	2,920	260	263	-3.47	
08/18/05	4,236,811	2,942	262	263	-1.47	
08/19/05	4,180,750	2,903	258	263	-4.93	
08/20/05	4,163,243	2,891	257	263	-6.01	
08/21/05	4,131,461	2,869	255	263	-7.97	
08/22/05	4,108,836	2,853	254	263	-9.37	
08/23/05	4,089,226	2,840	252	263	-10.58	
08/24/05	4,107,431	2,852	254	263	-9.45	

08/25/05	4,097,795	2,846	253	263	-10.05	
08/26/05	4,057,312	2,818	250	263	-12.55	
08/27/05	4,040,536	2,806	249	263	-13.58	
08/28/05	4,024,953	2,795	248	263	-14.55	
08/29/05	4,000,157	2,778	247	263	-16.08	
08/30/05	4,180,842	2,903	258	263	-4.92	
08/31/05	4,189,053	2,909	259	263	-4.42	
09/01/05	5,131,295	3,563	317	263	53.75	53.75
09/02/05	5,633,734	3,912	348	376	84.76	84.76
09/03/05	4,103,635	2,850	253	376	-9.69	
09/04/05	4,253,558	2,954	263	263	-0.43	
09/05/05	4,414,610	3,066	273	263	9.51	9.51
09/06/05	4,392,269	3,050	271	263	8.13	8.13
09/07/05	4,356,368	3,025	269	263	5.91	5.91
09/08/05	4,300,286	2,986	265	263	2.45	2.45
09/09/05	4,263,410	2,961	263	263	0.17	
09/10/05	4,262,801	2,960	263	263	0.14	
09/11/05	4,559,040	3,166	281	263	18.42	18.42
09/12/05	4,354,537	3,024	269	263	5.80	5.80
09/13/05	4,318,777	2,999	267	263	3.59	3.59
09/14/05	4,308,469	2,992	266	263	2.95	2.95
09/15/05	4,267,103	2,963	263	263	0.40	
09/16/05	4,251,248	2,952	262	263	-0.58	
09/17/05	4,290,547	2,980	265	263	1.85	1.85
09/18/05	4,412,897	3,065	272	263	9.40	9.40
09/19/05	4,308,406	2,992	266	263	2.95	2.95
09/20/05	4,228,851	2,937	261	263	-1.96	
09/21/05	4,199,394	2,916	259	263	-3.78	
09/22/05	4,207,386	2,922	260	263	-3.28	
09/23/05	4,317,640	2,998	267	263	3.52	3.52
09/24/05	4,731,922	3,286	292	263	29.09	29.09
09/25/05	4,445,194	3,087	274	263	11.39	11.39
09/26/05	4,296,697	2,984	265	263	2.23	2.23
09/27/05	4,206,922	2,921	260	263	-3.31	
09/28/05	4,161,473	2,890	257	263	-6.12	
09/29/05	4,121,987	2,862	254	263	-8.56	
09/30/05	4,047,418	2,811	250	263	-13.16	
10/01/05	3,965,593	2,754	245	263	-18.21	
10/02/05	4,068,285	2,825	251	263	-11.87	
10/03/05	4,215,599	2,927	260	263	-2.78	
10/04/05	4,256,890	2,956	263	263	-0.23	
10/05/05	4,788,204	3,325	296	263	32.57	32.57
10/06/05	4,914,577	3,413	303	263	40.37	40.37
10/07/05	4,377,855	3,040	270	263	7.24	7.24

10/08/05	4,442,552	3,085	274	263	11.23	11.23
10/09/05	4,468,027	3,103	276	263	12.80	12.80
10/10/05	4,332,068	3,008	267	263	4.41	4.41
10/11/05	4,156,505	2,886	257	263	-6.43	
10/12/05	4,283,476	2,975	264	263	1.41	1.41
10/13/05	4,258,384	2,957	263	263	-0.14	
10/14/05	4,278,185	2,971	264	263	1.09	1.09
10/15/05	4,279,684	2,972	264	263	1.18	1.18
10/16/05	4,171,273	2,897	257	263	-5.51	
10/17/05	4,086,556	2,838	252	263	-10.74	
10/18/05	4,047,237	2,811	250	263	-13.17	
10/19/05	4,190,506	2,910	259	263	-4.33	
10/20/05	4,280,596	2,973	264	263	1.23	1.23
10/21/05	4,284,113	2,975	264	263	1.45	1.45
10/22/05	4,318,165	2,999	267	263	3.55	3.55
10/23/05	4,304,735	2,989	266	263	2.72	2.72
10/24/05	4,290,976	2,980	265	263	1.88	1.88
10/25/05	4,276,808	2,970	264	263	1.00	1.00
10/26/05	4,257,974	2,957	263	263	-0.16	
10/27/05	4,266,186	2,963	263	263	0.34	
10/28/05	4,362,293	3,029	269	263	6.28	6.28
10/29/05	4,305,311	2,990	266	263	2.76	2.76
10/30/05	4,469,644	3,104	276	263	12.90	12.90
10/31/05	4,279,388	2,972	264	263	1.16	1.16
11/01/05	4,290,954	2,980	265	263	1.87	1.87
11/02/05	4,509,881	3,132	278	263	15.39	15.39
11/03/05	4,540,248	3,153	280	263	17.26	17.26
11/04/05	4,121,483	2,862	254	263	-8.59	
11/05/05	4,249,622	2,951	262	263	-0.68	
11/06/05	4,259,098	2,958	263	263	-0.09	
11/07/05	4,282,646	2,974	264	263	1.36	1.36
11/08/05	4,297,290	2,984	265	263	2.26	2.26
11/09/05	3,893,912	2,704	240	263	-22.64	
11/10/05	4,329,522	3,007	267	263	4.25	4.25
11/11/05	4,421,000	3,070	273	263	9.90	9.90
11/12/05	4,329,521	3,007	267	263	4.25	4.25
11/13/05	4,431,497	3,077	274	263	10.55	10.55
11/14/05	4,309,357	2,993	266	263	3.01	3.01
11/15/05	2,902,648	2,016	179	263	-83.82	
11/16/05	4,402,974	3,058	272	263	8.79	8.79
11/17/05	4,388,043	3,047	271	263	7.87	7.87
11/18/05	4,112,035	2,856	254	263	-9.17	
11/19/05	4,338,176	3,013	268	263	4.79	4.79
11/20/05	4,203,032	2,919	259	263	-3.55	

11/21/05	4,320,789	3,001	267	263	3.72	3.72		
11/22/05	4,149,893	2,882	256	263	-6.83			
11/23/05	4,137,269	2,873	255	263	-7.61			
11/24/05	3,999,384	2,777	247	263	-16.12			
11/25/05	4,045,125	2,809	250	263	-13.30			
11/26/05	4,335,198	3,011	268	263	4.60	4.60		
11/27/05	4,340,777	3,014	268	263	4.95	4.95		
11/28/05	4,334,839	3,010	268	263	4.58	4.58		
11/29/05	3,498,176	2,429	216	263	-47.06			
11/30/05	4,392,685	3,050	271	263	8.15	8.15		
12/01/05	4,341,305	3,015	268	263	4.98	4.98		
12/02/05	4,341,763	3,015	268	263	5.01	5.01		
12/03/05	4,328,280	3,006	267	263	4.18	4.18		
12/04/05	4,367,469	3,033	270	263	6.60	6.60		
12/05/05	4,351,441	3,022	269	263	5.61	5.61		
12/06/05	3,984,220	2,767	246	263	-17.06			
12/07/05	3,650,778	2,535	225	263	-37.64			
12/08/05	4,470,148	3,104	276	263	12.94	12.94		
12/09/05	4,569,642	3,173	282	263	19.08	19.08		
12/10/05	4,447,636	3,089	275	263	11.55	11.55		
12/11/05	4,352,268	3,022	269	263	5.66	5.66		
12/12/05	4,325,672	3,004	267	263	4.02	4.02		
12/13/05	4,343,066	3,016	268	263	5.09	5.09		
12/14/05	4,390,904	3,049	271	263	8.04	8.04		
12/15/05	3,962,833	2,752	245	263	-18.38			
12/16/05	4,374,700	3,038	270	263	7.04	7.04		
12/17/05	3,805,598	2,643	235	263	-28.09			
12/18/05	3,903,272	2,711	241	263	-22.06			
12/19/05	4,408,508	3,061	272	263	9.13	9.13		
12/20/05	4,452,507	3,092	275	263	11.85	11.85		
12/21/05	4,371,246	3,036	270	263	6.83	6.83		
12/22/05	4,415,103	3,066	273	263	9.54	9.54		
12/23/05	4,407,418	3,061	272	263	9.06	9.06		
12/24/05	4,318,308	2,999	267	263	3.56	3.56		
12/25/05	4,302,931	2,988	266	263	2.61	2.61		
12/26/05	4,307,576	2,991	266	263	2.90	2.90		
12/27/05	4,314,750	2,996	266	263	3.34	3.34		
12/28/05	4,307,491	2,991	266	263	2.89	2.89		
12/29/05	4,371,182	3,036	270	263	6.83	6.83		
12/30/05	4,316,894	2,998	266	263	3.47	3.47		
12/31/05	4,342,008	3,015	268	263	5.03	5.03	15669.50	783.47
01/01/06	4,314,643	2,996	266	263	3.34	3.34		
01/02/06	4,309,096	2,992	266	263	2.99	2.99		
01/03/06	4,330,970	3,008	267	263	4.34	4.34		

01/04/06	4,302,319	2,988	266	263	2.58	2.58
01/05/06	3,467,777	2,408	214	263	-48.94	
01/06/06	4,342,365	3,016	268	263	5.05	5.05
01/07/06	4,309,428	2,993	266	263	3.01	3.01
01/08/06	4,315,665	2,997	266	263	3.40	3.40
01/09/06	2,451,834	1,703	151	263	-111.65	
01/10/06	4,456,994	3,095	275	263	12.12	12.12
01/11/06	4,357,893	3,026	269	263	6.01	6.01
01/12/06	4,088,102	2,839	252	263	-10.65	
01/13/06	3,131,417	2,175	193	263	-69.70	
01/14/06	4,352,907	3,023	269	263	5.70	5.70
01/15/06	4,327,520	3,005	267	263	4.13	4.13
01/16/06	3,025,329	2,101	187	263	-76.25	
01/17/06	4,202,919	2,919	259	263	-3.56	
01/18/06	4,373,124	3,037	270	263	6.95	6.95
01/19/06	3,902,217	2,710	241	263	-22.12	
01/20/06	3,869,010	2,687	239	263	-24.17	
01/21/06	4,182,251	2,904	258	263	-4.84	
01/22/06	1,764,748	1,226	109	263	-154.06	
01/23/06	4,460,961	3,098	275	263	12.37	12.37
01/24/06	4,175,516	2,900	258	263	-5.25	
01/25/06	3,540,310	2,459	219	263	-44.46	
01/26/06	4,342,462	3,016	268	263	5.05	5.05
01/27/06	4,356,422	3,025	269	263	5.91	5.91
01/28/06	3,564,784	2,476	220	263	-42.95	
01/29/06	4,322,073	3,001	267	263	3.79	3.79
01/30/06	4,242,940	2,946	262	263	-1.09	
01/31/06	4,272,700	2,967	264	263	0.75	
02/01/06	4,242,378	2,946	262	263	-1.12	
02/02/06	4,206,388	2,921	260	263	-3.35	
02/03/06	3,102,506	2,155	192	263	-71.49	
02/04/06	3,612,762	2,509	223	263	-39.99	
02/05/06	4,238,589	2,943	262	263	-1.36	
02/06/06	2,285,818	1,587	141	263	-121.90	
02/07/06	3,957,783	2,748	244	263	-18.69	
02/08/06	4,099,063	2,847	253	263	-9.97	
02/09/06	4,149,282	2,881	256	263	-6.87	
02/10/06	2,540,013	1,764	157	263	-106.21	
02/11/06	1,672,778	1,162	103	263	-159.74	
02/12/06	4,077,670	2,832	252	263	-11.29	
02/13/06	4,322,329	3,002	267	263	3.81	3.81
02/14/06	4,316,401	2,998	266	263	3.44	3.44
02/15/06	3,950,281	2,743	244	263	-19.16	
02/16/06	3,002,051	2,085	185	263	-77.69	

02/17/06	3,215,133	2,233	198	263	-64.54	
02/18/06	3,020,368	2,097	186	263	-76.56	
02/19/06	3,473,137	2,412	214	263	-48.61	
02/20/06	3,840,957	2,667	237	263	-25.90	
02/21/06	4,098,479	2,846	253	263	-10.01	
02/22/06	4,030,590	2,799	249	263	-14.20	
02/23/06	3,895,223	2,705	240	263	-22.55	
02/24/06	3,808,697	2,645	235	263	-27.90	
02/25/06	3,669,985	2,549	227	263	-36.46	
02/26/06	3,670,082	2,549	227	263	-36.45	
02/27/06	3,914,373	2,718	242	263	-21.37	
02/28/06	4,192,118	2,911	259	263	-4.23	
03/01/06	4,083,690	2,836	252	263	-10.92	
03/02/06	3,716,003	2,581	229	263	-33.62	
03/03/06	3,920,659	2,723	242	263	-20.98	
03/04/06	4,012,214	2,786	248	263	-15.33	
03/05/06	3,902,008	2,710	241	263	-22.14	
03/06/06	3,934,634	2,732	243	263	-20.12	
03/07/06	3,990,478	2,771	246	263	-16.67	
03/08/06	4,011,606	2,786	248	263	-15.37	
03/09/06	4,048,658	2,812	250	263	-13.08	
03/10/06	3,254,615	2,260	201	263	-62.10	
03/11/06	2,211,653	1,536	137	263	-126.48	
03/12/06	4,357,607	3,026	269	263	5.99	5.99
03/13/06	3,290,732	2,285	203	263	-59.87	
03/14/06	4,005,673	2,782	247	263	-15.74	
03/15/06	4,163,897	2,892	257	263	-5.97	
03/16/06	3,795,290	2,636	234	263	-28.72	
03/17/06	3,976,707	2,762	245	263	-17.52	
03/18/06	3,900,302	2,709	241	263	-22.24	
03/19/06	3,863,422	2,683	238	263	-24.52	
03/20/06	3,787,755	2,630	234	263	-29.19	
03/21/06	3,276,082	2,275	202	263	-60.77	
03/22/06	3,768,762	2,617	233	263	-30.36	
03/23/06	3,741,601	2,598	231	263	-32.04	
03/24/06	3,928,690	2,728	243	263	-20.49	
03/25/06	4,207,906	2,922	260	263	-3.25	
03/26/06	4,265,634	2,962	263	263	0.31	
03/27/06	3,975,345	2,761	245	263	-17.61	
03/28/06	4,229,570	2,937	261	263	-1.92	
03/29/06	4,289,257	2,979	265	263	1.77	1.77
03/30/06	4,396,790	3,053	271	263	8.41	8.41
03/31/06	4,390,834	3,049	271	263	8.04	8.04
04/01/06	4,401,767	3,057	272	263	8.71	8.71

04/02/06	4,207,060	2,922	260	263	-3.30	
04/03/06	4,436,997	3,081	274	263	10.89	10.89
04/04/06	4,537,055	3,151	280	263	17.07	17.07
04/05/06	4,665,000	3,240	288	263	24.96	24.96
04/06/06	5,100,333	3,542	315	263	51.84	51.84
04/07/06	5,036,715	3,498	311	263	47.91	47.91
04/08/06	5,072,559	3,523	313	263	50.12	50.12
04/09/06	5,101,745	3,543	315	263	51.92	51.92
04/10/06	5,079,157	3,527	314	263	50.53	50.53
04/11/06	4,913,840	3,412	303	263	40.32	40.32
04/12/06	4,843,661	3,364	299	263	35.99	35.99
04/13/06	5,179,122	3,597	320	263	56.70	56.70
04/14/06	5,421,126	3,765	335	263	71.64	71.64
04/15/06	5,520,736	3,834	341	263	77.79	77.79
04/16/06	5,672,823	3,939	350	263	87.17	87.17
04/17/06	5,639,450	3,916	348	263	85.11	85.11
04/18/06	5,292,171	3,675	327	263	63.68	63.68
04/19/06	5,065,191	3,517	313	263	49.67	49.67
04/20/06	4,987,217	3,463	308	263	44.85	44.85
04/21/06	5,058,648	3,513	312	263	49.26	49.26
04/22/06	5,289,535	3,673	327	263	63.51	63.51
04/23/06	5,534,582	3,843	342	263	78.64	78.64
04/24/06	5,323,898	3,697	329	263	65.64	65.64
04/25/06	5,150,935	3,577	318	263	54.96	54.96
04/26/06	5,093,904	3,537	314	263	51.44	51.44
04/27/06	5,124,143	3,558	316	263	53.31	53.31
04/28/06	5,131,692	3,564	317	263	53.77	53.77
04/29/06	5,277,704	3,665	326	263	62.78	62.78
04/30/06	5,712,202	3,967	353	263	89.61	89.61
05/01/06	5,790,927	4,021	357	263	94.46	94.46
05/02/06	5,755,844	3,997	355	263	92.30	92.30
05/03/06	5,553,885	3,857	343	263	79.83	79.83
05/04/06	5,388,023	3,742	333	263	69.59	69.59
05/05/06	5,336,409	3,706	329	263	66.41	66.41
05/06/06	5,353,523	3,718	330	263	67.46	67.46
05/07/06	5,400,056	3,750	333	263	70.34	70.34
05/08/06	5,516,935	3,831	341	263	77.55	77.55
05/09/06	5,419,502	3,764	335	263	71.54	71.54
05/10/06	5,282,521	3,668	326	263	63.08	63.08
05/11/06	5,227,987	3,631	323	263	59.72	59.72
05/12/06	5,272,268	3,661	325	263	62.45	62.45
05/13/06	5,352,437	3,717	330	263	67.40	67.40
05/14/06	5,433,585	3,773	335	263	72.41	72.41
05/15/06	5,968,619	4,145	368	263	105.43	105.43

05/16/06	6,593,985	4,579	407	263	144.04	144.04
05/17/06	6,955,501	4,830	429	263	166.35	166.35
05/18/06	7,439,609	5,166	459	263	196.24	196.24
05/19/06	7,733,073	5,370	477	263	214.35	214.35
05/20/06	7,849,084	5,451	485	263	221.51	221.51
05/21/06	7,952,642	5,523	491	263	227.90	227.90
05/22/06	7,803,373	5,419	482	263	218.69	218.69
05/23/06	7,702,867	5,349	475	263	212.49	212.49
05/24/06	7,565,753	5,254	467	263	204.02	204.02
05/25/06	6,393,630	4,440	395	263	131.67	131.67
05/26/06	5,092,300	3,536	314	263	51.34	51.34
05/27/06	5,204,977	3,615	321	263	58.29	58.29
05/28/06	5,117,724	3,554	316	263	52.91	52.91
05/29/06	5,055,993	3,511	312	263	49.10	49.10
05/30/06	4,936,435	3,428	305	263	41.72	41.72
05/31/06	4,836,749	3,359	299	263	35.56	35.56
06/01/06	4,746,111	3,296	293	263	29.97	29.97
06/02/06	5,097,552	3,540	315	263	51.66	51.66
06/03/06	5,438,090	3,776	336	263	72.68	72.68
06/04/06	5,422,362	3,766	335	263	71.71	71.71
06/05/06	5,375,700	3,733	332	263	68.83	68.83
06/06/06	5,302,185	3,682	327	263	64.30	64.30
06/07/06	5,248,136	3,645	324	263	60.96	60.96
06/08/06	5,272,207	3,661	325	263	62.44	62.44
06/09/06	5,341,500	3,709	330	263	66.72	66.72
06/10/06	5,565,788	3,865	344	263	80.57	80.57
06/11/06	5,437,493	3,776	336	263	72.65	72.65
06/12/06	5,315,536	3,691	328	263	65.12	65.12
06/13/06	5,198,674	3,610	321	263	57.91	57.91
06/14/06	5,149,737	3,576	318	263	54.89	54.89
06/15/06	5,177,984	3,596	320	263	56.63	56.63
06/16/06	5,038,442	3,499	311	263	48.01	48.01
06/17/06	4,933,769	3,426	305	263	41.55	41.55
06/18/06	4,682,903	3,252	289	263	26.07	26.07
06/19/06	4,852,328	3,370	300	263	36.53	36.53
06/20/06	4,633,662	3,218	286	263	23.03	23.03
06/21/06	4,165,477	2,893	257	263	-5.87	
06/22/06	4,087,066	2,838	252	263	-10.71	
06/23/06	4,093,112	2,842	253	263	-10.34	
06/24/06	4,117,114	2,859	254	263	-8.86	
06/25/06	4,044,559	2,809	250	263	-13.34	
06/26/06	4,142,608	2,877	256	263	-7.28	
06/27/06	4,170,474	2,896	257	263	-5.56	
06/28/06	4,083,038	2,835	252	263	-10.96	

06/29/06	3,961,175	2,751	245	263	-18.48	
06/30/06	4,365,388	3,032	269	263	6.47	6.47
07/01/06	4,071,348	2,827	251	263	-11.68	
07/02/06	3,817,275	2,651	236	263	-27.37	
07/03/06	3,966,394	2,754	245	263	-18.16	
07/04/06	3,949,813	2,743	244	263	-19.18	
07/05/06	4,011,968	2,786	248	263	-15.35	
07/06/06	4,135,382	2,872	255	263	-7.73	
07/07/06	4,221,446	2,932	261	263	-2.42	
07/08/06	4,034,604	2,802	249	263	-13.95	
07/09/06	3,946,654	2,741	244	263	-19.38	
07/10/06	3,910,824	2,716	241	263	-21.59	
07/11/06	3,808,086	2,645	235	263	-27.93	
07/12/06	4,196,500	2,914	259	263	-3.96	
07/13/06	4,708,772	3,270	291	263	27.66	27.66
07/14/06	4,414,924	3,066	273	263	9.53	9.53
07/15/06	4,288,578	2,978	265	263	1.73	1.73
07/16/06	4,253,357	2,954	263	263	-0.45	
07/17/06	4,248,125	2,950	262	263	-0.77	
07/18/06	4,228,416	2,936	261	263	-1.99	
07/19/06	4,272,358	2,967	264	263	0.73	
07/20/06	3,647,584	2,533	225	200	-37.84	
07/21/06	2,949,890	2,049	182	200	-80.91	
07/22/06	2,949,462	2,048	182	200	-80.93	
07/23/06	3,051,167	2,119	188	200	-74.66	
07/24/06	3,196,619	2,220	197	200	-65.68	
07/25/06	3,263,521	2,266	201	200	-61.55	
07/26/06	3,269,061	2,270	202	200	-61.21	
07/27/06	3,288,703	2,284	203	200	-59.99	
07/28/06	3,301,042	2,292	204	200	-59.23	
07/29/06	3,288,710	2,284	203	200	-59.99	
07/30/06	3,261,192	2,265	201	200	-61.69	
07/31/06	3,235,485	2,247	200	200	-63.28	
08/01/06	3,291,850	2,286	203	200	-59.80	
08/02/06	3,264,503	2,267	202	200	-61.49	
08/03/06	3,217,467	2,234	199	200	-64.39	
08/04/06	3,197,372	2,220	197	200	-65.63	
08/05/06	3,171,223	2,202	196	200	-67.25	
08/06/06	3,143,616	2,183	194	200	-68.95	
08/07/06	3,148,060	2,186	194	200	-68.68	
08/08/06	3,185,226	2,212	197	200	-66.38	
08/09/06	3,183,711	2,211	197	200	-66.47	
08/10/06	3,231,361	2,244	199	200	-63.53	
08/11/06	3,094,862	2,149	191	200	-71.96	

08/12/06	3,102,045	2,154	191	200	-71.52	
08/13/06	3,115,602	2,164	192	200	-70.68	
08/14/06	3,081,810	2,140	190	200	-72.76	
08/15/06	3,074,883	2,135	190	200	-73.19	
08/16/06	3,127,679	2,172	193	200	-69.93	
08/17/06	3,133,250	2,176	193	200	-69.59	
08/18/06	3,107,557	2,158	192	200	-71.18	
08/19/06	3,043,140	2,113	188	200	-75.15	
08/20/06	3,001,115	2,084	185	200	-77.75	
08/21/06	3,233,363	2,245	200	200	-63.41	
08/22/06	3,387,047	2,352	209	200	-53.92	
08/23/06	3,386,406	2,352	209	200	-53.96	
08/24/06	3,384,602	2,350	209	200	-54.07	
08/25/06	3,382,464	2,349	209	200	-54.21	
08/26/06	3,372,729	2,342	208	200	-54.81	
08/27/06	3,355,852	2,330	207	200	-55.85	
08/28/06	3,335,240	2,316	206	200	-57.12	
08/29/06	3,302,331	2,293	204	200	-59.15	
08/30/06	3,280,331	2,278	202	200	-60.51	
08/31/06	3,261,133	2,265	201	200	-61.70	
09/01/06	3,235,052	2,247	200	200	-63.31	
09/02/06	3,232,949	2,245	200	200	-63.44	
09/03/06	3,242,255	2,252	200	200	-62.86	
09/04/06	3,224,630	2,239	199	200	-63.95	
09/05/06	3,182,593	2,210	196	200	-66.54	
09/06/06	3,166,325	2,199	195	200	-67.55	
09/07/06	3,154,885	2,191	195	200	-68.25	
09/08/06	3,197,852	2,221	197	200	-65.60	
09/09/06	3,158,641	2,194	195	200	-68.02	
09/10/06	3,129,537	2,173	193	200	-69.82	
09/11/06	3,081,022	2,140	190	200	-72.81	
09/12/06	2,933,317	2,037	181	200	-81.93	
09/13/06	3,649,925	2,535	225	263	-37.70	
09/14/06	4,017,209	2,790	248	263	-15.02	
09/15/06	4,166,100	2,893	257	263	-5.83	
09/16/06	4,396,233	3,053	271	263	8.37	8.37
09/17/06	4,312,494	2,995	266	263	3.20	3.20
09/18/06	4,210,724	2,924	260	263	-3.08	
09/19/06	4,136,975	2,873	255	263	-7.63	
09/20/06	4,107,474	2,852	254	263	-9.45	
09/21/06	4,224,904	2,934	261	263	-2.20	
09/22/06	4,384,156	3,045	271	263	7.63	7.63
09/23/06	4,343,017	3,016	268	263	5.09	5.09
09/24/06	4,188,978	2,909	259	263	-4.42	

09/25/06	4,168,456	2,895	257	263	-5.69	
09/26/06	4,251,469	2,952	262	263	-0.56	
09/27/06	4,203,703	2,919	259	263	-3.51	
09/28/06	4,182,378	2,904	258	263	-4.83	
09/29/06	4,247,786	2,950	262	263	-0.79	
09/30/06	4,192,218	2,911	259	263	-4.22	
10/01/06	4,176,957	2,901	258	263	-5.16	
10/02/06	4,347,436	3,019	268	263	5.36	5.36
10/03/06	4,568,032	3,172	282	263	18.98	18.98
10/04/06	4,380,129	3,042	270	263	7.38	7.38
10/05/06	4,224,044	2,933	261	263	-2.26	
10/06/06	3,916,321	2,720	242	263	-21.25	
10/07/06	4,132,138	2,870	255	263	-7.93	
10/08/06	3,955,114	2,747	244	263	-18.86	
10/09/06	4,418,505	3,068	273	263	9.75	9.75
10/10/06	4,369,581	3,034	270	263	6.73	6.73
10/11/06	4,276,668	2,970	264	263	0.99	
10/12/06	4,224,988	2,934	261	263	-2.20	
10/13/06	4,041,857	2,807	249	263	-13.50	
10/14/06	3,853,559	2,676	238	263	-25.13	
10/15/06	4,095,104	2,844	253	263	-10.22	
10/16/06	4,816,987	3,345	297	263	34.34	34.34
10/17/06	5,105,134	3,545	315	263	52.13	52.13
10/18/06	4,457,781	3,096	275	263	12.17	12.17
10/19/06	4,487,968	3,117	277	263	14.04	14.04
10/20/06	4,712,844	3,273	291	263	27.92	27.92
10/21/06	4,638,142	3,221	286	263	23.31	23.31
10/22/06	4,582,793	3,182	283	263	19.89	19.89
10/23/06	4,574,198	3,177	282	263	19.36	19.36
10/24/06	4,581,777	3,182	283	263	19.83	19.83
10/25/06	4,585,242	3,184	283	263	20.04	20.04
10/26/06	4,529,664	3,146	280	263	16.61	16.61
10/27/06	4,515,009	3,135	279	263	15.70	15.70
10/28/06	4,515,009	3,135	279	263	15.70	15.70
10/29/06	4,593,143	3,190	284	263	20.53	20.53
10/30/06	4,284,225	2,975	264	263	1.46	1.46
10/31/06	3,295,836	2,289	203	263	-59.55	
11/01/06	4,165,568	2,893	257	263	-5.87	
11/02/06	4,389,144	3,048	271	263	7.93	7.93
11/03/06	4,492,300	3,120	277	263	14.30	14.30
11/04/06	4,492,984	3,120	277	263	14.34	14.34
11/05/06	4,437,890	3,082	274	263	10.94	10.94
11/06/06	4,472,337	3,106	276	263	13.07	13.07
11/07/06	4,807,233	3,338	297	263	33.74	33.74

11/08/06	5,157,185	3,581	318	263	55.34	55.34
11/09/06	4,986,486	3,463	308	263	44.81	44.81
11/10/06	4,810,694	3,341	297	263	33.96	33.96
11/11/06	4,744,430	3,295	293	263	29.87	29.87
11/12/06	4,609,376	3,201	285	263	21.53	21.53
11/13/06	4,642,348	3,224	287	263	23.56	23.56
11/14/06	4,623,686	3,211	285	263	22.41	22.41
11/15/06	3,216,893	2,234	199	263	-64.43	
11/16/06	4,607,587	3,200	284	263	21.42	21.42
11/17/06	4,585,441	3,184	283	263	20.05	20.05
11/18/06	4,527,129	3,144	279	263	16.45	16.45
11/19/06	2,953,050	2,051	182	263	-80.71	
11/20/06	4,550,167	3,160	281	263	17.87	17.87
11/21/06	4,548,110	3,158	281	263	17.75	17.75
11/22/06	4,545,048	3,156	281	263	17.56	17.56
11/23/06	4,452,135	3,092	275	263	11.82	11.82
11/24/06	4,384,488	3,045	271	263	7.65	7.65
11/25/06	4,454,458	3,093	275	263	11.97	11.97
11/26/06	4,392,237	3,050	271	263	8.13	8.13
11/27/06	4,385,941	3,046	271	263	7.74	7.74
11/28/06	2,822,530	1,960	174	263	-88.77	
11/29/06	3,872,952	2,690	239	263	-23.93	
11/30/06	4,631,557	3,216	286	263	22.90	22.90
12/01/06	4,613,205	3,204	285	263	21.77	21.77
12/02/06	4,498,866	3,124	278	263	14.71	14.71
12/03/06	4,404,635	3,059	272	263	8.89	8.89
12/04/06	4,581,370	3,182	283	263	19.80	19.80
12/05/06	4,535,897	3,150	280	263	16.99	16.99
12/06/06	4,480,841	3,112	277	263	13.60	13.60
12/07/06	4,464,697	3,100	276	263	12.60	12.60
12/08/06	4,437,049	3,081	274	263	10.89	10.89
12/09/06	4,433,099	3,079	274	263	10.65	10.65
12/10/06	4,400,082	3,056	272	263	8.61	8.61
12/11/06	4,384,529	3,045	271	263	7.65	7.65
12/12/06	4,380,776	3,042	270	263	7.42	7.42
12/13/06	4,380,221	3,042	270	263	7.38	7.38
12/14/06	4,376,406	3,039	270	263	7.15	7.15
12/15/06	4,406,027	3,060	272	263	8.98	8.98
12/16/06	3,692,658	2,564	228	263	-35.06	
12/17/06	1,350,496	938	83	263	-179.64	
12/18/06	4,134,124	2,871	255	263	-7.81	
12/19/06	4,569,736	3,173	282	263	19.08	19.08
12/20/06	4,504,979	3,128	278	263	15.09	15.09
12/21/06	4,606,236	3,199	284	263	21.34	21.34

12/22/06	4,544,945	3,156	281	263	17.55	17.55		
12/23/06	4,402,472	3,057	272	263	8.76	8.76		
12/24/06	4,412,278	3,064	272	263	9.36	9.36		
12/25/06	4,344,811	3,017	268	263	5.20	5.20		
12/26/06	4,346,543	3,018	268	263	5.31	5.31		
12/27/06	4,334,696	3,010	268	263	4.57	4.57		
12/28/06	4,343,755	3,016	268	263	5.13	5.13		
12/29/06	3,791,927	2,633	234	263	-28.93			
12/30/06	3,621,165	2,515	224	263	-39.47			
12/31/06	4,429,654	3,076	273	263	10.44	10.44	7363.28	368.16
01/01/07	4,433,794	3,079	274	263	10.69	10.69		
01/02/07	4,553,452	3,162	281	263	18.08	18.08		
01/03/07	4,373,836	3,037	270	263	6.99	6.99		
01/04/07	4,363,522	3,030	269	263	6.35	6.35		
01/05/07	4,162,604	2,891	257	263	-6.05			
01/06/07	4,200,360	2,917	259	263	-3.72			
01/07/07	3,696,500	2,567	228	263	-34.82			
01/08/07	4,415,461	3,066	273	263	9.56	9.56		
01/09/07	4,322,501	3,002	267	263	3.82	3.82		
01/10/07	4,305,479	2,990	266	263	2.77	2.77		
01/11/07	2,768,865	1,923	171	263	-92.08			
01/12/07	3,362,983	2,335	208	263	-55.41			
01/13/07	4,645,827	3,226	287	263	23.78	23.78		
01/14/07	4,956,164	3,442	306	263	42.94	42.94		
01/15/07	4,686,216	3,254	289	263	26.27	26.27		
01/16/07	4,659,934	3,236	288	263	24.65	24.65		
01/17/07	4,665,019	3,240	288	263	24.96	24.96		
01/18/07	4,653,732	3,232	287	263	24.27	24.27		
01/19/07	4,639,610	3,222	286	263	23.40	23.40		
01/20/07	4,660,905	3,237	288	263	24.71	24.71		
01/21/07	4,631,599	3,216	286	263	22.90	22.90		
01/22/07	4,518,404	3,138	279	263	15.91	15.91		
01/23/07	4,518,905	3,138	279	263	15.94	15.94		
01/24/07	4,454,578	3,093	275	263	11.97	11.97		
01/25/07	4,381,293	3,043	270	263	7.45	7.45		
01/26/07	4,296,525	2,984	265	263	2.22	2.22		
01/27/07	3,877,432	2,693	239	263	-23.65			
01/28/07	3,834,159	2,663	237	263	-26.32			
01/29/07	4,360,822	3,028	269	263	6.19	6.19		
01/30/07	4,198,777	2,916	259	263	-3.82			
01/31/07	4,716,145	3,275	291	263	28.12	28.12		
02/01/07	4,357,863	3,026	269	263	6.00	6.00		
02/02/07	3,879,695	2,694	239	263	-23.51			
02/03/07	4,752,424	3,300	293	263	30.36	30.36		

02/04/07	4,466,096	3,101	276	263	12.68	12.68
02/05/07	4,625,424	3,212	286	263	22.52	22.52
02/06/07	4,717,220	3,276	291	263	28.19	28.19
02/07/07	4,294,476	2,982	265	263	2.09	2.09
02/08/07	3,476,426	2,414	215	263	-48.41	
02/09/07	3,467,662	2,408	214	263	-48.95	
02/10/07	3,704,348	2,572	229	263	-34.34	
02/11/07	4,058,788	2,819	251	263	-12.46	
02/12/07	3,959,839	2,750	244	263	-18.57	
02/13/07	3,901,027	2,709	241	263	-22.20	
02/14/07	4,157,379	2,887	257	263	-6.37	
02/15/07	4,059,232	2,819	251	263	-12.43	
02/16/07	4,179,875	2,903	258	263	-4.98	
02/17/07	4,094,724	2,844	253	263	-10.24	
02/18/07	4,165,814	2,893	257	263	-5.85	
02/19/07	4,374,514	3,038	270	263	7.03	7.03
02/20/07	4,375,026	3,038	270	263	7.06	7.06
02/21/07	4,385,981	3,046	271	263	7.74	7.74
02/22/07	4,382,254	3,043	271	263	7.51	7.51
02/23/07	4,349,058	3,020	268	263	5.46	5.46
02/24/07	4,336,723	3,012	268	263	4.70	4.70
02/25/07	4,396,925	3,053	271	263	8.42	8.42
02/26/07	4,267,485	2,964	263	263	0.43	
02/27/07	2,968,176	2,061	183	263	-79.78	
02/28/07	4,072,884	2,828	251	263	-11.59	
03/01/07	4,503,314	3,127	278	263	14.98	14.98
03/02/07	4,081,081	2,834	252	263	-11.08	
03/03/07	3,405,778	2,365	210	263	-52.77	
03/04/07	4,668,969	3,242	288	263	25.21	25.21
03/05/07	4,414,505	3,066	273	263	9.50	9.50
03/06/07	4,403,826	3,058	272	263	8.84	8.84
03/07/07	4,433,365	3,079	274	263	10.66	10.66
03/08/07	4,500,282	3,125	278	263	14.80	14.80
03/09/07	4,497,404	3,123	278	263	14.62	14.62
03/10/07	4,521,535	3,140	279	263	16.11	16.11
03/11/07	4,586,403	3,185	283	263	20.11	20.11
03/12/07	4,697,176	3,262	290	263	26.95	26.95
03/13/07	4,870,973	3,383	301	263	37.68	37.68
03/14/07	4,895,420	3,400	302	263	39.19	39.19
03/15/07	4,871,479	3,383	301	263	37.71	37.71
03/16/07	4,866,573	3,380	300	263	37.41	37.41
03/17/07	4,915,306	3,413	303	263	40.41	40.41
03/18/07	5,071,384	3,522	313	263	50.05	50.05
03/19/07	4,770,293	3,313	294	263	31.46	31.46

03/20/07	4,275,121	2,969	264	263	0.90	
03/21/07	4,340,684	3,014	268	263	4.94	4.94
03/22/07	4,235,657	2,941	261	263	-1.54	
03/23/07	4,191,138	2,911	259	263	-4.29	
03/24/07	4,214,711	2,927	260	263	-2.83	
03/25/07	4,317,184	2,998	266	263	3.49	3.49
03/26/07	4,592,963	3,190	284	263	20.52	20.52
03/27/07	4,615,236	3,205	285	263	21.89	21.89
03/28/07	4,577,197	3,179	283	263	19.54	19.54
03/29/07	3,308,474	2,298	204	263	-58.77	
03/30/07	3,871,440	2,689	239	263	-24.02	
03/31/07	3,856,693	2,678	238	263	-24.93	
04/01/07	3,868,107	2,686	239	263	-24.23	
04/02/07	3,854,418	2,677	238	263	-25.07	
04/03/07	3,803,974	2,642	235	263	-28.19	
04/04/07	3,791,965	2,633	234	263	-28.93	
04/05/07	3,797,814	2,637	234	263	-28.57	
04/06/07	3,790,663	2,632	234	263	-29.01	
04/07/07	3,781,238	2,626	233	263	-29.59	
04/08/07	3,792,493	2,634	234	263	-28.90	
04/09/07	3,908,661	2,714	241	263	-21.72	
04/10/07	3,948,395	2,742	244	263	-19.27	
04/11/07	3,904,092	2,711	241	263	-22.01	
04/12/07	4,042,472	2,807	250	263	-13.46	
04/13/07	4,670,706	3,244	288	263	25.32	25.32
04/14/07	4,758,860	3,305	294	263	30.76	30.76
04/15/07	4,858,173	3,374	300	263	36.89	36.89
04/16/07	4,965,384	3,448	307	263	43.51	43.51
04/17/07	5,077,232	3,526	313	263	50.41	50.41
04/18/07	5,184,873	3,601	320	263	57.05	57.05
04/19/07	5,177,032	3,595	320	263	56.57	56.57
04/20/07	5,087,640	3,533	314	263	51.05	51.05
04/21/07	4,956,556	3,442	306	263	42.96	42.96
04/22/07	4,914,568	3,413	303	263	40.37	40.37
04/23/07	5,002,157	3,474	309	263	45.78	45.78
04/24/07	4,864,188	3,378	300	263	37.26	37.26
04/25/07	4,576,403	3,178	282	263	19.49	19.49
04/26/07	4,985,349	3,462	308	263	44.74	44.74
04/27/07	4,958,706	3,444	306	263	43.09	43.09
04/28/07	4,982,494	3,460	308	263	44.56	44.56
04/29/07	5,179,544	3,597	320	263	56.72	56.72
04/30/07	5,191,712	3,605	320	263	57.48	57.48
05/01/07	5,152,227	3,578	318	263	55.04	55.04
05/02/07	5,152,042	3,578	318	263	55.03	55.03

05/03/07	5,063,103	3,516	313	263	49.54	49.54
05/04/07	4,795,319	3,330	296	263	33.01	33.01
05/05/07	4,616,246	3,206	285	263	21.95	21.95
05/06/07	4,470,414	3,104	276	263	12.95	12.95
05/07/07	4,317,799	2,998	267	263	3.53	3.53
05/08/07	4,225,844	2,935	261	263	-2.15	
05/09/07	4,268,090	2,964	263	263	0.46	
05/10/07	4,298,150	2,985	265	263	2.32	2.32
05/11/07	4,476,056	3,108	276	263	13.30	13.30
05/12/07	4,543,433	3,155	280	263	17.46	17.46
05/13/07	4,515,336	3,136	279	263	15.72	15.72
05/14/07	4,510,318	3,132	278	263	15.41	15.41
05/15/07	4,349,920	3,021	269	263	5.51	5.51
05/16/07	4,249,130	2,951	262	263	-0.71	
05/17/07	4,158,809	2,888	257	263	-6.28	
05/18/07	4,348,890	3,020	268	263	5.45	5.45
05/19/07	4,599,700	3,194	284	263	20.93	20.93
05/20/07	4,597,001	3,192	284	263	20.77	20.77
05/21/07	4,602,444	3,196	284	263	21.10	21.10
05/22/07	4,527,973	3,144	280	263	16.50	16.50
05/23/07	4,235,124	2,941	261	263	-1.57	
05/24/07	3,982,967	2,766	246	263	-17.14	
05/25/07	4,186,953	2,908	258	263	-4.55	
05/26/07	4,222,394	2,932	261	263	-2.36	
05/27/07	4,571,765	3,175	282	263	19.21	19.21
05/28/07	4,814,295	3,343	297	263	34.18	34.18
05/29/07	4,804,858	3,337	297	263	33.60	33.60
05/30/07	4,622,543	3,210	285	263	22.34	22.34
05/31/07	4,381,178	3,042	270	263	7.44	7.44
06/01/07	4,278,653	2,971	264	263	1.11	1.11
06/02/07	4,281,304	2,973	264	263	1.28	1.28
06/03/07	4,260,428	2,959	263	263	-0.01	
06/04/07	4,194,463	2,913	259	263	-4.08	
06/05/07	4,135,131	2,872	255	263	-7.75	
06/06/07	4,221,292	2,931	261	263	-2.43	
06/07/07	4,420,896	3,070	273	263	9.89	9.89
06/08/07	4,489,773	3,118	277	263	14.15	14.15
06/09/07	4,493,221	3,120	277	263	14.36	14.36
06/10/07	4,531,249	3,147	280	263	16.71	16.71
06/11/07	4,463,042	3,099	275	263	12.50	12.50
06/12/07	4,413,485	3,065	272	263	9.44	9.44
06/13/07	4,350,120	3,021	269	263	5.53	5.53
06/14/07	4,337,214	3,012	268	263	4.73	4.73
06/15/07	4,271,702	2,966	264	263	0.69	

06/16/07	4,237,017	2,942	262	263	-1.46	
06/17/07	4,208,003	2,922	260	263	-3.25	
06/18/07	4,151,328	2,883	256	263	-6.75	
06/19/07	4,401,784	3,057	272	263	8.72	8.72
06/20/07	4,484,706	3,114	277	263	13.83	13.83
06/21/07	4,463,683	3,100	276	263	12.54	12.54
06/22/07	4,336,692	3,012	268	263	4.70	4.70
06/23/07	4,140,803	2,876	256	263	-7.39	
06/24/07	4,089,926	2,840	252	263	-10.54	
06/25/07	4,302,479	2,988	266	263	2.59	2.59
06/26/07	4,449,049	3,090	275	263	11.63	11.63
06/27/07	4,395,633	3,053	271	263	8.34	8.34
06/28/07	4,334,454	3,010	268	263	4.56	4.56
06/29/07	4,606,440	3,199	284	263	21.35	21.35
06/30/07	4,543,136	3,155	280	263	17.44	17.44
07/01/07	4,485,932	3,115	277	263	13.91	13.91
07/02/07	4,423,090	3,072	273	263	10.03	10.03
07/03/07	4,289,721	2,979	265	263	1.80	1.80
07/04/07	4,196,679	2,914	259	263	-3.95	
07/05/07	4,385,148	3,045	271	263	7.69	7.69
07/06/07	4,557,139	3,165	281	263	18.30	18.30
07/07/07	4,575,383	3,177	282	263	19.43	19.43
07/08/07	4,541,454	3,154	280	263	17.34	17.34
07/09/07	4,447,919	3,089	275	263	11.56	11.56
07/10/07	4,411,096	3,063	272	263	9.29	9.29
07/11/07	4,363,861	3,030	269	263	6.37	6.37
07/12/07	4,328,485	3,006	267	263	4.19	4.19
07/13/07	4,321,164	3,001	267	263	3.74	3.74
07/14/07	4,311,510	2,994	266	263	3.14	3.14
07/15/07	4,311,826	2,994	266	263	3.16	3.16
07/16/07	4,348,484	3,020	268	263	5.42	5.42
07/17/07	4,394,827	3,052	271	263	8.29	8.29
07/18/07	4,379,172	3,041	270	263	7.32	7.32
07/19/07	4,340,017	3,014	268	263	4.90	4.90
07/20/07	4,279,686	2,972	264	263	1.18	1.18
07/21/07	4,247,886	2,950	262	263	-0.78	
07/22/07	4,213,400	2,926	260	263	-2.91	
07/23/07	4,251,472	2,952	262	263	-0.56	
07/24/07	4,327,515	3,005	267	263	4.13	4.13
07/25/07	4,389,979	3,049	271	263	7.99	7.99
07/26/07	4,377,309	3,040	270	263	7.20	7.20
07/27/07	4,369,774	3,035	270	263	6.74	6.74
07/28/07	4,317,877	2,999	267	263	3.54	3.54
07/29/07	4,289,099	2,979	265	263	1.76	1.76

07/30/07	4,271,060	2,966	264	263	0.65	
07/31/07	4,260,489	2,959	263	263	-0.01	
08/01/07	4,249,595	2,951	262	263	-0.68	
08/02/07	4,275,382	2,969	264	263	0.91	
08/03/07	4,273,425	2,968	264	263	0.79	
08/04/07	4,304,356	2,989	266	263	2.70	2.70
08/05/07	4,347,231	3,019	268	263	5.35	5.35
08/06/07	4,483,177	3,113	277	263	13.74	13.74
08/07/07	4,363,843	3,030	269	263	6.37	6.37
08/08/07	4,333,768	3,010	268	263	4.52	4.52
08/09/07	4,318,584	2,999	267	263	3.58	3.58
08/10/07	4,313,518	2,995	266	263	3.27	3.27
08/11/07	4,286,351	2,977	265	263	1.59	1.59
08/12/07	4,250,290	2,952	262	263	-0.64	
08/13/07	4,209,547	2,923	260	263	-3.15	
08/14/07	4,216,368	2,928	260	263	-2.73	
08/15/07	4,203,770	2,919	259	263	-3.51	
08/16/07	4,188,806	2,909	259	263	-4.43	
08/17/07	4,209,357	2,923	260	263	-3.16	
08/18/07	4,305,792	2,990	266	263	2.79	2.79
08/19/07	4,311,670	2,994	266	263	3.15	3.15
08/20/07	4,203,833	2,919	259	263	-3.50	
08/21/07	4,198,973	2,916	259	263	-3.80	
08/22/07	4,149,144	2,881	256	263	-6.88	
08/23/07	4,186,015	2,907	258	263	-4.60	
08/24/07	4,205,710	2,921	260	263	-3.39	
08/25/07	4,119,206	2,861	254	263	-8.73	
08/26/07	4,068,992	2,826	251	263	-11.83	
08/27/07	4,100,717	2,848	253	263	-9.87	
08/28/07	4,118,283	2,860	254	263	-8.79	
08/29/07	4,097,031	2,845	253	263	-10.10	
08/30/07	4,076,440	2,831	252	263	-11.37	
08/31/07	4,127,292	2,866	255	263	-8.23	
09/01/07	4,162,566	2,891	257	263	-6.05	
09/02/07	4,120,550	2,861	254	263	-8.65	
09/03/07	4,100,698	2,848	253	263	-9.87	
09/04/07	4,103,171	2,849	253	263	-9.72	
09/05/07	4,123,574	2,864	255	263	-8.46	
09/06/07	4,201,727	2,918	259	263	-3.63	
09/07/07	4,292,021	2,981	265	263	1.94	1.94
09/08/07	4,434,663	3,080	274	263	10.74	10.74
09/09/07	4,435,980	3,081	274	263	10.83	10.83
09/10/07	4,435,762	3,080	274	263	10.81	10.81
09/11/07	4,440,353	3,084	274	263	11.10	11.10

09/12/07	4,392,524	3,050	271	263	8.14	8.14
09/13/07	4,372,972	3,037	270	263	6.94	6.94
09/14/07	4,327,175	3,005	267	263	4.11	4.11
09/15/07	4,306,994	2,991	266	263	2.86	2.86
09/16/07	4,346,242	3,018	268	263	5.29	5.29
09/17/07	4,341,221	3,015	268	263	4.98	4.98
09/18/07	4,382,190	3,043	271	263	7.51	7.51
09/19/07	4,298,299	2,985	265	263	2.33	2.33
09/20/07	4,288,150	2,978	265	263	1.70	1.70
09/21/07	4,433,982	3,079	274	263	10.70	10.70
09/22/07	4,318,022	2,999	267	263	3.54	3.54
09/23/07	4,338,383	3,013	268	263	4.80	4.80
09/24/07	4,386,700	3,046	271	263	7.78	7.78
09/25/07	4,320,194	3,000	267	263	3.68	3.68
09/26/07	4,249,991	2,951	262	263	-0.65	
09/27/07	4,204,408	2,920	260	263	-3.47	
09/28/07	4,200,207	2,917	259	263	-3.73	
09/29/07	4,334,508	3,010	268	263	4.56	4.56
09/30/07	4,321,548	3,001	267	263	3.76	3.76
10/01/07	4,244,646	2,948	262	263	-0.98	
10/02/07	4,273,296	2,968	264	263	0.78	
10/03/07	4,246,970	2,949	262	263	-0.84	
10/04/07	4,184,013	2,906	258	263	-4.73	
10/05/07	4,240,406	2,945	262	263	-1.25	
10/06/07	4,318,297	2,999	267	263	3.56	3.56
10/07/07	4,251,861	2,953	262	263	-0.54	
10/08/07	4,277,369	2,970	264	263	1.04	1.04
10/09/07	4,228,709	2,937	261	263	-1.97	
10/10/07	4,237,301	2,943	262	263	-1.44	
10/11/07	4,171,161	2,897	257	263	-5.52	
10/12/07	4,068,850	2,826	251	263	-11.84	
10/13/07	4,019,689	2,791	248	263	-14.87	
10/14/07	4,001,703	2,779	247	263	-15.98	
10/15/07	3,925,440	2,726	242	263	-20.69	
10/16/07	3,932,320	2,731	243	263	-20.26	
10/17/07	4,041,760	2,807	249	263	-13.51	
10/18/07	4,050,850	2,813	250	263	-12.95	
10/19/07	4,068,288	2,825	251	263	-11.87	
10/20/07	4,172,800	2,898	258	263	-5.42	
10/21/07	3,971,520	2,758	245	263	-17.84	
10/22/07	3,877,344	2,693	239	263	-23.66	
10/23/07	3,854,225	2,677	238	263	-25.08	
10/24/07	3,854,016	2,676	238	263	-25.10	
10/25/07	3,837,600	2,665	237	263	-26.11	

10/26/07	4,009,392	2,784	247	263	-15.51	
10/27/07	4,120,380	2,861	254	263	-8.66	
10/28/07	4,103,200	2,849	253	263	-9.72	
10/29/07	4,098,651	2,846	253	263	-10.00	
10/30/07	4,218,880	2,930	260	263	-2.58	
10/31/07	4,174,020	2,899	258	263	-5.34	
11/01/07	4,172,960	2,898	258	263	-5.41	
11/02/07	4,100,427	2,848	253	263	-9.89	
11/03/07	4,138,063	2,874	255	263	-7.56	
11/04/07	4,130,588	2,868	255	263	-8.03	
11/05/07	4,124,520	2,864	255	263	-8.40	
11/06/07	4,112,861	2,856	254	263	-9.12	
11/07/07	4,117,050	2,859	254	263	-8.86	
11/08/07	4,116,013	2,858	254	263	-8.93	
11/09/07	4,109,595	2,854	254	263	-9.32	
11/10/07	4,102,045	2,849	253	263	-9.79	
11/11/07	4,102,668	2,849	253	263	-9.75	
11/12/07	4,121,603	2,862	254	263	-8.58	
11/13/07	3,783,097	2,627	234	263	-29.48	
11/14/07	2,955,278	2,052	182	263	-80.58	
11/15/07	3,855,818	2,678	238	263	-24.99	
11/16/07	4,330,640	3,007	267	263	4.32	4.32
11/17/07	4,329,974	3,007	267	263	4.28	4.28
11/18/07	4,358,963	3,027	269	263	6.07	6.07
11/19/07	4,403,948	3,058	272	263	8.85	8.85
11/20/07	4,346,404	3,018	268	263	5.30	5.30
11/21/07	4,022,915	2,794	248	263	-14.67	
11/22/07	2,653,170	1,842	164	263	-99.22	
11/23/07	4,175,814	2,900	258	263	-5.23	
11/24/07	4,407,027	3,060	272	263	9.04	9.04
11/25/07	4,355,211	3,024	269	263	5.84	5.84
11/26/07	4,271,745	2,966	264	263	0.69	
11/27/07	4,323,531	3,002	267	263	3.88	3.88
11/28/07	4,278,322	2,971	264	263	1.09	1.09
11/29/07	4,250,027	2,951	262	263	-0.65	
11/30/07	3,849,809	2,673	238	263	-25.36	
12/01/07	4,132,710	2,870	255	263	-7.89	
12/02/07	4,188,490	2,909	259	263	-4.45	
12/03/07	4,272,455	2,967	264	263	0.73	
12/04/07	4,292,521	2,981	265	263	1.97	1.97
12/05/07	4,253,732	2,954	263	263	-0.42	
12/06/07	4,222,705	2,932	261	263	-2.34	
12/07/07	4,183,500	2,905	258	263	-4.76	
12/08/07	3,995,335	2,775	247	263	-16.37	

12/09/07	3,079,034	2,138	190	263	-72.94			
12/10/07	4,246,160	2,949	262	263	-0.89			
12/11/07	4,029,042	2,798	249	263	-14.29			
12/12/07	4,348,819	3,020	268	263	5.45	5.45		
12/13/07	4,220,788	2,931	261	263	-2.46			
12/14/07	4,164,251	2,892	257	263	-5.95			
12/15/07	4,078,403	2,832	252	263	-11.25			
12/16/07	4,144,175	2,878	256	263	-7.19			
12/17/07	4,132,536	2,870	255	263	-7.91			
12/18/07	4,161,094	2,890	257	263	-6.14			
12/19/07	4,140,555	2,875	256	263	-7.41			
12/20/07	4,116,383	2,859	254	263	-8.90			
12/21/07	4,093,585	2,843	253	263	-10.31			
12/22/07	3,283,588	2,280	203	263	-60.31			
12/23/07	4,241,067	2,945	262	263	-1.21			
12/24/07	4,148,655	2,881	256	263	-6.91			
12/25/07	4,140,775	2,876	256	263	-7.40			
12/26/07	4,081,696	2,835	252	263	-11.04			
12/27/07	4,095,444	2,844	253	263	-10.19			
12/28/07	3,819,115	2,652	236	263	-27.25			
12/29/07	4,166,436	2,893	257	263	-5.81			
12/30/07	4,080,491	2,834	252	263	-11.12			
12/31/07	4,075,716	2,830	252	263	-11.41		2945.72	147.29
01/01/08	3,135,332	2,177	194	263	-69.46			
01/02/08	4,267,045	2,963	263	263	0.40			
01/03/08	4,319,828	3,000	267	263	3.66	3.66		
01/04/08	4,182,902	2,905	258	263	-4.80			
01/05/08	4,108,197	2,853	254	263	-9.41			
01/06/08	4,076,653	2,831	252	263	-11.35			
01/07/08	3,519,351	2,444	217	263	-45.76			
01/08/08	3,948,407	2,742	244	263	-19.27			
01/09/08	4,221,398	2,932	261	263	-2.42			
01/10/08	4,083,684	2,836	252	263	-10.92			
01/11/08	4,073,737	2,829	251	263	-11.53			
01/12/08	4,063,052	2,822	251	263	-12.19			
01/13/08	4,057,449	2,818	250	263	-12.54			
01/14/08	3,859,309	2,680	238	263	-24.77			
01/15/08	4,065,752	2,823	251	263	-12.03			
01/16/08	3,809,998	2,646	235	263	-27.81			
01/17/08	4,272,608	2,967	264	263	0.74			
01/18/08	4,247,707	2,950	262	263	-0.80			
01/19/08	4,158,814	2,888	257	263	-6.28			
01/20/08	3,874,442	2,691	239	263	-23.84			
01/21/08	3,095,977	2,150	191	263	-71.89			

01/22/08	4,192,016	2,911	259	263	-4.23
01/23/08	4,222,836	2,933	261	263	-2.33
01/24/08	4,187,105	2,908	258	263	-4.54
01/25/08	4,170,037	2,896	257	263	-5.59
01/26/08	4,109,202	2,854	254	263	-9.35
01/27/08	4,085,154	2,837	252	263	-10.83
01/28/08	3,839,371	2,666	237	263	-26.00
01/29/08	3,865,392	2,684	239	263	-24.40
01/30/08	4,093,083	2,842	253	263	-10.34
01/31/08	4,030,563	2,799	249	263	-14.20
02/01/08	4,032,323	2,800	249	263	-14.09
02/02/08	3,867,725	2,686	239	263	-24.25
02/03/08	4,085,783	2,837	252	263	-10.79
02/04/08	4,025,352	2,795	248	263	-14.52
02/05/08	4,008,153	2,783	247	263	-15.58
02/06/08	4,018,605	2,791	248	263	-14.94
02/07/08	4,010,943	2,785	248	263	-15.41
02/08/08	3,995,408	2,775	247	263	-16.37
02/09/08	3,984,701	2,767	246	263	-17.03
02/10/08	3,990,605	2,771	246	263	-16.67
02/11/08	3,986,398	2,768	246	263	-16.93
02/12/08	3,985,695	2,768	246	263	-16.97
02/13/08	4,003,102	2,780	247	263	-15.89
02/14/08	3,896,374	2,706	241	263	-22.48
02/15/08	3,953,957	2,746	244	263	-18.93
02/16/08	3,993,249	2,773	246	263	-16.50
02/17/08	3,984,546	2,767	246	263	-17.04
02/18/08	3,256,203	2,261	201	263	-62.00
02/19/08	3,906,003	2,713	241	263	-21.89
02/20/08	3,804,882	2,642	235	263	-28.13
02/21/08	3,968,426	2,756	245	263	-18.04
02/22/08	4,060,572	2,820	251	263	-12.35
02/23/08	4,079,385	2,833	252	263	-11.19
02/24/08	4,022,572	2,793	248	263	-14.69
02/25/08	4,013,557	2,787	248	263	-15.25
02/26/08	3,974,199	2,760	245	263	-17.68
02/27/08	3,997,033	2,776	247	263	-16.27
02/28/08	4,000,347	2,778	247	263	-16.07
02/29/08	3,990,313	2,771	246	263	-16.68
03/01/08	4,009,053	2,784	247	263	-15.53
03/02/08	3,998,891	2,777	247	263	-16.15
03/03/08	3,108,990	2,159	192	263	-71.09
03/04/08	4,028,704	2,798	249	263	-14.31
03/05/08	3,549,697	2,465	219	263	-43.88

03/06/08	4,005,442	2,782	247	263	-15.75	
03/07/08	3,770,198	2,618	233	263	-30.27	
03/08/08	4,002,279	2,779	247	263	-15.95	
03/09/08	3,984,380	2,767	246	263	-17.05	
03/10/08	3,782,428	2,627	233	263	-29.52	
03/11/08	4,011,069	2,785	248	263	-15.40	
03/12/08	4,026,785	2,796	249	263	-14.43	
03/13/08	4,024,861	2,795	248	263	-14.55	
03/14/08	4,021,133	2,792	248	263	-14.78	
03/15/08	3,979,218	2,763	246	263	-17.37	
03/16/08	4,006,377	2,782	247	263	-15.69	
03/17/08	3,436,738	2,387	212	263	-50.86	
03/18/08	4,021,897	2,793	248	263	-14.73	
03/19/08	4,003,596	2,780	247	263	-15.86	
03/20/08	4,043,428	2,808	250	263	-13.41	
03/21/08	4,006,939	2,783	247	263	-15.66	
03/22/08	3,674,241	2,552	227	263	-36.20	
03/23/08	2,933,177	2,037	181	263	-81.94	
03/24/08	4,087,901	2,839	252	263	-10.66	
03/25/08	4,029,778	2,798	249	263	-14.25	
03/26/08	4,033,810	2,801	249	263	-14.00	
03/27/08	3,918,158	2,721	242	263	-21.14	
03/28/08	2,507,962	1,742	155	263	-108.19	
03/29/08	4,105,604	2,851	253	263	-9.57	
03/30/08	2,604,407	1,809	161	263	-102.23	
03/31/08	4,093,707	2,843	253	263	-10.30	
04/01/08	3,527,211	2,449	218	263	-45.27	
04/02/08	3,738,962	2,597	231	263	-32.20	
04/03/08	4,058,958	2,819	251	263	-12.45	
04/04/08	4,044,414	2,809	250	263	-13.34	
04/05/08	4,033,411	2,801	249	263	-14.02	
04/06/08	3,616,543	2,511	223	263	-39.76	
04/07/08	4,022,953	2,794	248	263	-14.67	
04/08/08	4,039,366	2,805	249	263	-13.66	
04/09/08	4,175,924	2,900	258	263	-5.23	
04/10/08	4,343,449	3,016	268	263	5.11	5.11
04/11/08	4,335,205	3,011	268	263	4.61	4.61
04/12/08	4,369,032	3,034	270	263	6.69	6.69
04/13/08	4,517,789	3,137	279	263	15.88	15.88
04/14/08	4,772,848	3,314	295	263	31.62	31.62
04/15/08	4,934,223	3,427	305	263	41.58	41.58
04/16/08	4,776,476	3,317	295	263	31.84	31.84
04/17/08	4,721,416	3,279	291	263	28.45	28.45
04/18/08	4,767,543	3,311	294	263	31.29	31.29

04/19/08	4,863,720	3,378	300	263	37.23	37.23
04/20/08	4,863,778	3,378	300	263	37.23	37.23
04/21/08	4,892,549	3,398	302	263	39.01	39.01
04/22/08	5,374,680	3,732	332	263	68.77	68.77
04/23/08	5,558,245	3,860	343	263	80.10	80.10
04/24/08	5,525,273	3,837	341	263	78.07	78.07
04/25/08	5,060,711	3,514	312	263	49.39	49.39
04/26/08	4,717,585	3,276	291	263	28.21	28.21
04/27/08	4,532,171	3,147	280	263	16.76	16.76
04/28/08	4,465,450	3,101	276	263	12.65	12.65
04/29/08	4,866,229	3,379	300	263	37.38	37.38
04/30/08	5,314,224	3,690	328	263	65.04	65.04
05/01/08	5,064,398	3,517	313	263	49.62	49.62
05/02/08	4,895,482	3,400	302	263	39.19	39.19
05/03/08	4,809,562	3,340	297	263	33.89	33.89
05/04/08	4,923,728	3,419	304	263	40.93	40.93
05/05/08	4,961,065	3,445	306	263	43.24	43.24
05/06/08	4,760,759	3,306	294	263	30.87	30.87
05/07/08	4,632,239	3,217	286	263	22.94	22.94
05/08/08	4,482,970	3,113	277	263	13.73	13.73
05/09/08	4,312,417	2,995	266	263	3.20	3.20
05/10/08	4,156,491	2,886	257	263	-6.43	
05/11/08	4,163,481	2,891	257	263	-6.00	
05/12/08	4,235,588	2,941	261	263	-1.54	
05/13/08	4,155,134	2,886	256	263	-6.51	
05/14/08	4,266,944	2,963	263	263	0.39	
05/15/08	4,454,340	3,093	275	263	11.96	11.96
05/16/08	4,371,515	3,036	270	263	6.85	6.85
05/17/08	4,182,192	2,904	258	263	-4.84	
05/18/08	4,277,642	2,971	264	263	1.05	1.05
05/19/08	4,267,448	2,964	263	263	0.42	
05/20/08	4,221,938	2,932	261	263	-2.39	
05/21/08	4,196,547	2,914	259	263	-3.95	
05/22/08	4,083,309	2,836	252	263	-10.94	
05/23/08	4,051,878	2,814	250	263	-12.88	
05/24/08	3,913,033	2,717	242	263	-21.45	
05/25/08	3,732,339	2,592	230	263	-32.61	
05/26/08	4,443,306	3,086	274	263	11.28	11.28
05/27/08	4,504,768	3,128	278	263	15.07	15.07
05/28/08	4,422,683	3,071	273	263	10.01	10.01
05/29/08	4,453,630	3,093	275	263	11.92	11.92
05/30/08	4,456,149	3,095	275	263	12.07	12.07
05/31/08	4,457,038	3,095	275	263	12.13	12.13
06/01/08	4,377,762	3,040	270	263	7.23	7.23

06/02/08	4,344,934	3,017	268	263	5.21	5.21
06/03/08	4,431,012	3,077	274	263	10.52	10.52
06/04/08	4,463,631	3,100	276	263	12.53	12.53
06/05/08	4,469,029	3,103	276	263	12.87	12.87
06/06/08	4,466,097	3,101	276	263	12.69	12.69
06/07/08	4,432,204	3,078	274	263	10.59	10.59
06/08/08	4,428,912	3,076	273	263	10.39	10.39
06/09/08	4,403,782	3,058	272	263	8.84	8.84
06/10/08	4,361,531	3,029	269	263	6.23	6.23
06/11/08	4,331,639	3,008	267	263	4.39	4.39
06/12/08	4,239,919	2,944	262	263	-1.28	
06/13/08	4,134,137	2,871	255	263	-7.81	
06/14/08	4,237,787	2,943	262	263	-1.41	
06/15/08	4,282,459	2,974	264	263	1.35	1.35
06/16/08	4,285,507	2,976	265	263	1.54	1.54
06/17/08	4,303,802	2,989	266	263	2.67	2.67
06/18/08	4,314,334	2,996	266	263	3.32	3.32
06/19/08	4,305,286	2,990	266	263	2.76	2.76
06/20/08	4,277,942	2,971	264	263	1.07	1.07
06/21/08	4,272,152	2,967	264	263	0.71	
06/22/08	4,429,971	3,076	273	263	10.46	10.46
06/23/08	4,652,307	3,231	287	263	24.18	24.18
06/24/08	4,534,015	3,149	280	263	16.88	16.88
06/25/08	4,136,764	2,873	255	263	-7.64	
06/26/08	4,067,224	2,824	251	263	-11.94	
06/27/08	4,017,765	2,790	248	263	-14.99	
06/28/08	3,991,451	2,772	246	263	-16.61	
06/29/08	4,060,935	2,820	251	263	-12.33	
06/30/08	4,913,814	3,412	303	263	40.32	40.32
07/01/08	4,750,586	3,299	293	263	30.25	30.25
07/02/08	4,594,211	3,190	284	263	20.59	20.59
07/03/08	4,796,598	3,331	296	263	33.09	33.09
07/04/08	4,676,266	3,247	289	263	25.66	25.66
07/05/08	4,619,433	3,208	285	263	22.15	22.15
07/06/08	4,469,614	3,104	276	263	12.90	12.90
07/07/08	4,231,210	2,938	261	263	-1.81	
07/08/08	4,525,718	3,143	279	263	16.37	16.37
07/09/08	4,764,916	3,309	294	263	31.13	31.13
07/10/08	4,488,474	3,117	277	263	14.07	14.07
07/11/08	4,454,285	3,093	275	263	11.96	11.96
07/12/08	4,369,455	3,034	270	263	6.72	6.72
07/13/08	4,276,638	2,970	264	263	0.99	
07/14/08	4,182,453	2,904	258	263	-4.82	
07/15/08	4,142,108	2,876	256	263	-7.31	

07/16/08	4,180,444	2,903	258	263	-4.95	
07/17/08	4,281,180	2,973	264	263	1.27	1.27
07/18/08	4,219,859	2,930	260	263	-2.51	
07/19/08	4,199,192	2,916	259	263	-3.79	
07/20/08	4,116,838	2,859	254	263	-8.87	
07/21/08	4,060,533	2,820	251	263	-12.35	
07/22/08	3,995,156	2,774	247	263	-16.39	
07/23/08	4,131,517	2,869	255	263	-7.97	
07/24/08	4,229,743	2,937	261	263	-1.90	
07/25/08	4,240,486	2,945	262	263	-1.24	
07/26/08	4,165,101	2,892	257	263	-5.89	
07/27/08	4,171,612	2,897	258	263	-5.49	
07/28/08	4,303,120	2,988	266	263	2.62	2.62
07/29/08	4,190,322	2,910	259	263	-4.34	
07/30/08	4,234,554	2,941	261	263	-1.61	
07/31/08	4,239,251	2,944	262	263	-1.32	
08/01/08	4,297,434	2,984	265	263	2.27	2.27
08/02/08	4,318,570	2,999	267	263	3.58	3.58
08/03/08	4,266,244	2,963	263	263	0.35	
08/04/08	4,217,172	2,929	260	263	-2.68	
08/05/08	4,199,394	2,916	259	263	-3.78	
08/06/08	4,178,730	2,902	258	263	-5.05	
08/07/08	3,990,033	2,771	246	263	-16.70	
08/08/08	4,021,929	2,793	248	263	-14.73	
08/09/08	4,122,334	2,863	254	263	-8.53	
08/10/08	4,121,916	2,862	254	263	-8.56	
08/11/08	4,481,621	3,112	277	263	13.64	13.64
08/12/08	4,486,772	3,116	277	263	13.96	13.96
08/13/08	4,568,593	3,173	282	263	19.01	19.01
08/14/08	4,610,417	3,202	285	263	21.59	21.59
08/15/08	4,625,242	3,212	286	263	22.51	22.51
08/16/08	4,640,134	3,222	286	263	23.43	23.43
08/17/08	4,650,760	3,230	287	263	24.08	24.08
08/18/08	4,666,134	3,240	288	263	25.03	25.03
08/19/08	4,675,642	3,247	289	263	25.62	25.62
08/20/08	4,609,079	3,201	285	263	21.51	21.51
08/21/08	4,545,845	3,157	281	263	17.61	17.61
08/22/08	4,570,810	3,174	282	263	19.15	19.15
08/23/08	4,590,135	3,188	283	263	20.34	20.34
08/24/08	4,596,484	3,192	284	263	20.73	20.73
08/25/08	4,624,845	3,212	285	263	22.48	22.48
08/26/08	4,468,303	3,103	276	263	12.82	12.82
08/27/08	4,337,409	3,012	268	263	4.74	4.74
08/28/08	4,339,858	3,014	268	263	4.89	4.89

08/29/08	4,327,296	3,005	267	263	4.12	4.12
08/30/08	4,343,151	3,016	268	263	5.10	5.10
08/31/08	4,334,555	3,010	268	263	4.57	4.57
09/01/08	4,278,415	2,971	264	263	1.10	1.10
09/02/08	4,230,432	2,938	261	263	-1.86	
09/03/08	4,205,516	2,920	260	263	-3.40	
09/04/08	4,187,109	2,908	258	263	-4.54	
09/05/08	4,163,714	2,891	257	263	-5.98	
09/06/08	4,177,920	2,901	258	263	-5.10	
09/07/08	4,161,649	2,890	257	263	-6.11	
09/08/08	4,100,471	2,848	253	263	-9.88	
09/09/08	4,079,666	2,833	252	263	-11.17	
09/10/08	4,102,664	2,849	253	263	-9.75	
09/11/08	4,136,093	2,872	255	263	-7.69	
09/12/08	4,107,200	2,852	254	263	-9.47	
09/13/08	4,087,242	2,838	252	263	-10.70	
09/14/08	4,092,360	2,842	253	263	-10.39	
09/15/08	4,079,421	2,833	252	263	-11.18	
09/16/08	4,074,642	2,830	252	263	-11.48	
09/17/08	4,097,533	2,846	253	263	-10.07	
09/18/08	4,094,404	2,843	253	263	-10.26	
09/19/08	4,115,764	2,858	254	263	-8.94	
09/20/08	4,098,698	2,846	253	263	-9.99	
09/21/08	4,166,794	2,894	257	263	-5.79	
09/22/08	4,280,345	2,972	264	263	1.22	1.22
09/23/08	4,284,003	2,975	264	263	1.44	1.44
09/24/08	4,257,951	2,957	263	263	-0.16	
09/25/08	4,263,069	2,960	263	263	0.15	
09/26/08	4,289,739	2,979	265	263	1.80	1.80
09/27/08	4,342,082	3,015	268	263	5.03	5.03
09/28/08	4,348,279	3,020	268	263	5.41	5.41
09/29/08	4,330,428	3,007	267	263	4.31	4.31
09/30/08	4,301,776	2,987	266	263	2.54	2.54
10/01/08	4,326,648	3,005	267	263	4.08	4.08
10/02/08	4,312,008	2,994	266	263	3.17	3.17
10/03/08	4,276,608	2,970	264	263	0.99	
10/04/08	4,270,246	2,965	264	263	0.60	
10/05/08	4,265,735	2,962	263	263	0.32	
10/06/08	4,213,570	2,926	260	263	-2.90	
10/07/08	4,206,710	2,921	260	263	-3.33	
10/08/08	4,150,899	2,883	256	263	-6.77	
10/09/08	4,072,081	2,828	251	263	-11.64	
10/10/08	4,073,808	2,829	251	263	-11.53	
10/11/08	4,049,972	2,812	250	263	-13.00	

10/12/08	4,047,340	2,811	250	263	-13.16	
10/13/08	4,031,112	2,799	249	263	-14.17	
10/14/08	4,039,306	2,805	249	263	-13.66	
10/15/08	4,068,846	2,826	251	263	-11.84	
10/16/08	4,078,438	2,832	252	263	-11.24	
10/17/08	4,129,719	2,868	255	263	-8.08	
10/18/08	4,354,139	3,024	269	263	5.77	5.77
10/19/08	4,371,058	3,035	270	263	6.82	6.82
10/20/08	4,180,246	2,903	258	263	-4.96	
10/21/08	4,184,848	2,906	258	263	-4.68	
10/22/08	4,180,278	2,903	258	263	-4.96	
10/23/08	4,180,874	2,903	258	263	-4.92	
10/24/08	4,184,522	2,906	258	263	-4.70	
10/25/08	4,182,633	2,905	258	263	-4.81	
10/26/08	4,177,110	2,901	258	263	-5.15	
10/27/08	4,175,378	2,900	258	263	-5.26	
10/28/08	3,958,022	2,749	244	263	-18.68	
10/29/08	4,237,896	2,943	262	263	-1.40	
10/30/08	4,338,454	3,013	268	263	4.81	4.81
10/31/08	4,317,328	2,998	267	263	3.50	3.50
11/01/08	4,314,307	2,996	266	263	3.32	3.32
11/02/08	4,313,188	2,995	266	263	3.25	3.25
11/03/08	4,306,742	2,991	266	263	2.85	2.85
11/04/08	4,301,119	2,987	266	263	2.50	2.50
11/05/08	4,296,347	2,984	265	263	2.21	2.21
11/06/08	3,689,878	2,562	228	263	-35.23	
11/07/08	4,380,609	3,042	270	263	7.41	7.41
11/08/08	4,398,318	3,054	272	263	8.50	8.50
11/09/08	4,353,573	3,023	269	263	5.74	5.74
11/10/08	4,330,922	3,008	267	263	4.34	4.34
11/11/08	4,322,819	3,002	267	263	3.84	3.84
11/12/08	4,318,070	2,999	267	263	3.55	3.55
11/13/08	4,361,945	3,029	269	263	6.26	6.26
11/14/08	4,351,928	3,022	269	263	5.64	5.64
11/15/08	4,339,193	3,013	268	263	4.85	4.85
11/16/08	4,364,453	3,031	269	263	6.41	6.41
11/17/08	4,364,984	3,031	269	263	6.44	6.44
11/18/08	4,364,942	3,031	269	263	6.44	6.44
11/19/08	4,363,494	3,030	269	263	6.35	6.35
11/20/08	4,364,436	3,031	269	263	6.41	6.41
11/21/08	4,336,526	3,011	268	263	4.69	4.69
11/22/08	3,133,348	2,176	193	263	-69.58	
11/23/08	3,350,311	2,327	207	263	-56.19	
11/24/08	2,459,859	1,708	152	263	-111.16	

11/25/08	4,373,053	3,037	270	263	6.94	6.94		
11/26/08	4,394,302	3,052	271	263	8.25	8.25		
11/27/08	4,173,797	2,898	258	263	-5.36			
11/28/08	4,392,834	3,051	271	263	8.16	8.16		
11/29/08	4,430,359	3,077	273	263	10.48	10.48		
11/30/08	4,415,461	3,066	273	263	9.56	9.56		
12/01/08	4,399,028	3,055	272	263	8.54	8.54		
12/02/08	4,402,615	3,057	272	263	8.77	8.77		
12/03/08	4,322,132	3,001	267	263	3.80	3.80		
12/04/08	3,895,705	2,705	240	263	-22.52			
12/05/08	4,227,218	2,936	261	263	-2.06			
12/06/08	4,458,938	3,096	275	263	12.24	12.24		
12/07/08	4,364,901	3,031	269	263	6.44	6.44		
12/08/08	4,355,660	3,025	269	263	5.87	5.87		
12/09/08	4,353,986	3,024	269	263	5.76	5.76		
12/10/08	4,370,078	3,035	270	263	6.76	6.76		
12/11/08	3,650,629	2,535	225	263	-37.65			
12/12/08	2,754,447	1,913	170	263	-92.97			
12/13/08	3,792,051	2,633	234	263	-28.92			
12/14/08	948,635	659	59	263	-204.44			
12/15/08	3,748,140	2,603	231	263	-31.63			
12/16/08	4,379,240	3,041	270	263	7.32	7.32		
12/17/08	4,471,786	3,105	276	263	13.04	13.04		
12/18/08	4,461,467	3,098	275	263	12.40	12.40		
12/19/08	4,359,850	3,028	269	263	6.13	6.13		
12/20/08	4,242,389	2,946	262	263	-1.12			
12/21/08	4,249,229	2,951	262	263	-0.70			
12/22/08	4,248,553	2,950	262	263	-0.74			
12/23/08	4,155,420	2,886	257	263	-6.49			
12/24/08	4,142,129	2,876	256	263	-7.31			
12/25/08	4,132,014	2,869	255	263	-7.94			
12/26/08	4,128,982	2,867	255	263	-8.12			
12/27/08	4,102,417	2,849	253	263	-9.76			
12/28/08	4,094,366	2,843	253	263	-10.26			
12/29/08	4,110,520	2,855	254	263	-9.26			
12/30/08	4,116,640	2,859	254	263	-8.89			
12/31/08	4,092,647	2,842	253	263	-10.37		2200.53	110.03
01/01/09	4,095,058	2,844	253	263	-10.22			
01/02/09	4,110,383	2,854	254	263	-9.27			
01/03/09	3,228,467	2,242	199	263	-63.71			
01/04/09	3,169,353	2,201	196	263	-67.36			
01/05/09	4,455,261	3,094	275	263	12.02	12.02		
01/06/09	4,205,942	2,921	260	263	-3.37			
01/07/09	4,151,823	2,883	256	263	-6.71			

01/08/09	4,135,189	2,872	255	263	-7.74	
01/09/09	4,121,881	2,862	254	263	-8.56	
01/10/09	4,107,350	2,852	254	263	-9.46	
01/11/09	4,102,004	2,849	253	263	-9.79	
01/12/09	4,082,265	2,835	252	263	-11.01	
01/13/09	4,062,020	2,821	251	263	-12.26	
01/14/09	4,034,598	2,802	249	263	-13.95	
01/15/09	4,013,464	2,787	248	263	-15.26	
01/16/09	3,992,935	2,773	246	263	-16.52	
01/17/09	3,964,976	2,753	245	263	-18.25	
01/18/09	2,837,908	1,971	175	263	-87.82	
01/19/09	3,258,911	2,263	201	263	-61.83	
01/20/09	2,825,753	1,962	174	263	-88.57	
01/21/09	4,090,621	2,841	253	263	-10.49	
01/22/09	4,130,648	2,869	255	263	-8.02	
01/23/09	3,458,818	2,402	214	263	-49.49	
01/24/09	2,771,514	1,925	171	263	-91.92	
01/25/09	3,670,091	2,549	227	263	-36.45	
01/26/09	3,784,762	2,628	234	263	-29.37	
01/27/09	3,939,157	2,736	243	263	-19.84	
01/28/09	4,285,611	2,976	265	263	1.54	1.54
01/29/09	4,050,465	2,813	250	263	-12.97	
01/30/09	3,968,970	2,756	245	263	-18.00	
01/31/09	3,933,966	2,732	243	263	-20.16	
02/01/09	3,725,629	2,587	230	263	-33.02	
02/02/09	3,761,446	2,612	232	263	-30.81	
02/03/09	3,724,127	2,586	230	263	-33.12	
02/04/09	3,718,626	2,582	230	263	-33.46	
02/05/09	3,758,531	2,610	232	263	-30.99	
02/06/09	3,773,785	2,621	233	263	-30.05	
02/07/09	3,771,166	2,619	233	263	-30.21	
02/08/09	3,906,954	2,713	241	263	-21.83	
02/09/09	4,131,339	2,869	255	263	-7.98	
02/10/09	4,105,176	2,851	253	263	-9.59	
02/11/09	3,873,756	2,690	239	263	-23.88	
02/12/09	3,907,801	2,714	241	263	-21.78	
02/13/09	3,171,027	2,202	196	263	-67.26	
02/14/09	3,858,065	2,679	238	263	-24.85	
02/15/09	3,853,784	2,676	238	263	-25.11	
02/16/09	3,852,462	2,675	238	263	-25.19	
02/17/09	3,765,747	2,615	232	263	-30.55	
02/18/09	3,743,158	2,599	231	263	-31.94	
02/19/09	3,735,951	2,594	231	263	-32.39	
02/20/09	3,954,405	2,746	244	263	-18.90	

02/21/09	3,734,272	2,593	231	263	-32.49	
02/22/09	4,034,993	2,802	249	263	-13.93	
02/23/09	4,183,181	2,905	258	263	-4.78	
02/24/09	4,224,219	2,933	261	263	-2.25	
02/25/09	4,205,492	2,920	260	263	-3.40	
02/26/09	4,236,258	2,942	261	263	-1.50	
02/27/09	4,343,155	3,016	268	263	5.10	5.10
02/28/09	3,699,059	2,569	228	263	-34.66	
03/01/09	4,674,397	3,246	289	263	25.54	25.54
03/02/09	4,048,827	2,812	250	263	-13.07	
03/03/09	4,084,837	2,837	252	263	-10.85	
03/04/09	4,092,137	2,842	253	263	-10.40	
03/05/09	4,101,816	2,848	253	263	-9.80	
03/06/09	3,834,830	2,663	237	263	-26.28	
03/07/09	3,609,040	2,506	223	263	-40.22	
03/08/09	5,317,376	3,693	328	263	65.23	65.23
03/09/09	4,700,581	3,264	290	263	27.16	27.16
03/10/09	3,567,467	2,477	220	263	-42.79	
03/11/09	4,724,675	3,281	292	263	28.65	28.65
03/12/09	4,786,508	3,324	295	263	32.46	32.46
03/13/09	5,084,865	3,531	314	263	50.88	50.88
03/14/09	5,094,945	3,538	315	263	51.50	51.50
03/15/09	5,096,095	3,539	315	263	51.57	51.57
03/16/09	5,050,126	3,507	312	263	48.74	48.74
03/17/09	5,055,135	3,511	312	263	49.05	49.05
03/18/09	4,951,932	3,439	306	263	42.67	42.67
03/19/09	5,012,912	3,481	309	263	46.44	46.44
03/20/09	5,179,283	3,597	320	263	56.71	56.71
03/21/09	5,349,776	3,715	330	263	67.23	67.23
03/22/09	5,769,148	4,006	356	263	93.12	93.12
03/23/09	5,727,430	3,977	354	263	90.55	90.55
03/24/09	5,397,097	3,748	333	263	70.15	70.15
03/25/09	5,296,676	3,678	327	263	63.96	63.96
03/26/09	4,466,515	3,102	276	263	12.71	12.71
03/27/09	2,424,140	1,683	150	263	-113.36	
03/28/09	3,395,274	2,358	210	263	-53.42	
03/29/09	3,337,879	2,318	206	263	-56.96	
03/30/09	3,323,731	2,308	205	263	-57.83	
03/31/09	3,332,223	2,314	206	263	-57.31	
04/01/09	3,331,779	2,314	206	263	-57.33	
04/02/09	3,324,117	2,308	205	263	-57.81	
04/03/09	3,325,581	2,309	205	263	-57.72	
04/04/09	3,334,286	2,315	206	263	-57.18	
04/05/09	3,528,305	2,450	218	263	-45.20	

04/06/09	3,223,156	2,238	199	263	-64.04	
04/07/09	4,312,040	2,994	266	263	3.18	3.18
04/08/09	4,339,829	3,014	268	263	4.89	4.89
04/09/09	4,362,956	3,030	269	263	6.32	6.32
04/10/09	4,386,094	3,046	271	263	7.75	7.75
04/11/09	4,440,233	3,083	274	263	11.09	11.09
04/12/09	4,474,762	3,107	276	263	13.22	13.22
04/13/09	4,485,804	3,115	277	263	13.90	13.90
04/14/09	4,493,895	3,121	277	263	14.40	14.40
04/15/09	4,466,955	3,102	276	263	12.74	12.74
04/16/09	4,429,386	3,076	273	263	10.42	10.42
04/17/09	4,408,064	3,061	272	263	9.10	9.10
04/18/09	4,214,825	2,927	260	263	-2.83	
04/19/09	4,197,510	2,915	259	263	-3.89	
04/20/09	4,260,902	2,959	263	263	0.02	
04/21/09	4,475,672	3,108	276	263	13.28	13.28
04/22/09	4,534,935	3,149	280	263	16.93	16.93
04/23/09	4,417,975	3,068	273	263	9.71	9.71
04/24/09	3,782,808	2,627	234	263	-29.49	
04/25/09	4,199,514	2,916	259	263	-3.77	
04/26/09	3,938,465	2,735	243	263	-19.88	
04/27/09	3,833,217	2,662	237	263	-26.38	
04/28/09	3,829,196	2,659	236	263	-26.63	
04/29/09	3,777,337	2,623	233	263	-29.83	
04/30/09	3,715,856	2,580	229	263	-33.63	
05/01/09	4,392,985	3,051	271	263	8.17	8.17
05/02/09	4,809,832	3,340	297	263	33.90	33.90
05/03/09	4,401,030	3,056	272	263	8.67	8.67
05/04/09	4,290,120	2,979	265	263	1.82	1.82
05/05/09	4,025,644	2,796	248	263	-14.50	
05/06/09	4,012,971	2,787	248	263	-15.29	
05/07/09	4,070,569	2,827	251	263	-11.73	
05/08/09	4,048,084	2,811	250	263	-13.12	
05/09/09	4,025,763	2,796	249	263	-14.50	
05/10/09	4,071,429	2,827	251	263	-11.68	
05/11/09	4,186,207	2,907	258	263	-4.59	
05/12/09	4,230,094	2,938	261	263	-1.88	
05/13/09	4,185,847	2,907	258	263	-4.61	
05/14/09	4,188,115	2,908	259	263	-4.47	
05/15/09	4,330,065	3,007	267	263	4.29	4.29
05/16/09	4,279,740	2,972	264	263	1.18	1.18
05/17/09	4,344,791	3,017	268	263	5.20	5.20
05/18/09	4,212,001	2,925	260	263	-3.00	
05/19/09	3,869,823	2,687	239	263	-24.12	

05/20/09	3,839,570	2,666	237	263	-25.99	
05/21/09	4,005,429	2,782	247	263	-15.75	
05/22/09	4,185,847	2,907	258	263	-4.61	
05/23/09	4,202,734	2,919	259	263	-3.57	
05/24/09	4,236,958	2,942	262	263	-1.46	
05/25/09	4,272,210	2,967	264	263	0.72	
05/26/09	4,240,269	2,945	262	263	-1.26	
05/27/09	4,244,177	2,947	262	263	-1.01	
05/28/09	4,012,839	2,787	248	263	-15.29	
05/29/09	4,172,907	2,898	258	263	-5.41	
05/30/09	4,156,349	2,886	257	263	-6.44	
05/31/09	4,146,128	2,879	256	263	-7.07	
06/01/09	4,063,119	2,822	251	263	-12.19	
06/02/09	3,888,124	2,700	240	263	-22.99	
06/03/09	3,719,560	2,583	230	263	-33.40	
06/04/09	3,627,705	2,519	224	263	-39.07	
06/05/09	3,605,106	2,504	223	263	-40.46	
06/06/09	3,638,542	2,527	225	263	-38.40	
06/07/09	2,797,132	1,942	173	263	-90.34	
06/08/09	4,096,562	2,845	253	263	-10.13	
06/09/09	4,103,024	2,849	253	263	-9.73	
06/10/09	4,068,981	2,826	251	263	-11.83	
06/11/09	4,629,902	3,215	286	263	22.80	22.80
06/12/09	5,036,129	3,497	311	263	47.87	47.87
06/13/09	5,069,985	3,521	313	263	49.96	49.96
06/14/09	5,112,489	3,550	316	263	52.59	52.59
06/15/09	5,176,159	3,595	320	263	56.52	56.52
06/16/09	5,226,213	3,629	323	263	59.61	59.61
06/17/09	5,250,031	3,646	324	263	61.08	61.08
06/18/09	5,412,431	3,759	334	263	71.10	71.10
06/19/09	5,431,806	3,772	335	263	72.30	72.30
06/20/09	5,355,675	3,719	331	263	67.60	67.60
06/21/09	5,389,232	3,743	333	263	69.67	69.67
06/22/09	5,319,494	3,694	328	263	65.36	65.36
06/23/09	5,237,478	3,637	323	263	60.30	60.30
06/24/09	5,194,612	3,607	321	263	57.66	57.66
06/25/09	4,920,040	3,417	304	263	40.71	40.71
06/26/09	4,394,683	3,052	271	263	8.28	8.28
06/27/09	4,257,711	2,957	263	263	-0.18	
06/28/09	4,229,601	2,937	261	263	-1.91	
06/29/09	4,569,352	3,173	282	263	19.06	19.06
06/30/09	4,708,371	3,270	291	263	27.64	27.64
07/01/09	4,614,404	3,204	285	263	21.84	21.84
07/02/09	4,451,998	3,092	275	263	11.81	11.81

07/03/09	4,374,997	3,038	270	263	7.06	7.06
07/04/09	4,170,754	2,896	257	263	-5.55	
07/05/09	4,047,553	2,811	250	263	-13.15	
07/06/09	3,983,083	2,766	246	263	-17.13	
07/07/09	4,216,663	2,928	260	263	-2.71	
07/08/09	4,228,576	2,937	261	263	-1.98	
07/09/09	4,202,076	2,918	259	263	-3.61	
07/10/09	4,087,618	2,839	252	263	-10.68	
07/11/09	4,009,582	2,784	248	263	-15.49	
07/12/09	3,984,548	2,767	246	263	-17.04	
07/13/09	3,980,640	2,764	246	263	-17.28	
07/14/09	3,913,130	2,717	242	263	-21.45	
07/15/09	3,983,969	2,767	246	263	-17.08	
07/16/09	4,041,388	2,807	249	263	-13.53	
07/17/09	4,120,939	2,862	254	263	-8.62	
07/18/09	4,129,736	2,868	255	263	-8.08	
07/19/09	4,099,189	2,847	253	263	-9.96	
07/20/09	4,132,275	2,870	255	263	-7.92	
07/21/09	4,215,617	2,928	260	263	-2.78	
07/22/09	4,252,635	2,953	263	263	-0.49	
07/23/09	4,275,879	2,969	264	263	0.94	
07/24/09	4,243,478	2,947	262	263	-1.06	
07/25/09	4,346,749	3,019	268	263	5.32	5.32
07/26/09	4,330,975	3,008	267	263	4.34	4.34
07/27/09	4,280,568	2,973	264	263	1.23	1.23
07/28/09	4,422,114	3,071	273	263	9.97	9.97
07/29/09	4,361,303	3,029	269	263	6.22	6.22
07/30/09	4,295,296	2,983	265	263	2.14	2.14
07/31/09	4,284,477	2,975	264	263	1.47	1.47
08/01/09	4,339,954	3,014	268	263	4.90	4.90
08/02/09	4,337,800	3,012	268	263	4.77	4.77
08/03/09	4,338,928	3,013	268	263	4.84	4.84
08/04/09	4,355,476	3,025	269	263	5.86	5.86
08/05/09	4,349,202	3,020	268	263	5.47	5.47
08/06/09	4,411,842	3,064	272	263	9.34	9.34
08/07/09	4,480,409	3,111	277	263	13.57	13.57
08/08/09	4,449,066	3,090	275	263	11.63	11.63
08/09/09	4,455,910	3,094	275	263	12.06	12.06
08/10/09	4,445,166	3,087	274	263	11.39	11.39
08/11/09	4,440,940	3,084	274	263	11.13	11.13
08/12/09	4,450,375	3,091	275	263	11.71	11.71
08/13/09	4,460,590	3,098	275	263	12.35	12.35
08/14/09	4,447,281	3,088	275	263	11.52	11.52
08/15/09	4,531,452	3,147	280	263	16.72	16.72

08/16/09	4,470,174	3,104	276	263	12.94	12.94
08/17/09	4,466,508	3,102	276	263	12.71	12.71
08/18/09	4,448,735	3,089	275	263	11.61	11.61
08/19/09	4,441,901	3,085	274	263	11.19	11.19
08/20/09	4,395,119	3,052	271	263	8.30	8.30
08/21/09	4,406,856	3,060	272	263	9.03	9.03
08/22/09	4,423,009	3,072	273	263	10.03	10.03
08/23/09	4,446,450	3,088	274	263	11.47	11.47
08/24/09	4,490,339	3,118	277	263	14.18	14.18
08/25/09	4,419,747	3,069	273	263	9.82	9.82
08/26/09	4,408,973	3,062	272	263	9.16	9.16
08/27/09	4,431,641	3,078	274	263	10.56	10.56
08/28/09	4,384,082	3,045	271	263	7.62	7.62
08/29/09	4,379,648	3,041	270	263	7.35	7.35
08/30/09	4,405,573	3,059	272	263	8.95	8.95
08/31/09	4,393,713	3,051	271	263	8.22	8.22
09/01/09	4,340,933	3,015	268	263	4.96	4.96
09/02/09	4,307,666	2,991	266	263	2.91	2.91
09/03/09	4,283,571	2,975	264	263	1.42	1.42
09/04/09	4,219,593	2,930	260	263	-2.53	
09/05/09	4,178,283	2,902	258	263	-5.08	
09/06/09	4,167,511	2,894	257	263	-5.75	
09/07/09	4,129,884	2,868	255	263	-8.07	
09/08/09	4,048,980	2,812	250	263	-13.06	
09/09/09	4,013,287	2,787	248	263	-15.27	
09/10/09	3,987,221	2,769	246	263	-16.88	
09/11/09	3,940,505	2,736	243	263	-19.76	
09/12/09	3,929,388	2,729	243	263	-20.45	
09/13/09	3,894,190	2,704	240	263	-22.62	
09/14/09	3,948,708	2,742	244	263	-19.25	
09/15/09	4,058,211	2,818	251	263	-12.49	
09/16/09	4,033,767	2,801	249	263	-14.00	
09/17/09	4,107,317	2,852	254	263	-9.46	
09/18/09	4,184,251	2,906	258	263	-4.71	
09/19/09	4,245,036	2,948	262	263	-0.96	
09/20/09	4,460,323	3,097	275	263	12.33	12.33
09/21/09	4,336,119	3,011	268	263	4.66	4.66
09/22/09	4,307,340	2,991	266	263	2.89	2.89
09/23/09	4,383,673	3,044	271	263	7.60	7.60
09/24/09	4,376,823	3,039	270	263	7.17	7.17
09/25/09	4,385,113	3,045	271	263	7.69	7.69
09/26/09	4,359,546	3,027	269	263	6.11	6.11
09/27/09	4,327,709	3,005	267	263	4.14	4.14
09/28/09	4,293,041	2,981	265	263	2.00	2.00

09/29/09	4,310,259	2,993	266	263	3.07	3.07
09/30/09	4,343,049	3,016	268	263	5.09	5.09
10/01/09	4,383,194	3,044	271	263	7.57	7.57
10/02/09	4,318,968	2,999	267	263	3.60	3.60
10/03/09	4,321,799	3,001	267	263	3.78	3.78
10/04/09	4,298,031	2,985	265	263	2.31	2.31
10/05/09	4,262,102	2,960	263	263	0.09	
10/06/09	4,852,678	3,370	300	263	36.55	36.55
10/07/09	5,061,756	3,515	312	263	49.45	49.45
10/08/09	4,613,299	3,204	285	263	21.77	21.77
10/09/09	4,564,835	3,170	282	263	18.78	18.78
10/10/09	2,216,319	1,539	137	263	-126.19	
10/11/09	2,203,270	1,530	136	263	-127.00	
10/12/09	2,427,003	1,685	150	263	-113.19	
10/13/09	4,595,094	3,191	284	263	20.65	20.65
10/14/09	4,648,871	3,228	287	263	23.97	23.97
10/15/09	4,724,980	3,281	292	263	28.67	28.67
10/16/09	4,662,109	3,238	288	263	24.78	24.78
10/17/09	4,650,615	3,230	287	263	24.08	24.08
10/18/09	4,699,846	3,264	290	263	27.11	27.11
10/19/09	4,774,734	3,316	295	263	31.74	31.74
10/20/09	4,756,500	3,303	294	263	30.61	30.61
10/21/09	4,688,770	3,256	289	263	26.43	26.43
10/22/09	4,656,375	3,234	287	263	24.43	24.43
10/23/09	4,643,553	3,225	287	263	23.64	23.64
10/24/09	4,641,327	3,223	287	263	23.50	23.50
10/25/09	4,561,556	3,168	282	263	18.58	18.58
10/26/09	4,538,164	3,152	280	263	17.13	17.13
10/27/09	5,316,737	3,692	328	263	65.19	65.19
10/28/09	6,074,872	4,219	375	263	111.99	111.99
10/29/09	4,984,257	3,461	308	263	44.67	44.67
10/30/09	6,327,864	4,394	391	263	127.61	127.61
10/31/09	6,010,643	4,174	371	263	108.03	108.03
11/01/09	6,031,823	4,189	372	263	109.33	109.33
11/02/09	6,001,004	4,167	370	263	107.43	107.43
11/03/09	5,989,261	4,159	370	263	106.71	106.71
11/04/09	5,945,635	4,129	367	263	104.01	104.01
11/05/09	5,980,439	4,153	369	263	106.16	106.16
11/06/09	6,006,090	4,171	371	263	107.75	107.75
11/07/09	6,000,420	4,167	370	263	107.40	107.40
11/08/09	5,966,756	4,144	368	263	105.32	105.32
11/09/09	5,076,447	3,525	313	263	50.36	50.36
11/10/09	6,115,433	4,247	377	263	114.50	114.50
11/11/09	6,025,931	4,185	372	263	108.97	108.97

11/12/09	6,157,009	4,276	380	263	117.06	117.06
11/13/09	5,250,878	3,646	324	263	61.13	61.13
11/14/09	5,215,329	3,622	322	263	58.93	58.93
11/15/09	5,030,523	3,493	311	263	47.53	47.53
11/16/09	5,945,352	4,129	367	263	104.00	104.00
11/17/09	6,156,101	4,275	380	263	117.01	117.01
11/18/09	6,156,606	4,275	380	263	117.04	117.04
11/19/09	5,938,738	4,124	367	263	103.59	103.59
11/20/09	5,901,118	4,098	364	263	101.27	101.27
11/21/09	5,923,747	4,114	366	263	102.66	102.66
11/22/09	3,836,355	2,664	237	263	-26.19	
11/23/09	6,113,597	4,246	377	263	114.38	114.38
11/24/09	4,622,477	3,210	285	263	22.34	22.34
11/25/09	5,731,114	3,980	354	263	90.77	90.77
11/26/09	5,702,452	3,960	352	263	89.00	89.00
11/27/09	5,749,697	3,993	355	263	91.92	91.92
11/28/09	5,860,301	4,070	362	263	98.75	98.75
11/29/09	5,689,379	3,951	351	263	88.20	88.20
11/30/09	5,057,653	3,512	312	263	49.20	49.20
12/01/09	5,175,401	3,594	319	263	56.47	56.47
12/02/09	2,138,283	1,485	132	263	-131.01	
12/03/09	4,675,648	3,247	289	263	25.62	25.62
12/04/09	4,832,776	3,356	298	263	35.32	35.32
12/05/09	5,870,453	4,077	362	263	99.37	99.37
12/06/09	5,720,104	3,972	353	263	90.09	90.09
12/07/09	5,187,591	3,602	320	263	57.22	57.22
12/08/09	5,606,849	3,894	346	263	83.10	83.10
12/09/09	6,011,709	4,175	371	263	108.09	108.09
12/10/09	6,029,710	4,187	372	263	109.20	109.20
12/11/09	5,980,521	4,153	369	263	106.17	106.17
12/12/09	5,783,311	4,016	357	263	93.99	93.99
12/13/09	5,510,143	3,826	340	263	77.13	77.13
12/14/09	5,368,195	3,728	331	263	68.37	68.37
12/15/09	5,338,323	3,707	330	263	66.53	66.53
12/16/09	5,337,467	3,707	329	263	66.47	66.47
12/17/09	5,363,653	3,725	331	263	68.09	68.09
12/18/09	5,173,759	3,593	319	263	56.37	56.37
12/19/09	5,154,200	3,579	318	263	55.16	55.16
12/20/09	5,251,432	3,647	324	263	61.16	61.16
12/21/09	5,287,588	3,672	326	263	63.39	63.39
12/22/09	5,238,644	3,638	323	263	60.37	60.37
12/23/09	5,201,914	3,612	321	263	58.11	58.11
12/24/09	4,064,143	2,822	251	263	-12.13	
12/25/09	5,564,777	3,864	344	263	80.50	80.50

12/26/09	4,508,675	3,131	278	263	15.31	15.31		
12/27/09	4,248,129	2,950	262	263	-0.77			
12/28/09	5,103,008	3,544	315	263	52.00	52.00		
12/29/09	5,501,564	3,821	340	263	76.60	76.60		
12/30/09	5,434,862	3,774	335	263	72.49	72.49		
12/31/09	5,309,251	3,687	328	263	64.73	64.73	8143.82	407.19
01/01/10	5,220,469	3,625	322	263	59.25	59.25		
01/02/10	5,146,167	3,574	318	263	54.66	54.66		
01/03/10	5,090,945	3,535	314	263	51.26	51.26		
01/04/10	5,036,910	3,498	311	263	47.92	47.92		
01/05/10	5,118,165	3,554	316	263	52.94	52.94		
01/06/10	3,770,395	2,618	233	263	-30.26			
01/07/10	3,753,377	2,607	232	263	-31.31			
01/08/10	5,410,330	3,757	334	263	70.97	70.97		
01/09/10	5,477,112	3,804	338	263	75.09	75.09		
01/10/10	5,207,745	3,616	321	263	58.47	58.47		
01/11/10	4,992,295	3,467	308	263	45.17	45.17		
01/12/10	4,998,710	3,471	309	263	45.56	45.56		
01/13/10	5,000,887	3,473	309	263	45.70	45.70		
01/14/10	4,962,998	3,447	306	263	43.36	43.36		
01/15/10	4,931,124	3,424	304	263	41.39	41.39		
01/16/10	4,906,679	3,407	303	263	39.88	39.88		
01/17/10	4,890,711	3,396	302	263	38.90	38.90		
01/18/10	4,893,575	3,398	302	263	39.07	39.07		
01/19/10	4,906,655	3,407	303	263	39.88	39.88		
01/20/10	4,863,151	3,377	300	263	37.19	37.19		
01/21/10	4,854,054	3,371	300	263	36.63	36.63		
01/22/10	4,861,396	3,376	300	263	37.09	37.09		
01/23/10	4,826,083	3,351	298	263	34.91	34.91		
01/24/10	4,870,778	3,382	301	263	37.67	37.67		
01/25/10	4,816,536	3,345	297	263	34.32	34.32		
01/26/10	4,813,608	3,343	297	263	34.14	34.14		
01/27/10	4,805,630	3,337	297	263	33.64	33.64		
01/28/10	3,790,316	2,632	234	263	-29.03			
01/29/10	5,237,981	3,637	323	263	60.33	60.33		
01/30/10	4,915,579	3,414	303	263	40.43	40.43		
01/31/10	4,758,531	3,305	294	263	30.74	30.74		
02/01/10	4,752,679	3,300	293	263	30.38	30.38		
02/02/10	4,716,298	3,275	291	263	28.13	28.13		
02/03/10	4,704,048	3,267	290	263	27.37	27.37		
02/04/10	4,721,370	3,279	291	263	28.44	28.44		
02/05/10	4,711,793	3,272	291	263	27.85	27.85		
02/06/10	4,740,358	3,292	293	263	29.61	29.61		
02/07/10	4,705,401	3,268	290	263	27.46	27.46		

02/08/10	3,881,661	2,696	240	263	-23.39	
02/09/10	2,953,491	2,051	182	263	-80.69	
02/10/10	5,032,916	3,495	311	263	47.67	47.67
02/11/10	5,276,163	3,664	326	263	62.69	62.69
02/12/10	4,878,730	3,388	301	263	38.16	38.16
02/13/10	4,737,739	3,290	292	263	29.45	29.45
02/14/10	4,677,687	3,248	289	263	25.75	25.75
02/15/10	4,692,351	3,259	290	263	26.65	26.65
02/16/10	4,660,761	3,237	288	263	24.70	24.70
02/17/10	4,660,146	3,236	288	263	24.66	24.66
02/18/10	4,632,900	3,217	286	263	22.98	22.98
02/19/10	4,630,363	3,216	286	263	22.82	22.82
02/20/10	4,397,825	3,054	271	263	8.47	8.47
02/21/10	3,307,000	2,297	204	263	-58.86	
02/22/10	4,184,738	2,906	258	263	-4.68	
02/23/10	4,786,222	3,324	295	263	32.45	32.45
02/24/10	4,875,098	3,385	301	263	37.93	37.93
02/25/10	4,737,020	3,290	292	263	29.41	29.41
02/26/10	4,484,258	3,114	277	263	13.81	13.81
02/27/10	4,451,391	3,091	275	263	11.78	11.78
02/28/10	4,419,015	3,069	273	263	9.78	9.78
03/01/10	4,367,464	3,033	270	263	6.60	6.60
03/02/10	4,366,044	3,032	270	263	6.51	6.51
03/03/10	4,396,657	3,053	271	263	8.40	8.40
03/04/10	4,326,374	3,004	267	263	4.06	4.06
03/05/10	4,360,388	3,028	269	263	6.16	6.16
03/06/10	4,308,901	2,992	266	263	2.98	2.98
03/07/10	4,344,308	3,017	268	263	5.17	5.17
03/08/10	4,195,783	2,914	259	263	-4.00	
03/09/10	3,962,061	2,751	245	263	-18.43	
03/10/10	3,975,223	2,761	245	263	-17.62	
03/11/10	2,891,862	2,008	179	263	-84.49	
03/12/10	3,348,826	2,326	207	263	-56.28	
03/13/10	3,859,402	2,680	238	263	-24.77	
03/14/10	3,874,129	2,690	239	263	-23.86	
03/15/10	3,863,171	2,683	238	263	-24.53	
03/16/10	3,924,231	2,725	242	263	-20.76	
03/17/10	4,082,007	2,835	252	263	-11.02	
03/18/10	4,184,125	2,906	258	263	-4.72	
03/19/10	4,257,948	2,957	263	263	-0.16	
03/20/10	3,135,055	2,177	194	263	-69.48	
03/21/10	3,378,525	2,346	209	263	-54.45	
03/22/10	4,577,239	3,179	283	263	19.55	19.55
03/23/10	4,524,567	3,142	279	263	16.29	16.29

03/24/10	3,911,151	2,716	241	263	-21.57	
03/25/10	4,402,556	3,057	272	263	8.76	8.76
03/26/10	4,416,764	3,067	273	263	9.64	9.64
03/27/10	4,392,818	3,051	271	263	8.16	8.16
03/28/10	4,396,262	3,053	271	263	8.37	8.37
03/29/10	4,516,373	3,136	279	263	15.79	15.79
03/30/10	4,775,855	3,317	295	263	31.81	31.81
03/31/10	4,567,341	3,172	282	263	18.93	18.93
04/01/10	4,525,619	3,143	279	263	16.36	16.36
04/02/10	3,308,828	2,298	204	263	-58.75	
04/03/10	4,409,764	3,062	272	263	9.21	9.21
04/04/10	3,130,407	2,174	193	263	-69.77	
04/05/10	3,459,093	2,402	214	263	-49.48	
04/06/10	4,218,600	2,930	260	263	-2.59	
04/07/10	3,085,267	2,143	190	263	-72.55	
04/08/10	4,177,830	2,901	258	263	-5.11	
04/09/10	3,582,998	2,488	221	263	-41.83	
04/10/10	3,209,351	2,229	198	263	-64.89	
04/11/10	4,681,184	3,251	289	263	25.96	25.96
04/12/10	4,703,303	3,266	290	263	27.33	27.33
04/13/10	4,752,251	3,300	293	263	30.35	30.35
04/14/10	4,766,658	3,310	294	263	31.24	31.24
04/15/10	4,240,952	2,945	262	263	-1.21	
04/16/10	4,022,325	2,793	248	263	-14.71	
04/17/10	4,157,974	2,887	257	263	-6.33	
04/18/10	3,813,084	2,648	235	263	-27.62	
04/19/10	3,771,821	2,619	233	263	-30.17	
04/20/10	4,554,400	3,163	281	263	18.14	18.14
04/21/10	5,387,562	3,741	333	263	69.57	69.57
04/22/10	4,932,094	3,425	304	263	41.45	41.45
04/23/10	4,280,017	2,972	264	263	1.20	1.20
04/24/10	4,142,970	2,877	256	263	-7.26	
04/25/10	3,852,788	2,676	238	263	-25.17	
04/26/10	3,986,749	2,769	246	263	-16.90	
04/27/10	4,306,534	2,991	266	263	2.84	2.84
04/28/10	4,373,843	3,037	270	263	6.99	6.99
04/29/10	4,275,304	2,969	264	263	0.91	
04/30/10	4,201,182	2,917	259	263	-3.67	
05/01/10	4,157,807	2,887	257	263	-6.35	
05/02/10	4,113,196	2,856	254	263	-9.10	
05/03/10	4,074,527	2,830	252	263	-11.49	
05/04/10	4,077,739	2,832	252	263	-11.29	
05/05/10	4,150,772	2,882	256	263	-6.78	
05/06/10	4,300,129	2,986	265	263	2.44	2.44

05/07/10	4,280,329	2,972	264	263	1.22	1.22
05/08/10	4,167,307	2,894	257	263	-5.76	
05/09/10	4,376,276	3,039	270	263	7.14	7.14
05/10/10	4,414,078	3,065	272	263	9.47	9.47
05/11/10	4,453,854	3,093	275	263	11.93	11.93
05/12/10	4,432,497	3,078	274	263	10.61	10.61
05/13/10	4,427,751	3,075	273	263	10.32	10.32
05/14/10	4,505,207	3,129	278	263	15.10	15.10
05/15/10	4,603,281	3,197	284	263	21.15	21.15
05/16/10	4,710,040	3,271	291	263	27.74	27.74
05/17/10	4,851,652	3,369	299	263	36.48	36.48
05/18/10	5,056,050	3,511	312	263	49.10	49.10
05/19/10	4,878,417	3,388	301	263	38.14	38.14
05/20/10	4,363,256	3,030	269	263	6.34	6.34
05/21/10	4,252,773	2,953	263	263	-0.48	
05/22/10	4,164,754	2,892	257	263	-5.92	
05/23/10	4,050,445	2,813	250	263	-12.97	
05/24/10	3,999,665	2,778	247	263	-16.11	
05/25/10	4,053,346	2,815	250	263	-12.79	
05/26/10	3,151,091	2,188	195	263	-68.49	
05/27/10	4,240,574	2,945	262	263	-1.24	
05/28/10	4,298,173	2,985	265	263	2.32	2.32
05/29/10	4,328,996	3,006	267	263	4.22	4.22
05/30/10	4,252,301	2,953	262	263	-0.51	
05/31/10	4,192,763	2,912	259	263	-4.19	
06/01/10	4,226,543	2,935	261	263	-2.10	
06/02/10	4,308,433	2,992	266	263	2.95	2.95
06/03/10	4,310,014	2,993	266	263	3.05	3.05
06/04/10	4,125,126	2,865	255	263	-8.36	
06/05/10	3,885,480	2,698	240	263	-23.16	
06/06/10	3,799,932	2,639	235	263	-28.44	
06/07/10	3,842,161	2,668	237	263	-25.83	
06/08/10	3,814,639	2,649	235	263	-27.53	
06/09/10	3,985,879	2,768	246	263	-16.96	
06/10/10	4,323,523	3,002	267	263	3.88	3.88
06/11/10	4,355,880	3,025	269	263	5.88	5.88
06/12/10	4,341,881	3,015	268	263	5.02	5.02
06/13/10	4,305,472	2,990	266	263	2.77	2.77
06/14/10	4,310,310	2,993	266	263	3.07	3.07
06/15/10	4,314,740	2,996	266	263	3.34	3.34
06/16/10	4,295,556	2,983	265	263	2.16	2.16
06/17/10	4,283,948	2,975	264	263	1.44	1.44
06/18/10	4,229,511	2,937	261	263	-1.92	
06/19/10	4,180,231	2,903	258	263	-4.96	

06/20/10	4,152,723	2,884	256	263	-6.66	
06/21/10	4,133,210	2,870	255	263	-7.86	
06/22/10	4,070,320	2,827	251	263	-11.75	
06/23/10	4,002,574	2,780	247	263	-15.93	
06/24/10	4,128,238	2,867	255	263	-8.17	
06/25/10	4,374,857	3,038	270	263	7.05	7.05
06/26/10	4,428,413	3,075	273	263	10.36	10.36
06/27/10	4,415,675	3,066	273	263	9.57	9.57
06/28/10	4,383,000	3,044	271	263	7.56	7.56
06/29/10	4,328,666	3,006	267	263	4.20	4.20
06/30/10	4,295,187	2,983	265	263	2.13	2.13
07/01/10	4,338,165	3,013	268	263	4.79	4.79
07/02/10	4,246,167	2,949	262	263	-0.89	
07/03/10	4,139,853	2,875	256	263	-7.45	
07/04/10	4,046,115	2,810	250	263	-13.24	
07/05/10	3,962,250	2,752	245	263	-18.42	
07/06/10	3,866,742	2,685	239	263	-24.31	
07/07/10	3,767,725	2,616	233	263	-30.42	
07/08/10	4,080,092	2,833	252	263	-11.14	
07/09/10	4,538,289	3,152	280	263	17.14	17.14
07/10/10	4,453,547	3,093	275	263	11.91	11.91
07/11/10	4,330,376	3,007	267	263	4.31	4.31
07/12/10	4,212,842	2,926	260	263	-2.95	
07/13/10	4,034,957	2,802	249	263	-13.93	
07/14/10	4,255,903	2,955	263	263	-0.29	
07/15/10	4,494,339	3,121	277	263	14.43	14.43
07/16/10	4,345,889	3,018	268	263	5.26	5.26
07/17/10	4,263,946	2,961	263	263	0.21	
07/18/10	4,221,189	2,931	261	263	-2.43	
07/19/10	4,318,730	2,999	267	263	3.59	3.59
07/20/10	4,406,024	3,060	272	263	8.98	8.98
07/21/10	4,425,021	3,073	273	263	10.15	10.15
07/22/10	4,463,199	3,099	276	263	12.51	12.51
07/23/10	4,343,893	3,017	268	263	5.14	5.14
07/24/10	4,277,383	2,970	264	263	1.04	1.04
07/25/10	4,256,363	2,956	263	263	-0.26	
07/26/10	4,238,982	2,944	262	263	-1.33	
07/27/10	4,319,836	3,000	267	263	3.66	3.66
07/28/10	4,413,590	3,065	272	263	9.44	9.44
07/29/10	4,405,934	3,060	272	263	8.97	8.97
07/30/10	4,354,199	3,024	269	263	5.78	5.78
07/31/10	4,450,249	3,090	275	263	11.71	11.71
08/01/10	960,887	667	59	263	-203.69	
08/02/10	2,848,901	1,978	176	263	-87.14	

08/03/10	3,924,358	2,725	242	263	-20.76	
08/04/10	3,925,822	2,726	242	263	-20.67	
08/05/10	3,940,941	2,737	243	263	-19.73	
08/06/10	3,927,151	2,727	242	263	-20.58	
08/07/10	3,890,499	2,702	240	263	-22.85	
08/08/10	3,899,108	2,708	241	263	-22.31	
08/09/10	3,983,660	2,766	246	263	-17.10	
08/10/10	4,102,881	2,849	253	263	-9.74	
08/11/10	4,077,532	2,832	252	263	-11.30	
08/12/10	4,079,009	2,833	252	263	-11.21	
08/13/10	4,126,796	2,866	255	263	-8.26	
08/14/10	4,115,480	2,858	254	263	-8.96	
08/15/10	4,092,564	2,842	253	263	-10.37	
08/16/10	4,071,923	2,828	251	263	-11.65	
08/17/10	4,045,479	2,809	250	263	-13.28	
08/18/10	4,115,641	2,858	254	263	-8.95	
08/19/10	4,178,668	2,902	258	263	-5.06	
08/20/10	4,188,417	2,909	259	263	-4.46	
08/21/10	4,215,275	2,927	260	263	-2.80	
08/22/10	4,218,019	2,929	260	263	-2.63	
08/23/10	4,291,770	2,980	265	263	1.92	1.92
08/24/10	4,216,898	2,928	260	263	-2.70	
08/25/10	4,188,650	2,909	259	263	-4.44	
08/26/10	3,236,609	2,248	200	263	-63.21	
08/27/10	4,249,655	2,951	262	263	-0.68	
08/28/10	4,308,149	2,992	266	263	2.94	2.94
08/29/10	4,335,391	3,011	268	263	4.62	4.62
08/30/10	4,316,462	2,998	266	263	3.45	3.45
08/31/10	4,402,315	3,057	272	263	8.75	8.75
09/01/10	4,322,352	3,002	267	263	3.81	3.81
09/02/10	4,319,990	3,000	267	263	3.67	3.67
09/03/10	4,213,091	2,926	260	263	-2.93	
09/04/10	4,162,390	2,891	257	263	-6.06	
09/05/10	4,253,818	2,954	263	263	-0.42	
09/06/10	4,227,791	2,936	261	263	-2.03	
09/07/10	4,190,040	2,910	259	263	-4.36	
09/08/10	4,192,548	2,911	259	263	-4.20	
09/09/10	4,285,202	2,976	265	263	1.52	1.52
09/10/10	4,653,234	3,231	287	263	24.24	24.24
09/11/10	4,565,734	3,171	282	263	18.84	18.84
09/12/10	4,466,508	3,102	276	263	12.71	12.71
09/13/10	4,404,452	3,059	272	263	8.88	8.88
09/14/10	4,420,730	3,070	273	263	9.88	9.88
09/15/10	4,471,734	3,105	276	263	13.03	13.03

09/16/10	4,438,989	3,083	274	263	11.01	11.01
09/17/10	4,429,023	3,076	273	263	10.40	10.40
09/18/10	4,443,526	3,086	274	263	11.29	11.29
09/19/10	4,453,952	3,093	275	263	11.94	11.94
09/20/10	4,462,021	3,099	275	263	12.43	12.43
09/21/10	4,432,807	3,078	274	263	10.63	10.63
09/22/10	4,411,262	3,063	272	263	9.30	9.30
09/23/10	4,416,153	3,067	273	263	9.60	9.60
09/24/10	4,384,096	3,045	271	263	7.62	7.62
09/25/10	4,327,243	3,005	267	263	4.11	4.11
09/26/10	4,318,913	2,999	267	263	3.60	3.60
09/27/10	4,252,030	2,953	262	263	-0.53	
09/28/10	4,313,836	2,996	266	263	3.29	3.29
09/29/10	4,352,471	3,023	269	263	5.67	5.67
09/30/10	4,307,243	2,991	266	263	2.88	2.88
10/01/10	4,256,270	2,956	263	263	-0.27	
10/02/10	4,325,344	3,004	267	263	4.00	4.00
10/03/10	4,321,596	3,001	267	263	3.77	3.77
10/04/10	4,246,875	2,949	262	263	-0.85	
10/05/10	4,182,231	2,904	258	263	-4.84	
10/06/10	4,134,289	2,871	255	263	-7.80	
10/07/10	4,083,174	2,836	252	263	-10.95	
10/08/10	4,068,729	2,826	251	263	-11.84	
10/09/10	4,016,515	2,789	248	263	-15.07	
10/10/10	3,987,305	2,769	246	263	-16.87	
10/11/10	3,912,548	2,717	242	263	-21.48	
10/12/10	3,643,993	2,531	225	263	-38.06	
10/13/10	3,937,419	2,734	243	263	-19.95	
10/14/10	4,212,993	2,926	260	263	-2.94	
10/15/10	4,210,591	2,924	260	263	-3.09	
10/16/10	4,169,170	2,895	257	263	-5.64	
10/17/10	4,220,857	2,931	261	263	-2.45	
10/18/10	4,161,695	2,890	257	263	-6.11	
10/19/10	4,119,102	2,860	254	263	-8.73	
10/20/10	4,088,028	2,839	252	263	-10.65	
10/21/10	4,074,072	2,829	251	263	-11.51	
10/22/10	4,215,489	2,927	260	263	-2.78	
10/23/10	4,260,826	2,959	263	263	0.01	
10/24/10	4,296,257	2,984	265	263	2.20	2.20
10/25/10	4,536,767	3,151	280	263	17.05	17.05
10/26/10	4,460,493	3,098	275	263	12.34	12.34
10/27/10	4,448,357	3,089	275	263	11.59	11.59
10/28/10	4,434,327	3,079	274	263	10.72	10.72
10/29/10	4,455,948	3,094	275	263	12.06	12.06

10/30/10	4,457,455	3,095	275	263	12.15	12.15
10/31/10	4,458,522	3,096	275	263	12.22	12.22
11/01/10	4,457,936	3,096	275	263	12.18	12.18
11/02/10	4,456,091	3,095	275	263	12.07	12.07
11/03/10	4,455,784	3,094	275	263	12.05	12.05
11/04/10	4,445,195	3,087	274	263	11.39	11.39
11/05/10	4,439,508	3,083	274	263	11.04	11.04
11/06/10	4,438,444	3,082	274	263	10.98	10.98
11/07/10	4,447,176	3,088	275	263	11.52	11.52
11/08/10	4,482,744	3,113	277	263	13.71	13.71
11/09/10	4,484,599	3,114	277	263	13.83	13.83
11/10/10	4,427,905	3,075	273	263	10.33	10.33
11/11/10	4,431,089	3,077	274	263	10.52	10.52
11/12/10	4,423,728	3,072	273	263	10.07	10.07
11/13/10	4,442,648	3,085	274	263	11.24	11.24
11/14/10	4,458,343	3,096	275	263	12.21	12.21
11/15/10	4,475,648	3,108	276	263	13.27	13.27
11/16/10	4,472,005	3,106	276	263	13.05	13.05
11/17/10	4,455,754	3,094	275	263	12.05	12.05
11/18/10	4,453,459	3,093	275	263	11.90	11.90
11/19/10	4,457,258	3,095	275	263	12.14	12.14
11/20/10	4,388,703	3,048	271	263	7.91	7.91
11/21/10	3,336,851	2,317	206	263	-57.02	
11/22/10	4,489,780	3,118	277	263	14.15	14.15
11/23/10	4,530,937	3,146	280	263	16.69	16.69
11/24/10	4,702,299	3,265	290	263	27.27	27.27
11/25/10	4,780,437	3,320	295	263	32.09	32.09
11/26/10	4,759,736	3,305	294	263	30.81	30.81
11/27/10	4,754,243	3,302	293	263	30.47	30.47
11/28/10	4,735,074	3,288	292	263	29.29	29.29
11/29/10	4,703,717	3,266	290	263	27.35	27.35
11/30/10	4,631,063	3,216	286	263	22.87	22.87
12/01/10	4,721,168	3,279	291	263	28.43	28.43
12/02/10	4,695,654	3,261	290	263	26.86	26.86
12/03/10	4,723,745	3,280	292	263	28.59	28.59
12/04/10	4,418,289	3,068	273	263	9.73	9.73
12/05/10	4,370,029	3,035	270	263	6.75	6.75
12/06/10	4,787,838	3,325	296	263	32.55	32.55
12/07/10	4,754,152	3,301	293	263	30.47	30.47
12/08/10	4,727,477	3,283	292	263	28.82	28.82
12/09/10	4,718,391	3,277	291	263	28.26	28.26
12/10/10	4,719,594	3,277	291	263	28.33	28.33
12/11/10	4,715,616	3,275	291	263	28.09	28.09
12/12/10	4,723,484	3,280	292	263	28.57	28.57

12/13/10	4,732,657	3,287	292	263	29.14	29.14		
12/14/10	4,737,828	3,290	292	263	29.46	29.46		
12/15/10	4,555,957	3,164	281	263	18.23	18.23		
12/16/10	2,899,100	2,013	179	263	-84.04			
12/17/10	3,281,473	2,279	203	263	-60.44			
12/18/10	4,796,247	3,331	296	263	33.06	33.06		
12/19/10	5,068,727	3,520	313	263	49.88	49.88		
12/20/10	4,979,614	3,458	307	263	44.38	44.38		
12/21/10	4,848,336	3,367	299	263	36.28	36.28		
12/22/10	4,941,982	3,432	305	263	42.06	42.06		
12/23/10	4,616,579	3,206	285	263	21.97	21.97		
12/24/10	4,134,358	2,871	255	263	-7.79			
12/25/10	4,127,930	2,867	255	263	-8.19			
12/26/10	4,132,583	2,870	255	263	-7.90			
12/27/10	4,124,672	2,864	255	263	-8.39			
12/28/10	4,341,176	3,015	268	263	4.97	4.97		
12/29/10	4,788,653	3,325	296	263	32.60	32.60		
12/30/10	4,618,228	3,207	285	263	22.08	22.08		
12/31/10	4,157,729	2,887	257	263	-6.35		4323.83	216.19
01/01/11	4,993,382	3,468	308	263	45.23	45.23		
01/02/11	4,951,871	3,439	306	263	42.67	42.67		
01/03/11	4,726,313	3,282	292	263	28.75	28.75		
01/04/11	4,574,334	3,177	282	263	19.37	19.37		
01/05/11	4,587,448	3,186	283	263	20.18	20.18		
01/06/11	4,567,541	3,172	282	263	18.95	18.95		
01/07/11	4,550,856	3,160	281	263	17.92	17.92		
01/08/11	4,541,750	3,154	280	263	17.35	17.35		
01/09/11	4,481,192	3,112	277	263	13.62	13.62		
01/10/11	3,768,122	2,617	233	263	-30.40			
01/11/11	4,400,237	3,056	272	263	8.62	8.62		
01/12/11	4,482,154	3,113	277	263	13.68	13.68		
01/13/11	4,395,023	3,052	271	263	8.30	8.30		
01/14/11	4,325,692	3,004	267	263	4.02	4.02		
01/15/11	4,307,786	2,992	266	263	2.91	2.91		
01/16/11	4,321,095	3,001	267	263	3.73	3.73		
01/17/11	4,340,542	3,014	268	263	4.93	4.93		
01/18/11	4,320,950	3,001	267	263	3.73	3.73		
01/19/11	4,322,595	3,002	267	263	3.83	3.83		
01/20/11	2,993,076	2,079	185	263	-78.24			
01/21/11	4,333,098	3,009	267	263	4.48	4.48		
01/22/11	4,281,172	2,973	264	263	1.27	1.27		
01/23/11	3,648,083	2,533	225	263	-37.81			
01/24/11	4,273,149	2,967	264	263	0.77			
01/25/11	4,273,815	2,968	264	263	0.82			

01/26/11	4,267,423	2,963	263	263	0.42	
01/27/11	4,257,588	2,957	263	263	-0.19	
01/28/11	4,255,799	2,955	263	263	-0.30	
01/29/11	4,255,260	2,955	263	263	-0.33	
01/30/11	4,247,145	2,949	262	263	-0.83	
01/31/11	3,153,175	2,190	195	263	-68.36	
02/01/11	4,145,078	2,879	256	263	-7.13	
02/02/11	4,546,448	3,157	281	263	17.64	17.64
02/03/11	4,411,139	3,063	272	263	9.29	9.29
02/04/11	4,314,672	2,996	266	263	3.34	3.34
02/05/11	4,284,189	2,975	264	263	1.46	1.46
02/06/11	4,288,751	2,978	265	263	1.74	1.74
02/07/11	4,285,425	2,976	265	263	1.53	1.53
02/08/11	3,741,910	2,599	231	263	-32.02	
02/09/11	3,898,971	2,708	241	263	-22.32	
02/10/11	4,034,600	2,802	249	263	-13.95	
02/11/11	3,846,058	2,671	237	263	-25.59	
02/12/11	3,853,438	2,676	238	263	-25.13	
02/13/11	3,863,971	2,683	239	263	-24.48	
02/14/11	4,057,234	2,818	250	263	-12.55	
02/15/11	4,661,154	3,237	288	263	24.73	24.73
02/16/11	4,478,780	3,110	276	263	13.47	13.47
02/17/11	4,133,758	2,871	255	263	-7.83	
02/18/11	4,134,552	2,871	255	263	-7.78	
02/19/11	3,661,171	2,542	226	263	-37.00	
02/20/11	3,740,933	2,598	231	263	-32.08	
02/21/11	4,216,919	2,928	260	263	-2.70	
02/22/11	4,208,691	2,923	260	263	-3.20	
02/23/11	4,222,232	2,932	261	263	-2.37	
02/24/11	4,045,632	2,809	250	263	-13.27	
02/25/11	3,964,973	2,753	245	263	-18.25	
02/26/11	4,448,447	3,089	275	263	11.60	11.60
02/27/11	4,302,719	2,988	266	263	2.60	2.60
02/28/11	4,181,157	2,904	258	263	-4.90	
03/01/11	4,142,625	2,877	256	263	-7.28	
03/02/11	4,137,734	2,873	255	263	-7.58	
03/03/11	4,133,018	2,870	255	263	-7.88	
03/04/11	4,127,087	2,866	255	263	-8.24	
03/05/11	4,123,153	2,863	255	263	-8.48	
03/06/11	4,118,283	2,860	254	263	-8.79	
03/07/11	3,986,083	2,768	246	263	-16.95	
03/08/11	4,120,181	2,861	254	263	-8.67	
03/09/11	4,112,985	2,856	254	263	-9.11	
03/10/11	4,125,598	2,865	255	263	-8.33	

03/11/11	4,136,331	2,872	255	263	-7.67	
03/12/11	4,124,516	2,864	255	263	-8.40	
03/13/11	4,126,310	2,865	255	263	-8.29	
03/14/11	4,130,829	2,869	255	263	-8.01	
03/15/11	4,127,945	2,867	255	263	-8.19	
03/16/11	4,152,759	2,884	256	263	-6.66	
03/17/11	4,148,403	2,881	256	263	-6.93	
03/18/11	4,139,391	2,875	256	263	-7.48	
03/19/11	4,140,185	2,875	256	263	-7.43	
03/20/11	4,138,908	2,874	255	263	-7.51	
03/21/11	4,140,298	2,875	256	263	-7.43	
03/22/11	4,164,161	2,892	257	263	-5.95	
03/23/11	4,086,770	2,838	252	263	-10.73	
03/24/11	4,150,106	2,882	256	263	-6.82	
03/25/11	4,145,785	2,879	256	263	-7.09	
03/26/11	4,138,710	2,874	255	263	-7.52	
03/27/11	4,139,953	2,875	256	263	-7.45	
03/28/11	4,142,549	2,877	256	263	-7.29	
03/29/11	4,141,445	2,876	256	263	-7.36	
03/30/11	4,143,228	2,877	256	263	-7.25	
03/31/11	4,160,777	2,889	257	263	-6.16	
04/01/11	4,209,800	2,923	260	263	-3.14	
04/02/11	4,271,217	2,966	264	263	0.66	
04/03/11	4,294,205	2,982	265	263	2.07	2.07
04/04/11	4,261,462	2,959	263	263	0.05	
04/05/11	4,254,303	2,954	263	263	-0.39	
04/06/11	4,212,580	2,925	260	263	-2.96	
04/07/11	4,224,614	2,934	261	263	-2.22	
04/08/11	4,226,875	2,935	261	263	-2.08	
04/09/11	4,203,245	2,919	259	263	-3.54	
04/10/11	4,192,827	2,912	259	263	-4.18	
04/11/11	4,207,234	2,922	260	263	-3.29	
04/12/11	4,249,443	2,951	262	263	-0.69	
04/13/11	4,256,285	2,956	263	263	-0.27	
04/14/11	4,292,673	2,981	265	263	1.98	1.98
04/15/11	4,291,815	2,980	265	263	1.93	1.93
04/16/11	4,287,095	2,977	265	263	1.64	1.64
04/17/11	4,340,138	3,014	268	263	4.91	4.91
04/18/11	4,360,870	3,028	269	263	6.19	6.19
04/19/11	4,349,443	3,020	268	263	5.48	5.48
04/20/11	3,841,427	2,668	237	263	-25.87	
04/21/11	4,328,539	3,006	267	263	4.19	4.19
04/22/11	4,335,719	3,011	268	263	4.64	4.64
04/23/11	4,109,064	2,854	254	263	-9.35	

04/24/11	4,317,190	2,998	266	263	3.49	3.49
04/25/11	4,335,288	3,011	268	263	4.61	4.61
04/26/11	4,345,948	3,018	268	263	5.27	5.27
04/27/11	4,332,201	3,008	267	263	4.42	4.42
04/28/11	4,333,816	3,010	268	263	4.52	4.52
04/29/11	4,340,431	3,014	268	263	4.93	4.93
04/30/11	4,347,217	3,019	268	263	5.35	5.35
05/01/11	4,338,222	3,013	268	263	4.79	4.79
05/02/11	4,194,267	2,913	259	263	-4.09	
05/03/11	4,006,806	2,783	247	263	-15.67	
05/04/11	4,184,691	2,906	258	263	-4.69	
05/05/11	4,485,945	3,115	277	263	13.91	13.91
05/06/11	4,401,989	3,057	272	263	8.73	8.73
05/07/11	4,432,641	3,078	274	263	10.62	10.62
05/08/11	4,540,516	3,153	280	263	17.28	17.28
05/09/11	4,639,131	3,222	286	263	23.37	23.37
05/10/11	4,555,379	3,163	281	263	18.20	18.20
05/11/11	4,226,493	2,935	261	263	-2.11	
05/12/11	4,228,894	2,937	261	263	-1.96	
05/13/11	4,331,533	3,008	267	263	4.38	4.38
05/14/11	4,499,107	3,124	278	263	14.72	14.72
05/15/11	4,427,586	3,075	273	263	10.31	10.31
05/16/11	4,293,451	2,982	265	263	2.03	2.03
05/17/11	4,234,712	2,941	261	263	-1.60	
05/18/11	4,183,682	2,905	258	263	-4.75	
05/19/11	4,145,168	2,879	256	263	-7.13	
05/20/11	4,130,228	2,868	255	263	-8.05	
05/21/11	4,087,245	2,838	252	263	-10.70	
05/22/11	4,035,013	2,802	249	263	-13.93	
05/23/11	3,937,528	2,734	243	263	-19.94	
05/24/11	3,612,341	2,509	223	263	-40.02	
05/25/11	1,039,682	722	64	263	-198.82	
05/26/11	720,000	500	44	263	-218.56	
05/27/11	720,000	500	44	263	-218.56	
05/28/11	720,000	500	44	263	-218.56	
05/29/11	720,000	500	44	263	-218.56	
05/30/11	720,000	500	44	263	-218.56	
05/31/11	720,000	500	44	263	-218.56	
06/01/11	720,000	500	44	263	-218.56	
06/02/11	1,173,727	815	72	263	-190.55	
06/03/11	1,712,633	1,189	106	263	-157.28	
06/04/11	2,014,904	1,399	124	263	-138.62	
06/05/11	2,037,310	1,415	126	263	-137.24	
06/06/11	2,255,050	1,566	139	263	-123.80	

06/07/11	1,762,379	1,224	109	263	-154.21	
06/08/11	1,828,391	1,270	113	263	-150.14	
06/09/11	1,745,807	1,212	108	263	-155.23	
06/10/11	1,670,425	1,160	103	263	-159.89	
06/11/11	1,433,530	996	88	263	-174.51	
06/12/11	1,608,000	1,117	99	263	-163.74	
06/13/11	3,509,467	2,437	217	263	-46.37	
06/14/11	4,208,173	2,922	260	263	-3.24	
06/15/11	4,295,661	2,983	265	263	2.16	2.16
06/16/11	4,427,570	3,075	273	263	10.31	10.31
06/17/11	4,246,410	2,949	262	263	-0.88	
06/18/11	4,105,707	2,851	253	263	-9.56	
06/19/11	3,936,095	2,733	243	263	-20.03	
06/20/11	3,925,638	2,726	242	263	-20.68	
06/21/11	4,169,511	2,895	257	263	-5.62	
06/22/11	4,768,375	3,311	294	263	31.34	31.34
06/23/11	4,943,761	3,433	305	263	42.17	42.17
06/24/11	4,679,653	3,250	289	263	25.87	25.87
06/25/11	4,657,066	3,234	287	263	24.47	24.47
06/26/11	4,622,433	3,210	285	263	22.34	22.34
06/27/11	4,621,299	3,209	285	263	22.27	22.27
06/28/11	4,651,386	3,230	287	263	24.12	24.12
06/29/11	4,649,600	3,229	287	263	24.01	24.01
06/30/11	4,344,425	3,017	268	263	5.17	5.17
07/01/11	4,407,024	3,060	272	263	9.04	9.04
07/02/11	4,519,689	3,139	279	263	15.99	15.99
07/03/11	4,324,200	3,003	267	263	3.93	3.93
07/04/11	3,925,483	2,726	242	263	-20.69	
07/05/11	3,895,356	2,705	240	263	-22.55	
07/06/11	4,327,530	3,005	267	263	4.13	4.13
07/07/11	4,202,861	2,919	259	263	-3.56	
07/08/11	3,955,798	2,747	244	263	-18.81	
07/09/11	3,747,922	2,603	231	263	-31.65	
07/10/11	3,951,029	2,744	244	263	-19.11	
07/11/11	4,201,990	2,918	259	263	-3.62	
07/12/11	4,330,697	3,007	267	263	4.33	4.33
07/13/11	4,254,326	2,954	263	263	-0.39	
07/14/11	4,257,213	2,956	263	263	-0.21	
07/15/11	4,231,232	2,938	261	263	-1.81	
07/16/11	4,119,748	2,861	254	263	-8.69	
07/17/11	3,969,926	2,757	245	263	-17.94	
07/18/11	4,379,542	3,041	270	263	7.34	7.34
07/19/11	4,578,733	3,180	283	263	19.64	19.64
07/20/11	4,495,650	3,122	278	263	14.51	14.51

07/21/11	4,455,623	3,094	275	263	12.04	12.04
07/22/11	4,423,290	3,072	273	263	10.04	10.04
07/23/11	4,726,568	3,282	292	263	28.76	28.76
07/24/11	4,609,711	3,201	285	263	21.55	21.55
07/25/11	4,552,715	3,162	281	263	18.03	18.03
07/26/11	4,582,622	3,182	283	263	19.88	19.88
07/27/11	4,590,019	3,188	283	263	20.33	20.33
07/28/11	4,516,794	3,137	279	263	15.81	15.81
07/29/11	4,435,522	3,080	274	263	10.80	10.80
07/30/11	4,434,767	3,080	274	263	10.75	10.75
07/31/11	4,456,665	3,095	275	263	12.10	12.10
08/01/11	4,503,120	3,127	278	263	14.97	14.97
08/02/11	4,510,289	3,132	278	263	15.41	15.41
08/03/11	4,493,697	3,121	277	263	14.39	14.39
08/04/11	4,428,611	3,075	273	263	10.37	10.37
08/05/11	4,382,759	3,044	271	263	7.54	7.54
08/06/11	4,408,069	3,061	272	263	9.10	9.10
08/07/11	4,328,239	3,006	267	263	4.18	4.18
08/08/11	4,297,422	2,984	265	263	2.27	2.27
08/09/11	4,216,168	2,928	260	263	-2.74	
08/10/11	4,349,639	3,021	268	263	5.50	5.50
08/11/11	4,433,150	3,079	274	263	10.65	10.65
08/12/11	4,402,235	3,057	272	263	8.74	8.74
08/13/11	4,370,289	3,035	270	263	6.77	6.77
08/14/11	4,312,638	2,995	266	263	3.21	3.21
08/15/11	4,253,575	2,954	263	263	-0.43	
08/16/11	4,210,394	2,924	260	263	-3.10	
08/17/11	4,115,493	2,858	254	263	-8.96	
08/18/11	4,072,855	2,828	251	263	-11.59	
08/19/11	4,041,483	2,807	249	263	-13.53	
08/20/11	3,994,930	2,774	247	263	-16.40	
08/21/11	3,951,613	2,744	244	263	-19.07	
08/22/11	4,057,372	2,818	250	263	-12.54	
08/23/11	4,160,963	2,890	257	263	-6.15	
08/24/11	4,296,626	2,984	265	263	2.22	2.22
08/25/11	4,312,814	2,995	266	263	3.22	3.22
08/26/11	4,252,387	2,953	262	263	-0.51	
08/27/11	4,234,484	2,941	261	263	-1.61	
08/28/11	4,173,047	2,898	258	263	-5.40	
08/29/11	4,191,408	2,911	259	263	-4.27	
08/30/11	4,070,416	2,827	251	263	-11.74	
08/31/11	4,038,711	2,805	249	263	-13.70	
09/01/11	4,268,100	2,964	263	263	0.46	
09/02/11	4,614,619	3,205	285	263	21.85	21.85

09/03/11	4,500,008	3,125	278	263	14.78	14.78
09/04/11	4,445,681	3,087	274	263	11.42	11.42
09/05/11	4,399,428	3,055	272	263	8.57	8.57
09/06/11	4,330,202	3,007	267	263	4.30	4.30
09/07/11	4,300,443	2,986	265	263	2.46	2.46
09/08/11	4,292,976	2,981	265	263	2.00	2.00
09/09/11	4,295,648	2,983	265	263	2.16	2.16
09/10/11	4,271,913	2,967	264	263	0.70	
09/11/11	4,258,280	2,957	263	263	-0.14	
09/12/11	4,260,663	2,959	263	263	0.00	
09/13/11	4,244,151	2,947	262	263	-1.02	
09/14/11	4,243,017	2,947	262	263	-1.09	
09/15/11	4,214,535	2,927	260	263	-2.84	
09/16/11	4,330,064	3,007	267	263	4.29	4.29
09/17/11	4,340,090	3,014	268	263	4.91	4.91
09/18/11	4,323,197	3,002	267	263	3.86	3.86
09/19/11	4,328,004	3,006	267	263	4.16	4.16
09/20/11	4,288,525	2,978	265	263	1.72	1.72
09/21/11	4,238,738	2,944	262	263	-1.35	
09/22/11	4,222,697	2,932	261	263	-2.34	
09/23/11	4,208,824	2,923	260	263	-3.20	
09/24/11	4,192,903	2,912	259	263	-4.18	
09/25/11	4,215,835	2,928	260	263	-2.76	
09/26/11	4,248,705	2,950	262	263	-0.73	
09/27/11	4,257,769	2,957	263	263	-0.17	
09/28/11	4,267,552	2,964	263	263	0.43	
09/29/11	4,237,674	2,943	262	263	-1.42	
09/30/11	4,273,146	2,967	264	263	0.77	
10/01/11	4,332,478	3,009	267	263	4.44	4.44
10/02/11	4,378,470	3,041	270	263	7.28	7.28
10/03/11	4,464,898	3,101	276	263	12.61	12.61
10/04/11	4,895,860	3,400	302	263	39.21	39.21
10/05/11	5,195,174	3,608	321	263	57.69	57.69
10/06/11	5,309,342	3,687	328	263	64.74	64.74
10/07/11	5,867,062	4,074	362	263	99.16	99.16
10/08/11	6,289,223	4,368	388	263	125.22	125.22
10/09/11	6,387,192	4,436	394	263	131.27	131.27
10/10/11	5,093,473	3,537	314	263	51.41	51.41
10/11/11	3,880,469	2,695	240	263	-23.46	
10/12/11	4,307,232	2,991	266	263	2.88	2.88
10/13/11	4,459,850	3,097	275	263	12.30	12.30
10/14/11	4,384,130	3,045	271	263	7.63	7.63
10/15/11	4,306,320	2,991	266	263	2.82	2.82
10/16/11	4,225,023	2,934	261	263	-2.20	

10/17/11	4,139,767	2,875	256	263	-7.46	
10/18/11	4,090,479	2,841	252	263	-10.50	
10/19/11	3,997,250	2,776	247	263	-16.26	
10/20/11	3,922,262	2,724	242	263	-20.89	
10/21/11	3,852,521	2,675	238	263	-25.19	
10/22/11	3,793,721	2,635	234	263	-28.82	
10/23/11	3,872,768	2,689	239	263	-23.94	
10/24/11	3,963,644	2,753	245	263	-18.33	
10/25/11	4,533,831	3,148	280	263	16.87	16.87
10/26/11	4,543,731	3,155	280	263	17.48	17.48
10/27/11	4,453,888	3,093	275	263	11.93	11.93
10/28/11	4,312,051	2,994	266	263	3.18	3.18
10/29/11	4,431,045	3,077	274	263	10.52	10.52
10/30/11	4,281,938	2,974	264	263	1.32	1.32
10/31/11	4,225,162	2,934	261	263	-2.19	
11/01/11	4,116,984	2,859	254	263	-8.87	
11/02/11	4,150,265	2,882	256	263	-6.81	
11/03/11	4,051,417	2,813	250	263	-12.91	
11/04/11	4,382,117	3,043	271	263	7.50	7.50
11/05/11	4,260,807	2,959	263	263	0.01	
11/06/11	4,293,345	2,981	265	263	2.02	2.02
11/07/11	3,983,951	2,767	246	263	-17.08	
11/08/11	4,418,731	3,069	273	263	9.76	9.76
11/09/11	4,045,953	2,810	250	263	-13.25	
11/10/11	4,052,623	2,814	250	263	-12.84	
11/11/11	4,054,977	2,816	250	263	-12.69	
11/12/11	4,067,781	2,825	251	263	-11.90	
11/13/11	4,062,069	2,821	251	263	-12.26	
11/14/11	4,050,560	2,813	250	263	-12.97	
11/15/11	4,049,513	2,812	250	263	-13.03	
11/16/11	3,783,131	2,627	234	263	-29.47	
11/17/11	4,684,077	3,253	289	263	26.14	26.14
11/18/11	4,656,501	3,234	287	263	24.44	24.44
11/19/11	4,605,825	3,198	284	263	21.31	21.31
11/20/11	4,480,128	3,111	277	263	13.55	13.55
11/21/11	4,669,586	3,243	288	263	25.25	25.25
11/22/11	4,649,068	3,229	287	263	23.98	23.98
11/23/11	4,640,666	3,223	286	263	23.46	23.46
11/24/11	4,622,006	3,210	285	263	22.31	22.31
11/25/11	4,610,399	3,202	285	263	21.59	21.59
11/26/11	4,130,275	2,868	255	263	-8.04	
11/27/11	4,621,754	3,210	285	263	22.29	22.29
11/28/11	4,602,264	3,196	284	263	21.09	21.09
11/29/11	4,598,906	3,194	284	263	20.88	20.88

11/30/11	4,599,587	3,194	284	263	20.93	20.93		
12/01/11	4,540,978	3,153	280	263	17.31	17.31		
12/02/11	4,391,326	3,050	271	263	8.07	8.07		
12/03/11	4,509,814	3,132	278	263	15.38	15.38		
12/04/11	4,604,125	3,197	284	263	21.21	21.21		
12/05/11	3,650,607	2,535	225	263	-37.65			
12/06/11	4,728,559	3,284	292	263	28.89	28.89		
12/07/11	4,763,516	3,308	294	263	31.04	31.04		
12/08/11	4,656,297	3,234	287	263	24.43	24.43		
12/09/11	4,620,555	3,209	285	263	22.22	22.22		
12/10/11	4,595,700	3,191	284	263	20.69	20.69		
12/11/11	4,654,745	3,232	287	263	24.33	24.33		
12/12/11	4,616,919	3,206	285	263	22.00	22.00		
12/13/11	4,398,631	3,055	272	263	8.52	8.52		
12/14/11	4,697,443	3,262	290	263	26.97	26.97		
12/15/11	4,637,608	3,221	286	263	23.27	23.27		
12/16/11	4,578,005	3,179	283	263	19.59	19.59		
12/17/11	4,565,338	3,170	282	263	18.81	18.81		
12/18/11	4,550,363	3,160	281	263	17.89	17.89		
12/19/11	4,545,458	3,157	281	263	17.58	17.58		
12/20/11	4,537,007	3,151	280	263	17.06	17.06		
12/21/11	4,545,720	3,157	281	263	17.60	17.60		
12/22/11	4,111,050	2,855	254	263	-9.23			
12/23/11	4,433,542	3,079	274	263	10.68	10.68		
12/24/11	4,590,471	3,188	283	263	20.36	20.36		
12/25/11	4,561,545	3,168	282	263	18.58	18.58		
12/26/11	4,538,797	3,152	280	263	17.17	17.17		
12/27/11	4,532,911	3,148	280	263	16.81	16.81		
12/28/11	4,523,548	3,141	279	263	16.23	16.23		
12/29/11	4,522,464	3,141	279	263	16.16	16.16		
12/30/11	4,517,890	3,137	279	263	15.88	15.88		
12/31/11	4,434,907	3,080	274	263	10.76	10.76	2795.08	139.75
01/01/12	4,245,834	2,948	262	263	-0.91			
01/02/12	4,538,159	3,151	280	263	17.13	17.13		
01/03/12	4,514,984	3,135	279	263	15.70	15.70		
01/04/12	4,507,637	3,130	278	263	15.25	15.25		
01/05/12	4,509,954	3,132	278	263	15.39	15.39		
01/06/12	4,503,432	3,127	278	263	14.99	14.99		
01/07/12	3,414,269	2,371	211	263	-52.24			
01/08/12	4,045,474	2,809	250	263	-13.28			
01/09/12	4,282,866	2,974	264	263	1.37	1.37		
01/10/12	4,267,062	2,963	263	263	0.40			
01/11/12	3,915,177	2,719	242	263	-21.32			
01/12/12	3,880,867	2,695	240	263	-23.44			

01/13/12	4,338,440	3,013	268	263	4.80	4.80
01/14/12	4,299,909	2,986	265	263	2.43	2.43
01/15/12	4,273,162	2,967	264	263	0.78	
01/16/12	4,156,035	2,886	257	263	-6.45	
01/17/12	3,568,636	2,478	220	263	-42.71	
01/18/12	4,395,167	3,052	271	263	8.31	8.31
01/19/12	4,307,919	2,992	266	263	2.92	2.92
01/20/12	4,255,777	2,955	263	263	-0.30	
01/21/12	4,246,764	2,949	262	263	-0.85	
01/22/12	4,224,525	2,934	261	263	-2.23	
01/23/12	3,966,866	2,755	245	263	-18.13	
01/24/12	3,785,177	2,629	234	263	-29.35	
01/25/12	4,300,511	2,986	265	263	2.46	2.46
01/26/12	4,239,352	2,944	262	263	-1.31	
01/27/12	4,036,741	2,803	249	263	-13.82	
01/28/12	3,519,488	2,444	217	263	-45.75	
01/29/12	4,245,364	2,948	262	263	-0.94	
01/30/12	4,237,955	2,943	262	263	-1.40	
01/31/12	4,227,572	2,936	261	263	-2.04	
02/01/12	4,204,992	2,920	260	263	-3.43	
02/02/12	4,404,734	3,059	272	263	8.90	8.90
02/03/12	4,126,125	2,865	255	263	-8.30	
02/04/12	3,609,229	2,506	223	263	-40.21	
02/05/12	4,334,717	3,010	268	263	4.58	4.58
02/06/12	4,610,464	3,202	285	263	21.60	21.60
02/07/12	4,484,132	3,114	277	263	13.80	13.80
02/08/12	4,033,236	2,801	249	263	-14.03	
02/09/12	4,656,952	3,234	287	263	24.47	24.47
02/10/12	4,500,454	3,125	278	263	14.81	14.81
02/11/12	4,438,888	3,083	274	263	11.01	11.01
02/12/12	4,402,833	3,058	272	263	8.78	8.78
02/13/12	4,400,944	3,056	272	263	8.66	8.66
02/14/12	4,371,649	3,036	270	263	6.85	6.85
02/15/12	4,106,198	2,852	253	263	-9.53	
02/16/12	3,619,940	2,514	223	263	-39.55	
02/17/12	4,444,043	3,086	274	263	11.32	11.32
02/18/12	4,327,699	3,005	267	263	4.14	4.14
02/19/12	4,343,773	3,017	268	263	5.13	5.13
02/20/12	4,373,376	3,037	270	263	6.96	6.96
02/21/12	4,451,503	3,091	275	263	11.78	11.78
02/22/12	4,508,861	3,131	278	263	15.32	15.32
02/23/12	4,435,136	3,080	274	263	10.77	10.77
02/24/12	4,389,266	3,048	271	263	7.94	7.94
02/25/12	4,422,113	3,071	273	263	9.97	9.97

02/26/12	4,400,601	3,056	272	263	8.64	8.64
02/27/12	3,851,232	2,674	238	263	-25.27	
02/28/12	3,885,262	2,698	240	263	-23.17	
02/29/12	4,387,271	3,047	271	263	7.82	7.82
03/01/12	4,416,317	3,067	273	263	9.61	9.61
03/02/12	4,519,594	3,139	279	263	15.99	15.99
03/03/12	4,451,343	3,091	275	263	11.77	11.77
03/04/12	4,436,988	3,081	274	263	10.89	10.89
03/05/12	4,425,573	3,073	273	263	10.18	10.18
03/06/12	4,430,307	3,077	273	263	10.48	10.48
03/07/12	4,208,325	2,922	260	263	-3.23	
03/08/12	4,313,056	2,995	266	263	3.24	3.24
03/09/12	4,529,594	3,146	280	263	16.60	16.60
03/10/12	4,525,995	3,143	279	263	16.38	16.38
03/11/12	4,621,847	3,210	285	263	22.30	22.30
03/12/12	4,634,598	3,218	286	263	23.09	23.09
03/13/12	4,625,877	3,212	286	263	22.55	22.55
03/14/12	4,636,298	3,220	286	263	23.19	23.19
03/15/12	4,646,528	3,227	287	263	23.82	23.82
03/16/12	4,675,450	3,247	289	263	25.61	25.61
03/17/12	4,699,963	3,264	290	263	27.12	27.12
03/18/12	4,719,911	3,278	291	263	28.35	28.35
03/19/12	4,718,123	3,276	291	263	28.24	28.24
03/20/12	4,607,430	3,200	284	263	21.41	21.41
03/21/12	4,670,058	3,243	288	263	25.28	25.28
03/22/12	4,659,835	3,236	288	263	24.64	24.64
03/23/12	4,683,546	3,252	289	263	26.11	26.11
03/24/12	4,699,447	3,264	290	263	27.09	27.09
03/25/12	4,713,435	3,273	291	263	27.95	27.95
03/26/12	4,753,693	3,301	293	263	30.44	30.44
03/27/12	4,778,535	3,318	295	263	31.97	31.97
03/28/12	4,763,310	3,308	294	263	31.03	31.03
03/29/12	4,763,967	3,308	294	263	31.07	31.07
03/30/12	4,754,163	3,302	293	263	30.47	30.47
03/31/12	4,806,573	3,338	297	263	33.70	33.70
04/01/12	4,880,258	3,389	301	263	38.25	38.25
04/02/12	4,422,677	3,071	273	263	10.00	10.00
04/03/12	3,705,520	2,573	229	263	-34.26	
04/04/12	4,465,772	3,101	276	263	12.66	12.66
04/05/12	4,283,819	2,975	264	263	1.43	1.43
04/06/12	4,257,793	2,957	263	263	-0.17	
04/07/12	4,213,809	2,926	260	263	-2.89	
04/08/12	4,156,868	2,887	257	263	-6.40	
04/09/12	4,198,048	2,915	259	263	-3.86	

04/10/12	4,230,331	2,938	261	263	-1.87	
04/11/12	4,336,723	3,012	268	263	4.70	4.70
04/12/12	2,541,322	1,765	157	263	-106.13	
04/13/12	4,007,094	2,783	247	263	-15.65	
04/14/12	4,068,064	2,825	251	263	-11.88	
04/15/12	3,989,115	2,770	246	263	-16.76	
04/16/12	3,945,127	2,740	244	263	-19.47	
04/17/12	3,930,034	2,729	243	263	-20.41	
04/18/12	3,831,933	2,661	237	263	-26.46	
04/19/12	3,764,830	2,614	232	263	-30.60	
04/20/12	3,869,334	2,687	239	263	-24.15	
04/21/12	4,242,100	2,946	262	263	-1.14	
04/22/12	4,402,152	3,057	272	263	8.74	8.74
04/23/12	4,524,911	3,142	279	263	16.32	16.32
04/24/12	4,782,202	3,321	295	263	32.20	32.20
04/25/12	4,923,796	3,419	304	263	40.94	40.94
04/26/12	4,976,424	3,456	307	263	44.19	44.19
04/27/12	4,976,628	3,456	307	263	44.20	44.20
04/28/12	4,809,998	3,340	297	263	33.91	33.91
04/29/12	4,715,346	3,275	291	263	28.07	28.07
04/30/12	4,695,647	3,261	290	263	26.85	26.85
05/01/12	4,756,399	3,303	294	263	30.60	30.60
05/02/12	4,759,570	3,305	294	263	30.80	30.80
05/03/12	4,681,611	3,251	289	263	25.99	25.99
05/04/12	4,687,218	3,255	289	263	26.33	26.33
05/05/12	4,725,244	3,281	292	263	28.68	28.68
05/06/12	4,651,768	3,230	287	263	24.15	24.15
05/07/12	4,404,568	3,059	272	263	8.89	8.89
05/08/12	4,167,591	2,894	257	263	-5.74	
05/09/12	4,218,111	2,929	260	263	-2.62	
05/10/12	4,349,742	3,021	269	263	5.50	5.50
05/11/12	4,261,330	2,959	263	263	0.05	
05/12/12	4,161,134	2,890	257	263	-6.14	
05/13/12	4,103,731	2,850	253	263	-9.68	
05/14/12	4,109,968	2,854	254	263	-9.30	
05/15/12	4,180,703	2,903	258	263	-4.93	
05/16/12	4,286,555	2,977	265	263	1.60	1.60
05/17/12	4,328,377	3,006	267	263	4.18	4.18
05/18/12	4,391,981	3,050	271	263	8.11	8.11
05/19/12	4,284,960	2,976	265	263	1.50	1.50
05/20/12	4,172,214	2,897	258	263	-5.46	
05/21/12	4,096,668	2,845	253	263	-10.12	
05/22/12	4,096,699	2,845	253	263	-10.12	
05/23/12	4,119,305	2,861	254	263	-8.72	

05/24/12	4,014,076	2,788	248	263	-15.22	
05/25/12	3,854,554	2,677	238	263	-25.06	
05/26/12	3,739,127	2,597	231	263	-32.19	
05/27/12	3,673,945	2,551	227	263	-36.21	
05/28/12	3,708,411	2,575	229	263	-34.09	
05/29/12	3,922,398	2,724	242	263	-20.88	
05/30/12	4,078,308	2,832	252	263	-11.25	
05/31/12	4,068,109	2,825	251	263	-11.88	
06/01/12	4,121,347	2,862	254	263	-8.60	
06/02/12	4,088,284	2,839	252	263	-10.64	
06/03/12	4,086,368	2,838	252	263	-10.76	
06/04/12	4,216,127	2,928	260	263	-2.75	
06/05/12	4,246,029	2,949	262	263	-0.90	
06/06/12	4,073,421	2,829	251	263	-11.55	
06/07/12	3,890,987	2,702	240	263	-22.82	
06/08/12	4,146,122	2,879	256	263	-7.07	
06/09/12	4,310,522	2,993	266	263	3.08	3.08
06/10/12	4,193,833	2,912	259	263	-4.12	
06/11/12	4,247,103	2,949	262	263	-0.83	
06/12/12	4,199,754	2,916	259	263	-3.76	
06/13/12	4,159,774	2,889	257	263	-6.22	
06/14/12	4,047,847	2,811	250	263	-13.13	
06/15/12	3,962,970	2,752	245	263	-18.37	
06/16/12	3,919,537	2,722	242	263	-21.05	
06/17/12	3,761,288	2,612	232	263	-30.82	
06/18/12	4,288,186	2,978	265	263	1.70	1.70
06/19/12	4,546,531	3,157	281	263	17.65	17.65
06/20/12	4,491,272	3,119	277	263	14.24	14.24
06/21/12	4,517,014	3,137	279	263	15.83	15.83
06/22/12	4,261,511	2,959	263	263	0.06	
06/23/12	4,015,840	2,789	248	263	-15.11	
06/24/12	3,905,103	2,712	241	263	-21.94	
06/25/12	4,101,307	2,848	253	263	-9.83	
06/26/12	4,138,560	2,874	255	263	-7.53	
06/27/12	3,925,369	2,726	242	263	-20.69	
06/28/12	3,905,212	2,712	241	263	-21.94	
06/29/12	3,942,308	2,738	243	263	-19.65	
06/30/12	3,872,068	2,689	239	263	-23.98	
07/01/12	3,749,155	2,604	231	263	-31.57	
07/02/12	3,758,893	2,610	232	263	-30.97	
07/03/12	3,752,735	2,606	232	263	-31.35	
07/04/12	3,645,116	2,531	225	263	-37.99	
07/05/12	3,527,388	2,450	218	263	-45.26	
07/06/12	3,522,211	2,446	217	263	-45.58	

07/07/12	3,445,040	2,392	213	263	-50.34	
07/08/12	3,383,638	2,350	209	263	-54.13	
07/09/12	3,293,314	2,287	203	263	-59.71	
07/10/12	3,227,278	2,241	199	263	-63.79	
07/11/12	3,187,055	2,213	197	263	-66.27	
07/12/12	3,151,393	2,188	195	263	-68.47	
07/13/12	3,054,730	2,121	189	263	-74.44	
07/14/12	3,117,046	2,165	192	263	-70.59	
07/15/12	3,157,608	2,193	195	263	-68.09	
07/16/12	3,122,852	2,169	193	263	-70.23	
07/17/12	3,120,406	2,167	193	263	-70.38	
07/18/12	3,036,096	2,108	187	263	-75.59	
07/19/12	3,040,870	2,112	188	263	-75.29	
07/20/12	3,037,264	2,109	187	263	-75.51	
07/21/12	3,086,479	2,143	191	263	-72.48	
07/22/12	3,138,987	2,180	194	263	-69.24	
07/23/12	3,187,780	2,214	197	263	-66.22	
07/24/12	3,277,038	2,276	202	263	-60.71	
07/25/12	3,324,329	2,309	205	263	-57.79	
07/26/12	3,352,041	2,328	207	263	-56.08	
07/27/12	3,400,181	2,361	210	263	-53.11	
07/28/12	3,540,374	2,459	219	263	-44.46	
07/29/12	3,794,438	2,635	234	263	-28.78	
07/30/12	4,289,934	2,979	265	263	1.81	1.81
07/31/12	4,158,084	2,888	257	263	-6.33	
08/01/12	3,994,533	2,774	247	263	-16.42	
08/02/12	4,166,202	2,893	257	263	-5.83	
08/03/12	4,291,429	2,980	265	263	1.90	1.90
08/04/12	4,301,109	2,987	266	263	2.50	2.50
08/05/12	4,278,106	2,971	264	263	1.08	1.08
08/06/12	4,432,864	3,078	274	263	10.63	10.63
08/07/12	4,369,221	3,034	270	263	6.70	6.70
08/08/12	4,268,939	2,965	264	263	0.51	
08/09/12	4,263,889	2,961	263	263	0.20	
08/10/12	4,291,121	2,980	265	263	1.88	1.88
08/11/12	4,346,469	3,018	268	263	5.30	5.30
08/12/12	4,279,957	2,972	264	263	1.19	1.19
08/13/12	4,225,172	2,934	261	263	-2.19	
08/14/12	4,211,745	2,925	260	263	-3.02	
08/15/12	4,223,614	2,933	261	263	-2.28	
08/16/12	4,226,214	2,935	261	263	-2.12	
08/17/12	4,180,641	2,903	258	263	-4.94	
08/18/12	4,135,821	2,872	255	263	-7.70	
08/19/12	4,131,506	2,869	255	263	-7.97	

08/20/12	4,136,709	2,873	255	263	-7.65	
08/21/12	4,092,075	2,842	253	263	-10.40	
08/22/12	4,150,910	2,883	256	263	-6.77	
08/23/12	4,106,779	2,852	254	263	-9.50	
08/24/12	4,085,213	2,837	252	263	-10.83	
08/25/12	4,047,457	2,811	250	263	-13.16	
08/26/12	4,027,480	2,797	249	263	-14.39	
08/27/12	4,031,073	2,799	249	263	-14.17	
08/28/12	4,002,115	2,779	247	263	-15.96	
08/29/12	3,986,028	2,768	246	263	-16.95	
08/30/12	3,988,754	2,770	246	263	-16.78	
08/31/12	3,993,949	2,774	247	263	-16.46	
09/01/12	4,018,538	2,791	248	263	-14.94	
09/02/12	3,962,814	2,752	245	263	-18.38	
09/03/12	3,929,671	2,729	243	263	-20.43	
09/04/12	3,896,073	2,706	240	263	-22.50	
09/05/12	3,887,959	2,700	240	263	-23.00	
09/06/12	3,880,253	2,695	240	263	-23.48	
09/07/12	3,866,931	2,685	239	263	-24.30	
09/08/12	3,850,683	2,674	238	263	-25.30	
09/09/12	3,836,703	2,664	237	263	-26.17	
09/10/12	3,823,287	2,655	236	263	-26.99	
09/11/12	3,827,442	2,658	236	263	-26.74	
09/12/12	4,117,337	2,859	254	263	-8.84	
09/13/12	4,351,224	3,022	269	263	5.59	5.59
09/14/12	4,335,729	3,011	268	263	4.64	4.64
09/15/12	4,323,713	3,003	267	263	3.90	3.90
09/16/12	4,322,058	3,001	267	263	3.79	3.79
09/17/12	4,340,316	3,014	268	263	4.92	4.92
09/18/12	4,328,295	3,006	267	263	4.18	4.18
09/19/12	4,320,495	3,000	267	263	3.70	3.70
09/20/12	4,311,200	2,994	266	263	3.12	3.12
09/21/12	4,296,362	2,984	265	263	2.21	2.21
09/22/12	4,273,023	2,967	264	263	0.77	
09/23/12	4,298,718	2,985	265	263	2.35	2.35
09/24/12	4,270,269	2,965	264	263	0.60	
09/25/12	4,256,855	2,956	263	263	-0.23	
09/26/12	4,252,229	2,953	262	263	-0.52	
09/27/12	4,121,640	2,862	254	263	-8.58	
09/28/12	4,338,068	3,013	268	263	4.78	4.78
09/29/12	4,303,661	2,989	266	263	2.66	2.66
09/30/12	4,252,621	2,953	263	263	-0.49	
10/01/12	4,235,523	2,941	261	263	-1.55	
10/02/12	4,174,036	2,899	258	263	-5.34	

10/03/12	4,214,173	2,927	260	263	-2.87
10/04/12	4,080,704	2,834	252	263	-11.10
10/05/12	4,086,908	2,838	252	263	-10.72
10/06/12	4,074,594	2,830	252	263	-11.48
10/07/12	4,075,839	2,830	252	263	-11.41
10/08/12	1,510,833	1,049	93	263	-169.74
10/09/12	0	0	0	263	-263.00
10/10/12	0	0	0	263	-263.00
10/11/12	0	0	0	263	-263.00
10/12/12	0	0	0	263	-263.00
10/13/12	0	0	0	263	-263.00
10/14/12	0	0	0	263	-263.00
10/15/12	0	0	0	263	-263.00
10/16/12	0	0	0	263	-263.00
10/17/12	0	0	0	263	-263.00
10/18/12	3,195,450	2,219	197	263	-65.75
10/19/12	4,260,600	2,959	263	263	0.00
10/20/12	4,260,600	2,959	263	263	0.00
10/21/12	4,260,600	2,959	263	263	0.00
10/22/12	4,260,600	2,959	263	263	0.00
10/23/12	4,260,600	2,959	263	263	0.00
10/24/12	4,260,600	2,959	263	263	0.00
10/25/12	4,260,600	2,959	263	263	0.00
10/26/12	4,260,600	2,959	263	263	0.00
10/27/12	4,260,600	2,959	263	263	0.00
10/28/12	4,260,600	2,959	263	263	0.00
10/29/12	4,260,600	2,959	263	263	0.00
10/30/12	4,260,600	2,959	263	263	0.00
10/31/12	4,260,600	2,959	263	263	0.00
11/01/12	4,260,600	2,959	263	263	0.00
11/02/12	4,260,600	2,959	263	263	0.00
11/03/12	4,260,600	2,959	263	263	0.00
11/04/12	4,260,600	2,959	263	263	0.00
11/05/12	4,260,600	2,959	263	263	0.00
11/06/12	4,260,600	2,959	263	263	0.00
11/07/12	4,260,600	2,959	263	263	0.00
11/08/12	4,260,600	2,959	263	263	0.00
11/09/12	4,260,600	2,959	263	263	0.00
11/10/12	4,260,600	2,959	263	263	0.00
11/11/12	4,260,600	2,959	263	263	0.00
11/12/12	4,260,600	2,959	263	263	0.00
11/13/12	4,260,600	2,959	263	263	0.00
11/14/12	4,260,600	2,959	263	263	0.00
11/15/12	4,260,600	2,959	263	263	0.00

11/16/12	4,260,600	2,959	263	263	0.00
11/17/12	4,260,600	2,959	263	263	0.00
11/18/12	4,260,600	2,959	263	263	0.00
11/19/12	4,260,600	2,959	263	263	0.00
11/20/12	4,260,600	2,959	263	263	0.00
11/21/12	4,260,600	2,959	263	263	0.00
11/22/12	4,260,600	2,959	263	263	0.00
11/23/12	4,260,600	2,959	263	263	0.00
11/24/12	4,260,600	2,959	263	263	0.00
11/25/12	4,260,600	2,959	263	263	0.00
11/26/12	4,260,600	2,959	263	263	0.00
11/27/12	4,260,600	2,959	263	263	0.00
11/28/12	4,260,600	2,959	263	263	0.00
11/29/12	4,260,600	2,959	263	263	0.00
11/30/12	4,260,600	2,959	263	263	0.00
12/01/12	4,260,600	2,959	263	263	0.00
12/02/12	4,260,600	2,959	263	263	0.00
12/03/12	4,260,600	2,959	263	263	0.00
12/04/12	4,260,600	2,959	263	263	0.00
12/05/12	4,260,600	2,959	263	263	0.00
12/06/12	4,260,600	2,959	263	263	0.00
12/07/12	4,260,600	2,959	263	263	0.00
12/08/12	4,260,600	2,959	263	263	0.00
12/09/12	4,260,600	2,959	263	263	0.00
12/10/12	4,260,600	2,959	263	263	0.00
12/11/12	4,260,600	2,959	263	263	0.00
12/12/12	4,260,600	2,959	263	263	0.00
12/13/12	4,260,600	2,959	263	263	0.00
12/14/12	4,260,600	2,959	263	263	0.00
12/15/12	4,260,600	2,959	263	263	0.00
12/16/12	4,260,600	2,959	263	263	0.00
12/17/12	4,260,600	2,959	263	263	0.00
12/18/12	4,260,600	2,959	263	263	0.00
12/19/12	2,900,001	2,014	179	263	-83.99
12/20/12	3,910,575	2,716	241	263	-21.61
12/21/12	4,074,370	2,829	252	263	-11.50
12/22/12	4,061,438	2,820	251	263	-12.29
12/23/12	4,043,249	2,808	250	263	-13.42
12/24/12	4,034,973	2,802	249	263	-13.93
12/25/12	3,690,162	2,563	228	263	-35.21
12/26/12	4,116,745	2,859	254	263	-8.88
12/27/12	4,110,863	2,855	254	263	-9.24
12/28/12	4,032,108	2,800	249	263	-14.10
12/29/12	3,648,250	2,534	225	263	-37.80

12/30/12	3,915,422	2,719	242	263	-21.31		
12/31/12	4,060,907	2,820	251	263	-12.33	1664.77	83.24
01/01/13	4,111,793	2,855	254	263	-9.19		
01/02/13	3,572,514	2,481	221	263	-42.47		
01/03/13	3,786,709	2,630	234	263	-29.25		
01/04/13	4,066,154	2,824	251	263	-12.00		
01/05/13	4,028,965	2,798	249	263	-14.30		
01/06/13	3,940,144	2,736	243	263	-19.78		
01/07/13	4,004,814	2,781	247	263	-15.79		
01/08/13	4,014,993	2,788	248	263	-15.16		
01/09/13	3,945,506	2,740	244	263	-19.45		
01/10/13	3,903,090	2,710	241	263	-22.07		
01/11/13	3,631,261	2,522	224	263	-38.85		
01/12/13	3,669,778	2,548	227	263	-36.47		
01/13/13	3,940,723	2,737	243	263	-19.75		
01/14/13	3,828,710	2,659	236	263	-26.66		
01/15/13	3,945,182	2,740	244	263	-19.47		
01/16/13	3,899,057	2,708	241	263	-22.32		
01/17/13	3,851,961	2,675	238	263	-25.22		
01/18/13	3,867,490	2,686	239	263	-24.27		
01/19/13	3,797,084	2,637	234	263	-28.61		
01/20/13	3,822,395	2,654	236	263	-27.05		
01/21/13	3,898,131	2,707	241	263	-22.37		
01/22/13	3,768,231	2,617	233	263	-30.39		
01/23/13	3,816,603	2,650	236	263	-27.41		
01/24/13	3,852,038	2,675	238	263	-25.22		
01/25/13	3,827,451	2,658	236	263	-26.74		
01/26/13	3,950,851	2,744	244	263	-19.12		
01/27/13	3,921,954	2,724	242	263	-20.90		
01/28/13	3,914,191	2,718	242	263	-21.38		
01/29/13	3,881,124	2,695	240	263	-23.42		
01/30/13	3,951,645	2,744	244	263	-19.07		
01/31/13	4,052,593	2,814	250	263	-12.84		
02/01/13	3,954,692	2,746	244	263	-18.88		
02/02/13	3,797,102	2,637	234	263	-28.61		
02/03/13	3,818,039	2,651	236	263	-27.32		
02/04/13	3,893,500	2,704	240	263	-22.66		
02/05/13	3,800,188	2,639	235	263	-28.42		
02/06/13	3,870,230	2,688	239	263	-24.10		
02/07/13	3,825,274	2,656	236	263	-26.87		
02/08/13	3,816,563	2,650	236	263	-27.41		
02/09/13	3,818,604	2,652	236	263	-27.28		
02/10/13	3,810,280	2,646	235	263	-27.80		
02/11/13	2,951,927	2,050	182	263	-80.78		

02/12/13	4,172,216	2,897	258	263	-5.46
02/13/13	4,089,846	2,840	252	263	-10.54
02/14/13	3,874,287	2,690	239	263	-23.85
02/15/13	3,805,207	2,643	235	263	-28.11
02/16/13	3,791,784	2,633	234	263	-28.94
02/17/13	3,897,971	2,707	241	263	-22.38
02/18/13	3,928,527	2,728	243	263	-20.50
02/19/13	3,793,090	2,634	234	263	-28.86
02/20/13	3,767,794	2,617	233	263	-30.42
02/21/13	3,905,213	2,712	241	263	-21.94
02/22/13	3,873,612	2,690	239	263	-23.89
02/23/13	3,889,377	2,701	240	263	-22.92
02/24/13	3,887,250	2,699	240	263	-23.05
02/25/13	3,523,633	2,447	218	263	-45.49
02/26/13	4,017,998	2,790	248	263	-14.98
02/27/13	3,734,483	2,593	231	263	-32.48
02/28/13	3,925,404	2,726	242	263	-20.69
03/01/13	3,839,655	2,666	237	263	-25.98
03/02/13	3,807,224	2,644	235	263	-27.99
03/03/13	3,901,517	2,709	241	263	-22.17
03/04/13	3,730,591	2,591	230	263	-32.72
03/05/13	3,046,140	2,115	188	263	-74.97
03/06/13	4,198,900	2,916	259	263	-3.81
03/07/13	3,895,131	2,705	240	263	-22.56
03/08/13	3,824,102	2,656	236	263	-26.94
03/09/13	3,785,186	2,629	234	263	-29.35
03/10/13	3,512,956	2,440	217	263	-46.15
03/11/13	3,859,549	2,680	238	263	-24.76
03/12/13	3,833,118	2,662	237	263	-26.39
03/13/13	3,924,085	2,725	242	263	-20.77
03/14/13	4,062,601	2,821	251	263	-12.22
03/15/13	4,104,714	2,850	253	263	-9.62
03/16/13	4,095,685	2,844	253	263	-10.18
03/17/13	4,074,162	2,829	251	263	-11.51
03/18/13	3,809,358	2,645	235	263	-27.85
03/19/13	3,875,186	2,691	239	263	-23.79
03/20/13	3,895,963	2,706	240	263	-22.51
03/21/13	3,147,607	2,186	194	263	-68.70
03/22/13	3,581,480	2,487	221	263	-41.92
03/23/13	3,691,167	2,563	228	263	-35.15
03/24/13	3,357,539	2,332	207	263	-55.74
03/25/13	3,423,224	2,377	211	263	-51.69
03/26/13	4,192,421	2,911	259	263	-4.21
03/27/13	3,994,933	2,774	247	263	-16.40

03/28/13	3,994,671	2,774	247	263	-16.42	
03/29/13	4,121,859	2,862	254	263	-8.56	
03/30/13	4,323,613	3,003	267	263	3.89	3.89
03/31/13	4,306,959	2,991	266	263	2.86	2.86
04/01/13	3,816,342	2,650	236	263	-27.42	
04/02/13	4,064,509	2,823	251	263	-12.10	
04/03/13	4,127,098	2,866	255	263	-8.24	
04/04/13	4,096,448	2,845	253	263	-10.13	
04/05/13	4,190,429	2,910	259	263	-4.33	
04/06/13	4,183,053	2,905	258	263	-4.79	
04/07/13	4,168,526	2,895	257	263	-5.68	
04/08/13	4,139,854	2,875	256	263	-7.45	
04/09/13	4,141,688	2,876	256	263	-7.34	
04/10/13	4,032,206	2,800	249	263	-14.10	
04/11/13	4,096,851	2,845	253	263	-10.11	
04/12/13	4,103,411	2,850	253	263	-9.70	
04/13/13	4,145,946	2,879	256	263	-7.08	
04/14/13	4,115,916	2,858	254	263	-8.93	
04/15/13	3,863,813	2,683	239	263	-24.49	
04/16/13	3,903,364	2,711	241	263	-22.05	
04/17/13	3,929,365	2,729	243	263	-20.45	
04/18/13	3,222,411	2,238	199	263	-64.09	
04/19/13	3,927,688	2,728	242	263	-20.55	
04/20/13	3,857,982	2,679	238	263	-24.85	
04/21/13	3,912,936	2,717	242	263	-21.46	
04/22/13	3,950,406	2,743	244	263	-19.15	
04/23/13	3,398,260	2,360	210	263	-53.23	
04/24/13	3,945,287	2,740	244	263	-19.46	
04/25/13	3,879,442	2,694	239	263	-23.53	
04/26/13	4,063,570	2,822	251	263	-12.16	
04/27/13	4,412,329	3,064	272	263	9.37	9.37
04/28/13	4,662,199	3,238	288	263	24.79	24.79
04/29/13	4,690,697	3,257	290	263	26.55	26.55
04/30/13	4,485,055	3,115	277	263	13.86	13.86
05/01/13	4,345,046	3,017	268	263	5.21	5.21
05/02/13	4,212,245	2,925	260	263	-2.98	
05/03/13	4,317,664	2,998	267	263	3.52	3.52
05/04/13	4,445,461	3,087	274	263	11.41	11.41
05/05/13	4,696,332	3,261	290	263	26.90	26.90
05/06/13	4,838,369	3,360	299	263	35.66	35.66
05/07/13	4,693,637	3,259	290	263	26.73	26.73
05/08/13	4,708,275	3,270	291	263	27.63	27.63
05/09/13	4,316,256	2,997	266	263	3.44	3.44
05/10/13	4,267,365	2,963	263	263	0.42	

05/11/13	4,245,870	2,949	262	263	-0.91	
05/12/13	4,474,530	3,107	276	263	13.21	13.21
05/13/13	4,927,913	3,422	304	263	41.19	41.19
05/14/13	5,383,463	3,739	332	263	69.31	69.31
05/15/13	4,961,647	3,446	306	263	43.27	43.27
05/16/13	5,210,378	3,618	322	263	58.63	58.63
05/17/13	5,299,761	3,680	327	263	64.15	64.15
05/18/13	5,421,879	3,765	335	263	71.68	71.68
05/19/13	4,326,196	3,004	267	263	4.05	4.05
05/20/13	1,564,042	1,086	97	263	-166.45	
05/21/13	2,470,511	1,716	153	263	-110.50	
05/22/13	4,135,512	2,872	255	263	-7.72	
05/23/13	4,698,400	3,263	290	263	27.02	27.02
05/24/13	4,924,120	3,420	304	263	40.96	40.96
05/25/13	5,188,480	3,603	320	263	57.28	57.28
05/26/13	4,905,780	3,407	303	263	39.83	39.83
05/27/13	4,795,036	3,330	296	263	32.99	32.99
05/28/13	5,003,891	3,475	309	263	45.88	45.88
05/29/13	4,733,312	3,287	292	263	29.18	29.18
05/30/13	4,929,290	3,423	304	263	41.28	41.28
05/31/13	5,410,397	3,757	334	263	70.98	70.98
06/01/13	5,283,714	3,669	326	263	63.16	63.16
06/02/13	5,131,526	3,564	317	263	53.76	53.76
06/03/13	5,107,176	3,547	315	263	52.26	52.26
06/04/13	5,031,112	3,494	311	263	47.56	47.56
06/05/13	4,482,000	3,113	277	263	13.67	13.67
06/06/13	4,178,942	2,902	258	263	-5.04	
06/07/13	4,741,979	3,293	293	263	29.71	29.71
06/08/13	4,544,494	3,156	281	263	17.52	17.52
06/09/13	4,370,586	3,035	270	263	6.79	6.79
06/10/13	3,984,875	2,767	246	263	-17.02	
06/11/13	4,829,096	3,354	298	263	35.09	35.09
06/12/13	4,811,432	3,341	297	263	34.00	34.00
06/13/13	4,638,240	3,221	286	263	23.31	23.31
06/14/13	4,925,303	3,420	304	263	41.03	41.03
06/15/13	4,792,515	3,328	296	263	32.83	32.83
06/16/13	4,806,684	3,338	297	263	33.71	33.71
06/17/13	4,569,879	3,174	282	263	19.09	19.09
06/18/13	4,585,443	3,184	283	263	20.05	20.05
06/19/13	4,459,875	3,097	275	263	12.30	12.30
06/20/13	4,344,055	3,017	268	263	5.15	5.15
06/21/13	4,166,520	2,893	257	263	-5.81	
06/22/13	4,166,500	2,893	257	263	-5.81	
06/23/13	3,847,475	2,672	237	263	-25.50	

06/24/13	3,739,826	2,597	231	263	-32.15		
06/25/13	3,865,876	2,685	239	263	-24.37		
06/26/13	3,842,172	2,668	237	263	-25.83		
06/27/13	3,615,640	2,511	223	263	-39.81		
06/28/13	4,015,769	2,789	248	263	-15.11		
06/29/13	4,148,101	2,881	256	263	-6.94		
06/30/13	4,314,935	2,996	266	263	3.35	3.35	
07/01/13	4,331,082	3,008	267	263	4.35	4.35	
07/02/13	4,100,344	2,847	253	263	-9.89		
07/03/13	4,128,050	2,867	255	263	-8.18		
07/04/13	3,525,697	2,448	218	200	-45.36		
07/05/13	3,512,287	2,439	217	200	-46.19		
07/06/13	3,414,643	2,371	211	200	-52.22		
07/07/13	3,415,853	2,372	211	200	-52.14		
07/08/13	3,279,106	2,277	202	200	-60.59		
07/09/13	3,420,277	2,375	211	200	-51.87		
07/10/13	3,420,277	2,375	211	200	-51.87		
07/11/13	3,240,000	2,250	200	200	-63.00	no flow meter	due to plant construction
07/12/13	3,240,000	2,250	200	200	-63.00		
07/13/13	3,240,000	2,250	200	200	-63.00		
07/14/13	3,240,000	2,250	200	200	-63.00		
07/15/13	3,240,000	2,250	200	200	-63.00		
07/16/13	3,240,000	2,250	200	200	-63.00		
07/17/13	3,240,000	2,250	200	200	-63.00		
07/18/13	3,240,000	2,250	200	200	-63.00		
07/19/13	3,240,000	2,250	200	200	-63.00		
07/20/13	3,240,000	2,250	200	200	-63.00		
07/21/13	3,240,000	2,250	200	200	-63.00		
07/22/13	3,240,000	2,250	200	200	-63.00		
07/23/13	3,240,000	2,250	200	200	-63.00		
07/24/13	3,240,000	2,250	200	200	-63.00		
07/25/13	3,240,000	2,250	200	200	-63.00		
07/26/13	3,240,000	2,250	200	200	-63.00		
07/27/13	3,240,000	2,250	200	200	-63.00		
07/28/13	3,240,000	2,250	200	200	-63.00		
07/29/13	3,240,000	2,250	200	200	-63.00		
07/30/13	4,260,600	2,959	263	263	0.00		
07/31/13	4,260,600	2,959	263	263	0.00		
08/01/13	4,260,600	2,959	263	263	0.00		
08/02/13	4,260,600	2,959	263	263	0.00		
08/03/13	4,260,600	2,959	263	263	0.00		
08/04/13	4,260,600	2,959	263	263	0.00		

08/05/13	4,260,600	2,959	263	263	0.00
08/06/13	4,260,600	2,959	263	263	0.00
08/07/13	4,260,600	2,959	263	263	0.00
08/08/13	4,260,600	2,959	263	263	0.00
08/09/13	4,260,600	2,959	263	263	0.00
08/10/13	4,260,600	2,959	263	263	0.00
08/11/13	4,260,600	2,959	263	263	0.00
08/12/13	4,260,600	2,959	263	263	0.00
08/13/13	4,260,600	2,959	263	263	0.00
08/14/13	4,260,600	2,959	263	263	0.00
08/15/13	4,260,600	2,959	263	263	0.00
08/16/13	4,260,600	2,959	263	263	0.00
08/17/13	4,260,600	2,959	263	263	0.00
08/18/13	4,260,600	2,959	263	263	0.00
08/19/13	4,260,600	2,959	263	263	0.00
08/20/13	4,260,600	2,959	263	263	0.00
08/21/13	4,260,600	2,959	263	263	0.00
08/22/13	4,260,600	2,959	263	263	0.00
08/23/13	4,260,600	2,959	263	263	0.00
08/24/13	4,260,600	2,959	263	263	0.00
08/25/13	4,260,600	2,959	263	263	0.00
08/26/13	4,260,600	2,959	263	263	0.00
08/27/13	4,260,600	2,959	263	263	0.00
08/28/13	4,260,600	2,959	263	263	0.00
08/29/13	4,260,600	2,959	263	263	0.00
08/30/13	4,260,600	2,959	263	263	0.00
08/31/13	4,260,600	2,959	263	263	0.00
09/01/13	4,260,600	2,959	263	263	0.00
09/02/13	4,260,600	2,959	263	263	0.00
09/03/13	4,260,600	2,959	263	263	0.00
09/04/13	4,260,600	2,959	263	263	0.00
09/05/13	4,260,600	2,959	263	263	0.00
09/06/13	4,260,600	2,959	263	263	0.00
09/07/13	4,260,600	2,959	263	263	0.00
09/08/13	4,260,600	2,959	263	263	0.00
09/09/13	4,260,600	2,959	263	263	0.00
09/10/13	4,260,600	2,959	263	263	0.00
09/11/13	4,260,600	2,959	263	263	0.00
09/12/13	4,260,600	2,959	263	263	0.00
09/13/13	4,260,600	2,959	263	263	0.00
09/14/13	4,260,600	2,959	263	263	0.00
09/15/13	4,260,600	2,959	263	263	0.00
09/16/13	4,260,600	2,959	263	263	0.00
09/17/13	4,260,600	2,959	263	263	0.00

09/18/13	4,260,600	2,959	263	263	0.00
09/19/13	4,260,600	2,959	263	263	0.00
09/20/13	4,260,600	2,959	263	263	0.00
09/21/13	4,260,600	2,959	263	263	0.00
09/22/13	4,260,600	2,959	263	263	0.00
09/23/13	4,260,600	2,959	263	263	0.00
09/24/13	4,260,600	2,959	263	263	0.00
09/25/13	4,260,600	2,959	263	263	0.00
09/26/13	4,260,600	2,959	263	263	0.00
09/27/13	4,260,600	2,959	263	263	0.00
09/28/13	4,260,600	2,959	263	263	0.00
09/29/13	4,260,600	2,959	263	263	0.00
09/30/13	4,260,600	2,959	263	263	0.00
10/01/13	4,260,600	2,959	263	263	0.00
10/02/13	4,260,600	2,959	263	263	0.00
10/03/13	4,260,600	2,959	263	263	0.00
10/04/13	4,260,600	2,959	263	263	0.00
10/05/13	4,260,600	2,959	263	263	0.00
10/06/13	4,260,600	2,959	263	263	0.00
10/07/13	4,260,600	2,959	263	263	0.00
10/08/13	4,260,600	2,959	263	263	0.00
10/09/13	4,260,600	2,959	263	263	0.00
10/10/13	4,260,600	2,959	263	263	0.00
10/11/13	4,260,600	2,959	263	263	0.00
10/12/13	4,260,600	2,959	263	263	0.00
10/13/13	4,260,600	2,959	263	263	0.00
10/14/13	4,260,600	2,959	263	263	0.00
10/15/13	4,260,600	2,959	263	263	0.00
10/16/13	4,260,600	2,959	263	263	0.00
10/17/13	4,260,600	2,959	263	263	0.00
10/18/13	4,260,600	2,959	263	263	0.00
10/19/13	4,260,600	2,959	263	263	0.00
10/20/13	4,260,600	2,959	263	263	0.00
10/21/13	4,260,600	2,959	263	263	0.00
10/22/13	4,260,600	2,959	263	263	0.00
10/23/13	4,260,600	2,959	263	263	0.00
10/24/13	4,260,600	2,959	263	263	0.00
10/25/13	4,260,600	2,959	263	263	0.00
10/26/13	4,260,600	2,959	263	263	0.00
10/27/13	4,260,600	2,959	263	263	0.00
10/28/13	4,260,600	2,959	263	263	0.00
10/29/13	4,260,600	2,959	263	263	0.00
10/30/13	4,260,600	2,959	263	263	0.00
10/31/13	4,260,600	2,959	263	263	0.00

11/01/13	4,260,600	2,959	263	263	0.00
11/02/13	4,260,600	2,959	263	263	0.00
11/03/13	4,260,600	2,959	263	263	0.00
11/04/13	4,260,600	2,959	263	263	0.00
11/05/13	4,260,600	2,959	263	263	0.00
11/06/13	4,260,600	2,959	263	263	0.00
11/07/13	4,260,600	2,959	263	263	0.00
11/08/13	4,260,600	2,959	263	263	0.00
11/09/13	4,260,600	2,959	263	263	0.00
11/10/13	4,260,600	2,959	263	263	0.00
11/11/13	4,260,600	2,959	263	263	0.00
11/12/13	4,260,600	2,959	263	263	0.00
11/13/13	4,260,600	2,959	263	263	0.00
11/14/13	4,260,600	2,959	263	263	0.00
11/15/13	4,260,600	2,959	263	263	0.00
11/16/13	4,260,600	2,959	263	263	0.00
11/17/13	4,260,600	2,959	263	263	0.00
11/18/13	4,260,600	2,959	263	263	0.00
11/19/13	4,260,600	2,959	263	263	0.00
11/20/13	4,260,600	2,959	263	263	0.00
11/21/13	4,260,600	2,959	263	263	0.00
11/22/13	4,260,600	2,959	263	263	0.00
11/23/13	4,260,600	2,959	263	263	0.00
11/24/13	4,260,600	2,959	263	263	0.00
11/25/13	4,260,600	2,959	263	263	0.00
11/26/13	4,260,600	2,959	263	263	0.00
11/27/13	4,260,600	2,959	263	263	0.00
11/28/13	4,260,600	2,959	263	263	0.00
11/29/13	4,260,600	2,959	263	263	0.00
11/30/13	4,260,600	2,959	263	263	0.00
12/01/13	4,260,600	2,959	263	263	0.00
12/02/13	4,260,600	2,959	263	263	0.00
12/03/13	4,260,600	2,959	263	263	0.00
12/04/13	4,260,600	2,959	263	263	0.00
12/05/13	4,260,600	2,959	263	263	0.00
12/06/13	4,260,600	2,959	263	263	0.00
12/07/13	4,260,600	2,959	263	263	0.00
12/08/13	4,260,600	2,959	263	263	0.00
12/09/13	4,260,600	2,959	263	263	0.00
12/10/13	4,260,600	2,959	263	263	0.00
12/11/13	4,260,600	2,959	263	263	0.00
12/12/13	4,260,600	2,959	263	263	0.00
12/13/13	4,260,600	2,959	263	263	0.00
12/14/13	4,260,600	2,959	263	263	0.00

12/15/13	4,260,600	2,959	263	263	0.00		
12/16/13	4,260,600	2,959	263	263	0.00		
12/17/13	4,260,600	2,959	263	263	0.00		
12/18/13	4,260,600	2,959	263	263	0.00		
12/19/13	4,260,600	2,959	263	263	0.00		
12/20/13	4,260,600	2,959	263	263	0.00		
12/21/13	4,260,600	2,959	263	263	0.00		
12/22/13	4,260,600	2,959	263	263	0.00		
12/23/13	4,260,600	2,959	263	263	0.00		
12/24/13	4,260,600	2,959	263	263	0.00		
12/25/13	4,260,600	2,959	263	263	0.00		
12/26/13	4,260,600	2,959	263	263	0.00		
12/27/13	4,260,600	2,959	263	263	0.00		
12/28/13	4,260,600	2,959	263	263	0.00		
12/29/13	4,260,600	2,959	263	263	0.00		
12/30/13	4,260,600	2,959	263	263	0.00		
12/31/13	4,260,600	2,959	263	263	0.00	1521.41	76.07
01/01/14	4,260,600	2,959	263	263	0.00		
01/02/14	4,260,600	2,959	263	263	0.00		
01/03/14	4,260,600	2,959	263	263	0.00		
01/04/14	4,260,600	2,959	263	263	0.00		
01/05/14	4,260,600	2,959	263	263	0.00		
01/06/14	4,260,600	2,959	263	263	0.00		
01/07/14	4,260,600	2,959	263	263	0.00		
01/08/14	4,260,600	2,959	263	263	0.00		
01/09/14	4,260,600	2,959	263	263	0.00		
01/10/14	4,260,600	2,959	263	263	0.00		
01/11/14	4,260,600	2,959	263	263	0.00		
01/12/14	4,260,600	2,959	263	263	0.00		
01/13/14	4,260,600	2,959	263	263	0.00		
01/14/14	4,260,600	2,959	263	263	0.00		
01/15/14	4,260,600	2,959	263	263	0.00		
01/16/14	4,260,600	2,959	263	263	0.00		
01/17/14	4,260,600	2,959	263	263	0.00		
01/18/14	4,260,600	2,959	263	263	0.00		
01/19/14	4,260,600	2,959	263	263	0.00		
01/20/14	4,260,600	2,959	263	263	0.00		
01/21/14	1,419,840	986	88	263	-175.36		
01/22/14	1,419,840	986	88	263	-175.36		
01/23/14	4,260,600	2,959	263	263	0.00		
01/24/14	4,260,600	2,959	263	263	0.00		
01/25/14	4,260,600	2,959	263	263	0.00		
01/26/14	4,260,600	2,959	263	263	0.00		
01/27/14	4,260,600	2,959	263	263	0.00		

01/28/14	4,260,600	2,959	263	263	0.00
01/29/14	4,260,600	2,959	263	263	0.00
01/30/14	4,260,600	2,959	263	263	0.00
01/31/14	4,260,600	2,959	263	263	0.00
02/01/14	4,260,600	2,959	263	263	0.00
02/02/14	4,260,600	2,959	263	263	0.00
02/03/14	4,260,600	2,959	263	263	0.00
02/04/14	4,260,600	2,959	263	263	0.00
02/05/14	4,260,600	2,959	263	263	0.00
02/06/14	4,260,600	2,959	263	263	0.00
02/07/14	4,260,600	2,959	263	263	0.00
02/08/14	4,260,600	2,959	263	263	0.00
02/09/14	4,260,600	2,959	263	263	0.00
02/10/14	4,260,600	2,959	263	263	0.00
02/11/14	4,260,600	2,959	263	263	0.00
02/12/14	4,260,600	2,959	263	263	0.00
02/13/14	4,260,600	2,959	263	263	0.00
02/14/14	4,260,600	2,959	263	263	0.00
02/15/14	4,260,600	2,959	263	263	0.00
02/16/14	4,260,600	2,959	263	263	0.00
02/17/14	4,260,600	2,959	263	263	0.00
02/18/14	4,260,600	2,959	263	263	0.00
02/19/14	4,260,600	2,959	263	263	0.00
02/20/14	4,260,600	2,959	263	263	0.00
02/21/14	4,260,600	2,959	263	263	0.00
02/22/14	4,260,600	2,959	263	263	0.00
02/23/14	4,260,600	2,959	263	263	0.00
02/24/14	4,260,600	2,959	263	263	0.00
02/25/14	4,260,600	2,959	263	263	0.00
02/26/14	4,260,600	2,959	263	263	0.00
02/27/14	4,260,600	2,959	263	263	0.00
02/28/14	4,260,600	2,959	263	263	0.00
03/01/14	4,260,600	2,959	263	263	0.00
03/02/14	4,260,600	2,959	263	263	0.00
03/03/14	4,260,600	2,959	263	263	0.00
03/04/14	4,260,600	2,959	263	263	0.00
03/05/14	4,260,600	2,959	263	263	0.00
03/06/14	4,260,600	2,959	263	263	0.00
03/07/14	4,260,600	2,959	263	263	0.00
03/08/14	4,260,600	2,959	263	263	0.00
03/09/14	4,260,600	2,959	263	263	0.00
03/10/14	4,260,600	2,959	263	263	0.00
03/11/14	4,260,600	2,959	263	263	0.00

03/12/14	4,260,600	2,959	263	263	0.00		new plant online
3/13/2014	3,639,510	2,527	225	263	-38.00		
3/14/2014	3,524,226	2,447	218	263	-45.00		
3/15/2014	3,509,327	2,437	217	263	-46.00		
3/16/2014	3,546,377	2,463	219	263	-44.00		
3/17/2014	3,693,782	2,565	228	263	-35.00		
3/18/2014	3,337,096	2,317	206	263	-57.00		
3/19/2014	3,570,832	2,480	220	263	-43.00		
3/20/2014	3,628,150	2,520	224	263	-39.00		
3/21/2014	3,465,668	2,407	214	263	-49.00		
3/22/2014	3,250,536	2,257	201	263	-62.00		
3/23/2014	3,512,343	2,439	217	263	-46.00		
3/24/2014	3,403,729	2,364	210	263	-53.00		
3/25/2014	3,449,313	2,395	213	263	-50.00		
3/26/2014	3,612,887	2,509	223	263	-40.00		
3/27/2014	3,629,360	2,520	224	263	-39.00		
3/28/2014	3,562,176	2,474	220	263	-43.00		
3/29/2014	3,610,823	2,508	223	263	-40.00		
3/30/2014	3,615,264	2,511	223	263	-40.00		
3/31/2014	3,687,715	2,561	228	263	-35.00		
4/1/2014	3,565,653	2,476	220	263	-43.00		
4/2/2014	3,606,624	2,505	223	263	-40.00		
4/3/2014	3,622,380	2,516	224	263	-39.00		
4/4/2014	3,628,989	2,520	224	263	-39.00		
4/5/2014	3,791,090	2,633	234	263	-29.00		
4/6/2014	3,801,936	2,640	235	263	-28.00		
4/7/2014	5,596,736	3,887	345	263	82.00	82.00	
4/8/2014	3,633,432	2,523	224	263	-39.00		
4/9/2014	3,686,105	2,560	228	263	-35.00		
4/10/2014	3,693,309	2,565	228	263	-35.00		
4/11/2014	3,685,407	2,559	227	263	-36.00		
4/12/2014	3,726,464	2,588	230	263	-33.00		
4/13/2014	3,734,585	2,593	231	263	-32.00		
4/14/2014	3,532,698	2,453	218	263	-45.00		
4/15/2014	3,742,421	2,599	231	263	-32.00		
4/16/2014	3,763,107	2,613	232	263	-31.00		
4/17/2014	3,649,839	2,535	225	263	-38.00		
4/18/2014	3,711,378	2,577	229	263	-34.00		
4/19/2014	3,778,270	2,624	233	263	-30.00		
4/20/2014	3,927,410	2,727	242	263	-21.00		
4/21/2014	4,119,890	2,861	254	263	-9.00		
4/22/2014	4,341,472	3,015	268	263	5.00	5.00	
4/23/2014	4,555,204	3,163	281	263	18.00	18.00	
4/24/2014	4,342,984	3,016	268	263	5.00	5.00	
4/25/2014	4,167,989	2,894	257	263	-6.00		

4/26/2014	4,241,859	2,946	262	263	-1.00	
4/27/2014	4,292,229	2,981	265	263	2.00	2.00
4/28/2014	4,279,651	2,972	264	263	1.00	1.00
4/29/2014	4,217,177	2,929	260	263	-3.00	
4/30/2014	4,059,850	2,819	251	263	-12.00	
5/1/2014	4,139,531	2,875	256	263	-7.00	
5/2/2014	4,496,899	3,123	278	263	15.00	15.00
5/3/2014	4,941,877	3,432	305	263	42.00	42.00
5/4/2014	5,126,008	3,560	316	263	53.00	53.00
5/5/2014	4,880,519	3,389	301	263	38.00	38.00
5/6/2014	4,644,297	3,225	287	263	24.00	24.00
5/7/2014	2,975,294	2,066	184	263	-79.00	
5/8/2014	4,078,668	2,832	252	263	-11.00	
5/9/2014	4,283,227	2,974	264	263	1.00	1.00
5/10/2014	4,264,679	2,962	263	263	0.00	
5/11/2014	4,178,029	2,901	258	263	-5.00	
5/12/2014	4,046,773	2,810	250	263	-13.00	
5/13/2014	3,943,564	2,739	243	263	-20.00	
5/14/2014	3,942,700	2,738	243	263	-20.00	
5/15/2014	4,298,729	2,985	265	263	2.00	2.00
5/16/2014	4,899,592	3,402	302	263	39.00	39.00
5/17/2014	5,198,739	3,610	321	263	58.00	58.00
5/18/2014	5,308,928	3,687	328	263	65.00	65.00
5/19/2014	4,309,199	2,992	266	263	3.00	3.00
5/20/2014	3,830,738	2,660	236	263	-27.00	
5/21/2014	4,172,076	2,897	258	263	-5.00	
5/22/2014	4,965,215	3,448	306	263	43.00	43.00
5/23/2014	4,959,965	3,444	306	263	43.00	43.00
5/24/2014	4,518,536	3,138	279	263	16.00	16.00
5/25/2014	4,452,515	3,092	275	263	12.00	12.00
5/26/2014	4,371,223	3,036	270	263	7.00	7.00
5/27/2014	4,286,917	2,977	265	263	2.00	2.00
5/28/2014	4,326,530	3,005	267	263	4.00	4.00
5/29/2014	4,330,133	3,007	267	263	4.00	4.00
5/30/2014	4,069,895	2,826	251	263	-12.00	
5/31/2014	3,716,592	2,581	229	263	-34.00	
6/1/2014	3,573,099	2,481	221	263	-42.00	
6/2/2014	3,530,140	2,451	218	263	-45.00	
6/3/2014	4,274,725	2,969	264	263	1.00	1.00
6/4/2014	4,329,437	3,007	267	263	4.00	4.00
6/5/2014	4,268,397	2,964	263	263	0.00	
6/6/2014	4,229,460	2,937	261	263	-2.00	
6/7/2014	4,156,102	2,886	257	263	-6.00	
6/8/2014	4,078,813	2,833	252	263	-11.00	
6/9/2014	4,089,162	2,840	252	263	-11.00	
6/10/2014	4,234,542	2,941	261	263	-2.00	
6/11/2014	4,445,093	3,087	274	263	11.00	11.00

6/12/2014	4,318,936	2,999	267	263	4.00	4.00
6/13/2014	4,378,735	3,041	270	263	7.00	7.00
6/14/2014	4,262,659	2,960	263	263	0.00	
6/15/2014	4,186,683	2,907	258	263	-5.00	
6/16/2014	4,353,336	3,023	269	263	6.00	6.00
6/17/2014	4,226,869	2,935	261	263	-2.00	
6/18/2014	4,114,086	2,857	254	263	-9.00	
6/19/2014	4,027,137	2,797	249	263	-14.00	
6/20/2014	4,222,430	2,932	261	263	-2.00	
6/21/2014	4,434,177	3,079	274	263	11.00	11.00
6/22/2014	4,312,700	2,995	266	263	3.00	3.00
6/23/2014	4,289,711	2,979	265	263	2.00	2.00
6/24/2014	4,193,924	2,912	259	263	-4.00	
6/25/2014	4,315,569	2,997	266	263	3.00	3.00
6/26/2014	4,368,709	3,034	270	263	7.00	7.00
6/27/2014	4,705,409	3,268	290	263	27.00	27.00
6/28/2014	4,322,739	3,002	267	263	4.00	4.00
6/29/2014	4,206,959	2,921	260	263	-3.00	
6/30/2014	4,021,884	2,793	248	263	-15.00	
7/1/2014	3,944,591	2,739	243	263	-20.00	
7/2/2014	4,128,422	2,867	255	263	-8.00	
7/3/2014	4,105,907	2,851	253	263	-10.00	
7/4/2014	4,053,689	2,815	250	263	-13.00	
7/5/2014	3,806,245	2,643	235	263	-28.00	
7/6/2014	3,672,821	2,551	227	263	-36.00	
7/7/2014	3,867,676	2,686	239	263	-24.00	
7/8/2014	3,868,818	2,687	239	263	-24.00	
7/9/2014	4,481,166	3,112	277	263	14.00	14.00
7/10/2014	5,052,476	3,509	312	263	49.00	49.00
7/11/2014	4,986,420	3,463	308	263	45.00	45.00
7/12/2014	5,095,979	3,539	315	263	52.00	52.00
7/13/2014	5,121,700	3,557	316	263	53.00	53.00
7/14/2014	4,377,023	3,040	270	263	7.00	7.00
7/15/2014	3,953,257	2,745	244	263	-19.00	
7/16/2014	3,932,877	2,731	243	263	-20.00	
7/17/2014	3,752,191	2,606	232	263	-31.00	
7/18/2014	3,634,802	2,524	224	263	-39.00	
7/19/2014	3,181,548	2,209	196	263	-67.00	
7/20/2014	4,139,703	2,875	256	263	-7.00	
7/21/2014	4,082,306	2,835	252	263	-11.00	
7/22/2014	4,191,768	2,911	259	263	-4.00	
7/23/2014	4,342,573	3,016	268	263	5.00	5.00
7/24/2014	4,395,699	3,053	271	263	8.00	8.00
7/25/2014	4,327,166	3,005	267	263	4.00	4.00
7/26/2014	4,265,011	2,962	263	263	0.00	
7/27/2014	4,273,842	2,968	264	263	1.00	1.00
7/28/2014	4,489,307	3,118	277	263	14.00	14.00

7/29/2014	4,655,343	3,233	287	263	24.00	24.00
7/30/2014	4,688,703	3,256	289	263	26.00	26.00
7/31/2014	4,780,992	3,320	295	263	32.00	32.00
8/1/2014	4,937,300	3,429	305	263	42.00	42.00
8/2/2014	5,036,254	3,497	311	263	48.00	48.00
8/3/2014	4,934,286	3,427	305	263	42.00	42.00
8/4/2014	4,580,259	3,181	283	263	20.00	20.00
8/5/2014	4,409,235	3,062	272	263	9.00	9.00
8/6/2014	4,356,784	3,026	269	263	6.00	6.00
8/7/2014	4,310,547	2,993	266	263	3.00	3.00
8/8/2014	4,361,808	3,029	269	263	6.00	6.00
8/9/2014	4,258,839	2,958	263	263	0.00	
8/10/2014	4,255,418	2,955	263	263	0.00	
8/11/2014	4,308,841	2,992	266	263	3.00	3.00
8/12/2014	4,304,921	2,990	266	263	3.00	3.00
8/13/2014	4,292,126	2,981	265	263	2.00	2.00
8/14/2014	4,188,319	2,909	259	263	-4.00	
8/15/2014	4,093,882	2,843	253	263	-10.00	
8/16/2014	4,095,090	2,844	253	263	-10.00	
8/17/2014	4,057,926	2,818	250	263	-13.00	
8/18/2014	4,151,026	2,883	256	263	-7.00	
8/19/2014	4,228,349	2,936	261	263	-2.00	
8/20/2014	4,458,623	3,096	275	263	12.00	12.00
8/21/2014	4,687,024	3,255	289	263	26.00	26.00
8/22/2014	5,001,218	3,473	309	263	46.00	46.00
8/23/2014	5,356,389	3,720	331	263	68.00	68.00
8/24/2014	5,767,691	4,005	356	263	93.00	93.00
8/25/2014	5,448,930	3,784	336	263	73.00	73.00
8/26/2014	5,310,846	3,688	328	263	65.00	65.00
8/27/2014	4,874,455	3,385	301	263	38.00	38.00
8/28/2014	4,434,823	3,080	274	263	11.00	11.00
8/29/2014	4,378,452	3,041	270	263	7.00	7.00
8/30/2014	4,418,009	3,068	273	263	10.00	10.00
8/31/2014	4,466,409	3,102	276	263	13.00	13.00
9/1/2014	4,401,081	3,056	272	263	9.00	9.00
9/2/2014	4,292,893	2,981	265	263	2.00	2.00
9/3/2014	4,285,509	2,976	265	263	2.00	2.00
9/4/2014	4,236,574	2,942	262	263	-1.00	
9/5/2014	4,151,390	2,883	256	263	-7.00	
9/6/2014	4,092,691	2,842	253	263	-10.00	
9/7/2014	4,071,155	2,827	251	263	-12.00	
9/8/2014	4,059,886	2,819	251	263	-12.00	
9/9/2014	4,088,752	2,839	252	263	-11.00	
9/10/2014	4,084,962	2,837	252	263	-11.00	
9/11/2014	4,093,260	2,843	253	263	-10.00	
9/12/2014	4,070,783	2,827	251	263	-12.00	
9/13/2014	4,022,061	2,793	248	263	-15.00	

9/14/2014	3,987,815	2,769	246	263	-17.00	
9/15/2014	3,943,790	2,739	243	263	-20.00	
9/16/2014	3,923,988	2,725	242	263	-21.00	
9/17/2014	3,928,131	2,728	242	263	-21.00	
9/18/2014	3,991,695	2,772	246	263	-17.00	
9/19/2014	3,903,299	2,711	241	263	-22.00	
9/20/2014	3,794,050	2,635	234	263	-29.00	
9/21/2014	3,738,495	2,596	231	263	-32.00	
9/22/2014	3,546,695	2,463	219	263	-44.00	
9/23/2014	3,772,627	2,620	233	263	-30.00	
9/24/2014	3,955,721	2,747	244	263	-19.00	
9/25/2014	4,117,797	2,860	254	263	-9.00	
9/26/2014	4,075,580	2,830	252	263	-11.00	
9/27/2014	4,233,158	2,940	261	263	-2.00	
9/28/2014	4,110,836	2,855	254	263	-9.00	
9/29/2014	3,985,052	2,767	246	263	-17.00	
9/30/2014	4,109,872	2,854	254	263	-9.00	
10/1/2014	4,459,685	3,097	275	263	12.00	12.00
10/2/2014	4,063,133	2,822	251	263	-12.00	
10/3/2014	3,727,499	2,589	230	263	-33.00	
10/4/2014	3,683,407	2,558	227	263	-36.00	
10/5/2014	3,587,661	2,491	221	263	-42.00	
10/6/2014	3,467,307	2,408	214	263	-49.00	
10/7/2014	3,417,498	2,373	211	263	-52.00	
10/8/2014	3,533,793	2,454	218	263	-45.00	
10/9/2014	3,842,270	2,668	237	263	-26.00	
10/10/2014	3,894,132	2,704	240	263	-23.00	
10/11/2014	4,000,106	2,778	247	263	-16.00	
10/12/2014	4,807,724	3,339	297	263	34.00	34.00
10/13/2014	4,373,194	3,037	270	263	7.00	7.00
10/14/2014	4,378,265	3,040	270	263	7.00	7.00
10/15/2014	4,617,479	3,207	285	263	22.00	22.00
10/16/2014	4,578,313	3,179	283	263	20.00	20.00
10/17/2014	4,897,199	3,401	302	263	39.00	39.00
10/18/2014	4,666,504	3,241	288	263	25.00	25.00
10/19/2014	4,452,014	3,092	275	263	12.00	12.00
10/20/2014	4,345,634	3,018	268	263	5.00	5.00
10/21/2014	4,305,728	2,990	266	263	3.00	3.00
10/22/2014	4,238,748	2,944	262	263	-1.00	
10/23/2014	4,356,007	3,025	269	263	6.00	6.00
10/24/2014	4,727,804	3,283	292	263	29.00	29.00
10/25/2014	4,633,707	3,218	286	263	23.00	23.00
10/26/2014	4,399,311	3,055	272	263	9.00	9.00
10/27/2014	4,307,091	2,991	266	263	3.00	3.00
10/28/2014	4,180,872	2,903	258	263	-5.00	
10/29/2014	4,229,261	2,937	261	263	-2.00	
10/30/2014	4,115,497	2,858	254	263	-9.00	

10/31/2014	3,959,145	2,749	244	263	-19.00	
11/1/2014	3,969,775	2,757	245	263	-18.00	
11/2/2014	3,953,743	2,746	244	263	-19.00	
11/3/2014	3,867,297	2,686	239	263	-24.00	
11/4/2014	3,832,478	2,661	237	263	-26.00	
11/5/2014	3,814,464	2,649	235	263	-28.00	
11/6/2014	3,772,402	2,620	233	263	-30.00	
11/7/2014	4,077,007	2,831	252	263	-11.00	
11/8/2014	4,873,690	3,385	301	263	38.00	38.00
11/9/2014	4,865,845	3,379	300	263	37.00	37.00
11/10/2014	4,937,350	3,429	305	263	42.00	42.00
11/11/2014	3,508,511	2,436	217	263	-46.00	
11/12/2014	3,183,006	2,210	196	263	-67.00	
11/13/2014	4,046,773	2,810	250	263	-13.00	
11/14/2014	4,981,169	3,459	307	263	44.00	44.00
11/15/2014	4,969,136	3,451	307	263	44.00	44.00
11/16/2014	4,994,963	3,469	308	263	45.00	45.00
11/17/2014	4,935,729	3,428	305	263	42.00	42.00
11/18/2014	4,962,482	3,446	306	263	43.00	43.00
11/19/2014	4,881,126	3,390	301	263	38.00	38.00
11/20/2014	4,580,175	3,181	283	263	20.00	20.00
11/21/2014	4,180,949	2,903	258	263	-5.00	
11/22/2014	4,165,689	2,893	257	263	-6.00	
11/23/2014	4,162,617	2,891	257	263	-6.00	
11/24/2014	4,149,289	2,881	256	263	-7.00	
11/25/2014	4,123,055	2,863	255	263	-8.00	
11/26/2014	4,167,079	2,894	257	263	-6.00	
11/27/2014	4,204,821	2,920	260	263	-3.00	
11/28/2014	4,221,427	2,932	261	263	-2.00	
11/29/2014	4,188,388	2,909	259	263	-4.00	
11/30/2014	3,823,446	2,655	236	263	-27.00	
12/1/2014	4,246,629	2,949	262	263	-1.00	
12/2/2014	4,214,533	2,927	260	263	-3.00	
12/3/2014	2,335,837	1,622	144	263	-119.00	
12/4/2014	4,151,100	2,883	256	263	-7.00	
12/5/2014	4,067,857	2,825	251	263	-12.00	
12/6/2014	4,154,711	2,885	256	263	-7.00	
12/7/2014	4,116,565	2,859	254	263	-9.00	
12/8/2014	4,145,197	2,879	256	263	-7.00	
12/9/2014	4,176,464	2,900	258	263	-5.00	
12/10/2014	4,165,065	2,892	257	263	-6.00	
12/11/2014	4,084,523	2,836	252	263	-11.00	
12/12/2014	4,121,482	2,862	254	263	-9.00	
12/13/2014	4,202,118	2,918	259	263	-4.00	
12/14/2014	4,237,423	2,943	262	263	-1.00	
12/15/2014	4,149,033	2,881	256	263	-7.00	
12/16/2014	3,746,663	2,602	231	263	-32.00	

12/17/2014	4,088,373	2,839	252	263	-11.00			
12/18/2014	3,945,937	2,740	244	263	-19.00			
12/19/2014	4,074,463	2,829	252	263	-11.00			
12/20/2014	4,073,930	2,829	251	263	-12.00			
12/21/2014	4,088,489	2,839	252	263	-11.00			
12/22/2014	4,082,381	2,835	252	263	-11.00			
12/23/2014	4,071,080	2,827	251	263	-12.00			
12/24/2014	4,101,124	2,848	253	263	-10.00			
12/25/2014	4,092,734	2,842	253	263	-10.00			
12/26/2014	3,950,502	2,743	244	263	-19.00			
12/27/2014	3,481,263	2,418	215	263	-48.00			
12/28/2014	4,019,693	2,791	248	263	-15.00			
12/29/2014	3,897,457	2,707	241	263	-22.00			
12/30/2014	3,320,236	2,306	205	263	-58.00			
12/31/2014	3,875,853	2,692	239	263	-24.00		2316.00	115.80
1/1/2015	3,872,297	2,689	239	263	-24.00			
1/2/2015	3,793,049	2,634	234	263	-29.00			
1/3/2015	3,692,498	2,564	228	263	-35.00			
1/4/2015	3,626,779	2,519	224	263	-39.00			
1/5/2015	3,562,046	2,474	220	263	-43.00			
1/6/2015	3,557,129	2,470	220	263	-43.00			
1/7/2015	3,556,187	2,470	220	263	-43.00			
1/8/2015	3,565,580	2,476	220	263	-43.00			
1/9/2015	3,140,902	2,181	194	263	-69.00			
1/10/2015	4,276,176	2,970	264	263	1.00	1.00		
1/11/2015	4,172,472	2,898	258	263	-5.00			
1/12/2015	4,092,881	2,842	253	263	-10.00			
1/13/2015	4,075,799	2,830	252	263	-11.00			
1/14/2015	3,654,123	2,538	226	263	-37.00			
1/15/2015	4,115,657	2,858	254	263	-9.00			
1/16/2015	4,086,961	2,838	252	263	-11.00			
1/17/2015	4,093,546	2,843	253	263	-10.00			
1/18/2015	4,065,827	2,823	251	263	-12.00			
1/19/2015	4,079,440	2,833	252	263	-11.00			
1/20/2015	4,044,180	2,808	250	263	-13.00			
1/21/2015	3,995,945	2,775	247	263	-16.00			
1/22/2015	3,300,157	2,292	204	263	-59.00			
1/23/2015	4,147,138	2,880	256	263	-7.00			
1/24/2015	4,100,639	2,848	253	263	-10.00			
1/25/2015	4,112,347	2,856	254	263	-9.00			
1/26/2015	4,328,308	3,006	267	263	4.00	4.00		
1/27/2015	4,359,899	3,028	269	263	6.00	6.00		
1/28/2015	4,365,850	3,032	269	263	6.00	6.00		
1/29/2015	4,094,015	2,843	253	263	-10.00			
1/30/2015	3,972,489	2,759	245	263	-18.00			
1/31/2015	3,886,644	2,699	240	263	-23.00			
2/1/2015	4,092,395	2,842	253	263	-10.00			

2/2/2015	4,271,959	2,967	264	263	1.00	1.00
2/3/2015	4,346,389	3,018	268	263	5.00	5.00
2/4/2015	4,287,697	2,978	265	263	2.00	2.00
2/5/2015	4,359,097	3,027	269	263	6.00	6.00
2/6/2015	4,341,703	3,015	268	263	5.00	5.00
2/7/2015	4,438,638	3,082	274	263	11.00	11.00
2/8/2015	4,426,575	3,074	273	263	10.00	10.00
2/9/2015	4,474,908	3,108	276	263	13.00	13.00
2/10/2015	4,513,043	3,134	279	263	16.00	16.00
2/11/2015	4,523,802	3,142	279	263	16.00	16.00
2/12/2015	4,481,690	3,112	277	263	14.00	14.00
2/13/2015	4,483,902	3,114	277	263	14.00	14.00
2/14/2015	3,018,973	2,097	186	263	-77.00	
2/15/2015	4,356,623	3,025	269	263	6.00	6.00
2/16/2015	4,395,463	3,052	271	263	8.00	8.00
2/17/2015	4,359,310	3,027	269	263	6.00	6.00
2/18/2015	4,363,637	3,030	269	263	6.00	6.00
2/19/2015	4,403,845	3,058	272	263	9.00	9.00
2/20/2015	4,393,572	3,051	271	263	8.00	8.00
2/21/2015	4,337,703	3,012	268	263	5.00	5.00
2/22/2015	2,606,754	1,810	161	263	-102.00	
2/23/2015	3,836,181	2,664	237	263	-26.00	
2/24/2015	4,292,652	2,981	265	263	2.00	2.00
2/25/2015	4,279,100	2,972	264	263	1.00	1.00
2/26/2015	4,343,547	3,016	268	263	5.00	5.00
2/27/2015	3,605,730	2,504	223	263	-40.00	
2/28/2015	4,401,909	3,057	272	263	9.00	9.00
3/1/2015	4,234,253	2,940	261	263	-2.00	
3/2/2015	4,381,359	3,043	270	263	7.00	7.00
3/3/2015	4,377,206	3,040	270	263	7.00	7.00
3/4/2015	4,228,162	2,936	261	263	-2.00	
3/5/2015	4,418,588	3,068	273	263	10.00	10.00
3/6/2015	4,311,312	2,994	266	263	3.00	3.00
3/7/2015	4,276,104	2,970	264	263	1.00	1.00
3/8/2015	4,296,618	2,984	265	263	2.00	2.00
3/9/2015	4,117,098	2,859	271	263	8.00	8.00
3/10/2015	4,290,744	2,980	265	263	2.00	2.00
3/11/2015	4,316,754	2,998	266	263	3.00	3.00
3/12/2015	4,284,937	2,976	265	263	2.00	2.00
3/13/2015	4,252,732	2,953	263	263	0.00	
3/14/2015	4,215,479	2,927	260	263	-3.00	
3/15/2015	4,278,010	2,971	264	263	1.00	1.00
3/16/2015	4,341,449	3,015	268	263	5.00	5.00
3/17/2015	4,311,282	2,994	266	263	3.00	3.00
3/18/2015	4,405,192	3,059	272	263	9.00	9.00
3/19/2015	4,410,020	3,063	272	263	9.00	9.00
3/20/2015	4,442,936	3,085	274	263	11.00	11.00

3/21/2015	4,393,384	3,051	271	263	8.00	8.00
3/22/2015	4,398,737	3,055	272	263	9.00	9.00
3/23/2015	4,347,072	3,019	268	263	5.00	5.00
3/24/2015	4,413,718	3,065	272	263	9.00	9.00
3/25/2015	4,429,167	3,076	273	263	10.00	10.00
3/26/2015	3,794,989	2,635	234	263	-29.00	
3/27/2015	4,184,692	2,906	258	263	-5.00	
3/28/2015	4,440,166	3,083	274	263	11.00	11.00
3/29/2015	4,470,592	3,105	276	263	13.00	13.00
3/30/2015	4,454,371	3,093	275	263	12.00	12.00
3/31/2015	4,451,730	3,091	275	263	12.00	12.00
4/1/2015	4,485,179	3,115	277	263	14.00	14.00
4/2/2015	4,346,007	3,018	268	263	5.00	5.00
4/3/2015	4,301,762	2,987	266	263	3.00	3.00
4/4/2015	4,265,071	2,962	263	263	0.00	
4/5/2015	4,302,099	2,988	266	263	3.00	3.00
4/6/2015	4,263,526	2,961	263	263	0.00	
4/7/2015	4,355,173	3,024	269	263	6.00	6.00
4/8/2015	4,436,126	3,081	274	263	11.00	11.00
4/9/2015	4,422,861	3,071	273	263	10.00	10.00
4/10/2015	4,361,018	3,028	269	263	6.00	6.00
4/11/2015	4,264,476	2,961	263	263	0.00	
4/12/2015	4,315,446	2,997	266	263	3.00	3.00
4/13/2015	4,281,683	2,973	264	263	1.00	1.00
4/14/2015	4,280,327	2,972	264	263	1.00	1.00
4/15/2015	4,296,303	2,984	265	263	2.00	2.00
4/16/2015	4,191,794	2,911	259	263	-4.00	
4/17/2015	4,034,465	2,802	249	263	-14.00	
4/18/2015	3,733,379	2,593	230	263	-33.00	
4/19/2015	3,677,792	2,554	227	263	-36.00	
4/20/2015	3,611,693	2,508	223	263	-40.00	
4/21/2015	3,593,977	2,496	222	263	-41.00	
4/22/2015	3,700,632	2,570	228	263	-35.00	
4/23/2015	3,825,534	2,657	236	263	-27.00	
4/24/2015	4,289,914	2,979	265	263	2.00	2.00
4/25/2015	4,994,042	3,468	308	263	45.00	45.00
4/26/2015	4,897,729	3,401	302	263	39.00	39.00
4/27/2015	4,821,901	3,349	298	263	35.00	35.00
4/28/2015	4,849,643	3,368	299	263	36.00	36.00
4/29/2015	4,743,446	3,294	293	263	30.00	30.00
4/30/2015	4,503,995	3,128	278	263	15.00	15.00
5/1/2015	4,523,492	3,141	279	263	16.00	16.00
5/2/2015	4,486,335	3,116	277	263	14.00	14.00
5/3/2015	4,485,349	3,115	277	263	14.00	14.00
5/4/2015	4,473,074	3,106	276	263	13.00	13.00
5/5/2015	4,526,119	3,143	279	263	16.00	16.00
5/6/2015	4,590,477	3,188	283	263	20.00	20.00

5/7/2015	4,452,111	3,092	275	263	12.00	12.00
5/8/2015	4,404,514	3,059	272	263	9.00	9.00
5/9/2015	4,371,883	3,036	270	263	7.00	7.00
5/10/2015	4,292,867	2,981	265	263	2.00	2.00
5/11/2015	4,179,150	2,902	258	263	-5.00	
5/12/2015	4,162,856	2,891	257	263	-6.00	
5/13/2015	4,295,241	2,983	265	263	2.00	2.00
5/14/2015	4,274,194	2,968	264	263	1.00	1.00
5/15/2015	4,344,949	3,017	268	263	5.00	5.00
5/16/2015	4,742,748	3,294	293	263	30.00	30.00
5/17/2015	5,094,657	3,538	314	263	51.00	51.00
5/18/2015	4,930,356	3,424	304	263	41.00	41.00
5/19/2015	4,804,377	3,336	297	263	34.00	34.00
5/20/2015	4,713,976	3,274	291	263	28.00	28.00
5/21/2015	4,654,701	3,232	287	263	24.00	24.00
5/22/2015	4,661,478	3,237	288	263	25.00	25.00
5/23/2015	4,696,915	3,262	290	263	27.00	27.00
5/24/2015	4,718,424	3,277	291	263	28.00	28.00
5/25/2015	4,705,188	3,267	290	263	27.00	27.00
5/26/2015	4,703,219	3,266	290	263	27.00	27.00
5/27/2015	4,649,535	3,229	287	263	24.00	24.00
5/28/2015	4,433,130	3,079	274	263	11.00	11.00
5/29/2015	5,043,670	3,503	311	263	48.00	48.00
5/30/2015	5,021,994	3,487	310	263	47.00	47.00
5/31/2015	4,957,552	3,443	306	263	43.00	43.00
6/1/2015	4,832,600	3,356	298	263	35.00	35.00
6/2/2015	5,230,129	3,632	323	263	60.00	60.00
6/3/2015	5,088,827	3,534	314	263	51.00	51.00
6/4/2015	4,958,024	3,443	306	263	43.00	43.00
6/5/2015	4,942,464	3,432	305	263	42.00	42.00
6/6/2015	4,838,382	3,360	299	263	36.00	36.00
6/7/2015	4,723,530	3,280	292	263	29.00	29.00
6/8/2015	4,543,601	3,155	280	263	17.00	17.00
6/9/2015	4,461,978	3,099	275	263	12.00	12.00
6/10/2015	4,349,649	3,021	268	263	5.00	5.00
6/11/2015	4,153,958	2,885	256	263	-7.00	
6/12/2015	4,102,891	2,849	253	263	-10.00	
6/13/2015	3,852,631	2,675	238	263	-25.00	
6/14/2015	3,712,805	2,578	229	263	-34.00	
6/15/2015	3,767,327	2,616	233	263	-30.00	
6/16/2015	3,865,731	2,685	239	263	-24.00	
6/17/2015	4,110,455	2,854	254	263	-9.00	
6/18/2015	4,077,451	2,832	252	263	-11.00	
6/19/2015	3,838,773	2,666	237	263	-26.00	
6/20/2015	3,064,360	2,128	189	200	-74.00	
6/21/2015	2,921,454	2,029	180	200	-83.00	
6/22/2015	2,954,512	2,052	182	200	-81.00	

6/23/2015	3,460,574	2,403	214	263	-49.00	
6/24/2015	3,652,525	2,536	225	263	-38.00	
6/25/2015	2,917,802	2,026	180	263	-83.00	
6/26/2015	2,917,324	2,026	180	263	-83.00	
6/27/2015	2,886,548	2,005	178	263	-85.00	
6/28/2015	2,781,220	1,931	172	263	-91.00	
6/29/2015	3,802,970	2,641	235	263	-28.00	
6/30/2015	4,439,967	3,083	274	263	11.00	11.00
7/1/2015	4,135,448	2,872	255	263	-8.00	
7/2/2015	3,855,872	2,678	238	263	-25.00	
7/3/2015	3,732,312	2,592	230	263	-33.00	
7/4/2015	3,559,211	2,472	220	263	-43.00	
7/5/2015	3,333,531	2,315	206	263	-57.00	
7/6/2015	3,531,921	2,453	218	263	-45.00	
7/7/2015	3,503,126	2,433	216	263	-47.00	
7/8/2015	3,535,407	2,455	218	263	-45.00	
7/9/2015	3,468,839	2,409	214	263	-49.00	
7/10/2015	3,343,321	2,322	206	263	-57.00	
7/11/2015	3,514,410	2,441	217	263	-46.00	
7/12/2015	3,552,507	2,467	219	263	-44.00	
7/13/2015	3,701,892	2,571	229	263	-34.00	
7/14/2015	3,880,121	2,695	240	263	-23.00	
7/15/2015	4,035,274	2,802	249	263	-14.00	
7/16/2015	4,256,480	2,956	263	263	0.00	
7/17/2015	4,214,336	2,927	260	263	-3.00	
7/18/2015	3,613,333	2,509	223	263	-40.00	
7/19/2015	4,189,855	2,910	259	263	-4.00	
7/20/2015	4,228,468	2,936	261	263	-2.00	
7/21/2015	4,267,015	2,963	263	263	0.00	
7/22/2015	4,387,832	3,047	271	263	8.00	8.00
7/23/2015	4,640,352	3,222	286	263	23.00	23.00
7/24/2015	4,674,183	3,246	289	263	26.00	26.00
7/25/2015	4,638,188	3,221	286	263	23.00	23.00
7/26/2015	4,540,057	3,153	280	263	17.00	17.00
7/27/2015	4,883,343	3,391	301	263	38.00	38.00
7/28/2015	5,315,463	3,691	328	263	65.00	65.00
7/29/2015	4,963,026	3,447	306	263	43.00	43.00
7/30/2015	4,840,282	3,361	299	263	36.00	36.00
7/31/2015	4,693,134	3,259	290	263	27.00	27.00
8/1/2015	4,625,751	3,212	286	263	23.00	23.00
8/2/2015	4,587,350	3,186	283	263	20.00	20.00
8/3/2015	4,502,986	3,127	278	263	15.00	15.00
8/4/2015	4,534,331	3,149	280	263	17.00	17.00
8/5/2015	4,559,397	3,166	281	263	18.00	18.00
8/6/2015	4,653,231	3,231	287	263	24.00	24.00
8/7/2015	4,352,767	3,023	269	263	6.00	6.00
8/8/2015	4,539,766	3,153	280	263	17.00	17.00

8/9/2015	4,531,733	3,147	280	263	17.00	17.00
8/10/2015	4,374,039	3,038	270	263	7.00	7.00
8/11/2015	4,252,085	2,953	262	263	-1.00	
8/12/2015	4,203,354	2,919	259	263	-4.00	
8/13/2015	4,235,558	2,941	261	263	-2.00	
8/14/2015	4,206,165	2,921	260	263	-3.00	
8/15/2015	4,240,035	2,944	262	263	-1.00	
8/16/2015	4,136,877	2,873	255	263	-8.00	
8/17/2015	4,093,808	2,843	253	263	-10.00	
8/18/2015	4,115,763	2,858	254	263	-9.00	
8/19/2015	4,098,453	2,846	253	263	-10.00	
8/20/2015	4,054,966	2,816	250	263	-13.00	
8/21/2015	4,065,268	2,823	251	263	-12.00	
8/22/2015	4,048,990	2,812	250	263	-13.00	
8/23/2015	4,001,601	2,779	247	263	-16.00	
8/24/2015	3,942,730	2,738	243	263	-20.00	
8/25/2015	3,843,585	2,669	237	263	-26.00	
8/26/2015	3,883,250	2,697	240	263	-23.00	
8/27/2015	3,938,058	2,735	243	263	-20.00	
8/28/2015	3,889,421	2,701	240	263	-23.00	
8/29/2015	3,823,004	2,655	236	263	-27.00	
8/30/2015	3,828,619	2,659	236	263	-27.00	
8/31/2015	3,888,961	2,701	240	263	-23.00	
9/1/2015	3,822,596	2,655	236	263	-27.00	
9/2/2015	3,771,199	2,619	233	263	-30.00	
9/3/2015	3,855,104	2,677	238	263	-25.00	
9/4/2015	3,774,499	2,621	233	263	-30.00	
9/5/2015	3,853,893	2,676	238	263	-25.00	
9/6/2015	3,879,901	2,694	240	263	-23.00	
9/7/2015	3,651,565	2,536	225	263	-38.00	
9/8/2015	3,614,861	2,510	223	263	-40.00	
9/9/2015	3,801,585	2,640	235	263	-28.00	
9/10/2015	3,919,812	2,722	242	263	-21.00	
9/11/2015	3,900,237	2,708	241	263	-22.00	
9/12/2015	4,035,830	2,803	249	263	-14.00	
9/13/2015	4,145,810	2,879	256	263	-7.00	
9/14/2015	4,125,201	2,865	255	263	-8.00	
9/15/2015	4,507,683	3,130	278	263	15.00	15.00
9/16/2015	4,750,962	3,299	293	263	30.00	30.00
9/17/2015	4,756,957	3,303	294	263	31.00	31.00
9/18/2015	4,729,455	3,284	292	263	29.00	29.00
9/19/2015	4,474,866	3,108	276	263	13.00	13.00
9/20/2015	4,454,540	3,093	275	263	12.00	12.00
9/21/2015	4,378,658	3,041	270	263	7.00	7.00
9/22/2015	4,306,471	2,991	266	263	3.00	3.00
9/23/2015	4,280,804	2,973	264	263	1.00	1.00
9/24/2015	4,240,513	2,945	262	263	-1.00	

9/25/2015	4,278,659	2,971	264	263	1.00	1.00
9/26/2015	4,297,136	2,984	265	263	2.00	2.00
9/27/2015	4,284,243	2,975	264	263	1.00	1.00
9/28/2015	4,219,262	2,930	260	263	-3.00	
9/29/2015	4,131,357	2,869	255	263	-8.00	
9/30/2015	4,127,559	2,866	255	263	-8.00	
10/1/2015	4,213,172	2,926	260	263	-3.00	
10/2/2015	4,220,281	2,931	261	263	-2.00	
10/3/2015	4,246,486	2,949	262	263	-1.00	
10/4/2015	4,141,777	2,876	256	263	-7.00	
10/5/2015	4,137,215	2,873	255	263	-8.00	
10/6/2015	4,149,741	2,882	256	263	-7.00	
10/7/2015	4,122,868	2,863	254	263	-9.00	
10/8/2015	4,145,291	2,879	256	263	-7.00	
10/9/2015	4,027,841	2,797	249	263	-14.00	
10/10/2015	3,975,350	2,761	245	263	-18.00	
10/11/2015	4,124,470	2,864	255	263	-8.00	
10/12/2015	4,086,860	2,838	252	263	-11.00	
10/13/2015	4,058,963	2,819	251	263	-12.00	
10/14/2015	3,977,340	2,762	246	263	-17.00	
10/15/2015	3,995,104	2,774	247	263	-16.00	
10/16/2015	3,835,784	2,664	237	263	-26.00	
10/17/2015	3,712,972	2,578	229	263	-34.00	
10/18/2015	3,665,980	2,546	226	263	-37.00	
10/19/2015	3,736,904	2,595	231	263	-32.00	
10/20/2015	4,281,923	2,974	264	263	1.00	1.00
10/21/2015	4,053,246	2,815	250	263	-13.00	
10/22/2015	3,774,930	2,621	233	263	-30.00	
10/23/2015	3,655,786	2,539	226	263	-37.00	
10/24/2015	3,495,310	2,427	216	263	-47.00	
10/25/2015	3,358,694	2,332	207	263	-56.00	
10/26/2015	3,327,237	2,311	205	263	-58.00	
10/27/2015	3,237,081	2,248	200	263	-63.00	
10/28/2015	3,150,015	2,188	194	263	-69.00	
10/29/2015	3,123,054	2,169	193	263	-70.00	
10/30/2015	3,138,008	2,179	194	263	-69.00	
10/31/2015	3,172,060	2,203	196	263	-67.00	
11/1/2015	3,171,853	2,203	196	263	-67.00	
11/2/2015	3,137,004	2,178	194	263	-69.00	
11/3/2015	3,894,205	2,704	240	263	-23.00	
11/4/2015	4,786,573	3,324	295	263	32.00	32.00
11/5/2015	4,344,874	3,017	268	263	5.00	5.00
11/6/2015	4,302,184	2,988	266	263	3.00	3.00
11/7/2015	4,163,459	2,891	257	263	-6.00	
11/8/2015	4,324,995	3,003	267	263	4.00	4.00
11/9/2015	4,388,355	3,047	271	263	8.00	8.00
11/10/2015	4,350,034	3,021	269	263	6.00	6.00

11/11/2015	4,303,311	2,988	266	263	3.00	3.00
11/12/2015	4,311,614	2,994	266	263	3.00	3.00
11/13/2015	4,281,106	2,973	264	263	1.00	1.00
11/14/2015	4,345,481	3,018	268	263	5.00	5.00
11/15/2015	4,341,008	3,015	268	263	5.00	5.00
11/16/2015	4,313,275	2,995	266	263	3.00	3.00
11/17/2015	3,929,344	2,729	243	263	-20.00	
11/18/2015	4,122,464	2,863	254	263	-9.00	
11/19/2015	4,106,122	2,851	253	263	-10.00	
11/20/2015	3,961,068	2,751	245	263	-18.00	
11/21/2015	2,755,824	1,914	170	263	-93.00	
11/22/2015	4,126,171	2,865	255	263	-8.00	
11/23/2015	4,115,150	2,858	254	263	-9.00	
11/24/2015	4,145,196	2,879	256	263	-7.00	
11/25/2015	4,060,545	2,820	251	263	-12.00	
11/26/2015	2,750,637	1,910	170	263	-93.00	
11/27/2015	3,462,968	2,405	214	263	-49.00	
11/28/2015	4,045,356	2,809	250	263	-13.00	
11/29/2015	4,146,993	2,880	256	263	-7.00	
11/30/2015	4,166,367	2,893	257	263	-6.00	
12/1/2015	4,132,640	2,870	255	263	-8.00	
12/2/2015	4,129,901	2,868	255	263	-8.00	
12/3/2015	4,097,896	2,846	253	263	-10.00	
12/4/2015	4,093,532	2,843	253	263	-10.00	
12/5/2015	4,067,908	2,825	251	263	-12.00	
12/6/2015	4,087,041	2,838	252	263	-11.00	
12/7/2015	4,053,802	2,815	250	263	-13.00	
12/8/2015	4,080,005	2,833	252	263	-11.00	
12/9/2015	4,080,812	2,834	252	263	-11.00	
12/10/2015	4,087,940	2,839	252	263	-11.00	
12/11/2015	4,091,398	2,841	253	263	-10.00	
12/12/2015	4,099,159	2,847	253	263	-10.00	
12/13/2015	4,089,310	2,840	252	263	-11.00	
12/14/2015	4,130,097	2,868	255	263	-8.00	
12/15/2015	4,108,808	2,853	254	263	-9.00	
12/16/2015	4,087,954	2,839	252	263	-11.00	
12/17/2015	3,874,999	2,691	239	263	-24.00	
12/18/2015	4,136,289	2,872	255	263	-8.00	
12/19/2015	4,071,971	2,828	251	263	-12.00	
12/20/2015	4,096,204	2,845	253	263	-10.00	
12/21/2015	4,037,969	2,804	249	263	-14.00	
12/22/2015	4,090,099	2,840	252	263	-11.00	
12/23/2015	3,624,711	2,517	224	263	-39.00	
12/24/2015	4,093,590	2,843	253	263	-10.00	
12/25/2015	3,951,815	2,744	244	263	-19.00	
12/26/2015	4,210,180	2,924	260	263	-3.00	
12/27/2015	3,383,021	2,349	209	263	-54.00	

12/28/2015	4,224,915	2,934	261	263	-2.00		
12/29/2015	4,169,925	2,896	257	263	-6.00		
12/30/2015	4,153,742	2,885	256	263	-7.00		
12/31/2015	4,088,350	2,839	252	263	-11.00	2315.00	115.75
1/1/2016	3,569,872	2,479	220	263	-43.00		
1/2/2016	4,177,429	2,901	258	263	-5.00		
1/3/2016	4,219,466	2,930	260	263	-3.00		
1/4/2016	4,166,216	2,893	257	263	-6.00		
1/5/2016	4,015,165	2,788	248	263	-15.00		
1/6/2016	3,784,305	2,628	234	263	-29.00		
1/7/2016	4,168,677	2,895	257	263	-6.00		
1/8/2016	4,162,761	2,891	257	263	-6.00		
1/9/2016	4,143,446	2,877	256	263	-7.00		
1/10/2016	4,148,613	2,881	256	263	-7.00		
1/11/2016	3,429,355	2,381	212	263	-51.00		
1/12/2016	4,251,817	2,953	262	263	-1.00		
1/13/2016	4,159,853	2,889	257	263	-6.00		
1/14/2016	4,154,088	2,885	256	263	-7.00		
1/15/2016	4,157,308	2,887	257	263	-6.00		
1/16/2016	4,156,068	2,886	257	263	-6.00		
1/17/2016	4,165,788	2,893	257	263	-6.00		
1/18/2016	4,183,796	2,905	258	263	-5.00		
1/19/2016	4,169,011	2,895	257	263	-6.00		
1/20/2016	4,175,773	2,900	258	263	-5.00		
1/21/2016	4,160,842	2,889	257	263	-6.00		
1/22/2016	4,164,361	2,892	257	263	-6.00		
1/23/2016	4,165,072	2,892	257	263	-6.00		
1/24/2016	4,156,125	2,886	257	263	-6.00		
1/25/2016	4,097,363	2,845	253	263	-10.00		
1/26/2016	3,305,129	2,295	204	263	-59.00		
1/27/2016	4,144,510	2,878	256	263	-7.00		
1/28/2016	4,161,125	2,890	257	263	-6.00		
1/29/2016	4,163,723	2,891	257	263	-6.00		
1/30/2016	4,191,402	2,911	259	263	-4.00		
1/31/2016	3,920,370	2,722	242	263	-21.00		
2/1/2016	3,208,671	2,228	198	263	-65.00		
2/2/2016	4,000,805	2,778	247	263	-16.00		
2/3/2016	4,172,581	2,898	258	263	-5.00		
2/4/2016	4,113,647	2,857	254	263	-9.00		
2/5/2016	4,189,675	2,909	259	263	-4.00		
2/6/2016	4,136,984	2,873	255	263	-8.00		
2/7/2016	4,075,125	2,830	252	263	-11.00		
2/8/2016	4,096,456	2,845	253	263	-10.00		
2/9/2016	4,118,645	2,860	254	263	-9.00		
2/10/2016	4,098,729	2,846	253	263	-10.00		
2/11/2016	4,102,081	2,849	253	263	-10.00		
2/12/2016	4,104,335	2,850	253	263	-10.00		

2/13/2016	4,135,672	2,872	255	263	-8.00
2/14/2016	4,082,021	2,835	252	263	-11.00
2/15/2016	4,138,515	2,874	255	263	-8.00
2/16/2016	4,070,400	2,827	251	263	-12.00
2/17/2016	4,123,085	2,863	255	263	-8.00
2/18/2016	4,138,541	2,874	255	263	-8.00
2/19/2016	4,100,759	2,848	253	263	-10.00
2/20/2016	4,099,345	2,847	253	263	-10.00
2/21/2016	3,250,938	2,258	201	263	-62.00
2/22/2016	4,107,848	2,853	254	263	-9.00
2/23/2016	3,900,356	2,709	241	263	-22.00
2/24/2016	2,918,535	2,027	180	263	-83.00
2/25/2016	4,112,452	2,856	254	263	-9.00
2/26/2016	4,066,016	2,824	251	263	-12.00
2/27/2016	4,096,367	2,845	253	263	-10.00
2/28/2016	4,096,769	2,845	253	263	-10.00
2/29/2016	4,071,717	2,828	251	263	-12.00
3/1/2016	3,540,533	2,459	219	263	-44.00
3/2/2016	4,041,374	2,807	249	263	-14.00
3/3/2016	4,038,336	2,804	249	263	-14.00
3/4/2016	4,054,943	2,816	250	263	-13.00
3/5/2016	4,047,666	2,811	250	263	-13.00
3/6/2016	4,076,195	2,831	252	263	-11.00
3/7/2016	4,091,970	2,842	253	263	-10.00
3/8/2016	4,074,075	2,829	251	263	-12.00
3/9/2016	4,057,078	2,817	250	263	-13.00
3/10/2016	4,055,803	2,817	250	263	-13.00
3/11/2016	4,073,614	2,829	251	263	-12.00
3/12/2016	4,070,459	2,827	251	263	-12.00
3/13/2016	4,092,536	2,842	253	263	-10.00
3/14/2016	4,000,090	2,778	247	263	-16.00
3/15/2016	4,086,856	2,838	252	263	-11.00
3/16/2016	4,079,866	2,833	252	263	-11.00
3/17/2016	4,068,226	2,825	251	263	-12.00
3/18/2016	4,016,434	2,789	248	263	-15.00
3/19/2016	2,828,596	1,964	175	263	-88.00
3/20/2016	4,035,919	2,803	249	263	-14.00
3/21/2016	4,053,173	2,815	250	263	-13.00
3/22/2016	4,075,438	2,830	252	263	-11.00
3/23/2016	4,106,334	2,852	253	263	-10.00
3/24/2016	4,088,441	2,839	252	263	-11.00
3/25/2016	4,094,697	2,844	253	263	-10.00
3/26/2016	4,063,704	2,822	251	263	-12.00
3/27/2016	4,015,745	2,789	248	263	-15.00
3/28/2016	3,998,046	2,776	247	263	-16.00
3/29/2016	4,102,657	2,849	253	263	-10.00
3/30/2016	4,060,087	2,820	251	263	-12.00

3/31/2016	3,921,577	2,723	242	263	-21.00	
4/1/2016	4,061,893	2,821	251	263	-12.00	
4/2/2016	4,059,677	2,819	251	263	-12.00	
4/3/2016	4,083,464	2,836	252	263	-11.00	
4/4/2016	4,013,558	2,787	248	263	-15.00	
4/5/2016	4,220,246	2,931	261	263	-2.00	
4/6/2016	4,198,500	2,916	259	263	-4.00	
4/7/2016	4,192,851	2,912	259	263	-4.00	
4/8/2016	4,223,362	2,933	261	263	-2.00	
4/9/2016	4,278,112	2,971	264	263	1.00	1.00
4/10/2016	4,345,099	3,017	268	263	5.00	5.00
4/11/2016	4,257,469	2,957	263	263	0.00	
4/12/2016	4,270,980	2,966	264	263	1.00	1.00
4/13/2016	4,353,755	3,023	269	263	6.00	6.00
4/14/2016	4,366,097	3,032	270	263	7.00	7.00
4/15/2016	4,194,511	2,913	259	263	-4.00	
4/16/2016	3,875,316	2,691	239	263	-24.00	
4/17/2016	3,887,575	2,700	240	263	-23.00	
4/18/2016	3,929,095	2,729	243	263	-20.00	
4/19/2016	3,927,106	2,727	242	263	-21.00	
4/20/2016	4,334,358	3,010	268	263	5.00	5.00
4/21/2016	4,653,075	3,231	287	263	24.00	24.00
4/22/2016	4,856,799	3,373	300	263	37.00	37.00
4/23/2016	5,074,336	3,524	313	263	50.00	50.00
4/24/2016	5,280,095	3,667	326	263	63.00	63.00
4/25/2016	5,332,208	3,703	329	263	66.00	66.00
4/26/2016	5,230,590	3,632	323	263	60.00	60.00
4/27/2016	5,058,371	3,513	312	263	49.00	49.00
4/28/2016	4,919,578	3,416	304	263	41.00	41.00
4/29/2016	4,816,596	3,345	297	263	34.00	34.00
4/30/2016	4,719,818	3,278	291	263	28.00	28.00
5/1/2016	4,619,613	3,208	285	263	22.00	22.00
5/2/2016	4,623,186	3,211	285	263	22.00	22.00
5/3/2016	4,689,006	3,256	289	263	26.00	26.00
5/4/2016	4,831,999	3,356	298	263	35.00	35.00
5/5/2016	5,011,291	3,480	309	263	46.00	46.00
5/6/2016	5,204,854	3,614	321	263	58.00	58.00
5/7/2016	5,242,292	3,640	324	263	61.00	61.00
5/8/2016	5,256,356	3,650	324	263	61.00	61.00
5/9/2016	5,281,075	3,667	326	263	63.00	63.00
5/10/2016	5,132,699	3,564	317	263	54.00	54.00
5/11/2016	5,034,335	3,496	311	263	48.00	48.00
5/12/2016	5,046,797	3,505	312	263	49.00	49.00
5/13/2016	5,204,562	3,614	321	263	58.00	58.00
5/14/2016	5,258,753	3,652	325	263	62.00	62.00
5/15/2016	5,320,766	3,695	328	263	65.00	65.00
5/16/2016	5,326,230	3,699	329	263	66.00	66.00

5/17/2016	5,255,138	3,649	324	263	61.00	61.00
5/18/2016	5,290,090	3,674	327	263	64.00	64.00
5/19/2016	5,465,456	3,795	337	263	74.00	74.00
5/20/2016	5,639,012	3,916	348	263	85.00	85.00
5/21/2016	5,715,625	3,969	353	263	90.00	90.00
5/22/2016	5,574,690	3,871	344	263	81.00	81.00
5/23/2016	5,408,568	3,756	334	263	71.00	71.00
5/24/2016	5,304,193	3,683	327	263	64.00	64.00
5/25/2016	5,141,508	3,570	317	263	54.00	54.00
5/26/2016	5,131,985	3,564	317	263	54.00	54.00
5/27/2016	5,104,778	3,545	315	263	52.00	52.00
5/28/2016	5,305,286	3,684	327	263	64.00	64.00
5/29/2016	5,284,623	3,670	326	263	63.00	63.00
5/30/2016	5,211,127	3,619	322	263	59.00	59.00
5/31/2016	5,071,723	3,522	313	263	50.00	50.00
6/1/2016	5,080,267	3,528	314	263	51.00	51.00
6/2/2016	4,987,406	3,463	308	263	45.00	45.00
6/3/2016	5,012,455	3,481	309	263	46.00	46.00
6/4/2016	5,010,563	3,480	309	263	46.00	46.00
6/5/2016	5,118,123	3,554	316	263	53.00	53.00
6/6/2016	5,191,479	3,605	320	263	57.00	57.00
6/7/2016	5,086,307	3,532	314	263	51.00	51.00
6/8/2016	4,637,282	3,220	286	263	23.00	23.00
6/9/2016	4,178,340	2,902	258	263	-5.00	
6/10/2016	4,078,149	2,832	252	263	-11.00	
6/11/2016	3,785,260	2,629	234	263	-29.00	
6/12/2016	3,693,792	2,565	228	263	-35.00	
6/13/2016	3,817,376	2,651	236	263	-27.00	
6/14/2016	3,948,108	2,742	244	263	-19.00	
6/15/2016	3,947,056	2,741	244	263	-19.00	
6/16/2016	3,980,785	2,764	246	263	-17.00	
6/17/2016	4,197,683	2,915	259	263	-4.00	
6/18/2016	4,197,358	2,915	259	263	-4.00	
6/19/2016	3,912,898	2,717	242	263	-21.00	
6/20/2016	4,343,934	3,017	268	263	5.00	5.00
6/21/2016	4,541,011	3,153	280	263	17.00	17.00
6/22/2016	4,335,678	3,011	268	263	5.00	5.00
6/23/2016	4,212,501	2,925	260	263	-3.00	
6/24/2016	4,155,929	2,886	257	263	-6.00	
6/25/2016	4,162,521	2,891	257	263	-6.00	
6/26/2016	4,105,213	2,851	253	263	-10.00	
6/27/2016	4,054,273	2,815	250	263	-13.00	
6/28/2016	4,021,704	2,793	248	263	-15.00	
6/29/2016	3,960,224	2,750	244	263	-19.00	
6/30/2016	3,999,974	2,778	247	263	-16.00	
7/1/2016	3,926,324	2,727	242	263	-21.00	
7/2/2016	3,852,785	2,676	238	263	-25.00	

7/3/2016	3,704,992	2,573	229	263	-34.00	
7/4/2016	3,817,908	2,651	236	263	-27.00	
7/5/2016	3,703,597	2,572	229	263	-34.00	
7/6/2016	3,661,043	2,542	226	263	-37.00	
7/7/2016	3,591,819	2,494	222	263	-41.00	
7/8/2016	3,498,727	2,430	216	263	-47.00	
7/9/2016	3,342,946	2,321	206	263	-57.00	
7/10/2016	2,951,694	2,050	182	263	-81.00	
7/11/2016	3,193,808	2,218	197	263	-66.00	
7/12/2016	3,017,449	2,095	186	263	-77.00	
7/13/2016	3,178,551	2,207	196	263	-67.00	
7/14/2016	3,399,961	2,361	210	263	-53.00	
7/15/2016	3,576,986	2,484	221	263	-42.00	
7/16/2016	3,616,887	2,512	223	263	-40.00	
7/17/2016	3,619,105	2,513	223	263	-40.00	
7/18/2016	3,433,476	2,384	212	263	-51.00	
7/19/2016	3,272,327	2,272	202	263	-61.00	
7/20/2016	3,450,185	2,396	213	263	-50.00	
7/21/2016	3,721,932	2,585	230	263	-33.00	
7/22/2016	3,801,659	2,640	235	263	-28.00	
7/23/2016	3,915,516	2,719	242	263	-21.00	
7/24/2016	3,964,730	2,753	245	263	-18.00	
7/25/2016	4,171,602	2,897	258	263	-5.00	
7/26/2016	3,933,174	2,731	243	263	-20.00	
7/27/2016	4,052,628	2,814	250	263	-13.00	
7/28/2016	4,153,409	2,884	256	263	-7.00	
7/29/2016	4,486,410	3,116	277	263	14.00	14.00
7/30/2016	4,550,124	3,160	281	263	18.00	18.00
7/31/2016	4,593,874	3,190	284	263	21.00	21.00
8/1/2016	4,477,349	3,109	276	263	13.00	13.00
8/2/2016	4,440,881	3,084	274	263	11.00	11.00
8/3/2016	4,407,499	3,061	272	263	9.00	9.00
8/4/2016	4,387,989	3,047	271	263	8.00	8.00
8/5/2016	4,416,049	3,067	273	263	10.00	10.00
8/6/2016	4,547,000	3,158	281	263	18.00	18.00
8/7/2016	4,754,117	3,301	293	263	30.00	30.00
8/8/2016	4,583,565	3,183	283	263	20.00	20.00
8/9/2016	4,513,338	3,134	279	263	16.00	16.00
8/10/2016	4,402,351	3,057	272	263	9.00	9.00
8/11/2016	4,361,226	3,029	269	263	6.00	6.00
8/12/2016	4,388,617	3,048	271	263	8.00	8.00
8/13/2016	4,431,548	3,077	274	263	11.00	11.00
8/14/2016	4,403,529	3,058	272	263	9.00	9.00
8/15/2016	4,397,204	3,054	271	263	8.00	8.00
8/16/2016	4,383,680	3,044	271	263	8.00	8.00
8/17/2016	4,431,617	3,078	274	263	11.00	11.00
8/18/2016	4,425,663	3,073	273	263	10.00	10.00

8/19/2016	4,629,226	3,215	286	263	23.00	23.00
8/20/2016	4,456,459	3,095	275	263	12.00	12.00
8/21/2016	4,427,395	3,075	273	263	10.00	10.00
8/22/2016	4,386,423	3,046	271	263	8.00	8.00
8/23/2016	4,329,031	3,006	267	263	4.00	4.00
8/24/2016	4,444,212	3,086	274	263	11.00	11.00
8/25/2016	4,583,437	3,183	283	263	20.00	20.00
8/26/2016	4,532,583	3,148	280	263	17.00	17.00
8/27/2016	4,508,466	3,131	278	263	15.00	15.00
8/28/2016	4,469,291	3,104	276	263	13.00	13.00
8/29/2016	4,451,718	3,091	275	263	12.00	12.00
8/30/2016	4,426,996	3,074	273	263	10.00	10.00
8/31/2016	4,422,586	3,071	273	263	10.00	10.00
9/1/2016	4,420,510	3,070	273	263	10.00	10.00
9/2/2016	4,426,455	3,074	273	263	10.00	10.00
9/3/2016	4,454,803	3,094	275	263	12.00	12.00
9/4/2016	4,633,638	3,218	286	263	23.00	23.00
9/5/2016	4,780,665	3,320	295	263	32.00	32.00
9/6/2016	4,668,237	3,242	288	263	25.00	25.00
9/7/2016	4,536,503	3,150	280	263	17.00	17.00
9/8/2016	4,492,413	3,120	277	263	14.00	14.00
9/9/2016	4,544,232	3,156	281	263	18.00	18.00
9/10/2016	4,439,034	3,083	274	263	11.00	11.00
9/11/2016	4,387,942	3,047	271	263	8.00	8.00
9/12/2016	4,517,917	3,137	279	263	16.00	16.00
9/13/2016	4,529,032	3,145	280	263	17.00	17.00
9/14/2016	4,619,883	3,208	285	263	22.00	22.00
9/15/2016	4,621,019	3,209	285	263	22.00	22.00
9/16/2016	4,400,042	3,056	272	263	9.00	9.00
9/17/2016	4,371,551	3,036	270	263	7.00	7.00
9/18/2016	4,389,773	3,048	271	263	8.00	8.00
9/19/2016	4,424,105	3,072	273	263	10.00	10.00
9/20/2016	4,472,851	3,106	276	263	13.00	13.00
9/21/2016	4,526,768	3,144	279	263	16.00	16.00
9/22/2016	4,783,802	3,322	295	263	32.00	32.00
9/23/2016	4,557,376	3,165	281	263	18.00	18.00
9/24/2016	4,273,751	2,968	264	263	1.00	1.00
9/25/2016	4,133,388	2,870	255	263	-8.00	
9/26/2016	4,066,774	2,824	251	263	-12.00	
9/27/2016	4,038,049	2,804	249	263	-14.00	
9/28/2016	4,049,274	2,812	250	263	-13.00	
9/29/2016	4,119,401	2,861	254	263	-9.00	
9/30/2016	4,078,419	2,832	252	263	-11.00	
10/1/2016	4,248,617	2,950	262	263	-1.00	
10/2/2016	4,321,214	3,001	267	263	4.00	4.00
10/3/2016	4,529,635	3,146	280	263	17.00	17.00
10/4/2016	4,738,847	3,291	293	263	30.00	30.00

10/5/2016	4,300,955	2,987	265	263	2.00	2.00
10/6/2016	4,170,752	2,896	257	263	-6.00	
10/7/2016	4,160,057	2,889	257	263	-6.00	
10/8/2016	4,144,546	2,878	256	263	-7.00	
10/9/2016	4,234,515	2,941	261	263	-2.00	
10/10/2016	4,199,210	2,916	259	263	-4.00	
10/11/2016	4,543,620	3,155	280	263	17.00	17.00
10/12/2016	4,159,346	2,888	257	263	-6.00	
10/13/2016	4,309,420	2,993	266	263	3.00	3.00
10/14/2016	4,289,667	2,979	265	263	2.00	2.00
10/15/2016	4,481,103	3,112	277	263	14.00	14.00
10/16/2016	4,331,756	3,008	267	263	4.00	4.00
10/17/2016	4,202,293	2,918	259	263	-4.00	
10/18/2016	4,880,729	3,389	301	263	38.00	38.00
10/19/2016	5,613,169	3,898	346	263	83.00	83.00
10/20/2016	4,958,905	3,444	306	263	43.00	43.00
10/21/2016	4,406,098	3,060	272	263	9.00	9.00
10/22/2016	4,354,771	3,024	269	263	6.00	6.00
10/23/2016	4,400,145	3,056	272	263	9.00	9.00
10/24/2016	4,365,864	3,032	269	263	6.00	6.00
10/25/2016	4,407,635	3,061	272	263	9.00	9.00
10/26/2016	4,369,414	3,034	270	263	7.00	7.00
10/27/2016	4,377,893	3,040	270	263	7.00	7.00
10/28/2016	4,375,430	3,038	270	263	7.00	7.00
10/29/2016	4,422,532	3,071	273	263	10.00	10.00
10/30/2016	4,433,356	3,079	274	263	11.00	11.00
10/31/2016	4,476,921	3,109	276	263	13.00	13.00
11/1/2016	4,420,301	3,070	273	263	10.00	10.00
11/2/2016	4,416,948	3,067	273	263	10.00	10.00
11/3/2016	4,400,811	3,056	272	263	9.00	9.00
11/4/2016	4,396,792	3,053	271	263	8.00	8.00
11/5/2016	4,397,389	3,054	271	263	8.00	8.00
11/6/2016	4,384,186	3,045	271	263	8.00	8.00
11/7/2016	4,523,584	3,141	279	263	16.00	16.00
11/8/2016	4,351,194	3,022	269	263	6.00	6.00
11/9/2016	4,344,605	3,017	268	263	5.00	5.00
11/10/2016	4,337,149	3,012	268	263	5.00	5.00
11/11/2016	4,338,884	3,013	268	263	5.00	5.00
11/12/2016	4,351,209	3,022	269	263	6.00	6.00
11/13/2016	4,318,116	2,999	267	263	4.00	4.00
11/14/2016	4,330,778	3,007	267	263	4.00	4.00
11/15/2016	4,325,654	3,004	267	263	4.00	4.00
11/16/2016	4,383,811	3,044	271	263	8.00	8.00
11/17/2016	4,394,763	3,052	271	263	8.00	8.00
11/18/2016	4,224,791	2,934	261	263	-2.00	
11/19/2016	4,380,414	3,042	270	263	7.00	7.00
11/20/2016	4,386,373	3,046	271	263	8.00	8.00

11/21/2016	4,370,270	3,035	270	263	7.00	7.00		
11/22/2016	4,357,385	3,026	269	263	6.00	6.00		
11/23/2016	4,382,654	3,044	271	263	8.00	8.00		
11/24/2016	4,383,810	3,044	271	263	8.00	8.00		
11/25/2016	4,444,769	3,087	274	263	11.00	11.00		
11/26/2016	4,395,974	3,053	271	263	8.00	8.00		
11/27/2016	4,354,225	3,024	269	263	6.00	6.00		
11/28/2016	4,373,773	3,037	270	263	7.00	7.00		
11/29/2016	4,319,747	3,000	267	263	4.00	4.00		
11/30/2016	3,659,133	2,541	226	263	-37.00			
12/1/2016	4,378,197	3,040	270	263	7.00	7.00		
12/2/2016	4,367,548	3,033	270	263	7.00	7.00		
12/3/2016	4,346,137	3,018	268	263	5.00	5.00		
12/4/2016	4,358,393	3,027	269	263	6.00	6.00		
12/5/2016	4,287,408	2,977	265	263	2.00	2.00		
12/6/2016	3,063,108	2,127	189	263	-74.00			
12/7/2016	3,593,666	2,496	222	263	-41.00			
12/8/2016	4,297,938	2,985	265	263	2.00	2.00		
12/9/2016	4,415,405	3,066	273	263	10.00	10.00		
12/10/2016	4,474,462	3,107	276	263	13.00	13.00		
12/11/2016	4,436,728	3,081	274	263	11.00	11.00		
12/12/2016	4,334,536	3,010	268	263	5.00	5.00		
12/13/2016	4,230,977	2,938	261	263	-2.00			
12/14/2016	4,191,408	2,911	259	263	-4.00			
12/15/2016	4,238,815	2,944	262	263	-1.00			
12/16/2016	4,078,369	2,832	252	263	-11.00			
12/17/2016	3,402,416	2,363	210	263	-53.00			
12/18/2016	4,075,200	2,830	252	263	-11.00			
12/19/2016	4,123,539	2,864	255	263	-8.00			
12/20/2016	4,105,003	2,851	253	263	-10.00			
12/21/2016	4,090,568	2,841	253	263	-10.00			
12/22/2016	3,803,549	2,641	235	263	-28.00			
12/23/2016	4,116,179	2,858	254	263	-9.00			
12/24/2016	4,121,714	2,862	254	263	-9.00			
12/25/2016	4,117,532	2,859	254	263	-9.00			
12/26/2016	4,038,339	2,804	249	263	-14.00			
12/27/2016	4,032,992	2,801	249	263	-14.00			
12/28/2016	4,057,612	2,818	250	263	-13.00			
12/29/2016	3,761,229	2,612	232	263	-31.00			
12/30/2016	4,100,203	2,847	253	263	-10.00			
12/31/2016	3,991,666	2,772	246	263	-17.00		4085.00	204.25
1/1/2017	4,013,718	2,787	248	263	-15.00			
1/2/2017	3,696,761	2,567	228	263	-35.00			
1/3/2017	3,750,817	2,605	232	263	-31.00			
1/4/2017	4,126,360	2,866	255	263	-8.00			
1/5/2017	4,111,427	2,855	254	263	-9.00			
1/6/2017	4,156,514	2,886	257	263	-6.00			

1/7/2017	4,134,138	2,871	255	263	-8.00
1/8/2017	4,140,262	2,875	256	263	-7.00
1/9/2017	4,103,910	2,850	253	263	-10.00
1/10/2017	4,010,405	2,785	248	263	-15.00
1/11/2017	3,843,895	2,669	237	263	-26.00
1/12/2017	4,036,540	2,803	249	263	-14.00
1/13/2017	3,658,378	2,541	226	263	-37.00
1/14/2017	3,979,486	2,764	246	263	-17.00
1/15/2017	3,978,926	2,763	246	263	-17.00
1/16/2017	3,911,771	2,717	241	263	-22.00
1/17/2017	3,932,128	2,731	243	263	-20.00
1/18/2017	3,934,111	2,732	243	263	-20.00
1/19/2017	3,949,135	2,742	244	263	-19.00
1/20/2017	3,887,808	2,700	240	263	-23.00
1/21/2017	3,854,899	2,677	238	263	-25.00
1/22/2017	3,837,970	2,665	237	263	-26.00
1/23/2017	3,826,514	2,657	236	263	-27.00
1/24/2017	3,807,053	2,644	235	263	-28.00
1/25/2017	3,876,308	2,692	239	263	-24.00
1/26/2017	3,627,526	2,519	224	263	-39.00
1/27/2017	3,218,690	2,235	199	263	-64.00
1/28/2017	3,846,967	2,672	237	263	-26.00
1/29/2017	3,697,747	2,568	228	263	-35.00
1/30/2017	3,448,692	2,395	213	263	-50.00
1/31/2017	3,643,513	2,530	225	263	-38.00
2/1/2017	3,603,018	2,502	222	263	-41.00
2/2/2017	3,056,575	2,123	189	263	-74.00
2/3/2017	3,672,431	2,550	227	263	-36.00
2/4/2017	3,938,536	2,735	243	263	-20.00
2/5/2017	3,711,994	2,578	229	263	-34.00
2/6/2017	3,708,775	2,576	229	263	-34.00
2/7/2017	3,758,742	2,610	232	263	-31.00
2/8/2017	3,682,119	2,557	227	263	-36.00
2/9/2017	3,826,081	2,657	236	263	-27.00
2/10/2017	3,940,153	2,736	243	263	-20.00
2/11/2017	3,909,441	2,715	241	263	-22.00
2/12/2017	3,276,221	2,275	202	263	-61.00
2/13/2017	3,849,015	2,673	238	263	-25.00
2/14/2017	3,845,294	2,670	237	263	-26.00
2/15/2017	3,890,837	2,702	240	263	-23.00
2/16/2017	4,156,784	2,887	257	263	-6.00
2/17/2017	4,253,675	2,954	263	263	0.00
2/18/2017	4,224,504	2,934	261	263	-2.00
2/19/2017	4,215,615	2,928	260	263	-3.00
2/20/2017	4,229,705	2,937	261	263	-2.00
2/21/2017	4,229,020	2,937	261	263	-2.00
2/22/2017	4,206,889	2,921	260	263	-3.00

2/23/2017	4,280,460	2,973	264	263	1.00	1.00
2/24/2017	4,288,789	2,978	265	263	2.00	2.00
2/25/2017	4,294,294	2,982	265	263	2.00	2.00
2/26/2017	3,870,616	2,688	239	263	-24.00	
2/27/2017	3,894,250	2,704	240	263	-23.00	
2/28/2017	3,544,339	2,461	219	263	-44.00	
3/1/2017	3,714,038	2,579	229	263	-34.00	
3/2/2017	3,867,735	2,686	239	263	-24.00	
3/3/2017	3,803,344	2,641	235	263	-28.00	
3/4/2017	3,819,705	2,653	236	263	-27.00	
3/5/2017	3,806,579	2,643	235	263	-28.00	
3/6/2017	3,816,649	2,650	236	263	-27.00	
3/7/2017	3,520,678	2,445	217	263	-46.00	
3/8/2017	3,790,786	2,632	234	263	-29.00	
3/9/2017	3,785,905	2,629	234	263	-29.00	
3/10/2017	3,791,540	2,633	234	263	-29.00	
3/11/2017	3,804,463	2,642	235	263	-28.00	
3/12/2017	3,849,019	2,673	238	263	-25.00	
3/13/2017	3,868,705	2,687	239	263	-24.00	
3/14/2017	3,913,574	2,718	242	263	-21.00	
3/15/2017	3,925,894	2,726	242	263	-21.00	
3/16/2017	3,937,386	2,734	243	263	-20.00	
3/17/2017	3,885,898	2,699	240	263	-23.00	
3/18/2017	3,880,387	2,695	240	263	-23.00	
3/19/2017	3,974,459	2,760	245	263	-18.00	
3/20/2017	4,027,702	2,797	249	263	-14.00	
3/21/2017	4,030,544	2,799	249	263	-14.00	
3/22/2017	4,023,214	2,794	248	263	-15.00	
3/23/2017	4,040,883	2,806	249	263	-14.00	
3/24/2017	3,988,031	2,769	246	263	-17.00	
3/25/2017	3,996,968	2,776	247	263	-16.00	
3/26/2017	3,990,286	2,771	246	263	-17.00	
3/27/2017	3,969,716	2,757	245	263	-18.00	
3/28/2017	4,004,363	2,781	247	263	-16.00	
3/29/2017	3,843,694	2,669	237	263	-26.00	
3/30/2017	4,060,024	2,819	251	263	-12.00	
3/31/2017	4,258,013	2,957	263	263	0.00	
4/1/2017	4,170,741	2,896	257	263	-6.00	
4/2/2017	4,455,141	3,094	275	263	12.00	12.00
4/3/2017	4,272,463	2,967	264	263	1.00	1.00
4/4/2017	4,169,660	2,896	257	263	-6.00	
4/5/2017	4,154,585	2,885	256	263	-7.00	
4/6/2017	4,042,955	2,808	250	263	-13.00	
4/7/2017	4,216,003	2,928	260	263	-3.00	
4/8/2017	4,400,394	3,056	272	263	9.00	9.00
4/9/2017	4,410,882	3,063	272	263	9.00	9.00
4/10/2017	4,369,031	3,034	270	263	7.00	7.00

4/11/2017	4,319,165	2,999	267	263	4.00	4.00
4/12/2017	4,296,723	2,984	265	263	2.00	2.00
4/13/2017	4,333,636	3,009	268	263	5.00	5.00
4/14/2017	4,532,004	3,147	280	263	17.00	17.00
4/15/2017	4,524,158	3,142	279	263	16.00	16.00
4/16/2017	4,467,953	3,103	276	263	13.00	13.00
4/17/2017	4,498,763	3,124	278	263	15.00	15.00
4/18/2017	4,544,864	3,156	281	263	18.00	18.00
4/19/2017	4,711,062	3,272	291	263	28.00	28.00
4/20/2017	4,692,228	3,258	290	263	27.00	27.00
4/21/2017	4,730,501	3,285	292	263	29.00	29.00
4/22/2017	4,709,701	3,271	291	263	28.00	28.00
4/23/2017	4,794,112	3,329	296	263	33.00	33.00
4/24/2017	4,874,414	3,385	301	263	38.00	38.00
4/25/2017	4,966,197	3,449	307	263	44.00	44.00
4/26/2017	5,006,179	3,477	309	263	46.00	46.00
4/27/2017	5,061,338	3,515	312	263	49.00	49.00
4/28/2017	4,979,016	3,458	307	263	44.00	44.00
4/29/2017	4,912,151	3,411	303	263	40.00	40.00
4/30/2017	4,944,494	3,434	305	263	42.00	42.00
5/1/2017	4,941,326	3,431	305	263	42.00	42.00
5/2/2017	4,951,081	3,438	306	263	43.00	43.00
5/3/2017	4,868,837	3,381	301	263	38.00	38.00
5/4/2017	4,896,998	3,401	302	263	39.00	39.00
5/5/2017	5,300,656	3,681	327	263	64.00	64.00
5/6/2017	5,741,269	3,987	354	263	91.00	91.00
5/7/2017	5,864,361	4,072	362	263	99.00	99.00
5/8/2017	5,827,328	4,047	360	263	97.00	97.00
5/9/2017	5,682,157	3,946	351	263	88.00	88.00
5/10/2017	5,532,785	3,842	342	263	79.00	79.00
5/11/2017	5,542,618	3,849	342	263	79.00	79.00
5/12/2017	5,034,963	3,497	311	263	48.00	48.00
5/13/2017	4,758,080	3,304	294	263	31.00	31.00
5/14/2017	4,578,926	3,180	283	263	20.00	20.00
5/15/2017	4,361,503	3,029	269	263	6.00	6.00
5/16/2017	4,286,930	2,977	265	263	2.00	2.00
5/17/2017	4,295,348	2,983	265	263	2.00	2.00
5/18/2017	4,185,206	2,906	258	263	-5.00	
5/19/2017	4,440,602	3,084	274	263	11.00	11.00
5/20/2017	4,770,539	3,313	294	263	31.00	31.00
5/21/2017	4,930,350	3,424	304	263	41.00	41.00
5/22/2017	4,875,972	3,386	301	263	38.00	38.00
5/23/2017	4,881,183	3,390	301	263	38.00	38.00
5/24/2017	4,649,062	3,229	287	263	24.00	24.00
5/25/2017	4,430,336	3,077	273	263	10.00	10.00
5/26/2017	4,251,964	2,953	262	263	-1.00	
5/27/2017	4,027,957	2,797	249	263	-14.00	

5/28/2017	3,944,764	2,739	244	263	-19.00	
5/29/2017	3,960,495	2,750	244	263	-19.00	
5/30/2017	1,704,485	1,184	105	263	-158.00	
5/31/2017	33,030	23	2	263	-261.00	
6/1/2017	2,445,187	1,698	151	263	-112.00	
6/2/2017	3,517,723	2,443	217	263	-46.00	
6/3/2017	3,675,528	2,552	227	263	-36.00	
6/4/2017	3,854,381	2,677	238	263	-25.00	
6/5/2017	4,121,337	2,862	254	263	-9.00	
6/6/2017	4,226,754	2,935	261	263	-2.00	
6/7/2017	4,161,544	2,890	257	263	-6.00	
6/8/2017	4,130,264	2,868	255	263	-8.00	
6/9/2017	4,094,450	2,843	253	263	-10.00	
6/10/2017	4,125,901	2,865	255	263	-8.00	
6/11/2017	4,202,754	2,919	259	263	-4.00	
6/12/2017	4,134,615	2,871	255	263	-8.00	
6/13/2017	4,353,539	3,023	269	263	6.00	6.00
6/14/2017	4,426,291	3,074	273	263	10.00	10.00
6/15/2017	4,205,210	2,920	260	263	-3.00	
6/16/2017	4,079,426	2,833	252	263	-11.00	
6/17/2017	4,146,404	2,879	256	263	-7.00	
6/18/2017	3,962,761	2,752	245	263	-18.00	
6/19/2017	3,929,837	2,729	243	263	-20.00	
6/20/2017	3,799,431	2,638	235	263	-28.00	
6/21/2017	3,802,921	2,641	235	263	-28.00	
6/22/2017	3,725,595	2,587	230	263	-33.00	
6/23/2017	3,827,712	2,658	236	263	-27.00	
6/24/2017	3,956,363	2,747	244	263	-19.00	
6/25/2017	3,808,700	2,645	235	263	-28.00	
6/26/2017	3,986,337	2,768	246	263	-17.00	
6/27/2017	3,945,235	2,740	244	263	-19.00	
6/28/2017	3,838,682	2,666	237	263	-26.00	
6/29/2017	3,862,223	2,682	238	263	-25.00	
6/30/2017	3,914,252	2,718	242	263	-21.00	
7/1/2017	3,933,570	2,732	243	263	-20.00	
7/2/2017	3,783,711	2,628	234	263	-29.00	
7/3/2017	4,001,130	2,779	247	263	-16.00	
7/4/2017	3,819,588	2,652	236	263	-27.00	
7/5/2017	3,652,991	2,537	225	263	-38.00	
7/6/2017	3,731,345	2,591	230	263	-33.00	
7/7/2017	3,808,335	2,645	235	263	-28.00	
7/8/2017	3,996,573	2,775	247	263	-16.00	
7/9/2017	4,127,674	2,866	255	263	-8.00	
7/10/2017	4,075,581	2,830	252	263	-11.00	
7/11/2017	4,266,144	2,963	263	263	0.00	
7/12/2017	4,078,432	2,832	252	263	-11.00	
7/13/2017	4,092,115	2,842	253	263	-10.00	

7/14/2017	4,052,119	2,814	250	263	-13.00	
7/15/2017	3,908,823	2,714	241	263	-22.00	
7/16/2017	3,826,228	2,657	236	263	-27.00	
7/17/2017	3,799,643	2,639	235	263	-28.00	
7/18/2017	3,817,825	2,651	236	263	-27.00	
7/19/2017	3,743,824	2,600	231	263	-32.00	
7/20/2017	3,646,317	2,532	225	263	-38.00	
7/21/2017	3,904,906	2,712	241	263	-22.00	
7/22/2017	4,090,259	2,840	252	263	-11.00	
7/23/2017	4,031,417	2,800	249	263	-14.00	
7/24/2017	4,100,306	2,847	253	263	-10.00	
7/25/2017	4,471,520	3,105	276	263	13.00	13.00
7/26/2017	4,307,111	2,991	266	263	3.00	3.00
7/27/2017	4,353,628	3,023	269	263	6.00	6.00
7/28/2017	4,451,858	3,092	275	263	12.00	12.00
7/29/2017	4,505,279	3,129	278	263	15.00	15.00
7/30/2017	4,455,013	3,094	275	263	12.00	12.00
7/31/2017	4,570,412	3,174	282	263	19.00	19.00
8/1/2017	4,585,876	3,185	283	263	20.00	20.00
8/2/2017	4,473,188	3,106	276	263	13.00	13.00
8/3/2017	4,389,345	3,048	271	263	8.00	8.00
8/4/2017	4,461,459	3,098	275	263	12.00	12.00
8/5/2017	4,460,970	3,098	275	263	12.00	12.00
8/6/2017	4,517,590	3,137	279	263	16.00	16.00
8/7/2017	4,504,630	3,128	278	263	15.00	15.00
8/8/2017	4,660,284	3,236	288	263	25.00	25.00
8/9/2017	4,490,704	3,119	277	263	14.00	14.00
8/10/2017	4,283,936	2,975	264	263	1.00	1.00
8/11/2017	4,108,154	2,853	254	263	-9.00	
8/12/2017	4,056,968	2,817	250	263	-13.00	
8/13/2017	4,078,651	2,832	252	263	-11.00	
8/14/2017	4,292,198	2,981	265	263	2.00	2.00
8/15/2017	4,514,023	3,135	279	263	16.00	16.00
8/16/2017	4,230,745	2,938	261	263	-2.00	
8/17/2017	4,182,179	2,904	258	263	-5.00	
8/18/2017	4,072,618	2,828	251	263	-12.00	
8/19/2017	3,990,735	2,771	246	263	-17.00	
8/20/2017	4,049,679	2,812	250	263	-13.00	
8/21/2017	3,970,015	2,757	245	263	-18.00	
8/22/2017	3,842,088	2,668	237	263	-26.00	
8/23/2017	3,937,788	2,735	243	263	-20.00	
8/24/2017	3,987,692	2,769	246	263	-17.00	
8/25/2017	4,074,281	2,829	251	263	-12.00	
8/26/2017	3,983,471	2,766	246	263	-17.00	
8/27/2017	3,839,061	2,666	237	263	-26.00	
8/28/2017	3,931,407	2,730	243	263	-20.00	
8/29/2017	3,922,893	2,724	242	263	-21.00	

8/30/2017	3,947,882	2,742	244	263	-19.00	
8/31/2017	3,904,109	2,711	241	263	-22.00	
9/1/2017	3,848,800	2,673	238	263	-25.00	
9/2/2017	3,855,259	2,677	238	263	-25.00	
9/3/2017	3,723,148	2,586	230	263	-33.00	
9/4/2017	3,647,290	2,533	225	263	-38.00	
9/5/2017	3,504,863	2,434	216	263	-47.00	
9/6/2017	3,360,359	2,334	207	263	-56.00	
9/7/2017	3,180,476	2,209	196	263	-67.00	
9/8/2017	3,344,639	2,323	206	263	-57.00	
9/9/2017	3,352,343	2,328	207	263	-56.00	
9/10/2017	3,382,072	2,349	209	263	-54.00	
9/11/2017	3,551,396	2,466	219	263	-44.00	
9/12/2017	3,642,367	2,529	225	263	-38.00	
9/13/2017	3,732,308	2,592	230	263	-33.00	
9/14/2017	3,826,410	2,657	236	263	-27.00	
9/15/2017	3,829,022	2,659	236	263	-27.00	
9/16/2017	3,633,401	2,523	224	263	-39.00	
9/17/2017	3,561,935	2,474	220	263	-43.00	
9/18/2017	3,700,695	2,570	228	263	-35.00	
9/19/2017	1,945,943	1,351	120	263	-143.00	
9/20/2017	0	0	0	263	-263.00	
9/21/2017	0	0	0	263	-263.00	
9/22/2017	2,219,110	1,541	137	263	-126.00	
9/23/2017	3,954,104	2,746	244	263	-19.00	
9/24/2017	3,629,361	2,520	224	263	-39.00	
9/25/2017	1,257,239	873	78	263	-185.00	
9/26/2017	0	0	0	263	-263.00	
9/27/2017	0	0	0	263	-263.00	
9/28/2017	2,263,463	1,572	140	263	-123.00	
9/29/2017	4,185,660	2,907	258	263	-5.00	
9/30/2017	4,287,986	2,978	265	263	2.00	2.00
10/1/2017	4,846,067	3,365	299	263	36.00	36.00
10/2/2017	4,830,909	3,355	298	263	35.00	35.00
10/3/2017	5,097,590	3,540	315	263	52.00	52.00
10/4/2017	4,966,179	3,449	307	263	44.00	44.00
10/5/2017	4,798,196	3,332	296	263	33.00	33.00
10/6/2017	4,779,553	3,319	295	263	32.00	32.00
10/7/2017	4,893,706	3,398	302	263	39.00	39.00
10/8/2017	4,872,441	3,384	301	263	38.00	38.00
10/9/2017	4,724,304	3,281	292	263	29.00	29.00
10/10/2017	4,543,883	3,155	280	263	17.00	17.00
10/11/2017	4,518,468	3,138	279	263	16.00	16.00
10/12/2017	5,524,951	3,837	341	263	78.00	78.00
10/13/2017	5,594,724	3,885	345	263	82.00	82.00
10/14/2017	4,152,926	2,884	256	263	-7.00	
10/15/2017	3,750,202	2,604	231	263	-32.00	

10/16/2017	3,495,337	2,427	216	263	-47.00		
10/17/2017	3,569,032	2,478	220	263	-43.00		
10/18/2017	3,839,599	2,666	237	263	-26.00		
10/19/2017	4,215,296	2,927	260	263	-3.00		
10/20/2017	4,348,703	3,020	268	263	5.00	5.00	
10/21/2017	4,218,825	2,930	260	263	-3.00		
10/22/2017	4,120,552	2,861	254	263	-9.00		
10/23/2017	4,059,835	2,819	251	263	-12.00		
10/24/2017	3,849,556	2,673	238	263	-25.00		
10/25/2017	4,047,317	2,811	250	263	-13.00		
10/26/2017	3,900,559	2,709	241	263	-22.00		
10/27/2017	3,824,132	2,656	236	263	-27.00		
10/28/2017	3,833,034	2,662	237	263	-26.00		
10/29/2017	3,836,312	2,664	237	263	-26.00		
10/30/2017	3,675,885	2,553	227	263	-36.00		
10/31/2017	5,342,189	3,710	330	263	67.00	67.00	
11/1/2017	7,029,083	4,881	434	263	171.00	171.00	Mystic Lake draining due to beavers
11/2/2017	6,062,492	4,210	374	263	111.00	111.00	Mystic Lake draining due to beavers
11/3/2017	5,503,017	3,822	340	263	77.00	77.00	
11/4/2017	4,997,835	3,471	309	263	46.00	46.00	
11/5/2017	4,880,150	3,389	301	263	38.00	38.00	
11/6/2017	5,129,049	3,562	317	263	54.00	54.00	
11/7/2017	5,465,610	3,796	337	263	74.00	74.00	
11/8/2017	5,628,914	3,909	347	263	84.00	84.00	
11/9/2017	5,855,988	4,067	361	263	98.00	98.00	
11/10/2017	5,466,677	3,796	337	263	74.00	74.00	
11/11/2017	5,629,442	3,909	347	263	84.00	84.00	
11/12/2017	5,368,574	3,728	331	263	68.00	68.00	
11/13/2017	5,095,388	3,538	315	263	52.00	52.00	
11/14/2017	4,861,638	3,376	300	263	37.00	37.00	
11/15/2017	4,492,845	3,120	277	263	14.00	14.00	
11/16/2017	4,942,070	3,432	305	263	42.00	42.00	
11/17/2017	4,971,675	3,453	307	263	44.00	44.00	
11/18/2017	4,483,062	3,113	277	263	14.00	14.00	
11/19/2017	4,547,716	3,158	281	263	18.00	18.00	
11/20/2017	4,998,094	3,471	309	263	46.00	46.00	
11/21/2017	4,974,893	3,455	307	263	44.00	44.00	
11/22/2017	4,963,889	3,447	306	263	43.00	43.00	
11/23/2017	5,010,802	3,480	309	263	46.00	46.00	

11/24/2017	5,046,724	3,505	312	263	49.00	49.00		
11/25/2017	5,021,366	3,487	310	263	47.00	47.00		
11/26/2017	5,058,074	3,513	312	263	49.00	49.00		
11/27/2017	5,113,410	3,551	316	263	53.00	53.00		
11/28/2017	5,096,052	3,539	315	263	52.00	52.00		
11/29/2017	5,071,508	3,522	313	263	50.00	50.00		
11/30/2017	4,930,793	3,424	304	263	41.00	41.00		
12/1/2017	5,085,382	3,532	314	263	51.00	51.00		
12/2/2017	5,041,308	3,501	311	263	48.00	48.00		
12/3/2017	5,049,748	3,507	312	263	49.00	49.00		
12/4/2017	5,032,349	3,495	311	263	48.00	48.00		
12/5/2017	4,625,573	3,212	286	263	23.00	23.00		
12/6/2017	4,996,851	3,470	308	263	45.00	45.00		
12/7/2017	5,087,823	3,533	314	263	51.00	51.00		
12/8/2017	4,760,082	3,306	294	263	31.00	31.00		
12/9/2017	4,747,537	3,297	293	263	30.00	30.00		
12/10/2017	4,911,770	3,411	303	263	40.00	40.00		
12/11/2017	5,017,732	3,485	310	263	47.00	47.00		
12/12/2017	5,023,620	3,489	310	263	47.00	47.00		
12/13/2017	5,062,912	3,516	313	263	50.00	50.00		
12/14/2017	5,025,556	3,490	310	263	47.00	47.00		
12/15/2017	4,877,411	3,387	301	263	38.00	38.00		
12/16/2017	5,019,211	3,486	310	263	47.00	47.00		
12/17/2017	4,299,276	2,986	265	263	2.00	2.00		
12/18/2017	4,998,953	3,471	309	263	46.00	46.00		
12/19/2017	4,847,435	3,366	299	263	36.00	36.00		
12/20/2017	4,550,658	3,160	281	263	18.00	18.00		
12/21/2017	3,767,224	2,616	233	263	-30.00			
12/22/2017	4,634,816	3,219	286	263	23.00	23.00		
12/23/2017	3,857,924	2,679	238	263	-25.00			
12/24/2017	3,304,292	2,295	204	263	-59.00			
12/25/2017	4,322,150	3,001	267	263	4.00	4.00		
12/26/2017	4,614,170	3,204	285	263	22.00	22.00		
12/27/2017	4,696,350	3,261	290	263	27.00	27.00		
12/28/2017	4,704,346	3,267	290	263	27.00	27.00		
12/29/2017	4,643,900	3,225	287	263	24.00	24.00		
12/30/2017	4,155,821	2,886	257	263	-6.00			
12/31/2017	4,780,976	3,320	295	263	32.00	32.00	5170.00	258.50
1/1/2018	4,452,330	3,092	275	263	12.00	12.00		
1/2/2018	3,984,579	2,767	246	263	-17.00			
1/3/2018	4,793,054	3,329	296	263	33.00	33.00		
1/4/2018	4,649,839	3,229	287	263	24.00	24.00		
1/5/2018	4,591,179	3,188	283	263	20.00	20.00		
1/6/2018	4,504,252	3,128	278	263	15.00	15.00		
1/7/2018	4,449,053	3,090	275	263	12.00	12.00		
1/8/2018	4,475,428	3,108	276	263	13.00	13.00		
1/9/2018	4,499,872	3,125	278	263	15.00	15.00		

1/10/2018	4,433,898	3,079	274	263	11.00	11.00
1/11/2018	4,422,312	3,071	273	263	10.00	10.00
1/12/2018	4,454,339	3,093	275	263	12.00	12.00
1/13/2018	4,450,425	3,091	275	263	12.00	12.00
1/14/2018	4,361,930	3,029	269	263	6.00	6.00
1/15/2018	4,377,644	3,040	270	263	7.00	7.00
1/16/2018	2,519,038	1,749	155	263	-108.00	
1/17/2018	4,188,095	2,908	259	263	-4.00	
1/18/2018	4,546,467	3,157	281	263	18.00	18.00
1/19/2018	4,511,450	3,133	278	263	15.00	15.00
1/20/2018	4,447,346	3,088	275	263	12.00	12.00
1/21/2018	4,305,988	2,990	266	263	3.00	3.00
1/22/2018	3,538,612	2,457	218	263	-45.00	
1/23/2018	4,428,602	3,075	273	263	10.00	10.00
1/24/2018	4,422,029	3,071	273	263	10.00	10.00
1/25/2018	4,489,006	3,117	277	263	14.00	14.00
1/26/2018	4,418,240	3,068	273	263	10.00	10.00
1/27/2018	3,946,456	2,741	244	263	-19.00	
1/28/2018	4,388,525	3,048	271	263	8.00	8.00
1/29/2018	4,212,223	2,925	260	263	-3.00	
1/30/2018	4,289,207	2,979	265	263	2.00	2.00
1/31/2018	4,076,779	2,831	252	263	-11.00	
2/1/2018	4,293,522	2,982	265	263	2.00	2.00
2/2/2018	4,384,567	3,045	271	263	8.00	8.00
2/3/2018	4,355,741	3,025	269	263	6.00	6.00
2/4/2018	4,177,604	2,901	258	263	-5.00	
2/5/2018	4,370,715	3,035	270	263	7.00	7.00
2/6/2018	4,327,663	3,005	267	263	4.00	4.00
2/7/2018	4,332,878	3,009	267	263	4.00	4.00
2/8/2018	4,436,518	3,081	274	263	11.00	11.00
2/9/2018	3,384,925	2,351	209	263	-54.00	
2/10/2018	3,588,725	2,492	222	263	-41.00	
2/11/2018	4,333,415	3,009	267	263	4.00	4.00
2/12/2018	3,967,311	2,755	245	263	-18.00	
2/13/2018	3,787,230	2,630	234	263	-29.00	
2/14/2018	4,533,680	3,148	280	263	17.00	17.00
2/15/2018	4,555,405	3,163	281	263	18.00	18.00
2/16/2018	4,270,697	2,966	264	263	1.00	1.00
2/17/2018	4,578,633	3,180	283	263	20.00	20.00
2/18/2018	4,382,179	3,043	271	263	8.00	8.00
2/19/2018	3,324,229	2,308	205	263	-58.00	
2/20/2018	4,385,755	3,046	271	263	8.00	8.00
2/21/2018	4,542,703	3,155	280	263	17.00	17.00
2/22/2018	4,273,289	2,968	264	263	1.00	1.00
2/23/2018	4,178,966	2,902	258	263	-5.00	
2/24/2018	4,181,997	2,904	258	263	-5.00	
2/25/2018	4,154,231	2,885	256	263	-7.00	

2/26/2018	4,106,809	2,852	254	263	-9.00	
2/27/2018	4,044,927	2,809	250	263	-13.00	
2/28/2018	3,970,096	2,757	245	263	-18.00	
3/1/2018	3,917,873	2,721	242	263	-21.00	
3/2/2018	3,958,716	2,749	244	263	-19.00	
3/3/2018	3,955,374	2,747	244	263	-19.00	
3/4/2018	3,924,300	2,725	242	263	-21.00	
3/5/2018	3,958,225	2,749	244	263	-19.00	
3/6/2018	3,906,138	2,713	241	263	-22.00	
3/7/2018	3,817,583	2,651	236	263	-27.00	
3/8/2018	3,993,357	2,773	247	263	-16.00	
3/9/2018	3,840,831	2,667	237	263	-26.00	
3/10/2018	3,919,929	2,722	242	263	-21.00	
3/11/2018	3,894,585	2,705	240	263	-23.00	
3/12/2018	4,029,488	2,798	249	263	-14.00	
3/13/2018	4,114,393	2,857	254	263	-9.00	
3/14/2018	4,355,501	3,025	269	263	6.00	6.00
3/15/2018	4,466,649	3,102	276	263	13.00	13.00
3/16/2018	4,454,367	3,093	275	263	12.00	12.00
3/17/2018	4,425,363	3,073	273	263	10.00	10.00
3/18/2018	4,389,712	3,048	271	263	8.00	8.00
3/19/2018	4,403,800	3,058	272	263	9.00	9.00
3/20/2018	4,384,129	3,045	271	263	8.00	8.00
3/21/2018	4,404,094	3,058	272	263	9.00	9.00
3/22/2018	4,406,447	3,060	272	263	9.00	9.00
3/23/2018	4,463,701	3,100	276	263	13.00	13.00
3/24/2018	4,516,622	3,137	279	263	16.00	16.00
3/25/2018	4,493,219	3,120	277	263	14.00	14.00
3/26/2018	4,487,885	3,117	277	263	14.00	14.00
3/27/2018	4,465,931	3,101	276	263	13.00	13.00
3/28/2018	4,488,823	3,117	277	263	14.00	14.00
3/29/2018	4,476,811	3,109	276	263	13.00	13.00
3/30/2018	4,486,622	3,116	277	263	14.00	14.00
3/31/2018	4,477,611	3,109	276	263	13.00	13.00
4/1/2018	4,277,961	2,971	264	263	1.00	1.00
4/2/2018	4,499,858	3,125	278	263	15.00	15.00
4/3/2018	4,135,424	2,872	255	263	-8.00	
4/4/2018	4,502,447	3,127	278	263	15.00	15.00
4/5/2018	4,484,588	3,114	277	263	14.00	14.00
4/6/2018	4,501,053	3,126	278	263	15.00	15.00
4/7/2018	4,448,127	3,089	275	263	12.00	12.00
4/8/2018	4,533,827	3,148	280	263	17.00	17.00
4/9/2018	4,531,727	3,147	280	263	17.00	17.00
4/10/2018	4,472,966	3,106	276	263	13.00	13.00
4/11/2018	4,522,131	3,140	279	263	16.00	16.00
4/12/2018	4,569,158	3,173	282	263	19.00	19.00
4/13/2018	4,600,736	3,195	284	263	21.00	21.00

4/14/2018	4,619,787	3,208	285	263	22.00	22.00
4/15/2018	4,643,966	3,225	287	263	24.00	24.00
4/16/2018	4,668,927	3,242	288	263	25.00	25.00
4/17/2018	4,680,487	3,250	289	263	26.00	26.00
4/18/2018	4,619,884	3,208	285	263	22.00	22.00
4/19/2018	4,592,761	3,189	284	263	21.00	21.00
4/20/2018	4,771,669	3,314	295	263	32.00	32.00
4/21/2018	5,126,655	3,560	316	263	53.00	53.00
4/22/2018	5,546,672	3,852	342	263	79.00	79.00
4/23/2018	5,910,514	4,105	365	263	102.00	102.00
4/24/2018	5,641,647	3,918	348	263	85.00	85.00
4/25/2018	5,377,543	3,734	332	263	69.00	69.00
4/26/2018	5,185,227	3,601	320	263	57.00	57.00
4/27/2018	5,479,377	3,805	338	263	75.00	75.00
4/28/2018	5,912,794	4,106	365	263	102.00	102.00
4/29/2018	5,964,089	4,142	368	263	105.00	105.00
4/30/2018	5,882,297	4,085	363	263	100.00	100.00
5/1/2018	5,287,798	3,672	326	263	63.00	63.00
5/2/2018	4,632,294	3,217	286	263	23.00	23.00
5/3/2018	4,534,654	3,149	280	263	17.00	17.00
5/4/2018	4,567,734	3,172	282	263	19.00	19.00
5/5/2018	4,720,381	3,278	291	263	28.00	28.00
5/6/2018	4,863,909	3,378	300	263	37.00	37.00
5/7/2018	4,847,980	3,367	299	263	36.00	36.00
5/8/2018	4,792,170	3,328	296	263	33.00	33.00
5/9/2018	4,770,090	3,313	294	263	31.00	31.00
5/10/2018	4,879,712	3,389	301	263	38.00	38.00
5/11/2018	4,592,515	3,189	283	263	20.00	20.00
5/12/2018	4,297,208	2,984	265	263	2.00	2.00
5/13/2018	4,094,452	2,843	253	263	-10.00	
5/14/2018	3,888,767	2,701	240	263	-23.00	
5/15/2018	3,956,940	2,748	244	263	-19.00	
5/16/2018	4,284,199	2,975	264	263	1.00	1.00
5/17/2018	4,448,656	3,089	275	263	12.00	12.00
5/18/2018	4,448,106	3,089	275	263	12.00	12.00
5/19/2018	4,451,620	3,091	275	263	12.00	12.00
5/20/2018	4,383,075	3,044	271	263	8.00	8.00
5/21/2018	4,367,808	3,033	270	263	7.00	7.00
5/22/2018	4,421,345	3,070	273	263	10.00	10.00
5/23/2018	4,486,294	3,115	277	263	14.00	14.00
5/24/2018	4,502,144	3,126	278	263	15.00	15.00
5/25/2018	4,473,205	3,106	276	263	13.00	13.00
5/26/2018	4,436,183	3,081	274	263	11.00	11.00
5/27/2018	4,442,366	3,085	274	263	11.00	11.00
5/28/2018	4,393,671	3,051	271	263	8.00	8.00
5/29/2018	4,388,145	3,047	271	263	8.00	8.00
5/30/2018	4,068,061	2,825	251	263	-12.00	

5/31/2018	3,950,891	2,744	244	263	-19.00	
6/1/2018	3,978,679	2,763	246	263	-17.00	
6/2/2018	3,980,502	2,764	246	263	-17.00	
6/3/2018	3,827,860	2,658	236	263	-27.00	
6/4/2018	3,779,692	2,625	233	263	-30.00	
6/5/2018	3,704,042	2,572	229	263	-34.00	
6/6/2018	3,692,915	2,565	228	263	-35.00	
6/7/2018	3,679,386	2,555	227	263	-36.00	
6/8/2018	3,570,583	2,480	220	263	-43.00	
6/9/2018	3,456,954	2,401	213	263	-50.00	
6/10/2018	3,730,684	2,591	230	263	-33.00	
6/11/2018	4,201,740	2,918	259	263	-4.00	
6/12/2018	4,116,142	2,858	254	263	-9.00	
6/13/2018	4,188,057	2,908	259	263	-4.00	
6/14/2018	4,115,106	2,858	254	263	-9.00	
6/15/2018	4,014,970	2,788	248	263	-15.00	
6/16/2018	3,941,921	2,737	243	263	-20.00	
6/17/2018	3,922,326	2,724	242	263	-21.00	
6/18/2018	4,050,142	2,813	250	263	-13.00	
6/19/2018	3,949,468	2,743	244	263	-19.00	
6/20/2018	4,077,006	2,831	252	263	-11.00	
6/21/2018	3,997,933	2,776	247	263	-16.00	
6/22/2018	3,906,586	2,713	241	263	-22.00	
6/23/2018	3,758,390	2,610	232	263	-31.00	
6/24/2018	3,724,879	2,587	230	263	-33.00	
6/25/2018	3,254,361	2,260	201	263	-62.00	
6/26/2018	3,769,921	2,618	233	263	-30.00	
6/27/2018	4,263,051	2,960	263	263	0.00	
6/28/2018	4,420,708	3,070	273	263	10.00	10.00
6/29/2018	4,445,546	3,087	274	263	11.00	11.00
6/30/2018	4,462,671	3,099	275	263	12.00	12.00
7/1/2018	4,243,067	2,947	262	263	-1.00	
7/2/2018	4,227,932	2,936	261	263	-2.00	
7/3/2018	4,122,046	2,863	254	263	-9.00	
7/4/2018	4,113,756	2,857	254	263	-9.00	
7/5/2018	4,010,686	2,785	248	263	-15.00	
7/6/2018	4,153,303	2,884	256	263	-7.00	
7/7/2018	4,108,847	2,853	254	263	-9.00	
7/8/2018	4,239,951	2,944	262	263	-1.00	
7/9/2018	4,216,386	2,928	260	263	-3.00	
7/10/2018	4,142,407	2,877	256	263	-7.00	
7/11/2018	4,240,911	2,945	262	263	-1.00	
7/12/2018	4,921,231	3,418	304	263	41.00	41.00
7/13/2018	4,599,755	3,194	284	263	21.00	21.00
7/14/2018	4,015,109	2,788	248	263	-15.00	
7/15/2018	4,105,786	2,851	253	263	-10.00	
7/16/2018	4,405,052	3,059	272	263	9.00	9.00

7/17/2018	4,389,351	3,048	271	263	8.00	8.00
7/18/2018	4,332,651	3,009	267	263	4.00	4.00
7/19/2018	4,385,776	3,046	271	263	8.00	8.00
7/20/2018	4,472,293	3,106	276	263	13.00	13.00
7/21/2018	4,561,688	3,168	282	263	19.00	19.00
7/22/2018	4,415,567	3,066	273	263	10.00	10.00
7/23/2018	4,305,997	2,990	266	263	3.00	3.00
7/24/2018	4,384,041	3,044	271	263	8.00	8.00
7/25/2018	4,428,634	3,075	273	263	10.00	10.00
7/26/2018	4,493,474	3,120	277	263	14.00	14.00
7/27/2018	4,602,544	3,196	284	263	21.00	21.00
7/28/2018	4,708,015	3,269	291	263	28.00	28.00
7/29/2018	4,813,467	3,343	297	263	34.00	34.00
7/30/2018	4,925,251	3,420	304	263	41.00	41.00
7/31/2018	5,044,448	3,503	311	263	48.00	48.00
8/1/2018	5,376,255	3,734	332	263	69.00	69.00
8/2/2018	5,424,243	3,767	335	263	72.00	72.00
8/3/2018	4,953,975	3,440	306	263	43.00	43.00
8/4/2018	4,662,755	3,238	288	263	25.00	25.00
8/5/2018	4,630,701	3,216	286	263	23.00	23.00
8/6/2018	4,623,394	3,211	285	263	22.00	22.00
8/7/2018	4,481,037	3,112	277	263	14.00	14.00
8/8/2018	4,415,845	3,067	273	263	10.00	10.00
8/9/2018	4,407,078	3,060	272	263	9.00	9.00
8/10/2018	4,429,417	3,076	273	263	10.00	10.00
8/11/2018	4,385,773	3,046	271	263	8.00	8.00
8/12/2018	4,460,339	3,097	275	263	12.00	12.00
8/13/2018	4,495,092	3,122	277	263	14.00	14.00
8/14/2018	4,417,485	3,068	273	263	10.00	10.00
8/15/2018	4,395,010	3,052	271	263	8.00	8.00
8/16/2018	4,392,309	3,050	271	263	8.00	8.00
8/17/2018	4,455,406	3,094	275	263	12.00	12.00
8/18/2018	4,397,386	3,054	271	263	8.00	8.00
8/19/2018	4,432,521	3,078	274	263	11.00	11.00
8/20/2018	1,808,356	1,256	112	263	-151.00	
8/21/2018	0	0	0	263	-263.00	
8/22/2018	0	0	0	263	-263.00	
8/23/2018	0	0	0	263	-263.00	
8/24/2018	1,349,980	937	83	263	-180.00	
8/25/2018	4,191,834	2,911	259	263	-4.00	
8/26/2018	4,218,961	2,930	260	263	-3.00	
8/27/2018	4,398,853	3,055	272	263	9.00	9.00
8/28/2018	4,242,124	2,946	262	263	-1.00	
8/29/2018	3,415,622	2,372	211	263	-52.00	
8/30/2018	3,128,968	2,173	193	263	-70.00	
8/31/2018	3,596,029	2,497	222	263	-41.00	
9/1/2018	3,402,872	2,363	210	263	-53.00	

9/2/2018	3,357,404	2,332	207	263	-56.00	
9/3/2018	3,438,234	2,388	212	263	-51.00	
9/4/2018	3,426,790	2,380	212	263	-51.00	
9/5/2018	3,806,649	2,644	235	263	-28.00	
9/6/2018	4,074,718	2,830	252	263	-11.00	
9/7/2018	4,114,239	2,857	254	263	-9.00	
9/8/2018	4,070,832	2,827	251	263	-12.00	
9/9/2018	4,014,628	2,788	248	263	-15.00	
9/10/2018	4,077,301	2,831	252	263	-11.00	
9/11/2018	3,943,051	2,738	243	263	-20.00	
9/12/2018	4,025,687	2,796	248	263	-15.00	
9/13/2018	4,055,318	2,816	250	263	-13.00	
9/14/2018	4,020,664	2,792	248	263	-15.00	
9/15/2018	4,048,005	2,811	250	263	-13.00	
9/16/2018	4,084,577	2,837	252	263	-11.00	
9/17/2018	3,962,802	2,752	245	263	-18.00	
9/18/2018	4,005,568	2,782	247	263	-16.00	
9/19/2018	4,029,770	2,798	249	263	-14.00	
9/20/2018	4,184,744	2,906	258	263	-5.00	
9/21/2018	4,199,264	2,916	259	263	-4.00	
9/22/2018	4,162,586	2,891	257	263	-6.00	
9/23/2018	4,163,722	2,891	257	263	-6.00	
9/24/2018	4,176,484	2,900	258	263	-5.00	
9/25/2018	4,184,857	2,906	258	263	-5.00	
9/26/2018	4,204,820	2,920	260	263	-3.00	
9/27/2018	4,183,403	2,905	258	263	-5.00	
9/28/2018	4,182,219	2,904	258	263	-5.00	
9/29/2018	4,156,614	2,887	257	263	-6.00	
9/30/2018	4,166,392	2,893	257	263	-6.00	
10/1/2018	4,229,017	2,937	261	263	-2.00	
10/2/2018	4,192,165	2,911	259	263	-4.00	
10/3/2018	4,207,798	2,922	260	263	-3.00	
10/4/2018	4,272,104	2,967	264	263	1.00	1.00
10/5/2018	4,403,119	3,058	272	263	9.00	9.00
10/6/2018	4,394,940	3,052	271	263	8.00	8.00
10/7/2018	4,474,578	3,107	276	263	13.00	13.00
10/8/2018	4,357,586	3,026	269	263	6.00	6.00
10/9/2018	4,384,275	3,045	271	263	8.00	8.00
10/10/2018	4,350,821	3,021	269	263	6.00	6.00
10/11/2018	4,284,558	2,975	264	263	1.00	1.00
10/12/2018	4,286,111	2,976	265	263	2.00	2.00
10/13/2018	4,297,693	2,985	265	263	2.00	2.00
10/14/2018	4,304,965	2,990	266	263	3.00	3.00
10/15/2018	4,196,910	2,915	259	263	-4.00	
10/16/2018	4,279,093	2,972	264	263	1.00	1.00
10/17/2018	4,310,763	2,994	266	263	3.00	3.00
10/18/2018	4,300,943	2,987	265	263	2.00	2.00

10/19/2018	4,287,905	2,978	265	263	2.00	2.00
10/20/2018	4,310,996	2,994	266	263	3.00	3.00
10/21/2018	4,314,709	2,996	266	263	3.00	3.00
10/22/2018	4,299,999	2,986	265	263	2.00	2.00
10/23/2018	4,238,410	2,943	262	263	-1.00	
10/24/2018	4,094,377	2,843	253	263	-10.00	
10/25/2018	4,034,890	2,802	249	263	-14.00	
10/26/2018	3,981,864	2,765	246	263	-17.00	
10/27/2018	4,311,481	2,994	266	263	3.00	3.00
10/28/2018	4,270,344	2,966	264	263	1.00	1.00
10/29/2018	4,217,413	2,929	260	263	-3.00	
10/30/2018	4,055,109	2,816	250	263	-13.00	
10/31/2018	3,884,502	2,698	240	263	-23.00	
11/1/2018	3,718,812	2,583	230	263	-33.00	
11/2/2018	4,010,689	2,785	248	263	-15.00	
11/3/2018	3,991,428	2,772	246	263	-17.00	
11/4/2018	3,992,063	2,772	246	263	-17.00	
11/5/2018	3,983,714	2,766	246	263	-17.00	
11/6/2018	3,972,862	2,759	245	263	-18.00	
11/7/2018	3,974,911	2,760	245	263	-18.00	
11/8/2018	3,970,428	2,757	245	263	-18.00	
11/9/2018	3,772,168	2,620	233	263	-30.00	
11/10/2018	3,998,010	2,776	247	263	-16.00	
11/11/2018	3,966,005	2,754	245	263	-18.00	
11/12/2018	3,601,485	2,501	222	263	-41.00	
11/13/2018	3,986,070	2,768	246	263	-17.00	
11/14/2018	3,983,925	2,767	246	263	-17.00	
11/15/2018	4,164,583	2,892	257	263	-6.00	
11/16/2018	4,361,048	3,029	269	263	6.00	6.00
11/17/2018	4,349,418	3,020	268	263	5.00	5.00
11/18/2018	3,279,545	2,277	202	263	-61.00	
11/19/2018	4,385,285	3,045	271	263	8.00	8.00
11/20/2018	4,362,071	3,029	269	263	6.00	6.00
11/21/2018	4,311,461	2,994	266	263	3.00	3.00
11/22/2018	4,332,542	3,009	267	263	4.00	4.00
11/23/2018	4,404,621	3,059	272	263	9.00	9.00
11/24/2018	4,360,486	3,028	269	263	6.00	6.00
11/25/2018	4,319,988	3,000	267	263	4.00	4.00
11/26/2018	3,863,618	2,683	238	263	-25.00	
11/27/2018	4,416,708	3,067	273	263	10.00	10.00
11/28/2018	4,364,692	3,031	269	263	6.00	6.00
11/29/2018	4,278,697	2,971	264	263	1.00	1.00
11/30/2018	3,836,195	2,664	237	263	-26.00	
12/1/2018	4,298,895	2,985	265	263	2.00	2.00
12/2/2018	3,011,480	2,091	186	263	-77.00	
12/3/2018	3,881,674	2,696	240	263	-23.00	
12/4/2018	4,351,634	3,022	269	263	6.00	6.00

12/5/2018	3,409,331	2,368	210	263	-53.00			
12/6/2018	3,721,683	2,585	230	263	-33.00			
12/7/2018	4,171,765	2,897	258	263	-5.00			
12/8/2018	4,549,669	3,159	281	263	18.00	18.00		
12/9/2018	4,486,112	3,115	277	263	14.00	14.00		
12/10/2018	4,500,119	3,125	278	263	15.00	15.00		
12/11/2018	4,469,742	3,104	276	263	13.00	13.00		
12/12/2018	4,455,661	3,094	275	263	12.00	12.00		
12/13/2018	4,385,381	3,045	271	263	8.00	8.00		
12/14/2018	4,383,325	3,044	271	263	8.00	8.00		
12/15/2018	4,364,032	3,031	269	263	6.00	6.00		
12/16/2018	4,374,333	3,038	270	263	7.00	7.00		
12/17/2018	4,400,354	3,056	272	263	9.00	9.00		
12/18/2018	4,390,138	3,049	271	263	8.00	8.00		
12/19/2018	4,434,084	3,079	274	263	11.00	11.00		
12/20/2018	4,405,452	3,059	272	263	9.00	9.00		
12/21/2018	4,319,535	3,000	267	263	4.00	4.00		
12/22/2018	4,208,426	2,923	260	263	-3.00			
12/23/2018	3,403,170	2,363	210	263	-53.00			
12/24/2018	4,464,832	3,101	276	263	13.00	13.00		
12/25/2018	4,158,599	2,888	257	263	-6.00			
12/26/2018	4,316,181	2,997	266	263	3.00	3.00		
12/27/2018	4,130,858	2,869	255	263	-8.00			
12/28/2018	4,294,255	2,982	265	263	2.00	2.00		
12/29/2018	4,100,217	2,847	253	263	-10.00			
12/30/2018	4,291,469	2,980	265	263	2.00	2.00		
12/31/2018	3,837,625	2,665	237	263	-26.00		3398.00	169.90
1/1/2019	3,340,958	2,320	206	263	-57.00			
1/2/2019	4,429,519	3,076	273	263	10.00	10.00		
1/3/2019	4,473,777	3,107	276	263	13.00	13.00		
1/4/2019	4,362,441	3,029	269	263	6.00	6.00		
1/5/2019	4,311,896	2,994	266	263	3.00	3.00		
1/6/2019	4,274,691	2,969	264	263	1.00	1.00		
1/7/2019	4,261,517	2,959	263	263	0.00			
1/8/2019	3,428,451	2,381	212	263	-51.00			
1/9/2019	4,354,988	3,024	269	263	6.00	6.00		
1/10/2019	4,270,994	2,966	264	263	1.00	1.00		
1/11/2019	4,274,939	2,969	264	263	1.00	1.00		
1/12/2019	3,398,111	2,360	210	263	-53.00			
1/13/2019	4,342,090	3,015	268	263	5.00	5.00		
1/14/2019	4,327,555	3,005	267	263	4.00	4.00		
1/15/2019	4,252,720	2,953	263	263	0.00			
1/16/2019	4,519,528	3,139	279	263	16.00	16.00		
1/17/2019	4,393,254	3,051	271	263	8.00	8.00		
1/18/2019	4,351,200	3,022	269	263	6.00	6.00		
1/19/2019	4,312,730	2,995	266	263	3.00	3.00		
1/20/2019	4,267,329	2,963	263	263	0.00			

1/21/2019	4,286,678	2,977	265	263	2.00	2.00
1/22/2019	4,464,941	3,101	276	263	13.00	13.00
1/23/2019	4,270,621	2,966	264	263	1.00	1.00
1/24/2019	4,271,872	2,967	264	263	1.00	1.00
1/25/2019	4,286,519	2,977	265	263	2.00	2.00
1/26/2019	4,308,831	2,992	266	263	3.00	3.00
1/27/2019	4,309,287	2,993	266	263	3.00	3.00
1/28/2019	4,141,684	2,876	256	263	-7.00	
1/29/2019	2,914,966	2,024	180	263	-83.00	
1/30/2019	4,405,942	3,060	272	263	9.00	9.00
1/31/2019	4,457,929	3,096	275	263	12.00	12.00
2/1/2019	4,317,452	2,998	267	263	4.00	4.00
2/2/2019	4,272,135	2,967	264	263	1.00	1.00
2/3/2019	4,025,079	2,795	248	263	-15.00	
2/4/2019	2,442,899	1,696	151	263	-112.00	
2/5/2019	3,983,156	2,766	246	263	-17.00	
2/6/2019	4,432,463	3,078	274	263	11.00	11.00
2/7/2019	4,339,948	3,014	268	263	5.00	5.00
2/8/2019	4,432,444	3,078	274	263	11.00	11.00
2/9/2019	4,098,265	2,846	253	263	-10.00	
2/10/2019	3,810,175	2,646	235	263	-28.00	
2/11/2019	4,280,023	2,972	264	263	1.00	1.00
2/12/2019	4,159,934	2,889	257	263	-6.00	
2/13/2019	4,032,738	2,801	249	263	-14.00	
2/14/2019	3,923,373	2,725	242	263	-21.00	
2/15/2019	3,932,868	2,731	243	263	-20.00	
2/16/2019	3,910,734	2,716	241	263	-22.00	
2/17/2019	3,742,375	2,599	231	263	-32.00	
2/18/2019	3,395,171	2,358	210	263	-53.00	
2/19/2019	3,583,329	2,488	221	263	-42.00	
2/20/2019	4,168,202	2,895	257	263	-6.00	
2/21/2019	3,958,742	2,749	244	263	-19.00	
2/22/2019	3,429,361	2,382	212	263	-51.00	
2/23/2019	4,000,154	2,778	247	263	-16.00	
2/24/2019	3,780,957	2,626	233	263	-30.00	
2/25/2019	3,732,684	2,592	230	263	-33.00	
2/26/2019	3,750,436	2,604	232	263	-31.00	
2/27/2019	3,981,696	2,765	246	263	-17.00	
2/28/2019	4,076,238	2,831	252	263	-11.00	
3/1/2019	3,915,557	2,719	242	263	-21.00	
3/2/2019	3,786,892	2,630	234	263	-29.00	
3/3/2019	3,586,403	2,491	221	263	-42.00	
3/4/2019	3,742,864	2,599	231	263	-32.00	
3/5/2019	3,916,463	2,720	242	263	-21.00	
3/6/2019	3,947,048	2,741	244	263	-19.00	
3/7/2019	3,879,833	2,694	239	263	-24.00	
3/8/2019	3,854,208	2,677	238	263	-25.00	

3/9/2019	3,801,427	2,640	235	263	-28.00	
3/10/2019	3,552,799	2,467	219	263	-44.00	
3/11/2019	3,579,510	2,486	221	263	-42.00	
3/12/2019	3,788,707	2,631	234	263	-29.00	
3/13/2019	3,790,344	2,632	234	263	-29.00	
3/14/2019	3,775,026	2,622	233	263	-30.00	
3/15/2019	3,724,189	2,586	230	263	-33.00	
3/16/2019	3,729,889	2,590	230	263	-33.00	
3/17/2019	3,750,065	2,604	231	263	-32.00	
3/18/2019	3,753,126	2,606	232	263	-31.00	
3/19/2019	3,780,085	2,625	233	263	-30.00	
3/20/2019	3,940,341	2,736	243	263	-20.00	
3/21/2019	4,187,237	2,908	258	263	-5.00	
3/22/2019	4,438,149	3,082	274	263	11.00	11.00
3/23/2019	4,497,674	3,123	278	263	15.00	15.00
3/24/2019	4,522,107	3,140	279	263	16.00	16.00
3/25/2019	4,513,744	3,135	279	263	16.00	16.00
3/26/2019	4,543,260	3,155	280	263	17.00	17.00
3/27/2019	4,592,466	3,189	283	263	20.00	20.00
3/28/2019	4,576,584	3,178	283	263	20.00	20.00
3/29/2019	4,535,015	3,149	280	263	17.00	17.00
3/30/2019	4,510,355	3,132	278	263	15.00	15.00
3/31/2019	4,510,784	3,132	278	263	15.00	15.00
4/1/2019	4,557,480	3,165	281	263	18.00	18.00
4/2/2019	4,550,434	3,160	281	263	18.00	18.00
4/3/2019	4,566,618	3,171	282	263	19.00	19.00
4/4/2019	4,586,255	3,185	283	263	20.00	20.00
4/5/2019	4,582,045	3,182	283	263	20.00	20.00
4/6/2019	4,585,710	3,185	283	263	20.00	20.00
4/7/2019	4,589,512	3,187	283	263	20.00	20.00
4/8/2019	4,615,065	3,205	285	263	22.00	22.00
4/9/2019	4,574,788	3,177	282	263	19.00	19.00
4/10/2019	4,568,219	3,172	282	263	19.00	19.00
4/11/2019	4,477,066	3,109	276	263	13.00	13.00
4/12/2019	4,456,786	3,095	275	263	12.00	12.00
4/13/2019	4,422,595	3,071	273	263	10.00	10.00
4/14/2019	4,435,498	3,080	274	263	11.00	11.00
4/15/2019	4,414,823	3,066	273	263	10.00	10.00
4/16/2019	4,401,724	3,057	272	263	9.00	9.00
4/17/2019	4,441,802	3,085	274	263	11.00	11.00
4/18/2019	4,372,804	3,037	270	263	7.00	7.00
4/19/2019	4,480,625	3,112	277	263	14.00	14.00
4/20/2019	5,130,953	3,563	317	263	54.00	54.00
4/21/2019	5,910,929	4,105	365	263	102.00	102.00
4/22/2019	5,652,841	3,926	349	263	86.00	86.00
4/23/2019	5,547,335	3,852	342	263	79.00	79.00
4/24/2019	5,562,679	3,863	343	263	80.00	80.00

4/25/2019	5,492,115	3,814	339	263	76.00	76.00
4/26/2019	5,580,646	3,875	344	263	81.00	81.00
4/27/2019	5,574,967	3,872	344	263	81.00	81.00
4/28/2019	5,481,177	3,806	338	263	75.00	75.00
4/29/2019	4,967,166	3,449	307	263	44.00	44.00
4/30/2019	5,913,987	4,107	365	263	102.00	102.00
5/1/2019	5,475,384	3,802	338	263	75.00	75.00
5/2/2019	4,933,682	3,426	305	263	42.00	42.00
5/3/2019	4,733,348	3,287	292	263	29.00	29.00
5/4/2019	4,738,681	3,291	293	263	30.00	30.00
5/5/2019	4,878,573	3,388	301	263	38.00	38.00
5/6/2019	4,991,695	3,466	308	263	45.00	45.00
5/7/2019	5,137,748	3,568	317	263	54.00	54.00
5/8/2019	5,432,163	3,772	335	263	72.00	72.00
5/9/2019	5,510,302	3,827	340	263	77.00	77.00
5/10/2019	5,418,215	3,763	334	263	71.00	71.00
5/11/2019	5,477,252	3,804	338	263	75.00	75.00
5/12/2019	5,710,280	3,965	352	263	89.00	89.00
5/13/2019	5,965,180	4,142	368	263	105.00	105.00
5/14/2019	6,157,559	4,276	380	263	117.00	117.00
5/15/2019	6,294,557	4,371	389	263	126.00	126.00
5/16/2019	6,374,000	4,426	393	263	130.00	130.00
5/17/2019	6,383,724	4,433	394	263	131.00	131.00
5/18/2019	6,384,821	4,434	394	263	131.00	131.00
5/19/2019	6,063,237	4,211	374	263	111.00	111.00
5/20/2019	5,879,080	4,083	363	263	100.00	100.00
5/21/2019	5,732,546	3,981	354	263	91.00	91.00
5/22/2019	5,614,329	3,899	347	263	84.00	84.00
5/23/2019	5,466,805	3,796	337	263	74.00	74.00
5/24/2019	5,417,036	3,762	334	263	71.00	71.00
5/25/2019	5,330,036	3,701	329	263	66.00	66.00
5/26/2019	5,316,592	3,692	328	263	65.00	65.00
5/27/2019	5,589,770	3,882	345	263	82.00	82.00
5/28/2019	5,726,467	3,977	353	263	90.00	90.00
5/29/2019	5,722,401	3,974	353	263	90.00	90.00
5/30/2019	5,677,814	3,943	350	263	87.00	87.00
5/31/2019	5,093,722	3,537	314	263	51.00	51.00
6/1/2019	4,735,297	3,288	292	263	29.00	29.00
6/2/2019	4,711,046	3,272	291	263	28.00	28.00
6/3/2019	4,733,539	3,287	292	263	29.00	29.00
6/4/2019	4,802,829	3,335	296	263	33.00	33.00
6/5/2019	4,572,296	3,175	282	263	19.00	19.00
6/6/2019	4,469,043	3,104	276	263	13.00	13.00
6/7/2019	4,505,329	3,129	278	263	15.00	15.00
6/8/2019	4,577,428	3,179	283	263	20.00	20.00
6/9/2019	4,464,676	3,100	276	263	13.00	13.00
6/10/2019	4,401,277	3,056	272	263	9.00	9.00

6/11/2019	4,361,393	3,029	269	263	6.00	6.00
6/12/2019	4,336,748	3,012	268	263	5.00	5.00
6/13/2019	4,237,069	2,942	262	263	-1.00	
6/14/2019	4,278,544	2,971	264	263	1.00	1.00
6/15/2019	4,222,579	2,932	261	263	-2.00	
6/16/2019	4,144,911	2,878	256	263	-7.00	
6/17/2019	4,120,128	2,861	254	263	-9.00	
6/18/2019	4,186,432	2,907	258	263	-5.00	
6/19/2019	4,265,685	2,962	263	263	0.00	
6/20/2019	4,209,581	2,923	260	263	-3.00	
6/21/2019	4,471,770	3,105	276	263	13.00	13.00
6/22/2019	4,588,135	3,186	283	263	20.00	20.00
6/23/2019	4,538,461	3,152	280	263	17.00	17.00
6/24/2019	4,514,861	3,135	279	263	16.00	16.00
6/25/2019	4,395,443	3,052	271	263	8.00	8.00
6/26/2019	4,348,730	3,020	268	263	5.00	5.00
6/27/2019	4,305,677	2,990	266	263	3.00	3.00
6/28/2019	4,168,644	2,895	257	263	-6.00	
6/29/2019	3,982,620	2,766	246	263	-17.00	
6/30/2019	3,794,702	2,635	234	263	-29.00	
7/1/2019	3,925,809	2,726	242	263	-21.00	
7/2/2019	3,968,819	2,756	245	263	-18.00	
7/3/2019	4,024,342	2,795	248	263	-15.00	
7/4/2019	4,161,635	2,890	257	263	-6.00	
7/5/2019	4,014,902	2,788	248	263	-15.00	
7/6/2019	3,930,672	2,730	243	263	-20.00	
7/7/2019	3,836,046	2,664	237	263	-26.00	
7/8/2019	3,852,636	2,675	238	263	-25.00	
7/9/2019	3,969,982	2,757	245	263	-18.00	
7/10/2019	3,976,864	2,762	245	263	-18.00	
7/11/2019	4,178,391	2,902	258	263	-5.00	
7/12/2019	4,281,495	2,973	264	263	1.00	1.00
7/13/2019	4,031,954	2,800	249	263	-14.00	
7/14/2019	3,925,158	2,726	242	263	-21.00	
7/15/2019	3,769,068	2,617	233	263	-30.00	
7/16/2019	3,944,867	2,739	244	263	-19.00	
7/17/2019	4,076,472	2,831	252	263	-11.00	
7/18/2019	4,213,232	2,926	260	263	-3.00	
7/19/2019	4,017,155	2,790	248	263	-15.00	
7/20/2019	3,839,205	2,666	237	263	-26.00	
7/21/2019	3,966,897	2,755	245	263	-18.00	
7/22/2019	4,231,771	2,939	261	263	-2.00	
7/23/2019	4,238,332	2,943	262	263	-1.00	
7/24/2019	4,333,971	3,010	268	263	5.00	5.00
7/25/2019	4,273,179	2,967	264	263	1.00	1.00
7/26/2019	4,158,346	2,888	257	263	-6.00	
7/27/2019	4,055,519	2,816	250	263	-13.00	

7/28/2019	4,035,905	2,803	249	263	-14.00	
7/29/2019	4,234,176	2,940	261	263	-2.00	
7/30/2019	4,244,394	2,947	262	263	-1.00	
7/31/2019	4,245,111	2,948	262	263	-1.00	
8/1/2019	4,244,394	2,947	262	263	-1.00	
8/2/2019	4,228,200	2,936	261	263	-2.00	
8/3/2019	3,922,229	2,724	242	263	-21.00	
8/4/2019	4,060,054	2,819	251	263	-12.00	
8/5/2019	4,202,018	2,918	259	263	-4.00	
8/6/2019	4,019,894	2,792	248	263	-15.00	
8/7/2019	4,009,578	2,784	248	263	-15.00	
8/8/2019	3,934,127	2,732	243	263	-20.00	
8/9/2019	3,666,199	2,546	226	263	-37.00	
8/10/2019	3,463,912	2,405	214	263	-49.00	
8/11/2019	3,665,395	2,545	226	263	-37.00	
8/12/2019	3,824,094	2,656	236	263	-27.00	
8/13/2019	3,817,120	2,651	236	263	-27.00	
8/14/2019	3,791,524	2,633	234	263	-29.00	
8/15/2019	3,807,854	2,644	235	263	-28.00	
8/16/2019	3,889,149	2,701	240	263	-23.00	
8/17/2019	3,861,860	2,682	238	263	-25.00	
8/18/2019	3,823,216	2,655	236	263	-27.00	
8/19/2019	3,879,105	2,694	239	263	-24.00	
8/20/2019	3,971,770	2,758	245	263	-18.00	
8/21/2019	3,991,386	2,772	246	263	-17.00	
8/22/2019	3,971,672	2,758	245	263	-18.00	
8/23/2019	4,137,356	2,873	255	263	-8.00	
8/24/2019	4,106,573	2,852	253	263	-10.00	
8/25/2019	4,154,637	2,885	256	263	-7.00	
8/26/2019	4,108,463	2,853	254	263	-9.00	
8/27/2019	4,155,745	2,886	257	263	-6.00	
8/28/2019	4,175,570	2,900	258	263	-5.00	
8/29/2019	4,219,117	2,930	260	263	-3.00	
8/30/2019	4,244,204	2,947	262	263	-1.00	
8/31/2019	4,198,670	2,916	259	263	-4.00	
9/1/2019	4,167,474	2,894	257	263	-6.00	
9/2/2019	4,179,740	2,903	258	263	-5.00	
9/3/2019	4,177,916	2,901	258	263	-5.00	
9/4/2019	4,144,272	2,878	256	263	-7.00	
9/5/2019	4,286,933	2,977	265	263	2.00	2.00
9/6/2019	4,276,666	2,970	264	263	1.00	1.00
9/7/2019	4,178,481	2,902	258	263	-5.00	
9/8/2019	4,073,383	2,829	251	263	-12.00	
9/9/2019	4,319,184	2,999	267	263	4.00	4.00
9/10/2019	4,049,551	2,812	250	263	-13.00	
9/11/2019	4,112,550	2,856	254	263	-9.00	
9/12/2019	4,133,369	2,870	255	263	-8.00	

9/13/2019	4,051,314	2,813	250	263	-13.00	
9/14/2019	4,229,790	2,937	261	263	-2.00	
9/15/2019	4,327,350	3,005	267	263	4.00	4.00
9/16/2019	4,292,723	2,981	265	263	2.00	2.00
9/17/2019	4,242,319	2,946	262	263	-1.00	
9/18/2019	4,236,071	2,942	261	263	-2.00	
9/19/2019	4,209,021	2,923	260	263	-3.00	
9/20/2019	4,307,716	2,991	266	263	3.00	3.00
9/21/2019	4,707,483	3,269	291	263	28.00	28.00
9/22/2019	4,593,763	3,190	284	263	21.00	21.00
9/23/2019	4,556,355	3,164	281	263	18.00	18.00
9/24/2019	4,473,636	3,107	276	263	13.00	13.00
9/25/2019	4,334,717	3,010	268	263	5.00	5.00
9/26/2019	4,292,549	2,981	265	263	2.00	2.00
9/27/2019	4,392,698	3,050	271	263	8.00	8.00
9/28/2019	4,379,759	3,041	270	263	7.00	7.00
9/29/2019	4,360,522	3,028	269	263	6.00	6.00
9/30/2019	4,310,030	2,993	266	263	3.00	3.00
10/1/2019	4,351,991	3,022	269	263	6.00	6.00
10/2/2019	4,286,051	2,976	265	263	2.00	2.00
10/3/2019	4,174,188	2,899	258	263	-5.00	
10/4/2019	4,293,670	2,982	265	263	2.00	2.00
10/5/2019	4,368,509	3,034	270	263	7.00	7.00
10/6/2019	4,297,709	2,985	265	263	2.00	2.00
10/7/2019	4,244,783	2,948	262	263	-1.00	
10/8/2019	4,231,196	2,938	261	263	-2.00	
10/9/2019	4,236,862	2,942	262	263	-1.00	
10/10/2019	4,138,589	2,874	255	263	-8.00	
10/11/2019	4,079,775	2,833	252	263	-11.00	
10/12/2019	4,262,939	2,960	263	263	0.00	
10/13/2019	4,396,980	3,053	271	263	8.00	8.00
10/14/2019	4,427,230	3,074	273	263	10.00	10.00
10/15/2019	4,328,488	3,006	267	263	4.00	4.00
10/16/2019	4,241,541	2,946	262	263	-1.00	
10/17/2019	4,271,285	2,966	264	263	1.00	1.00
10/18/2019	4,422,883	3,071	273	263	10.00	10.00
10/19/2019	4,278,185	2,971	264	263	1.00	1.00
10/20/2019	4,306,997	2,991	266	263	3.00	3.00
10/21/2019	4,173,100	2,898	258	263	-5.00	
10/22/2019	4,428,562	3,075	273	263	10.00	10.00
10/23/2019	4,329,923	3,007	267	263	4.00	4.00
10/24/2019	4,575,873	3,178	282	263	19.00	19.00
10/25/2019	4,825,190	3,351	298	263	35.00	35.00
10/26/2019	4,453,221	3,093	275	263	12.00	12.00
10/27/2019	4,403,023	3,058	272	263	9.00	9.00
10/28/2019	4,443,596	3,086	274	263	11.00	11.00
10/29/2019	3,987,436	2,769	246	263	-17.00	

10/30/2019	4,233,266	2,940	261	263	-2.00	
10/31/2019	4,418,357	3,068	273	263	10.00	10.00
11/1/2019	4,389,193	3,048	271	263	8.00	8.00
11/2/2019	4,453,723	3,093	275	263	12.00	12.00
11/3/2019	4,408,390	3,061	272	263	9.00	9.00
11/4/2019	4,363,649	3,030	269	263	6.00	6.00
11/5/2019	4,369,718	3,035	270	263	7.00	7.00
11/6/2019	4,336,463	3,011	268	263	5.00	5.00
11/7/2019	4,283,130	2,974	264	263	1.00	1.00
11/8/2019	4,349,782	3,021	269	263	6.00	6.00
11/9/2019	4,338,454	3,013	268	263	5.00	5.00
11/10/2019	4,370,960	3,035	270	263	7.00	7.00
11/11/2019	4,197,893	2,915	259	263	-4.00	
11/12/2019	4,461,908	3,099	275	263	12.00	12.00
11/13/2019	4,407,380	3,061	272	263	9.00	9.00
11/14/2019	4,409,098	3,062	272	263	9.00	9.00
11/15/2019	4,398,714	3,055	272	263	9.00	9.00
11/16/2019	4,402,310	3,057	272	263	9.00	9.00
11/17/2019	4,383,291	3,044	271	263	8.00	8.00
11/18/2019	4,416,011	3,067	273	263	10.00	10.00
11/19/2019	4,398,152	3,054	271	263	8.00	8.00
11/20/2019	4,456,307	3,095	275	263	12.00	12.00
11/21/2019	4,471,092	3,105	276	263	13.00	13.00
11/22/2019	4,414,056	3,065	272	263	9.00	9.00
11/23/2019	4,464,971	3,101	276	263	13.00	13.00
11/24/2019	4,431,601	3,078	274	263	11.00	11.00
11/25/2019	4,416,513	3,067	273	263	10.00	10.00
11/26/2019	4,330,097	3,007	267	263	4.00	4.00
11/27/2019	4,223,688	2,933	261	263	-2.00	
11/28/2019	4,378,844	3,041	270	263	7.00	7.00
11/29/2019	4,046,495	2,810	250	263	-13.00	
11/30/2019	4,391,854	3,050	271	263	8.00	8.00
12/1/2019	4,383,724	3,044	271	263	8.00	8.00
12/2/2019	4,451,401	3,091	275	263	12.00	12.00
12/3/2019	4,391,436	3,050	271	263	8.00	8.00
12/4/2019	4,392,351	3,050	271	263	8.00	8.00
12/5/2019	4,370,798	3,035	270	263	7.00	7.00
12/6/2019	4,392,377	3,050	271	263	8.00	8.00
12/7/2019	4,386,904	3,046	271	263	8.00	8.00
12/8/2019	4,421,683	3,071	273	263	10.00	10.00
12/9/2019	4,396,830	3,053	271	263	8.00	8.00
12/10/2019	4,408,900	3,062	272	263	9.00	9.00
12/11/2019	4,391,887	3,050	271	263	8.00	8.00
12/12/2019	4,387,727	3,047	271	263	8.00	8.00
12/13/2019	4,423,239	3,072	273	263	10.00	10.00
12/14/2019	4,356,258	3,025	269	263	6.00	6.00
12/15/2019	4,416,566	3,067	273	263	10.00	10.00

12/16/2019	3,613,435	2,509	223	263	-40.00			
12/17/2019	4,229,773	2,937	261	263	-2.00			
12/18/2019	4,449,395	3,090	275	263	12.00	12.00		
12/19/2019	4,487,891	3,117	277	263	14.00	14.00		
12/20/2019	4,429,810	3,076	273	263	10.00	10.00		
12/21/2019	4,406,303	3,060	272	263	9.00	9.00		
12/22/2019	4,542,799	3,155	280	263	17.00	17.00		
12/23/2019	4,606,685	3,199	284	263	21.00	21.00		
12/24/2019	4,647,286	3,227	287	263	24.00	24.00		
12/25/2019	4,500,327	3,125	278	263	15.00	15.00		
12/26/2019	4,380,737	3,042	270	263	7.00	7.00		
12/27/2019	2,491,838	1,730	154	263	-109.00			
12/28/2019	4,408,628	3,062	272	263	9.00	9.00		
12/29/2019	4,239,815	2,944	262	263	-1.00			
12/30/2019	4,390,239	3,049	271	263	8.00	8.00		
12/31/2019	4,542,730	3,155	280	263	17.00	17.00	5095.00	254.75
1/1/2020	4,541,729	3,154	280	263	17.00	17.00		
1/2/2020	4,466,659	3,102	276	263	13.00	13.00		
1/3/2020	4,444,124	3,086	274	263	11.00	11.00		
1/4/2020	4,435,279	3,080	274	263	11.00	11.00		
1/5/2020	4,245,068	2,948	262	263	-1.00			
1/6/2020	4,440,475	3,084	274	263	11.00	11.00		
1/7/2020	4,418,882	3,069	273	263	10.00	10.00		
1/8/2020	4,405,593	3,059	272	263	9.00	9.00		
1/9/2020	4,415,455	3,066	273	263	10.00	10.00		
1/10/2020	3,836,313	2,664	237	263	-26.00			
1/11/2020	4,453,156	3,092	275	263	12.00	12.00		
1/12/2020	4,362,677	3,030	269	263	6.00	6.00		
1/13/2020	4,315,202	2,997	266	263	3.00	3.00		
1/14/2020	4,119,302	2,861	254	263	-9.00			
1/15/2020	2,846,414	1,977	176	263	-87.00			
1/16/2020	4,039,273	2,805	249	263	-14.00			
1/17/2020	4,441,272	3,084	274	263	11.00	11.00		
1/18/2020	4,362,454	3,029	269	263	6.00	6.00		
1/19/2020	4,356,372	3,025	269	263	6.00	6.00		
1/20/2020	3,906,233	2,713	241	263	-22.00			
1/21/2020	4,364,356	3,031	269	263	6.00	6.00		
1/22/2020	4,372,141	3,036	270	263	7.00	7.00		
1/23/2020	4,386,430	3,046	271	263	8.00	8.00		
1/24/2020	4,399,403	3,055	272	263	9.00	9.00		
1/25/2020	4,388,340	3,047	271	263	8.00	8.00		
1/26/2020	4,362,163	3,029	269	263	6.00	6.00		
1/27/2020	4,398,444	3,054	272	263	9.00	9.00		
1/28/2020	4,117,573	2,859	254	263	-9.00			
1/29/2020	4,363,994	3,031	269	263	6.00	6.00		
1/30/2020	4,344,539	3,017	268	263	5.00	5.00		
1/31/2020	4,226,572	2,935	261	263	-2.00			

2/1/2020	4,328,700	3,006	267	263	4.00	4.00
2/2/2020	4,320,923	3,001	267	263	4.00	4.00
2/3/2020	3,891,911	2,703	240	263	-23.00	
2/4/2020	3,132,821	2,176	193	263	-70.00	
2/5/2020	4,507,935	3,131	278	263	15.00	15.00
2/6/2020	4,476,253	3,109	276	263	13.00	13.00
2/7/2020	4,527,557	3,144	279	263	16.00	16.00
2/8/2020	4,524,225	3,142	279	263	16.00	16.00
2/9/2020	4,256,605	2,956	263	263	0.00	
2/10/2020	4,489,266	3,118	277	263	14.00	14.00
2/11/2020	3,182,309	2,210	196	263	-67.00	
2/12/2020	4,645,412	3,226	287	263	24.00	24.00
2/13/2020	4,521,642	3,140	279	263	16.00	16.00
2/14/2020	4,492,767	3,120	277	263	14.00	14.00
2/15/2020	4,304,619	2,989	266	263	3.00	3.00
2/16/2020	4,399,130	3,055	272	263	9.00	9.00
2/17/2020	4,306,148	2,990	266	263	3.00	3.00
2/18/2020	4,039,128	2,805	249	263	-14.00	
2/19/2020	3,802,118	2,640	235	263	-28.00	
2/20/2020	2,919,019	2,027	180	263	-83.00	
2/21/2020	4,422,923	3,071	273	263	10.00	10.00
2/22/2020	4,643,020	3,224	287	263	24.00	24.00
2/23/2020	4,491,215	3,119	277	263	14.00	14.00
2/24/2020	4,441,877	3,085	274	263	11.00	11.00
2/25/2020	4,426,785	3,074	273	263	10.00	10.00
2/26/2020	4,251,865	2,953	262	263	-1.00	
2/27/2020	4,266,698	2,963	263	263	0.00	
2/28/2020	4,165,023	2,892	257	263	-6.00	
2/29/2020	4,312,424	2,995	266	263	3.00	3.00
3/1/2020	4,271,532	2,966	264	263	1.00	1.00
3/2/2020	3,537,567	2,457	218	263	-45.00	
3/3/2020	4,354,845	3,024	269	263	6.00	6.00
3/4/2020	4,186,829	2,908	258	263	-5.00	
3/5/2020	4,322,671	3,002	267	263	4.00	4.00
3/6/2020	4,715,147	3,274	291	263	28.00	28.00
3/7/2020	4,831,398	3,355	298	263	35.00	35.00
3/8/2020	4,868,490	3,381	301	263	38.00	38.00
3/9/2020	4,883,719	3,391	301	263	38.00	38.00
3/10/2020	4,850,854	3,369	299	263	36.00	36.00
3/11/2020	4,863,857	3,378	300	263	37.00	37.00
3/12/2020	4,870,559	3,382	301	263	38.00	38.00
3/13/2020	4,434,856	3,080	274	263	11.00	11.00
3/14/2020	4,586,218	3,185	283	263	20.00	20.00
3/15/2020	3,542,382	2,460	219	263	-44.00	
3/16/2020	4,730,044	3,285	292	263	29.00	29.00
3/17/2020	4,852,669	3,370	300	263	37.00	37.00
3/18/2020	4,968,939	3,451	307	263	44.00	44.00

3/19/2020	4,856,405	3,373	300	263	37.00	37.00
3/20/2020	4,769,988	3,312	294	263	31.00	31.00
3/21/2020	4,802,879	3,335	296	263	33.00	33.00
3/22/2020	4,812,955	3,342	297	263	34.00	34.00
3/23/2020	4,826,087	3,351	298	263	35.00	35.00
3/24/2020	4,816,739	3,345	297	263	34.00	34.00
3/25/2020	4,841,570	3,362	299	263	36.00	36.00
3/26/2020	4,805,875	3,337	297	263	34.00	34.00
3/27/2020	4,577,190	3,179	283	263	20.00	20.00
3/28/2020	4,795,653	3,330	296	263	33.00	33.00
3/29/2020	4,802,426	3,335	296	263	33.00	33.00
3/30/2020	4,820,249	3,347	298	263	35.00	35.00
3/31/2020	4,849,565	3,368	299	263	36.00	36.00
4/1/2020	4,856,425	3,373	300	263	37.00	37.00
4/2/2020	4,684,926	3,253	289	263	26.00	26.00
4/3/2020	4,269,742	2,965	264	263	1.00	1.00
4/4/2020	4,644,900	3,226	287	263	24.00	24.00
4/5/2020	4,867,079	3,380	300	263	37.00	37.00
4/6/2020	4,862,435	3,377	300	263	37.00	37.00
4/7/2020	4,880,564	3,389	301	263	38.00	38.00
4/8/2020	4,900,540	3,403	303	263	40.00	40.00
4/9/2020	4,939,137	3,430	305	263	42.00	42.00
4/10/2020	4,965,192	3,448	306	263	43.00	43.00
4/11/2020	5,044,500	3,503	311	263	48.00	48.00
4/12/2020	5,012,509	3,481	309	263	46.00	46.00
4/13/2020	4,694,806	3,260	290	263	27.00	27.00
4/14/2020	4,874,289	3,385	301	263	38.00	38.00
4/15/2020	4,982,769	3,460	308	263	45.00	45.00
4/16/2020	4,991,079	3,466	308	263	45.00	45.00
4/17/2020	4,895,722	3,400	302	263	39.00	39.00
4/18/2020	4,822,426	3,349	298	263	35.00	35.00
4/19/2020	4,621,264	3,209	285	263	22.00	22.00
4/20/2020	4,460,813	3,098	275	263	12.00	12.00
4/21/2020	4,390,091	3,049	271	263	8.00	8.00
4/22/2020	4,380,303	3,042	270	263	7.00	7.00
4/23/2020	4,541,282	3,154	280	263	17.00	17.00
4/24/2020	4,650,878	3,230	287	263	24.00	24.00
4/25/2020	4,801,235	3,334	296	263	33.00	33.00
4/26/2020	5,427,471	3,769	335	263	72.00	72.00
4/27/2020	5,458,811	3,791	337	263	74.00	74.00
4/28/2020	5,538,462	3,846	342	263	79.00	79.00
4/29/2020	5,529,812	3,840	341	263	78.00	78.00
4/30/2020	5,633,105	3,912	348	263	85.00	85.00
5/1/2020	5,388,420	3,742	333	263	70.00	70.00
5/2/2020	4,890,718	3,396	302	263	39.00	39.00
5/3/2020	4,741,780	3,293	293	263	30.00	30.00
5/4/2020	4,560,198	3,167	281	263	18.00	18.00

5/5/2020	4,382,218	3,043	271	263	8.00	8.00
5/6/2020	4,554,604	3,163	281	263	18.00	18.00
5/7/2020	4,706,858	3,269	291	263	28.00	28.00
5/8/2020	4,518,441	3,138	279	263	16.00	16.00
5/9/2020	4,361,779	3,029	269	263	6.00	6.00
5/10/2020	4,334,109	3,010	268	263	5.00	5.00
5/11/2020	4,215,631	2,928	260	263	-3.00	
5/12/2020	4,161,563	2,890	257	263	-6.00	
5/13/2020	4,197,021	2,915	259	263	-4.00	
5/14/2020	4,188,819	2,909	259	263	-4.00	
5/15/2020	4,314,795	2,996	266	263	3.00	3.00
5/16/2020	4,312,077	2,994	266	263	3.00	3.00
5/17/2020	4,438,192	3,082	274	263	11.00	11.00
5/18/2020	4,612,246	3,203	285	263	22.00	22.00
5/19/2020	4,848,115	3,367	299	263	36.00	36.00
5/20/2020	4,930,021	3,424	304	263	41.00	41.00
5/21/2020	4,725,038	3,281	292	263	29.00	29.00
5/22/2020	4,705,123	3,267	290	263	27.00	27.00
5/23/2020	4,818,158	3,346	297	263	34.00	34.00
5/24/2020	4,759,333	3,305	294	263	31.00	31.00
5/25/2020	4,802,982	3,335	296	263	33.00	33.00
5/26/2020	4,654,971	3,233	287	263	24.00	24.00
5/27/2020	4,727,980	3,283	292	263	29.00	29.00
5/28/2020	4,968,156	3,450	307	263	44.00	44.00
5/29/2020	5,200,173	3,611	321	263	58.00	58.00
5/30/2020	5,445,509	3,782	336	263	73.00	73.00
5/31/2020	5,424,583	3,767	335	263	72.00	72.00
6/1/2020	5,024,452	3,489	310	263	47.00	47.00
6/2/2020	4,823,687	3,350	298	263	35.00	35.00
6/3/2020	4,752,366	3,300	293	263	30.00	30.00
6/4/2020	4,600,341	3,195	284	263	21.00	21.00
6/5/2020	4,387,455	3,047	271	263	8.00	8.00
6/6/2020	4,617,000	3,206	285	263	22.00	22.00
6/7/2020	4,617,000	3,206	285	263	22.00	22.00
6/8/2020	4,629,600	3,215	286	263	23.00	23.00
6/9/2020	4,611,270	3,202	285	263	22.00	22.00
6/10/2020	4,737,021	3,290	292	263	29.00	29.00
6/11/2020	4,906,001	3,407	303	263	40.00	40.00
6/12/2020	4,846,937	3,366	299	263	36.00	36.00
6/13/2020	4,736,768	3,289	292	263	29.00	29.00
6/14/2020	4,624,530	3,211	285	263	22.00	22.00
6/15/2020	4,591,907	3,189	283	263	20.00	20.00
6/16/2020	4,585,866	3,185	283	263	20.00	20.00
6/17/2020	4,725,983	3,282	292	263	29.00	29.00
6/18/2020	4,558,457	3,166	281	263	18.00	18.00
6/19/2020	4,345,504	3,018	268	263	5.00	5.00
6/20/2020	4,178,470	2,902	258	263	-5.00	

6/21/2020	4,060,689	2,820	251	263	-12.00	
6/22/2020	3,896,032	2,706	240	263	-23.00	
6/23/2020	3,997,287	2,776	247	263	-16.00	
6/24/2020	3,823,508	2,655	236	263	-27.00	
6/25/2020	3,402,524	2,363	210	263	-53.00	
6/26/2020	3,151,072	2,188	195	263	-68.00	
6/27/2020	2,946,990	2,047	182	263	-81.00	
6/28/2020	2,673,552	1,857	165	263	-98.00	
6/29/2020	3,140,375	2,181	194	263	-69.00	
6/30/2020	3,646,419	2,532	225	263	-38.00	
7/1/2020	3,885,083	2,698	240	263	-23.00	
7/2/2020	3,818,221	2,652	236	263	-27.00	
7/3/2020	4,137,037	2,873	255	263	-8.00	
7/4/2020	4,306,350	2,991	266	263	3.00	3.00
7/5/2020	4,221,262	2,931	261	263	-2.00	
7/6/2020	4,178,920	2,902	258	263	-5.00	
7/7/2020	4,167,186	2,894	257	263	-6.00	
7/8/2020	4,141,994	2,876	256	263	-7.00	
7/9/2020	4,204,178	2,920	260	263	-3.00	
7/10/2020	4,403,435	3,058	272	263	9.00	9.00
7/11/2020	4,105,538	2,851	253	263	-10.00	
7/12/2020	4,000,076	2,778	247	263	-16.00	
7/13/2020	3,962,795	2,752	245	263	-18.00	
7/14/2020	3,946,210	2,740	244	263	-19.00	
7/15/2020	4,001,973	2,779	247	263	-16.00	
7/16/2020	4,045,987	2,810	250	263	-13.00	
7/17/2020	4,068,201	2,825	251	263	-12.00	
7/18/2020	3,943,673	2,739	243	263	-20.00	
7/19/2020	4,012,181	2,786	248	263	-15.00	
7/20/2020	4,032,539	2,800	249	263	-14.00	
7/21/2020	4,129,304	2,868	255	263	-8.00	
7/22/2020	3,959,249	2,749	244	263	-19.00	
7/23/2020	4,019,622	2,791	248	263	-15.00	
7/24/2020	4,061,925	2,821	251	263	-12.00	
7/25/2020	4,017,662	2,790	248	263	-15.00	
7/26/2020	4,036,198	2,803	249	263	-14.00	
7/27/2020	4,063,527	2,822	251	263	-12.00	
7/28/2020	4,133,354	2,870	255	263	-8.00	
7/29/2020	4,115,779	2,858	254	263	-9.00	
7/30/2020	4,106,732	2,852	254	263	-9.00	
7/31/2020	4,127,807	2,867	255	263	-8.00	
8/1/2020	4,076,339	2,831	252	263	-11.00	
8/2/2020	4,067,661	2,825	251	263	-12.00	
8/3/2020	4,108,826	2,853	254	263	-9.00	
8/4/2020	4,071,814	2,828	251	263	-12.00	
8/5/2020	4,086,409	2,838	252	263	-11.00	
8/6/2020	4,089,928	2,840	252	263	-11.00	

8/7/2020	4,092,850	2,842	253	263	-10.00
8/8/2020	3,981,798	2,765	246	263	-17.00
8/9/2020	3,994,273	2,774	247	263	-16.00
8/10/2020	3,992,530	2,773	246	263	-17.00
8/11/2020	4,007,136	2,783	247	263	-16.00
8/12/2020	4,060,522	2,820	251	263	-12.00
8/13/2020	3,957,318	2,748	244	263	-19.00
8/14/2020	3,883,173	2,697	240	263	-23.00
8/15/2020	3,871,858	2,689	239	263	-24.00
8/16/2020	3,958,554	2,749	244	263	-19.00
8/17/2020	3,996,883	2,776	247	263	-16.00
8/18/2020	3,887,945	2,700	240	263	-23.00
8/19/2020	3,936,824	2,734	243	263	-20.00
8/20/2020	3,917,264	2,720	242	263	-21.00
8/21/2020	3,902,188	2,710	241	263	-22.00
8/22/2020	3,837,972	2,665	237	263	-26.00
8/23/2020	3,834,010	2,663	237	263	-26.00
8/24/2020	3,863,109	2,683	238	263	-25.00
8/25/2020	3,825,248	2,656	236	263	-27.00
8/26/2020	3,800,170	2,639	235	263	-28.00
8/27/2020	3,733,290	2,593	230	263	-33.00
8/28/2020	3,720,694	2,584	230	263	-33.00
8/29/2020	3,655,819	2,539	226	263	-37.00
8/30/2020	3,642,183	2,529	225	263	-38.00
8/31/2020	3,643,293	2,530	225	263	-38.00
9/1/2020	3,604,347	2,503	222	263	-41.00
9/2/2020	3,716,164	2,581	229	263	-34.00
9/3/2020	3,755,551	2,608	232	263	-31.00
9/4/2020	3,760,035	2,611	232	263	-31.00
9/5/2020	3,803,604	2,641	235	263	-28.00
9/6/2020	3,728,483	2,589	230	263	-33.00
9/7/2020	3,638,265	2,527	225	263	-38.00
9/8/2020	3,587,433	2,491	221	263	-42.00
9/9/2020	3,528,010	2,450	218	263	-45.00
9/10/2020	3,578,976	2,485	221	263	-42.00
9/11/2020	3,554,358	2,468	219	263	-44.00
9/12/2020	3,498,640	2,430	216	263	-47.00
9/13/2020	3,615,735	2,511	223	263	-40.00
9/14/2020	3,759,104	2,610	232	263	-31.00
9/15/2020	3,794,083	2,635	234	263	-29.00
9/16/2020	3,872,367	2,689	239	263	-24.00
9/17/2020	3,819,593	2,652	236	263	-27.00
9/18/2020	3,742,009	2,599	231	263	-32.00
9/19/2020	3,756,445	2,609	232	263	-31.00
9/20/2020	3,776,116	2,622	233	263	-30.00
9/21/2020	3,851,266	2,674	238	263	-25.00
9/22/2020	3,856,500	2,678	238	263	-25.00

9/23/2020	3,986,556	2,768	246	263	-17.00	
9/24/2020	4,056,283	2,817	250	263	-13.00	
9/25/2020	3,949,417	2,743	244	263	-19.00	
9/26/2020	3,889,250	2,701	240	263	-23.00	
9/27/2020	3,945,339	2,740	244	263	-19.00	
9/28/2020	3,844,407	2,670	237	263	-26.00	
9/29/2020	3,766,225	2,615	232	263	-31.00	
9/30/2020	3,727,069	2,588	230	263	-33.00	
10/1/2020	3,691,577	2,564	228	263	-35.00	
10/2/2020	3,813,230	2,648	235	263	-28.00	
10/3/2020	3,919,170	2,722	242	263	-21.00	
10/4/2020	3,897,434	2,707	241	263	-22.00	
10/5/2020	3,860,676	2,681	238	263	-25.00	
10/6/2020	3,839,918	2,667	237	263	-26.00	
10/7/2020	3,839,119	2,666	237	263	-26.00	
10/8/2020	3,781,318	2,626	233	263	-30.00	
10/9/2020	3,741,291	2,598	231	263	-32.00	
10/10/2020	3,768,041	2,617	233	263	-30.00	
10/11/2020	3,893,982	2,704	240	263	-23.00	
10/12/2020	3,822,612	2,655	236	263	-27.00	
10/13/2020	3,758,518	2,610	232	263	-31.00	
10/14/2020	3,752,655	2,606	232	263	-31.00	
10/15/2020	3,919,594	2,722	242	263	-21.00	
10/16/2020	4,314,345	2,996	266	263	3.00	3.00
10/17/2020	4,372,788	3,037	270	263	7.00	7.00
10/18/2020	4,311,243	2,994	266	263	3.00	3.00
10/19/2020	4,348,878	3,020	268	263	5.00	5.00
10/20/2020	4,318,111	2,999	267	263	4.00	4.00
10/21/2020	4,387,946	3,047	271	263	8.00	8.00
10/22/2020	4,415,612	3,066	273	263	10.00	10.00
10/23/2020	4,310,491	2,993	266	263	3.00	3.00
10/24/2020	4,440,424	3,084	274	263	11.00	11.00
10/25/2020	3,912,098	2,717	241	263	-22.00	
10/26/2020	4,033,645	2,801	249	263	-14.00	
10/27/2020	4,235,400	2,941	261	263	-2.00	
10/28/2020	4,227,856	2,936	261	263	-2.00	
10/29/2020	4,273,180	2,967	264	263	1.00	1.00
10/30/2020	4,233,449	2,940	261	263	-2.00	
10/31/2020	4,206,325	2,921	260	263	-3.00	
11/1/2020	4,204,198	2,920	260	263	-3.00	
11/2/2020	4,237,030	2,942	262	263	-1.00	
11/3/2020	4,238,463	2,943	262	263	-1.00	
11/4/2020	4,190,819	2,910	259	263	-4.00	
11/5/2020	4,134,248	2,871	255	263	-8.00	
11/6/2020	4,239,326	2,944	262	263	-1.00	
11/7/2020	4,278,465	2,971	264	263	1.00	1.00
11/8/2020	4,166,882	2,894	257	263	-6.00	

11/9/2020	4,008,422	2,784	247	263	-16.00	
11/10/2020	3,997,589	2,776	247	263	-16.00	
11/11/2020	4,270,070	2,965	264	263	1.00	1.00
11/12/2020	4,224,132	2,933	261	263	-2.00	
11/13/2020	4,235,133	2,941	261	263	-2.00	
11/14/2020	4,188,350	2,909	259	263	-4.00	
11/15/2020	4,165,973	2,893	257	263	-6.00	
11/16/2020	4,254,065	2,954	263	263	0.00	
11/17/2020	4,293,283	2,981	265	263	2.00	2.00
11/18/2020	4,326,339	3,004	267	263	4.00	4.00
11/19/2020	4,345,044	3,017	268	263	5.00	5.00
11/20/2020	4,257,905	2,957	263	263	0.00	
11/21/2020	3,704,286	2,572	229	263	-34.00	
11/22/2020	3,451,442	2,397	213	263	-50.00	
11/23/2020	4,142,393	2,877	256	263	-7.00	
11/24/2020	4,342,944	3,016	268	263	5.00	5.00
11/25/2020	4,348,171	3,020	268	263	5.00	5.00
11/26/2020	4,331,793	3,008	267	263	4.00	4.00
11/27/2020	4,101,185	2,848	253	263	-10.00	
11/28/2020	4,000,576	2,778	247	263	-16.00	
11/29/2020	3,943,100	2,738	243	263	-20.00	
11/30/2020	3,650,939	2,535	225	263	-38.00	
12/1/2020	4,323,787	3,003	267	263	4.00	4.00
12/2/2020	3,727,678	2,589	230	263	-33.00	
12/3/2020	4,013,775	2,787	248	263	-15.00	
12/4/2020	4,206,795	2,921	260	263	-3.00	
12/5/2020	4,107,571	2,852	254	263	-9.00	
12/6/2020	4,224,373	2,934	261	263	-2.00	
12/7/2020	4,239,563	2,944	262	263	-1.00	
12/8/2020	4,330,968	3,008	267	263	4.00	4.00
12/9/2020	4,347,104	3,019	268	263	5.00	5.00
12/10/2020	4,273,698	2,968	264	263	1.00	1.00
12/11/2020	3,859,586	2,680	238	263	-25.00	
12/12/2020	4,282,885	2,974	264	263	1.00	1.00
12/13/2020	3,897,892	2,707	241	263	-22.00	
12/14/2020	4,349,573	3,021	268	263	5.00	5.00
12/15/2020	4,215,323	2,927	260	263	-3.00	
12/16/2020	4,284,680	2,975	264	263	1.00	1.00
12/17/2020	4,266,495	2,963	263	263	0.00	
12/18/2020	4,234,764	2,941	261	263	-2.00	
12/19/2020	4,253,788	2,954	263	263	0.00	
12/20/2020	4,233,963	2,940	261	263	-2.00	
12/21/2020	4,225,851	2,935	261	263	-2.00	
12/22/2020	4,237,962	2,943	262	263	-1.00	
12/23/2020	4,093,195	2,842	253	263	-10.00	
12/24/2020	3,124,684	2,170	193	263	-70.00	
12/25/2020	4,280,791	2,973	264	263	1.00	1.00

12/26/2020	4,302,491	2,988	266	263	3.00	3.00		
12/27/2020	4,205,745	2,921	260	263	-3.00			
12/28/2020	2,451,524	1,702	151	263	-112.00			
12/29/2020	3,798,678	2,638	234	263	-29.00			
12/30/2020	4,388,829	3,048	271	263	8.00	8.00		
12/31/2020	4,351,401	3,022	269	263	6.00	6.00	3817.00	190.85
1/1/2021	4,361,060	3,029	269	263	6.00	6.00		
1/2/2021	4,345,410	3,018	268	263	5.00	5.00		
1/3/2021	4,344,337	3,017	268	263	5.00	5.00		
1/4/2021	4,160,467	2,889	257	263	-6.00			
1/5/2021	4,298,366	2,985	265	263	2.00	2.00		
1/6/2021	4,164,617	2,892	257	263	-6.00			
1/7/2021	4,205,437	2,920	260	263	-3.00			
1/8/2021	4,235,036	2,941	261	263	-2.00			
1/9/2021	3,384,121	2,350	209	263	-54.00			
1/10/2021	3,178,125	2,207	196	263	-67.00			
1/11/2021	4,403,886	3,058	272	263	9.00	9.00		
1/12/2021	4,419,260	3,069	273	263	10.00	10.00		
1/13/2021	4,283,371	2,975	264	263	1.00	1.00		
1/14/2021	3,995,343	2,775	247	263	-16.00			
1/15/2021	3,209,703	2,229	198	263	-65.00			
1/16/2021	4,271,229	2,966	264	263	1.00	1.00		
1/17/2021	4,230,447	2,938	261	263	-2.00			
1/18/2021	4,219,232	2,930	260	263	-3.00			
1/19/2021	3,665,420	2,545	226	263	-37.00			
1/20/2021	3,973,699	2,760	245	263	-18.00			
1/21/2021	4,256,172	2,956	263	263	0.00			
1/22/2021	4,233,307	2,940	261	263	-2.00			
1/23/2021	4,132,704	2,870	255	263	-8.00			
1/24/2021	2,450,243	1,702	151	263	-112.00			
1/25/2021	3,799,374	2,638	235	263	-28.00			
1/26/2021	3,422,242	2,377	211	263	-52.00			
1/27/2021	3,965,951	2,754	245	263	-18.00			
1/28/2021	4,465,632	3,101	276	263	13.00	13.00		
1/29/2021	4,232,068	2,939	261	263	-2.00			
1/30/2021	3,873,481	2,690	239	263	-24.00			
1/31/2021	3,541,158	2,459	219	263	-44.00			
2/1/2021	3,805,632	2,643	235	263	-28.00			
2/2/2021	3,855,464	2,677	238	263	-25.00			
2/3/2021	3,797,708	2,637	234	263	-29.00			
2/4/2021	3,938,286	2,735	243	263	-20.00			
2/5/2021	3,878,272	2,693	239	263	-24.00			
2/6/2021	3,839,584	2,666	237	263	-26.00			
2/7/2021	3,199,079	2,222	197	263	-66.00			
2/8/2021	4,029,341	2,798	249	263	-14.00			
2/9/2021	3,628,780	2,520	224	263	-39.00			
2/10/2021	3,625,856	2,518	224	263	-39.00			

2/11/2021	3,985,702	2,768	246	263	-17.00	
2/12/2021	3,983,055	2,766	246	263	-17.00	
2/13/2021	4,664,469	3,239	288	263	25.00	25.00
2/14/2021	4,112,979	2,856	254	263	-9.00	
2/15/2021	4,186,945	2,908	258	263	-5.00	
2/16/2021	4,106,886	2,852	254	263	-9.00	
2/17/2021	3,980,173	2,764	246	263	-17.00	
2/18/2021	4,050,181	2,813	250	263	-13.00	
2/19/2021	3,887,071	2,699	240	263	-23.00	
2/20/2021	3,755,684	2,608	232	263	-31.00	
2/21/2021	3,707,254	2,574	229	263	-34.00	
2/22/2021	3,688,313	2,561	228	263	-35.00	
2/23/2021	3,665,784	2,546	226	263	-37.00	
2/24/2021	3,757,305	2,609	232	263	-31.00	
2/25/2021	2,930,092	2,035	181	263	-82.00	
2/26/2021	3,905,928	2,712	241	263	-22.00	
2/27/2021	3,738,047	2,596	231	263	-32.00	
2/28/2021	3,523,708	2,447	218	263	-45.00	
3/1/2021	3,750,913	2,605	232	263	-31.00	
3/2/2021	3,661,247	2,543	226	263	-37.00	
3/3/2021	3,790,906	2,633	234	263	-29.00	
3/4/2021	3,681,139	2,556	227	263	-36.00	
3/5/2021	3,677,927	2,554	227	263	-36.00	
3/6/2021	3,674,327	2,552	227	263	-36.00	
3/7/2021	3,708,917	2,576	229	263	-34.00	
3/8/2021	3,742,306	2,599	231	263	-32.00	
3/9/2021	3,791,051	2,633	234	263	-29.00	
3/10/2021	3,703,084	2,572	229	263	-34.00	
3/11/2021	3,479,080	2,416	215	263	-48.00	
3/12/2021	3,317,974	2,304	205	263	-58.00	
3/13/2021	3,643,733	2,530	225	263	-38.00	
3/14/2021	3,711,286	2,577	229	263	-34.00	
3/15/2021	3,773,387	2,620	233	263	-30.00	
3/16/2021	4,207,628	2,922	260	263	-3.00	
3/17/2021	4,183,086	2,905	258	263	-5.00	
3/18/2021	4,239,713	2,944	262	263	-1.00	
3/19/2021	4,308,784	2,992	266	263	3.00	3.00
3/20/2021	4,379,490	3,041	270	263	7.00	7.00
3/21/2021	4,331,341	3,008	267	263	4.00	4.00
3/22/2021	4,311,208	2,994	266	263	3.00	3.00
3/23/2021	4,292,427	2,981	265	263	2.00	2.00
3/24/2021	3,951,098	2,744	244	263	-19.00	
3/25/2021	4,276,739	2,970	264	263	1.00	1.00
3/26/2021	4,268,379	2,964	263	263	0.00	
3/27/2021	4,170,657	2,896	257	263	-6.00	
3/28/2021	4,202,299	2,918	259	263	-4.00	
3/29/2021	4,310,128	2,993	266	263	3.00	3.00

3/30/2021	4,265,428	2,962	263	263	0.00	
3/31/2021	3,811,226	2,647	235	263	-28.00	
4/1/2021	4,223,142	2,933	261	263	-2.00	
4/2/2021	4,331,467	3,008	267	263	4.00	4.00
4/3/2021	4,387,169	3,047	271	263	8.00	8.00
4/4/2021	4,471,958	3,106	276	263	13.00	13.00
4/5/2021	4,564,873	3,170	282	263	19.00	19.00
4/6/2021	4,498,871	3,124	278	263	15.00	15.00
4/7/2021	4,463,353	3,100	276	263	13.00	13.00
4/8/2021	4,441,326	3,084	274	263	11.00	11.00
4/9/2021	4,381,322	3,043	270	263	7.00	7.00
4/10/2021	4,422,117	3,071	273	263	10.00	10.00
4/11/2021	4,459,266	3,097	275	263	12.00	12.00
4/12/2021	4,464,274	3,100	276	263	13.00	13.00
4/13/2021	4,443,183	3,086	274	263	11.00	11.00
4/14/2021	4,160,430	2,889	257	263	-6.00	
4/15/2021	3,967,646	2,755	245	263	-18.00	
4/16/2021	4,098,107	2,846	253	263	-10.00	
4/17/2021	4,212,911	2,926	260	263	-3.00	
4/18/2021	4,343,522	3,016	268	263	5.00	5.00
4/19/2021	4,215,468	2,927	260	263	-3.00	
4/20/2021	4,279,063	2,972	264	263	1.00	1.00
4/21/2021	4,159,457	2,889	257	263	-6.00	
4/22/2021	4,266,674	2,963	263	263	0.00	
4/23/2021	4,288,368	2,978	265	263	2.00	2.00
4/24/2021	4,332,371	3,009	267	263	4.00	4.00
4/25/2021	4,395,791	3,053	271	263	8.00	8.00
4/26/2021	4,477,017	3,109	276	263	13.00	13.00
4/27/2021	4,425,335	3,073	273	263	10.00	10.00
4/28/2021	4,400,156	3,056	272	263	9.00	9.00
4/29/2021	4,543,336	3,155	280	263	17.00	17.00
4/30/2021	4,967,836	3,450	307	263	44.00	44.00
5/1/2021	5,277,927	3,665	326	263	63.00	63.00
5/2/2021	5,604,634	3,892	346	263	83.00	83.00
5/3/2021	5,257,721	3,651	325	263	62.00	62.00
5/4/2021	5,019,949	3,486	310	263	47.00	47.00
5/5/2021	4,904,094	3,406	303	263	40.00	40.00
5/6/2021	4,979,842	3,458	307	263	44.00	44.00
5/7/2021	5,314,989	3,691	328	263	65.00	65.00
5/8/2021	5,791,986	4,022	358	263	95.00	95.00
5/9/2021	5,334,252	3,704	329	263	66.00	66.00
5/10/2021	5,146,582	3,574	318	263	55.00	55.00
5/11/2021	5,000,898	3,473	309	263	46.00	46.00
5/12/2021	4,890,160	3,396	302	263	39.00	39.00
5/13/2021	4,888,465	3,395	302	263	39.00	39.00
5/14/2021	5,031,134	3,494	311	263	48.00	48.00
5/15/2021	5,075,804	3,525	313	263	50.00	50.00

5/16/2021	5,181,551	3,598	320	263	57.00	57.00
5/17/2021	5,461,792	3,793	337	263	74.00	74.00
5/18/2021	5,500,778	3,820	340	263	77.00	77.00
5/19/2021	5,479,294	3,805	338	263	75.00	75.00
5/20/2021	5,479,952	3,806	338	263	75.00	75.00
5/21/2021	5,348,682	3,714	330	263	67.00	67.00
5/22/2021	5,185,929	3,601	320	263	57.00	57.00
5/23/2021	5,217,455	3,623	322	263	59.00	59.00
5/24/2021	5,154,858	3,580	318	263	55.00	55.00
5/25/2021	5,387,067	3,741	333	263	70.00	70.00
5/26/2021	5,315,285	3,691	328	263	65.00	65.00
5/27/2021	5,399,281	3,750	333	263	70.00	70.00
5/28/2021	5,368,217	3,728	331	263	68.00	68.00
5/29/2021	5,287,619	3,672	326	263	63.00	63.00
5/30/2021	5,235,151	3,636	323	263	60.00	60.00
5/31/2021	5,168,840	3,589	319	263	56.00	56.00
6/1/2021	5,076,017	3,525	313	263	50.00	50.00
6/2/2021	4,826,809	3,352	298	263	35.00	35.00
6/3/2021	4,978,479	3,457	307	263	44.00	44.00
6/4/2021	4,993,153	3,467	308	263	45.00	45.00
6/5/2021	4,809,692	3,340	297	263	34.00	34.00
6/6/2021	4,696,037	3,261	290	263	27.00	27.00
6/7/2021	4,791,565	3,327	296	263	33.00	33.00
6/8/2021	4,673,365	3,245	288	263	25.00	25.00
6/9/2021	4,649,574	3,229	287	263	24.00	24.00
6/10/2021	4,615,024	3,205	285	263	22.00	22.00
6/11/2021	4,319,276	2,999	267	263	4.00	4.00
6/12/2021	4,030,637	2,799	249	263	-14.00	
6/13/2021	4,101,053	2,848	253	263	-10.00	
6/14/2021	4,091,665	2,841	253	263	-10.00	
6/15/2021	3,949,856	2,743	244	263	-19.00	
6/16/2021	3,856,133	2,678	238	263	-25.00	
6/17/2021	3,793,522	2,634	234	263	-29.00	
6/18/2021	3,806,651	2,644	235	263	-28.00	
6/19/2021	3,715,207	2,580	229	263	-34.00	
6/20/2021	3,419,400	2,375	211	263	-52.00	
6/21/2021	3,298,493	2,291	204	263	-59.00	
6/22/2021	3,233,241	2,245	200	263	-63.00	
6/23/2021	3,255,776	2,261	201	263	-62.00	
6/24/2021	3,167,565	2,200	196	263	-67.00	
6/25/2021	3,091,324	2,147	191	263	-72.00	
6/26/2021	3,111,098	2,160	192	263	-71.00	
6/27/2021	3,074,463	2,135	190	263	-73.00	
6/28/2021	3,066,885	2,130	189	263	-74.00	
6/29/2021	3,104,739	2,156	192	263	-71.00	
6/30/2021	2,827,264	1,963	175	263	-88.00	
7/1/2021	2,775,821	1,928	171	263	-92.00	

7/2/2021	2,912,421	2,023	180	263	-83.00
7/3/2021	2,921,002	2,028	180	263	-83.00
7/4/2021	2,860,664	1,987	177	263	-86.00
7/5/2021	2,822,703	1,960	174	263	-89.00
7/6/2021	2,765,637	1,921	171	263	-92.00
7/7/2021	2,832,749	1,967	175	263	-88.00
7/8/2021	2,881,348	2,001	178	263	-85.00
7/9/2021	2,729,127	1,895	168	263	-95.00
7/10/2021	2,615,451	1,816	161	263	-102.00
7/11/2021	2,624,614	1,823	162	263	-101.00
7/12/2021	2,719,060	1,888	168	263	-95.00
7/13/2021	2,654,951	1,844	164	263	-99.00
7/14/2021	2,745,117	1,906	169	263	-94.00
7/15/2021	2,931,253	2,036	181	263	-82.00
7/16/2021	2,862,526	1,988	177	263	-86.00
7/17/2021	2,835,956	1,969	175	263	-88.00
7/18/2021	2,834,354	1,968	175	263	-88.00
7/19/2021	2,712,750	1,884	167	263	-96.00
7/20/2021	2,769,403	1,923	171	263	-92.00
7/21/2021	3,277,301	2,276	202	263	-61.00
7/22/2021	3,299,639	2,291	204	263	-59.00
7/23/2021	3,414,702	2,371	211	263	-52.00
7/24/2021	3,060,699	2,125	189	263	-74.00
7/25/2021	3,083,034	2,141	190	263	-73.00
7/26/2021	2,975,228	2,066	184	263	-79.00
7/27/2021	2,953,041	2,051	182	263	-81.00
7/28/2021	3,188,333	2,214	197	263	-66.00
7/29/2021	3,128,178	2,172	193	263	-70.00
7/30/2021	3,037,836	2,110	188	263	-75.00
7/31/2021	3,016,070	2,094	186	263	-77.00
8/1/2021	2,989,595	2,076	185	263	-78.00
8/2/2021	2,752,579	1,912	170	263	-93.00
8/3/2021	2,610,967	1,813	161	263	-102.00
8/4/2021	2,828,624	1,964	175	263	-88.00
8/5/2021	2,727,922	1,894	168	263	-95.00
8/6/2021	2,761,612	1,918	170	263	-93.00
8/7/2021	2,783,648	1,933	172	263	-91.00
8/8/2021	2,771,149	1,924	171	263	-92.00
8/9/2021	2,567,337	1,783	158	263	-105.00
8/10/2021	2,506,514	1,741	155	263	-108.00
8/11/2021	2,842,653	1,974	175	263	-88.00
8/12/2021	2,998,147	2,082	185	263	-78.00
8/13/2021	2,963,828	2,058	183	263	-80.00
8/14/2021	3,107,635	2,158	192	263	-71.00
8/15/2021	3,057,736	2,123	189	263	-74.00
8/16/2021	2,907,892	2,019	179	263	-84.00
8/17/2021	2,795,131	1,941	173	263	-90.00

8/18/2021	2,632,774	1,828	163	263	-100.00	
8/19/2021	2,282,238	1,585	141	263	-122.00	
8/20/2021	2,357,674	1,637	146	263	-117.00	
8/21/2021	2,439,553	1,694	151	263	-112.00	
8/22/2021	2,392,312	1,661	148	263	-115.00	
8/23/2021	2,510,512	1,743	155	263	-108.00	
8/24/2021	2,493,548	1,732	154	263	-109.00	
8/25/2021	2,813,482	1,954	174	263	-89.00	
8/26/2021	2,702,249	1,877	167	263	-96.00	
8/27/2021	2,741,936	1,904	169	263	-94.00	
8/28/2021	2,798,837	1,944	173	263	-90.00	
8/29/2021	2,655,326	1,844	164	263	-99.00	
8/30/2021	2,560,129	1,778	158	263	-105.00	
8/31/2021	2,585,761	1,796	160	263	-103.00	
9/1/2021	2,726,422	1,893	168	263	-95.00	
9/2/2021	2,800,115	1,945	173	263	-90.00	
9/3/2021	2,913,424	2,023	180	263	-83.00	
9/4/2021	3,050,508	2,118	188	263	-75.00	
9/5/2021	3,139,644	2,180	194	263	-69.00	
9/6/2021	3,473,201	2,412	214	263	-49.00	
9/7/2021	3,676,178	2,553	227	263	-36.00	
9/8/2021	3,547,667	2,464	219	263	-44.00	
9/9/2021	3,853,339	2,676	238	263	-25.00	
9/10/2021	3,929,021	2,728	243	263	-20.00	
9/11/2021	4,108,640	2,853	254	263	-9.00	
9/12/2021	4,107,530	2,852	254	263	-9.00	
9/13/2021	4,337,013	3,012	268	263	5.00	5.00
9/14/2021	4,177,366	2,901	258	263	-5.00	
9/15/2021	4,448,455	3,089	275	263	12.00	12.00
9/16/2021	4,398,258	3,054	271	263	8.00	8.00
9/17/2021	4,211,916	2,925	260	263	-3.00	
9/18/2021	4,255,153	2,955	263	263	0.00	
9/19/2021	4,335,919	3,011	268	263	5.00	5.00
9/20/2021	4,445,957	3,087	274	263	11.00	11.00
9/21/2021	4,540,074	3,153	280	263	17.00	17.00
9/22/2021	4,456,385	3,095	275	263	12.00	12.00
9/23/2021	4,214,340	2,927	260	263	-3.00	
9/24/2021	4,036,081	2,803	249	263	-14.00	
9/25/2021	4,120,875	2,862	254	263	-9.00	
9/26/2021	4,252,723	2,953	263	263	0.00	
9/27/2021	4,196,638	2,914	259	263	-4.00	
9/28/2021	4,186,123	2,907	258	263	-5.00	
9/29/2021	4,157,370	2,887	257	263	-6.00	
9/30/2021	4,265,432	2,962	263	263	0.00	
10/1/2021	4,431,074	3,077	274	263	11.00	11.00
10/2/2021	4,320,878	3,001	267	263	4.00	4.00
10/3/2021	4,309,150	2,992	266	263	3.00	3.00

10/4/2021	4,330,510	3,007	267	263	4.00	4.00
10/5/2021	4,325,038	3,003	267	263	4.00	4.00
10/6/2021	4,393,030	3,051	271	263	8.00	8.00
10/7/2021	4,354,042	3,024	269	263	6.00	6.00
10/8/2021	4,304,181	2,989	266	263	3.00	3.00
10/9/2021	4,402,989	3,058	272	263	9.00	9.00
10/10/2021	4,333,725	3,010	268	263	5.00	5.00
10/11/2021	4,221,051	2,931	261	263	-2.00	
10/12/2021	4,388,990	3,048	271	263	8.00	8.00
10/13/2021	4,314,358	2,996	266	263	3.00	3.00
10/14/2021	4,276,240	2,970	264	263	1.00	1.00
10/15/2021	4,265,398	2,962	263	263	0.00	
10/16/2021	4,281,384	2,973	264	263	1.00	1.00
10/17/2021	4,207,610	2,922	260	263	-3.00	
10/18/2021	4,237,818	2,943	262	263	-1.00	
10/19/2021	4,170,572	2,896	257	263	-6.00	
10/20/2021	4,024,513	2,795	248	263	-15.00	
10/21/2021	4,163,622	2,891	257	263	-6.00	
10/22/2021	4,169,604	2,896	257	263	-6.00	
10/23/2021	4,159,464	2,889	257	263	-6.00	
10/24/2021	4,102,539	2,849	253	263	-10.00	
10/25/2021	4,075,766	2,830	252	263	-11.00	
10/26/2021	4,347,439	3,019	268	263	5.00	5.00
10/27/2021	4,156,219	2,886	257	263	-6.00	
10/28/2021	4,025,200	2,795	248	263	-15.00	
10/29/2021	4,107,548	2,852	254	263	-9.00	
10/30/2021	4,463,157	3,099	276	263	13.00	13.00
10/31/2021	4,336,723	3,012	268	263	5.00	5.00
11/1/2021	4,239,621	2,944	262	263	-1.00	
11/2/2021	4,142,409	2,877	256	263	-7.00	
11/3/2021	3,972,089	2,758	245	263	-18.00	
11/4/2021	3,864,835	2,684	239	263	-24.00	
11/5/2021	3,748,139	2,603	231	263	-32.00	
11/6/2021	3,700,500	2,570	228	263	-35.00	
11/7/2021	3,594,501	2,496	222	263	-41.00	
11/8/2021	3,349,065	2,326	207	263	-56.00	
11/9/2021	3,414,446	2,371	211	263	-52.00	
11/10/2021	4,503,936	3,128	278	263	15.00	15.00
11/11/2021	3,991,321	2,772	246	263	-17.00	
11/12/2021	4,394,806	3,052	271	263	8.00	8.00
11/13/2021	4,580,642	3,181	283	263	20.00	20.00
11/14/2021	4,657,511	3,234	288	263	25.00	25.00
11/15/2021	4,626,944	3,213	286	263	23.00	23.00
11/16/2021	4,616,376	3,206	285	263	22.00	22.00
11/17/2021	3,499,794	2,430	216	263	-47.00	
11/18/2021	3,265,179	2,267	202	263	-61.00	
11/19/2021	4,652,463	3,231	287	263	24.00	24.00

11/20/2021	4,584,078	3,183	283	263	20.00	20.00		
11/21/2021	4,090,491	2,841	252	263	-11.00			
11/22/2021	4,332,110	3,008	267	263	4.00	4.00		
11/23/2021	3,857,624	2,679	238	263	-25.00			
11/24/2021	4,155,680	2,886	257	263	-6.00			
11/25/2021	3,786,895	2,630	234	263	-29.00			
11/26/2021	4,343,600	3,016	268	263	5.00	5.00		
11/27/2021	4,297,339	2,984	265	263	2.00	2.00		
11/28/2021	4,300,090	2,986	265	263	2.00	2.00		
11/29/2021	4,417,216	3,068	273	263	10.00	10.00		
11/30/2021	4,403,928	3,058	272	263	9.00	9.00		
12/1/2021	4,429,350	3,076	273	263	10.00	10.00		
12/2/2021	4,482,960	3,113	277	263	14.00	14.00		
12/3/2021	4,475,208	3,108	276	263	13.00	13.00		
12/4/2021	4,474,239	3,107	276	263	13.00	13.00		
12/5/2021	4,257,674	2,957	263	263	0.00			
12/6/2021	3,530,147	2,451	218	263	-45.00			
12/7/2021	4,506,287	3,129	278	263	15.00	15.00		
12/8/2021	4,294,416	2,982	265	263	2.00	2.00		
12/9/2021	3,251,976	2,258	201	263	-62.00			
12/10/2021	3,348,849	2,326	207	263	-56.00			
12/11/2021	3,887,406	2,700	240	263	-23.00			
12/12/2021	4,438,913	3,083	274	263	11.00	11.00		
12/13/2021	4,425,274	3,073	273	263	10.00	10.00		
12/14/2021	4,390,776	3,049	271	263	8.00	8.00		
12/15/2021	3,670,014	2,549	227	263	-36.00			
12/16/2021	3,165,182	2,198	195	263	-68.00			
12/17/2021	3,893,861	2,704	240	263	-23.00			
12/18/2021	3,201,592	2,223	198	263	-65.00			
12/19/2021	4,457,412	3,095	275	263	12.00	12.00		
12/20/2021	4,379,320	3,041	270	263	7.00	7.00		
12/21/2021	4,347,260	3,019	268	263	5.00	5.00		
12/22/2021	4,458,616	3,096	275	263	12.00	12.00		
12/23/2021	3,987,455	2,769	246	263	-17.00			
12/24/2021	4,067,992	2,825	251	263	-12.00			
12/25/2021	3,479,514	2,416	215	263	-48.00			
12/26/2021	3,326,768	2,310	205	263	-58.00			
12/27/2021	2,777,451	1,929	171	263	-92.00			
12/28/2021	4,095,259	2,844	253	263	-10.00			
12/29/2021	4,314,747	2,996	266	263	3.00	3.00		
12/30/2021	4,255,300	2,955	263	263	0.00			
12/31/2021	4,301,832	2,987	266	263	3.00	3.00	3072.00	153.60
1/1/2022	3,620,570	2,514	223	263	-40.00			
1/2/2022	4,073,774	2,829	251	263	-12.00			
1/3/2022	4,183,145	2,905	258	263	-5.00			
1/4/2022	4,064,343	2,822	251	263	-12.00			
1/5/2022	3,738,472	2,596	231	263	-32.00			

1/6/2022	3,755,204	2,608	232	263	-31.00
1/7/2022	3,933,054	2,731	243	263	-20.00
1/8/2022	3,774,509	2,621	233	263	-30.00
1/9/2022	3,457,449	2,401	213	263	-50.00
1/10/2022	3,620,394	2,514	223	263	-40.00
1/11/2022	3,615,556	2,511	223	263	-40.00
1/12/2022	3,668,019	2,547	226	263	-37.00
1/13/2022	3,686,637	2,560	228	263	-35.00
1/14/2022	3,621,667	2,515	224	263	-39.00
1/15/2022	3,587,004	2,491	221	263	-42.00
1/16/2022	3,563,728	2,475	220	263	-43.00
1/17/2022	3,566,749	2,477	220	263	-43.00
1/18/2022	3,620,380	2,514	223	263	-40.00
1/19/2022	3,549,918	2,465	219	263	-44.00
1/20/2022	3,497,226	2,429	216	263	-47.00
1/21/2022	3,652,741	2,537	225	263	-38.00
1/22/2022	3,612,247	2,509	223	263	-40.00
1/23/2022	3,540,709	2,459	219	263	-44.00
1/24/2022	3,598,177	2,499	222	263	-41.00
1/25/2022	3,658,492	2,541	226	263	-37.00
1/26/2022	3,046,132	2,115	188	263	-75.00
1/27/2022	3,750,140	2,604	231	263	-32.00
1/28/2022	2,848,137	1,978	176	263	-87.00
1/29/2022	3,925,017	2,726	242	263	-21.00
1/30/2022	3,720,384	2,584	230	263	-33.00
1/31/2022	3,736,598	2,595	231	263	-32.00
2/1/2022	3,604,629	2,503	223	263	-40.00
2/2/2022	2,456,961	1,706	152	263	-111.00
2/3/2022	3,813,005	2,648	235	263	-28.00
2/4/2022	4,016,778	2,789	248	263	-15.00
2/5/2022	3,742,391	2,599	231	263	-32.00
2/6/2022	3,554,505	2,468	219	263	-44.00
2/7/2022	3,490,265	2,424	215	263	-48.00
2/8/2022	3,536,763	2,456	218	263	-45.00
2/9/2022	3,558,287	2,471	220	263	-43.00
2/10/2022	3,625,620	2,518	224	263	-39.00
2/11/2022	3,551,387	2,466	219	263	-44.00
2/12/2022	3,174,802	2,205	196	263	-67.00
2/13/2022	3,267,819	2,269	202	263	-61.00
2/14/2022	3,638,127	2,526	225	263	-38.00
2/15/2022	3,578,229	2,485	221	263	-42.00
2/16/2022	3,598,867	2,499	222	263	-41.00
2/17/2022	3,419,905	2,375	211	263	-52.00
2/18/2022	3,559,362	2,472	220	263	-43.00
2/19/2022	3,542,564	2,460	219	263	-44.00
2/20/2022	3,564,807	2,476	220	263	-43.00
2/21/2022	2,675,522	1,858	165	263	-98.00

2/22/2022	2,285,468	1,587	141	263	-122.00	
2/23/2022	2,855,256	1,983	176	263	-87.00	
2/24/2022	3,541,776	2,460	219	263	-44.00	
2/25/2022	3,395,158	2,358	210	263	-53.00	
2/26/2022	3,193,182	2,217	197	263	-66.00	
2/27/2022	3,412,831	2,370	211	263	-52.00	
2/28/2022	3,568,901	2,478	220	263	-43.00	
3/1/2022	3,880,691	2,695	240	263	-23.00	
3/2/2022	4,066,151	2,824	251	263	-12.00	
3/3/2022	4,240,080	2,945	262	263	-1.00	
3/4/2022	4,258,051	2,957	263	263	0.00	
3/5/2022	3,993,839	2,773	247	263	-16.00	
3/6/2022	3,781,688	2,626	233	263	-30.00	
3/7/2022	3,095,871	2,150	191	263	-72.00	
3/8/2022	3,950,776	2,744	244	263	-19.00	
3/9/2022	2,572,033	1,786	159	263	-104.00	
3/10/2022	3,224,876	2,239	199	263	-64.00	
3/11/2022	4,181,912	2,904	258	263	-5.00	
3/12/2022	4,172,400	2,898	258	263	-5.00	
3/13/2022	3,860,891	2,681	238	263	-25.00	
3/14/2022	3,818,294	2,652	236	263	-27.00	
3/15/2022	3,867,820	2,686	239	263	-24.00	
3/16/2022	3,946,775	2,741	244	263	-19.00	
3/17/2022	3,853,704	2,676	238	263	-25.00	
3/18/2022	3,766,348	2,616	232	263	-31.00	
3/19/2022	3,769,112	2,617	233	263	-30.00	
3/20/2022	3,921,559	2,723	242	263	-21.00	
3/21/2022	3,744,177	2,600	231	263	-32.00	
3/22/2022	3,765,923	2,615	232	263	-31.00	
3/23/2022	3,805,865	2,643	235	263	-28.00	
3/24/2022	4,183,670	2,905	258	263	-5.00	
3/25/2022	4,495,560	3,122	278	263	15.00	15.00
3/26/2022	4,701,697	3,265	290	263	27.00	27.00
3/27/2022	5,102,895	3,544	315	263	52.00	52.00
3/28/2022	5,162,237	3,585	319	263	56.00	56.00
3/29/2022	5,193,287	3,606	321	263	58.00	58.00
3/30/2022	4,779,411	3,319	295	263	32.00	32.00
3/31/2022	4,349,154	3,020	268	263	5.00	5.00
4/1/2022	4,245,168	2,948	262	263	-1.00	
4/2/2022	4,254,922	2,955	263	263	0.00	
4/3/2022	4,203,637	2,919	259	263	-4.00	
4/4/2022	4,217,330	2,929	260	263	-3.00	
4/5/2022	4,173,748	2,898	258	263	-5.00	
4/6/2022	4,155,909	2,886	257	263	-6.00	
4/7/2022	3,849,223	2,673	238	263	-25.00	
4/8/2022	4,184,619	2,906	258	263	-5.00	
4/9/2022	4,321,856	3,001	267	263	4.00	4.00

4/10/2022	4,291,735	2,980	265	263	2.00	2.00
4/11/2022	3,888,613	2,700	240	263	-23.00	
4/12/2022	4,132,419	2,870	255	263	-8.00	
4/13/2022	4,001,943	2,779	247	263	-16.00	
4/14/2022	3,549,149	2,465	219	263	-44.00	
4/15/2022	4,650,209	3,229	287	263	24.00	24.00
4/16/2022	4,618,899	3,208	285	263	22.00	22.00
4/17/2022	4,527,022	3,144	279	263	16.00	16.00
4/18/2022	4,517,932	3,137	279	263	16.00	16.00
4/19/2022	4,877,411	3,387	301	263	38.00	38.00
4/20/2022	5,213,327	3,620	322	263	59.00	59.00
4/21/2022	5,139,273	3,569	317	263	54.00	54.00
4/22/2022	5,384,586	3,739	332	263	69.00	69.00
4/23/2022	5,570,819	3,869	344	263	81.00	81.00
4/24/2022	5,352,802	3,717	330	263	67.00	67.00
4/25/2022	5,339,120	3,708	330	263	67.00	67.00
4/26/2022	5,476,251	3,803	338	263	75.00	75.00
4/27/2022	5,567,949	3,867	344	263	81.00	81.00
4/28/2022	5,664,316	3,934	350	263	87.00	87.00
4/29/2022	5,734,332	3,982	354	263	91.00	91.00
4/30/2022	5,680,489	3,945	351	263	88.00	88.00
5/1/2022	5,853,028	4,065	361	263	98.00	98.00
5/2/2022	5,933,761	4,121	366	263	103.00	103.00
5/3/2022	6,615,061	4,594	408	263	145.00	145.00
5/4/2022	6,859,746	4,764	423	263	160.00	160.00
5/5/2022	7,004,245	4,864	432	263	169.00	169.00
5/6/2022	6,226,104	4,324	384	263	121.00	121.00
5/7/2022	5,409,459	3,757	334	263	71.00	71.00
5/8/2022	5,173,413	3,593	319	263	56.00	56.00
5/9/2022	4,878,386	3,388	301	263	38.00	38.00
5/10/2022	4,579,827	3,180	283	263	20.00	20.00
5/11/2022	4,460,615	3,098	275	263	12.00	12.00
5/12/2022	4,569,284	3,173	282	263	19.00	19.00
5/13/2022	4,521,590	3,140	279	263	16.00	16.00
5/14/2022	4,604,966	3,198	284	263	21.00	21.00
5/15/2022	4,785,782	3,323	295	263	32.00	32.00
5/16/2022	5,191,331	3,605	320	263	57.00	57.00
5/17/2022	5,840,375	4,056	361	263	98.00	98.00
5/18/2022	5,773,511	4,009	356	263	93.00	93.00
5/19/2022	5,770,310	4,007	356	263	93.00	93.00
5/20/2022	5,479,502	3,805	338	263	75.00	75.00
5/21/2022	5,215,296	3,622	322	263	59.00	59.00
5/22/2022	5,037,536	3,498	311	263	48.00	48.00
5/23/2022	4,923,075	3,419	304	263	41.00	41.00
5/24/2022	4,799,737	3,333	296	263	33.00	33.00
5/25/2022	4,868,696	3,381	301	263	38.00	38.00
5/26/2022	5,093,389	3,537	314	263	51.00	51.00

5/27/2022	5,554,184	3,857	343	263	80.00	80.00
5/28/2022	5,899,974	4,097	364	263	101.00	101.00
5/29/2022	6,034,467	4,191	372	263	109.00	109.00
5/30/2022	6,018,761	4,180	372	263	109.00	109.00
5/31/2022	5,033,226	3,495	311	263	48.00	48.00
6/1/2022	4,112,212	2,856	254	263	-9.00	
6/2/2022	3,795,237	2,636	234	263	-29.00	
6/3/2022	4,393,988	3,051	271	263	8.00	8.00
6/4/2022	4,918,559	3,416	304	263	41.00	41.00
6/5/2022	4,918,162	3,415	304	263	41.00	41.00
6/6/2022	4,998,031	3,471	309	263	46.00	46.00
6/7/2022	5,266,018	3,657	325	263	62.00	62.00
6/8/2022	5,507,192	3,824	340	263	77.00	77.00
6/9/2022	5,151,757	3,578	318	263	55.00	55.00
6/10/2022	4,894,762	3,399	302	263	39.00	39.00
6/11/2022	4,769,182	3,312	294	263	31.00	31.00
6/12/2022	4,699,625	3,264	290	263	27.00	27.00
6/13/2022	4,678,723	3,249	289	263	26.00	26.00
6/14/2022	4,584,918	3,184	283	263	20.00	20.00
6/15/2022	4,398,998	3,055	272	263	9.00	9.00
6/16/2022	4,438,205	3,082	274	263	11.00	11.00
6/17/2022	4,669,427	3,243	288	263	25.00	25.00
6/18/2022	4,662,017	3,238	288	263	25.00	25.00
6/19/2022	4,671,801	3,244	288	263	25.00	25.00
6/20/2022	4,642,844	3,224	287	263	24.00	24.00
6/21/2022	4,795,427	3,330	296	263	33.00	33.00
6/22/2022	4,652,842	3,231	287	263	24.00	24.00
6/23/2022	4,571,768	3,175	282	263	19.00	19.00
6/24/2022	4,500,003	3,125	278	263	15.00	15.00
6/25/2022	4,414,116	3,065	272	263	9.00	9.00
6/26/2022	4,367,262	3,033	270	263	7.00	7.00
6/27/2022	4,299,084	2,985	265	263	2.00	2.00
6/28/2022	4,226,002	2,935	261	263	-2.00	
6/29/2022	4,175,557	2,900	258	263	-5.00	
6/30/2022	4,189,798	2,910	259	263	-4.00	
7/1/2022	4,033,597	2,801	249	263	-14.00	
7/2/2022	3,753,790	2,607	232	263	-31.00	
7/3/2022	3,575,182	2,483	221	263	-42.00	
7/4/2022	3,677,290	2,554	227	263	-36.00	
7/5/2022	3,611,172	2,508	223	263	-40.00	
7/6/2022	3,778,139	2,624	233	263	-30.00	
7/7/2022	3,673,444	2,551	227	263	-36.00	
7/8/2022	3,571,888	2,480	220	263	-43.00	
7/9/2022	3,531,694	2,453	218	263	-45.00	
7/10/2022	3,357,808	2,332	207	263	-56.00	
7/11/2022	3,679,602	2,555	227	263	-36.00	
7/12/2022	3,974,517	2,760	245	263	-18.00	

7/13/2022	4,156,354	2,886	257	263	-6.00	
7/14/2022	4,182,708	2,905	258	263	-5.00	
7/15/2022	4,084,588	2,837	252	263	-11.00	
7/16/2022	4,096,766	2,845	253	263	-10.00	
7/17/2022	3,933,057	2,731	243	263	-20.00	
7/18/2022	3,866,977	2,685	239	263	-24.00	
7/19/2022	4,145,189	2,879	256	263	-7.00	
7/20/2022	4,181,560	2,904	258	263	-5.00	
7/21/2022	4,157,289	2,887	257	263	-6.00	
7/22/2022	4,072,035	2,828	251	263	-12.00	
7/23/2022	4,017,930	2,790	248	263	-15.00	
7/24/2022	4,021,018	2,792	248	263	-15.00	
7/25/2022	3,868,249	2,686	239	263	-24.00	
7/26/2022	4,087,970	2,839	252	263	-11.00	
7/27/2022	4,292,639	2,981	265	263	2.00	2.00
7/28/2022	4,361,234	3,029	269	263	6.00	6.00
7/29/2022	4,355,997	3,025	269	263	6.00	6.00
7/30/2022	4,375,403	3,038	270	263	7.00	7.00
7/31/2022	4,395,213	3,052	271	263	8.00	8.00
8/1/2022	4,469,675	3,104	276	263	13.00	13.00
8/2/2022	4,607,371	3,200	284	263	21.00	21.00
8/3/2022	4,413,895	3,065	272	263	9.00	9.00
8/4/2022	4,220,225	2,931	261	263	-2.00	
8/5/2022	4,138,796	2,874	255	263	-8.00	
8/6/2022	4,137,085	2,873	255	263	-8.00	
8/7/2022	4,155,746	2,886	257	263	-6.00	
8/8/2022	4,271,605	2,966	264	263	1.00	1.00
8/9/2022	4,447,404	3,088	275	263	12.00	12.00
8/10/2022	4,559,305	3,166	281	263	18.00	18.00
8/11/2022	4,590,092	3,188	283	263	20.00	20.00
8/12/2022	4,618,798	3,207	285	263	22.00	22.00
8/13/2022	4,606,697	3,199	284	263	21.00	21.00
8/14/2022	4,626,116	3,213	286	263	23.00	23.00
8/15/2022	4,590,718	3,188	283	263	20.00	20.00
8/16/2022	4,622,543	3,210	285	263	22.00	22.00
8/17/2022	4,682,473	3,252	289	263	26.00	26.00
8/18/2022	4,655,677	3,233	287	263	24.00	24.00
8/19/2022	4,612,464	3,203	285	263	22.00	22.00
8/20/2022	4,602,431	3,196	284	263	21.00	21.00
8/21/2022	4,545,959	3,157	281	263	18.00	18.00
8/22/2022	4,484,855	3,114	277	263	14.00	14.00
8/23/2022	4,517,490	3,137	279	263	16.00	16.00
8/24/2022	4,503,876	3,128	278	263	15.00	15.00
8/25/2022	4,479,005	3,110	276	263	13.00	13.00
8/26/2022	4,474,495	3,107	276	263	13.00	13.00
8/27/2022	4,418,872	3,069	273	263	10.00	10.00
8/28/2022	4,255,831	2,955	263	263	0.00	

8/29/2022	4,210,954	2,924	260	263	-3.00	
8/30/2022	4,297,290	2,984	265	263	2.00	2.00
8/31/2022	4,348,887	3,020	268	263	5.00	5.00
9/1/2022	4,332,963	3,009	267	263	4.00	4.00
9/2/2022	4,906,725	3,407	303	263	40.00	40.00
9/3/2022	4,205,501	2,920	260	263	-3.00	
9/4/2022	4,152,376	2,884	256	263	-7.00	
9/5/2022	4,866,573	3,380	300	263	37.00	37.00
9/6/2022	4,173,450	2,898	258	263	-5.00	
9/7/2022	4,166,167	2,893	257	263	-6.00	
9/8/2022	4,226,010	2,935	261	263	-2.00	
9/9/2022	4,216,974	2,928	260	263	-3.00	
9/10/2022	3,983,527	2,766	246	263	-17.00	
9/11/2022	3,890,123	2,701	240	263	-23.00	
9/12/2022	4,002,067	2,779	247	263	-16.00	
9/13/2022	4,109,400	2,854	254	263	-9.00	
9/14/2022	4,200,210	2,917	259	263	-4.00	
9/15/2022	4,028,537	2,798	249	263	-14.00	
9/16/2022	4,058,365	2,818	251	263	-12.00	
9/17/2022	3,852,863	2,676	238	263	-25.00	
9/18/2022	3,805,235	2,643	235	263	-28.00	
9/19/2022	3,848,166	2,672	238	263	-25.00	
9/20/2022	3,705,013	2,573	229	263	-34.00	
9/21/2022	3,819,349	2,652	236	263	-27.00	
9/22/2022	4,078,009	2,832	252	263	-11.00	
9/23/2022	4,094,159	2,843	253	263	-10.00	
9/24/2022	3,973,957	2,760	245	263	-18.00	
9/25/2022	3,799,643	2,639	235	263	-28.00	
9/26/2022	3,822,464	2,654	236	263	-27.00	
9/27/2022	4,012,487	2,786	248	263	-15.00	
9/28/2022	4,195,003	2,913	259	263	-4.00	
9/29/2022	4,203,347	2,919	259	263	-4.00	
9/30/2022	4,328,876	3,006	267	263	4.00	4.00
10/1/2022	4,245,584	2,948	262	263	-1.00	
10/2/2022	4,538,741	3,152	280	263	17.00	17.00
10/3/2022	4,461,218	3,098	275	263	12.00	12.00
10/4/2022	4,359,844	3,028	269	263	6.00	6.00
10/5/2022	4,262,645	2,960	263	263	0.00	
10/6/2022	4,230,142	2,938	261	263	-2.00	
10/7/2022	4,264,576	2,962	263	263	0.00	
10/8/2022	4,267,165	2,963	263	263	0.00	
10/9/2022	4,182,593	2,905	258	263	-5.00	
10/10/2022	4,263,621	2,961	263	263	0.00	
10/11/2022	4,260,103	2,958	263	263	0.00	
10/12/2022	4,317,501	2,998	267	263	4.00	4.00
10/13/2022	4,315,000	2,997	266	263	3.00	3.00
10/14/2022	4,232,607	2,939	261	263	-2.00	

10/15/2022	4,198,963	2,916	259	263	-4.00	
10/16/2022	4,204,492	2,920	260	263	-3.00	
10/17/2022	4,209,547	2,923	260	263	-3.00	
10/18/2022	4,203,902	2,919	260	263	-3.00	
10/19/2022	4,195,667	2,914	259	263	-4.00	
10/20/2022	4,240,568	2,945	262	263	-1.00	
10/21/2022	4,275,391	2,969	264	263	1.00	1.00
10/22/2022	4,584,843	3,184	283	263	20.00	20.00
10/23/2022	5,293,759	3,676	327	263	64.00	64.00
10/24/2022	4,938,483	3,430	305	263	42.00	42.00
10/25/2022	4,580,561	3,181	283	263	20.00	20.00
10/26/2022	4,439,168	3,083	274	263	11.00	11.00
10/27/2022	4,376,717	3,039	270	263	7.00	7.00
10/28/2022	4,270,670	2,966	264	263	1.00	1.00
10/29/2022	4,331,504	3,008	267	263	4.00	4.00
10/30/2022	4,262,453	2,960	263	263	0.00	
10/31/2022	4,338,420	3,013	268	263	5.00	5.00
11/1/2022	4,287,770	2,978	265	263	2.00	2.00
11/2/2022	4,781,861	3,321	295	263	32.00	32.00
11/3/2022	4,846,889	3,366	299	263	36.00	36.00
11/4/2022	4,386,453	3,046	271	263	8.00	8.00
11/5/2022	4,450,405	3,091	275	263	12.00	12.00
11/6/2022	4,430,951	3,077	274	263	11.00	11.00
11/7/2022	4,406,463	3,060	272	263	9.00	9.00
11/8/2022	4,005,478	2,782	247	263	-16.00	
11/9/2022	4,220,932	2,931	261	263	-2.00	
11/10/2022	4,342,258	3,015	268	263	5.00	5.00
11/11/2022	4,296,449	2,984	265	263	2.00	2.00
11/12/2022	4,327,020	3,005	267	263	4.00	4.00
11/13/2022	4,378,626	3,041	270	263	7.00	7.00
11/14/2022	4,387,975	3,047	271	263	8.00	8.00
11/15/2022	4,370,569	3,035	270	263	7.00	7.00
11/16/2022	4,373,423	3,037	270	263	7.00	7.00
11/17/2022	4,145,109	2,879	256	263	-7.00	
11/18/2022	3,290,338	2,285	203	263	-60.00	
11/19/2022	4,239,212	2,944	262	263	-1.00	
11/20/2022	4,219,547	2,930	260	263	-3.00	
11/21/2022	4,219,359	2,930	260	263	-3.00	
11/22/2022	4,167,251	2,894	257	263	-6.00	
11/23/2022	4,178,404	2,902	258	263	-5.00	
11/24/2022	4,135,691	2,872	255	263	-8.00	
11/25/2022	4,138,282	2,874	255	263	-8.00	
11/26/2022	4,141,271	2,876	256	263	-7.00	
11/27/2022	4,138,505	2,874	255	263	-8.00	
11/28/2022	3,824,925	2,656	236	263	-27.00	
11/29/2022	3,992,976	2,773	246	263	-17.00	
11/30/2022	4,226,988	2,935	261	263	-2.00	

12/1/2022	4,210,449	2,924	260	263	-3.00			
12/2/2022	4,178,255	2,902	258	263	-5.00			
12/3/2022	3,823,796	2,655	236	263	-27.00			
12/4/2022	4,226,408	2,935	261	263	-2.00			
12/5/2022	4,241,463	2,945	262	263	-1.00			
12/6/2022	4,183,390	2,905	258	263	-5.00			
12/7/2022	4,160,752	2,889	257	263	-6.00			
12/8/2022	3,991,071	2,772	246	263	-17.00			
12/9/2022	4,261,202	2,959	263	263	0.00			
12/10/2022	4,166,922	2,894	257	263	-6.00			
12/11/2022	4,235,992	2,942	261	263	-2.00			
12/12/2022	4,291,023	2,980	265	263	2.00	2.00		
12/13/2022	4,251,851	2,953	262	263	-1.00			
12/14/2022	4,286,852	2,977	265	263	2.00	2.00		
12/15/2022	4,342,297	3,015	268	263	5.00	5.00		
12/16/2022	4,266,561	2,963	263	263	0.00			
12/17/2022	4,222,591	2,932	261	263	-2.00			
12/18/2022	3,965,059	2,754	245	263	-18.00			
12/19/2022	3,988,672	2,770	246	263	-17.00			
12/20/2022	4,463,414	3,100	276	263	13.00	13.00		
12/21/2022	3,859,190	2,680	238	263	-25.00			
12/22/2022	3,478,088	2,415	215	263	-48.00			
12/23/2022	4,003,811	2,780	247	263	-16.00			
12/24/2022	4,041,298	2,806	249	263	-14.00			
12/25/2022	3,980,753	2,764	246	263	-17.00			
12/26/2022	3,992,619	2,773	246	263	-17.00			
12/27/2022	4,023,386	2,794	248	263	-15.00			
12/28/2022	4,023,969	2,794	248	263	-15.00			
12/29/2022	3,981,813	2,765	246	263	-17.00			
12/30/2022	3,811,153	2,647	235	263	-28.00			
12/31/2022	3,984,907	2,767	246	263	-17.00		5005.00	250.25
1/1/2023	3,985,169	2,767	246	263	-17.00			
1/2/2023	3,851,999	2,675	238	263	-25.00			
1/3/2023	3,400,982	2,362	210	263	-53.00			
1/4/2023	4,049,229	2,812	250	263	-13.00			
1/5/2023	4,070,321	2,827	251	263	-12.00			
1/6/2023	4,001,140	2,779	247	263	-16.00			
1/7/2023	3,956,158	2,747	244	263	-19.00			
1/8/2023	3,920,666	2,723	242	263	-21.00			
1/9/2023	3,966,252	2,754	245	263	-18.00			
1/10/2023	3,977,018	2,762	245	263	-18.00			
1/11/2023	3,955,165	2,747	244	263	-19.00			
1/12/2023	3,939,595	2,736	243	263	-20.00			
1/13/2023	3,976,930	2,762	245	263	-18.00			
1/14/2023	3,974,918	2,760	245	263	-18.00			
1/15/2023	3,956,793	2,748	244	263	-19.00			
1/16/2023	3,971,595	2,758	245	263	-18.00			

1/17/2023	3,929,886	2,729	243	263	-20.00
1/18/2023	3,922,698	2,724	242	263	-21.00
1/19/2023	3,585,954	2,490	221	263	-42.00
1/20/2023	3,940,468	2,736	243	263	-20.00
1/21/2023	3,544,150	2,461	219	263	-44.00
1/22/2023	3,791,248	2,633	234	263	-29.00
1/23/2023	3,962,051	2,751	245	263	-18.00
1/24/2023	3,616,427	2,511	223	263	-40.00
1/25/2023	3,972,178	2,758	245	263	-18.00
1/26/2023	3,966,799	2,755	245	263	-18.00
1/27/2023	3,991,680	2,772	246	263	-17.00
1/28/2023	3,623,952	2,517	224	263	-39.00
1/29/2023	2,533,810	1,760	156	263	-107.00
1/30/2023	3,887,387	2,700	240	263	-23.00
1/31/2023	4,150,534	2,882	256	263	-7.00
2/1/2023	4,068,314	2,825	251	263	-12.00
2/2/2023	3,997,029	2,776	247	263	-16.00
2/3/2023	3,975,158	2,761	245	263	-18.00
2/4/2023	3,918,528	2,721	242	263	-21.00
2/5/2023	3,894,604	2,705	240	263	-23.00
2/6/2023	3,895,505	2,705	240	263	-23.00
2/7/2023	3,890,597	2,702	240	263	-23.00
2/8/2023	3,947,521	2,741	244	263	-19.00
2/9/2023	3,826,146	2,657	236	263	-27.00
2/10/2023	3,520,632	2,445	217	263	-46.00
2/11/2023	3,864,229	2,683	239	263	-24.00
2/12/2023	3,538,560	2,457	218	263	-45.00
2/13/2023	3,980,773	2,764	246	263	-17.00
2/14/2023	3,888,600	2,700	240	263	-23.00
2/15/2023	3,224,522	2,239	199	263	-64.00
2/16/2023	3,898,677	2,707	241	263	-22.00
2/17/2023	4,080,549	2,834	252	263	-11.00
2/18/2023	3,940,076	2,736	243	263	-20.00
2/19/2023	3,928,795	2,728	243	263	-20.00
2/20/2023	3,924,484	2,725	242	263	-21.00
2/21/2023	3,897,588	2,707	241	263	-22.00
2/22/2023	2,793,241	1,940	172	263	-91.00
2/23/2023	3,944,097	2,739	243	263	-20.00
2/24/2023	4,202,956	2,919	259	263	-4.00
2/25/2023	4,175,171	2,899	258	263	-5.00
2/26/2023	4,047,650	2,811	250	263	-13.00
2/27/2023	3,887,401	2,700	240	263	-23.00
2/28/2023	3,722,720	2,585	230	263	-33.00
3/1/2023	3,742,224	2,599	231	263	-32.00
3/2/2023	3,764,113	2,614	232	263	-31.00
3/3/2023	3,764,643	2,614	232	263	-31.00
3/4/2023	3,726,967	2,588	230	263	-33.00

3/5/2023	3,755,737	2,608	232	263	-31.00	
3/6/2023	3,661,645	2,543	226	263	-37.00	
3/7/2023	3,541,870	2,460	219	263	-44.00	
3/8/2023	3,655,568	2,539	226	263	-37.00	
3/9/2023	3,670,588	2,549	227	263	-36.00	
3/10/2023	3,787,472	2,630	234	263	-29.00	
3/11/2023	3,671,031	2,549	227	263	-36.00	
3/12/2023	3,580,467	2,486	221	263	-42.00	
3/13/2023	3,609,870	2,507	223	263	-40.00	
3/14/2023	3,730,873	2,591	230	263	-33.00	
3/15/2023	3,379,544	2,347	209	263	-54.00	
3/16/2023	3,751,034	2,605	232	263	-31.00	
3/17/2023	3,265,506	2,268	202	263	-61.00	
3/18/2023	3,460,699	2,403	214	263	-49.00	
3/19/2023	4,035,082	2,802	249	263	-14.00	
3/20/2023	4,098,217	2,846	253	263	-10.00	
3/21/2023	3,981,047	2,765	246	263	-17.00	
3/22/2023	3,648,000	2,533	225	263	-38.00	
3/23/2023	3,628,963	2,520	224	263	-39.00	
3/24/2023	3,977,134	2,762	246	263	-17.00	
3/25/2023	3,498,411	2,429	216	263	-47.00	
3/26/2023	4,389,839	3,048	271	263	8.00	8.00
3/27/2023	4,153,602	2,884	256	263	-7.00	
3/28/2023	3,742,477	2,599	231	263	-32.00	
3/29/2023	3,986,869	2,769	246	263	-17.00	
3/30/2023	3,906,482	2,713	241	263	-22.00	
3/31/2023	3,913,675	2,718	242	263	-21.00	
4/1/2023	3,844,705	2,670	237	263	-26.00	
4/2/2023	3,797,462	2,637	234	263	-29.00	
4/3/2023	3,520,671	2,445	217	263	-46.00	
4/4/2023	3,785,953	2,629	234	263	-29.00	
4/5/2023	3,709,553	2,576	229	263	-34.00	
4/6/2023	3,543,841	2,461	219	263	-44.00	
4/7/2023	3,892,142	2,703	240	263	-23.00	
4/8/2023	4,063,268	2,822	251	263	-12.00	
4/9/2023	4,072,159	2,828	251	263	-12.00	
4/10/2023	4,187,555	2,908	258	263	-5.00	
4/11/2023	4,320,409	3,000	267	263	4.00	4.00
4/12/2023	4,441,392	3,084	274	263	11.00	11.00
4/13/2023	4,439,980	3,083	274	263	11.00	11.00
4/14/2023	4,440,679	3,084	274	263	11.00	11.00
4/15/2023	4,339,882	3,014	268	263	5.00	5.00
4/16/2023	4,311,763	2,994	266	263	3.00	3.00
4/17/2023	4,411,465	3,064	272	263	9.00	9.00
4/18/2023	4,316,425	2,998	266	263	3.00	3.00
4/19/2023	4,095,105	2,844	253	263	-10.00	
4/20/2023	4,061,547	2,821	251	263	-12.00	

4/21/2023	4,013,590	2,787	248	263	-15.00			
4/22/2023	3,875,569	2,691	239	263	-24.00			
4/23/2023	3,796,197	2,636	234	263	-29.00			
4/24/2023	4,086,453	2,838	252	263	-11.00			
4/25/2023	4,244,827	2,948	262	263	-1.00			
4/26/2023	4,208,070	2,922	260	263	-3.00			
4/27/2023	4,362,749	3,030	269	263	6.00	6.00		
4/28/2023	4,373,819	3,037	270	263	7.00	7.00		
4/29/2023	4,546,353	3,157	281	263	18.00	18.00		
4/30/2023	4,841,350	3,362	299	263	36.00	36.00		
5/1/2023	5,267,529	3,658	325	263	62.00	62.00		
5/2/2023	5,244,032	3,642	324	263	61.00	61.00		
5/3/2023	4,813,334	3,343	297	263	34.00	34.00		
5/4/2023	4,895,981	3,400	302	263	39.00	39.00		
5/5/2023	4,871,384	3,383	301	263	38.00	38.00		
5/6/2023	4,746,667	3,296	293	263	30.00	30.00		
5/7/2023	4,600,699	3,195	284	263	21.00	21.00		
5/8/2023	4,460,857	3,098	275	263	12.00	12.00		
5/9/2023	4,591,041	3,188	283	263	20.00	20.00		
5/10/2023	4,684,818	3,253	289	263	26.00	26.00		
5/11/2023	4,674,329	3,246	289	263	26.00	26.00		
5/12/2023	4,709,981	3,271	291	263	28.00	28.00		
5/13/2023	4,883,426	3,391	301	263	38.00	38.00		
5/14/2023	5,053,393	3,509	312	263	49.00	49.00		
5/15/2023	5,125,195	3,559	316	263	53.00	53.00		
5/16/2023	5,190,124	3,604	320	263	57.00	57.00		
5/17/2023	5,174,632	3,593	319	263	56.00	56.00		
5/18/2023	5,101,967	3,543	315	263	52.00	52.00		
5/19/2023	5,065,003	3,517	313	263	50.00	50.00		
5/20/2023	4,997,500	3,470	308	263	45.00	45.00		
5/21/2023	4,991,580	3,466	308	263	45.00	45.00		
5/22/2023	5,074,425	3,524	313	263	50.00	50.00		
5/23/2023	5,057,405	3,512	312	263	49.00	49.00		
5/24/2023	5,073,639	3,523	313	263	50.00	50.00		
5/25/2023	4,900,006	3,403	302	263	39.00	39.00		
5/26/2023	4,867,434	3,380	300	263	37.00	37.00		
5/27/2023	4,838,683	3,360	299	263	36.00	36.00		
5/28/2023	4,766,552	3,310	294	263	31.00	31.00		
5/29/2023	4,728,649	3,284	292	263	29.00	29.00		
5/30/2023	4,567,341	3,172	282	263	19.00	19.00		
5/31/2023	4,626,214	3,213	286	263	23.00	23.00		
6/1/2023	4,796,452	3,331	296	263	33.00	33.00		
6/2/2023	4,775,364	3,316	295	263	32.00	32.00		
6/3/2023	5,334,056	3,704	329	263	66.00	66.00		
6/4/2023	5,396,380	3,747	333	263	70.00	70.00		
6/5/2023	5,293,965	3,676	327	263	64.00	64.00	1602.00	80.10 so far

Year	Number of days over 263 MI between 4-1 and 7-1		yearly total		
1988	61	5-1 to 7-9	67		52
1989	91		91		78
1990	78		220		78
1991	93	4-1 to 7-6	116		87
1992	72		73		72
1993	77		244		77
1994	84		213		83
1995	100	4-1 to 7-15	182		85
1996	19	4-1 to 7-8	32		11
1997	60		141		59
1998	65		237		63
1999	87		272		87
2000	63		72		60
2001	48		63		48
2002	74		110		71
2003	82		107		82
2004	82		103		82
2005	85		195		85
2006	81		180		81
2007	63		199		63
2008	63		148		63
2009	41		200		41
2010	45		220		45
2011	41		180		40
2012	33		114		33
2013	49		51		49
2014	41		109		38
2015	62		160		59
2016	58		177		58
2017	51		147		51
2018	58		188		58
2019	81		213		81
2020	76		167		76
2021	64		134		64
2022	74		148		74
2023	48		49	so far	48
Total	2350				

Date	Diverted MI	MI >263	Test	*MI > 263
5/1/1988	374	111	1	111
5/2/1988	369	106	1	106
5/3/1988	370	107	1	107
5/4/1988	369	106	1	106
5/5/1988	378	115	1	115
5/6/1988	376	113	1	113
5/7/1988	385	122	1	122
5/8/1988	367	104	1	104
5/9/1988	350	87	1	87
5/10/1988	312	49	1	49
5/11/1988	339	76	1	76
5/12/1988	390	127	1	127
5/13/1988	318	55	1	55
5/14/1988	461	198	1	198
5/15/1988	419	156	1	156
5/16/1988	427	164	1	164
5/17/1988	424	161	1	161
5/18/1988	416	153	1	153
5/19/1988	406	143	1	143
5/20/1988	343	80	1	80
5/21/1988	471	208	1	208
5/22/1988	412	149	1	149
5/23/1988	385	122	1	122
5/24/1988	402	139	1	139
5/25/1988	417	154	1	154
5/26/1988	415	152	1	152
5/27/1988	411	148	1	148
5/28/1988	402	139	1	139
5/29/1988	402	139	1	139
5/30/1988	408	145	1	145
5/31/1988	401	138	1	138
6/1/1988	391	128	1	128
6/2/1988	391	128	1	128
6/3/1988	391	128	1	128
6/4/1988	391	128	1	128
6/5/1988	386	123	1	123
6/6/1988	383	120	1	120
6/7/1988	379	116	1	116
6/8/1988	373	110	1	110
6/9/1988	365	102	1	102
6/10/1988	364	101	1	101
6/11/1988	354	91	1	91
6/12/1988	351	88	1	88

6/13/1988	344	81	1	81
6/14/1988	339	76	1	76
6/15/1988	334	71	1	71
6/16/1988	332	69	1	69
6/17/1988	330	67	1	67
6/18/1988	328	65	1	65
6/19/1988	326	63	1	63
6/20/1988	323	60	1	60
6/21/1988	265	2	1	2
6/22/1988	250	-13	0	0
6/23/1988	245	-18	0	0
6/24/1988	242	-21	0	0
6/25/1988	243	-20	0	0
6/26/1988	242	-21	0	0
6/27/1988	240	-23	0	0
6/28/1988	241	-22	0	0
6/29/1988	240	-23	0	0
6/30/1988	236	-27	0	0
7/1/1988	276	13	1	
7/2/1988	278	15	1	
7/3/1988	276	13	1	
7/4/1988	274	11	1	
7/5/1988	275	12	1	
7/6/1988	275	12	1	
7/7/1988	275	12	1	
7/8/1988	271	8	1	
7/9/1988	272	9	1	
7/10/1988	206	-57	0	
7/11/1988	198	-65	0	
7/12/1988	198	-65	0	
7/13/1988	197	-66	0	
7/14/1988	198	-65	0	
7/15/1988	193	-70	0	
7/16/1988	195	-68	0	
7/17/1988	196	-67	0	
7/18/1988	195	-68	0	
7/19/1988	194	-69	0	
7/20/1988	194	-69	0	
7/21/1988	193	-70	0	
7/22/1988	192	-71	0	
7/23/1988	192	-71	0	

7/24/1988	192	-71	0
7/25/1988	192	-71	0
7/26/1988	191	-72	0
7/27/1988	192	-71	0
7/28/1988	191	-72	0
7/29/1988	188	-75	0
7/30/1988	189	-74	0
7/31/1988	191	-72	0
8/1/1988	188	-75	0
8/2/1988	190	-73	0
8/3/1988	190	-73	0
8/4/1988	205	-58	0
8/5/1988	201	-62	0
8/6/1988	206	-57	0
8/7/1988	201	-62	0
8/8/1988	202	-61	0
8/9/1988	202	-61	0
8/10/1988	200	-63	0
8/11/1988	201	-62	0
8/12/1988	203	-60	0
8/13/1988	201	-62	0
8/14/1988	201	-62	0
8/15/1988	202	-61	0
8/16/1988	199	-64	0
8/17/1988	200	-63	0
8/18/1988	199	-64	0
8/19/1988	199	-64	0
8/20/1988	200	-63	0
8/21/1988	199	-64	0
8/22/1988	198	-65	0
8/23/1988	200	-63	0
8/24/1988	199	-64	0
8/25/1988	198	-65	0
8/26/1988	198	-65	0
8/27/1988	199	-64	0
8/28/1988	199	-64	0
8/29/1988	200	-63	0
8/30/1988	197	-66	0
8/31/1988	199	-64	0
9/1/1988	199	-64	0
9/2/1988	199	-64	0
9/3/1988	198	-65	0
9/4/1988	202	-61	0
9/5/1988	196	-67	0

9/6/1988	198	-65	0
9/7/1988	199	-64	0
9/8/1988	200	-63	0
9/9/1988	200	-63	0
9/10/1988	202	-61	0
9/11/1988	205	-58	0
9/12/1988	213	-50	0
9/13/1988	217	-46	0
9/14/1988	216	-47	0
9/15/1988	215	-48	0
9/16/1988	259	-4	0
9/17/1988	260	-3	0
9/18/1988	262	-1	0
9/19/1988	261	-2	0
9/20/1988	262	-1	0
9/21/1988	263	0	0
9/22/1988	260	-3	0
9/23/1988	261	-2	0
9/24/1988	260	-3	0
9/25/1988	259	-4	0
9/26/1988	261	-2	0
9/27/1988	258	-5	0
9/28/1988	260	-3	0
9/29/1988	256	-7	0
9/30/1988	256	-7	0
10/1/1988	255	-8	0
10/2/1988	252	-11	0
10/3/1988	10	-253	0
10/4/1988	1	-262	0
10/5/1988	1	-262	0
10/6/1988	189	-74	0
10/7/1988	247	-16	0
10/8/1988	244	-19	0
10/9/1988	243	-20	0
10/10/1988	242	-21	0
10/11/1988	248	-15	0
10/12/1988	247	-16	0
10/13/1988	245	-18	0
10/14/1988	241	-22	0
10/15/1988	241	-22	0
10/16/1988	243	-20	0
10/17/1988	239	-24	0
10/18/1988	238	-25	0
10/19/1988	239	-24	0

10/20/1988	243	-20	0
10/21/1988	242	-21	0
10/22/1988	240	-23	0
10/23/1988	241	-22	0
10/24/1988	240	-23	0
10/25/1988	244	-19	0
10/26/1988	248	-15	0
10/27/1988	247	-16	0
10/28/1988	246	-17	0
10/29/1988	256	-7	0
10/30/1988	246	-17	0
10/31/1988	245	-18	0
11/1/1988	242	-21	0
11/2/1988	244	-19	0
11/3/1988	362	99	1
11/4/1988	360	97	1
11/5/1988	364	101	1
11/6/1988	362	99	1
11/7/1988	295	32	1
11/8/1988	267	4	1
11/9/1988	259	-4	0
11/10/1988	257	-6	0
11/11/1988	257	-6	0
11/12/1988	256	-7	0
11/13/1988	257	-6	0
11/14/1988	209	-54	0
11/15/1988	251	-12	0
11/16/1988	257	-6	0
11/17/1988	249	-14	0
11/18/1988	241	-22	0
11/19/1988	235	-28	0
11/20/1988	248	-15	0
11/21/1988	246	-17	0
11/22/1988	247	-16	0
11/23/1988	249	-14	0
11/24/1988	245	-18	0
11/25/1988	261	-2	0
11/26/1988	230	-33	0
11/27/1988	249	-14	0
11/28/1988	248	-15	0
11/29/1988	252	-11	0
11/30/1988	245	-18	0
12/1/1988	244	-19	0
12/2/1988	250	-13	0

12/3/1988	250	-13	0
12/4/1988	248	-15	0
12/5/1988	249	-14	0
12/6/1988	251	-12	0
12/7/1988	249	-14	0
12/8/1988	248	-15	0
12/9/1988	248	-15	0
12/10/1988	248	-15	0
12/11/1988	247	-16	0
12/12/1988	248	-15	0
12/13/1988	247	-16	0
12/14/1988	197	-66	0
12/15/1988	200	-63	0
12/16/1988	253	-10	0
12/17/1988	256	-7	0
12/18/1988	254	-9	0
12/19/1988	254	-9	0
12/20/1988	250	-13	0
12/21/1988	250	-13	0
12/22/1988	248	-15	0
12/23/1988	249	-14	0
12/24/1988	247	-16	0
12/25/1988	247	-16	0
12/26/1988	253	-10	0
12/27/1988	238	-25	0
12/28/1988	250	-13	0
12/29/1988	250	-13	0
12/30/1988	250	-13	0
12/31/1988	257	-6	0
1/1/1989	235	-28	0
1/2/1989	248	-15	0
1/3/1989	246	-17	0
1/4/1989	246	-17	0
1/5/1989	247	-16	0
1/6/1988	237	-26	0
1/7/1989	237	-26	0
1/8/1989	249	-14	0
1/9/1989	248	-15	0
1/10/1989	246	-17	0
1/11/1989	244	-19	0
1/12/1989	244	-19	0
1/13/1989	242	-21	0
1/14/1989	243	-20	0
1/15/1989	244	-19	0

1/16/1989	243	-20	0
1/17/1989	244	-19	0
1/18/1989	244	-19	0
1/19/1989	245	-18	0
1/20/1989	242	-21	0
1/21/1989	246	-17	0
1/22/1989	245	-18	0
1/23/1989	244	-19	0
1/24/1989	233	-30	0
1/25/1989	249	-14	0
1/26/1989	251	-12	0
1/27/1989	244	-19	0
1/28/1989	245	-18	0
1/29/1989	247	-16	0
1/30/1989	246	-17	0
1/31/1989	229	-34	0
2/1/1989	225	-38	0
2/2/1989	251	-12	0
2/3/1989	255	-8	0
2/4/1989	252	-11	0
2/5/1989	260	-3	0
2/6/1989	261	-2	0
2/7/1989	260	-3	0
2/8/1989	252	-11	0
2/9/1989	260	-3	0
2/10/1989	258	-5	0
2/11/1989	254	-9	0
2/12/1989	250	-13	0
2/13/1989	248	-15	0
2/14/1989	248	-15	0
2/15/1989	248	-15	0
2/16/1989	246	-17	0
2/17/1989	248	-15	0
2/18/1989	243	-20	0
2/19/1989	247	-16	0
2/20/1989	247	-16	0
2/21/1989	247	-16	0
2/22/1989	247	-16	0
2/23/1989	247	-16	0
2/24/1989	248	-15	0
2/25/1989	246	-17	0
2/26/1989	260	-3	0
2/27/1989	248	-15	0
2/28/1989	244	-19	0

3/1/1989	243	-20	0	
3/2/1989	246	-17	0	
3/3/1989	246	-17	0	
3/4/1989	251	-12	0	
3/5/1989	243	-20	0	
3/6/1989	246	-17	0	
3/7/1989	245	-18	0	
3/8/1989	248	-15	0	
3/9/1989	250	-13	0	
3/10/1989	256	-7	0	
3/11/1989	249	-14	0	
3/12/1989	253	-10	0	
3/13/1989	254	-9	0	
3/14/1989	227	-36	0	
3/15/1989	251	-12	0	
3/16/1989	194	-69	0	
3/17/1989	250	-13	0	
3/18/1989	251	-12	0	
3/19/1989	229	-34	0	
3/20/1989	208	-55	0	
3/21/1989	253	-10	0	
3/22/1989	254	-9	0	
3/23/1989	244	-19	0	
3/24/1989	250	-13	0	
3/25/1989	256	-7	0	
3/26/1989	257	-6	0	
3/27/1989	255	-8	0	
3/28/1989	254	-9	0	
3/29/1989	255	-8	0	
3/30/1989	257	-6	0	
3/31/1989	254	-9	0	
4/1/1989	245	-18	0	0
4/2/1989	253	-10	0	0
4/3/1989	254	-9	0	0
4/4/1989	254	-9	0	0
4/5/1989	253	-10	0	0
4/6/1989	261	-2	0	0
4/7/1989	262	-1	0	0
4/8/1989	262	-1	0	0
4/9/1989	213	-50	0	0
4/10/1989	243	-20	0	0
4/11/1989	251	-12	0	0
4/12/1989	259	-4	0	0
4/13/1989	263	0	0	0

4/14/1989	374	111	1	111
4/15/1989	386	123	1	123
4/16/1989	388	125	1	125
4/17/1989	380	117	1	117
4/18/1989	378	115	1	115
4/19/1989	386	123	1	123
4/20/1989	395	132	1	132
4/21/1989	394	131	1	131
4/22/1989	395	132	1	132
4/23/1989	391	128	1	128
4/24/1989	384	121	1	121
4/25/1989	382	119	1	119
4/26/1989	381	118	1	118
4/27/1989	381	118	1	118
4/28/1989	373	110	1	110
4/29/1989	371	108	1	108
4/30/1989	374	111	1	111
5/1/1989	373	110	1	110
5/2/1989	385	122	1	122
5/3/1989	396	133	1	133
5/4/1989	388	125	1	125
5/5/1989	389	126	1	126
5/6/1989	398	135	1	135
5/7/1989	405	142	1	142
5/8/1989	410	147	1	147
5/9/1989	401	138	1	138
5/10/1989	405	142	1	142
5/11/1989	404	141	1	141
5/12/1989	400	137	1	137
5/13/1989	398	135	1	135
5/14/1989	397	134	1	134
5/15/1989	397	134	1	134
5/16/1989	407	144	1	144
5/17/1989	404	141	1	141
5/18/1989	404	141	1	141
5/19/1989	402	139	1	139
5/20/1989	399	136	1	136
5/21/1989	395	132	1	132
5/22/1989	394	131	1	131
5/23/1989	392	129	1	129
5/24/1989	395	132	1	132
5/25/1989	388	125	1	125
5/26/1989	391	128	1	128
5/27/1989	393	130	1	130

5/28/1989	384	121	1	121
5/29/1989	397	134	1	134
5/30/1989	392	129	1	129
5/31/1989	389	126	1	126
6/1/1989	391	128	1	128
6/2/1989	391	128	1	128
6/3/1989	396	133	1	133
6/4/1989	392	129	1	129
6/5/1989	394	131	1	131
6/6/1989	393	130	1	130
6/7/1989	393	130	1	130
6/8/1989	395	132	1	132
6/9/1989	396	133	1	133
6/10/1989	397	134	1	134
6/11/1989	396	133	1	133
6/12/1989	392	129	1	129
6/13/1989	389	126	1	126
6/14/1989	389	126	1	126
6/15/1989	390	127	1	127
6/16/1989	392	129	1	129
6/17/1989	389	126	1	126
6/18/1989	386	123	1	123
6/19/1989	381	118	1	118
6/20/1989	379	116	1	116
6/21/1989	385	122	1	122
6/22/1989	381	118	1	118
6/23/1989	380	117	1	117
6/24/1989	383	120	1	120
6/25/1989	378	115	1	115
6/26/1989	378	115	1	115
6/27/1989	378	115	1	115
6/28/1989	374	111	1	111
6/29/1989	377	114	1	114
6/30/1989	372	109	1	109
4/1/1990	262	-1	0	0
4/2/1990	146	-117	0	0
4/3/1990	242	-21	0	0
4/4/1990	246	-17	0	0
4/5/1990	235	-28	0	0
4/6/1990	238	-25	0	0
4/7/1990	238	-25	0	0
4/8/1990	240	-23	0	0
4/9/1990	239	-24	0	0
4/10/1990	234	-29	0	0

4/11/1990	237	-26	0	0
4/12/1990	238	-25	0	0
4/13/1990	422	159	1	159
4/14/1990	407	144	1	144
4/15/1990	415	152	1	152
4/16/1990	411	148	1	148
4/17/1990	410	147	1	147
4/18/1990	415	152	1	152
4/19/1990	417	154	1	154
4/20/1990	419	156	1	156
4/21/1990	420	157	1	157
4/22/1990	420	157	1	157
4/23/1990	419	156	1	156
4/24/1990	417	154	1	154
4/25/1990	416	153	1	153
4/26/1990	410	147	1	147
4/27/1990	409	146	1	146
4/28/1990	412	149	1	149
4/29/1990	404	141	1	141
4/30/1990	397	134	1	134
5/1/1990	399	136	1	136
5/2/1990	392	129	1	129
5/3/1990	400	137	1	137
5/4/1990	401	138	1	138
5/5/1990	410	147	1	147
5/6/1990	419	156	1	156
5/7/1990	419	156	1	156
5/8/1990	411	148	1	148
5/9/1990	404	141	1	141
5/10/1990	403	140	1	140
5/11/1990	401	138	1	138
5/12/1990	402	139	1	139
5/13/1990	396	133	1	133
5/14/1990	404	141	1	141
5/15/1990	407	144	1	144
5/16/1990	409	146	1	146
5/17/1990	396	133	1	133
5/18/1990	411	148	1	148
5/19/1990	400	137	1	137
5/20/1990	409	146	1	146
5/21/1990	406	143	1	143
5/22/1990	408	145	1	145
5/23/1990	412	149	1	149
5/24/1990	417	154	1	154

5/25/1990	417	154	1	154
5/26/1990	420	157	1	157
5/27/1990	418	155	1	155
5/28/1990	416	153	1	153
5/29/1990	424	161	1	161
5/30/1990	420	157	1	157
5/31/1990	419	156	1	156
6/1/1990	414	151	1	151
6/2/1990	412	149	1	149
6/3/1990	420	157	1	157
6/4/1990	406	143	1	143
6/5/1990	410	147	1	147
6/6/1990	410	147	1	147
6/7/1990	411	148	1	148
6/8/1990	404	141	1	141
6/9/1990	411	148	1	148
6/10/1990	413	150	1	150
6/11/1990	412	149	1	149
6/12/1990	409	146	1	146
6/13/1990	405	142	1	142
6/14/1990	400	137	1	137
6/15/1990	402	139	1	139
6/16/1990	402	139	1	139
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6/18/1990	401	138	1	138
6/19/1990	400	137	1	137
6/20/1990	399	136	1	136
6/21/1990	399	136	1	136
6/22/1990	405	142	1	142
6/23/1990	417	154	1	154
6/24/1990	431	168	1	168
6/25/1990	458	195	1	195
6/26/1990	446	183	1	183
6/27/1990	442	179	1	179
6/28/1990	441	178	1	178
6/29/1990	440	177	1	177
6/30/1990	250	-13	0	0
4/1/1991	254	-9	0	0
4/2/1991	258	-5	0	0
4/3/1991	246	-17	0	0
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4/5/1991	289	26	1	26
4/6/1991	283	20	1	20
4/7/1991	288	25	1	25

4/8/1991	335	72	1	72
4/9/1991	363	100	1	100
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4/11/1991	342	79	1	79
4/12/1991	355	92	1	92
4/13/1991	354	91	1	91
4/14/1991	354	91	1	91
4/15/1991	380	117	1	117
4/16/1991	386	123	1	123
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4/18/1991	388	125	1	125
4/19/1991	395	132	1	132
4/20/1991	433	170	1	170
4/21/1991	452	189	1	189
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4/23/1991	466	203	1	203
4/24/1991	460	197	1	197
4/25/1991	459	196	1	196
4/26/1991	456	193	1	193
4/27/1991	447	184	1	184
4/28/1991	446	183	1	183
4/29/1991	438	175	1	175
4/30/1991	436	173	1	173
5/1/1991	443	180	1	180
5/2/1991	442	179	1	179
5/3/1991	440	177	1	177
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5/6/1991	454	191	1	191
5/7/1991	466	203	1	203
5/8/1991	486	223	1	223
5/9/1991	498	235	1	235
5/10/1991	493	230	1	230
5/11/1991	505	242	1	242
5/12/1991	508	245	1	245
5/13/1991	510	247	1	247
5/14/1991	509	246	1	246
5/15/1991	516	253	1	253
5/16/1991	518	255	1	255
5/17/1991	505	242	1	242
5/18/1991	425	162	1	162
5/19/1991	401	138	1	138
5/20/1991	399	136	1	136
5/21/1991	394	131	1	131

5/22/1991	393	130	1	130
5/23/1991	387	124	1	124
5/24/1991	388	125	1	125
5/25/1991	386	123	1	123
5/26/1991	381	118	1	118
5/27/1991	375	112	1	112
5/28/1991	369	106	1	106
5/29/1991	356	93	1	93
5/30/1991	414	151	1	151
5/31/1991	416	153	1	153
6/1/1991	413	150	1	150
6/2/1991	417	154	1	154
6/3/1991	429	166	1	166
6/4/1991	416	153	1	153
6/5/1991	418	155	1	155
6/6/1991	414	151	1	151
6/7/1991	411	148	1	148
6/8/1991	406	143	1	143
6/9/1991	404	141	1	141
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6/11/1991	405	142	1	142
6/12/1991	397	134	1	134
6/13/1991	396	133	1	133
6/14/1991	401	138	1	138
6/15/1991	395	132	1	132
6/16/1991	393	130	1	130
6/17/1991	391	128	1	128
6/18/1991	385	122	1	122
6/19/1991	380	117	1	117
6/20/1991	380	117	1	117
6/21/1991	384	121	1	121
6/22/1991	375	112	1	112
6/23/1991	374	111	1	111
6/24/1991	370	107	1	107
6/25/1991	370	107	1	107
6/26/1991	369	106	1	106
6/27/1991	366	103	1	103
6/28/1991	367	104	1	104
6/29/1991	357	94	1	94
6/30/1991	336	73	1	73
4/1/1992	250	-13	0	0
4/2/1992	250	-13	0	0
4/3/1992	250	-13	0	0
4/4/1992	241	-22	0	0

4/5/1992	249	-14	0	0
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4/7/1992	239	-24	0	0
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4/9/1992	247	-16	0	0
4/10/1992	253	-10	0	0
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4/13/1992	257	-6	0	0
4/14/1992	263	0	0	0
4/15/1992	271	8	1	8
4/16/1992	260	-3	0	0
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4/19/1992	258	-5	0	0
4/20/1992	255	-8	0	0
4/21/1992	263	0	1	0
4/22/1992	267	4	1	4
4/23/1992	265	2	1	2
4/24/1992	264	1	1	1
4/25/1992	270	7	1	7
4/26/1992	277	14	1	14
4/27/1992	287	24	1	24
4/28/1992	278	15	1	15
4/29/1992	285	22	1	22
4/30/1992	286	23	1	23
5/1/1992	275	12	1	12
5/2/1992	277	14	1	14
5/3/1992	282	19	1	19
5/4/1992	279	16	1	16
5/5/1992	283	20	1	20
5/6/1992	298	35	1	35
5/7/1992	317	54	1	54
5/8/1992	319	56	1	56
5/9/1992	316	53	1	53
5/10/1992	314	51	1	51
5/11/1992	309	46	1	46
5/12/1992	306	43	1	43
5/13/1992	302	39	1	39
5/14/1992	302	39	1	39
5/15/1992	305	42	1	42
5/16/1992	305	42	1	42
5/17/1992	302	39	1	39
5/18/1992	302	39	1	39

5/19/1992	304	41	1	41
5/20/1992	305	42	1	42
5/21/1992	302	39	1	39
5/22/1992	303	40	1	40
5/23/1992	301	38	1	38
5/24/1992	301	38	1	38
5/25/1992	300	37	1	37
5/26/1992	280	17	1	17
5/27/1992	299	36	1	36
5/28/1992	288	25	1	25
5/29/1992	289	26	1	26
5/30/1992	282	19	1	19
5/31/1992	280	17	1	17
6/1/1992	280	17	1	17
6/2/1992	279	16	1	16
6/3/1992	279	16	1	16
6/4/1992	277	14	1	14
6/5/1992	280	17	1	17
6/6/1992	278	15	1	15
6/7/1992	270	7	1	7
6/8/1992	274	11	1	11
6/9/1992	272	9	1	9
6/10/1992	272	9	1	9
6/11/1992	268	5	1	5
6/12/1992	267	4	1	4
6/13/1992	266	3	1	3
6/14/1992	270	7	1	7
6/15/1992	289	26	1	26
6/16/1992	335	72	1	72
6/17/1992	319	56	1	56
6/18/1992	305	42	1	42
6/19/1992	290	27	1	27
6/20/1992	286	23	1	23
6/21/1992	284	21	1	21
6/22/1992	276	13	1	13
6/23/1992	272	9	1	9
6/24/1992	274	11	1	11
6/25/1992	270	7	1	7
6/26/1992	266	3	1	3
6/27/1992	266	3	1	3
6/28/1992	268	5	1	5
6/29/1992	271	8	1	8
6/30/1992	269	6	1	6
4/1/1993	237	-26	0	0

4/2/1993	237	-26	0	0
4/3/1993	237	-26	0	0
4/4/1993	237	-26	0	0
4/5/1993	237	-26	0	0
4/6/1993	237	-26	0	0
4/7/1993	237	-26	0	0
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4/12/1993	237	-26	0	0
4/13/1993	237	-26	0	0
4/14/1993	237	-26	0	0
4/15/1993	375	112	1	112
4/16/1993	375	112	1	112
4/17/1993	375	112	1	112
4/18/1993	375	112	1	112
4/19/1993	375	112	1	112
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5/6/1993	375	112	1	112
5/7/1993	375	112	1	112
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5/10/1993	375	112	1	112
5/11/1993	375	112	1	112
5/12/1993	375	112	1	112
5/13/1993	375	112	1	112
5/14/1993	375	112	1	112
5/15/1993	375	112	1	112

5/16/1993	375	112	1	112
5/17/1993	375	112	1	112
5/18/1993	375	112	1	112
5/19/1993	363	100	1	100
5/20/1993	352	89	1	89
5/21/1993	346	83	1	83
5/22/1993	357	94	1	94
5/23/1993	346	83	1	83
5/24/1993	343	80	1	80
5/25/1993	342	79	1	79
5/26/1993	347	84	1	84
5/27/1993	333	70	1	70
5/28/1993	343	80	1	80
5/29/1993	338	75	1	75
5/30/1993	345	82	1	82
5/31/1993	337	74	1	74
6/1/1993	332	69	1	69
6/2/1993	339	76	1	76
6/3/1993	357	94	1	94
6/4/1993	305	42	1	42
6/5/1993	330	67	1	67
6/6/1993	326	63	1	63
6/7/1993	334	71	1	71
6/8/1993	336	73	1	73
6/9/1993	278	15	1	15
6/10/1993	373	110	1	110
6/11/1993	373	110	1	110
6/12/1993	363	100	1	100
6/13/1993	356	93	1	93
6/14/1993	354	91	1	91
6/15/1993	397	134	1	134
6/16/1993	344	81	1	81
6/17/1993	341	78	1	78
6/18/1993	338	75	1	75
6/19/1993	323	60	1	60
6/20/1993	330	67	1	67
6/21/1993	502	239	1	239
6/22/1993	519	256	1	256
6/23/1993	494	231	1	231
6/24/1993	499	236	1	236
6/25/1993	493	230	1	230
6/26/1993	472	209	1	209
6/27/1993	403	140	1	140
6/28/1993	389	126	1	126

6/29/1993	384	121	1	121
6/30/1993	384	121	1	121
4/1/1994	283	20	1	20
4/2/1994	285	22	1	22
4/3/1994	277	14	1	14
4/4/1994	288	25	1	25
4/5/1994	283	20	1	20
4/6/1994	286	23	1	23
4/7/1994	287	24	1	24
4/8/1994	288	25	1	25
4/9/1994	282	19	1	19
4/10/1994	271	8	1	8
4/11/1994	298	35	1	35
4/12/1994	301	38	1	38
4/13/1994	298	35	1	35
4/14/1994	296	33	1	33
4/15/1994	300	37	1	37
4/16/1994	307	44	1	44
4/17/1994	311	48	1	48
4/18/1994	320	57	1	57
4/19/1994	299	36	1	36
4/20/1994	246	-17	0	0
4/21/1994	335	72	1	72
4/22/1994	332	69	1	69
4/23/1994	300	37	1	37
4/24/1994	300	37	1	37
4/25/1994	300	37	1	37
4/26/1994	300	37	1	37
4/27/1994	300	37	1	37
4/28/1994	300	37	1	37
4/29/1994	300	37	1	37
4/30/1994	300	37	1	37
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5/2/1994	300	37	1	37
5/3/1994	300	37	1	37
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5/5/1994	300	37	1	37
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5/7/1994	300	37	1	37
5/8/1994	300	37	1	37
5/9/1994	300	37	1	37
5/10/1994	350	87	1	87
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5/12/1994	350	87	1	87

5/13/1994	350	87	1	87
5/14/1994	350	87	1	87
5/15/1994	350	87	1	87
5/16/1994	350	87	1	87
5/17/1994	392	129	1	129
5/18/1994	386	123	1	123
5/19/1994	390	127	1	127
5/20/1994	392	129	1	129
5/21/1994	384	121	1	121
5/22/1994	382	119	1	119
5/23/1994	387	124	1	124
5/24/1994	387	124	1	124
5/25/1994	386	123	1	123
5/26/1994	330	67	1	67
5/27/1994	290	27	1	27
5/28/1994	290	27	1	27
5/29/1994	289	26	1	26
5/30/1994	288	25	1	25
5/31/1994	283	20	1	20
6/1/1994	285	22	1	22
6/2/1994	287	24	1	24
6/3/1994	280	17	1	17
6/4/1994	282	19	1	19
6/5/1994	278	15	1	15
6/6/1994	278	15	1	15
6/7/1994	282	19	1	19
6/8/1994	280	17	1	17
6/9/1994	281	18	1	18
6/10/1994	281	18	1	18
6/11/1994	279	16	1	16
6/12/1994	276	13	1	13
6/13/1994	280	17	1	17
6/14/1994	290	27	1	27
6/15/1994	287	24	1	24
6/16/1994	281	18	1	18
6/17/1994	283	20	1	20
6/18/1994	281	18	1	18
6/19/1994	281	18	1	18
6/20/1994	284	21	1	21
6/21/1994	287	24	1	24
6/22/1994	283	20	1	20
6/23/1994	242	-21	0	0
6/24/1994	252	-11	0	0
6/25/1994	260	-3	0	0

6/26/1994	262	-1	0	0
6/27/1994	263	0	1	0
6/28/1994	260	-3	0	0
6/29/1994	260	-3	0	0
6/30/1994	265	2	1	2
4/1/1995	283	20	1	20
4/2/1995	275	12	1	12
4/3/1995	281	18	1	18
4/4/1995	291	28	1	28
4/5/1995	295	32	1	32
4/6/1995	296	33	1	33
4/7/1995	299	36	1	36
4/8/1995	303	40	1	40
4/9/1995	301	38	1	38
4/10/1995	299	36	1	36
4/11/1995	291	28	1	28
4/12/1995	294	31	1	31
4/13/1995	289	26	1	26
4/14/1995	310	47	1	47
4/15/1995	304	41	1	41
4/16/1995	300	37	1	37
4/17/1995	303	40	1	40
4/18/1995	299	36	1	36
4/19/1995	295	32	1	32
4/20/1995	299	36	1	36
4/21/1995	287	24	1	24
4/22/1995	294	31	1	31
4/23/1995	295	32	1	32
4/24/1995	293	30	1	30
4/25/1995	295	32	1	32
4/26/1995	295	32	1	32
4/27/1995	294	31	1	31
4/28/1995	292	29	1	29
4/29/1995	265	2	1	2
4/30/1995	0	-263	0	0
5/1/1995	0	-263	0	0
5/2/1995	0	-263	0	0
5/3/1995	0	-263	0	0
5/4/1995	146	-117	0	0
5/5/1995	250	-13	0	0
5/6/1995	292	29	1	29
5/7/1995	291	28	1	28
5/8/1995	291	28	1	28
5/9/1995	290	27	1	27

5/10/1995	288	25	1	25
5/11/1995	290	27	1	27
5/12/1995	293	30	1	30
5/13/1995	291	28	1	28
5/14/1995	282	19	1	19
5/15/1995	281	18	1	18
5/16/1995	281	18	1	18
5/17/1995	284	21	1	21
5/18/1995	284	21	1	21
5/19/1995	284	21	1	21
5/20/1995	284	21	1	21
5/21/1995	287	24	1	24
5/22/1995	287	24	1	24
5/23/1995	283	20	1	20
5/24/1995	282	19	1	19
5/25/1995	280	17	1	17
5/26/1995	276	13	1	13
5/27/1995	273	10	1	10
5/28/1995	273	10	1	10
5/29/1995	274	11	1	11
5/30/1995	277	14	1	14
5/31/1995	283	20	1	20
6/1/1995	284	21	1	21
6/2/1995	279	16	1	16
6/3/1995	279	16	1	16
6/4/1995	276	13	1	13
6/5/1995	275	12	1	12
6/6/1995	279	16	1	16
6/7/1995	273	10	1	10
6/8/1995	266	3	1	3
6/9/1995	265	2	1	2
6/10/1995	341	78	1	78
6/11/1995	391	128	1	128
6/12/1995	391	128	1	128
6/13/1995	391	128	1	128
6/14/1995	465	202	1	202
6/15/1995	502	239	1	239
6/16/1995	503	240	1	240
6/17/1995	503	240	1	240
6/18/1995	502	239	1	239
6/19/1995	498	235	1	235
6/20/1995	494	231	1	231
6/21/1995	493	230	1	230
6/22/1995	491	228	1	228

6/23/1995	479	216	1	216
6/24/1995	480	217	1	217
6/25/1995	475	212	1	212
6/26/1995	476	213	1	213
6/27/1995	462	199	1	199
6/28/1995	447	184	1	184
6/29/1995	450	187	1	187
6/30/1995	446	183	1	183
4/1/1996	212	-51	0	0
4/2/1996	215	-48	0	0
4/3/1996	213	-50	0	0
4/4/1996	210	-53	0	0
4/5/1996	211	-52	0	0
4/6/1996	216	-47	0	0
4/7/1996	213	-50	0	0
4/8/1996	231	-32	0	0
4/9/1996	238	-25	0	0
4/10/1996	243	-20	0	0
4/11/1996	241	-22	0	0
4/12/1996	233	-30	0	0
4/13/1996	225	-38	0	0
4/14/1996	221	-42	0	0
4/15/1996	0	-263	0	0
4/16/1996	213	-50	0	0
4/17/1996	214	-49	0	0
4/18/1996	214	-49	0	0
4/19/1996	206	-57	0	0
4/20/1996	202	-61	0	0
4/21/1996	200	-63	0	0
4/22/1996	198	-65	0	0
4/23/1996	202	-61	0	0
4/24/1996	228	-35	0	0
4/25/1996	239	-24	0	0
4/26/1996	239	-24	0	0
4/27/1996	239	-24	0	0
4/28/1996	237	-26	0	0
4/29/1996	236	-27	0	0
4/30/1996	236	-27	0	0
5/1/1996	229	-34	0	0
5/2/1996	229	-34	0	0
5/3/1996	229	-34	0	0
5/4/1996	228	-35	0	0
5/5/1996	228	-35	0	0
5/6/1996	228	-35	0	0

5/7/1996	223	-40	0	0
5/8/1996	231	-32	0	0
5/9/1996	233	-30	0	0
5/10/1996	234	-29	0	0
5/11/1996	236	-27	0	0
5/12/1996	245	-18	0	0
5/13/1996	251	-12	0	0
5/14/1996	258	-5	0	0
5/15/1996	257	-6	0	0
5/16/1996	255	-8	0	0
5/17/1996	254	-9	0	0
5/18/1996	255	-8	0	0
5/19/1996	252	-11	0	0
5/20/1996	248	-15	0	0
5/21/1996	239	-24	0	0
5/22/1996	247	-16	0	0
5/23/1996	251	-12	0	0
5/24/1996	250	-13	0	0
5/25/1996	247	-16	0	0
5/26/1996	249	-14	0	0
5/27/1996	254	-9	0	0
5/28/1996	254	-9	0	0
5/29/1996	227	-36	0	0
5/30/1996	255	-8	0	0
5/31/1996	246	-17	0	0
6/1/1996	253	-10	0	0
6/2/1996	251	-12	0	0
6/3/1996	87	-176	0	0
6/4/1996	0	-263	0	0
6/5/1996	0	-263	0	0
6/6/1996	0	-263	0	0
6/7/1996	0	-263	0	0
6/8/1996	0	-263	0	0
6/9/1996	0	-263	0	0
6/10/1996	0	-263	0	0
6/11/1996	0	-263	0	0
6/12/1996	0	-263	0	0
6/13/1996	0	-263	0	0
6/14/1996	0	-263	0	0
6/15/1996	0	-263	0	0
6/16/1996	0	-263	0	0
6/17/1996	0	-263	0	0
6/18/1996	0	-263	0	0
6/19/1996	206	-57	0	0

6/20/1996	331	68	1	68
6/21/1996	330	67	1	67
6/22/1996	331	68	1	68
6/23/1996	330	67	1	67
6/24/1996	327	64	1	64
6/25/1996	326	63	1	63
6/26/1996	326	63	1	63
6/27/1996	324	61	1	61
6/28/1996	325	62	1	62
6/29/1996	325	62	1	62
6/30/1996	324	61	1	61
4/1/1997	233	-30	0	0
4/2/1997	227	-36	0	0
4/3/1997	203	-60	0	0
4/4/1997	246	-17	0	0
4/5/1997	241	-22	0	0
4/6/1997	228	-35	0	0
4/7/1997	235	-28	0	0
4/8/1997	234	-29	0	0
4/9/1997	239	-24	0	0
4/10/1997	233	-30	0	0
4/11/1997	216	-47	0	0
4/12/1997	243	-20	0	0
4/13/1997	251	-12	0	0
4/14/1997	255	-8	0	0
4/15/1997	243	-20	0	0
4/16/1997	273	10	1	10
4/17/1997	287	24	1	24
4/18/1997	293	30	1	30
4/19/1997	301	38	1	38
4/20/1997	301	38	1	38
4/21/1997	307	44	1	44
4/22/1997	304	41	1	41
4/23/1997	303	40	1	40
4/24/1997	305	42	1	42
4/25/1997	306	43	1	43
4/26/1997	293	30	1	30
4/27/1997	313	50	1	50
4/28/1997	317	54	1	54
4/29/1997	314	51	1	51
4/30/1997	299	36	1	36
5/1/1997	313	50	1	50
5/2/1997	291	28	1	28
5/3/1997	306	43	1	43

5/4/1997	310	47	1	47
5/5/1997	314	51	1	51
5/6/1997	316	53	1	53
5/7/1997	327	64	1	64
5/8/1997	323	60	1	60
5/9/1997	323	60	1	60
5/10/1997	328	65	1	65
5/11/1997	333	70	1	70
5/12/1997	333	70	1	70
5/13/1997	337	74	1	74
5/14/1997	340	77	1	77
5/15/1997	350	87	1	87
5/16/1997	347	84	1	84
5/17/1997	358	95	1	95
5/18/1997	323	60	1	60
5/19/1997	318	55	1	55
5/20/1997	318	55	1	55
5/21/1997	317	54	1	54
5/22/1997	328	65	1	65
5/23/1997	329	66	1	66
5/24/1997	336	73	1	73
5/25/1997	362	99	1	99
5/26/1997	341	78	1	78
5/27/1997	339	76	1	76
5/28/1997	318	55	1	55
5/29/1997	305	42	1	42
5/30/1997	303	40	1	40
5/31/1997	306	43	1	43
6/1/1997	321	58	1	58
6/2/1997	322	59	1	59
6/3/1997	301	38	1	38
6/4/1997	317	54	1	54
6/5/1997	363	100	1	100
6/6/1997	368	105	1	105
6/7/1997	134	-129	0	0
6/8/1997	0	-263	0	0
6/9/1997	0	-263	0	0
6/10/1997	0	-263	0	0
6/11/1997	0	-263	0	0
6/12/1997	0	-263	0	0
6/13/1997	0	-263	0	0
6/14/1997	0	-263	0	0
6/15/1997	0	-263	0	0
6/16/1997	0	-263	0	0

6/17/1997	0	-263	0	0
6/18/1997	0	-263	0	0
6/19/1997	0	-263	0	0
6/20/1997	0	-263	0	0
6/21/1997	0	-263	0	0
6/22/1997	0	-263	0	0
6/23/1997	200	-63	0	0
6/24/1997	300	37	1	37
6/25/1997	300	37	1	37
6/26/1997	350	87	1	87
6/27/1997	350	87	1	87
6/28/1997	350	87	1	87
6/29/1997	350	87	1	87
6/30/1997	350	87	1	87
4/1/1998	259	-4	0	0
4/2/1998	260	-3	0	0
4/3/1998	250	-13	0	0
4/4/1998	263	0	1	0
4/5/1998	253	-10	0	0
4/6/1998	263	0	0	0
4/7/1998	256	-7	0	0
4/8/1998	259	-4	0	0
4/9/1998	259	-4	0	0
4/10/1998	258	-5	0	0
4/11/1998	261	-2	0	0
4/12/1998	264	1	1	1
4/13/1998	262	-1	0	0
4/14/1998	261	-2	0	0
4/15/1998	259	-4	0	0
4/16/1998	259	-4	0	0
4/17/1998	258	-5	0	0
4/18/1998	257	-6	0	0
4/19/1998	257	-6	0	0
4/20/1998	259	-4	0	0
4/21/1998	262	-1	0	0
4/22/1998	268	5	1	5
4/23/1998	277	14	1	14
4/24/1998	274	11	1	11
4/25/1998	262	-1	0	0
4/26/1998	256	-7	0	0
4/27/1998	247	-16	0	0
4/28/1998	254	-9	0	0
4/29/1998	258	-5	0	0
4/30/1998	258	-5	0	0

5/1/1998	256	-7	0	0
5/2/1998	279	16	1	16
5/3/1998	311	48	1	48
5/4/1998	371	108	1	108
5/5/1998	403	140	1	140
5/6/1998	391	128	1	128
5/7/1998	385	122	1	122
5/8/1998	398	135	1	135
5/9/1998	394	131	1	131
5/10/1998	390	127	1	127
5/11/1998	388	125	1	125
5/12/1998	386	123	1	123
5/13/1998	385	122	1	122
5/14/1998	384	121	1	121
5/15/1998	385	122	1	122
5/16/1998	382	119	1	119
5/17/1998	381	118	1	118
5/18/1998	379	116	1	116
5/19/1998	378	115	1	115
5/20/1998	378	115	1	115
5/21/1998	380	117	1	117
5/22/1998	383	120	1	120
5/23/1998	382	119	1	119
5/24/1998	382	119	1	119
5/25/1998	383	120	1	120
5/26/1998	382	119	1	119
5/27/1998	382	119	1	119
5/28/1998	381	118	1	118
5/29/1998	380	117	1	117
5/30/1998	381	118	1	118
5/31/1998	380	117	1	117
6/1/1998	380	117	1	117
6/2/1998	380	117	1	117
6/3/1998	380	117	1	117
6/4/1998	379	116	1	116
6/5/1998	386	123	1	123
6/6/1998	390	127	1	127
6/7/1998	390	127	1	127
6/8/1998	388	125	1	125
6/9/1998	386	123	1	123
6/10/1998	373	110	1	110
6/11/1998	369	106	1	106
6/12/1998	350	87	1	87
6/13/1998	298	35	1	35

6/14/1998	303	40	1	40
6/15/1998	305	42	1	42
6/16/1998	309	46	1	46
6/17/1998	318	55	1	55
6/18/1998	318	55	1	55
6/19/1998	319	56	1	56
6/20/1998	319	56	1	56
6/21/1998	311	48	1	48
6/22/1998	306	43	1	43
6/23/1998	305	42	1	42
6/24/1998	301	38	1	38
6/25/1998	301	38	1	38
6/26/1998	304	41	1	41
6/27/1998	302	39	1	39
6/28/1998	300	37	1	37
6/29/1998	296	33	1	33
6/30/1998	294	31	1	31
4/1/1999	278	15	1	15
4/2/1999	274	11	1	11
4/3/1999	210	-53	0	0
4/4/1999	265	2	1	2
4/5/1999	270	7	1	7
4/6/1999	277	14	1	14
4/7/1999	277	14	1	14
4/8/1999	279	16	1	16
4/9/1999	279	16	1	16
4/10/1999	277	14	1	14
4/11/1999	226	-37	0	0
4/12/1999	264	1	1	1
4/13/1999	280	17	1	17
4/14/1999	280	17	1	17
4/15/1999	265	2	1	2
4/16/1999	306	43	1	43
4/17/1999	320	57	1	57
4/18/1999	325	62	1	62
4/19/1999	333	70	1	70
4/20/1999	345	82	1	82
4/21/1999	343	80	1	80
4/22/1999	335	72	1	72
4/23/1999	331	68	1	68
4/24/1999	329	66	1	66
4/25/1999	332	69	1	69
4/26/1999	337	74	1	74
4/27/1999	344	81	1	81

4/28/1999	344	81	1	81
4/29/1999	341	78	1	78
4/30/1999	336	73	1	73
5/1/1999	338	75	1	75
5/2/1999	344	81	1	81
5/3/1999	347	84	1	84
5/4/1999	344	81	1	81
5/5/1999	328	65	1	65
5/6/1999	336	73	1	73
5/7/1999	338	75	1	75
5/8/1999	341	78	1	78
5/9/1999	341	78	1	78
5/10/1999	339	76	1	76
5/11/1999	336	73	1	73
5/12/1999	333	70	1	70
5/13/1999	339	76	1	76
5/14/1999	337	74	1	74
5/15/1999	336	73	1	73
5/16/1999	334	71	1	71
5/17/1999	335	72	1	72
5/18/1999	338	75	1	75
5/19/1999	347	84	1	84
5/20/1999	354	91	1	91
5/21/1999	360	97	1	97
5/22/1999	362	99	1	99
5/23/1999	364	101	1	101
5/24/1999	366	103	1	103
5/25/1999	286	23	1	23
5/26/1999	265	2	1	2
5/27/1999	158	-105	0	0
5/28/1999	235	-28	0	0
5/29/1999	310	47	1	47
5/30/1999	307	44	1	44
5/31/1999	302	39	1	39
6/1/1999	303	40	1	40
6/2/1999	302	39	1	39
6/3/1999	301	38	1	38
6/4/1999	298	35	1	35
6/5/1999	296	33	1	33
6/6/1999	297	34	1	34
6/7/1999	305	42	1	42
6/8/1999	313	50	1	50
6/9/1999	312	49	1	49
6/10/1999	306	43	1	43

6/11/1999	301	38	1	38
6/12/1999	300	37	1	37
6/13/1999	349	86	1	86
6/14/1999	381	118	1	118
6/15/1999	381	118	1	118
6/16/1999	374	111	1	111
6/17/1999	370	107	1	107
6/18/1999	368	105	1	105
6/19/1999	366	103	1	103
6/20/1999	363	100	1	100
6/21/1999	348	85	1	85
6/22/1999	367	104	1	104
6/23/1999	360	97	1	97
6/24/1999	358	95	1	95
6/25/1999	352	89	1	89
6/26/1999	357	94	1	94
6/27/1999	357	94	1	94
6/28/1999	355	92	1	92
6/29/1999	355	92	1	92
6/30/1999	358	95	1	95
4/1/2000	260	-3	0	0
4/2/2000	249	-14	0	0
4/3/2000	227	-36	0	0
4/4/2000	260	-3	0	0
4/5/2000	268	5	1	5
4/6/2000	251	-12	0	0
4/7/2000	262	-1	0	0
4/8/2000	257	-6	0	0
4/9/2000	263	0	0	0
4/10/2000	264	1	1	1
4/11/2000	267	4	1	4
4/12/2000	272	9	1	9
4/13/2000	277	14	1	14
4/14/2000	275	12	1	12
4/15/2000	272	9	1	9
4/16/2000	271	8	1	8
4/17/2000	268	5	1	5
4/18/2000	275	12	1	12
4/19/2000	277	14	1	14
4/20/2000	277	14	1	14
4/21/2000	279	16	1	16
4/22/2000	283	20	1	20
4/23/2000	288	25	1	25
4/24/2000	283	20	1	20

4/25/2000	278	15	1	15
4/26/2000	278	15	1	15
4/27/2000	278	15	1	15
4/28/2000	284	21	1	21
4/29/2000	288	25	1	25
4/30/2000	282	19	1	19
5/1/2000	276	13	1	13
5/2/2000	272	9	1	9
5/3/2000	273	10	1	10
5/4/2000	274	11	1	11
5/5/2000	270	7	1	7
5/6/2000	270	7	1	7
5/7/2000	269	6	1	6
5/8/2000	267	4	1	4
5/9/2000	267	4	1	4
5/10/2000	268	5	1	5
5/11/2000	269	6	1	6
5/12/2000	268	5	1	5
5/13/2000	267	4	1	4
5/14/2000	267	4	1	4
5/15/2000	268	5	1	5
5/16/2000	269	6	1	6
5/17/2000	275	12	1	12
5/18/2000	275	12	1	12
5/19/2000	268	5	1	5
5/20/2000	274	11	1	11
5/21/2000	276	13	1	13
5/22/2000	279	16	1	16
5/23/2000	279	16	1	16
5/24/2000	271	8	1	8
5/25/2000	278	15	1	15
5/26/2000	274	11	1	11
5/27/2000	269	6	1	6
5/28/2000	273	10	1	10
5/29/2000	280	17	1	17
5/30/2000	281	18	1	18
5/31/2000	274	11	1	11
6/1/2000	277	14	1	14
6/2/2000	275	12	1	12
6/3/2000	273	10	1	10
6/4/2000	272	9	1	9
6/5/2000	305	42	1	42
6/6/2000	283	20	1	20
6/7/2000	259	-4	0	0

6/8/2000	257	-6	0	0
6/9/2000	256	-7	0	0
6/10/2000	257	-6	0	0
6/11/2000	254	-9	0	0
6/12/2000	253	-10	0	0
6/13/2000	253	-10	0	0
6/14/2000	226	-37	0	0
6/15/2000	189	-74	0	0
6/16/2000	197	-66	0	0
6/17/2000	194	-69	0	0
6/18/2000	192	-71	0	0
6/19/2000	195	-68	0	0
6/20/2000	245	-18	0	0
6/21/2000	264	1	1	1
6/22/2000	263	0	0	0
6/23/2000	266	3	1	3
6/24/2000	262	-1	0	0
6/25/2000	261	-2	0	0
6/26/2000	258	-5	0	0
6/27/2000	256	-7	0	0
6/28/2000	263	0	0	0
6/29/2000	266	3	1	3
6/30/2000	265	2	1	2
4/1/2001	201	-62	0	0
4/2/2001	211	-52	0	0
4/3/2001	211	-52	0	0
4/4/2001	211	-52	0	0
4/5/2001	211	-52	0	0
4/6/2001	212	-51	0	0
4/7/2001	212	-51	0	0
4/8/2001	213	-50	0	0
4/9/2001	212	-51	0	0
4/10/2001	211	-52	0	0
4/11/2001	206	-57	0	0
4/12/2001	208	-55	0	0
4/13/2001	200	-63	0	0
4/14/2001	208	-55	0	0
4/15/2001	159	-104	0	0
4/16/2001	258	-5	0	0
4/17/2001	287	24	1	24
4/18/2001	301	38	1	38
4/19/2001	310	47	1	47
4/20/2001	302	39	1	39
4/21/2001	292	29	1	29

4/22/2001	289	26	1	26
4/23/2001	289	26	1	26
4/24/2001	292	29	1	29
4/25/2001	303	40	1	40
4/26/2001	314	51	1	51
4/27/2001	320	57	1	57
4/28/2001	329	66	1	66
4/29/2001	333	70	1	70
4/30/2001	319	56	1	56
5/1/2001	323	60	1	60
5/2/2001	313	50	1	50
5/3/2001	310	47	1	47
5/4/2001	312	49	1	49
5/5/2001	315	52	1	52
5/6/2001	316	53	1	53
5/7/2001	314	51	1	51
5/8/2001	318	55	1	55
5/9/2001	323	60	1	60
5/10/2001	324	61	1	61
5/11/2001	323	60	1	60
5/12/2001	325	62	1	62
5/13/2001	331	68	1	68
5/14/2001	331	68	1	68
5/15/2001	353	90	1	90
5/16/2001	370	107	1	107
5/17/2001	370	107	1	107
5/18/2001	366	103	1	103
5/19/2001	361	98	1	98
5/20/2001	357	94	1	94
5/21/2001	355	92	1	92
5/22/2001	353	90	1	90
5/23/2001	351	88	1	88
5/24/2001	350	87	1	87
5/25/2001	350	87	1	87
5/26/2001	348	85	1	85
5/27/2001	348	85	1	85
5/28/2001	347	84	1	84
5/29/2001	345	82	1	82
5/30/2001	343	80	1	80
5/31/2001	341	78	1	78
6/1/2001	331	68	1	68
6/2/2001	256	-7	0	0
6/3/2001	258	-5	0	0
6/4/2001	257	-6	0	0

6/5/2001	255	-8	0	0
6/6/2001	256	-7	0	0
6/7/2001	254	-9	0	0
6/8/2001	252	-11	0	0
6/9/2001	251	-12	0	0
6/10/2001	180	-83	0	0
6/11/2001	146	-117	0	0
6/12/2001	153	-110	0	0
6/13/2001	150	-113	0	0
6/14/2001	199	-64	0	0
6/15/2001	239	-24	0	0
6/16/2001	239	-24	0	0
6/17/2001	240	-23	0	0
6/18/2001	172	-91	0	0
6/19/2001	236	-27	0	0
6/20/2001	202	-61	0	0
6/21/2001	224	-39	0	0
6/22/2001	239	-24	0	0
6/23/2001	255	-8	0	0
6/24/2001	254	-9	0	0
6/25/2001	254	-9	0	0
6/26/2001	250	-13	0	0
6/27/2001	249	-14	0	0
6/28/2001	261	-2	0	0
6/29/2001	274	11	1	11
6/30/2001	279	16	1	16
04/01/02	196	-67	0	0
04/02/02	97	-166	0	0
04/03/02	129	-134	0	0
04/04/02	224	-39	0	0
04/05/02	242	-21	0	0
04/06/02	280	17	1	17
04/07/02	285	22	1	22
04/08/02	278	15	1	15
04/09/02	258	-5	0	0
04/10/02	260	-3	0	0
04/11/02	262	-1	0	0
04/12/02	266	3	1	3
04/13/02	285	22	1	22
04/14/02	332	69	1	69
04/15/02	339	76	1	76
04/16/02	306	43	1	43
04/17/02	288	25	1	25
04/18/02	278	15	1	15

04/19/02	266	3	1	3
04/20/02	263	0	0	0
04/21/02	284	21	1	21
04/22/02	313	50	1	50
04/23/02	318	55	1	55
04/24/02	317	54	1	54
04/25/02	275	12	1	12
04/26/02	260	-3	0	0
04/27/02	265	2	1	2
04/28/02	271	8	1	8
04/29/02	269	6	1	6
04/30/02	281	18	1	18
05/01/02	278	15	1	15
05/02/02	277	14	1	14
05/03/02	290	27	1	27
05/04/02	259	-4	0	0
05/05/02	293	30	1	30
05/06/02	293	30	1	30
05/07/02	284	21	1	21
05/08/02	281	18	1	18
05/09/02	278	15	1	15
05/10/02	300	37	1	37
05/11/02	274	11	1	11
05/12/02	285	22	1	22
05/13/02	305	42	1	42
05/14/02	331	68	1	68
05/15/02	336	73	1	73
05/16/02	324	61	1	61
05/17/02	321	58	1	58
05/18/02	335	72	1	72
05/19/02	355	92	1	92
05/20/02	384	121	1	121
05/21/02	388	125	1	125
05/22/02	399	136	1	136
05/23/02	369	106	1	106
05/24/02	359	96	1	96
05/25/02	371	108	1	108
05/26/02	387	124	1	124
05/27/02	401	138	1	138
05/28/02	406	143	1	143
05/29/02	400	137	1	137
05/30/02	402	139	1	139
05/31/02	366	103	1	103
06/01/02	284	21	1	21

06/02/02	292	29	1	29
06/03/02	290	27	1	27
06/04/02	276	13	1	13
06/05/02	260	-3	0	0
06/06/02	255	-8	0	0
06/07/02	248	-15	0	0
06/08/02	245	-18	0	0
06/09/02	242	-21	0	0
06/10/02	244	-19	0	0
06/11/02	320	57	1	57
06/12/02	355	92	1	92
06/13/02	349	86	1	86
06/14/02	365	102	1	102
06/15/02	389	126	1	126
06/16/02	384	121	1	121
06/17/02	382	119	1	119
06/18/02	360	97	1	97
06/19/02	388	125	1	125
06/20/02	382	119	1	119
06/21/02	373	110	1	110
06/22/02	370	107	1	107
06/23/02	368	105	1	105
06/24/02	363	100	1	100
06/25/02	364	101	1	101
06/26/02	380	117	1	117
06/27/02	332	69	1	69
06/28/02	294	31	1	31
06/29/02	289	26	1	26
06/30/02	285	22	1	22
04/01/03	277	14	1	14
04/02/03	265	2	1	2
04/03/03	238	-25	0	0
04/04/03	209	-54	0	0
04/05/03	172	-91	0	0
04/06/03	222	-41	0	0
04/07/03	205	-58	0	0
04/08/03	245	-18	0	0
04/09/03	263	0	0	0
04/10/03	287	24	1	24
04/11/03	308	45	1	45
04/12/03	357	94	1	94
04/13/03	381	118	1	118
04/14/03	385	122	1	122
04/15/03	378	115	1	115

04/16/03	361	98	1	98
04/17/03	354	91	1	91
04/18/03	350	87	1	87
04/19/03	343	80	1	80
04/20/03	344	81	1	81
04/21/03	358	95	1	95
04/22/03	380	117	1	117
04/23/03	402	139	1	139
04/24/03	412	149	1	149
04/25/03	415	152	1	152
04/26/03	416	153	1	153
04/27/03	392	129	1	129
04/28/03	380	117	1	117
04/29/03	371	108	1	108
04/30/03	369	106	1	106
05/01/03	368	105	1	105
05/02/03	371	108	1	108
05/03/03	370	107	1	107
05/04/03	381	118	1	118
05/05/03	390	127	1	127
05/06/03	382	119	1	119
05/07/03	379	116	1	116
05/08/03	378	115	1	115
05/09/03	374	111	1	111
05/10/03	371	108	1	108
05/11/03	368	105	1	105
05/12/03	370	107	1	107
05/13/03	394	131	1	131
05/14/03	406	143	1	143
05/15/03	425	162	1	162
05/16/03	433	170	1	170
05/17/03	422	159	1	159
05/18/03	415	152	1	152
05/19/03	369	106	1	106
05/20/03	332	69	1	69
05/21/03	346	83	1	83
05/22/03	369	106	1	106
05/23/03	361	98	1	98
05/24/03	346	83	1	83
05/25/03	362	99	1	99
05/26/03	293	30	1	30
05/27/03	229	-34	0	0
05/28/03	228	-35	0	0
05/29/03	300	37	1	37

05/30/03	440	177	1	177
05/31/03	440	177	1	177
06/01/03	431	168	1	168
06/02/03	431	168	1	168
06/03/03	413	150	1	150
06/04/03	400	137	1	137
06/05/03	391	128	1	128
06/06/03	390	127	1	127
06/07/03	385	122	1	122
06/08/03	377	114	1	114
06/09/03	386	123	1	123
06/10/03	397	134	1	134
06/11/03	392	129	1	129
06/12/03	384	121	1	121
06/13/03	409	146	1	146
06/14/03	418	155	1	155
06/15/03	413	150	1	150
06/16/03	420	157	1	157
06/17/03	420	157	1	157
06/18/03	420	157	1	157
06/19/03	416	153	1	153
06/20/03	415	152	1	152
06/21/03	426	163	1	163
06/22/03	423	160	1	160
06/23/03	418	155	1	155
06/24/03	415	152	1	152
06/25/03	409	146	1	146
06/26/03	403	140	1	140
06/27/03	397	134	1	134
06/28/03	352	89	1	89
06/29/03	278	15	1	15
06/30/03	276	13	1	13
04/01/04	269	6	1	6
04/02/04	269	6	1	6
04/03/04	266	3	1	3
04/04/04	255	-8	0	0
04/05/04	269	6	1	6
04/06/04	271	8	1	8
04/07/04	263	0	0	0
04/08/04	256	-7	0	0
04/09/04	255	-8	0	0
04/10/04	245	-18	0	0
04/11/04	243	-20	0	0
04/12/04	241	-22	0	0

04/13/04	245	-18	0	0
04/14/04	249	-14	0	0
04/15/04	289	26	1	26
04/16/04	307	44	1	44
04/17/04	326	63	1	63
04/18/04	327	64	1	64
04/19/04	324	61	1	61
04/20/04	329	66	1	66
04/21/04	333	70	1	70
04/22/04	328	65	1	65
04/23/04	324	61	1	61
04/24/04	328	65	1	65
04/25/04	325	62	1	62
04/26/04	326	63	1	63
04/27/04	335	72	1	72
04/28/04	355	92	1	92
04/29/04	348	85	1	85
04/30/04	348	85	1	85
05/01/04	352	89	1	89
05/02/04	357	94	1	94
05/03/04	415	152	1	152
05/04/04	446	183	1	183
05/05/04	450	187	1	187
05/06/04	448	185	1	185
05/07/04	442	179	1	179
05/08/04	442	179	1	179
05/09/04	433	170	1	170
05/10/04	422	159	1	159
05/11/04	419	156	1	156
05/12/04	415	152	1	152
05/13/04	405	142	1	142
05/14/04	401	138	1	138
05/15/04	395	132	1	132
05/16/04	397	134	1	134
05/17/04	396	133	1	133
05/18/04	393	130	1	130
05/19/04	399	136	1	136
05/20/04	398	135	1	135
05/21/04	412	149	1	149
05/22/04	430	167	1	167
05/23/04	464	201	1	201
05/24/04	459	196	1	196
05/25/04	451	188	1	188
05/26/04	455	192	1	192

05/27/04	452	189	1	189
05/28/04	458	195	1	195
05/29/04	487	224	1	224
05/30/04	489	226	1	226
05/31/04	481	218	1	218
06/01/04	479	216	1	216
06/02/04	466	203	1	203
06/03/04	461	198	1	198
06/04/04	460	197	1	197
06/05/04	459	196	1	196
06/06/04	460	197	1	197
06/07/04	463	200	1	200
06/08/04	459	196	1	196
06/09/04	454	191	1	191
06/10/04	493	230	1	230
06/11/04	503	240	1	240
06/12/04	441	178	1	178
06/13/04	439	176	1	176
06/14/04	416	153	1	153
06/15/04	405	142	1	142
06/16/04	401	138	1	138
06/17/04	391	128	1	128
06/18/04	386	123	1	123
06/19/04	381	118	1	118
06/20/04	378	115	1	115
06/21/04	378	115	1	115
06/22/04	426	163	1	163
06/23/04	453	190	1	190
06/24/04	451	188	1	188
06/25/04	450	187	1	187
06/26/04	449	186	1	186
06/27/04	443	180	1	180
06/28/04	441	178	1	178
06/29/04	439	176	1	176
06/30/04	437	174	1	174
04/01/05	218	-45	0	0
04/02/05	227	-36	0	0
04/03/05	221	-42	0	0
04/04/05	234	-29	0	0
04/05/05	247	-16	0	0
04/06/05	261	-2	0	0
04/07/05	277	14	1	14
04/08/05	289	26	1	26
04/09/05	285	22	1	22

04/10/05	273	10	1	10
04/11/05	282	19	1	19
04/12/05	315	52	1	52
04/13/05	330	67	1	67
04/14/05	345	82	1	82
04/15/05	327	64	1	64
04/16/05	330	67	1	67
04/17/05	341	78	1	78
04/18/05	362	99	1	99
04/19/05	348	85	1	85
04/20/05	334	71	1	71
04/21/05	324	61	1	61
04/22/05	322	59	1	59
04/23/05	340	77	1	77
04/24/05	364	101	1	101
04/25/05	389	126	1	126
04/26/05	385	122	1	122
04/27/05	373	110	1	110
04/28/05	357	94	1	94
04/29/05	332	69	1	69
04/30/05	377	114	1	114
05/01/05	315	52	1	52
05/02/05	374	111	1	111
05/03/05	375	112	1	112
05/04/05	385	122	1	122
05/05/05	403	140	1	140
05/06/05	426	163	1	163
05/07/05	442	179	1	179
05/08/05	460	197	1	197
05/09/05	463	200	1	200
05/10/05	472	209	1	209
05/11/05	473	210	1	210
05/12/05	452	189	1	189
05/13/05	438	175	1	175
05/14/05	437	174	1	174
05/15/05	442	179	1	179
05/16/05	457	194	1	194
05/17/05	469	206	1	206
05/18/05	456	193	1	193
05/19/05	461	198	1	198
05/20/05	476	213	1	213
05/21/05	500	237	1	237
05/22/05	488	225	1	225
05/23/05	491	228	1	228

05/24/05	482	219	1	219
05/25/05	467	204	1	204
05/26/05	455	192	1	192
05/27/05	447	184	1	184
05/28/05	442	179	1	179
05/29/05	439	176	1	176
05/30/05	433	170	1	170
05/31/05	428	165	1	165
06/01/05	444	181	1	181
06/02/05	458	195	1	195
06/03/05	497	234	1	234
06/04/05	523	260	1	260
06/05/05	511	248	1	248
06/06/05	520	257	1	257
06/07/05	530	267	1	267
06/08/05	537	274	1	274
06/09/05	538	275	1	275
06/10/05	529	266	1	266
06/11/05	523	260	1	260
06/12/05	538	275	1	275
06/13/05	553	290	1	290
06/14/05	538	275	1	275
06/15/05	529	266	1	266
06/16/05	522	259	1	259
06/17/05	515	252	1	252
06/18/05	506	243	1	243
06/19/05	493	230	1	230
06/20/05	505	242	1	242
06/21/05	514	251	1	251
06/22/05	508	245	1	245
06/23/05	504	241	1	241
06/24/05	496	233	1	233
06/25/05	485	222	1	222
06/26/05	483	220	1	220
06/27/05	417	154	1	154
06/28/05	353	90	1	90
06/29/05	349	86	1	86
06/30/05	344	81	1	81
04/01/06	272	9	1	9
04/02/06	260	-3	0	0
04/03/06	274	11	1	11
04/04/06	280	17	1	17
04/05/06	288	25	1	25
04/06/06	315	52	1	52

04/07/06	311	48	1	48
04/08/06	313	50	1	50
04/09/06	315	52	1	52
04/10/06	314	51	1	51
04/11/06	303	40	1	40
04/12/06	299	36	1	36
04/13/06	320	57	1	57
04/14/06	335	72	1	72
04/15/06	341	78	1	78
04/16/06	350	87	1	87
04/17/06	348	85	1	85
04/18/06	327	64	1	64
04/19/06	313	50	1	50
04/20/06	308	45	1	45
04/21/06	312	49	1	49
04/22/06	327	64	1	64
04/23/06	342	79	1	79
04/24/06	329	66	1	66
04/25/06	318	55	1	55
04/26/06	314	51	1	51
04/27/06	316	53	1	53
04/28/06	317	54	1	54
04/29/06	326	63	1	63
04/30/06	353	90	1	90
05/01/06	357	94	1	94
05/02/06	355	92	1	92
05/03/06	343	80	1	80
05/04/06	333	70	1	70
05/05/06	329	66	1	66
05/06/06	330	67	1	67
05/07/06	333	70	1	70
05/08/06	341	78	1	78
05/09/06	335	72	1	72
05/10/06	326	63	1	63
05/11/06	323	60	1	60
05/12/06	325	62	1	62
05/13/06	330	67	1	67
05/14/06	335	72	1	72
05/15/06	368	105	1	105
05/16/06	407	144	1	144
05/17/06	429	166	1	166
05/18/06	459	196	1	196
05/19/06	477	214	1	214
05/20/06	485	222	1	222

05/21/06	491	228	1	228
05/22/06	482	219	1	219
05/23/06	475	212	1	212
05/24/06	467	204	1	204
05/25/06	395	132	1	132
05/26/06	314	51	1	51
05/27/06	321	58	1	58
05/28/06	316	53	1	53
05/29/06	312	49	1	49
05/30/06	305	42	1	42
05/31/06	299	36	1	36
06/01/06	293	30	1	30
06/02/06	315	52	1	52
06/03/06	336	73	1	73
06/04/06	335	72	1	72
06/05/06	332	69	1	69
06/06/06	327	64	1	64
06/07/06	324	61	1	61
06/08/06	325	62	1	62
06/09/06	330	67	1	67
06/10/06	344	81	1	81
06/11/06	336	73	1	73
06/12/06	328	65	1	65
06/13/06	321	58	1	58
06/14/06	318	55	1	55
06/15/06	320	57	1	57
06/16/06	311	48	1	48
06/17/06	305	42	1	42
06/18/06	289	26	1	26
06/19/06	300	37	1	37
06/20/06	286	23	1	23
06/21/06	257	-6	0	0
06/22/06	252	-11	0	0
06/23/06	253	-10	0	0
06/24/06	254	-9	0	0
06/25/06	250	-13	0	0
06/26/06	256	-7	0	0
06/27/06	257	-6	0	0
06/28/06	252	-11	0	0
06/29/06	245	-18	0	0
06/30/06	269	6	1	6
04/01/07	239	-24	0	0
04/02/07	238	-25	0	0
04/03/07	235	-28	0	0

04/04/07	234	-29	0	0
04/05/07	234	-29	0	0
04/06/07	234	-29	0	0
04/07/07	233	-30	0	0
04/08/07	234	-29	0	0
04/09/07	241	-22	0	0
04/10/07	244	-19	0	0
04/11/07	241	-22	0	0
04/12/07	250	-13	0	0
04/13/07	288	25	1	25
04/14/07	294	31	1	31
04/15/07	300	37	1	37
04/16/07	307	44	1	44
04/17/07	313	50	1	50
04/18/07	320	57	1	57
04/19/07	320	57	1	57
04/20/07	314	51	1	51
04/21/07	306	43	1	43
04/22/07	303	40	1	40
04/23/07	309	46	1	46
04/24/07	300	37	1	37
04/25/07	282	19	1	19
04/26/07	308	45	1	45
04/27/07	306	43	1	43
04/28/07	308	45	1	45
04/29/07	320	57	1	57
04/30/07	320	57	1	57
05/01/07	318	55	1	55
05/02/07	318	55	1	55
05/03/07	313	50	1	50
05/04/07	296	33	1	33
05/05/07	285	22	1	22
05/06/07	276	13	1	13
05/07/07	267	4	1	4
05/08/07	261	-2	0	0
05/09/07	263	0	1	0
05/10/07	265	2	1	2
05/11/07	276	13	1	13
05/12/07	280	17	1	17
05/13/07	279	16	1	16
05/14/07	278	15	1	15
05/15/07	269	6	1	6
05/16/07	262	-1	0	0
05/17/07	257	-6	0	0

05/18/07	268	5	1	5
05/19/07	284	21	1	21
05/20/07	284	21	1	21
05/21/07	284	21	1	21
05/22/07	280	17	1	17
05/23/07	261	-2	0	0
05/24/07	246	-17	0	0
05/25/07	258	-5	0	0
05/26/07	261	-2	0	0
05/27/07	282	19	1	19
05/28/07	297	34	1	34
05/29/07	297	34	1	34
05/30/07	285	22	1	22
05/31/07	270	7	1	7
06/01/07	264	1	1	1
06/02/07	264	1	1	1
06/03/07	263	0	0	0
06/04/07	259	-4	0	0
06/05/07	255	-8	0	0
06/06/07	261	-2	0	0
06/07/07	273	10	1	10
06/08/07	277	14	1	14
06/09/07	277	14	1	14
06/10/07	280	17	1	17
06/11/07	275	12	1	12
06/12/07	272	9	1	9
06/13/07	269	6	1	6
06/14/07	268	5	1	5
06/15/07	264	1	1	1
06/16/07	262	-1	0	0
06/17/07	260	-3	0	0
06/18/07	256	-7	0	0
06/19/07	272	9	1	9
06/20/07	277	14	1	14
06/21/07	276	13	1	13
06/22/07	268	5	1	5
06/23/07	256	-7	0	0
06/24/07	252	-11	0	0
06/25/07	266	3	1	3
06/26/07	275	12	1	12
06/27/07	271	8	1	8
06/28/07	268	5	1	5
06/29/07	284	21	1	21
06/30/07	280	17	1	17

04/01/08	218	-45	0	0
04/02/08	231	-32	0	0
04/03/08	251	-12	0	0
04/04/08	250	-13	0	0
04/05/08	249	-14	0	0
04/06/08	223	-40	0	0
04/07/08	248	-15	0	0
04/08/08	249	-14	0	0
04/09/08	258	-5	0	0
04/10/08	268	5	1	5
04/11/08	268	5	1	5
04/12/08	270	7	1	7
04/13/08	279	16	1	16
04/14/08	295	32	1	32
04/15/08	305	42	1	42
04/16/08	295	32	1	32
04/17/08	291	28	1	28
04/18/08	294	31	1	31
04/19/08	300	37	1	37
04/20/08	300	37	1	37
04/21/08	302	39	1	39
04/22/08	332	69	1	69
04/23/08	343	80	1	80
04/24/08	341	78	1	78
04/25/08	312	49	1	49
04/26/08	291	28	1	28
04/27/08	280	17	1	17
04/28/08	276	13	1	13
04/29/08	300	37	1	37
04/30/08	328	65	1	65
05/01/08	313	50	1	50
05/02/08	302	39	1	39
05/03/08	297	34	1	34
05/04/08	304	41	1	41
05/05/08	306	43	1	43
05/06/08	294	31	1	31
05/07/08	286	23	1	23
05/08/08	277	14	1	14
05/09/08	266	3	1	3
05/10/08	257	-6	0	0
05/11/08	257	-6	0	0
05/12/08	261	-2	0	0
05/13/08	256	-7	0	0
05/14/08	263	0	1	0

05/15/08	275	12	1	12
05/16/08	270	7	1	7
05/17/08	258	-5	0	0
05/18/08	264	1	1	1
05/19/08	263	0	1	0
05/20/08	261	-2	0	0
05/21/08	259	-4	0	0
05/22/08	252	-11	0	0
05/23/08	250	-13	0	0
05/24/08	242	-21	0	0
05/25/08	230	-33	0	0
05/26/08	274	11	1	11
05/27/08	278	15	1	15
05/28/08	273	10	1	10
05/29/08	275	12	1	12
05/30/08	275	12	1	12
05/31/08	275	12	1	12
06/01/08	270	7	1	7
06/02/08	268	5	1	5
06/03/08	274	11	1	11
06/04/08	276	13	1	13
06/05/08	276	13	1	13
06/06/08	276	13	1	13
06/07/08	274	11	1	11
06/08/08	273	10	1	10
06/09/08	272	9	1	9
06/10/08	269	6	1	6
06/11/08	267	4	1	4
06/12/08	262	-1	0	0
06/13/08	255	-8	0	0
06/14/08	262	-1	0	0
06/15/08	264	1	1	1
06/16/08	265	2	1	2
06/17/08	266	3	1	3
06/18/08	266	3	1	3
06/19/08	266	3	1	3
06/20/08	264	1	1	1
06/21/08	264	1	1	1
06/22/08	273	10	1	10
06/23/08	287	24	1	24
06/24/08	280	17	1	17
06/25/08	255	-8	0	0
06/26/08	251	-12	0	0
06/27/08	248	-15	0	0

06/28/08	246	-17	0	0
06/29/08	251	-12	0	0
06/30/08	303	40	1	40
04/01/09	206	-57	0	0
04/02/09	205	-58	0	0
04/03/09	205	-58	0	0
04/04/09	206	-57	0	0
04/05/09	218	-45	0	0
04/06/09	199	-64	0	0
04/07/09	266	3	1	3
04/08/09	268	5	1	5
04/09/09	269	6	1	6
04/10/09	271	8	1	8
04/11/09	274	11	1	11
04/12/09	276	13	1	13
04/13/09	277	14	1	14
04/14/09	277	14	1	14
04/15/09	276	13	1	13
04/16/09	273	10	1	10
04/17/09	272	9	1	9
04/18/09	260	-3	0	0
04/19/09	259	-4	0	0
04/20/09	263	0	1	0
04/21/09	276	13	1	13
04/22/09	280	17	1	17
04/23/09	273	10	1	10
04/24/09	234	-29	0	0
04/25/09	259	-4	0	0
04/26/09	243	-20	0	0
04/27/09	237	-26	0	0
04/28/09	236	-27	0	0
04/29/09	233	-30	0	0
04/30/09	229	-34	0	0
05/01/09	271	8	1	8
05/02/09	297	34	1	34
05/03/09	272	9	1	9
05/04/09	265	2	1	2
05/05/09	248	-15	0	0
05/06/09	248	-15	0	0
05/07/09	251	-12	0	0
05/08/09	250	-13	0	0
05/09/09	249	-14	0	0
05/10/09	251	-12	0	0
05/11/09	258	-5	0	0

05/12/09	261	-2	0	0
05/13/09	258	-5	0	0
05/14/09	259	-4	0	0
05/15/09	267	4	1	4
05/16/09	264	1	1	1
05/17/09	268	5	1	5
05/18/09	260	-3	0	0
05/19/09	239	-24	0	0
05/20/09	237	-26	0	0
05/21/09	247	-16	0	0
05/22/09	258	-5	0	0
05/23/09	259	-4	0	0
05/24/09	262	-1	0	0
05/25/09	264	1	1	1
05/26/09	262	-1	0	0
05/27/09	262	-1	0	0
05/28/09	248	-15	0	0
05/29/09	258	-5	0	0
05/30/09	257	-6	0	0
05/31/09	256	-7	0	0
06/01/09	251	-12	0	0
06/02/09	240	-23	0	0
06/03/09	230	-33	0	0
06/04/09	224	-39	0	0
06/05/09	223	-40	0	0
06/06/09	225	-38	0	0
06/07/09	173	-90	0	0
06/08/09	253	-10	0	0
06/09/09	253	-10	0	0
06/10/09	251	-12	0	0
06/11/09	286	23	1	23
06/12/09	311	48	1	48
06/13/09	313	50	1	50
06/14/09	316	53	1	53
06/15/09	320	57	1	57
06/16/09	323	60	1	60
06/17/09	324	61	1	61
06/18/09	334	71	1	71
06/19/09	335	72	1	72
06/20/09	331	68	1	68
06/21/09	333	70	1	70
06/22/09	328	65	1	65
06/23/09	323	60	1	60
06/24/09	321	58	1	58

06/25/09	304	41	1	41
06/26/09	271	8	1	8
06/27/09	263	0	0	0
06/28/09	261	-2	0	0
06/29/09	282	19	1	19
06/30/09	291	28	1	28
04/01/10	279	16	1	16
04/02/10	204	-59	0	0
04/03/10	272	9	1	9
04/04/10	193	-70	0	0
04/05/10	214	-49	0	0
04/06/10	260	-3	0	0
04/07/10	190	-73	0	0
04/08/10	258	-5	0	0
04/09/10	221	-42	0	0
04/10/10	198	-65	0	0
04/11/10	289	26	1	26
04/12/10	290	27	1	27
04/13/10	293	30	1	30
04/14/10	294	31	1	31
04/15/10	262	-1	0	0
04/16/10	248	-15	0	0
04/17/10	257	-6	0	0
04/18/10	235	-28	0	0
04/19/10	233	-30	0	0
04/20/10	281	18	1	18
04/21/10	333	70	1	70
04/22/10	304	41	1	41
04/23/10	264	1	1	1
04/24/10	256	-7	0	0
04/25/10	238	-25	0	0
04/26/10	246	-17	0	0
04/27/10	266	3	1	3
04/28/10	270	7	1	7
04/29/10	264	1	1	1
04/30/10	259	-4	0	0
05/01/10	257	-6	0	0
05/02/10	254	-9	0	0
05/03/10	252	-11	0	0
05/04/10	252	-11	0	0
05/05/10	256	-7	0	0
05/06/10	265	2	1	2
05/07/10	264	1	1	1
05/08/10	257	-6	0	0

05/09/10	270	7	1	7
05/10/10	272	9	1	9
05/11/10	275	12	1	12
05/12/10	274	11	1	11
05/13/10	273	10	1	10
05/14/10	278	15	1	15
05/15/10	284	21	1	21
05/16/10	291	28	1	28
05/17/10	299	36	1	36
05/18/10	312	49	1	49
05/19/10	301	38	1	38
05/20/10	269	6	1	6
05/21/10	263	0	0	0
05/22/10	257	-6	0	0
05/23/10	250	-13	0	0
05/24/10	247	-16	0	0
05/25/10	250	-13	0	0
05/26/10	195	-68	0	0
05/27/10	262	-1	0	0
05/28/10	265	2	1	2
05/29/10	267	4	1	4
05/30/10	262	-1	0	0
05/31/10	259	-4	0	0
06/01/10	261	-2	0	0
06/02/10	266	3	1	3
06/03/10	266	3	1	3
06/04/10	255	-8	0	0
06/05/10	240	-23	0	0
06/06/10	235	-28	0	0
06/07/10	237	-26	0	0
06/08/10	235	-28	0	0
06/09/10	246	-17	0	0
06/10/10	267	4	1	4
06/11/10	269	6	1	6
06/12/10	268	5	1	5
06/13/10	266	3	1	3
06/14/10	266	3	1	3
06/15/10	266	3	1	3
06/16/10	265	2	1	2
06/17/10	264	1	1	1
06/18/10	261	-2	0	0
06/19/10	258	-5	0	0
06/20/10	256	-7	0	0
06/21/10	255	-8	0	0

06/22/10	251	-12	0	0
06/23/10	247	-16	0	0
06/24/10	255	-8	0	0
06/25/10	270	7	1	7
06/26/10	273	10	1	10
06/27/10	273	10	1	10
06/28/10	271	8	1	8
06/29/10	267	4	1	4
06/30/10	265	2	1	2
04/01/11	260	-3	0	0
04/02/11	264	1	1	1
04/03/11	265	2	1	2
04/04/11	263	0	1	0
04/05/11	263	0	0	0
04/06/11	260	-3	0	0
04/07/11	261	-2	0	0
04/08/11	261	-2	0	0
04/09/11	259	-4	0	0
04/10/11	259	-4	0	0
04/11/11	260	-3	0	0
04/12/11	262	-1	0	0
04/13/11	263	0	0	0
04/14/11	265	2	1	2
04/15/11	265	2	1	2
04/16/11	265	2	1	2
04/17/11	268	5	1	5
04/18/11	269	6	1	6
04/19/11	268	5	1	5
04/20/11	237	-26	0	0
04/21/11	267	4	1	4
04/22/11	268	5	1	5
04/23/11	254	-9	0	0
04/24/11	266	3	1	3
04/25/11	268	5	1	5
04/26/11	268	5	1	5
04/27/11	267	4	1	4
04/28/11	268	5	1	5
04/29/11	268	5	1	5
04/30/11	268	5	1	5
05/01/11	268	5	1	5
05/02/11	259	-4	0	0
05/03/11	247	-16	0	0
05/04/11	258	-5	0	0
05/05/11	277	14	1	14

05/06/11	272	9	1	9
05/07/11	274	11	1	11
05/08/11	280	17	1	17
05/09/11	286	23	1	23
05/10/11	281	18	1	18
05/11/11	261	-2	0	0
05/12/11	261	-2	0	0
05/13/11	267	4	1	4
05/14/11	278	15	1	15
05/15/11	273	10	1	10
05/16/11	265	2	1	2
05/17/11	261	-2	0	0
05/18/11	258	-5	0	0
05/19/11	256	-7	0	0
05/20/11	255	-8	0	0
05/21/11	252	-11	0	0
05/22/11	249	-14	0	0
05/23/11	243	-20	0	0
05/24/11	223	-40	0	0
05/25/11	64	-199	0	0
05/26/11	44	-219	0	0
05/27/11	44	-219	0	0
05/28/11	44	-219	0	0
05/29/11	44	-219	0	0
05/30/11	44	-219	0	0
05/31/11	44	-219	0	0
06/01/11	44	-219	0	0
06/02/11	72	-191	0	0
06/03/11	106	-157	0	0
06/04/11	124	-139	0	0
06/05/11	126	-137	0	0
06/06/11	139	-124	0	0
06/07/11	109	-154	0	0
06/08/11	113	-150	0	0
06/09/11	108	-155	0	0
06/10/11	103	-160	0	0
06/11/11	88	-175	0	0
06/12/11	99	-164	0	0
06/13/11	217	-46	0	0
06/14/11	260	-3	0	0
06/15/11	265	2	1	2
06/16/11	273	10	1	10
06/17/11	262	-1	0	0
06/18/11	253	-10	0	0

06/19/11	243	-20	0	0
06/20/11	242	-21	0	0
06/21/11	257	-6	0	0
06/22/11	294	31	1	31
06/23/11	305	42	1	42
06/24/11	289	26	1	26
06/25/11	287	24	1	24
06/26/11	285	22	1	22
06/27/11	285	22	1	22
06/28/11	287	24	1	24
06/29/11	287	24	1	24
06/30/11	268	5	1	5
04/01/12	301	38	1	38
04/02/12	273	10	1	10
04/03/12	229	-34	0	0
04/04/12	276	13	1	13
04/05/12	264	1	1	1
04/06/12	263	0	0	0
04/07/12	260	-3	0	0
04/08/12	257	-6	0	0
04/09/12	259	-4	0	0
04/10/12	261	-2	0	0
04/11/12	268	5	1	5
04/12/12	157	-106	0	0
04/13/12	247	-16	0	0
04/14/12	251	-12	0	0
04/15/12	246	-17	0	0
04/16/12	244	-19	0	0
04/17/12	243	-20	0	0
04/18/12	237	-26	0	0
04/19/12	232	-31	0	0
04/20/12	239	-24	0	0
04/21/12	262	-1	0	0
04/22/12	272	9	1	9
04/23/12	279	16	1	16
04/24/12	295	32	1	32
04/25/12	304	41	1	41
04/26/12	307	44	1	44
04/27/12	307	44	1	44
04/28/12	297	34	1	34
04/29/12	291	28	1	28
04/30/12	290	27	1	27
05/01/12	294	31	1	31
05/02/12	294	31	1	31

05/03/12	289	26	1	26
05/04/12	289	26	1	26
05/05/12	292	29	1	29
05/06/12	287	24	1	24
05/07/12	272	9	1	9
05/08/12	257	-6	0	0
05/09/12	260	-3	0	0
05/10/12	269	6	1	6
05/11/12	263	0	1	0
05/12/12	257	-6	0	0
05/13/12	253	-10	0	0
05/14/12	254	-9	0	0
05/15/12	258	-5	0	0
05/16/12	265	2	1	2
05/17/12	267	4	1	4
05/18/12	271	8	1	8
05/19/12	265	2	1	2
05/20/12	258	-5	0	0
05/21/12	253	-10	0	0
05/22/12	253	-10	0	0
05/23/12	254	-9	0	0
05/24/12	248	-15	0	0
05/25/12	238	-25	0	0
05/26/12	231	-32	0	0
05/27/12	227	-36	0	0
05/28/12	229	-34	0	0
05/29/12	242	-21	0	0
05/30/12	252	-11	0	0
05/31/12	251	-12	0	0
06/01/12	254	-9	0	0
06/02/12	252	-11	0	0
06/03/12	252	-11	0	0
06/04/12	260	-3	0	0
06/05/12	262	-1	0	0
06/06/12	251	-12	0	0
06/07/12	240	-23	0	0
06/08/12	256	-7	0	0
06/09/12	266	3	1	3
06/10/12	259	-4	0	0
06/11/12	262	-1	0	0
06/12/12	259	-4	0	0
06/13/12	257	-6	0	0
06/14/12	250	-13	0	0
06/15/12	245	-18	0	0

06/16/12	242	-21	0	0
06/17/12	232	-31	0	0
06/18/12	265	2	1	2
06/19/12	281	18	1	18
06/20/12	277	14	1	14
06/21/12	279	16	1	16
06/22/12	263	0	1	0
06/23/12	248	-15	0	0
06/24/12	241	-22	0	0
06/25/12	253	-10	0	0
06/26/12	255	-8	0	0
06/27/12	242	-21	0	0
06/28/12	241	-22	0	0
06/29/12	243	-20	0	0
06/30/12	239	-24	0	0
04/01/13	236	-27	0	0
04/02/13	251	-12	0	0
04/03/13	255	-8	0	0
04/04/13	253	-10	0	0
04/05/13	259	-4	0	0
04/06/13	258	-5	0	0
04/07/13	257	-6	0	0
04/08/13	256	-7	0	0
04/09/13	256	-7	0	0
04/10/13	249	-14	0	0
04/11/13	253	-10	0	0
04/12/13	253	-10	0	0
04/13/13	256	-7	0	0
04/14/13	254	-9	0	0
04/15/13	239	-24	0	0
04/16/13	241	-22	0	0
04/17/13	243	-20	0	0
04/18/13	199	-64	0	0
04/19/13	242	-21	0	0
04/20/13	238	-25	0	0
04/21/13	242	-21	0	0
04/22/13	244	-19	0	0
04/23/13	210	-53	0	0
04/24/13	244	-19	0	0
04/25/13	239	-24	0	0
04/26/13	251	-12	0	0
04/27/13	272	9	1	9
04/28/13	288	25	1	25
04/29/13	290	27	1	27

04/30/13	277	14	1	14
05/01/13	268	5	1	5
05/02/13	260	-3	0	0
05/03/13	267	4	1	4
05/04/13	274	11	1	11
05/05/13	290	27	1	27
05/06/13	299	36	1	36
05/07/13	290	27	1	27
05/08/13	291	28	1	28
05/09/13	266	3	1	3
05/10/13	263	0	1	0
05/11/13	262	-1	0	0
05/12/13	276	13	1	13
05/13/13	304	41	1	41
05/14/13	332	69	1	69
05/15/13	306	43	1	43
05/16/13	322	59	1	59
05/17/13	327	64	1	64
05/18/13	335	72	1	72
05/19/13	267	4	1	4
05/20/13	97	-166	0	0
05/21/13	153	-110	0	0
05/22/13	255	-8	0	0
05/23/13	290	27	1	27
05/24/13	304	41	1	41
05/25/13	320	57	1	57
05/26/13	303	40	1	40
05/27/13	296	33	1	33
05/28/13	309	46	1	46
05/29/13	292	29	1	29
05/30/13	304	41	1	41
05/31/13	334	71	1	71
06/01/13	326	63	1	63
06/02/13	317	54	1	54
06/03/13	315	52	1	52
06/04/13	311	48	1	48
06/05/13	277	14	1	14
06/06/13	258	-5	0	0
06/07/13	293	30	1	30
06/08/13	281	18	1	18
06/09/13	270	7	1	7
06/10/13	246	-17	0	0
06/11/13	298	35	1	35
06/12/13	297	34	1	34

06/13/13	286	23	1	23
06/14/13	304	41	1	41
06/15/13	296	33	1	33
06/16/13	297	34	1	34
06/17/13	282	19	1	19
06/18/13	283	20	1	20
06/19/13	275	12	1	12
06/20/13	268	5	1	5
06/21/13	257	-6	0	0
06/22/13	257	-6	0	0
06/23/13	237	-26	0	0
06/24/13	231	-32	0	0
06/25/13	239	-24	0	0
06/26/13	237	-26	0	0
06/27/13	223	-40	0	0
06/28/13	248	-15	0	0
06/29/13	256	-7	0	0
06/30/13	266	3	1	3
4/1/2014	220	-43	0	0
4/2/2014	223	-40	0	0
4/3/2014	224	-39	0	0
4/4/2014	224	-39	0	0
4/5/2014	234	-29	0	0
4/6/2014	235	-28	0	0
4/7/2014	345	82	1	82
4/8/2014	224	-39	0	0
4/9/2014	228	-35	0	0
4/10/2014	228	-35	0	0
4/11/2014	227	-36	0	0
4/12/2014	230	-33	0	0
4/13/2014	231	-32	0	0
4/14/2014	218	-45	0	0
4/15/2014	231	-32	0	0
4/16/2014	232	-31	0	0
4/17/2014	225	-38	0	0
4/18/2014	229	-34	0	0
4/19/2014	233	-30	0	0
4/20/2014	242	-21	0	0
4/21/2014	254	-9	0	0
4/22/2014	268	5	1	5
4/23/2014	281	18	1	18
4/24/2014	268	5	1	5
4/25/2014	257	-6	0	0
4/26/2014	262	-1	0	0
4/27/2014	265	2	1	2
4/28/2014	264	1	1	1

4/29/2014	260	-3	0	0
4/30/2014	251	-12	0	0
5/1/2014	256	-7	0	0
5/2/2014	278	15	1	15
5/3/2014	305	42	1	42
5/4/2014	316	53	1	53
5/5/2014	301	38	1	38
5/6/2014	287	24	1	24
5/7/2014	184	-79	0	0
5/8/2014	252	-11	0	0
5/9/2014	264	1	1	1
5/10/2014	263	0	0	0
5/11/2014	258	-5	0	0
5/12/2014	250	-13	0	0
5/13/2014	243	-20	0	0
5/14/2014	243	-20	0	0
5/15/2014	265	2	1	2
5/16/2014	302	39	1	39
5/17/2014	321	58	1	58
5/18/2014	328	65	1	65
5/19/2014	266	3	1	3
5/20/2014	236	-27	0	0
5/21/2014	258	-5	0	0
5/22/2014	306	43	1	43
5/23/2014	306	43	1	43
5/24/2014	279	16	1	16
5/25/2014	275	12	1	12
5/26/2014	270	7	1	7
5/27/2014	265	2	1	2
5/28/2014	267	4	1	4
5/29/2014	267	4	1	4
5/30/2014	251	-12	0	0
5/31/2014	229	-34	0	0
6/1/2014	221	-42	0	0
6/2/2014	218	-45	0	0
6/3/2014	264	1	1	1
6/4/2014	267	4	1	4
6/5/2014	263	0	0	0
6/6/2014	261	-2	0	0
6/7/2014	257	-6	0	0
6/8/2014	252	-11	0	0
6/9/2014	252	-11	0	0
6/10/2014	261	-2	0	0
6/11/2014	274	11	1	11
6/12/2014	267	4	1	4
6/13/2014	270	7	1	7
6/14/2014	263	0	0	0

6/15/2014	258	-5	0	0
6/16/2014	269	6	1	6
6/17/2014	261	-2	0	0
6/18/2014	254	-9	0	0
6/19/2014	249	-14	0	0
6/20/2014	261	-2	0	0
6/21/2014	274	11	1	11
6/22/2014	266	3	1	3
6/23/2014	265	2	1	2
6/24/2014	259	-4	0	0
6/25/2014	266	3	1	3
6/26/2014	270	7	1	7
6/27/2014	290	27	1	27
6/28/2014	267	4	1	4
6/29/2014	260	-3	0	0
6/30/2014	248	-15	0	0
4/1/2015	277	14	1	14
4/2/2015	268	5	1	5
4/3/2015	266	3	1	3
4/4/2015	263	0	0	0
4/5/2015	266	3	1	3
4/6/2015	263	0	0	0
4/7/2015	269	6	1	6
4/8/2015	274	11	1	11
4/9/2015	273	10	1	10
4/10/2015	269	6	1	6
4/11/2015	263	0	0	0
4/12/2015	266	3	1	3
4/13/2015	264	1	1	1
4/14/2015	264	1	1	1
4/15/2015	265	2	1	2
4/16/2015	259	-4	0	0
4/17/2015	249	-14	0	0
4/18/2015	230	-33	0	0
4/19/2015	227	-36	0	0
4/20/2015	223	-40	0	0
4/21/2015	222	-41	0	0
4/22/2015	228	-35	0	0
4/23/2015	236	-27	0	0
4/24/2015	265	2	1	2
4/25/2015	308	45	1	45
4/26/2015	302	39	1	39
4/27/2015	298	35	1	35
4/28/2015	299	36	1	36
4/29/2015	293	30	1	30
4/30/2015	278	15	1	15
5/1/2015	279	16	1	16

5/2/2015	277	14	1	14
5/3/2015	277	14	1	14
5/4/2015	276	13	1	13
5/5/2015	279	16	1	16
5/6/2015	283	20	1	20
5/7/2015	275	12	1	12
5/8/2015	272	9	1	9
5/9/2015	270	7	1	7
5/10/2015	265	2	1	2
5/11/2015	258	-5	0	0
5/12/2015	257	-6	0	0
5/13/2015	265	2	1	2
5/14/2015	264	1	1	1
5/15/2015	268	5	1	5
5/16/2015	293	30	1	30
5/17/2015	314	51	1	51
5/18/2015	304	41	1	41
5/19/2015	297	34	1	34
5/20/2015	291	28	1	28
5/21/2015	287	24	1	24
5/22/2015	288	25	1	25
5/23/2015	290	27	1	27
5/24/2015	291	28	1	28
5/25/2015	290	27	1	27
5/26/2015	290	27	1	27
5/27/2015	287	24	1	24
5/28/2015	274	11	1	11
5/29/2015	311	48	1	48
5/30/2015	310	47	1	47
5/31/2015	306	43	1	43
6/1/2015	298	35	1	35
6/2/2015	323	60	1	60
6/3/2015	314	51	1	51
6/4/2015	306	43	1	43
6/5/2015	305	42	1	42
6/6/2015	299	36	1	36
6/7/2015	292	29	1	29
6/8/2015	280	17	1	17
6/9/2015	275	12	1	12
6/10/2015	268	5	1	5
6/11/2015	256	-7	0	0
6/12/2015	253	-10	0	0
6/13/2015	238	-25	0	0
6/14/2015	229	-34	0	0
6/15/2015	233	-30	0	0
6/16/2015	239	-24	0	0
6/17/2015	254	-9	0	0

6/18/2015	252	-11	0	0
6/19/2015	237	-26	0	0
6/20/2015	189	-74	0	0
6/21/2015	180	-83	0	0
6/22/2015	182	-81	0	0
6/23/2015	214	-49	0	0
6/24/2015	225	-38	0	0
6/25/2015	180	-83	0	0
6/26/2015	180	-83	0	0
6/27/2015	178	-85	0	0
6/28/2015	172	-91	0	0
6/29/2015	235	-28	0	0
6/30/2015	274	11	1	11
4/1/2016	251	-12	0	0
4/2/2016	251	-12	0	0
4/3/2016	252	-11	0	0
4/4/2016	248	-15	0	0
4/5/2016	261	-2	0	0
4/6/2016	259	-4	0	0
4/7/2016	259	-4	0	0
4/8/2016	261	-2	0	0
4/9/2016	264	1	1	1
4/10/2016	268	5	1	5
4/11/2016	263	0	0	0
4/12/2016	264	1	1	1
4/13/2016	269	6	1	6
4/14/2016	270	7	1	7
4/15/2016	259	-4	0	0
4/16/2016	239	-24	0	0
4/17/2016	240	-23	0	0
4/18/2016	243	-20	0	0
4/19/2016	242	-21	0	0
4/20/2016	268	5	1	5
4/21/2016	287	24	1	24
4/22/2016	300	37	1	37
4/23/2016	313	50	1	50
4/24/2016	326	63	1	63
4/25/2016	329	66	1	66
4/26/2016	323	60	1	60
4/27/2016	312	49	1	49
4/28/2016	304	41	1	41
4/29/2016	297	34	1	34
4/30/2016	291	28	1	28
5/1/2016	285	22	1	22
5/2/2016	285	22	1	22
5/3/2016	289	26	1	26
5/4/2016	298	35	1	35

5/5/2016	309	46	1	46
5/6/2016	321	58	1	58
5/7/2016	324	61	1	61
5/8/2016	324	61	1	61
5/9/2016	326	63	1	63
5/10/2016	317	54	1	54
5/11/2016	311	48	1	48
5/12/2016	312	49	1	49
5/13/2016	321	58	1	58
5/14/2016	325	62	1	62
5/15/2016	328	65	1	65
5/16/2016	329	66	1	66
5/17/2016	324	61	1	61
5/18/2016	327	64	1	64
5/19/2016	337	74	1	74
5/20/2016	348	85	1	85
5/21/2016	353	90	1	90
5/22/2016	344	81	1	81
5/23/2016	334	71	1	71
5/24/2016	327	64	1	64
5/25/2016	317	54	1	54
5/26/2016	317	54	1	54
5/27/2016	315	52	1	52
5/28/2016	327	64	1	64
5/29/2016	326	63	1	63
5/30/2016	322	59	1	59
5/31/2016	313	50	1	50
6/1/2016	314	51	1	51
6/2/2016	308	45	1	45
6/3/2016	309	46	1	46
6/4/2016	309	46	1	46
6/5/2016	316	53	1	53
6/6/2016	320	57	1	57
6/7/2016	314	51	1	51
6/8/2016	286	23	1	23
6/9/2016	258	-5	0	0
6/10/2016	252	-11	0	0
6/11/2016	234	-29	0	0
6/12/2016	228	-35	0	0
6/13/2016	236	-27	0	0
6/14/2016	244	-19	0	0
6/15/2016	244	-19	0	0
6/16/2016	246	-17	0	0
6/17/2016	259	-4	0	0
6/18/2016	259	-4	0	0
6/19/2016	242	-21	0	0
6/20/2016	268	5	1	5

6/21/2016	280	17	1	17
6/22/2016	268	5	1	5
6/23/2016	260	-3	0	0
6/24/2016	257	-6	0	0
6/25/2016	257	-6	0	0
6/26/2016	253	-10	0	0
6/27/2016	250	-13	0	0
6/28/2016	248	-15	0	0
6/29/2016	244	-19	0	0
6/30/2016	247	-16	0	0
4/1/2017	257	-6	0	0
4/2/2017	275	12	1	12
4/3/2017	264	1	1	1
4/4/2017	257	-6	0	0
4/5/2017	256	-7	0	0
4/6/2017	250	-13	0	0
4/7/2017	260	-3	0	0
4/8/2017	272	9	1	9
4/9/2017	272	9	1	9
4/10/2017	270	7	1	7
4/11/2017	267	4	1	4
4/12/2017	265	2	1	2
4/13/2017	268	5	1	5
4/14/2017	280	17	1	17
4/15/2017	279	16	1	16
4/16/2017	276	13	1	13
4/17/2017	278	15	1	15
4/18/2017	281	18	1	18
4/19/2017	291	28	1	28
4/20/2017	290	27	1	27
4/21/2017	292	29	1	29
4/22/2017	291	28	1	28
4/23/2017	296	33	1	33
4/24/2017	301	38	1	38
4/25/2017	307	44	1	44
4/26/2017	309	46	1	46
4/27/2017	312	49	1	49
4/28/2017	307	44	1	44
4/29/2017	303	40	1	40
4/30/2017	305	42	1	42
5/1/2017	305	42	1	42
5/2/2017	306	43	1	43
5/3/2017	301	38	1	38
5/4/2017	302	39	1	39
5/5/2017	327	64	1	64
5/6/2017	354	91	1	91
5/7/2017	362	99	1	99

5/8/2017	360	97	1	97
5/9/2017	351	88	1	88
5/10/2017	342	79	1	79
5/11/2017	342	79	1	79
5/12/2017	311	48	1	48
5/13/2017	294	31	1	31
5/14/2017	283	20	1	20
5/15/2017	269	6	1	6
5/16/2017	265	2	1	2
5/17/2017	265	2	1	2
5/18/2017	258	-5	0	0
5/19/2017	274	11	1	11
5/20/2017	294	31	1	31
5/21/2017	304	41	1	41
5/22/2017	301	38	1	38
5/23/2017	301	38	1	38
5/24/2017	287	24	1	24
5/25/2017	273	10	1	10
5/26/2017	262	-1	0	0
5/27/2017	249	-14	0	0
5/28/2017	244	-19	0	0
5/29/2017	244	-19	0	0
5/30/2017	105	-158	0	0
5/31/2017	2	-261	0	0
6/1/2017	151	-112	0	0
6/2/2017	217	-46	0	0
6/3/2017	227	-36	0	0
6/4/2017	238	-25	0	0
6/5/2017	254	-9	0	0
6/6/2017	261	-2	0	0
6/7/2017	257	-6	0	0
6/8/2017	255	-8	0	0
6/9/2017	253	-10	0	0
6/10/2017	255	-8	0	0
6/11/2017	259	-4	0	0
6/12/2017	255	-8	0	0
6/13/2017	269	6	1	6
6/14/2017	273	10	1	10
6/15/2017	260	-3	0	0
6/16/2017	252	-11	0	0
6/17/2017	256	-7	0	0
6/18/2017	245	-18	0	0
6/19/2017	243	-20	0	0
6/20/2017	235	-28	0	0
6/21/2017	235	-28	0	0
6/22/2017	230	-33	0	0
6/23/2017	236	-27	0	0

6/24/2017	244	-19	0	0
6/25/2017	235	-28	0	0
6/26/2017	246	-17	0	0
6/27/2017	244	-19	0	0
6/28/2017	237	-26	0	0
6/29/2017	238	-25	0	0
6/30/2017	242	-21	0	0
4/1/2018	264	1	1	1
4/2/2018	278	15	1	15
4/3/2018	255	-8	0	0
4/4/2018	278	15	1	15
4/5/2018	277	14	1	14
4/6/2018	278	15	1	15
4/7/2018	275	12	1	12
4/8/2018	280	17	1	17
4/9/2018	280	17	1	17
4/10/2018	276	13	1	13
4/11/2018	279	16	1	16
4/12/2018	282	19	1	19
4/13/2018	284	21	1	21
4/14/2018	285	22	1	22
4/15/2018	287	24	1	24
4/16/2018	288	25	1	25
4/17/2018	289	26	1	26
4/18/2018	285	22	1	22
4/19/2018	284	21	1	21
4/20/2018	295	32	1	32
4/21/2018	316	53	1	53
4/22/2018	342	79	1	79
4/23/2018	365	102	1	102
4/24/2018	348	85	1	85
4/25/2018	332	69	1	69
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4/27/2018	338	75	1	75
4/28/2018	365	102	1	102
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5/5/2018	291	28	1	28
5/6/2018	300	37	1	37
5/7/2018	299	36	1	36
5/8/2018	296	33	1	33
5/9/2018	294	31	1	31
5/10/2018	301	38	1	38

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5/18/2018	275	12	1	12
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5/21/2018	270	7	1	7
5/22/2018	273	10	1	10
5/23/2018	277	14	1	14
5/24/2018	278	15	1	15
5/25/2018	276	13	1	13
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5/27/2018	274	11	1	11
5/28/2018	271	8	1	8
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4/24/2019	343	80	1	80
4/25/2019	339	76	1	76
4/26/2019	344	81	1	81
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4/30/2019	365	102	1	102
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5/5/2019	301	38	1	38
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5/17/2019	394	131	1	131
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6/23/2019	280	17	1	17
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6/27/2019	266	3	1	3
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4/30/2020	348	85	1	85
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5/22/2020	290	27	1	27
5/23/2020	297	34	1	34
5/24/2020	294	31	1	31
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4/29/2021	280	17	1	17
4/30/2021	307	44	1	44
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5/4/2021	310	47	1	47
5/5/2021	303	40	1	40
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5/12/2021	302	39	1	39
5/13/2021	302	39	1	39
5/14/2021	311	48	1	48
5/15/2021	313	50	1	50
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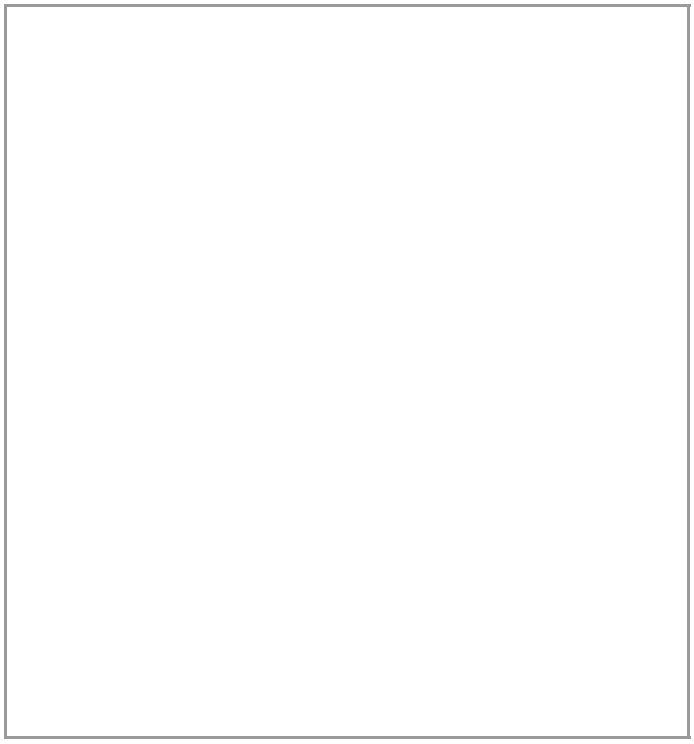
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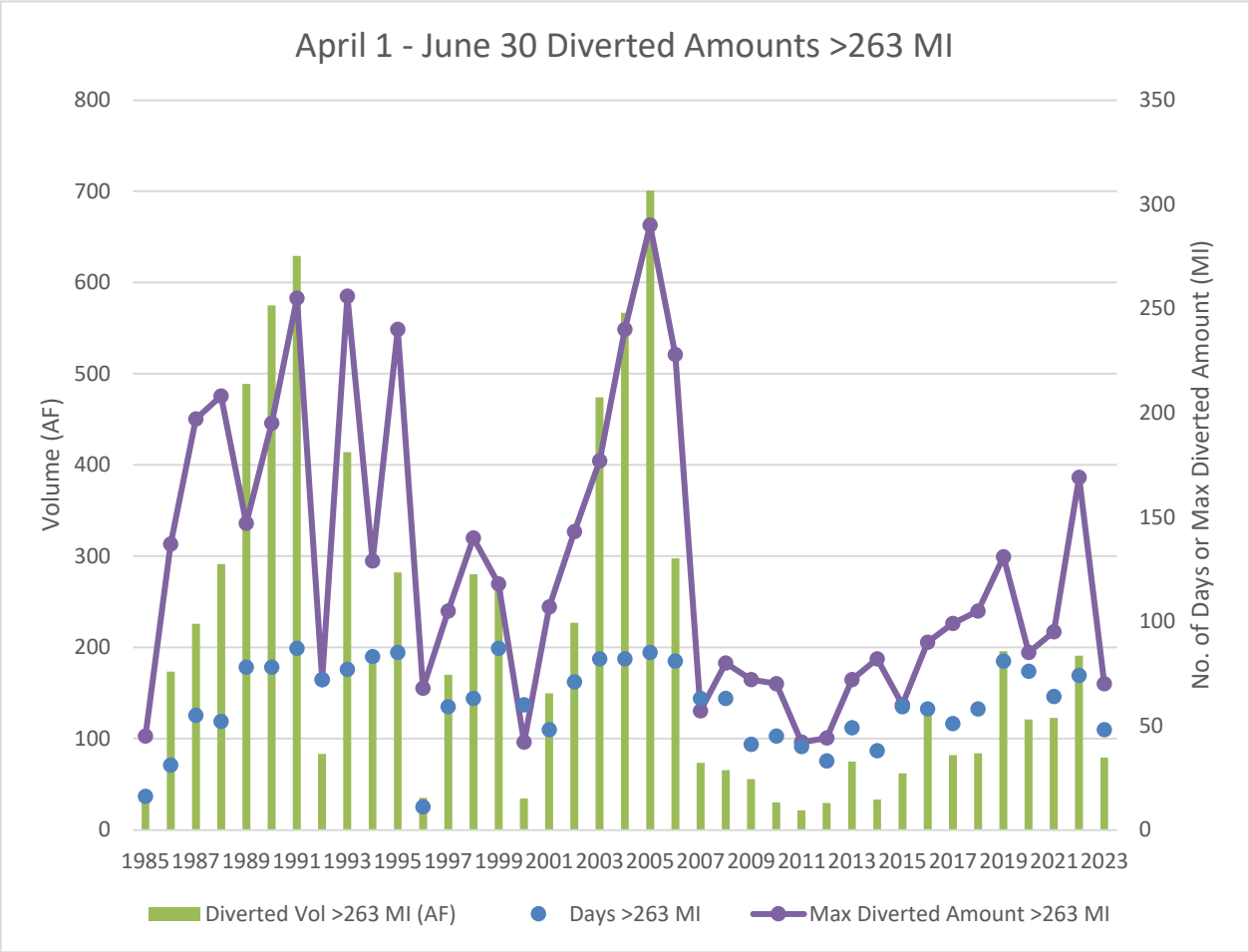
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5/7/2023	284	21	1	21
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5/11/2023	289	26	1	26
5/12/2023	291	28	1	28
5/13/2023	301	38	1	38
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5/23/2023	312	49	1	49
5/24/2023	313	50	1	50
5/25/2023	302	39	1	39

5/26/2023	300	37	1	37
5/27/2023	299	36	1	36
5/28/2023	294	31	1	31
5/29/2023	292	29	1	29
5/30/2023	282	19	1	19
5/31/2023	286	23	1	23
6/1/2023	296	33	1	33
6/2/2023	295	32	1	32
6/3/2023	329	66	1	66
6/4/2023	333	70	1	70
6/5/2023	327	64	1	64



Year	Days >263 MI	Diverted Volume >263 MI (MI*day)	Diverted Vol >263 MI (AF)	Max Diverted Amount >263 MI	Max Diverted Date
1985	16	616	30	45	21-May
1986	31	3502	173	137	5-Jun
1987	55	4567	226	197	30-Apr
1988	52	5883	291	208	21-May
1989	78	9876	489	147	8-May
1990	78	11616	575	195	25-Jun
1991	87	12706	629	255	16-May
1992	72	1679	83	72	16-Jun
1993	77	8364	414	256	22-Jun
1994	83	3673	182	129	17-May
1995	85	5700	282	240	16-Jun
1996	11	706	35	68	22-Jun
1997	59	3436	170	105	6-Jun
1998	63	5656	280	140	5-May
1999	87	5548	275	118	14-Jun
2000	60	693	34	42	5-Jun
2001	48	3026	150	107	16-May
2002	71	4585	227	143	28-May
2003	82	9576	474	177	30-May
2004	82	11451	567	240	11-Jun
2005	85	14155	701	290	13-Jun
2006	81	6015	298	228	21-May
2007	63	1483	73	57	29-Apr
2008	63	1324	66	80	23-Apr
2009	41	1121	55	72	19-Jun
2010	45	610	30	70	21-Apr
2011	40	429	21	42	23-Jun
2012	33	591	29	44	26-Apr
2013	49	1511	75	72	18-May
2014	38	674	33	82	7-Apr
2015	59	1254	62	60	2-Jun
2016	58	2658	132	90	21-May
2017	51	1653	82	99	7-May
2018	58	1696	84	105	29-Apr
2019	81	3953	196	131	17-May
2020	76	2445	121	85	30-Apr
2021	64	2482	123	95	8-May
2022	74	3856	191	169	5-May

2023	48	1594	79	70	4-Jun



Date	Diverted MI	MI >263	Test	*MI > 263
1/1/1985	210	-53	0	0
1/2/1985	210	-53	0	0
1/3/1985	210	-53	0	0
1/4/1985	210	-53	0	0
1/5/1985	210	-53	0	0
1/6/1985	210	-53	0	0
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1/8/1985	210	-53	0	0
1/9/1985	210	-53	0	0
1/10/1985	210	-53	0	0
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1/27/1985	210	-53	0	0
1/28/1985	210	-53	0	0
1/29/1985	210	-53	0	0
1/30/1985	210	-53	0	0
1/31/1985	210	-53	0	0
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2/2/1985		-263	0	0
2/3/1985	210	-53	0	0
2/4/1985	210	-53	0	0
2/5/1985	210	-53	0	0
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2/7/1985	210	-53	0	0
2/8/1985	210	-53	0	0
2/9/1985	210	-53	0	0
2/10/1985	210	-53	0	0
2/11/1985	210	-53	0	0
2/12/1985	210	-53	0	0
2/13/1985	210	-53	0	0
2/14/1985	210	-53	0	0
2/15/1985	210	-53	0	0

2/16/1985	210	-53	0	0
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2/18/1985	210	-53	0	0
2/19/1985	210	-53	0	0
2/20/1985	210	-53	0	0
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2/22/1985	210	-53	0	0
2/23/1985	210	-53	0	0
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3/26/1985	210	-53	0	0
3/27/1985	210	-53	0	0
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3/29/1985	210	-53	0	0
3/30/1985	210	-53	0	0
3/31/1985	210	-53	0	0
4/1/1985	210	-53	0	0
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4/3/1985	210	-53	0	0

4/4/1985	210	-53	0	0
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4/6/1985	210	-53	0	0
4/7/1985	210	-53	0	0
4/8/1985	210	-53	0	0
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4/10/1985	210	-53	0	0
4/11/1985	210	-53	0	0
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4/13/1985	210	-53	0	0
4/14/1985		-263	0	0
4/15/1985	210	-53	0	0
4/16/1985	210	-53	0	0
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4/21/1985	210	-53	0	0
4/22/1985	210	-53	0	0
4/23/1985	210	-53	0	0
4/24/1985	210	-53	0	0
4/25/1985	210	-53	0	0
4/26/1985		-263	0	0
4/27/1985		-263	0	0
4/28/1985		-263	0	0
4/29/1985	210	-53	0	0
4/30/1985	210	-53	0	0
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5/10/1985	210	-53	0	0
5/11/1985	210	-53	0	0
5/12/1985	210	-53	0	0
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5/14/1985	210	-53	0	0
5/15/1985	210	-53	0	0
5/16/1985	210	-53	0	0
5/17/1985	210	-53	0	0
5/18/1985	210	-53	0	0
5/19/1985	210	-53	0	0
5/20/1985	210	-53	0	0

5/21/1985	308	45	1	45
5/22/1985	308	45	1	45
5/23/1985	308	45	1	45
5/24/1985	250	-13	0	0
5/25/1985	250	-13	0	0
5/26/1985	250	-13	0	0
5/27/1985	250	-13	0	0
5/28/1985	250	-13	0	0
5/29/1985	300	37	1	37
5/30/1985	300	37	1	37
5/31/1985	300	37	1	37
6/1/1985	300	37	1	37
6/2/1985	300	37	1	37
6/3/1985	300	37	1	37
6/4/1985	300	37	1	37
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6/8/1985	300	37	1	37
6/9/1985	300	37	1	37
6/10/1985	300	37	1	37
6/11/1985	250	-13	0	0
6/12/1985	250	-13	0	0
6/13/1985	200	-63	0	0
6/14/1985	150	-113	0	0
6/15/1985	150	-113	0	0
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6/26/1985	150	-113	0	0
6/27/1985	150	-113	0	0
6/28/1985	200	-63	0	0
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7/1/1985	200	-63	0	0
7/2/1985	200	-63	0	0
7/3/1985	200	-63	0	0
7/4/1985	200	-63	0	0
7/5/1985	200	-63	0	0
7/6/1985	200	-63	0	0

7/7/1985	200	-63	0	0
7/8/1985	200	-63	0	0
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7/10/1985	200	-63	0	0
7/11/1985	200	-63	0	0
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8/7/1985	200	-63	0	0
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8/15/1985	200	-63	0	0
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8/17/1985	200	-63	0	0
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8/19/1985	200	-63	0	0
8/20/1985	200	-63	0	0
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8/22/1985	200	-63	0	0

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9/9/1985	250	-13	0	0
9/10/1985	250	-13	0	0
9/11/1985	200	-63	0	0
9/12/1985	250	-13	0	0
9/13/1985	250	-13	0	0
9/14/1985	250	-13	0	0
9/15/1985	250	-13	0	0
9/16/1985	250	-13	0	0
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2/6/1986	245	-18	0	0
2/7/1986	245	-18	0	0
2/8/1986	245	-18	0	0
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2/15/1986	245	-18	0	0
2/16/1986	245	-18	0	0
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2/21/1986	245	-18	0	0
2/22/1986	245	-18	0	0
2/23/1986	245	-18	0	0
2/24/1986	245	-18	0	0
2/25/1986	245	-18	0	0
2/26/1986	245	-18	0	0

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2/28/1986	245	-18	0	0
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3/2/1986	245	-18	0	0
3/3/1986	245	-18	0	0
3/4/1986	245	-18	0	0
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3/27/1986	245	-18	0	0
3/28/1986	245	-18	0	0
3/29/1986	245	-18	0	0
3/30/1986	245	-18	0	0
3/31/1986	245	-18	0	0
4/1/1986	245	-18	0	0
4/2/1986	245	-18	0	0
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5/27/1986	250	-13	0	0
5/28/1986		-263	0	0
5/29/1986	250	-13	0	0
5/30/1986	380	117	1	117
5/31/1986	380	117	1	117

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6/3/1986	380	117	1	117
6/4/1986	380	117	1	117
6/5/1986	400	137	1	137
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6/7/1986		-263	0	0
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6/12/1986	400	137	1	137
6/13/1986	400	137	1	137
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6/15/1986	400	137	1	137
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6/17/1986	400	137	1	137
6/18/1986	400	137	1	137
6/19/1986	400	137	1	137
6/20/1986	400	137	1	137
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6/22/1986	400	137	1	137
6/23/1986	400	137	1	137
6/24/1986	266	3	1	3
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6/29/1986	300	37	1	37
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7/6/1986	304	41	1	41
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7/17/1986	298	35	1	35

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7/26/1986	296	33	1	33
7/27/1986	296	33	1	33
7/28/1986	296	33	1	33
7/29/1986	296	33	1	33
7/30/1986	296	33	1	33
7/31/1986	296	33	1	33
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8/5/1986	289	26	1	26
8/6/1986	290	27	1	27
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8/8/1986	249	-14	0	0
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8/30/1986	243	-20	0	0
8/31/1986	243	-20	0	0
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9/29/1986	236	-27	0	0
9/30/1986	276	13	1	13
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4/18/1987	388	125	1	125
4/19/1987	388	125	1	125
4/20/1987	386.7	124	1	124
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4/22/1987	380	117	1	117
4/23/1987	386	123	1	123
4/24/1987	380	117	1	117
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4/26/1987	380	117	1	117
4/27/1987	380	117	1	117
4/28/1987	453	190	1	190
4/29/1987	453	190	1	190
4/30/1987	460	197	1	197
5/1/1987	455	192	1	192
5/2/1987	455	192	1	192
5/3/1987	455	192	1	192
5/4/1987	455	192	1	192
5/5/1987	455	192	1	192
5/6/1987	435	172	1	172
5/7/1987	435	172	1	172
5/8/1987	450	187	1	187
5/9/1987	450	187	1	187
5/10/1987	450	187	1	187
5/11/1987	450	187	1	187
5/12/1987	293	30	1	30
5/13/1987	300	37	1	37
5/14/1987	300	37	1	37
5/15/1987	285	22	1	22
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6/27/1987	255	-8	0	0
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9/6/1987	200	-63	0	0
9/7/1987	200	-63	0	0
9/8/1987	200	-63	0	0
9/9/1987	200	-63	0	0
9/10/1987	200	-63	0	0
9/11/1987	200	-63	0	0
9/12/1987	200	-63	0	0
9/13/1987	200	-63	0	0

9/14/1987	200	-63	0	0
9/15/1987	260	-3	0	0
9/16/1987	260	-3	0	0
9/17/1987	260	-3	0	0
9/18/1987	260	-3	0	0
9/19/1987	260	-3	0	0
9/20/1987	260	-3	0	0
9/21/1987	260	-3	0	0
9/22/1987	260	-3	0	0
9/23/1987	260	-3	0	0
9/24/1987	260	-3	0	0
9/25/1987	260	-3	0	0
9/26/1987	260	-3	0	0
9/27/1987	260	-3	0	0
9/28/1987	260	-3	0	0
9/29/1987	260	-3	0	0
9/30/1987	260	-3	0	0
10/1/1987	300	37	1	37
10/2/1987	300	37	1	37
10/3/1987	300	37	1	37
10/4/1987	300	37	1	37
10/5/1987	300	37	1	37
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10/7/1987	300	37	1	37
10/8/1987	300	37	1	37
10/9/1987	300	37	1	37
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10/23/1987	280	17	1	17
10/24/1987	280	17	1	17
10/25/1987	280	17	1	17
10/26/1987	300	37	1	37
10/27/1987	250	-13	0	0
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4/14/1988	480	217	1	217
4/15/1988	400	137	1	137
4/16/1988	400	137	1	137
4/17/1988	400	137	1	137
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4/29/1988	400	137	1	137
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5/2/1988	369	106	1	106
5/3/1988	370	107	1	107
5/4/1988	369	106	1	106

5/5/1988	378	115	1	115
5/6/1988	376	113	1	113
5/7/1988	385	122	1	122
5/8/1988	367	104	1	104
5/9/1988	350	87	1	87
5/10/1988	312	49	1	49
5/11/1988	339	76	1	76
5/12/1988	390	127	1	127
5/13/1988	318	55	1	55
5/14/1988	461	198	1	198
5/15/1988	419	156	1	156
5/16/1988	427	164	1	164
5/17/1988	424	161	1	161
5/18/1988	416	153	1	153
5/19/1988	406	143	1	143
5/20/1988	343	80	1	80
5/21/1988	471	208	1	208
5/22/1988	412	149	1	149
5/23/1988	385	122	1	122
5/24/1988	402	139	1	139
5/25/1988	417	154	1	154
5/26/1988	415	152	1	152
5/27/1988	411	148	1	148
5/28/1988	402	139	1	139
5/29/1988	402	139	1	139
5/30/1988	408	145	1	145
5/31/1988	401	138	1	138
6/1/1988	391	128	1	128
6/2/1988	391	128	1	128
6/3/1988	391	128	1	128
6/4/1988	391	128	1	128
6/5/1988	386	123	1	123
6/6/1988	383	120	1	120
6/7/1988	379	116	1	116
6/8/1988	373	110	1	110
6/9/1988	365	102	1	102
6/10/1988	364	101	1	101
6/11/1988	354	91	1	91
6/12/1988	351	88	1	88
6/13/1988	344	81	1	81
6/14/1988	339	76	1	76
6/15/1988	334	71	1	71
6/16/1988	332	69	1	69
6/17/1988	330	67	1	67

6/18/1988	328	65	1	65
6/19/1988	326	63	1	63
6/20/1988	323	60	1	60
6/21/1988	265	2	1	2
6/22/1988	250	-13	0	0
6/23/1988	245	-18	0	0
6/24/1988	242	-21	0	0
6/25/1988	243	-20	0	0
6/26/1988	242	-21	0	0
6/27/1988	240	-23	0	0
6/28/1988	241	-22	0	0
6/29/1988	240	-23	0	0
6/30/1988	236	-27	0	0
7/1/1988	276	13	1	13
7/2/1988	278	15	1	15
7/3/1988	276	13	1	13
7/4/1988	274	11	1	11
7/5/1988	275	12	1	12
7/6/1988	275	12	1	12
7/7/1988	275	12	1	12
7/8/1988	271	8	1	8
7/9/1988	272	9	1	9
7/10/1988	206	-57	0	0
7/11/1988	198	-65	0	0
7/12/1988	198	-65	0	0
7/13/1988	197	-66	0	0
7/14/1988	198	-65	0	0
7/15/1988	193	-70	0	0
7/16/1988	195	-68	0	0
7/17/1988	196	-67	0	0
7/18/1988	195	-68	0	0
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7/21/1988	193	-70	0	0
7/22/1988	192	-71	0	0
7/23/1988	192	-71	0	0
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7/31/1988	191	-72	0	0

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8/2/1988	190	-73	0	0
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8/5/1988	201	-62	0	0
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8/7/1988	201	-62	0	0
8/8/1988	202	-61	0	0
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8/11/1988	201	-62	0	0
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9/3/1988	198	-65	0	0
9/4/1988	202	-61	0	0
9/5/1988	196	-67	0	0
9/6/1988	198	-65	0	0
9/7/1988	199	-64	0	0
9/8/1988	200	-63	0	0
9/9/1988	200	-63	0	0
9/10/1988	202	-61	0	0
9/11/1988	205	-58	0	0
9/12/1988	213	-50	0	0
9/13/1988	217	-46	0	0

9/14/1988	216	-47	0	0
9/15/1988	215	-48	0	0
9/16/1988	259	-4	0	0
9/17/1988	260	-3	0	0
9/18/1988	262	-1	0	0
9/19/1988	261	-2	0	0
9/20/1988	262	-1	0	0
9/21/1988	263	0	0	0
9/22/1988	260	-3	0	0
9/23/1988	261	-2	0	0
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9/25/1988	259	-4	0	0
9/26/1988	261	-2	0	0
9/27/1988	258	-5	0	0
9/28/1988	260	-3	0	0
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9/30/1988	256	-7	0	0
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10/11/1988	248	-15	0	0
10/12/1988	247	-16	0	0
10/13/1988	245	-18	0	0
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11/4/1988	360	97	1	97
11/5/1988	364	101	1	101
11/6/1988	362	99	1	99
11/7/1988	295	32	1	32
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11/9/1988	259	-4	0	0
11/10/1988	257	-6	0	0
11/11/1988	257	-6	0	0
11/12/1988	256	-7	0	0
11/13/1988	257	-6	0	0
11/14/1988	209	-54	0	0
11/15/1988	251	-12	0	0
11/16/1988	257	-6	0	0
11/17/1988	249	-14	0	0
11/18/1988	241	-22	0	0
11/19/1988	235	-28	0	0
11/20/1988	248	-15	0	0
11/21/1988	246	-17	0	0
11/22/1988	247	-16	0	0
11/23/1988	249	-14	0	0
11/24/1988	245	-18	0	0
11/25/1988	261	-2	0	0
11/26/1988	230	-33	0	0
11/27/1988	249	-14	0	0
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11/30/1988	245	-18	0	0
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1/19/1989	245	-18	0	0
1/20/1989	242	-21	0	0
1/21/1989	246	-17	0	0
1/22/1989	245	-18	0	0
1/23/1989	244	-19	0	0

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1/25/1989	249	-14	0	0
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1/27/1989	244	-19	0	0
1/28/1989	245	-18	0	0
1/29/1989	247	-16	0	0
1/30/1989	246	-17	0	0
1/31/1989	229	-34	0	0
2/1/1989	225	-38	0	0
2/2/1989	251	-12	0	0
2/3/1989	255	-8	0	0
2/4/1989	252	-11	0	0
2/5/1989	260	-3	0	0
2/6/1989	261	-2	0	0
2/7/1989	260	-3	0	0
2/8/1989	252	-11	0	0
2/9/1989	260	-3	0	0
2/10/1989	258	-5	0	0
2/11/1989	254	-9	0	0
2/12/1989	250	-13	0	0
2/13/1989	248	-15	0	0
2/14/1989	248	-15	0	0
2/15/1989	248	-15	0	0
2/16/1989	246	-17	0	0
2/17/1989	248	-15	0	0
2/18/1989	243	-20	0	0
2/19/1989	247	-16	0	0
2/20/1989	247	-16	0	0
2/21/1989	247	-16	0	0
2/22/1989	247	-16	0	0
2/23/1989	247	-16	0	0
2/24/1989	248	-15	0	0
2/25/1989	246	-17	0	0
2/26/1989	260	-3	0	0
2/27/1989	248	-15	0	0
2/28/1989	244	-19	0	0
3/1/1989	243	-20	0	0
3/2/1989	246	-17	0	0
3/3/1989	246	-17	0	0
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3/5/1989	243	-20	0	0
3/6/1989	246	-17	0	0
3/7/1989	245	-18	0	0
3/8/1989	248	-15	0	0

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3/10/1989	256	-7	0	0
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3/12/1989	253	-10	0	0
3/13/1989	254	-9	0	0
3/14/1989	227	-36	0	0
3/15/1989	251	-12	0	0
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3/23/1989	244	-19	0	0
3/24/1989	250	-13	0	0
3/25/1989	256	-7	0	0
3/26/1989	257	-6	0	0
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3/28/1989	254	-9	0	0
3/29/1989	255	-8	0	0
3/30/1989	257	-6	0	0
3/31/1989	254	-9	0	0
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4/2/1989	253	-10	0	0
4/3/1989	254	-9	0	0
4/4/1989	254	-9	0	0
4/5/1989	253	-10	0	0
4/6/1989	261	-2	0	0
4/7/1989	262	-1	0	0
4/8/1989	262	-1	0	0
4/9/1989	213	-50	0	0
4/10/1989	243	-20	0	0
4/11/1989	251	-12	0	0
4/12/1989	259	-4	0	0
4/13/1989	263	0	0	0
4/14/1989	374	111	1	111
4/15/1989	386	123	1	123
4/16/1989	388	125	1	125
4/17/1989	380	117	1	117
4/18/1989	378	115	1	115
4/19/1989	386	123	1	123
4/20/1989	395	132	1	132
4/21/1989	394	131	1	131

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4/23/1989	391	128	1	128
4/24/1989	384	121	1	121
4/25/1989	382	119	1	119
4/26/1989	381	118	1	118
4/27/1989	381	118	1	118
4/28/1989	373	110	1	110
4/29/1989	371	108	1	108
4/30/1989	374	111	1	111
5/1/1989	373	110	1	110
5/2/1989	385	122	1	122
5/3/1989	396	133	1	133
5/4/1989	388	125	1	125
5/5/1989	389	126	1	126
5/6/1989	398	135	1	135
5/7/1989	405	142	1	142
5/8/1989	410	147	1	147
5/9/1989	401	138	1	138
5/10/1989	405	142	1	142
5/11/1989	404	141	1	141
5/12/1989	400	137	1	137
5/13/1989	398	135	1	135
5/14/1989	397	134	1	134
5/15/1989	397	134	1	134
5/16/1989	407	144	1	144
5/17/1989	404	141	1	141
5/18/1989	404	141	1	141
5/19/1989	402	139	1	139
5/20/1989	399	136	1	136
5/21/1989	395	132	1	132
5/22/1989	394	131	1	131
5/23/1989	392	129	1	129
5/24/1989	395	132	1	132
5/25/1989	388	125	1	125
5/26/1989	391	128	1	128
5/27/1989	393	130	1	130
5/28/1989	384	121	1	121
5/29/1989	397	134	1	134
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5/31/1989	389	126	1	126
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6/2/1989	391	128	1	128
6/3/1989	396	133	1	133
6/4/1989	392	129	1	129

6/5/1989	394	131	1	131
6/6/1989	393	130	1	130
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6/8/1989	395	132	1	132
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6/10/1989	397	134	1	134
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6/12/1989	392	129	1	129
6/13/1989	389	126	1	126
6/14/1989	389	126	1	126
6/15/1989	390	127	1	127
6/16/1989	392	129	1	129
6/17/1989	389	126	1	126
6/18/1989	386	123	1	123
6/19/1989	381	118	1	118
6/20/1989	379	116	1	116
6/21/1989	385	122	1	122
6/22/1989	381	118	1	118
6/23/1989	380	117	1	117
6/24/1989	383	120	1	120
6/25/1989	378	115	1	115
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6/27/1989	378	115	1	115
6/28/1989	374	111	1	111
6/29/1989	377	114	1	114
6/30/1989	372	109	1	109
7/1/1989	377	114	1	114
7/2/1989	370	107	1	107
7/3/1989	372	109	1	109
7/4/1989	334	71	1	71
7/5/1989	250	-13	0	0
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10/12/1989	237	-26	0	0
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10/14/1989	233	-30	0	0

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11/11/1989	265	2	1	2
11/12/1989	268	5	1	5
11/13/1989	265	2	1	2
11/14/1989	265	2	1	2
11/15/1989	261	-2	0	0
11/16/1989	258	-5	0	0
11/17/1989	266	3	1	3
11/18/1989	255	-8	0	0
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11/23/1989	252	-11	0	0
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11/26/1989	254	-9	0	0
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12/12/1989	256	-7	0	0
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12/15/1989	247	-16	0	0
12/16/1989	247	-16	0	0
12/17/1989	235	-28	0	0
12/18/1989	229	-34	0	0
12/19/1989	260	-3	0	0
12/20/1989	264	1	1	1
12/21/1989	255	-8	0	0
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12/23/1989	262	-1	0	0
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12/26/1989	252	-11	0	0
12/27/1989	258	-5	0	0
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12/29/1989	255	-8	0	0
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1/10/1990	258	-5	0	0

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1/12/1990	251	-12	0	0
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1/14/1990	250	-13	0	0
1/15/1990	250	-13	0	0
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1/18/1990	200	-63	0	0
1/19/1990	255	-8	0	0
1/20/1990	259	-4	0	0
1/21/1990	259	-4	0	0
1/22/1990	254	-9	0	0
1/23/1990	246	-17	0	0
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1/26/1990	235	-28	0	0
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1/29/1990	247	-16	0	0
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2/3/1990	247	-16	0	0
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2/6/1990	250	-13	0	0
2/7/1990	246	-17	0	0
2/8/1990	247	-16	0	0
2/9/1990	248	-15	0	0
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2/12/1990	211	-52	0	0
2/13/1990	204	-59	0	0
2/14/1990	248	-15	0	0
2/15/1990	260	-3	0	0
2/16/1990	248	-15	0	0
2/17/1990	248	-15	0	0
2/18/1990	249	-14	0	0
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2/20/1990	251	-12	0	0
2/21/1990	246	-17	0	0
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2/23/1990	248	-15	0	0

2/24/1990	245	-18	0	0
2/25/1990	247	-16	0	0
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2/27/1990	236	-27	0	0
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3/6/1990	240	-23	0	0
3/7/1990	245	-18	0	0
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3/17/1990	248	-15	0	0
3/18/1990	251	-12	0	0
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3/20/1990	255	-8	0	0
3/21/1990	253	-10	0	0
3/22/1990	141	-122	0	0
3/23/1990	239	-24	0	0
3/24/1990	252	-11	0	0
3/25/1990	264	1	1	1
3/26/1990	252	-11	0	0
3/27/1990	251	-12	0	0
3/28/1990	221	-42	0	0
3/29/1990	228	-35	0	0
3/30/1990	255	-8	0	0
3/31/1990	248	-15	0	0
4/1/1990	262	-1	0	0
4/2/1990	146	-117	0	0
4/3/1990	242	-21	0	0
4/4/1990	246	-17	0	0
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4/6/1990	238	-25	0	0
4/7/1990	238	-25	0	0
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4/9/1990	239	-24	0	0
4/10/1990	234	-29	0	0
4/11/1990	237	-26	0	0
4/12/1990	238	-25	0	0
4/13/1990	422	159	1	159
4/14/1990	407	144	1	144
4/15/1990	415	152	1	152
4/16/1990	411	148	1	148
4/17/1990	410	147	1	147
4/18/1990	415	152	1	152
4/19/1990	417	154	1	154
4/20/1990	419	156	1	156
4/21/1990	420	157	1	157
4/22/1990	420	157	1	157
4/23/1990	419	156	1	156
4/24/1990	417	154	1	154
4/25/1990	416	153	1	153
4/26/1990	410	147	1	147
4/27/1990	409	146	1	146
4/28/1990	412	149	1	149
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4/30/1990	397	134	1	134
5/1/1990	399	136	1	136
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5/3/1990	400	137	1	137
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5/6/1990	419	156	1	156
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5/8/1990	411	148	1	148
5/9/1990	404	141	1	141
5/10/1990	403	140	1	140
5/11/1990	401	138	1	138
5/12/1990	402	139	1	139
5/13/1990	396	133	1	133
5/14/1990	404	141	1	141
5/15/1990	407	144	1	144
5/16/1990	409	146	1	146
5/17/1990	396	133	1	133
5/18/1990	411	148	1	148
5/19/1990	400	137	1	137
5/20/1990	409	146	1	146
5/21/1990	406	143	1	143
5/22/1990	408	145	1	145

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5/24/1990	417	154	1	154
5/25/1990	417	154	1	154
5/26/1990	420	157	1	157
5/27/1990	418	155	1	155
5/28/1990	416	153	1	153
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5/31/1990	419	156	1	156
6/1/1990	414	151	1	151
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6/3/1990	420	157	1	157
6/4/1990	406	143	1	143
6/5/1990	410	147	1	147
6/6/1990	410	147	1	147
6/7/1990	411	148	1	148
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6/11/1990	412	149	1	149
6/12/1990	409	146	1	146
6/13/1990	405	142	1	142
6/14/1990	400	137	1	137
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6/16/1990	402	139	1	139
6/17/1990	402	139	1	139
6/18/1990	401	138	1	138
6/19/1990	400	137	1	137
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6/22/1990	405	142	1	142
6/23/1990	417	154	1	154
6/24/1990	431	168	1	168
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6/27/1990	442	179	1	179
6/28/1990	441	178	1	178
6/29/1990	440	177	1	177
6/30/1990	250	-13	0	0
7/1/1990	250	-13	0	0
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7/5/1990	250	-13	0	0

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7/9/1990	250	-13	0	0
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7/11/1990	250	-13	0	0
7/12/1990	200	-63	0	0
7/13/1990	200	-63	0	0
7/14/1990	200	-63	0	0
7/15/1990	200	-63	0	0
7/16/1990	200	-63	0	0
7/17/1990	197	-66	0	0
7/18/1990	195	-68	0	0
7/19/1990	194	-69	0	0
7/20/1990	193	-70	0	0
7/21/1990	192	-71	0	0
7/22/1990	193	-70	0	0
7/23/1990	191	-72	0	0
7/24/1990	190	-73	0	0
7/25/1990	193	-70	0	0
7/26/1990	189	-74	0	0
7/27/1990	190	-73	0	0
7/28/1990	189	-74	0	0
7/29/1990	190	-73	0	0
7/30/1990	191	-72	0	0
7/31/1990	191	-72	0	0
8/1/1990	197	-66	0	0
8/2/1990	201	-62	0	0
8/3/1990	199	-64	0	0
8/4/1990	198	-65	0	0
8/5/1990	198	-65	0	0
8/6/1990	197	-66	0	0
8/7/1990	197	-66	0	0
8/8/1990	199	-64	0	0
8/9/1990	196	-67	0	0
8/10/1990	196	-67	0	0
8/11/1990	198	-65	0	0
8/12/1990	197	-66	0	0
8/13/1990	197	-66	0	0
8/14/1990	197	-66	0	0
8/15/1990	197	-66	0	0
8/16/1990	197	-66	0	0
8/17/1990	198	-65	0	0
8/18/1990	194	-69	0	0

8/19/1990	200	-63	0	0
8/20/1990	189	-74	0	0
8/21/1990	190	-73	0	0
8/22/1990	193	-70	0	0
8/23/1990	191	-72	0	0
8/24/1990	192	-71	0	0
8/25/1990	190	-73	0	0
8/26/1990	190	-73	0	0
8/27/1990	191	-72	0	0
8/28/1990	189	-74	0	0
8/29/1990	190	-73	0	0
8/30/1990	188	-75	0	0
8/31/1990	186	-77	0	0
9/1/1990	185	-78	0	0
9/2/1990	185	-78	0	0
9/3/1990	188	-75	0	0
9/4/1990	189	-74	0	0
9/5/1990	190	-73	0	0
9/6/1990	191	-72	0	0
9/7/1990	186	-77	0	0
9/8/1990	190	-73	0	0
9/9/1990	188	-75	0	0
9/10/1990	187	-76	0	0
9/11/1990	187	-76	0	0
9/12/1990	188	-75	0	0
9/13/1990	255	-8	0	0
9/14/1990	253	-10	0	0
9/15/1990	252	-11	0	0
9/16/1990	254	-9	0	0
9/17/1990	250	-13	0	0
9/18/1990	250	-13	0	0
9/19/1990	250	-13	0	0
9/20/1990	249	-14	0	0
9/21/1990	246	-17	0	0
9/22/1990	245	-18	0	0
9/23/1990	245	-18	0	0
9/24/1990	244	-19	0	0
9/25/1990	238	-25	0	0
9/26/1990	241	-22	0	0
9/27/1990	230	-33	0	0
9/28/1990	235	-28	0	0
9/29/1990	231	-32	0	0
9/30/1990	229	-34	0	0
10/1/1990	251	-12	0	0

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10/3/1990	245	-18	0	0
10/4/1990	241	-22	0	0
10/5/1990	239	-24	0	0
10/6/1990	238	-25	0	0
10/7/1990	244	-19	0	0
10/8/1990	244	-19	0	0
10/9/1990	246	-17	0	0
10/10/1990	247	-16	0	0
10/11/1990	244	-19	0	0
10/12/1990	243	-20	0	0
10/13/1990	238	-25	0	0
10/14/1990	233	-30	0	0
10/15/1990	229	-34	0	0
10/16/1990	228	-35	0	0
10/17/1990	228	-35	0	0
10/18/1990	269	6	1	6
10/19/1990	274	11	1	11
10/20/1990	272	9	1	9
10/21/1990	272	9	1	9
10/22/1990	273	10	1	10
10/23/1990	269	6	1	6
10/24/1990	270	7	1	7
10/25/1990	277	14	1	14
10/26/1990	268	5	1	5
10/27/1990	281	18	1	18
10/28/1990	268	5	1	5
10/29/1990	268	5	1	5
10/30/1990	268	5	1	5
10/31/1990	269	6	1	6
11/1/1990	269	6	1	6
11/2/1990	252	-11	0	0
11/3/1990	264	1	1	1
11/4/1990	266	3	1	3
11/5/1990	267	4	1	4
11/6/1990	136	-127	0	0
11/7/1990	264	1	1	1
11/8/1990	270	7	1	7
11/9/1990	272	9	1	9
11/10/1990	277	14	1	14
11/11/1990	268	5	1	5
11/12/1990	271	8	1	8
11/13/1990	271	8	1	8
11/14/1990	274	11	1	11

11/15/1990	206	-57	0	0
11/16/1990	261	-2	0	0
11/17/1990	266	3	1	3
11/18/1990	268	5	1	5
11/19/1990	267	4	1	4
11/20/1990	256	-7	0	0
11/21/1990	267	4	1	4
11/22/1990	264	1	1	1
11/23/1990	275	12	1	12
11/24/1990	269	6	1	6
11/25/1990	273	10	1	10
11/26/1990	186	-77	0	0
11/27/1990	250	-13	0	0
11/28/1990	266	3	1	3
11/29/1990	270	7	1	7
11/30/1990	141	-122	0	0
12/1/1990	238	-25	0	0
12/2/1990	270	7	1	7
12/3/1990	268	5	1	5
12/4/1990	270	7	1	7
12/5/1990	267	4	1	4
12/6/1990	262	-1	0	0
12/7/1990	261	-2	0	0
12/8/1990	265	2	1	2
12/9/1990	268	5	1	5
12/10/1990	267	4	1	4
12/11/1990	264	1	1	1
12/12/1990	250	-13	0	0
12/13/1990	269	6	1	6
12/14/1990	260	-3	0	0
12/15/1990	255	-8	0	0
12/16/1990	277	14	1	14
12/17/1990	277	14	1	14
12/18/1990	250	-13	0	0
12/19/1990	212	-51	0	0
12/20/1990	267	4	1	4
12/21/1990	280	17	1	17
12/22/1990	277	14	1	14
12/23/1990	275	12	1	12
12/24/1990	279	16	1	16
12/25/1990	269	6	1	6
12/26/1990	261	-2	0	0
12/27/1990	258	-5	0	0
12/28/1990	258	-5	0	0

12/29/1990	259	-4	0	0
12/30/1990	262	-1	0	0
12/31/1990	260	-3	0	0
1/1/1991	259	-4	0	0
1/2/1991	262	-1	0	0
1/3/1991	258	-5	0	0
1/4/1991	256	-7	0	0
1/5/1991	257	-6	0	0
1/6/1991	259	-4	0	0
1/7/1991	256	-7	0	0
1/8/1991	258	-5	0	0
1/9/1991	258	-5	0	0
1/10/1991	259	-4	0	0
1/11/1991	259	-4	0	0
1/12/1991	259	-4	0	0
1/13/1991	260	-3	0	0
1/14/1991	259	-4	0	0
1/15/1991	259	-4	0	0
1/16/1991	260	-3	0	0
1/17/1991	259	-4	0	0
1/18/1991	260	-3	0	0
1/19/1991	259	-4	0	0
1/20/1991	248	-15	0	0
1/21/1991	252	-11	0	0
1/22/1991	258	-5	0	0
1/23/1991	257	-6	0	0
1/24/1991	253	-10	0	0
1/25/1991	259	-4	0	0
1/26/1991	274	11	1	11
1/27/1991	269	6	1	6
1/28/1991	242	-21	0	0
1/29/1991	242	-21	0	0
1/30/1991	263	0	0	0
1/31/1991	257	-6	0	0
2/1/1991	256	-7	0	0
2/2/1991	258	-5	0	0
2/3/1991	256	-7	0	0
2/4/1991	259	-4	0	0
2/5/1991	256	-7	0	0
2/6/1991	256	-7	0	0
2/7/1991	256	-7	0	0
2/8/1991	256	-7	0	0
2/9/1991	257	-6	0	0
2/10/1991	262	-1	0	0

2/11/1991	262	-1	0	0
2/12/1991	0	-263	0	0
2/13/1991	2	-261	0	0
2/14/1991	1	-262	0	0
2/15/1991	0	-263	0	0
2/16/1991	1	-262	0	0
2/17/1991	2	-261	0	0
2/18/1991	0	-263	0	0
2/19/1991	0	-263	0	0
2/20/1991	1	-262	0	0
2/21/1991	5	-258	0	0
2/22/1991	0	-263	0	0
2/23/1991	0	-263	0	0
2/24/1991	0	-263	0	0
2/25/1991	1	-262	0	0
2/26/1991	0	-263	0	0
2/27/1991	0	-263	0	0
2/28/1991	0	-263	0	0
3/1/1991	197	-66	0	0
3/2/1991	267	4	1	4
3/3/1991	254	-9	0	0
3/4/1991	267	4	1	4
3/5/1991	230	-33	0	0
3/6/1991	267	4	1	4
3/7/1991	267	4	1	4
3/8/1991	222	-41	0	0
3/9/1991	267	4	1	4
3/10/1991	267	4	1	4
3/11/1991	267	4	1	4
3/12/1991	267	4	1	4
3/13/1991	267	4	1	4
3/14/1991	249	-14	0	0
3/15/1991	267	4	1	4
3/16/1991	262	-1	0	0
3/17/1991	256	-7	0	0
3/18/1991	256	-7	0	0
3/19/1991	239	-24	0	0
3/20/1991	244	-19	0	0
3/21/1991	244	-19	0	0
3/22/1991	238	-25	0	0
3/23/1991	240	-23	0	0
3/24/1991	238	-25	0	0
3/25/1991	259	-4	0	0
3/26/1991	203	-60	0	0

3/27/1991	254	-9	0	0
3/28/1991	264	1	1	1
3/29/1991	235	-28	0	0
3/30/1991	247	-16	0	0
3/31/1991	251	-12	0	0
4/1/1991	254	-9	0	0
4/2/1991	258	-5	0	0
4/3/1991	246	-17	0	0
4/4/1991	246	-17	0	0
4/5/1991	289	26	1	26
4/6/1991	283	20	1	20
4/7/1991	288	25	1	25
4/8/1991	335	72	1	72
4/9/1991	363	100	1	100
4/10/1991	363	100	1	100
4/11/1991	342	79	1	79
4/12/1991	355	92	1	92
4/13/1991	354	91	1	91
4/14/1991	354	91	1	91
4/15/1991	380	117	1	117
4/16/1991	386	123	1	123
4/17/1991	386	123	1	123
4/18/1991	388	125	1	125
4/19/1991	395	132	1	132
4/20/1991	433	170	1	170
4/21/1991	452	189	1	189
4/22/1991	452	189	1	189
4/23/1991	466	203	1	203
4/24/1991	460	197	1	197
4/25/1991	459	196	1	196
4/26/1991	456	193	1	193
4/27/1991	447	184	1	184
4/28/1991	446	183	1	183
4/29/1991	438	175	1	175
4/30/1991	436	173	1	173
5/1/1991	443	180	1	180
5/2/1991	442	179	1	179
5/3/1991	440	177	1	177
5/4/1991	441	178	1	178
5/5/1991	443	180	1	180
5/6/1991	454	191	1	191
5/7/1991	466	203	1	203
5/8/1991	486	223	1	223
5/9/1991	498	235	1	235

5/10/1991	493	230	1	230
5/11/1991	505	242	1	242
5/12/1991	508	245	1	245
5/13/1991	510	247	1	247
5/14/1991	509	246	1	246
5/15/1991	516	253	1	253
5/16/1991	518	255	1	255
5/17/1991	505	242	1	242
5/18/1991	425	162	1	162
5/19/1991	401	138	1	138
5/20/1991	399	136	1	136
5/21/1991	394	131	1	131
5/22/1991	393	130	1	130
5/23/1991	387	124	1	124
5/24/1991	388	125	1	125
5/25/1991	386	123	1	123
5/26/1991	381	118	1	118
5/27/1991	375	112	1	112
5/28/1991	369	106	1	106
5/29/1991	356	93	1	93
5/30/1991	414	151	1	151
5/31/1991	416	153	1	153
6/1/1991	413	150	1	150
6/2/1991	417	154	1	154
6/3/1991	429	166	1	166
6/4/1991	416	153	1	153
6/5/1991	418	155	1	155
6/6/1991	414	151	1	151
6/7/1991	411	148	1	148
6/8/1991	406	143	1	143
6/9/1991	404	141	1	141
6/10/1991	402	139	1	139
6/11/1991	405	142	1	142
6/12/1991	397	134	1	134
6/13/1991	396	133	1	133
6/14/1991	401	138	1	138
6/15/1991	395	132	1	132
6/16/1991	393	130	1	130
6/17/1991	391	128	1	128
6/18/1991	385	122	1	122
6/19/1991	380	117	1	117
6/20/1991	380	117	1	117
6/21/1991	384	121	1	121
6/22/1991	375	112	1	112

6/23/1991	374	111	1	111
6/24/1991	370	107	1	107
6/25/1991	370	107	1	107
6/26/1991	369	106	1	106
6/27/1991	366	103	1	103
6/28/1991	367	104	1	104
6/29/1991	357	94	1	94
6/30/1991	336	73	1	73
7/1/1991	356	93	1	93
7/2/1991	356	93	1	93
7/3/1991	355	92	1	92
7/4/1991	354	91	1	91
7/5/1991	351	88	1	88
7/6/1991	355	92	1	92
7/7/1991	237	-26	0	0
7/8/1991	236	-27	0	0
7/9/1991	230	-33	0	0
7/10/1991	246	-17	0	0
7/11/1991	251	-12	0	0
7/12/1991	242	-21	0	0
7/13/1991	246	-17	0	0
7/14/1991	243	-20	0	0
7/15/1991	244	-19	0	0
7/16/1991	178	-85	0	0
7/17/1991	177	-86	0	0
7/18/1991	176	-87	0	0
7/19/1991	173	-90	0	0
7/20/1991	174	-89	0	0
7/21/1991	176	-87	0	0
7/22/1991	171	-92	0	0
7/23/1991	173	-90	0	0
7/24/1991	173	-90	0	0
7/25/1991	174	-89	0	0
7/26/1991	169	-94	0	0
7/27/1991	172	-91	0	0
7/28/1991	173	-90	0	0
7/29/1991	171	-92	0	0
7/30/1991	172	-91	0	0
7/31/1991	171	-92	0	0
8/1/1991	173	-90	0	0
8/2/1991	168	-95	0	0
8/3/1991	169	-94	0	0
8/4/1991	170	-93	0	0
8/5/1991	172	-91	0	0

8/6/1991	168	-95	0	0
8/7/1991	167	-96	0	0
8/8/1991	195	-68	0	0
8/9/1991	188	-75	0	0
8/10/1991	187	-76	0	0
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8/13/1991	188	-75	0	0
8/14/1991	188	-75	0	0
8/15/1991	189	-74	0	0
8/16/1991	190	-73	0	0
8/17/1991	184	-79	0	0
8/18/1991	187	-76	0	0
8/19/1991	183	-80	0	0
8/20/1991	186	-77	0	0
8/21/1991	186	-77	0	0
8/22/1991	184	-79	0	0
8/23/1991	188	-75	0	0
8/24/1991	183	-80	0	0
8/25/1991	185	-78	0	0
8/26/1991	190	-73	0	0
8/27/1991	191	-72	0	0
8/28/1991	193	-70	0	0
8/29/1991	184	-79	0	0
8/30/1991	186	-77	0	0
8/31/1991	188	-75	0	0
9/1/1991	184	-79	0	0
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9/3/1991	181	-82	0	0
9/4/1991	183	-80	0	0
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9/7/1991	182	-81	0	0
9/8/1991	185	-78	0	0
9/9/1991	185	-78	0	0
9/10/1991	196	-67	0	0
9/11/1991	200	-63	0	0
9/12/1991	195	-68	0	0
9/13/1991	197	-66	0	0
9/14/1991	201	-62	0	0
9/15/1991	198	-65	0	0
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9/19/1991	247	-16	0	0
9/20/1991	252	-11	0	0
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9/23/1991	250	-13	0	0
9/24/1991	248	-15	0	0
9/25/1991	250	-13	0	0
9/26/1991	246	-17	0	0
9/27/1991	247	-16	0	0
9/28/1991	244	-19	0	0
9/29/1991	250	-13	0	0
9/30/1991	248	-15	0	0
10/1/1991	241	-22	0	0
10/2/1991	235	-28	0	0
10/3/1991	229	-34	0	0
10/4/1991	229	-34	0	0
10/5/1991	226	-37	0	0
10/6/1991	223	-40	0	0
10/7/1991	224	-39	0	0
10/8/1991	213	-50	0	0
10/9/1991	222	-41	0	0
10/10/1991	201	-62	0	0
10/11/1991	206	-57	0	0
10/12/1991	203	-60	0	0
10/13/1991	197	-66	0	0
10/14/1991	239	-24	0	0
10/15/1991	234	-29	0	0
10/16/1991	240	-23	0	0
10/17/1991	253	-10	0	0
10/18/1991	253	-10	0	0
10/19/1991	246	-17	0	0
10/20/1991	252	-11	0	0
10/21/1991	249	-14	0	0
10/22/1991	246	-17	0	0
10/23/1991	240	-23	0	0
10/24/1991	241	-22	0	0
10/25/1991	243	-20	0	0
10/26/1991	251	-12	0	0
10/27/1991	174	-89	0	0
10/28/1991	227	-36	0	0
10/29/1991	115	-148	0	0
10/30/1991	171	-92	0	0
10/31/1991	215	-48	0	0
11/1/1991	233	-30	0	0

11/2/1991	238	-25	0	0
11/3/1991	250	-13	0	0
11/4/1991	239	-24	0	0
11/5/1991	238	-25	0	0
11/6/1991	232	-31	0	0
11/7/1991	220	-43	0	0
11/8/1991	217	-46	0	0
11/9/1991	235	-28	0	0
11/10/1991	232	-31	0	0
11/11/1991	234	-29	0	0
11/12/1991	233	-30	0	0
11/13/1991	221	-42	0	0
11/14/1991	153	-110	0	0
11/15/1991	122	-141	0	0
11/16/1991	252	-11	0	0
11/17/1991	265	2	1	2
11/18/1991	239	-24	0	0
11/19/1991	234	-29	0	0
11/20/1991	237	-26	0	0
11/21/1991	234	-29	0	0
11/22/1991	114	-149	0	0
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11/25/1991	48	-215	0	0
11/26/1991	0	-263	0	0
11/27/1991	165	-98	0	0
11/28/1991	243	-20	0	0
11/29/1991	186	-77	0	0
11/30/1991	187	-76	0	0
12/1/1991	255	-8	0	0
12/2/1991	256	-7	0	0
12/3/1991	252	-11	0	0
12/4/1991	249	-14	0	0
12/5/1991	246	-17	0	0
12/6/1991	241	-22	0	0
12/7/1991	229	-34	0	0
12/8/1991	235	-28	0	0
12/9/1991	235	-28	0	0
12/10/1991	106	-157	0	0
12/11/1991	259	-4	0	0
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3/5/1992	222	-41	0	0
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3/9/1992	203	-60	0	0
3/10/1992	219	-44	0	0
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3/14/1992	251	-12	0	0
3/15/1992	255	-8	0	0
3/16/1992	252	-11	0	0
3/17/1992	256	-7	0	0
3/18/1992	252	-11	0	0
3/19/1992	254	-9	0	0
3/20/1992	246	-17	0	0
3/21/1992	204	-59	0	0
3/22/1992	205	-58	0	0
3/23/1992	242	-21	0	0
3/24/1992	243	-20	0	0
3/25/1992	250	-13	0	0
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3/27/1992	250	-13	0	0
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3/29/1992	250	-13	0	0
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4/8/1992	245	-18	0	0
4/9/1992	247	-16	0	0
4/10/1992	253	-10	0	0
4/11/1992	251	-12	0	0
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4/13/1992	257	-6	0	0
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4/16/1992	260	-3	0	0
4/17/1992	263	0	0	0
4/18/1992	260	-3	0	0
4/19/1992	258	-5	0	0
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4/25/1992	270	7	1	7

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4/27/1992	287	24	1	24
4/28/1992	278	15	1	15
4/29/1992	285	22	1	22
4/30/1992	286	23	1	23
5/1/1992	275	12	1	12
5/2/1992	277	14	1	14
5/3/1992	282	19	1	19
5/4/1992	279	16	1	16
5/5/1992	283	20	1	20
5/6/1992	298	35	1	35
5/7/1992	317	54	1	54
5/8/1992	319	56	1	56
5/9/1992	316	53	1	53
5/10/1992	314	51	1	51
5/11/1992	309	46	1	46
5/12/1992	306	43	1	43
5/13/1992	302	39	1	39
5/14/1992	302	39	1	39
5/15/1992	305	42	1	42
5/16/1992	305	42	1	42
5/17/1992	302	39	1	39
5/18/1992	302	39	1	39
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5/23/1992	301	38	1	38
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5/26/1992	280	17	1	17
5/27/1992	299	36	1	36
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6/6/1992	278	15	1	15
6/7/1992	270	7	1	7
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6/11/1992	268	5	1	5
6/12/1992	267	4	1	4
6/13/1992	266	3	1	3
6/14/1992	270	7	1	7
6/15/1992	289	26	1	26
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6/17/1992	319	56	1	56
6/18/1992	305	42	1	42
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6/20/1992	286	23	1	23
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6/26/1992	266	3	1	3
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6/28/1992	268	5	1	5
6/29/1992	271	8	1	8
6/30/1992	269	6	1	6
7/1/1992	270	7	1	7
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5/9/1993	375	112	1	112
5/10/1993	375	112	1	112
5/11/1993	375	112	1	112
5/12/1993	375	112	1	112
5/13/1993	375	112	1	112
5/14/1993	375	112	1	112
5/15/1993	375	112	1	112
5/16/1993	375	112	1	112
5/17/1993	375	112	1	112
5/18/1993	375	112	1	112
5/19/1993	363	100	1	100
5/20/1993	352	89	1	89
5/21/1993	346	83	1	83
5/22/1993	357	94	1	94
5/23/1993	346	83	1	83
5/24/1993	343	80	1	80
5/25/1993	342	79	1	79
5/26/1993	347	84	1	84

5/27/1993	333	70	1	70
5/28/1993	343	80	1	80
5/29/1993	338	75	1	75
5/30/1993	345	82	1	82
5/31/1993	337	74	1	74
6/1/1993	332	69	1	69
6/2/1993	339	76	1	76
6/3/1993	357	94	1	94
6/4/1993	305	42	1	42
6/5/1993	330	67	1	67
6/6/1993	326	63	1	63
6/7/1993	334	71	1	71
6/8/1993	336	73	1	73
6/9/1993	278	15	1	15
6/10/1993	373	110	1	110
6/11/1993	373	110	1	110
6/12/1993	363	100	1	100
6/13/1993	356	93	1	93
6/14/1993	354	91	1	91
6/15/1993	397	134	1	134
6/16/1993	344	81	1	81
6/17/1993	341	78	1	78
6/18/1993	338	75	1	75
6/19/1993	323	60	1	60
6/20/1993	330	67	1	67
6/21/1993	502	239	1	239
6/22/1993	519	256	1	256
6/23/1993	494	231	1	231
6/24/1993	499	236	1	236
6/25/1993	493	230	1	230
6/26/1993	472	209	1	209
6/27/1993	403	140	1	140
6/28/1993	389	126	1	126
6/29/1993	384	121	1	121
6/30/1993	384	121	1	121
7/1/1993	388	125	1	125
7/2/1993	375	112	1	112
7/3/1993	392	129	1	129
7/4/1993	353	90	1	90
7/5/1993	370	107	1	107
7/6/1993	363	100	1	100
7/7/1993	354	91	1	91
7/8/1993	337	74	1	74
7/9/1993	313	50	1	50

7/10/1993	320	57	1	57
7/11/1993	327	64	1	64
7/12/1993	311	48	1	48
7/13/1993	294	31	1	31
7/14/1993	288	25	1	25
7/15/1993	288	25	1	25
7/16/1993	285	22	1	22
7/17/1993	282	19	1	19
7/18/1993	282	19	1	19
7/19/1993	267	4	1	4
7/20/1993	272	9	1	9
7/21/1993	266	3	1	3
7/22/1993	256	-7	0	0
7/23/1993	262	-1	0	0
7/24/1993	274	11	1	11
7/25/1993	328	65	1	65
7/26/1993	343	80	1	80
7/27/1993	399	136	1	136
7/28/1993	392	129	1	129
7/29/1993	386	123	1	123
7/30/1993	389	126	1	126
7/31/1993	391	128	1	128
8/1/1993	398	135	1	135
8/2/1993	394	131	1	131
8/3/1993	405	142	1	142
8/4/1993	381	118	1	118
8/5/1993	390	127	1	127
8/6/1993	406	143	1	143
8/7/1993	362	99	1	99
8/8/1993	416	153	1	153
8/9/1993	334	71	1	71
8/10/1993	372	109	1	109
8/11/1993	349	86	1	86
8/12/1993	353	90	1	90
8/13/1993	359	96	1	96
8/14/1993	351	88	1	88
8/15/1993	353	90	1	90
8/16/1993	340	77	1	77
8/17/1993	336	73	1	73
8/18/1993	336	73	1	73
8/19/1993	327	64	1	64
8/20/1993	372	109	1	109
8/21/1993	303	40	1	40
8/22/1993	336	73	1	73

8/23/1993	322	59	1	59
8/24/1993	324	61	1	61
8/25/1993	322	59	1	59
8/26/1993	317	54	1	54
8/27/1993	316	53	1	53
8/28/1993	314	51	1	51
8/29/1993	320	57	1	57
8/30/1993	320	57	1	57
8/31/1993	313	50	1	50
9/1/1993	314	51	1	51
9/2/1993	335	72	1	72
9/3/1993	281	18	1	18
9/4/1993	304	41	1	41
9/5/1993	295	32	1	32
9/6/1993	293	30	1	30
9/7/1993	287	24	1	24
9/8/1993	289	26	1	26
9/9/1993	286	23	1	23
9/10/1993	278	15	1	15
9/11/1993	284	21	1	21
9/12/1993	281	18	1	18
9/13/1993	274	11	1	11
9/14/1993	279	16	1	16
9/15/1993	298	35	1	35
9/16/1993	263	0	1	0
9/17/1993	278	15	1	15
9/18/1993	284	21	1	21
9/19/1993	281	18	1	18
9/20/1993	273	10	1	10
9/21/1993	274	11	1	11
9/22/1993	273	10	1	10
9/23/1993	50	-213	0	0
9/24/1993	43	-220	0	0
9/25/1993	270	7	1	7
9/26/1993	385	122	1	122
9/27/1993	376	113	1	113
9/28/1993	389	126	1	126
9/29/1993	398	135	1	135
9/30/1993	265	2	1	2
10/1/1993	271	8	1	8
10/2/1993	280	17	1	17
10/3/1993	262	-1	0	0
10/4/1993	278	15	1	15
10/5/1993	262	-1	0	0

10/6/1993	273	10	1	10
10/7/1993	269	6	1	6
10/8/1993	266	3	1	3
10/9/1993	276	13	1	13
10/10/1993	280	17	1	17
10/11/1993	293	30	1	30
10/12/1993	298	35	1	35
10/13/1993	297	34	1	34
10/14/1993	296	33	1	33
10/15/1993	297	34	1	34
10/16/1993	295	32	1	32
10/17/1993	294	31	1	31
10/18/1993	294	31	1	31
10/19/1993	293	30	1	30
10/20/1993	285	22	1	22
10/21/1993	278	15	1	15
10/22/1993	279	16	1	16
10/23/1993	280	17	1	17
10/24/1993	279	16	1	16
10/25/1993	275	12	1	12
10/26/1993	274	11	1	11
10/27/1993	273	10	1	10
10/28/1993	278	15	1	15
10/29/1993	267	4	1	4
10/30/1993	269	6	1	6
10/31/1993	284	21	1	21
11/1/1993	277	14	1	14
11/2/1993	274	11	1	11
11/3/1993	276	13	1	13
11/4/1993	272	9	1	9
11/5/1993	257	-6	0	0
11/6/1993	200	-63	0	0
11/7/1993	283	20	1	20
11/8/1993	288	25	1	25
11/9/1993	222	-41	0	0
11/10/1993	289	26	1	26
11/11/1993	281	18	1	18
11/12/1993	267	4	1	4
11/13/1993	288	25	1	25
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11/15/1993	287	24	1	24
11/16/1993	288	25	1	25
11/17/1993	286	23	1	23
11/18/1993	271	8	1	8

11/19/1993	184	-79	0	0
11/20/1993	286	23	1	23
11/21/1993	290	27	1	27
11/22/1993	270	7	1	7
11/23/1993	258	-5	0	0
11/24/1993	289	26	1	26
11/25/1993	292	29	1	29
11/26/1993	302	39	1	39
11/27/1993	299	36	1	36
11/28/1993	297	34	1	34
11/29/1993	292	29	1	29
11/30/1993	287	24	1	24
12/1/1993	285	22	1	22
12/2/1993	287	24	1	24
12/3/1993	567	304	1	304
12/4/1993	1,546	1,283	1	1283
12/5/1993	763	500	1	500
12/6/1993	76	-187	0	0
12/7/1993	303	40	1	40
12/8/1993	305	42	1	42
12/9/1993	294	31	1	31
12/10/1993	302	39	1	39
12/11/1993	298	35	1	35
12/12/1993	296	33	1	33
12/13/1993	260	-3	0	0
12/14/1993	330	67	1	67
12/15/1993	328	65	1	65
12/16/1993	327	64	1	64
12/17/1993	326	63	1	63
12/18/1993	252	-11	0	0
12/19/1993	333	70	1	70
12/20/1993	331	68	1	68
12/21/1993	339	76	1	76
12/22/1993	336	73	1	73
12/23/1993	336	73	1	73
12/24/1993	335	72	1	72
12/25/1993	328	65	1	65
12/26/1993	328	65	1	65
12/27/1993	330	67	1	67
12/28/1993	328	65	1	65
12/29/1993	331	68	1	68
12/30/1993	333	70	1	70
12/31/1993	331	68	1	68
1/1/1994	325	62	1	62

1/2/1994	328	65	1	65
1/3/1994	328	65	1	65
1/4/1994	329	66	1	66
1/5/1994	328	65	1	65
1/6/1994	308	45	1	45
1/7/1993	306	43	1	43
1/8/1994	333	70	1	70
1/9/1994	329	66	1	66
1/10/1994	329	66	1	66
1/11/1994	329	66	1	66
1/12/1994	327	64	1	64
1/13/1994	330	67	1	67
1/14/1994	330	67	1	67
1/15/1994	330	67	1	67
1/16/1994	336	73	1	73
1/17/1994	334	71	1	71
1/18/1994	333	70	1	70
1/19/1994	333	70	1	70
1/20/1994	336	73	1	73
1/21/1994	312	49	1	49
1/22/1994	334	71	1	71
1/23/1994	329	66	1	66
1/24/1994	334	71	1	71
1/25/1994	327	64	1	64
1/26/1994	335	72	1	72
1/27/1994	335	72	1	72
1/28/1994	335	72	1	72
1/29/1994	335	72	1	72
1/30/1994	327	64	1	64
1/31/1994	331	68	1	68
2/1/1994	341	78	1	78
2/2/1994	337	74	1	74
2/3/1994	341	78	1	78
2/4/1994	341	78	1	78
2/5/1994	328	65	1	65
2/6/1994	340	77	1	77
2/7/1994	317	54	1	54
2/8/1994	322	59	1	59
2/9/1994	335	72	1	72
2/10/1994	325	62	1	62
2/11/1994	315	52	1	52
2/12/1994	310	47	1	47
2/13/1994	306	43	1	43
2/14/1994	302	39	1	39

2/15/1994	305	42	1	42
2/16/1994	306	43	1	43
2/17/1994	305	42	1	42
2/18/1994	308	45	1	45
2/19/1994	303	40	1	40
2/20/1994	301	38	1	38
2/21/1994	301	38	1	38
2/22/1994	287	24	1	24
2/23/1994	294	31	1	31
2/24/1994	294	31	1	31
2/25/1994	296	33	1	33
2/26/1994	299	36	1	36
2/27/1994	295	32	1	32
2/28/1994	293	30	1	30
3/1/1994	291	28	1	28
3/2/1994	293	30	1	30
3/3/1994	294	31	1	31
3/4/1994	296	33	1	33
3/5/1994	295	32	1	32
3/6/1994	287	24	1	24
3/7/1994	242	-21	0	0
3/8/1994	277	14	1	14
3/9/1994	272	9	1	9
3/10/1994	291	28	1	28
3/11/1994	284	21	1	21
3/12/1994	273	10	1	10
3/13/1994	276	13	1	13
3/14/1994	282	19	1	19
3/15/1994	280	17	1	17
3/16/1994	286	23	1	23
3/17/1994	292	29	1	29
3/18/1994	296	33	1	33
3/19/1994	296	33	1	33
3/20/1994	271	8	1	8
3/21/1994	288	25	1	25
3/22/1994	291	28	1	28
3/23/1994	291	28	1	28
3/24/1994	242	-21	0	0
3/25/1994	291	28	1	28
3/26/1994	291	28	1	28
3/27/1994	269	6	1	6
3/28/1994	291	28	1	28
3/29/1994	277	14	1	14
3/30/1994	273	10	1	10

3/31/1994	281	18	1	18
4/1/1994	283	20	1	20
4/2/1994	285	22	1	22
4/3/1994	277	14	1	14
4/4/1994	288	25	1	25
4/5/1994	283	20	1	20
4/6/1994	286	23	1	23
4/7/1994	287	24	1	24
4/8/1994	288	25	1	25
4/9/1994	282	19	1	19
4/10/1994	271	8	1	8
4/11/1994	298	35	1	35
4/12/1994	301	38	1	38
4/13/1994	298	35	1	35
4/14/1994	296	33	1	33
4/15/1994	300	37	1	37
4/16/1994	307	44	1	44
4/17/1994	311	48	1	48
4/18/1994	320	57	1	57
4/19/1994	299	36	1	36
4/20/1994	246	-17	0	0
4/21/1994	335	72	1	72
4/22/1994	332	69	1	69
4/23/1994	300	37	1	37
4/24/1994	300	37	1	37
4/25/1994	300	37	1	37
4/26/1994	300	37	1	37
4/27/1994	300	37	1	37
4/28/1994	300	37	1	37
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4/30/1994	300	37	1	37
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5/10/1994	350	87	1	87
5/11/1994	350	87	1	87
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5/13/1994	350	87	1	87

5/14/1994	350	87	1	87
5/15/1994	350	87	1	87
5/16/1994	350	87	1	87
5/17/1994	392	129	1	129
5/18/1994	386	123	1	123
5/19/1994	390	127	1	127
5/20/1994	392	129	1	129
5/21/1994	384	121	1	121
5/22/1994	382	119	1	119
5/23/1994	387	124	1	124
5/24/1994	387	124	1	124
5/25/1994	386	123	1	123
5/26/1994	330	67	1	67
5/27/1994	290	27	1	27
5/28/1994	290	27	1	27
5/29/1994	289	26	1	26
5/30/1994	288	25	1	25
5/31/1994	283	20	1	20
6/1/1994	285	22	1	22
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6/3/1994	280	17	1	17
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6/7/1994	282	19	1	19
6/8/1994	280	17	1	17
6/9/1994	281	18	1	18
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6/11/1994	279	16	1	16
6/12/1994	276	13	1	13
6/13/1994	280	17	1	17
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6/15/1994	287	24	1	24
6/16/1994	281	18	1	18
6/17/1994	283	20	1	20
6/18/1994	281	18	1	18
6/19/1994	281	18	1	18
6/20/1994	284	21	1	21
6/21/1994	287	24	1	24
6/22/1994	283	20	1	20
6/23/1994	242	-21	0	0
6/24/1994	252	-11	0	0
6/25/1994	260	-3	0	0
6/26/1994	262	-1	0	0

6/27/1994	263	0	1	0
6/28/1994	260	-3	0	0
6/29/1994	260	-3	0	0
6/30/1994	265	2	1	2
7/1/1994	258	-5	0	0
7/2/1994	260	-3	0	0
7/3/1994	261	-2	0	0
7/4/1994	265	2	1	2
7/5/1994	266	3	1	3
7/6/1994	278	15	1	15
7/7/1994	256	-7	0	0
7/8/1994	292	29	1	29
7/9/1994	266	3	1	3
7/10/1994	264	1	1	1
7/11/1994	263	0	0	0
7/12/1994	260	-3	0	0
7/13/1994	260	-3	0	0
7/14/1994	257	-6	0	0
7/15/1994	258	-5	0	0
7/16/1994	255	-8	0	0
7/17/1994	256	-7	0	0
7/18/1994	254	-9	0	0
7/19/1994	257	-6	0	0
7/20/1994	225	-38	0	0
7/21/1994	207	-56	0	0
7/22/1994	207	-56	0	0
7/23/1994	205	-58	0	0
7/24/1994	206	-57	0	0
7/25/1994	204	-59	0	0
7/26/1994	205	-58	0	0
7/27/1994	203	-60	0	0
7/28/1994	204	-59	0	0
7/29/1994	203	-60	0	0
7/30/1994	204	-59	0	0
7/31/1994	200	-63	0	0
8/1/1994	203	-60	0	0
8/2/1994	202	-61	0	0
8/3/1994	201	-62	0	0
8/4/1994	206	-57	0	0
8/5/1994	201	-62	0	0
8/6/1994	200	-63	0	0
8/7/1994	239	-24	0	0
8/8/1994	160	-103	0	0
8/9/1994	200	-63	0	0

8/10/1994	245	-18	0	0
8/11/1994	198	-65	0	0
8/12/1994	198	-65	0	0
8/13/1994	194	-69	0	0
8/14/1994	193	-70	0	0
8/15/1994	195	-68	0	0
8/16/1994	195	-68	0	0
8/17/1994	190	-73	0	0
8/18/1994	208	-55	0	0
8/19/1994	204	-59	0	0
8/20/1994	192	-71	0	0
8/21/1994	193	-70	0	0
8/22/1994	190	-73	0	0
8/23/1994	192	-71	0	0
8/24/1994	191	-72	0	0
8/25/1994	191	-72	0	0
8/26/1994	193	-70	0	0
8/27/1994	192	-71	0	0
8/28/1994	188	-75	0	0
8/29/1994	190	-73	0	0
8/30/1994	190	-73	0	0
8/31/1994	191	-72	0	0
9/1/1994	216	-47	0	0
9/2/1994	233	-30	0	0
9/3/1994	233	-30	0	0
9/4/1994	231	-32	0	0
9/5/1994	228	-35	0	0
9/6/1994	231	-32	0	0
9/7/1994	231	-32	0	0
9/8/1994	241	-22	0	0
9/9/1994	254	-9	0	0
9/10/1994	249	-14	0	0
9/11/1994	246	-17	0	0
9/12/1994	249	-14	0	0
9/13/1994	293	30	1	30
9/14/1994	203	-60	0	0
9/15/1994	247	-16	0	0
9/16/1994	247	-16	0	0
9/17/1994	243	-20	0	0
9/18/1994	245	-18	0	0
9/19/1994	250	-13	0	0
9/20/1994	244	-19	0	0
9/21/1994	248	-15	0	0
9/22/1994	246	-17	0	0

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9/24/1994	243	-20	0	0
9/25/1994	245	-18	0	0
9/26/1994	247	-16	0	0
9/27/1994	243	-20	0	0
9/28/1994	245	-18	0	0
9/29/1994	244	-19	0	0
9/30/1994	244	-19	0	0
10/1/1994	239	-24	0	0
10/2/1994	245	-18	0	0
10/3/1994	242	-21	0	0
10/4/1994	241	-22	0	0
10/5/1994	241	-22	0	0
10/6/1994	247	-16	0	0
10/7/1994	244	-19	0	0
10/8/1994	242	-21	0	0
10/9/1994	240	-23	0	0
10/10/1994	242	-21	0	0
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10/13/1994	244	-19	0	0
10/14/1994	244	-19	0	0
10/15/1994	244	-19	0	0
10/16/1994	244	-19	0	0
10/17/1994	243	-20	0	0
10/18/1994	246	-17	0	0
10/19/1994	246	-17	0	0
10/20/1994	244	-19	0	0
10/21/1994	246	-17	0	0
10/22/1994	244	-19	0	0
10/23/1994	244	-19	0	0
10/24/1994	242	-21	0	0
10/25/1994	243	-20	0	0
10/26/1994	244	-19	0	0
10/27/1994	247	-16	0	0
10/28/1994	257	-6	0	0
10/29/1994	250	-13	0	0
10/30/1994	254	-9	0	0
10/31/1994	245	-18	0	0
11/1/1994	245	-18	0	0
11/2/1994	246	-17	0	0
11/3/1994	239	-24	0	0
11/4/1994	242	-21	0	0
11/5/1994	248	-15	0	0

11/6/1994	244	-19	0	0
11/7/1994	247	-16	0	0
11/8/1994	247	-16	0	0
11/9/1994	247	-16	0	0
11/10/1994	256	-7	0	0
11/11/1994	252	-11	0	0
11/12/1994	253	-10	0	0
11/13/1994	254	-9	0	0
11/14/1994	241	-22	0	0
11/15/1994	253	-10	0	0
11/16/1994	260	-3	0	0
11/17/1994	257	-6	0	0
11/18/1994	241	-22	0	0
11/19/1994	252	-11	0	0
11/20/1994	263	0	0	0
11/21/1994	257	-6	0	0
11/22/1994	260	-3	0	0
11/23/1994	267	4	1	4
11/24/1994	269	6	1	6
11/25/1994	266	3	1	3
11/26/1994	264	1	1	1
11/27/1994	260	-3	0	0
11/28/1994	265	2	1	2
11/29/1994	268	5	1	5
11/30/1994	265	2	1	2
12/1/1994	266	3	1	3
12/2/1994	265	2	1	2
12/3/1994	265	2	1	2
12/4/1994	259	-4	0	0
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12/6/1994	263	0	0	0
12/7/1994	272	9	1	9
12/8/1994	264	1	1	1
12/9/1994	269	6	1	6
12/10/1994	266	3	1	3
12/11/1994	271	8	1	8
12/12/1994	270	7	1	7
12/13/1994	271	8	1	8
12/14/1994	267	4	1	4
12/15/1994	267	4	1	4
12/16/1994	270	7	1	7
12/17/1994	265	2	1	2
12/18/1994	265	2	1	2
12/19/1994	265	2	1	2

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12/21/1994	264	1	1	1
12/22/1994	265	2	1	2
12/23/1994	265	2	1	2
12/24/1994	265	2	1	2
12/25/1994	266	3	1	3
12/26/1994	265	2	1	2
12/27/1994	265	2	1	2
12/28/1994	264	1	1	1
12/29/1994	262	-1	0	0
12/30/1994	264	1	1	1
12/31/1994	257	-6	0	0
1/1/1995	259	-4	0	0
1/2/1995	278	15	1	15
1/3/1995	283	20	1	20
1/4/1995	285	22	1	22
1/5/1995	291	28	1	28
1/6/1995	290	27	1	27
1/7/1995	295	32	1	32
1/8/1994	288	25	1	25
1/9/1995	276	13	1	13
1/10/1995	275	12	1	12
1/11/1995	269	6	1	6
1/12/1995	267	4	1	4
1/13/1995	268	5	1	5
1/14/1995	269	6	1	6
1/15/1995	270	7	1	7
1/16/1995	270	7	1	7
1/17/1995	268	5	1	5
1/18/1995	269	6	1	6
1/19/1995	270	7	1	7
1/20/1995	228	-35	0	0
1/21/1995	237	-26	0	0
1/22/1995	270	7	1	7
1/23/1995	281	18	1	18
1/24/1995	286	23	1	23
1/25/1995	279	16	1	16
1/26/1995	274	11	1	11
1/27/1995	273	10	1	10
1/28/1995	277	14	1	14
1/29/1995	253	-10	0	0
1/30/1995	278	15	1	15
1/31/1995	273	10	1	10
2/1/1995	271	8	1	8

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2/3/1995	271	8	1	8
2/4/1995	270	7	1	7
2/5/1995	271	8	1	8
2/6/1995	272	9	1	9
2/7/1995	271	8	1	8
2/8/1995	272	9	1	9
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2/13/1995	280	17	1	17
2/14/1995	278	15	1	15
2/15/1995	284	21	1	21
2/16/1995	281	18	1	18
2/17/1995	277	14	1	14
2/18/1995	273	10	1	10
2/19/1995	276	13	1	13
2/20/1995	280	17	1	17
2/21/1995	279	16	1	16
2/22/1995	276	13	1	13
2/23/1995	273	10	1	10
2/24/1995	273	10	1	10
2/25/1995	278	15	1	15
2/26/1995	280	17	1	17
2/27/1995	279	16	1	16
2/28/1995	256	-7	0	0
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3/2/1995	279	16	1	16
3/3/1995	289	26	1	26
3/4/1995	287	24	1	24
3/5/1995	284	21	1	21
3/6/1995	286	23	1	23
3/7/1995	285	22	1	22
3/8/1995	280	17	1	17
3/9/1995	279	16	1	16
3/10/1995	278	15	1	15
3/11/1995	288	25	1	25
3/12/1995	288	25	1	25
3/13/1995	285	22	1	22
3/14/1995	283	20	1	20
3/15/1995	284	21	1	21
3/16/1995	283	20	1	20
3/17/1995	282	19	1	19

3/18/1995	282	19	1	19
3/19/1995	288	25	1	25
3/20/1995	283	20	1	20
3/21/1995	285	22	1	22
3/22/1995	285	22	1	22
3/23/1995	284	21	1	21
3/24/1995	289	26	1	26
3/25/1995	292	29	1	29
3/26/1995	290	27	1	27
3/27/1995	284	21	1	21
3/28/1995	282	19	1	19
3/29/1995	278	15	1	15
3/30/1995	283	20	1	20
3/31/1995	281	18	1	18
4/1/1995	283	20	1	20
4/2/1995	275	12	1	12
4/3/1995	281	18	1	18
4/4/1995	291	28	1	28
4/5/1995	295	32	1	32
4/6/1995	296	33	1	33
4/7/1995	299	36	1	36
4/8/1995	303	40	1	40
4/9/1995	301	38	1	38
4/10/1995	299	36	1	36
4/11/1995	291	28	1	28
4/12/1995	294	31	1	31
4/13/1995	289	26	1	26
4/14/1995	310	47	1	47
4/15/1995	304	41	1	41
4/16/1995	300	37	1	37
4/17/1995	303	40	1	40
4/18/1995	299	36	1	36
4/19/1995	295	32	1	32
4/20/1995	299	36	1	36
4/21/1995	287	24	1	24
4/22/1995	294	31	1	31
4/23/1995	295	32	1	32
4/24/1995	293	30	1	30
4/25/1995	295	32	1	32
4/26/1995	295	32	1	32
4/27/1995	294	31	1	31
4/28/1995	292	29	1	29
4/29/1995	265	2	1	2
4/30/1995	0	-263	0	0

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5/2/1995	0	-263	0	0
5/3/1995	0	-263	0	0
5/4/1995	146	-117	0	0
5/5/1995	250	-13	0	0
5/6/1995	292	29	1	29
5/7/1995	291	28	1	28
5/8/1995	291	28	1	28
5/9/1995	290	27	1	27
5/10/1995	288	25	1	25
5/11/1995	290	27	1	27
5/12/1995	293	30	1	30
5/13/1995	291	28	1	28
5/14/1995	282	19	1	19
5/15/1995	281	18	1	18
5/16/1995	281	18	1	18
5/17/1995	284	21	1	21
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5/21/1995	287	24	1	24
5/22/1995	287	24	1	24
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5/30/1995	277	14	1	14
5/31/1995	283	20	1	20
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6/2/1995	279	16	1	16
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6/7/1995	273	10	1	10
6/8/1995	266	3	1	3
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6/10/1995	341	78	1	78
6/11/1995	391	128	1	128
6/12/1995	391	128	1	128
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6/15/1995	502	239	1	239
6/16/1995	503	240	1	240
6/17/1995	503	240	1	240
6/18/1995	502	239	1	239
6/19/1995	498	235	1	235
6/20/1995	494	231	1	231
6/21/1995	493	230	1	230
6/22/1995	491	228	1	228
6/23/1995	479	216	1	216
6/24/1995	480	217	1	217
6/25/1995	475	212	1	212
6/26/1995	476	213	1	213
6/27/1995	462	199	1	199
6/28/1995	447	184	1	184
6/29/1995	450	187	1	187
6/30/1995	446	183	1	183
7/1/1995	450	187	1	187
7/2/1995	453	190	1	190
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7/4/1995	465	202	1	202
7/5/1995	462	199	1	199
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7/7/1995	454	191	1	191
7/8/1995	455	192	1	192
7/9/1995	452	189	1	189
7/10/1995	451	188	1	188
7/11/1995	449	186	1	186
7/12/1995	448	185	1	185
7/13/1995	453	190	1	190
7/14/1995	444	181	1	181
7/15/1995	323	60	1	60
7/16/1995	240	-23	0	0
7/17/1995	247	-16	0	0
7/18/1995	247	-16	0	0
7/19/1995	247	-16	0	0
7/20/1995	251	-12	0	0
7/21/1995	254	-9	0	0
7/22/1995	255	-8	0	0
7/23/1995	256	-7	0	0
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7/25/1995	247	-16	0	0
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7/27/1995	262	-1	0	0

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8/28/1995	251	-12	0	0
8/29/1995	248	-15	0	0
8/30/1995	250	-13	0	0
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9/4/1995	253	-10	0	0
9/5/1995	251	-12	0	0
9/6/1995	246	-17	0	0
9/7/1995	242	-21	0	0
9/8/1995	241	-22	0	0
9/9/1995	241	-22	0	0

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9/11/1995	240	-23	0	0
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10/5/1995	235	-28	0	0
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10/7/1995	238	-25	0	0
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10/18/1995	238	-25	0	0
10/19/1995	234	-29	0	0
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11/2/1995	223	-40	0	0
11/3/1995	231	-32	0	0
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12/3/1995	222	-41	0	0
12/4/1995	209	-54	0	0
12/5/1995	184	-79	0	0
12/6/1995	224	-39	0	0

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12/8/1995	206	-57	0	0
12/9/1995	220	-43	0	0
12/10/1995	231	-32	0	0
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12/12/1995	230	-33	0	0
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12/16/1995	222	-41	0	0
12/17/1995	213	-50	0	0
12/18/1995	184	-79	0	0
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12/20/1995	222	-41	0	0
12/21/1995	229	-34	0	0
12/22/1995	207	-56	0	0
12/23/1995	222	-41	0	0
12/24/1995	228	-35	0	0
12/25/1995	226	-37	0	0
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12/31/1995	225	-38	0	0
1/1/1996	221	-42	0	0
1/2/1996	219	-44	0	0
1/3/1996	219	-44	0	0
1/4/1996	218	-45	0	0
1/5/1996	218	-45	0	0
1/6/1996	221	-42	0	0
1/7/1996	221	-42	0	0
1/8/1996	218	-45	0	0
1/9/1996	216	-47	0	0
1/10/1996	216	-47	0	0
1/11/1996	213	-50	0	0
1/12/1996	215	-48	0	0
1/13/1996	216	-47	0	0
1/14/1996	216	-47	0	0
1/15/1996	217	-46	0	0
1/16/1996	216	-47	0	0
1/17/1996	200	-63	0	0
1/18/1996	211	-52	0	0
1/19/1996	227	-36	0	0

1/20/1996	220	-43	0	0
1/21/1996	200	-63	0	0
1/22/1996	215	-48	0	0
1/23/1996	207	-56	0	0
1/24/1996	212	-51	0	0
1/25/1996	210	-53	0	0
1/26/1996	215	-48	0	0
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1/28/1996	212	-51	0	0
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1/30/1996	218	-45	0	0
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2/10/1996	214	-49	0	0
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2/12/1996	211	-52	0	0
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3/1/1996	229	-34	0	0
3/2/1996	219	-44	0	0
3/3/1996	213	-50	0	0

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3/5/1996	209	-54	0	0
3/6/1996	207	-56	0	0
3/7/1996	208	-55	0	0
3/8/1996	207	-56	0	0
3/9/1996	206	-57	0	0
3/10/1996	208	-55	0	0
3/11/1996	202	-61	0	0
3/12/1996	211	-52	0	0
3/13/1996	211	-52	0	0
3/14/1996	210	-53	0	0
3/15/1996	209	-54	0	0
3/16/1996	210	-53	0	0
3/17/1996	210	-53	0	0
3/18/1996	210	-53	0	0
3/19/1996	208	-55	0	0
3/20/1996	208	-55	0	0
3/21/1996	214	-49	0	0
3/22/1996	207	-56	0	0
3/23/1996	211	-52	0	0
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3/25/1996	179	-84	0	0
3/26/1996	213	-50	0	0
3/27/1996	210	-53	0	0
3/28/1996	209	-54	0	0
3/29/1996	209	-54	0	0
3/30/1996	208	-55	0	0
3/31/1996	209	-54	0	0
4/1/1996	212	-51	0	0
4/2/1996	215	-48	0	0
4/3/1996	213	-50	0	0
4/4/1996	210	-53	0	0
4/5/1996	211	-52	0	0
4/6/1996	216	-47	0	0
4/7/1996	213	-50	0	0
4/8/1996	231	-32	0	0
4/9/1996	238	-25	0	0
4/10/1996	243	-20	0	0
4/11/1996	241	-22	0	0
4/12/1996	233	-30	0	0
4/13/1996	225	-38	0	0
4/14/1996	221	-42	0	0
4/15/1996	0	-263	0	0
4/16/1996	213	-50	0	0

4/17/1996	214	-49	0	0
4/18/1996	214	-49	0	0
4/19/1996	206	-57	0	0
4/20/1996	202	-61	0	0
4/21/1996	200	-63	0	0
4/22/1996	198	-65	0	0
4/23/1996	202	-61	0	0
4/24/1996	228	-35	0	0
4/25/1996	239	-24	0	0
4/26/1996	239	-24	0	0
4/27/1996	239	-24	0	0
4/28/1996	237	-26	0	0
4/29/1996	236	-27	0	0
4/30/1996	236	-27	0	0
5/1/1996	229	-34	0	0
5/2/1996	229	-34	0	0
5/3/1996	229	-34	0	0
5/4/1996	228	-35	0	0
5/5/1996	228	-35	0	0
5/6/1996	228	-35	0	0
5/7/1996	223	-40	0	0
5/8/1996	231	-32	0	0
5/9/1996	233	-30	0	0
5/10/1996	234	-29	0	0
5/11/1996	236	-27	0	0
5/12/1996	245	-18	0	0
5/13/1996	251	-12	0	0
5/14/1996	258	-5	0	0
5/15/1996	257	-6	0	0
5/16/1996	255	-8	0	0
5/17/1996	254	-9	0	0
5/18/1996	255	-8	0	0
5/19/1996	252	-11	0	0
5/20/1996	248	-15	0	0
5/21/1996	239	-24	0	0
5/22/1996	247	-16	0	0
5/23/1996	251	-12	0	0
5/24/1996	250	-13	0	0
5/25/1996	247	-16	0	0
5/26/1996	249	-14	0	0
5/27/1996	254	-9	0	0
5/28/1996	254	-9	0	0
5/29/1996	227	-36	0	0
5/30/1996	255	-8	0	0

5/31/1996	246	-17	0	0
6/1/1996	253	-10	0	0
6/2/1996	251	-12	0	0
6/3/1996	87	-176	0	0
6/4/1996	0	-263	0	0
6/5/1996	0	-263	0	0
6/6/1996	0	-263	0	0
6/7/1996	0	-263	0	0
6/8/1996	0	-263	0	0
6/9/1996	0	-263	0	0
6/10/1996	0	-263	0	0
6/11/1996	0	-263	0	0
6/12/1996	0	-263	0	0
6/13/1996	0	-263	0	0
6/14/1996	0	-263	0	0
6/15/1996	0	-263	0	0
6/16/1996	0	-263	0	0
6/17/1996	0	-263	0	0
6/18/1996	0	-263	0	0
6/19/1996	206	-57	0	0
6/20/1996	331	68	1	68
6/21/1996	330	67	1	67
6/22/1996	331	68	1	68
6/23/1996	330	67	1	67
6/24/1996	327	64	1	64
6/25/1996	326	63	1	63
6/26/1996	326	63	1	63
6/27/1996	324	61	1	61
6/28/1996	325	62	1	62
6/29/1996	325	62	1	62
6/30/1996	324	61	1	61
7/1/1996	319	56	1	56
7/2/1996	322	59	1	59
7/3/1996	322	59	1	59
7/4/1996	301	38	1	38
7/5/1996	322	59	1	59
7/6/1996	321	58	1	58
7/7/1996	319	56	1	56
7/8/1996	318	55	1	55
7/9/1996	252	-11	0	0
7/10/1996	213	-50	0	0
7/11/1996	241	-22	0	0
7/12/1996	264	1	1	1
7/13/1996	264	1	1	1

7/14/1996	264	1	1	1
7/15/1996	233	-30	0	0
7/16/1996	214	-49	0	0
7/17/1996	214	-49	0	0
7/18/1996	213	-50	0	0
7/19/1996	211	-52	0	0
7/20/1996	211	-52	0	0
7/21/1996	210	-53	0	0
7/22/1996	210	-53	0	0
7/23/1996	209	-54	0	0
7/24/1996	230	-33	0	0
7/25/1996	262	-1	0	0
7/26/1996	266	3	1	3
7/27/1996	265	2	1	2
7/28/1996	254	-9	0	0
7/29/1996	263	0	1	0
7/30/1996	263	0	0	0
7/31/1996	257	-6	0	0
8/1/1996	262	-1	0	0
8/2/1996	262	-1	0	0
8/3/1996	255	-8	0	0
8/4/1996	256	-7	0	0
8/5/1996	260	-3	0	0
8/6/1996	259	-4	0	0
8/7/1996	258	-5	0	0
8/8/1996	257	-6	0	0
8/9/1996	258	-5	0	0
8/10/1996	257	-6	0	0
8/11/1996	231	-32	0	0
8/12/1996	212	-51	0	0
8/13/1996	211	-52	0	0
8/14/1996	210	-53	0	0
8/15/1996	210	-53	0	0
8/16/1996	209	-54	0	0
8/17/1996	204	-59	0	0
8/18/1996	210	-53	0	0
8/19/1996	209	-54	0	0
8/20/1996	209	-54	0	0
8/21/1996	208	-55	0	0
8/22/1996	208	-55	0	0
8/23/1996	207	-56	0	0
8/24/1996	207	-56	0	0
8/25/1996	206	-57	0	0
8/26/1996	207	-56	0	0

8/27/1996	207	-56	0	0
8/28/1996	207	-56	0	0
8/29/1996	208	-55	0	0
8/30/1996	207	-56	0	0
8/31/1996	197	-66	0	0
9/1/1996	206	-57	0	0
9/2/1996	206	-57	0	0
9/3/1996	205	-58	0	0
9/4/1996	205	-58	0	0
9/5/1996	205	-58	0	0
9/6/1996	204	-59	0	0
9/7/1996	204	-59	0	0
9/8/1996	204	-59	0	0
9/9/1996	237	-26	0	0
9/10/1996	255	-8	0	0
9/11/1996	254	-9	0	0
9/12/1996	253	-10	0	0
9/13/1996	252	-11	0	0
9/14/1996	245	-18	0	0
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9/16/1996	251	-12	0	0
9/17/1996	252	-11	0	0
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9/19/1996	251	-12	0	0
9/20/1996	251	-12	0	0
9/21/1996	251	-12	0	0
9/22/1996	251	-12	0	0
9/23/1996	251	-12	0	0
9/24/1996	251	-12	0	0
9/25/1996	251	-12	0	0
9/26/1996	250	-13	0	0
9/27/1996	250	-13	0	0
9/28/1996	251	-12	0	0
9/29/1996	250	-13	0	0
9/30/1996	262	-1	0	0
10/1/1996	276	13	1	13
10/2/1996	275	12	1	12
10/3/1996	274	11	1	11
10/4/1996	273	10	1	10
10/5/1996	273	10	1	10
10/6/1996	272	9	1	9
10/7/1996	272	9	1	9
10/8/1996	272	9	1	9
10/9/1996	271	8	1	8

10/10/1996	272	9	1	9
10/11/1996	259	-4	0	0
10/12/1996	247	-16	0	0
10/13/1996	247	-16	0	0
10/14/1996	250	-13	0	0
10/15/1996	240	-23	0	0
10/16/1996	242	-21	0	0
10/17/1996	246	-17	0	0
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10/30/1996	242	-21	0	0
10/31/1996	230	-33	0	0
11/1/1996	249	-14	0	0
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11/4/1996	249	-14	0	0
11/5/1996	247	-16	0	0
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11/7/1996	246	-17	0	0
11/8/1996	247	-16	0	0
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11/12/1996	246	-17	0	0
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11/23/1996	252	-11	0	0
11/24/1996	254	-9	0	0
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11/28/1996	247	-16	0	0
11/29/1996	244	-19	0	0
11/30/1996	227	-36	0	0
12/1/1996	248	-15	0	0
12/2/1996	244	-19	0	0
12/3/1996	243	-20	0	0
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12/11/1996	246	-17	0	0
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12/13/1996	225	-38	0	0
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12/19/1996	256	-7	0	0
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1/4/1997	237	-26	0	0
1/5/1997	205	-58	0	0

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1/9/1997	250	-13	0	0
1/10/1997	247	-16	0	0
1/11/1997	243	-20	0	0
1/12/1997	244	-19	0	0
1/13/1997	266	3	1	3
1/14/1997	278	15	1	15
1/15/1997	269	6	1	6
1/16/1997	259	-4	0	0
1/17/1997	255	-8	0	0
1/18/1997	253	-10	0	0
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1/20/1997	248	-15	0	0
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1/27/1997	236	-27	0	0
1/28/1997	249	-14	0	0
1/29/1997	227	-36	0	0
1/30/1997	245	-18	0	0
1/31/1997	243	-20	0	0
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2/2/1997	244	-19	0	0
2/3/1997	243	-20	0	0
2/4/1997	213	-50	0	0
2/5/1997	246	-17	0	0
2/6/1997	249	-14	0	0
2/7/1997	250	-13	0	0
2/8/1997	252	-11	0	0
2/9/1997	245	-18	0	0
2/10/1997	250	-13	0	0
2/11/1997	248	-15	0	0
2/12/1997	245	-18	0	0
2/13/1997	244	-19	0	0
2/14/1997	244	-19	0	0
2/15/1997	244	-19	0	0
2/16/1997	244	-19	0	0
2/17/1997	243	-20	0	0
2/18/1997	242	-21	0	0

2/19/1997	242	-21	0	0
2/20/1997	241	-22	0	0
2/21/1997	241	-22	0	0
2/22/1997	241	-22	0	0
2/23/1997	234	-29	0	0
2/24/1997	233	-30	0	0
2/25/1997	243	-20	0	0
2/26/1997	243	-20	0	0
2/27/1997	243	-20	0	0
2/28/1997	241	-22	0	0
3/1/1997	238	-25	0	0
3/2/1997	244	-19	0	0
3/3/1997	242	-21	0	0
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3/6/1997	243	-20	0	0
3/7/1997	243	-20	0	0
3/8/1997	243	-20	0	0
3/9/1997	238	-25	0	0
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3/12/1997	244	-19	0	0
3/13/1997	241	-22	0	0
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3/15/1997	238	-25	0	0
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3/17/1997	238	-25	0	0
3/18/1997	238	-25	0	0
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3/25/1997	238	-25	0	0
3/26/1997	238	-25	0	0
3/27/1997	238	-25	0	0
3/28/1997	238	-25	0	0
3/29/1997	233	-30	0	0
3/30/1997	238	-25	0	0
3/31/1997	236	-27	0	0
4/1/1997	233	-30	0	0
4/2/1997	227	-36	0	0
4/3/1997	203	-60	0	0

4/4/1997	246	-17	0	0
4/5/1997	241	-22	0	0
4/6/1997	228	-35	0	0
4/7/1997	235	-28	0	0
4/8/1997	234	-29	0	0
4/9/1997	239	-24	0	0
4/10/1997	233	-30	0	0
4/11/1997	216	-47	0	0
4/12/1997	243	-20	0	0
4/13/1997	251	-12	0	0
4/14/1997	255	-8	0	0
4/15/1997	243	-20	0	0
4/16/1997	273	10	1	10
4/17/1997	287	24	1	24
4/18/1997	293	30	1	30
4/19/1997	301	38	1	38
4/20/1997	301	38	1	38
4/21/1997	307	44	1	44
4/22/1997	304	41	1	41
4/23/1997	303	40	1	40
4/24/1997	305	42	1	42
4/25/1997	306	43	1	43
4/26/1997	293	30	1	30
4/27/1997	313	50	1	50
4/28/1997	317	54	1	54
4/29/1997	314	51	1	51
4/30/1997	299	36	1	36
5/1/1997	313	50	1	50
5/2/1997	291	28	1	28
5/3/1997	306	43	1	43
5/4/1997	310	47	1	47
5/5/1997	314	51	1	51
5/6/1997	316	53	1	53
5/7/1997	327	64	1	64
5/8/1997	323	60	1	60
5/9/1997	323	60	1	60
5/10/1997	328	65	1	65
5/11/1997	333	70	1	70
5/12/1997	333	70	1	70
5/13/1997	337	74	1	74
5/14/1997	340	77	1	77
5/15/1997	350	87	1	87
5/16/1997	347	84	1	84
5/17/1997	358	95	1	95

5/18/1997	323	60	1	60
5/19/1997	318	55	1	55
5/20/1997	318	55	1	55
5/21/1997	317	54	1	54
5/22/1997	328	65	1	65
5/23/1997	329	66	1	66
5/24/1997	336	73	1	73
5/25/1997	362	99	1	99
5/26/1997	341	78	1	78
5/27/1997	339	76	1	76
5/28/1997	318	55	1	55
5/29/1997	305	42	1	42
5/30/1997	303	40	1	40
5/31/1997	306	43	1	43
6/1/1997	321	58	1	58
6/2/1997	322	59	1	59
6/3/1997	301	38	1	38
6/4/1997	317	54	1	54
6/5/1997	363	100	1	100
6/6/1997	368	105	1	105
6/7/1997	134	-129	0	0
6/8/1997	0	-263	0	0
6/9/1997	0	-263	0	0
6/10/1997	0	-263	0	0
6/11/1997	0	-263	0	0
6/12/1997	0	-263	0	0
6/13/1997	0	-263	0	0
6/14/1997	0	-263	0	0
6/15/1997	0	-263	0	0
6/16/1997	0	-263	0	0
6/17/1997	0	-263	0	0
6/18/1997	0	-263	0	0
6/19/1997	0	-263	0	0
6/20/1997	0	-263	0	0
6/21/1997	0	-263	0	0
6/22/1997	0	-263	0	0
6/23/1997	200	-63	0	0
6/24/1997	300	37	1	37
6/25/1997	300	37	1	37
6/26/1997	350	87	1	87
6/27/1997	350	87	1	87
6/28/1997	350	87	1	87
6/29/1997	350	87	1	87
6/30/1997	350	87	1	87

7/1/1997	350	87	1	87
7/2/1997	350	87	1	87
7/3/1997	350	87	1	87
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7/5/1997	350	87	1	87
7/6/1997	350	87	1	87
7/7/1997	350	87	1	87
7/8/1997	375	112	1	112
7/9/1997	378	115	1	115
7/10/1997	375	112	1	112
7/11/1997	373	110	1	110
7/12/1997	372	109	1	109
7/13/1997	372	109	1	109
7/14/1997	370	107	1	107
7/15/1997	389	126	1	126
7/16/1997	341	78	1	78
7/17/1997	303	40	1	40
7/18/1997	319	56	1	56
7/19/1997	314	51	1	51
7/20/1997	314	51	1	51
7/21/1997	312	49	1	49
7/22/1997	309	46	1	46
7/23/1997	310	47	1	47
7/24/1997	304	41	1	41
7/25/1997	296	33	1	33
7/26/1997	307	44	1	44
7/27/1997	305	42	1	42
7/28/1997	305	42	1	42
7/29/1997	300	37	1	37
7/30/1997	297	34	1	34
7/31/1997	310	47	1	47
8/1/1997	332	69	1	69
8/2/1997	334	71	1	71
8/3/1997	330	67	1	67
8/4/1997	325	62	1	62
8/5/1997	324	61	1	61
8/6/1997	323	60	1	60
8/7/1997	313	50	1	50
8/8/1997	323	60	1	60
8/9/1997	317	54	1	54
8/10/1997	316	53	1	53
8/11/1997	317	54	1	54
8/12/1997	314	51	1	51
8/13/1997	313	50	1	50

8/14/1997	315	52	1	52
8/15/1997	313	50	1	50
8/16/1997	324	61	1	61
8/17/1997	318	55	1	55
8/18/1997	316	53	1	53
8/19/1997	314	51	1	51
8/20/1997	313	50	1	50
8/21/1997	311	48	1	48
8/22/1997	308	45	1	45
8/23/1997	308	45	1	45
8/24/1997	308	45	1	45
8/25/1997	301	38	1	38
8/26/1997	304	41	1	41
8/27/1997	302	39	1	39
8/28/1997	302	39	1	39
8/29/1997	299	36	1	36
8/30/1997	297	34	1	34
8/31/1997	295	32	1	32
9/1/1997	298	35	1	35
9/2/1997	298	35	1	35
9/3/1997	291	28	1	28
9/4/1997	295	32	1	32
9/5/1997	291	28	1	28
9/6/1997	293	30	1	30
9/7/1997	293	30	1	30
9/8/1997	292	29	1	29
9/9/1997	290	27	1	27
9/10/1997	290	27	1	27
9/11/1997	294	31	1	31
9/12/1997	301	38	1	38
9/13/1997	291	28	1	28
9/14/1997	288	25	1	25
9/15/1997	284	21	1	21
9/16/1997	100	-163	0	0
9/17/1997	0	-263	0	0
9/18/1997	95	-168	0	0
9/19/1997	238	-25	0	0
9/20/1997	233	-30	0	0
9/21/1997	231	-32	0	0
9/22/1997	231	-32	0	0
9/23/1997	229	-34	0	0
9/24/1997	242	-21	0	0
9/25/1997	249	-14	0	0
9/26/1997	247	-16	0	0

9/27/1997	244	-19	0	0
9/28/1997	238	-25	0	0
9/29/1997	238	-25	0	0
9/30/1997	236	-27	0	0
10/1/1997	234	-29	0	0
10/2/1997	232	-31	0	0
10/3/1997	229	-34	0	0
10/4/1997	226	-37	0	0
10/5/1997	221	-42	0	0
10/6/1997	85	-178	0	0
10/7/1997	0	-263	0	0
10/8/1997	0	-263	0	0
10/9/1997	118	-145	0	0
10/10/1997	242	-21	0	0
10/11/1997	245	-18	0	0
10/12/1997	244	-19	0	0
10/13/1997	242	-21	0	0
10/14/1997	242	-21	0	0
10/15/1997	118	-145	0	0
10/16/1997	18	-245	0	0
10/17/1997	21	-242	0	0
10/18/1997	14	-249	0	0
10/19/1997	16	-247	0	0
10/20/1997	166	-97	0	0
10/21/1997	256	-7	0	0
10/22/1997	257	-6	0	0
10/23/1997	258	-5	0	0
10/24/1997	257	-6	0	0
10/25/1997	254	-9	0	0
10/26/1997	255	-8	0	0
10/27/1997	268	5	1	5
10/28/1997	257	-6	0	0
10/29/1997	256	-7	0	0
10/30/1997	259	-4	0	0
10/31/1997	261	-2	0	0
11/1/1997	260	-3	0	0
11/2/1997	258	-5	0	0
11/3/1997	257	-6	0	0
11/4/1997	258	-5	0	0
11/5/1997	254	-9	0	0
11/6/1997	256	-7	0	0
11/7/1997	256	-7	0	0
11/8/1997	256	-7	0	0
11/9/1997	254	-9	0	0

11/10/1997	252	-11	0	0
11/11/1997	242	-21	0	0
11/12/1997	236	-27	0	0
11/13/1997	249	-14	0	0
11/14/1997	246	-17	0	0
11/15/1997	238	-25	0	0
11/16/1997	248	-15	0	0
11/17/1997	253	-10	0	0
11/18/1997	253	-10	0	0
11/19/1997	253	-10	0	0
11/20/1997	254	-9	0	0
11/21/1997	254	-9	0	0
11/22/1997	253	-10	0	0
11/23/1997	252	-11	0	0
11/24/1997	253	-10	0	0
11/25/1997	240	-23	0	0
11/26/1997	252	-11	0	0
11/27/1997	253	-10	0	0
11/28/1997	252	-11	0	0
11/29/1997	252	-11	0	0
11/30/1997	252	-11	0	0
12/1/1997	251	-12	0	0
12/2/1997	248	-15	0	0
12/3/1997	234	-29	0	0
12/4/1997	254	-9	0	0
12/5/1997	249	-14	0	0
12/6/1997	257	-6	0	0
12/7/1997	257	-6	0	0
12/8/1997	250	-13	0	0
12/9/1997	252	-11	0	0
12/10/1997	251	-12	0	0
12/11/1997	247	-16	0	0
12/12/1997	253	-10	0	0
12/13/1997	255	-8	0	0
12/14/1997	255	-8	0	0
12/15/1997	253	-10	0	0
12/16/1997	251	-12	0	0
12/17/1997	250	-13	0	0
12/18/1997	252	-11	0	0
12/19/1997	248	-15	0	0
12/20/1997	245	-18	0	0
12/21/1997	257	-6	0	0
12/22/1997	250	-13	0	0
12/23/1997	250	-13	0	0

12/24/1997	263	0	1	0
12/25/1997	253	-10	0	0
12/26/1997	263	0	0	0
12/27/1997	271	8	1	8
12/28/1997	263	0	0	0
12/29/1997	259	-4	0	0
12/30/1997	256	-7	0	0
12/31/1997	252	-11	0	0
1/1/1998	246	-17	0	0
1/2/1998	255	-8	0	0
1/3/1998	254	-9	0	0
1/4/1998	254	-9	0	0
1/5/1998	254	-9	0	0
1/6/1998	243	-20	0	0
1/7/1998	257	-6	0	0
1/8/1998	255	-8	0	0
1/9/1998	238	-25	0	0
1/10/1998	259	-4	0	0
1/11/1998	265	2	1	2
1/12/1998	268	5	1	5
1/13/1998	275	12	1	12
1/14/1998	263	0	1	0
1/15/1998	256	-7	0	0
1/16/1998	255	-8	0	0
1/17/1998	254	-9	0	0
1/18/1998	255	-8	0	0
1/19/1998	254	-9	0	0
1/20/1998	255	-8	0	0
1/21/1998	255	-8	0	0
1/22/1998	254	-9	0	0
1/23/1998	253	-10	0	0
1/24/1998	254	-9	0	0
1/25/1998	254	-9	0	0
1/26/1998	253	-10	0	0
1/27/1998	253	-10	0	0
1/28/1998	249	-14	0	0
1/29/1998	245	-18	0	0
1/30/1998	255	-8	0	0
1/31/1998	243	-20	0	0
2/1/1998	185	-78	0	0
2/2/1998	258	-5	0	0
2/3/1998	259	-4	0	0
2/4/1998	256	-7	0	0
2/5/1998	255	-8	0	0

2/6/1998	255	-8	0	0
2/7/1998	255	-8	0	0
2/8/1998	255	-8	0	0
2/9/1998	255	-8	0	0
2/10/1998	255	-8	0	0
2/11/1998	246	-17	0	0
2/12/1998	253	-10	0	0
2/13/1998	233	-30	0	0
2/14/1998	249	-14	0	0
2/15/1998	253	-10	0	0
2/16/1998	239	-24	0	0
2/17/1998	234	-29	0	0
2/18/1998	252	-11	0	0
2/19/1998	233	-30	0	0
2/20/1998	241	-22	0	0
2/21/1998	254	-9	0	0
2/22/1998	251	-12	0	0
2/23/1998	247	-16	0	0
2/24/1998	248	-15	0	0
2/25/1998	255	-8	0	0
2/26/1998	253	-10	0	0
2/27/1998	251	-12	0	0
2/28/1998	231	-32	0	0
3/1/1998	254	-9	0	0
3/2/1998	251	-12	0	0
3/3/1998	253	-10	0	0
3/4/1998	252	-11	0	0
3/5/1998	249	-14	0	0
3/6/1998	224	-39	0	0
3/7/1998	250	-13	0	0
3/8/1998	233	-30	0	0
3/9/1998	250	-13	0	0
3/10/1998	261	-2	0	0
3/11/1998	260	-3	0	0
3/12/1998	259	-4	0	0
3/13/1998	259	-4	0	0
3/14/1998	260	-3	0	0
3/15/1998	261	-2	0	0
3/16/1998	258	-5	0	0
3/17/1998	262	-1	0	0
3/18/1998	260	-3	0	0
3/19/1998	259	-4	0	0
3/20/1998	252	-11	0	0
3/21/1998	262	-1	0	0

3/22/1998	265	2	1	2
3/23/1998	268	5	1	5
3/24/1998	271	8	1	8
3/25/1998	273	10	1	10
3/26/1998	273	10	1	10
3/27/1998	272	9	1	9
3/28/1998	270	7	1	7
3/29/1998	261	-2	0	0
3/30/1998	240	-23	0	0
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4/2/1998	260	-3	0	0
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4/4/1998	263	0	1	0
4/5/1998	253	-10	0	0
4/6/1998	263	0	0	0
4/7/1998	256	-7	0	0
4/8/1998	259	-4	0	0
4/9/1998	259	-4	0	0
4/10/1998	258	-5	0	0
4/11/1998	261	-2	0	0
4/12/1998	264	1	1	1
4/13/1998	262	-1	0	0
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4/21/1998	262	-1	0	0
4/22/1998	268	5	1	5
4/23/1998	277	14	1	14
4/24/1998	274	11	1	11
4/25/1998	262	-1	0	0
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4/29/1998	258	-5	0	0
4/30/1998	258	-5	0	0
5/1/1998	256	-7	0	0
5/2/1998	279	16	1	16
5/3/1998	311	48	1	48
5/4/1998	371	108	1	108

5/5/1998	403	140	1	140
5/6/1998	391	128	1	128
5/7/1998	385	122	1	122
5/8/1998	398	135	1	135
5/9/1998	394	131	1	131
5/10/1998	390	127	1	127
5/11/1998	388	125	1	125
5/12/1998	386	123	1	123
5/13/1998	385	122	1	122
5/14/1998	384	121	1	121
5/15/1998	385	122	1	122
5/16/1998	382	119	1	119
5/17/1998	381	118	1	118
5/18/1998	379	116	1	116
5/19/1998	378	115	1	115
5/20/1998	378	115	1	115
5/21/1998	380	117	1	117
5/22/1998	383	120	1	120
5/23/1998	382	119	1	119
5/24/1998	382	119	1	119
5/25/1998	383	120	1	120
5/26/1998	382	119	1	119
5/27/1998	382	119	1	119
5/28/1998	381	118	1	118
5/29/1998	380	117	1	117
5/30/1998	381	118	1	118
5/31/1998	380	117	1	117
6/1/1998	380	117	1	117
6/2/1998	380	117	1	117
6/3/1998	380	117	1	117
6/4/1998	379	116	1	116
6/5/1998	386	123	1	123
6/6/1998	390	127	1	127
6/7/1998	390	127	1	127
6/8/1998	388	125	1	125
6/9/1998	386	123	1	123
6/10/1998	373	110	1	110
6/11/1998	369	106	1	106
6/12/1998	350	87	1	87
6/13/1998	298	35	1	35
6/14/1998	303	40	1	40
6/15/1998	305	42	1	42
6/16/1998	309	46	1	46
6/17/1998	318	55	1	55

6/18/1998	318	55	1	55
6/19/1998	319	56	1	56
6/20/1998	319	56	1	56
6/21/1998	311	48	1	48
6/22/1998	306	43	1	43
6/23/1998	305	42	1	42
6/24/1998	301	38	1	38
6/25/1998	301	38	1	38
6/26/1998	304	41	1	41
6/27/1998	302	39	1	39
6/28/1998	300	37	1	37
6/29/1998	296	33	1	33
6/30/1998	294	31	1	31
7/1/1998	293	30	1	30
7/2/1998	317	54	1	54
7/3/1998	371	108	1	108
7/4/1998	370	107	1	107
7/5/1998	369	106	1	106
7/6/1998	367	104	1	104
7/7/1998	366	103	1	103
7/8/1998	366	103	1	103
7/9/1998	370	107	1	107
7/10/1998	366	103	1	103
7/11/1998	363	100	1	100
7/12/1998	361	98	1	98
7/13/1998	361	98	1	98
7/14/1998	366	103	1	103
7/15/1998	360	97	1	97
7/16/1998	364	101	1	101
7/17/1998	358	95	1	95
7/18/1998	360	97	1	97
7/19/1998	360	97	1	97
7/20/1998	359	96	1	96
7/21/1998	326	63	1	63
7/22/1998	309	46	1	46
7/23/1998	307	44	1	44
7/24/1998	305	42	1	42
7/25/1998	304	41	1	41
7/26/1998	302	39	1	39
7/27/1998	301	38	1	38
7/28/1998	303	40	1	40
7/29/1998	355	92	1	92
7/30/1998	426	163	1	163
7/31/1998	348	85	1	85

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8/2/1998	296	33	1	33
8/3/1998	295	32	1	32
8/4/1998	291	28	1	28
8/5/1998	292	29	1	29
8/6/1998	297	34	1	34
8/7/1998	306	43	1	43
8/8/1998	306	43	1	43
8/9/1998	306	43	1	43
8/10/1998	306	43	1	43
8/11/1998	303	40	1	40
8/12/1998	306	43	1	43
8/13/1998	305	42	1	42
8/14/1998	306	43	1	43
8/15/1998	306	43	1	43
8/16/1998	305	42	1	42
8/17/1998	304	41	1	41
8/18/1998	304	41	1	41
8/19/1998	305	42	1	42
8/20/1998	214	-49	0	0
8/21/1998	311	48	1	48
8/22/1998	307	44	1	44
8/23/1998	304	41	1	41
8/24/1998	301	38	1	38
8/25/1998	300	37	1	37
8/26/1998	300	37	1	37
8/27/1998	307	44	1	44
8/28/1998	317	54	1	54
8/29/1998	317	54	1	54
8/30/1998	317	54	1	54
8/31/1998	316	53	1	53
9/1/1998	317	54	1	54
9/2/1998	317	54	1	54
9/3/1998	309	46	1	46
9/4/1998	315	52	1	52
9/5/1998	316	53	1	53
9/6/1998	317	54	1	54
9/7/1998	316	53	1	53
9/8/1998	306	43	1	43
9/9/1998	314	51	1	51
9/10/1998	313	50	1	50
9/11/1998	315	52	1	52
9/12/1998	317	54	1	54
9/13/1998	303	40	1	40

9/14/1998	314	51	1	51
9/15/1998	313	50	1	50
9/16/1998	312	49	1	49
9/17/1998	311	48	1	48
9/18/1998	301	38	1	38
9/19/1998	311	48	1	48
9/20/1998	312	49	1	49
9/21/1998	310	47	1	47
9/22/1998	308	45	1	45
9/23/1998	311	48	1	48
9/24/1998	310	47	1	47
9/25/1998	310	47	1	47
9/26/1998	316	53	1	53
9/27/1998	312	49	1	49
9/28/1998	310	47	1	47
9/29/1998	310	47	1	47
9/30/1998	310	47	1	47
10/1/1998	310	47	1	47
10/2/1998	298	35	1	35
10/3/1998	283	20	1	20
10/4/1998	282	19	1	19
10/5/1998	280	17	1	17
10/6/1998	279	16	1	16
10/7/1998	258	-5	0	0
10/8/1998	276	13	1	13
10/9/1998	277	14	1	14
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10/11/1998	275	12	1	12
10/12/1998	274	11	1	11
10/13/1998	273	10	1	10
10/14/1998	272	9	1	9
10/15/1998	273	10	1	10
10/16/1998	268	5	1	5
10/17/1998	272	9	1	9
10/18/1998	271	8	1	8
10/19/1998	269	6	1	6
10/20/1998	270	7	1	7
10/21/1998	271	8	1	8
10/22/1998	271	8	1	8
10/23/1998	272	9	1	9
10/24/1998	272	9	1	9
10/25/1998	272	9	1	9
10/26/1998	272	9	1	9
10/27/1998	271	8	1	8

10/28/1998	271	8	1	8
10/29/1998	271	8	1	8
10/30/1998	271	8	1	8
10/31/1998	270	7	1	7
11/1/1998	270	7	1	7
11/2/1998	271	8	1	8
11/3/1998	271	8	1	8
11/4/1998	271	8	1	8
11/5/1998	271	8	1	8
11/6/1998	271	8	1	8
11/7/1998	261	-2	0	0
11/8/1998	271	8	1	8
11/9/1998	270	7	1	7
11/10/1998	265	2	1	2
11/11/1998	205	-58	0	0
11/12/1998	274	11	1	11
11/13/1998	264	1	1	1
11/14/1998	276	13	1	13
11/15/1998	275	12	1	12
11/16/1998	272	9	1	9
11/17/1998	272	9	1	9
11/18/1998	274	11	1	11
11/19/1998	274	11	1	11
11/20/1998	273	10	1	10
11/21/1998	274	11	1	11
11/22/1998	275	12	1	12
11/23/1998	255	-8	0	0
11/24/1998	268	5	1	5
11/25/1998	268	5	1	5
11/26/1998	277	14	1	14
11/27/1998	277	14	1	14
11/28/1998	277	14	1	14
11/29/1998	278	15	1	15
11/30/1998	277	14	1	14
12/1/1998	277	14	1	14
12/2/1998	277	14	1	14
12/3/1998	277	14	1	14
12/4/1998	278	15	1	15
12/5/1998	277	14	1	14
12/6/1998	271	8	1	8
12/7/1998	277	14	1	14
12/8/1998	279	16	1	16
12/9/1998	280	17	1	17
12/10/1998	264	1	1	1

12/11/1998	271	8	1	8
12/12/1998	272	9	1	9
12/13/1998	269	6	1	6
12/14/1998	267	4	1	4
12/15/1998	267	4	1	4
12/16/1998	267	4	1	4
12/17/1998	214	-49	0	0
12/18/1998	266	3	1	3
12/19/1998	219	-44	0	0
12/20/1998	268	5	1	5
12/21/1998	278	15	1	15
12/22/1998	279	16	1	16
12/23/1998	272	9	1	9
12/24/1998	270	7	1	7
12/25/1998	269	6	1	6
12/26/1998	267	4	1	4
12/27/1998	266	3	1	3
12/28/1998	265	2	1	2
12/29/1998	267	4	1	4
12/30/1998	265	2	1	2
12/31/1998	265	2	1	2
1/1/1999	259	-4	0	0
1/2/1999	263	0	1	0
1/3/1999	264	1	1	1
1/4/1999	264	1	1	1
1/5/1999	265	2	1	2
1/6/1999	265	2	1	2
1/7/1999	265	2	1	2
1/8/1999	265	2	1	2
1/9/1999	265	2	1	2
1/10/1999	265	2	1	2
1/11/1999	264	1	1	1
1/12/1999	264	1	1	1
1/13/1999	264	1	1	1
1/14/1999	264	1	1	1
1/15/1999	265	2	1	2
1/16/1999	259	-4	0	0
1/17/1999	246	-17	0	0
1/18/1999	267	4	1	4
1/19/1999	267	4	1	4
1/20/1999	267	4	1	4
1/21/1999	267	4	1	4
1/22/1999	267	4	1	4
1/23/1999	258	-5	0	0

1/24/1999	226	-37	0	0
1/25/1999	264	1	1	1
1/26/1999	273	10	1	10
1/27/1999	268	5	1	5
1/28/1999	265	2	1	2
1/29/1999	265	2	1	2
1/30/1999	266	3	1	3
1/31/1999	265	2	1	2
2/1/1999	264	1	1	1
2/2/1999	255	-8	0	0
2/3/1999	264	1	1	1
2/4/1999	260	-3	0	0
2/5/1999	262	-1	0	0
2/6/1999	265	2	1	2
2/7/1999	265	2	1	2
2/8/1999	265	2	1	2
2/9/1999	265	2	1	2
2/10/1999	264	1	1	1
2/11/1999	254	-9	0	0
2/12/1999	255	-8	0	0
2/13/1999	271	8	1	8
2/14/1999	268	5	1	5
2/15/1999	266	3	1	3
2/16/1999	259	-4	0	0
2/17/1999	265	2	1	2
2/18/1999	265	2	1	2
2/19/1999	255	-8	0	0
2/20/1999	265	2	1	2
2/21/1999	248	-15	0	0
2/22/1999	267	4	1	4
2/23/1999	267	4	1	4
2/24/1999	267	4	1	4
2/25/1999	267	4	1	4
2/26/1999	269	6	1	6
2/27/1999	247	-16	0	0
2/28/1999	268	5	1	5
3/1/1999	269	6	1	6
3/2/1999	239	-24	0	0
3/3/1999	268	5	1	5
3/4/1999	255	-8	0	0
3/5/1999	267	4	1	4
3/6/1999	236	-27	0	0
3/7/1999	269	6	1	6
3/8/1999	268	5	1	5

3/9/1999	269	6	1	6
3/10/1999	264	1	1	1
3/11/1999	267	4	1	4
3/12/1999	268	5	1	5
3/13/1999	268	5	1	5
3/14/1999	269	6	1	6
3/15/1999	271	8	1	8
3/16/1999	270	7	1	7
3/17/1999	219	-44	0	0
3/18/1999	271	8	1	8
3/19/1999	264	1	1	1
3/20/1999	278	15	1	15
3/21/1999	280	17	1	17
3/22/1999	281	18	1	18
3/23/1999	281	18	1	18
3/24/1999	281	18	1	18
3/25/1999	284	21	1	21
3/26/1999	281	18	1	18
3/27/1999	284	21	1	21
3/28/1999	234	-29	0	0
3/29/1999	272	9	1	9
3/30/1999	280	17	1	17
3/31/1999	279	16	1	16
4/1/1999	278	15	1	15
4/2/1999	274	11	1	11
4/3/1999	210	-53	0	0
4/4/1999	265	2	1	2
4/5/1999	270	7	1	7
4/6/1999	277	14	1	14
4/7/1999	277	14	1	14
4/8/1999	279	16	1	16
4/9/1999	279	16	1	16
4/10/1999	277	14	1	14
4/11/1999	226	-37	0	0
4/12/1999	264	1	1	1
4/13/1999	280	17	1	17
4/14/1999	280	17	1	17
4/15/1999	265	2	1	2
4/16/1999	306	43	1	43
4/17/1999	320	57	1	57
4/18/1999	325	62	1	62
4/19/1999	333	70	1	70
4/20/1999	345	82	1	82
4/21/1999	343	80	1	80

4/22/1999	335	72	1	72
4/23/1999	331	68	1	68
4/24/1999	329	66	1	66
4/25/1999	332	69	1	69
4/26/1999	337	74	1	74
4/27/1999	344	81	1	81
4/28/1999	344	81	1	81
4/29/1999	341	78	1	78
4/30/1999	336	73	1	73
5/1/1999	338	75	1	75
5/2/1999	344	81	1	81
5/3/1999	347	84	1	84
5/4/1999	344	81	1	81
5/5/1999	328	65	1	65
5/6/1999	336	73	1	73
5/7/1999	338	75	1	75
5/8/1999	341	78	1	78
5/9/1999	341	78	1	78
5/10/1999	339	76	1	76
5/11/1999	336	73	1	73
5/12/1999	333	70	1	70
5/13/1999	339	76	1	76
5/14/1999	337	74	1	74
5/15/1999	336	73	1	73
5/16/1999	334	71	1	71
5/17/1999	335	72	1	72
5/18/1999	338	75	1	75
5/19/1999	347	84	1	84
5/20/1999	354	91	1	91
5/21/1999	360	97	1	97
5/22/1999	362	99	1	99
5/23/1999	364	101	1	101
5/24/1999	366	103	1	103
5/25/1999	286	23	1	23
5/26/1999	265	2	1	2
5/27/1999	158	-105	0	0
5/28/1999	235	-28	0	0
5/29/1999	310	47	1	47
5/30/1999	307	44	1	44
5/31/1999	302	39	1	39
6/1/1999	303	40	1	40
6/2/1999	302	39	1	39
6/3/1999	301	38	1	38
6/4/1999	298	35	1	35

6/5/1999	296	33	1	33
6/6/1999	297	34	1	34
6/7/1999	305	42	1	42
6/8/1999	313	50	1	50
6/9/1999	312	49	1	49
6/10/1999	306	43	1	43
6/11/1999	301	38	1	38
6/12/1999	300	37	1	37
6/13/1999	349	86	1	86
6/14/1999	381	118	1	118
6/15/1999	381	118	1	118
6/16/1999	374	111	1	111
6/17/1999	370	107	1	107
6/18/1999	368	105	1	105
6/19/1999	366	103	1	103
6/20/1999	363	100	1	100
6/21/1999	348	85	1	85
6/22/1999	367	104	1	104
6/23/1999	360	97	1	97
6/24/1999	358	95	1	95
6/25/1999	352	89	1	89
6/26/1999	357	94	1	94
6/27/1999	357	94	1	94
6/28/1999	355	92	1	92
6/29/1999	355	92	1	92
6/30/1999	358	95	1	95
7/1/1999	357	94	1	94
7/2/1999	342	79	1	79
7/3/1999	354	91	1	91
7/4/1999	349	86	1	86
7/5/1999	353	90	1	90
7/6/1999	352	89	1	89
7/7/1999	315	52	1	52
7/8/1999	291	28	1	28
7/9/1999	290	27	1	27
7/10/1999	313	50	1	50
7/11/1999	327	64	1	64
7/12/1999	323	60	1	60
7/13/1999	326	63	1	63
7/14/1999	326	63	1	63
7/15/1999	325	62	1	62
7/16/1999	325	62	1	62
7/17/1999	325	62	1	62
7/18/1999	324	61	1	61

7/19/1999	324	61	1	61
7/20/1999	318	55	1	55
7/21/1999	321	58	1	58
7/22/1999	321	58	1	58
7/23/1999	319	56	1	56
7/24/1999	318	55	1	55
7/25/1999	317	54	1	54
7/26/1999	316	53	1	53
7/27/1999	317	54	1	54
7/28/1999	316	53	1	53
7/29/1999	294	31	1	31
7/30/1999	257	-6	0	0
7/31/1999	228	-35	0	0
8/1/1999	227	-36	0	0
8/2/1999	226	-37	0	0
8/3/1999	225	-38	0	0
8/4/1999	217	-46	0	0
8/5/1999	225	-38	0	0
8/6/1999	227	-36	0	0
8/7/1999	227	-36	0	0
8/8/1999	226	-37	0	0
8/9/1999	225	-38	0	0
8/10/1999	224	-39	0	0
8/11/1999	214	-49	0	0
8/12/1999	204	-59	0	0
8/13/1999	231	-32	0	0
8/14/1999	228	-35	0	0
8/15/1999	227	-36	0	0
8/16/1999	227	-36	0	0
8/17/1999	226	-37	0	0
8/18/1999	226	-37	0	0
8/19/1999	265	2	1	2
8/20/1999	285	22	1	22
8/21/1999	284	21	1	21
8/22/1999	283	20	1	20
8/23/1999	282	19	1	19
8/24/1999	279	16	1	16
8/25/1999	284	21	1	21
8/26/1999	285	22	1	22
8/27/1999	284	21	1	21
8/28/1999	286	23	1	23
8/29/1999	286	23	1	23
8/30/1999	284	21	1	21
8/31/1999	284	21	1	21

9/1/1999	285	22	1	22
9/2/1999	284	21	1	21
9/3/1999	285	22	1	22
9/4/1999	285	22	1	22
9/5/1999	283	20	1	20
9/6/1999	283	20	1	20
9/7/1999	282	19	1	19
9/8/1999	282	19	1	19
9/9/1999	282	19	1	19
9/10/1999	282	19	1	19
9/11/1999	279	16	1	16
9/12/1999	269	6	1	6
9/13/1999	281	18	1	18
9/14/1999	281	18	1	18
9/15/1999	281	18	1	18
9/16/1999	281	18	1	18
9/17/1999	280	17	1	17
9/18/1999	280	17	1	17
9/19/1999	280	17	1	17
9/20/1999	279	16	1	16
9/21/1999	280	17	1	17
9/22/1999	280	17	1	17
9/23/1999	278	15	1	15
9/24/1999	277	14	1	14
9/25/1999	273	10	1	10
9/26/1999	273	10	1	10
9/27/1999	268	5	1	5
9/28/1999	265	2	1	2
9/29/1999	260	-3	0	0
9/30/1999	274	11	1	11
10/1/1999	274	11	1	11
10/2/1999	274	11	1	11
10/3/1999	273	10	1	10
10/4/1999	279	16	1	16
10/5/1999	288	25	1	25
10/6/1999	289	26	1	26
10/7/1999	287	24	1	24
10/8/1999	284	21	1	21
10/9/1999	284	21	1	21
10/10/1999	284	21	1	21
10/11/1999	283	20	1	20
10/12/1999	267	4	1	4
10/13/1999	285	22	1	22
10/14/1999	282	19	1	19

10/15/1999	280	17	1	17
10/16/1999	280	17	1	17
10/17/1999	279	16	1	16
10/18/1999	280	17	1	17
10/19/1999	279	16	1	16
10/20/1999	279	16	1	16
10/21/1999	279	16	1	16
10/22/1999	284	21	1	21
10/23/1999	298	35	1	35
10/24/1999	298	35	1	35
10/25/1999	300	37	1	37
10/26/1999	300	37	1	37
10/27/1999	304	41	1	41
10/28/1999	304	41	1	41
10/29/1999	304	41	1	41
10/30/1999	302	39	1	39
10/31/1999	314	51	1	51
11/1/1999	300	37	1	37
11/2/1999	291	28	1	28
11/3/1999	302	39	1	39
11/4/1999	302	39	1	39
11/5/1999	302	39	1	39
11/6/1999	302	39	1	39
11/7/1999	302	39	1	39
11/8/1999	296	33	1	33
11/9/1999	288	25	1	25
11/10/1999	288	25	1	25
11/11/1999	287	24	1	24
11/12/1999	287	24	1	24
11/13/1999	287	24	1	24
11/14/1999	287	24	1	24
11/15/1999	287	24	1	24
11/16/1999	287	24	1	24
11/17/1999	287	24	1	24
11/18/1999	287	24	1	24
11/19/1999	284	21	1	21
11/20/1999	287	24	1	24
11/21/1999	282	19	1	19
11/22/1999	285	22	1	22
11/23/1999	202	-61	0	0
11/24/1999	249	-14	0	0
11/25/1999	255	-8	0	0
11/26/1999	257	-6	0	0
11/27/1999	256	-7	0	0

11/28/1999	255	-8	0	0
11/29/1999	255	-8	0	0
11/30/1999	256	-7	0	0
12/1/1999	254	-9	0	0
12/2/1999	257	-6	0	0
12/3/1999	240	-23	0	0
12/4/1999	133	-130	0	0
12/5/1999	191	-72	0	0
12/6/1999	217	-46	0	0
12/7/1999	233	-30	0	0
12/8/1999	230	-33	0	0
12/9/1999	203	-60	0	0
12/10/1999	254	-9	0	0
12/11/1999	257	-6	0	0
12/12/1999	259	-4	0	0
12/13/1999	256	-7	0	0
12/14/1999	232	-31	0	0
12/15/1999	251	-12	0	0
12/16/1999	259	-4	0	0
12/17/1999	236	-27	0	0
12/18/1999	259	-4	0	0
12/19/1999	259	-4	0	0
12/20/1999	260	-3	0	0
12/21/1999	250	-13	0	0
12/22/1999	260	-3	0	0
12/23/1999	239	-24	0	0
12/24/1999	256	-7	0	0
12/25/1999	258	-5	0	0
12/26/1999	249	-14	0	0
12/27/1999	262	-1	0	0
12/28/1999	246	-17	0	0
12/29/1999	258	-5	0	0
12/30/1999	258	-5	0	0
12/31/1999	260	-3	0	0
1/1/2000	254	-9	0	0
1/2/2000	258	-5	0	0
1/3/2000	256	-7	0	0
1/4/2000	250	-13	0	0
1/5/2000	258	-5	0	0
1/6/2000	252	-11	0	0
1/7/2000	258	-5	0	0
1/8/2000	252	-11	0	0
1/9/2000	262	-1	0	0
1/10/2000	260	-3	0	0

1/11/2000	260	-3	0	0
1/12/2000	259	-4	0	0
1/13/2000	219	-44	0	0
1/14/2000	262	-1	0	0
1/15/2000	258	-5	0	0
1/16/2000	259	-4	0	0
1/17/2000	250	-13	0	0
1/18/2000	229	-34	0	0
1/19/2000	253	-10	0	0
1/20/2000	254	-9	0	0
1/21/2000	259	-4	0	0
1/22/2000	259	-4	0	0
1/23/2000	252	-11	0	0
1/24/2000	246	-17	0	0
1/25/2000	248	-15	0	0
1/26/2000	260	-3	0	0
1/27/2000	259	-4	0	0
1/28/2000	253	-10	0	0
1/29/2000	145	-118	0	0
1/30/2000	254	-9	0	0
1/31/2000	264	1	1	1
2/1/2000	269	6	1	6
2/2/2000	265	2	1	2
2/3/2000	257	-6	0	0
2/4/2000	246	-17	0	0
2/5/2000	260	-3	0	0
2/6/2000	258	-5	0	0
2/7/2000	258	-5	0	0
2/8/2000	258	-5	0	0
2/9/2000	258	-5	0	0
2/10/2000	262	-1	0	0
2/11/2000	260	-3	0	0
2/12/2000	259	-4	0	0
2/13/2000	260	-3	0	0
2/14/2000	259	-4	0	0
2/15/2000	260	-3	0	0
2/16/2000	259	-4	0	0
2/17/2000	204	-59	0	0
2/18/2000	235	-28	0	0
2/19/2000	242	-21	0	0
2/20/2000	267	4	1	4
2/21/2000	264	1	1	1
2/22/2000	260	-3	0	0
2/23/2000	258	-5	0	0

2/24/2000	250	-13	0	0
2/25/2000	256	-7	0	0
2/26/2000	226	-37	0	0
2/27/2000	262	-1	0	0
2/28/2000	259	-4	0	0
2/29/2000	259	-4	0	0
3/1/2000	257	-6	0	0
3/2/2000	254	-9	0	0
3/3/2000	257	-6	0	0
3/4/2000	257	-6	0	0
3/5/2000	258	-5	0	0
3/6/2000	259	-4	0	0
3/7/2000	259	-4	0	0
3/8/2000	259	-4	0	0
3/9/2000	235	-28	0	0
3/10/2000	245	-18	0	0
3/11/2000	257	-6	0	0
3/12/2000	257	-6	0	0
3/13/2000	257	-6	0	0
3/14/2000	257	-6	0	0
3/15/2000	248	-15	0	0
3/17/2000	258	-5	0	0
3/18/2000	257	-6	0	0
3/19/2000	256	-7	0	0
3/20/2000	257	-6	0	0
3/21/2000	172	-91	0	0
3/22/2000	255	-8	0	0
3/23/2000	255	-8	0	0
3/24/2000	256	-7	0	0
3/25/2000	248	-15	0	0
3/26/2000	262	-1	0	0
3/27/2000	263	0	1	0
3/28/2000	258	-5	0	0
3/29/2000	264	1	1	1
3/30/2000	263	0	1	0
3/31/2000	257	-6	0	0
4/1/2000	260	-3	0	0
4/2/2000	249	-14	0	0
4/3/2000	227	-36	0	0
4/4/2000	260	-3	0	0
4/5/2000	268	5	1	5
4/6/2000	251	-12	0	0
4/7/2000	262	-1	0	0
4/8/2000	257	-6	0	0

4/9/2000	263	0	0	0
4/10/2000	264	1	1	1
4/11/2000	267	4	1	4
4/12/2000	272	9	1	9
4/13/2000	277	14	1	14
4/14/2000	275	12	1	12
4/15/2000	272	9	1	9
4/16/2000	271	8	1	8
4/17/2000	268	5	1	5
4/18/2000	275	12	1	12
4/19/2000	277	14	1	14
4/20/2000	277	14	1	14
4/21/2000	279	16	1	16
4/22/2000	283	20	1	20
4/23/2000	288	25	1	25
4/24/2000	283	20	1	20
4/25/2000	278	15	1	15
4/26/2000	278	15	1	15
4/27/2000	278	15	1	15
4/28/2000	284	21	1	21
4/29/2000	288	25	1	25
4/30/2000	282	19	1	19
5/1/2000	276	13	1	13
5/2/2000	272	9	1	9
5/3/2000	273	10	1	10
5/4/2000	274	11	1	11
5/5/2000	270	7	1	7
5/6/2000	270	7	1	7
5/7/2000	269	6	1	6
5/8/2000	267	4	1	4
5/9/2000	267	4	1	4
5/10/2000	268	5	1	5
5/11/2000	269	6	1	6
5/12/2000	268	5	1	5
5/13/2000	267	4	1	4
5/14/2000	267	4	1	4
5/15/2000	268	5	1	5
5/16/2000	269	6	1	6
5/17/2000	275	12	1	12
5/18/2000	275	12	1	12
5/19/2000	268	5	1	5
5/20/2000	274	11	1	11
5/21/2000	276	13	1	13
5/22/2000	279	16	1	16

5/23/2000	279	16	1	16
5/24/2000	271	8	1	8
5/25/2000	278	15	1	15
5/26/2000	274	11	1	11
5/27/2000	269	6	1	6
5/28/2000	273	10	1	10
5/29/2000	280	17	1	17
5/30/2000	281	18	1	18
5/31/2000	274	11	1	11
6/1/2000	277	14	1	14
6/2/2000	275	12	1	12
6/3/2000	273	10	1	10
6/4/2000	272	9	1	9
6/5/2000	305	42	1	42
6/6/2000	283	20	1	20
6/7/2000	259	-4	0	0
6/8/2000	257	-6	0	0
6/9/2000	256	-7	0	0
6/10/2000	257	-6	0	0
6/11/2000	254	-9	0	0
6/12/2000	253	-10	0	0
6/13/2000	253	-10	0	0
6/14/2000	226	-37	0	0
6/15/2000	189	-74	0	0
6/16/2000	197	-66	0	0
6/17/2000	194	-69	0	0
6/18/2000	192	-71	0	0
6/19/2000	195	-68	0	0
6/20/2000	245	-18	0	0
6/21/2000	264	1	1	1
6/22/2000	263	0	0	0
6/23/2000	266	3	1	3
6/24/2000	262	-1	0	0
6/25/2000	261	-2	0	0
6/26/2000	258	-5	0	0
6/27/2000	256	-7	0	0
6/28/2000	263	0	0	0
6/29/2000	266	3	1	3
6/30/2000	265	2	1	2
7/1/2000	262	-1	0	0
7/2/2000	270	7	1	7
7/3/2000	260	-3	0	0
7/4/2000	265	2	1	2
7/5/2000	265	2	1	2

7/6/2000	264	1	1	1
7/7/2000	264	1	1	1
7/8/2000	262	-1	0	0
7/9/2000	262	-1	0	0
7/10/2000	261	-2	0	0
7/11/2000	262	-1	0	0
7/12/2000	219	-44	0	0
7/13/2000	198	-65	0	0
7/14/2000	160	-103	0	0
7/15/2000	160	-103	0	0
7/16/2000	160	-103	0	0
7/17/2000	129	-134	0	0
7/18/2000	151	-112	0	0
7/19/2000	151	-112	0	0
7/20/2000	149	-114	0	0
7/21/2000	151	-112	0	0
7/22/2000	148	-115	0	0
7/23/2000	147	-116	0	0
7/24/2000	148	-115	0	0
7/25/2000	150	-113	0	0
7/26/2000	149	-114	0	0
7/27/2000	148	-115	0	0
7/28/2000	148	-115	0	0
7/29/2000	146	-117	0	0
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4/19/2001	310	47	1	47
4/20/2001	302	39	1	39
4/21/2001	292	29	1	29
4/22/2001	289	26	1	26
4/23/2001	289	26	1	26
4/24/2001	292	29	1	29
4/25/2001	303	40	1	40
4/26/2001	314	51	1	51
4/27/2001	320	57	1	57
4/28/2001	329	66	1	66
4/29/2001	333	70	1	70
4/30/2001	319	56	1	56
5/1/2001	323	60	1	60
5/2/2001	313	50	1	50
5/3/2001	310	47	1	47
5/4/2001	312	49	1	49
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5/7/2001	314	51	1	51
5/8/2001	318	55	1	55
5/9/2001	323	60	1	60

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5/12/2001	325	62	1	62
5/13/2001	331	68	1	68
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5/15/2001	353	90	1	90
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6/30/2001	279	16	1	16
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7/7/2001	256	-7	0	0
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7/13/2001	263	0	1	0
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7/15/2001	267	4	1	4
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7/23/2001	262	-1	0	0
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12/29/2001	0	-263	0	0
12/30/2001	0	-263	0	0
12/31/2001	0	-263	0	0
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01/03/02	0	-263	0	0
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01/05/02	0	-263	0	0
01/06/02	0	-263	0	0
01/07/02	0	-263	0	0
01/08/02	0	-263	0	0
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01/11/02	0	-263	0	0
01/12/02	0	-263	0	0
01/13/02	0	-263	0	0
01/14/02	0	-263	0	0
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01/24/02	0	-263	0	0
01/25/02	0	-263	0	0
01/26/02	0	-263	0	0
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01/28/02	0	-263	0	0

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01/31/02	0	-263	0	0
02/01/02	0	-263	0	0
02/02/02	0	-263	0	0
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02/04/02	0	-263	0	0
02/05/02	0	-263	0	0
02/06/02	0	-263	0	0
02/07/02	0	-263	0	0
02/08/02	0	-263	0	0
02/09/02	0	-263	0	0
02/10/02	0	-263	0	0
02/11/02	66	-197	0	0
02/12/02	136	-127	0	0
02/13/02	133	-130	0	0
02/14/02	204	-59	0	0
02/15/02	119	-144	0	0
02/16/02	199	-64	0	0
02/17/02	196	-67	0	0
02/18/02	187	-76	0	0
02/19/02	184	-79	0	0
02/20/02	183	-80	0	0
02/21/02	158	-105	0	0
02/22/02	188	-75	0	0
02/23/02	188	-75	0	0
02/24/02	142	-121	0	0
02/25/02	138	-125	0	0
02/26/02	183	-81	0	0
02/27/02	216	-47	0	0
02/28/02	208	-55	0	0
03/01/02	190	-73	0	0
03/02/02	183	-80	0	0
03/03/02	191	-72	0	0
03/04/02	192	-71	0	0
03/05/02	192	-71	0	0
03/06/02	185	-78	0	0
03/07/02	138	-125	0	0
03/08/02	175	-88	0	0
03/09/02	193	-70	0	0
03/10/02	192	-71	0	0
03/11/02	188	-75	0	0
03/12/02	189	-74	0	0
03/13/02	182	-81	0	0

03/14/02	184	-79	0	0
03/15/02	143	-120	0	0
03/16/02	156	-107	0	0
03/17/02	183	-80	0	0
03/18/02	126	-137	0	0
03/19/02	210	-53	0	0
03/20/02	188	-75	0	0
03/21/02	134	-129	0	0
03/22/02	192	-71	0	0
03/23/02	195	-68	0	0
03/24/02	190	-73	0	0
03/25/02	182	-81	0	0
03/26/02	178	-85	0	0
03/27/02	189	-74	0	0
03/28/02	192	-71	0	0
03/29/02	192	-71	0	0
03/30/02	193	-70	0	0
03/31/02	195	-68	0	0
04/01/02	196	-67	0	0
04/02/02	97	-166	0	0
04/03/02	129	-134	0	0
04/04/02	224	-39	0	0
04/05/02	242	-21	0	0
04/06/02	280	17	1	17
04/07/02	285	22	1	22
04/08/02	278	15	1	15
04/09/02	258	-5	0	0
04/10/02	260	-3	0	0
04/11/02	262	-1	0	0
04/12/02	266	3	1	3
04/13/02	285	22	1	22
04/14/02	332	69	1	69
04/15/02	339	76	1	76
04/16/02	306	43	1	43
04/17/02	288	25	1	25
04/18/02	278	15	1	15
04/19/02	266	3	1	3
04/20/02	263	0	0	0
04/21/02	284	21	1	21
04/22/02	313	50	1	50
04/23/02	318	55	1	55
04/24/02	317	54	1	54
04/25/02	275	12	1	12
04/26/02	260	-3	0	0

04/27/02	265	2	1	2
04/28/02	271	8	1	8
04/29/02	269	6	1	6
04/30/02	281	18	1	18
05/01/02	278	15	1	15
05/02/02	277	14	1	14
05/03/02	290	27	1	27
05/04/02	259	-4	0	0
05/05/02	293	30	1	30
05/06/02	293	30	1	30
05/07/02	284	21	1	21
05/08/02	281	18	1	18
05/09/02	278	15	1	15
05/10/02	300	37	1	37
05/11/02	274	11	1	11
05/12/02	285	22	1	22
05/13/02	305	42	1	42
05/14/02	331	68	1	68
05/15/02	336	73	1	73
05/16/02	324	61	1	61
05/17/02	321	58	1	58
05/18/02	335	72	1	72
05/19/02	355	92	1	92
05/20/02	384	121	1	121
05/21/02	388	125	1	125
05/22/02	399	136	1	136
05/23/02	369	106	1	106
05/24/02	359	96	1	96
05/25/02	371	108	1	108
05/26/02	387	124	1	124
05/27/02	401	138	1	138
05/28/02	406	143	1	143
05/29/02	400	137	1	137
05/30/02	402	139	1	139
05/31/02	366	103	1	103
06/01/02	284	21	1	21
06/02/02	292	29	1	29
06/03/02	290	27	1	27
06/04/02	276	13	1	13
06/05/02	260	-3	0	0
06/06/02	255	-8	0	0
06/07/02	248	-15	0	0
06/08/02	245	-18	0	0
06/09/02	242	-21	0	0

06/10/02	244	-19	0	0
06/11/02	320	57	1	57
06/12/02	355	92	1	92
06/13/02	349	86	1	86
06/14/02	365	102	1	102
06/15/02	389	126	1	126
06/16/02	384	121	1	121
06/17/02	382	119	1	119
06/18/02	360	97	1	97
06/19/02	388	125	1	125
06/20/02	382	119	1	119
06/21/02	373	110	1	110
06/22/02	370	107	1	107
06/23/02	368	105	1	105
06/24/02	363	100	1	100
06/25/02	364	101	1	101
06/26/02	380	117	1	117
06/27/02	332	69	1	69
06/28/02	294	31	1	31
06/29/02	289	26	1	26
06/30/02	285	22	1	22
07/01/02	281	18	1	18
07/02/02	278	15	1	15
07/03/02	275	12	1	12
07/04/02	273	10	1	10
07/05/02	271	8	1	8
07/06/02	269	6	1	6
07/07/02	281	18	1	18
07/08/02	300	37	1	37
07/09/02	292	29	1	29
07/10/02	288	25	1	25
07/11/02	231	-32	0	0
07/12/02	198	-65	0	0
07/13/02	196	-67	0	0
07/14/02	194	-69	0	0
07/15/02	192	-71	0	0
07/16/02	192	-71	0	0
07/17/02	196	-67	0	0
07/18/02	199	-64	0	0
07/19/02	199	-64	0	0
07/20/02	191	-72	0	0
07/21/02	198	-65	0	0
07/22/02	195	-68	0	0
07/23/02	193	-70	0	0

07/24/02	191	-72	0	0
07/25/02	194	-69	0	0
07/26/02	196	-67	0	0
07/27/02	200	-63	0	0
07/28/02	197	-66	0	0
07/29/02	192	-71	0	0
07/30/02	190	-73	0	0
07/31/02	188	-75	0	0
08/01/02	185	-78	0	0
08/02/02	185	-78	0	0
08/03/02	184	-79	0	0
08/04/02	191	-72	0	0
08/05/02	186	-77	0	0
08/06/02	183	-80	0	0
08/07/02	182	-81	0	0
08/08/02	190	-73	0	0
08/09/02	189	-74	0	0
08/10/02	184	-79	0	0
08/11/02	181	-82	0	0
08/12/02	172	-91	0	0
08/13/02	179	-84	0	0
08/14/02	193	-70	0	0
08/15/02	197	-66	0	0
08/16/02	196	-67	0	0
08/17/02	196	-67	0	0
08/18/02	196	-67	0	0
08/19/02	192	-71	0	0
08/20/02	169	-94	0	0
08/21/02	195	-68	0	0
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08/23/02	195	-68	0	0
08/24/02	195	-68	0	0
08/25/02	193	-70	0	0
08/26/02	192	-71	0	0
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08/29/02	187	-76	0	0
08/30/03	185	-78	0	0
08/31/02	184	-79	0	0
09/01/02	179	-84	0	0
09/02/02	171	-92	0	0
09/03/02	170	-93	0	0
09/04/02	167	-96	0	0
09/05/02	167	-96	0	0

09/06/02	175	-88	0	0
09/07/02	170	-93	0	0
09/08/02	163	-100	0	0
09/09/02	171	-92	0	0
09/10/02	189	-74	0	0
09/11/02	195	-68	0	0
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09/17/02	186	-77	0	0
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09/25/02	186	-77	0	0
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09/27/02	195	-68	0	0
09/28/02	195	-68	0	0
09/29/02	193	-70	0	0
09/30/02	192	-71	0	0
10/01/02	243	-20	0	0
10/02/02	267	4	1	4
10/03/02	270	7	1	7
10/04/02	271	8	1	8
10/05/02	268	5	1	5
10/06/02	264	1	1	1
10/07/02	261	-2	0	0
10/08/02	256	-7	0	0
10/09/02	254	-9	0	0
10/10/02	246	-17	0	0
10/11/02	237	-26	0	0
10/12/02	233	-30	0	0
10/13/02	224	-39	0	0
10/14/02	227	-36	0	0
10/15/02	228	-35	0	0
10/16/02	226	-37	0	0
10/17/02	220	-43	0	0
10/18/02	242	-21	0	0
10/19/02	236	-27	0	0

10/20/02	234	-29	0	0
10/21/02	236	-27	0	0
10/22/02	230	-33	0	0
10/23/02	213	-50	0	0
10/24/02	187	-76	0	0
10/25/02	194	-69	0	0
10/26/02	195	-68	0	0
10/27/02	185	-78	0	0
10/28/02	229	-34	0	0
10/29/02	203	-60	0	0
10/30/02	87	-176	0	0
10/31/02	104	-159	0	0
11/01/02	193	-70	0	0
11/02/02	237	-26	0	0
11/03/02	258	-5	0	0
11/04/02	257	-6	0	0
11/05/02	245	-18	0	0
11/06/02	225	-38	0	0
11/07/02	280	17	1	17
11/08/02	278	15	1	15
11/09/02	271	8	1	8
11/10/02	267	4	1	4
11/11/02	266	3	1	3
11/12/02	264	1	1	1
11/13/02	268	5	1	5
11/14/02	267	4	1	4
11/15/02	267	4	1	4
11/16/02	266	3	1	3
11/17/02	265	2	1	2
11/18/02	262	-1	0	0
11/19/02	263	0	0	0
11/20/02	266	3	1	3
11/21/02	264	1	1	1
11/22/02	265	2	1	2
11/23/02	266	3	1	3
11/24/02	103	-160	0	0
11/25/02	142	-121	0	0
11/26/02	256	-7	0	0
11/27/02	275	12	1	12
11/28/02	270	7	1	7
11/29/02	268	5	1	5
11/30/02	261	-2	0	0
12/01/02	244	-19	0	0
12/02/02	255	-8	0	0

12/03/02	255	-8	0	0
12/04/02	251	-12	0	0
12/05/02	250	-13	0	0
12/06/02	181	-82	0	0
12/07/02	121	-142	0	0
12/08/02	203	-60	0	0
12/09/02	252	-11	0	0
12/10/02	254	-9	0	0
12/11/02	266	3	1	3
12/12/02	254	-9	0	0
12/13/02	254	-9	0	0
12/14/02	254	-9	0	0
12/15/02	250	-13	0	0
12/16/02	244	-19	0	0
12/17/02	243	-20	0	0
12/18/02	124	-139	0	0
12/19/02	199	-64	0	0
12/20/02	136	-127	0	0
12/21/02	279	16	1	16
12/22/02	271	8	1	8
12/23/02	241	-22	0	0
12/24/02	85	-178	0	0
12/25/02	168	-95	0	0
12/26/02	237	-26	0	0
12/27/02	258	-5	0	0
12/28/02	265	2	1	2
12/29/02	239	-24	0	0
12/30/02	223	-40	0	0
12/31/02	222	-41	0	0
01/01/03	218	-45	0	0
01/02/03	217	-46	0	0
01/03/03	221	-42	0	0
01/04/03	219	-44	0	0
01/05/03	228	-35	0	0
01/06/03	221	-42	0	0
01/07/03	197	-66	0	0
01/08/03	163	-100	0	0
01/09/03	217	-46	0	0
01/10/03	25	-238	0	0
01/11/03	200	-63	0	0
01/12/03	266	3	1	3
01/13/03	261	-2	0	0
01/14/03	234	-29	0	0
01/15/03	234	-29	0	0

01/16/03	215	-48	0	0
01/17/03	180	-83	0	0
01/18/03	208	-55	0	0
01/19/03	233	-30	0	0
01/20/03	221	-42	0	0
01/21/03	214	-49	0	0
01/22/03	179	-84	0	0
01/23/03	236	-27	0	0
01/24/03	213	-50	0	0
01/25/03	212	-51	0	0
01/26/03	218	-45	0	0
01/27/03	250	-13	0	0
01/28/03	239	-24	0	0
01/29/03	225	-38	0	0
01/30/03	223	-40	0	0
01/31/03	227	-36	0	0
02/01/03	263	0	0	0
02/02/03	257	-6	0	0
02/03/03	243	-20	0	0
02/04/03	232	-31	0	0
02/05/03	212	-51	0	0
02/06/03	148	-115	0	0
02/07/03	197	-66	0	0
02/08/03	274	11	1	11
02/09/03	263	0	1	0
02/10/03	246	-17	0	0
02/11/03	207	-56	0	0
02/12/03	211	-52	0	0
02/13/03	231	-32	0	0
02/14/03	230	-33	0	0
02/15/03	222	-41	0	0
02/16/03	217	-46	0	0
02/17/03	218	-45	0	0
02/18/03	214	-49	0	0
02/19/03	188	-75	0	0
02/20/03	199	-64	0	0
02/21/03	215	-48	0	0
02/22/03	206	-57	0	0
02/23/03	93	-170	0	0
02/24/03	173	-90	0	0
02/25/03	234	-29	0	0
02/26/03	236	-27	0	0
02/27/03	221	-42	0	0
02/28/03	205	-58	0	0

03/01/03	207	-56	0	0
03/02/03	203	-60	0	0
03/03/03	208	-55	0	0
03/04/03	204	-59	0	0
03/05/03	204	-59	0	0
03/06/03	208	-55	0	0
03/07/03	207	-56	0	0
03/08/03	196	-67	0	0
03/09/03	206	-57	0	0
03/10/03	207	-56	0	0
03/11/03	210	-53	0	0
03/12/03	230	-33	0	0
03/13/03	259	-4	0	0
03/14/03	286	23	1	23
03/15/03	287	24	1	24
03/16/03	287	24	1	24
03/17/03	264	1	1	1
03/18/03	235	-28	0	0
03/19/03	245	-18	0	0
03/20/03	231	-32	0	0
03/21/03	268	5	1	5
03/22/03	268	5	1	5
03/23/03	279	16	1	16
03/24/03	252	-11	0	0
03/25/03	268	5	1	5
03/26/03	252	-11	0	0
03/27/03	220	-43	0	0
03/28/03	265	2	1	2
03/29/03	253	-10	0	0
03/30/03	263	0	1	0
03/31/03	271	8	1	8
04/01/03	277	14	1	14
04/02/03	265	2	1	2
04/03/03	238	-25	0	0
04/04/03	209	-54	0	0
04/05/03	172	-91	0	0
04/06/03	222	-41	0	0
04/07/03	205	-58	0	0
04/08/03	245	-18	0	0
04/09/03	263	0	0	0
04/10/03	287	24	1	24
04/11/03	308	45	1	45
04/12/03	357	94	1	94
04/13/03	381	118	1	118

04/14/03	385	122	1	122
04/15/03	378	115	1	115
04/16/03	361	98	1	98
04/17/03	354	91	1	91
04/18/03	350	87	1	87
04/19/03	343	80	1	80
04/20/03	344	81	1	81
04/21/03	358	95	1	95
04/22/03	380	117	1	117
04/23/03	402	139	1	139
04/24/03	412	149	1	149
04/25/03	415	152	1	152
04/26/03	416	153	1	153
04/27/03	392	129	1	129
04/28/03	380	117	1	117
04/29/03	371	108	1	108
04/30/03	369	106	1	106
05/01/03	368	105	1	105
05/02/03	371	108	1	108
05/03/03	370	107	1	107
05/04/03	381	118	1	118
05/05/03	390	127	1	127
05/06/03	382	119	1	119
05/07/03	379	116	1	116
05/08/03	378	115	1	115
05/09/03	374	111	1	111
05/10/03	371	108	1	108
05/11/03	368	105	1	105
05/12/03	370	107	1	107
05/13/03	394	131	1	131
05/14/03	406	143	1	143
05/15/03	425	162	1	162
05/16/03	433	170	1	170
05/17/03	422	159	1	159
05/18/03	415	152	1	152
05/19/03	369	106	1	106
05/20/03	332	69	1	69
05/21/03	346	83	1	83
05/22/03	369	106	1	106
05/23/03	361	98	1	98
05/24/03	346	83	1	83
05/25/03	362	99	1	99
05/26/03	293	30	1	30
05/27/03	229	-34	0	0

05/28/03	228	-35	0	0
05/29/03	300	37	1	37
05/30/03	440	177	1	177
05/31/03	440	177	1	177
06/01/03	431	168	1	168
06/02/03	431	168	1	168
06/03/03	413	150	1	150
06/04/03	400	137	1	137
06/05/03	391	128	1	128
06/06/03	390	127	1	127
06/07/03	385	122	1	122
06/08/03	377	114	1	114
06/09/03	386	123	1	123
06/10/03	397	134	1	134
06/11/03	392	129	1	129
06/12/03	384	121	1	121
06/13/03	409	146	1	146
06/14/03	418	155	1	155
06/15/03	413	150	1	150
06/16/03	420	157	1	157
06/17/03	420	157	1	157
06/18/03	420	157	1	157
06/19/03	416	153	1	153
06/20/03	415	152	1	152
06/21/03	426	163	1	163
06/22/03	423	160	1	160
06/23/03	418	155	1	155
06/24/03	415	152	1	152
06/25/03	409	146	1	146
06/26/03	403	140	1	140
06/27/03	397	134	1	134
06/28/03	352	89	1	89
06/29/03	278	15	1	15
06/30/03	276	13	1	13
07/01/03	273	10	1	10
07/02/03	271	8	1	8
07/03/03	269	6	1	6
07/04/03	266	3	1	3
07/05/03	265	2	1	2
07/06/03	264	1	1	1
07/07/03	277	14	1	14
07/08/03	283	20	1	20
07/09/03	279	16	1	16
07/10/03	277	14	1	14

07/11/03	274	11	1	11
07/12/03	220	-43	0	0
07/13/03	196	-67	0	0
07/14/03	196	-67	0	0
07/15/03	196	-67	0	0
07/16/03	197	-66	0	0
07/17/03	196	-67	0	0
07/18/03	197	-66	0	0
07/19/03	197	-66	0	0
07/20/03	196	-67	0	0
07/21/03	195	-68	0	0
07/22/03	194	-69	0	0
07/23/03	192	-71	0	0
07/24/03	194	-69	0	0
07/25/03	198	-65	0	0
07/26/03	205	-58	0	0
07/27/03	197	-66	0	0
07/28/03	193	-70	0	0
07/29/03	191	-72	0	0
07/30/03	190	-73	0	0
07/31/03	190	-73	0	0
08/01/03	188	-75	0	0
08/02/03	186	-77	0	0
08/03/03	188	-75	0	0
08/04/03	190	-73	0	0
08/05/03	187	-76	0	0
08/06/03	186	-77	0	0
08/07/03	184	-79	0	0
08/08/03	183	-80	0	0
08/09/03	182	-81	0	0
08/10/03	184	-79	0	0
08/11/03	182	-81	0	0
08/12/03	181	-82	0	0
08/13/03	170	-93	0	0
08/14/03	178	-85	0	0
08/15/03	177	-86	0	0
08/16/03	180	-83	0	0
08/17/03	181	-82	0	0
08/18/03	179	-84	0	0
08/19/03	177	-86	0	0
08/20/03	176	-87	0	0
08/21/03	176	-87	0	0
08/22/03	173	-90	0	0
08/23/03	171	-92	0	0

08/24/03	171	-92	0	0
08/25/03	183	-80	0	0
08/26/03	193	-70	0	0
08/27/03	196	-67	0	0
08/28/03	196	-67	0	0
08/29/03	196	-67	0	0
08/30/03	197	-66	0	0
08/31/03	196	-67	0	0
09/01/03	195	-68	0	0
09/02/03	194	-69	0	0
09/03/03	194	-69	0	0
09/04/03	193	-70	0	0
09/05/03	192	-71	0	0
09/06/03	195	-68	0	0
09/07/03	196	-67	0	0
09/08/03	194	-69	0	0
09/09/03	196	-67	0	0
09/10/03	194	-69	0	0
09/11/03	193	-70	0	0
09/12/03	194	-69	0	0
09/13/03	197	-66	0	0
09/14/03	195	-68	0	0
09/15/03	193	-70	0	0
09/16/03	198	-65	0	0
09/17/03	204	-59	0	0
09/18/03	200	-63	0	0
09/19/03	198	-65	0	0
09/20/03	213	-50	0	0
09/21/03	252	-11	0	0
09/22/03	257	-6	0	0
09/23/03	256	-7	0	0
09/24/03	256	-7	0	0
09/25/03	255	-8	0	0
09/26/03	253	-10	0	0
09/27/03	254	-9	0	0
09/28/03	255	-8	0	0
09/29/03	255	-8	0	0
09/30/03	255	-8	0	0
10/01/03	254	-9	0	0
10/02/03	253	-10	0	0
10/03/03	246	-17	0	0
10/04/03	249	-14	0	0
10/05/03	243	-20	0	0
10/06/03	250	-13	0	0

10/07/03	247	-16	0	0
10/08/03	236	-27	0	0
10/09/03	245	-18	0	0
10/10/03	251	-12	0	0
10/11/03	248	-15	0	0
10/12/03	247	-16	0	0
10/13/03	251	-12	0	0
10/14/03	262	-1	0	0
10/15/03	263	0	1	0
10/16/03	261	-2	0	0
10/17/03	259	-4	0	0
10/18/03	257	-6	0	0
10/19/03	256	-7	0	0
10/20/03	254	-9	0	0
10/21/03	253	-10	0	0
10/22/03	254	-9	0	0
10/23/03	254	-9	0	0
10/24/03	253	-10	0	0
10/25/03	237	-26	0	0
10/26/03	264	1	1	1
10/27/03	256	-7	0	0
10/28/03	258	-5	0	0
10/29/03	266	3	1	3
10/30/03	243	-20	0	0
10/31/03	146	-117	0	0
11/01/03	130	-133	0	0
11/02/03	242	-21	0	0
11/03/03	254	-9	0	0
11/04/03	225	-38	0	0
11/05/03	93	-170	0	0
11/06/03	226	-37	0	0
11/07/03	261	-2	0	0
11/08/03	265	2	1	2
11/09/03	265	2	1	2
11/10/03	262	-1	0	0
11/11/03	255	-8	0	0
11/12/03	252	-11	0	0
11/13/03	240	-23	0	0
11/14/03	234	-29	0	0
11/15/03	250	-13	0	0
11/16/03	251	-12	0	0
11/17/03	250	-13	0	0
11/18/03	251	-12	0	0
11/19/03	256	-7	0	0

11/20/03	243	-20	0	0
11/21/03	202	-61	0	0
11/22/03	175	-88	0	0
11/23/03	207	-56	0	0
11/24/03	248	-15	0	0
11/25/03	227	-36	0	0
11/26/03	215	-48	0	0
11/27/03	218	-45	0	0
11/28/03	214	-49	0	0
11/29/03	219	-44	0	0
11/30/03	215	-48	0	0
12/01/03	215	-48	0	0
12/02/03	214	-49	0	0
12/03/03	212	-51	0	0
12/04/03	189	-74	0	0
12/05/03	217	-46	0	0
12/06/03	234	-29	0	0
12/07/03	207	-56	0	0
12/08/03	219	-44	0	0
12/09/03	174	-89	0	0
12/10/03	194	-69	0	0
12/11/03	237	-26	0	0
12/12/03	182	-81	0	0
12/13/03	231	-32	0	0
12/14/03	212	-51	0	0
12/15/03	212	-51	0	0
12/16/03	115	-148	0	0
12/17/03	241	-22	0	0
12/18/03	112	-151	0	0
12/19/03	188	-75	0	0
12/20/03	234	-29	0	0
12/21/03	231	-32	0	0
12/22/03	195	-68	0	0
12/23/03	121	-142	0	0
12/24/03	226	-37	0	0
12/25/03	231	-32	0	0
12/26/03	206	-57	0	0
12/27/03	175	-88	0	0
12/28/03	203	-60	0	0
12/29/03	234	-29	0	0
12/30/03	217	-46	0	0
12/31/03	217	-46	0	0
01/01/04	222	-41	0	0
01/02/04	211	-52	0	0

01/03/04	144	-119	0	0
01/04/04	169	-94	0	0
01/05/04	200	-63	0	0
01/06/04	198	-65	0	0
01/07/04	211	-52	0	0
01/08/04	214	-49	0	0
01/09/04	209	-54	0	0
01/10/04	204	-59	0	0
01/11/04	201	-62	0	0
01/12/04	198	-65	0	0
01/13/04	189	-74	0	0
01/14/04	197	-66	0	0
01/15/04	195	-68	0	0
01/16/04	197	-66	0	0
01/17/04	190	-73	0	0
01/18/04	180	-83	0	0
01/19/04	200	-63	0	0
01/20/04	195	-68	0	0
01/21/04	178	-85	0	0
01/22/04	185	-78	0	0
01/23/04	200	-63	0	0
01/24/04	197	-66	0	0
01/25/04	181	-82	0	0
01/26/04	195	-68	0	0
01/27/04	200	-63	0	0
01/28/04	195	-68	0	0
01/29/04	191	-72	0	0
01/30/04	194	-69	0	0
01/31/04	182	-81	0	0
02/01/04	162	-101	0	0
02/02/04	105	-158	0	0
02/03/04	191	-72	0	0
02/04/04	192	-71	0	0
02/05/04	201	-62	0	0
02/06/04	182	-81	0	0
02/07/04	188	-75	0	0
02/08/04	187	-76	0	0
02/09/04	169	-94	0	0
02/10/04	163	-100	0	0
02/11/04	178	-85	0	0
02/12/04	80	-183	0	0
02/13/04	201	-62	0	0
02/14/04	194	-69	0	0
02/15/14	192	-71	0	0

02/16/04	183	-80	0	0
02/17/04	186	-77	0	0
02/18/04	195	-68	0	0
02/19/04	199	-64	0	0
02/20/04	190	-73	0	0
02/21/04	119	-144	0	0
02/22/04	149	-114	0	0
02/23/04	194	-69	0	0
02/24/04	210	-53	0	0
02/25/04	194	-69	0	0
02/26/04	190	-73	0	0
02/27/04	190	-73	0	0
02/28/04	189	-74	0	0
02/29/04	189	-74	0	0
03/01/04	173	-90	0	0
03/02/04	136	-127	0	0
03/03/04	187	-76	0	0
03/04/04	192	-71	0	0
03/05/04	186	-77	0	0
03/06/04	173	-90	0	0
03/07/04	173	-90	0	0
03/08/04	197	-66	0	0
03/09/04	209	-54	0	0
03/10/04	229	-34	0	0
03/11/04	213	-50	0	0
03/12/04	210	-53	0	0
03/13/04	213	-50	0	0
03/14/04	207	-56	0	0
03/15/04	205	-58	0	0
03/16/04	195	-68	0	0
03/17/04	190	-73	0	0
03/18/04	255	-8	0	0
03/19/04	255	-8	0	0
03/20/04	251	-12	0	0
03/21/04	251	-12	0	0
03/22/04	254	-9	0	0
03/23/04	260	-3	0	0
03/24/04	265	2	1	2
03/25/04	268	5	1	5
03/26/04	267	4	1	4
03/27/04	267	4	1	4
03/28/04	260	-3	0	0
03/29/04	257	-6	0	0
03/30/04	259	-4	0	0

03/31/04	264	1	1	1
04/01/04	269	6	1	6
04/02/04	269	6	1	6
04/03/04	266	3	1	3
04/04/04	255	-8	0	0
04/05/04	269	6	1	6
04/06/04	271	8	1	8
04/07/04	263	0	0	0
04/08/04	256	-7	0	0
04/09/04	255	-8	0	0
04/10/04	245	-18	0	0
04/11/04	243	-20	0	0
04/12/04	241	-22	0	0
04/13/04	245	-18	0	0
04/14/04	249	-14	0	0
04/15/04	289	26	1	26
04/16/04	307	44	1	44
04/17/04	326	63	1	63
04/18/04	327	64	1	64
04/19/04	324	61	1	61
04/20/04	329	66	1	66
04/21/04	333	70	1	70
04/22/04	328	65	1	65
04/23/04	324	61	1	61
04/24/04	328	65	1	65
04/25/04	325	62	1	62
04/26/04	326	63	1	63
04/27/04	335	72	1	72
04/28/04	355	92	1	92
04/29/04	348	85	1	85
04/30/04	348	85	1	85
05/01/04	352	89	1	89
05/02/04	357	94	1	94
05/03/04	415	152	1	152
05/04/04	446	183	1	183
05/05/04	450	187	1	187
05/06/04	448	185	1	185
05/07/04	442	179	1	179
05/08/04	442	179	1	179
05/09/04	433	170	1	170
05/10/04	422	159	1	159
05/11/04	419	156	1	156
05/12/04	415	152	1	152
05/13/04	405	142	1	142

05/14/04	401	138	1	138
05/15/04	395	132	1	132
05/16/04	397	134	1	134
05/17/04	396	133	1	133
05/18/04	393	130	1	130
05/19/04	399	136	1	136
05/20/04	398	135	1	135
05/21/04	412	149	1	149
05/22/04	430	167	1	167
05/23/04	464	201	1	201
05/24/04	459	196	1	196
05/25/04	451	188	1	188
05/26/04	455	192	1	192
05/27/04	452	189	1	189
05/28/04	458	195	1	195
05/29/04	487	224	1	224
05/30/04	489	226	1	226
05/31/04	481	218	1	218
06/01/04	479	216	1	216
06/02/04	466	203	1	203
06/03/04	461	198	1	198
06/04/04	460	197	1	197
06/05/04	459	196	1	196
06/06/04	460	197	1	197
06/07/04	463	200	1	200
06/08/04	459	196	1	196
06/09/04	454	191	1	191
06/10/04	493	230	1	230
06/11/04	503	240	1	240
06/12/04	441	178	1	178
06/13/04	439	176	1	176
06/14/04	416	153	1	153
06/15/04	405	142	1	142
06/16/04	401	138	1	138
06/17/04	391	128	1	128
06/18/04	386	123	1	123
06/19/04	381	118	1	118
06/20/04	378	115	1	115
06/21/04	378	115	1	115
06/22/04	426	163	1	163
06/23/04	453	190	1	190
06/24/04	451	188	1	188
06/25/04	450	187	1	187
06/26/04	449	186	1	186

06/27/04	443	180	1	180
06/28/04	441	178	1	178
06/29/04	439	176	1	176
06/30/04	437	174	1	174
07/01/04	438	175	1	175
07/02/04	433	170	1	170
07/03/04	310	47	1	47
07/04/04	242	-21	0	0
07/05/04	244	-19	0	0
07/06/04	234	-29	0	0
07/07/04	229	-34	0	0
07/08/04	226	-37	0	0
07/09/04	223	-40	0	0
07/10/04	222	-41	0	0
07/11/04	221	-42	0	0
07/12/04	221	-42	0	0
07/13/04	219	-44	0	0
07/14/04	218	-45	0	0
07/15/04	217	-46	0	0
07/16/04	216	-47	0	0
07/17/04	214	-49	0	0
07/18/04	216	-47	0	0
07/19/04	222	-41	0	0
07/20/04	220	-43	0	0
07/21/04	210	-53	0	0
07/22/04	202	-61	0	0
07/23/04	200	-63	0	0
07/24/04	199	-64	0	0
07/25/04	199	-64	0	0
07/26/04	199	-64	0	0
07/27/04	198	-65	0	0
07/28/04	199	-64	0	0
07/29/04	199	-64	0	0
07/30/04	196	-67	0	0
07/31/04	195	-68	0	0
08/01/04	192	-71	0	0
08/02/04	190	-73	0	0
08/03/04	193	-70	0	0
08/04/04	192	-71	0	0
08/05/04	189	-74	0	0
08/06/04	186	-77	0	0
08/07/04	185	-78	0	0
08/08/04	184	-79	0	0
08/09/04	184	-79	0	0

08/10/04	184	-79	0	0
08/11/04	184	-79	0	0
08/12/04	182	-81	0	0
08/13/04	189	-74	0	0
08/14/04	196	-67	0	0
08/15/04	193	-70	0	0
08/16/04	193	-70	0	0
08/17/04	200	-63	0	0
08/18/04	217	-46	0	0
08/19/04	213	-50	0	0
08/20/04	212	-51	0	0
08/21/04	209	-54	0	0
08/22/04	206	-57	0	0
08/23/04	205	-58	0	0
08/24/04	204	-59	0	0
08/25/04	212	-51	0	0
08/26/04	216	-47	0	0
08/27/04	216	-47	0	0
08/28/04	210	-53	0	0
08/29/04	206	-57	0	0
08/30/04	204	-59	0	0
08/31/04	203	-60	0	0
09/01/04	202	-61	0	0
09/02/04	210	-53	0	0
09/03/04	212	-51	0	0
09/04/04	207	-56	0	0
09/05/04	204	-59	0	0
09/06/04	202	-61	0	0
09/07/04	200	-63	0	0
09/08/04	198	-65	0	0
09/09/04	194	-69	0	0
09/10/04	192	-71	0	0
09/11/04	192	-71	0	0
09/12/04	194	-69	0	0
09/13/04	205	-58	0	0
09/14/04	228	-35	0	0
09/15/04	242	-21	0	0
09/16/04	234	-29	0	0
09/17/04	228	-35	0	0
09/18/04	222	-41	0	0
09/19/04	226	-37	0	0
09/20/04	241	-22	0	0
09/21/04	250	-13	0	0
09/22/04	235	-28	0	0

09/23/04	266	3	1	3
09/24/04	263	0	1	0
09/25/04	255	-8	0	0
09/26/04	250	-13	0	0
09/27/04	247	-16	0	0
09/28/04	244	-19	0	0
09/29/04	241	-22	0	0
09/30/04	248	-15	0	0
10/01/04	262	-1	0	0
10/02/04	265	2	1	2
10/03/04	259	-4	0	0
10/04/04	257	-6	0	0
10/05/04	261	-2	0	0
10/06/04	255	-8	0	0
10/07/04	259	-4	0	0
10/08/04	256	-7	0	0
10/09/04	251	-12	0	0
10/10/04	253	-10	0	0
10/11/04	253	-10	0	0
10/12/04	252	-11	0	0
10/13/04	254	-9	0	0
10/14/04	254	-9	0	0
10/15/04	254	-9	0	0
10/16/04	254	-9	0	0
10/17/04	252	-11	0	0
10/18/04	255	-8	0	0
10/19/04	253	-10	0	0
10/20/04	254	-9	0	0
10/21/04	255	-8	0	0
10/22/04	253	-10	0	0
10/23/04	253	-10	0	0
10/24/04	255	-8	0	0
10/25/04	238	-25	0	0
10/26/04	252	-11	0	0
10/27/04	258	-5	0	0
10/28/04	264	1	1	1
10/29/04	277	14	1	14
10/30/04	270	7	1	7
10/31/04	266	3	1	3
11/01/04	253	-10	0	0
11/02/04	251	-12	0	0
11/03/04	260	-3	0	0
11/04/04	254	-9	0	0
11/05/04	255	-8	0	0

11/06/04	259	-4	0	0
11/07/04	257	-6	0	0
11/08/04	258	-5	0	0
11/09/04	262	-1	0	0
11/10/04	263	0	0	0
11/11/04	257	-6	0	0
11/12/04	248	-15	0	0
11/13/04	232	-31	0	0
11/14/04	218	-45	0	0
11/15/04	234	-29	0	0
11/16/04	259	-4	0	0
11/17/04	259	-4	0	0
11/18/04	210	-53	0	0
11/19/04	258	-5	0	0
11/20/04	215	-48	0	0
11/21/04	73	-190	0	0
11/22/04	255	-8	0	0
11/23/04	309	46	1	46
11/24/04	284	21	1	21
11/25/04	271	8	1	8
11/26/04	258	-5	0	0
11/27/04	127	-136	0	0
11/28/04	260	-3	0	0
11/29/04	57	-206	0	0
11/30/04	224	-39	0	0
12/01/04	277	14	1	14
12/02/04	275	12	1	12
12/03/04	272	9	1	9
12/04/04	267	4	1	4
12/05/04	239	-24	0	0
12/06/04	259	-4	0	0
12/07/04	259	-4	0	0
12/08/04	253	-10	0	0
12/09/04	254	-9	0	0
12/10/04	254	-9	0	0
12/11/04	257	-6	0	0
12/12/04	258	-5	0	0
12/13/04	154	-109	0	0
12/14/04	256	-7	0	0
12/15/04	254	-9	0	0
12/16/04	215	-48	0	0
12/17/04	248	-15	0	0
12/18/04	224	-39	0	0
12/19/04	250	-13	0	0

12/20/04	236	-27	0	0
12/21/04	178	-85	0	0
12/22/04	185	-78	0	0
12/23/04	80	-183	0	0
12/24/04	243	-20	0	0
12/25/04	259	-4	0	0
12/26/04	253	-10	0	0
12/27/04	245	-18	0	0
12/28/04	194	-69	0	0
12/29/04	240	-23	0	0
12/30/04	244	-19	0	0
12/31/04	183	-80	0	0
01/01/05	153	-110	0	0
01/02/05	206	-57	0	0
01/03/05	234	-29	0	0
01/04/05	215	-48	0	0
01/05/05	157	-106	0	0
01/06/05	175	-88	0	0
01/07/05	222	-41	0	0
01/08/05	235	-28	0	0
01/09/05	238	-25	0	0
01/10/05	224	-39	0	0
01/11/05	217	-46	0	0
01/12/05	212	-51	0	0
01/13/05	207	-56	0	0
01/14/05	210	-53	0	0
01/15/05	192	-71	0	0
01/16/05	212	-51	0	0
01/17/05	206	-57	0	0
01/18/05	212	-51	0	0
01/19/05	229	-34	0	0
01/20/05	235	-28	0	0
01/21/05	239	-24	0	0
01/22/05	228	-35	0	0
01/23/05	221	-42	0	0
01/24/05	216	-47	0	0
01/25/05	211	-52	0	0
01/26/05	208	-55	0	0
01/27/05	207	-56	0	0
01/28/05	211	-52	0	0
01/29/05	206	-57	0	0
01/30/05	205	-58	0	0
01/31/05	201	-62	0	0
02/01/05	202	-61	0	0

02/02/05	199	-64	0	0
02/03/05	198	-65	0	0
02/04/05	202	-61	0	0
02/05/05	207	-56	0	0
02/06/05	151	-112	0	0
02/07/05	180	-83	0	0
02/08/05	208	-55	0	0
02/09/05	176	-87	0	0
02/10/05	187	-76	0	0
02/11/05	181	-82	0	0
02/12/05	223	-40	0	0
02/13/05	213	-50	0	0
02/14/05	211	-52	0	0
02/15/05	186	-77	0	0
02/16/05	107	-156	0	0
02/17/05	204	-59	0	0
02/18/05	207	-56	0	0
02/19/05	214	-49	0	0
02/20/05	210	-53	0	0
02/21/05	205	-58	0	0
02/22/05	194	-69	0	0
02/23/05	164	-99	0	0
02/24/05	189	-74	0	0
02/25/05	194	-69	0	0
02/26/05	194	-69	0	0
02/27/05	190	-73	0	0
02/28/05	190	-73	0	0
03/01/05	195	-68	0	0
03/02/05	192	-71	0	0
03/03/05	192	-71	0	0
03/04/05	192	-71	0	0
03/05/05	194	-69	0	0
03/06/05	199	-64	0	0
03/07/05	202	-61	0	0
03/08/05	212	-51	0	0
03/09/05	220	-43	0	0
03/10/05	226	-37	0	0
03/11/05	227	-36	0	0
03/12/05	228	-35	0	0
03/13/05	214	-49	0	0
03/14/05	223	-40	0	0
03/15/05	215	-48	0	0
03/16/05	223	-40	0	0
03/17/05	223	-40	0	0

03/18/05	168	-95	0	0
03/19/05	218	-45	0	0
03/20/05	221	-42	0	0
03/21/05	221	-42	0	0
03/22/05	221	-42	0	0
03/23/05	217	-46	0	0
03/24/05	177	-86	0	0
03/25/05	133	-130	0	0
03/26/05	193	-70	0	0
03/27/05	223	-40	0	0
03/28/05	227	-36	0	0
03/29/05	227	-36	0	0
03/30/05	225	-38	0	0
03/31/05	224	-39	0	0
04/01/05	218	-45	0	0
04/02/05	227	-36	0	0
04/03/05	221	-42	0	0
04/04/05	234	-29	0	0
04/05/05	247	-16	0	0
04/06/05	261	-2	0	0
04/07/05	277	14	1	14
04/08/05	289	26	1	26
04/09/05	285	22	1	22
04/10/05	273	10	1	10
04/11/05	282	19	1	19
04/12/05	315	52	1	52
04/13/05	330	67	1	67
04/14/05	345	82	1	82
04/15/05	327	64	1	64
04/16/05	330	67	1	67
04/17/05	341	78	1	78
04/18/05	362	99	1	99
04/19/05	348	85	1	85
04/20/05	334	71	1	71
04/21/05	324	61	1	61
04/22/05	322	59	1	59
04/23/05	340	77	1	77
04/24/05	364	101	1	101
04/25/05	389	126	1	126
04/26/05	385	122	1	122
04/27/05	373	110	1	110
04/28/05	357	94	1	94
04/29/05	332	69	1	69
04/30/05	377	114	1	114

05/01/05	315	52	1	52
05/02/05	374	111	1	111
05/03/05	375	112	1	112
05/04/05	385	122	1	122
05/05/05	403	140	1	140
05/06/05	426	163	1	163
05/07/05	442	179	1	179
05/08/05	460	197	1	197
05/09/05	463	200	1	200
05/10/05	472	209	1	209
05/11/05	473	210	1	210
05/12/05	452	189	1	189
05/13/05	438	175	1	175
05/14/05	437	174	1	174
05/15/05	442	179	1	179
05/16/05	457	194	1	194
05/17/05	469	206	1	206
05/18/05	456	193	1	193
05/19/05	461	198	1	198
05/20/05	476	213	1	213
05/21/05	500	237	1	237
05/22/05	488	225	1	225
05/23/05	491	228	1	228
05/24/05	482	219	1	219
05/25/05	467	204	1	204
05/26/05	455	192	1	192
05/27/05	447	184	1	184
05/28/05	442	179	1	179
05/29/05	439	176	1	176
05/30/05	433	170	1	170
05/31/05	428	165	1	165
06/01/05	444	181	1	181
06/02/05	458	195	1	195
06/03/05	497	234	1	234
06/04/05	523	260	1	260
06/05/05	511	248	1	248
06/06/05	520	257	1	257
06/07/05	530	267	1	267
06/08/05	537	274	1	274
06/09/05	538	275	1	275
06/10/05	529	266	1	266
06/11/05	523	260	1	260
06/12/05	538	275	1	275
06/13/05	553	290	1	290

06/14/05	538	275	1	275
06/15/05	529	266	1	266
06/16/05	522	259	1	259
06/17/05	515	252	1	252
06/18/05	506	243	1	243
06/19/05	493	230	1	230
06/20/05	505	242	1	242
06/21/05	514	251	1	251
06/22/05	508	245	1	245
06/23/05	504	241	1	241
06/24/05	496	233	1	233
06/25/05	485	222	1	222
06/26/05	483	220	1	220
06/27/05	417	154	1	154
06/28/05	353	90	1	90
06/29/05	349	86	1	86
06/30/05	344	81	1	81
07/01/05	339	76	1	76
07/02/05	335	72	1	72
07/03/05	332	69	1	69
07/04/05	328	65	1	65
07/05/05	325	62	1	62
07/06/05	321	58	1	58
07/07/05	320	57	1	57
07/08/05	318	55	1	55
07/09/05	313	50	1	50
07/10/05	314	51	1	51
07/11/05	282	19	1	19
07/12/05	259	-4	0	0
07/13/05	257	-6	0	0
07/14/05	253	-10	0	0
07/15/05	252	-11	0	0
07/16/05	253	-10	0	0
07/17/05	251	-12	0	0
07/18/05	258	-5	0	0
07/19/05	262	-1	0	0
07/20/05	265	2	1	2
07/21/05	260	-3	0	0
07/22/05	262	-1	0	0
07/23/05	276	13	1	13
07/24/05	269	6	1	6
07/25/05	280	17	1	17
07/26/05	284	21	1	21
07/27/05	278	15	1	15

07/28/05	274	11	1	11
07/29/05	274	11	1	11
07/30/05	272	9	1	9
07/31/05	272	9	1	9
08/01/05	273	10	1	10
08/02/05	274	11	1	11
08/03/05	282	19	1	19
08/04/05	274	11	1	11
08/05/05	269	6	1	6
08/06/05	267	4	1	4
08/07/05	264	1	1	1
08/08/05	265	2	1	2
08/09/05	175	-88	0	0
08/10/05	0	-263	0	0
08/11/05	0	-263	0	0
08/12/05	145	-118	0	0
08/13/05	267	4	1	4
08/14/05	264	1	1	1
08/15/05	261	-2	0	0
08/16/05	258	-5	0	0
08/17/05	260	-3	0	0
08/18/05	262	-1	0	0
08/19/05	258	-5	0	0
08/20/05	257	-6	0	0
08/21/05	255	-8	0	0
08/22/05	254	-9	0	0
08/23/05	252	-11	0	0
08/24/05	254	-9	0	0
08/25/05	253	-10	0	0
08/26/05	250	-13	0	0
08/27/05	249	-14	0	0
08/28/05	248	-15	0	0
08/29/05	247	-16	0	0
08/30/05	258	-5	0	0
08/31/05	259	-4	0	0
09/01/05	317	54	1	54
09/02/05	348	85	1	85
09/03/05	253	-10	0	0
09/04/05	263	0	0	0
09/05/05	273	10	1	10
09/06/05	271	8	1	8
09/07/05	269	6	1	6
09/08/05	265	2	1	2
09/09/05	263	0	1	0

09/10/05	263	0	1	0
09/11/05	281	18	1	18
09/12/05	269	6	1	6
09/13/05	267	4	1	4
09/14/05	266	3	1	3
09/15/05	263	0	1	0
09/16/05	262	-1	0	0
09/17/05	265	2	1	2
09/18/05	272	9	1	9
09/19/05	266	3	1	3
09/20/05	261	-2	0	0
09/21/05	259	-4	0	0
09/22/05	260	-3	0	0
09/23/05	267	4	1	4
09/24/05	292	29	1	29
09/25/05	274	11	1	11
09/26/05	265	2	1	2
09/27/05	260	-3	0	0
09/28/05	257	-6	0	0
09/29/05	254	-9	0	0
09/30/05	250	-13	0	0
10/01/05	245	-18	0	0
10/02/05	251	-12	0	0
10/03/05	260	-3	0	0
10/04/05	263	0	0	0
10/05/05	296	33	1	33
10/06/05	303	40	1	40
10/07/05	270	7	1	7
10/08/05	274	11	1	11
10/09/05	276	13	1	13
10/10/05	267	4	1	4
10/11/05	257	-6	0	0
10/12/05	264	1	1	1
10/13/05	263	0	0	0
10/14/05	264	1	1	1
10/15/05	264	1	1	1
10/16/05	257	-6	0	0
10/17/05	252	-11	0	0
10/18/05	250	-13	0	0
10/19/05	259	-4	0	0
10/20/05	264	1	1	1
10/21/05	264	1	1	1
10/22/05	267	4	1	4
10/23/05	266	3	1	3

10/24/05	265	2	1	2
10/25/05	264	1	1	1
10/26/05	263	0	0	0
10/27/05	263	0	1	0
10/28/05	269	6	1	6
10/29/05	266	3	1	3
10/30/05	276	13	1	13
10/31/05	264	1	1	1
11/01/05	265	2	1	2
11/02/05	278	15	1	15
11/03/05	280	17	1	17
11/04/05	254	-9	0	0
11/05/05	262	-1	0	0
11/06/05	263	0	0	0
11/07/05	264	1	1	1
11/08/05	265	2	1	2
11/09/05	240	-23	0	0
11/10/05	267	4	1	4
11/11/05	273	10	1	10
11/12/05	267	4	1	4
11/13/05	274	11	1	11
11/14/05	266	3	1	3
11/15/05	179	-84	0	0
11/16/05	272	9	1	9
11/17/05	271	8	1	8
11/18/05	254	-9	0	0
11/19/05	268	5	1	5
11/20/05	259	-4	0	0
11/21/05	267	4	1	4
11/22/05	256	-7	0	0
11/23/05	255	-8	0	0
11/24/05	247	-16	0	0
11/25/05	250	-13	0	0
11/26/05	268	5	1	5
11/27/05	268	5	1	5
11/28/05	268	5	1	5
11/29/05	216	-47	0	0
11/30/05	271	8	1	8
12/01/05	268	5	1	5
12/02/05	268	5	1	5
12/03/05	267	4	1	4
12/04/05	270	7	1	7
12/05/05	269	6	1	6
12/06/05	246	-17	0	0

12/07/05	225	-38	0	0
12/08/05	276	13	1	13
12/09/05	282	19	1	19
12/10/05	275	12	1	12
12/11/05	269	6	1	6
12/12/05	267	4	1	4
12/13/05	268	5	1	5
12/14/05	271	8	1	8
12/15/05	245	-18	0	0
12/16/05	270	7	1	7
12/17/05	235	-28	0	0
12/18/05	241	-22	0	0
12/19/05	272	9	1	9
12/20/05	275	12	1	12
12/21/05	270	7	1	7
12/22/05	273	10	1	10
12/23/05	272	9	1	9
12/24/05	267	4	1	4
12/25/05	266	3	1	3
12/26/05	266	3	1	3
12/27/05	266	3	1	3
12/28/05	266	3	1	3
12/29/05	270	7	1	7
12/30/05	266	3	1	3
12/31/05	268	5	1	5
01/01/06	266	3	1	3
01/02/06	266	3	1	3
01/03/06	267	4	1	4
01/04/06	266	3	1	3
01/05/06	214	-49	0	0
01/06/06	268	5	1	5
01/07/06	266	3	1	3
01/08/06	266	3	1	3
01/09/06	151	-112	0	0
01/10/06	275	12	1	12
01/11/06	269	6	1	6
01/12/06	252	-11	0	0
01/13/06	193	-70	0	0
01/14/06	269	6	1	6
01/15/06	267	4	1	4
01/16/06	187	-76	0	0
01/17/06	259	-4	0	0
01/18/06	270	7	1	7
01/19/06	241	-22	0	0

01/20/06	239	-24	0	0
01/21/06	258	-5	0	0
01/22/06	109	-154	0	0
01/23/06	275	12	1	12
01/24/06	258	-5	0	0
01/25/06	219	-44	0	0
01/26/06	268	5	1	5
01/27/06	269	6	1	6
01/28/06	220	-43	0	0
01/29/06	267	4	1	4
01/30/06	262	-1	0	0
01/31/06	264	1	1	1
02/01/06	262	-1	0	0
02/02/06	260	-3	0	0
02/03/06	192	-71	0	0
02/04/06	223	-40	0	0
02/05/06	262	-1	0	0
02/06/06	141	-122	0	0
02/07/06	244	-19	0	0
02/08/06	253	-10	0	0
02/09/06	256	-7	0	0
02/10/06	157	-106	0	0
02/11/06	103	-160	0	0
02/12/06	252	-11	0	0
02/13/06	267	4	1	4
02/14/06	266	3	1	3
02/15/06	244	-19	0	0
02/16/06	185	-78	0	0
02/17/06	198	-65	0	0
02/18/06	186	-77	0	0
02/19/06	214	-49	0	0
02/20/06	237	-26	0	0
02/21/06	253	-10	0	0
02/22/06	249	-14	0	0
02/23/06	240	-23	0	0
02/24/06	235	-28	0	0
02/25/06	227	-36	0	0
02/26/06	227	-36	0	0
02/27/06	242	-21	0	0
02/28/06	259	-4	0	0
03/01/06	252	-11	0	0
03/02/06	229	-34	0	0
03/03/06	242	-21	0	0
03/04/06	248	-15	0	0

03/05/06	241	-22	0	0
03/06/06	243	-20	0	0
03/07/06	246	-17	0	0
03/08/06	248	-15	0	0
03/09/06	250	-13	0	0
03/10/06	201	-62	0	0
03/11/06	137	-126	0	0
03/12/06	269	6	1	6
03/13/06	203	-60	0	0
03/14/06	247	-16	0	0
03/15/06	257	-6	0	0
03/16/06	234	-29	0	0
03/17/06	245	-18	0	0
03/18/06	241	-22	0	0
03/19/06	238	-25	0	0
03/20/06	234	-29	0	0
03/21/06	202	-61	0	0
03/22/06	233	-30	0	0
03/23/06	231	-32	0	0
03/24/06	243	-20	0	0
03/25/06	260	-3	0	0
03/26/06	263	0	1	0
03/27/06	245	-18	0	0
03/28/06	261	-2	0	0
03/29/06	265	2	1	2
03/30/06	271	8	1	8
03/31/06	271	8	1	8
04/01/06	272	9	1	9
04/02/06	260	-3	0	0
04/03/06	274	11	1	11
04/04/06	280	17	1	17
04/05/06	288	25	1	25
04/06/06	315	52	1	52
04/07/06	311	48	1	48
04/08/06	313	50	1	50
04/09/06	315	52	1	52
04/10/06	314	51	1	51
04/11/06	303	40	1	40
04/12/06	299	36	1	36
04/13/06	320	57	1	57
04/14/06	335	72	1	72
04/15/06	341	78	1	78
04/16/06	350	87	1	87
04/17/06	348	85	1	85

04/18/06	327	64	1	64
04/19/06	313	50	1	50
04/20/06	308	45	1	45
04/21/06	312	49	1	49
04/22/06	327	64	1	64
04/23/06	342	79	1	79
04/24/06	329	66	1	66
04/25/06	318	55	1	55
04/26/06	314	51	1	51
04/27/06	316	53	1	53
04/28/06	317	54	1	54
04/29/06	326	63	1	63
04/30/06	353	90	1	90
05/01/06	357	94	1	94
05/02/06	355	92	1	92
05/03/06	343	80	1	80
05/04/06	333	70	1	70
05/05/06	329	66	1	66
05/06/06	330	67	1	67
05/07/06	333	70	1	70
05/08/06	341	78	1	78
05/09/06	335	72	1	72
05/10/06	326	63	1	63
05/11/06	323	60	1	60
05/12/06	325	62	1	62
05/13/06	330	67	1	67
05/14/06	335	72	1	72
05/15/06	368	105	1	105
05/16/06	407	144	1	144
05/17/06	429	166	1	166
05/18/06	459	196	1	196
05/19/06	477	214	1	214
05/20/06	485	222	1	222
05/21/06	491	228	1	228
05/22/06	482	219	1	219
05/23/06	475	212	1	212
05/24/06	467	204	1	204
05/25/06	395	132	1	132
05/26/06	314	51	1	51
05/27/06	321	58	1	58
05/28/06	316	53	1	53
05/29/06	312	49	1	49
05/30/06	305	42	1	42
05/31/06	299	36	1	36

06/01/06	293	30	1	30
06/02/06	315	52	1	52
06/03/06	336	73	1	73
06/04/06	335	72	1	72
06/05/06	332	69	1	69
06/06/06	327	64	1	64
06/07/06	324	61	1	61
06/08/06	325	62	1	62
06/09/06	330	67	1	67
06/10/06	344	81	1	81
06/11/06	336	73	1	73
06/12/06	328	65	1	65
06/13/06	321	58	1	58
06/14/06	318	55	1	55
06/15/06	320	57	1	57
06/16/06	311	48	1	48
06/17/06	305	42	1	42
06/18/06	289	26	1	26
06/19/06	300	37	1	37
06/20/06	286	23	1	23
06/21/06	257	-6	0	0
06/22/06	252	-11	0	0
06/23/06	253	-10	0	0
06/24/06	254	-9	0	0
06/25/06	250	-13	0	0
06/26/06	256	-7	0	0
06/27/06	257	-6	0	0
06/28/06	252	-11	0	0
06/29/06	245	-18	0	0
06/30/06	269	6	1	6
07/01/06	251	-12	0	0
07/02/06	236	-27	0	0
07/03/06	245	-18	0	0
07/04/06	244	-19	0	0
07/05/06	248	-15	0	0
07/06/06	255	-8	0	0
07/07/06	261	-2	0	0
07/08/06	249	-14	0	0
07/09/06	244	-19	0	0
07/10/06	241	-22	0	0
07/11/06	235	-28	0	0
07/12/06	259	-4	0	0
07/13/06	291	28	1	28
07/14/06	273	10	1	10

07/15/06	265	2	1	2
07/16/06	263	0	0	0
07/17/06	262	-1	0	0
07/18/06	261	-2	0	0
07/19/06	264	1	1	1
07/20/06	225	-38	0	0
07/21/06	182	-81	0	0
07/22/06	182	-81	0	0
07/23/06	188	-75	0	0
07/24/06	197	-66	0	0
07/25/06	201	-62	0	0
07/26/06	202	-61	0	0
07/27/06	203	-60	0	0
07/28/06	204	-59	0	0
07/29/06	203	-60	0	0
07/30/06	201	-62	0	0
07/31/06	200	-63	0	0
08/01/06	203	-60	0	0
08/02/06	202	-61	0	0
08/03/06	199	-64	0	0
08/04/06	197	-66	0	0
08/05/06	196	-67	0	0
08/06/06	194	-69	0	0
08/07/06	194	-69	0	0
08/08/06	197	-66	0	0
08/09/06	197	-66	0	0
08/10/06	199	-64	0	0
08/11/06	191	-72	0	0
08/12/06	191	-72	0	0
08/13/06	192	-71	0	0
08/14/06	190	-73	0	0
08/15/06	190	-73	0	0
08/16/06	193	-70	0	0
08/17/06	193	-70	0	0
08/18/06	192	-71	0	0
08/19/06	188	-75	0	0
08/20/06	185	-78	0	0
08/21/06	200	-63	0	0
08/22/06	209	-54	0	0
08/23/06	209	-54	0	0
08/24/06	209	-54	0	0
08/25/06	209	-54	0	0
08/26/06	208	-55	0	0
08/27/06	207	-56	0	0

08/28/06	206	-57	0	0
08/29/06	204	-59	0	0
08/30/06	202	-61	0	0
08/31/06	201	-62	0	0
09/01/06	200	-63	0	0
09/02/06	200	-63	0	0
09/03/06	200	-63	0	0
09/04/06	199	-64	0	0
09/05/06	196	-67	0	0
09/06/06	195	-68	0	0
09/07/06	195	-68	0	0
09/08/06	197	-66	0	0
09/09/06	195	-68	0	0
09/10/06	193	-70	0	0
09/11/06	190	-73	0	0
09/12/06	181	-82	0	0
09/13/06	225	-38	0	0
09/14/06	248	-15	0	0
09/15/06	257	-6	0	0
09/16/06	271	8	1	8
09/17/06	266	3	1	3
09/18/06	260	-3	0	0
09/19/06	255	-8	0	0
09/20/06	254	-9	0	0
09/21/06	261	-2	0	0
09/22/06	271	8	1	8
09/23/06	268	5	1	5
09/24/06	259	-4	0	0
09/25/06	257	-6	0	0
09/26/06	262	-1	0	0
09/27/06	259	-4	0	0
09/28/06	258	-5	0	0
09/29/06	262	-1	0	0
09/30/06	259	-4	0	0
10/01/06	258	-5	0	0
10/02/06	268	5	1	5
10/03/06	282	19	1	19
10/04/06	270	7	1	7
10/05/06	261	-2	0	0
10/06/06	242	-21	0	0
10/07/06	255	-8	0	0
10/08/06	244	-19	0	0
10/09/06	273	10	1	10
10/10/06	270	7	1	7

10/11/06	264	1	1	1
10/12/06	261	-2	0	0
10/13/06	249	-14	0	0
10/14/06	238	-25	0	0
10/15/06	253	-10	0	0
10/16/06	297	34	1	34
10/17/06	315	52	1	52
10/18/06	275	12	1	12
10/19/06	277	14	1	14
10/20/06	291	28	1	28
10/21/06	286	23	1	23
10/22/06	283	20	1	20
10/23/06	282	19	1	19
10/24/06	283	20	1	20
10/25/06	283	20	1	20
10/26/06	280	17	1	17
10/27/06	279	16	1	16
10/28/06	279	16	1	16
10/29/06	284	21	1	21
10/30/06	264	1	1	1
10/31/06	203	-60	0	0
11/01/06	257	-6	0	0
11/02/06	271	8	1	8
11/03/06	277	14	1	14
11/04/06	277	14	1	14
11/05/06	274	11	1	11
11/06/06	276	13	1	13
11/07/06	297	34	1	34
11/08/06	318	55	1	55
11/09/06	308	45	1	45
11/10/06	297	34	1	34
11/11/06	293	30	1	30
11/12/06	285	22	1	22
11/13/06	287	24	1	24
11/14/06	285	22	1	22
11/15/06	199	-64	0	0
11/16/06	284	21	1	21
11/17/06	283	20	1	20
11/18/06	279	16	1	16
11/19/06	182	-81	0	0
11/20/06	281	18	1	18
11/21/06	281	18	1	18
11/22/06	281	18	1	18
11/23/06	275	12	1	12

11/24/06	271	8	1	8
11/25/06	275	12	1	12
11/26/06	271	8	1	8
11/27/06	271	8	1	8
11/28/06	174	-89	0	0
11/29/06	239	-24	0	0
11/30/06	286	23	1	23
12/01/06	285	22	1	22
12/02/06	278	15	1	15
12/03/06	272	9	1	9
12/04/06	283	20	1	20
12/05/06	280	17	1	17
12/06/06	277	14	1	14
12/07/06	276	13	1	13
12/08/06	274	11	1	11
12/09/06	274	11	1	11
12/10/06	272	9	1	9
12/11/06	271	8	1	8
12/12/06	270	7	1	7
12/13/06	270	7	1	7
12/14/06	270	7	1	7
12/15/06	272	9	1	9
12/16/06	228	-35	0	0
12/17/06	83	-180	0	0
12/18/06	255	-8	0	0
12/19/06	282	19	1	19
12/20/06	278	15	1	15
12/21/06	284	21	1	21
12/22/06	281	18	1	18
12/23/06	272	9	1	9
12/24/06	272	9	1	9
12/25/06	268	5	1	5
12/26/06	268	5	1	5
12/27/06	268	5	1	5
12/28/06	268	5	1	5
12/29/06	234	-29	0	0
12/30/06	224	-39	0	0
12/31/06	273	10	1	10
01/01/07	274	11	1	11
01/02/07	281	18	1	18
01/03/07	270	7	1	7
01/04/07	269	6	1	6
01/05/07	257	-6	0	0
01/06/07	259	-4	0	0

01/07/07	228	-35	0	0
01/08/07	273	10	1	10
01/09/07	267	4	1	4
01/10/07	266	3	1	3
01/11/07	171	-92	0	0
01/12/07	208	-55	0	0
01/13/07	287	24	1	24
01/14/07	306	43	1	43
01/15/07	289	26	1	26
01/16/07	288	25	1	25
01/17/07	288	25	1	25
01/18/07	287	24	1	24
01/19/07	286	23	1	23
01/20/07	288	25	1	25
01/21/07	286	23	1	23
01/22/07	279	16	1	16
01/23/07	279	16	1	16
01/24/07	275	12	1	12
01/25/07	270	7	1	7
01/26/07	265	2	1	2
01/27/07	239	-24	0	0
01/28/07	237	-26	0	0
01/29/07	269	6	1	6
01/30/07	259	-4	0	0
01/31/07	291	28	1	28
02/01/07	269	6	1	6
02/02/07	239	-24	0	0
02/03/07	293	30	1	30
02/04/07	276	13	1	13
02/05/07	286	23	1	23
02/06/07	291	28	1	28
02/07/07	265	2	1	2
02/08/07	215	-48	0	0
02/09/07	214	-49	0	0
02/10/07	229	-34	0	0
02/11/07	251	-12	0	0
02/12/07	244	-19	0	0
02/13/07	241	-22	0	0
02/14/07	257	-6	0	0
02/15/07	251	-12	0	0
02/16/07	258	-5	0	0
02/17/07	253	-10	0	0
02/18/07	257	-6	0	0
02/19/07	270	7	1	7

02/20/07	270	7	1	7
02/21/07	271	8	1	8
02/22/07	271	8	1	8
02/23/07	268	5	1	5
02/24/07	268	5	1	5
02/25/07	271	8	1	8
02/26/07	263	0	1	0
02/27/07	183	-80	0	0
02/28/07	251	-12	0	0
03/01/07	278	15	1	15
03/02/07	252	-11	0	0
03/03/07	210	-53	0	0
03/04/07	288	25	1	25
03/05/07	273	10	1	10
03/06/07	272	9	1	9
03/07/07	274	11	1	11
03/08/07	278	15	1	15
03/09/07	278	15	1	15
03/10/07	279	16	1	16
03/11/07	283	20	1	20
03/12/07	290	27	1	27
03/13/07	301	38	1	38
03/14/07	302	39	1	39
03/15/07	301	38	1	38
03/16/07	300	37	1	37
03/17/07	303	40	1	40
03/18/07	313	50	1	50
03/19/07	294	31	1	31
03/20/07	264	1	1	1
03/21/07	268	5	1	5
03/22/07	261	-2	0	0
03/23/07	259	-4	0	0
03/24/07	260	-3	0	0
03/25/07	266	3	1	3
03/26/07	284	21	1	21
03/27/07	285	22	1	22
03/28/07	283	20	1	20
03/29/07	204	-59	0	0
03/30/07	239	-24	0	0
03/31/07	238	-25	0	0
04/01/07	239	-24	0	0
04/02/07	238	-25	0	0
04/03/07	235	-28	0	0
04/04/07	234	-29	0	0

04/05/07	234	-29	0	0
04/06/07	234	-29	0	0
04/07/07	233	-30	0	0
04/08/07	234	-29	0	0
04/09/07	241	-22	0	0
04/10/07	244	-19	0	0
04/11/07	241	-22	0	0
04/12/07	250	-13	0	0
04/13/07	288	25	1	25
04/14/07	294	31	1	31
04/15/07	300	37	1	37
04/16/07	307	44	1	44
04/17/07	313	50	1	50
04/18/07	320	57	1	57
04/19/07	320	57	1	57
04/20/07	314	51	1	51
04/21/07	306	43	1	43
04/22/07	303	40	1	40
04/23/07	309	46	1	46
04/24/07	300	37	1	37
04/25/07	282	19	1	19
04/26/07	308	45	1	45
04/27/07	306	43	1	43
04/28/07	308	45	1	45
04/29/07	320	57	1	57
04/30/07	320	57	1	57
05/01/07	318	55	1	55
05/02/07	318	55	1	55
05/03/07	313	50	1	50
05/04/07	296	33	1	33
05/05/07	285	22	1	22
05/06/07	276	13	1	13
05/07/07	267	4	1	4
05/08/07	261	-2	0	0
05/09/07	263	0	1	0
05/10/07	265	2	1	2
05/11/07	276	13	1	13
05/12/07	280	17	1	17
05/13/07	279	16	1	16
05/14/07	278	15	1	15
05/15/07	269	6	1	6
05/16/07	262	-1	0	0
05/17/07	257	-6	0	0
05/18/07	268	5	1	5

05/19/07	284	21	1	21
05/20/07	284	21	1	21
05/21/07	284	21	1	21
05/22/07	280	17	1	17
05/23/07	261	-2	0	0
05/24/07	246	-17	0	0
05/25/07	258	-5	0	0
05/26/07	261	-2	0	0
05/27/07	282	19	1	19
05/28/07	297	34	1	34
05/29/07	297	34	1	34
05/30/07	285	22	1	22
05/31/07	270	7	1	7
06/01/07	264	1	1	1
06/02/07	264	1	1	1
06/03/07	263	0	0	0
06/04/07	259	-4	0	0
06/05/07	255	-8	0	0
06/06/07	261	-2	0	0
06/07/07	273	10	1	10
06/08/07	277	14	1	14
06/09/07	277	14	1	14
06/10/07	280	17	1	17
06/11/07	275	12	1	12
06/12/07	272	9	1	9
06/13/07	269	6	1	6
06/14/07	268	5	1	5
06/15/07	264	1	1	1
06/16/07	262	-1	0	0
06/17/07	260	-3	0	0
06/18/07	256	-7	0	0
06/19/07	272	9	1	9
06/20/07	277	14	1	14
06/21/07	276	13	1	13
06/22/07	268	5	1	5
06/23/07	256	-7	0	0
06/24/07	252	-11	0	0
06/25/07	266	3	1	3
06/26/07	275	12	1	12
06/27/07	271	8	1	8
06/28/07	268	5	1	5
06/29/07	284	21	1	21
06/30/07	280	17	1	17
07/01/07	277	14	1	14

07/02/07	273	10	1	10
07/03/07	265	2	1	2
07/04/07	259	-4	0	0
07/05/07	271	8	1	8
07/06/07	281	18	1	18
07/07/07	282	19	1	19
07/08/07	280	17	1	17
07/09/07	275	12	1	12
07/10/07	272	9	1	9
07/11/07	269	6	1	6
07/12/07	267	4	1	4
07/13/07	267	4	1	4
07/14/07	266	3	1	3
07/15/07	266	3	1	3
07/16/07	268	5	1	5
07/17/07	271	8	1	8
07/18/07	270	7	1	7
07/19/07	268	5	1	5
07/20/07	264	1	1	1
07/21/07	262	-1	0	0
07/22/07	260	-3	0	0
07/23/07	262	-1	0	0
07/24/07	267	4	1	4
07/25/07	271	8	1	8
07/26/07	270	7	1	7
07/27/07	270	7	1	7
07/28/07	267	4	1	4
07/29/07	265	2	1	2
07/30/07	264	1	1	1
07/31/07	263	0	0	0
08/01/07	262	-1	0	0
08/02/07	264	1	1	1
08/03/07	264	1	1	1
08/04/07	266	3	1	3
08/05/07	268	5	1	5
08/06/07	277	14	1	14
08/07/07	269	6	1	6
08/08/07	268	5	1	5
08/09/07	267	4	1	4
08/10/07	266	3	1	3
08/11/07	265	2	1	2
08/12/07	262	-1	0	0
08/13/07	260	-3	0	0
08/14/07	260	-3	0	0

08/15/07	259	-4	0	0
08/16/07	259	-4	0	0
08/17/07	260	-3	0	0
08/18/07	266	3	1	3
08/19/07	266	3	1	3
08/20/07	259	-4	0	0
08/21/07	259	-4	0	0
08/22/07	256	-7	0	0
08/23/07	258	-5	0	0
08/24/07	260	-3	0	0
08/25/07	254	-9	0	0
08/26/07	251	-12	0	0
08/27/07	253	-10	0	0
08/28/07	254	-9	0	0
08/29/07	253	-10	0	0
08/30/07	252	-11	0	0
08/31/07	255	-8	0	0
09/01/07	257	-6	0	0
09/02/07	254	-9	0	0
09/03/07	253	-10	0	0
09/04/07	253	-10	0	0
09/05/07	255	-8	0	0
09/06/07	259	-4	0	0
09/07/07	265	2	1	2
09/08/07	274	11	1	11
09/09/07	274	11	1	11
09/10/07	274	11	1	11
09/11/07	274	11	1	11
09/12/07	271	8	1	8
09/13/07	270	7	1	7
09/14/07	267	4	1	4
09/15/07	266	3	1	3
09/16/07	268	5	1	5
09/17/07	268	5	1	5
09/18/07	271	8	1	8
09/19/07	265	2	1	2
09/20/07	265	2	1	2
09/21/07	274	11	1	11
09/22/07	267	4	1	4
09/23/07	268	5	1	5
09/24/07	271	8	1	8
09/25/07	267	4	1	4
09/26/07	262	-1	0	0
09/27/07	260	-3	0	0

09/28/07	259	-4	0	0
09/29/07	268	5	1	5
09/30/07	267	4	1	4
10/01/07	262	-1	0	0
10/02/07	264	1	1	1
10/03/07	262	-1	0	0
10/04/07	258	-5	0	0
10/05/07	262	-1	0	0
10/06/07	267	4	1	4
10/07/07	262	-1	0	0
10/08/07	264	1	1	1
10/09/07	261	-2	0	0
10/10/07	262	-1	0	0
10/11/07	257	-6	0	0
10/12/07	251	-12	0	0
10/13/07	248	-15	0	0
10/14/07	247	-16	0	0
10/15/07	242	-21	0	0
10/16/07	243	-20	0	0
10/17/07	249	-14	0	0
10/18/07	250	-13	0	0
10/19/07	251	-12	0	0
10/20/07	258	-5	0	0
10/21/07	245	-18	0	0
10/22/07	239	-24	0	0
10/23/07	238	-25	0	0
10/24/07	238	-25	0	0
10/25/07	237	-26	0	0
10/26/07	247	-16	0	0
10/27/07	254	-9	0	0
10/28/07	253	-10	0	0
10/29/07	253	-10	0	0
10/30/07	260	-3	0	0
10/31/07	258	-5	0	0
11/01/07	258	-5	0	0
11/02/07	253	-10	0	0
11/03/07	255	-8	0	0
11/04/07	255	-8	0	0
11/05/07	255	-8	0	0
11/06/07	254	-9	0	0
11/07/07	254	-9	0	0
11/08/07	254	-9	0	0
11/09/07	254	-9	0	0
11/10/07	253	-10	0	0

11/11/07	253	-10	0	0
11/12/07	254	-9	0	0
11/13/07	234	-29	0	0
11/14/07	182	-81	0	0
11/15/07	238	-25	0	0
11/16/07	267	4	1	4
11/17/07	267	4	1	4
11/18/07	269	6	1	6
11/19/07	272	9	1	9
11/20/07	268	5	1	5
11/21/07	248	-15	0	0
11/22/07	164	-99	0	0
11/23/07	258	-5	0	0
11/24/07	272	9	1	9
11/25/07	269	6	1	6
11/26/07	264	1	1	1
11/27/07	267	4	1	4
11/28/07	264	1	1	1
11/29/07	262	-1	0	0
11/30/07	238	-25	0	0
12/01/07	255	-8	0	0
12/02/07	259	-4	0	0
12/03/07	264	1	1	1
12/04/07	265	2	1	2
12/05/07	263	0	0	0
12/06/07	261	-2	0	0
12/07/07	258	-5	0	0
12/08/07	247	-16	0	0
12/09/07	190	-73	0	0
12/10/07	262	-1	0	0
12/11/07	249	-14	0	0
12/12/07	268	5	1	5
12/13/07	261	-2	0	0
12/14/07	257	-6	0	0
12/15/07	252	-11	0	0
12/16/07	256	-7	0	0
12/17/07	255	-8	0	0
12/18/07	257	-6	0	0
12/19/07	256	-7	0	0
12/20/07	254	-9	0	0
12/21/07	253	-10	0	0
12/22/07	203	-60	0	0
12/23/07	262	-1	0	0
12/24/07	256	-7	0	0

12/25/07	256	-7	0	0
12/26/07	252	-11	0	0
12/27/07	253	-10	0	0
12/28/07	236	-27	0	0
12/29/07	257	-6	0	0
12/30/07	252	-11	0	0
12/31/07	252	-11	0	0
01/01/08	194	-69	0	0
01/02/08	263	0	1	0
01/03/08	267	4	1	4
01/04/08	258	-5	0	0
01/05/08	254	-9	0	0
01/06/08	252	-11	0	0
01/07/08	217	-46	0	0
01/08/08	244	-19	0	0
01/09/08	261	-2	0	0
01/10/08	252	-11	0	0
01/11/08	251	-12	0	0
01/12/08	251	-12	0	0
01/13/08	250	-13	0	0
01/14/08	238	-25	0	0
01/15/08	251	-12	0	0
01/16/08	235	-28	0	0
01/17/08	264	1	1	1
01/18/08	262	-1	0	0
01/19/08	257	-6	0	0
01/20/08	239	-24	0	0
01/21/08	191	-72	0	0
01/22/08	259	-4	0	0
01/23/08	261	-2	0	0
01/24/08	258	-5	0	0
01/25/08	257	-6	0	0
01/26/08	254	-9	0	0
01/27/08	252	-11	0	0
01/28/08	237	-26	0	0
01/29/08	239	-24	0	0
01/30/08	253	-10	0	0
01/31/08	249	-14	0	0
02/01/08	249	-14	0	0
02/02/08	239	-24	0	0
02/03/08	252	-11	0	0
02/04/08	248	-15	0	0
02/05/08	247	-16	0	0
02/06/08	248	-15	0	0

02/07/08	248	-15	0	0
02/08/08	247	-16	0	0
02/09/08	246	-17	0	0
02/10/08	246	-17	0	0
02/11/08	246	-17	0	0
02/12/08	246	-17	0	0
02/13/08	247	-16	0	0
02/14/08	241	-22	0	0
02/15/08	244	-19	0	0
02/16/08	246	-17	0	0
02/17/08	246	-17	0	0
02/18/08	201	-62	0	0
02/19/08	241	-22	0	0
02/20/08	235	-28	0	0
02/21/08	245	-18	0	0
02/22/08	251	-12	0	0
02/23/08	252	-11	0	0
02/24/08	248	-15	0	0
02/25/08	248	-15	0	0
02/26/08	245	-18	0	0
02/27/08	247	-16	0	0
02/28/08	247	-16	0	0
02/29/08	246	-17	0	0
03/01/08	247	-16	0	0
03/02/08	247	-16	0	0
03/03/08	192	-71	0	0
03/04/08	249	-14	0	0
03/05/08	219	-44	0	0
03/06/08	247	-16	0	0
03/07/08	233	-30	0	0
03/08/08	247	-16	0	0
03/09/08	246	-17	0	0
03/10/08	233	-30	0	0
03/11/08	248	-15	0	0
03/12/08	249	-14	0	0
03/13/08	248	-15	0	0
03/14/08	248	-15	0	0
03/15/08	246	-17	0	0
03/16/08	247	-16	0	0
03/17/08	212	-51	0	0
03/18/08	248	-15	0	0
03/19/08	247	-16	0	0
03/20/08	250	-13	0	0
03/21/08	247	-16	0	0

03/22/08	227	-36	0	0
03/23/08	181	-82	0	0
03/24/08	252	-11	0	0
03/25/08	249	-14	0	0
03/26/08	249	-14	0	0
03/27/08	242	-21	0	0
03/28/08	155	-108	0	0
03/29/08	253	-10	0	0
03/30/08	161	-102	0	0
03/31/08	253	-10	0	0
04/01/08	218	-45	0	0
04/02/08	231	-32	0	0
04/03/08	251	-12	0	0
04/04/08	250	-13	0	0
04/05/08	249	-14	0	0
04/06/08	223	-40	0	0
04/07/08	248	-15	0	0
04/08/08	249	-14	0	0
04/09/08	258	-5	0	0
04/10/08	268	5	1	5
04/11/08	268	5	1	5
04/12/08	270	7	1	7
04/13/08	279	16	1	16
04/14/08	295	32	1	32
04/15/08	305	42	1	42
04/16/08	295	32	1	32
04/17/08	291	28	1	28
04/18/08	294	31	1	31
04/19/08	300	37	1	37
04/20/08	300	37	1	37
04/21/08	302	39	1	39
04/22/08	332	69	1	69
04/23/08	343	80	1	80
04/24/08	341	78	1	78
04/25/08	312	49	1	49
04/26/08	291	28	1	28
04/27/08	280	17	1	17
04/28/08	276	13	1	13
04/29/08	300	37	1	37
04/30/08	328	65	1	65
05/01/08	313	50	1	50
05/02/08	302	39	1	39
05/03/08	297	34	1	34
05/04/08	304	41	1	41

05/05/08	306	43	1	43
05/06/08	294	31	1	31
05/07/08	286	23	1	23
05/08/08	277	14	1	14
05/09/08	266	3	1	3
05/10/08	257	-6	0	0
05/11/08	257	-6	0	0
05/12/08	261	-2	0	0
05/13/08	256	-7	0	0
05/14/08	263	0	1	0
05/15/08	275	12	1	12
05/16/08	270	7	1	7
05/17/08	258	-5	0	0
05/18/08	264	1	1	1
05/19/08	263	0	1	0
05/20/08	261	-2	0	0
05/21/08	259	-4	0	0
05/22/08	252	-11	0	0
05/23/08	250	-13	0	0
05/24/08	242	-21	0	0
05/25/08	230	-33	0	0
05/26/08	274	11	1	11
05/27/08	278	15	1	15
05/28/08	273	10	1	10
05/29/08	275	12	1	12
05/30/08	275	12	1	12
05/31/08	275	12	1	12
06/01/08	270	7	1	7
06/02/08	268	5	1	5
06/03/08	274	11	1	11
06/04/08	276	13	1	13
06/05/08	276	13	1	13
06/06/08	276	13	1	13
06/07/08	274	11	1	11
06/08/08	273	10	1	10
06/09/08	272	9	1	9
06/10/08	269	6	1	6
06/11/08	267	4	1	4
06/12/08	262	-1	0	0
06/13/08	255	-8	0	0
06/14/08	262	-1	0	0
06/15/08	264	1	1	1
06/16/08	265	2	1	2
06/17/08	266	3	1	3

06/18/08	266	3	1	3
06/19/08	266	3	1	3
06/20/08	264	1	1	1
06/21/08	264	1	1	1
06/22/08	273	10	1	10
06/23/08	287	24	1	24
06/24/08	280	17	1	17
06/25/08	255	-8	0	0
06/26/08	251	-12	0	0
06/27/08	248	-15	0	0
06/28/08	246	-17	0	0
06/29/08	251	-12	0	0
06/30/08	303	40	1	40
07/01/08	293	30	1	30
07/02/08	284	21	1	21
07/03/08	296	33	1	33
07/04/08	289	26	1	26
07/05/08	285	22	1	22
07/06/08	276	13	1	13
07/07/08	261	-2	0	0
07/08/08	279	16	1	16
07/09/08	294	31	1	31
07/10/08	277	14	1	14
07/11/08	275	12	1	12
07/12/08	270	7	1	7
07/13/08	264	1	1	1
07/14/08	258	-5	0	0
07/15/08	256	-7	0	0
07/16/08	258	-5	0	0
07/17/08	264	1	1	1
07/18/08	260	-3	0	0
07/19/08	259	-4	0	0
07/20/08	254	-9	0	0
07/21/08	251	-12	0	0
07/22/08	247	-16	0	0
07/23/08	255	-8	0	0
07/24/08	261	-2	0	0
07/25/08	262	-1	0	0
07/26/08	257	-6	0	0
07/27/08	258	-5	0	0
07/28/08	266	3	1	3
07/29/08	259	-4	0	0
07/30/08	261	-2	0	0
07/31/08	262	-1	0	0

08/01/08	265	2	1	2
08/02/08	267	4	1	4
08/03/08	263	0	1	0
08/04/08	260	-3	0	0
08/05/08	259	-4	0	0
08/06/08	258	-5	0	0
08/07/08	246	-17	0	0
08/08/08	248	-15	0	0
08/09/08	254	-9	0	0
08/10/08	254	-9	0	0
08/11/08	277	14	1	14
08/12/08	277	14	1	14
08/13/08	282	19	1	19
08/14/08	285	22	1	22
08/15/08	286	23	1	23
08/16/08	286	23	1	23
08/17/08	287	24	1	24
08/18/08	288	25	1	25
08/19/08	289	26	1	26
08/20/08	285	22	1	22
08/21/08	281	18	1	18
08/22/08	282	19	1	19
08/23/08	283	20	1	20
08/24/08	284	21	1	21
08/25/08	285	22	1	22
08/26/08	276	13	1	13
08/27/08	268	5	1	5
08/28/08	268	5	1	5
08/29/08	267	4	1	4
08/30/08	268	5	1	5
08/31/08	268	5	1	5
09/01/08	264	1	1	1
09/02/08	261	-2	0	0
09/03/08	260	-3	0	0
09/04/08	258	-5	0	0
09/05/08	257	-6	0	0
09/06/08	258	-5	0	0
09/07/08	257	-6	0	0
09/08/08	253	-10	0	0
09/09/08	252	-11	0	0
09/10/08	253	-10	0	0
09/11/08	255	-8	0	0
09/12/08	254	-9	0	0
09/13/08	252	-11	0	0

09/14/08	253	-10	0	0
09/15/08	252	-11	0	0
09/16/08	252	-11	0	0
09/17/08	253	-10	0	0
09/18/08	253	-10	0	0
09/19/08	254	-9	0	0
09/20/08	253	-10	0	0
09/21/08	257	-6	0	0
09/22/08	264	1	1	1
09/23/08	264	1	1	1
09/24/08	263	0	0	0
09/25/08	263	0	1	0
09/26/08	265	2	1	2
09/27/08	268	5	1	5
09/28/08	268	5	1	5
09/29/08	267	4	1	4
09/30/08	266	3	1	3
10/01/08	267	4	1	4
10/02/08	266	3	1	3
10/03/08	264	1	1	1
10/04/08	264	1	1	1
10/05/08	263	0	1	0
10/06/08	260	-3	0	0
10/07/08	260	-3	0	0
10/08/08	256	-7	0	0
10/09/08	251	-12	0	0
10/10/08	251	-12	0	0
10/11/08	250	-13	0	0
10/12/08	250	-13	0	0
10/13/08	249	-14	0	0
10/14/08	249	-14	0	0
10/15/08	251	-12	0	0
10/16/08	252	-11	0	0
10/17/08	255	-8	0	0
10/18/08	269	6	1	6
10/19/08	270	7	1	7
10/20/08	258	-5	0	0
10/21/08	258	-5	0	0
10/22/08	258	-5	0	0
10/23/08	258	-5	0	0
10/24/08	258	-5	0	0
10/25/08	258	-5	0	0
10/26/08	258	-5	0	0
10/27/08	258	-5	0	0

10/28/08	244	-19	0	0
10/29/08	262	-1	0	0
10/30/08	268	5	1	5
10/31/08	267	4	1	4
11/01/08	266	3	1	3
11/02/08	266	3	1	3
11/03/08	266	3	1	3
11/04/08	266	3	1	3
11/05/08	265	2	1	2
11/06/08	228	-35	0	0
11/07/08	270	7	1	7
11/08/08	272	9	1	9
11/09/08	269	6	1	6
11/10/08	267	4	1	4
11/11/08	267	4	1	4
11/12/08	267	4	1	4
11/13/08	269	6	1	6
11/14/08	269	6	1	6
11/15/08	268	5	1	5
11/16/08	269	6	1	6
11/17/08	269	6	1	6
11/18/08	269	6	1	6
11/19/08	269	6	1	6
11/20/08	269	6	1	6
11/21/08	268	5	1	5
11/22/08	193	-70	0	0
11/23/08	207	-56	0	0
11/24/08	152	-111	0	0
11/25/08	270	7	1	7
11/26/08	271	8	1	8
11/27/08	258	-5	0	0
11/28/08	271	8	1	8
11/29/08	273	10	1	10
11/30/08	273	10	1	10
12/01/08	272	9	1	9
12/02/08	272	9	1	9
12/03/08	267	4	1	4
12/04/08	240	-23	0	0
12/05/08	261	-2	0	0
12/06/08	275	12	1	12
12/07/08	269	6	1	6
12/08/08	269	6	1	6
12/09/08	269	6	1	6
12/10/08	270	7	1	7

12/11/08	225	-38	0	0
12/12/08	170	-93	0	0
12/13/08	234	-29	0	0
12/14/08	59	-204	0	0
12/15/08	231	-32	0	0
12/16/08	270	7	1	7
12/17/08	276	13	1	13
12/18/08	275	12	1	12
12/19/08	269	6	1	6
12/20/08	262	-1	0	0
12/21/08	262	-1	0	0
12/22/08	262	-1	0	0
12/23/08	257	-6	0	0
12/24/08	256	-7	0	0
12/25/08	255	-8	0	0
12/26/08	255	-8	0	0
12/27/08	253	-10	0	0
12/28/08	253	-10	0	0
12/29/08	254	-9	0	0
12/30/08	254	-9	0	0
12/31/08	253	-10	0	0
01/01/09	253	-10	0	0
01/02/09	254	-9	0	0
01/03/09	199	-64	0	0
01/04/09	196	-67	0	0
01/05/09	275	12	1	12
01/06/09	260	-3	0	0
01/07/09	256	-7	0	0
01/08/09	255	-8	0	0
01/09/09	254	-9	0	0
01/10/09	254	-9	0	0
01/11/09	253	-10	0	0
01/12/09	252	-11	0	0
01/13/09	251	-12	0	0
01/14/09	249	-14	0	0
01/15/09	248	-15	0	0
01/16/09	246	-17	0	0
01/17/09	245	-18	0	0
01/18/09	175	-88	0	0
01/19/09	201	-62	0	0
01/20/09	174	-89	0	0
01/21/09	253	-10	0	0
01/22/09	255	-8	0	0
01/23/09	214	-49	0	0

01/24/09	171	-92	0	0
01/25/09	227	-36	0	0
01/26/09	234	-29	0	0
01/27/09	243	-20	0	0
01/28/09	265	2	1	2
01/29/09	250	-13	0	0
01/30/09	245	-18	0	0
01/31/09	243	-20	0	0
02/01/09	230	-33	0	0
02/02/09	232	-31	0	0
02/03/09	230	-33	0	0
02/04/09	230	-33	0	0
02/05/09	232	-31	0	0
02/06/09	233	-30	0	0
02/07/09	233	-30	0	0
02/08/09	241	-22	0	0
02/09/09	255	-8	0	0
02/10/09	253	-10	0	0
02/11/09	239	-24	0	0
02/12/09	241	-22	0	0
02/13/09	196	-67	0	0
02/14/09	238	-25	0	0
02/15/09	238	-25	0	0
02/16/09	238	-25	0	0
02/17/09	232	-31	0	0
02/18/09	231	-32	0	0
02/19/09	231	-32	0	0
02/20/09	244	-19	0	0
02/21/09	231	-32	0	0
02/22/09	249	-14	0	0
02/23/09	258	-5	0	0
02/24/09	261	-2	0	0
02/25/09	260	-3	0	0
02/26/09	261	-2	0	0
02/27/09	268	5	1	5
02/28/09	228	-35	0	0
03/01/09	289	26	1	26
03/02/09	250	-13	0	0
03/03/09	252	-11	0	0
03/04/09	253	-10	0	0
03/05/09	253	-10	0	0
03/06/09	237	-26	0	0
03/07/09	223	-40	0	0
03/08/09	328	65	1	65

03/09/09	290	27	1	27
03/10/09	220	-43	0	0
03/11/09	292	29	1	29
03/12/09	295	32	1	32
03/13/09	314	51	1	51
03/14/09	315	52	1	52
03/15/09	315	52	1	52
03/16/09	312	49	1	49
03/17/09	312	49	1	49
03/18/09	306	43	1	43
03/19/09	309	46	1	46
03/20/09	320	57	1	57
03/21/09	330	67	1	67
03/22/09	356	93	1	93
03/23/09	354	91	1	91
03/24/09	333	70	1	70
03/25/09	327	64	1	64
03/26/09	276	13	1	13
03/27/09	150	-113	0	0
03/28/09	210	-53	0	0
03/29/09	206	-57	0	0
03/30/09	205	-58	0	0
03/31/09	206	-57	0	0
04/01/09	206	-57	0	0
04/02/09	205	-58	0	0
04/03/09	205	-58	0	0
04/04/09	206	-57	0	0
04/05/09	218	-45	0	0
04/06/09	199	-64	0	0
04/07/09	266	3	1	3
04/08/09	268	5	1	5
04/09/09	269	6	1	6
04/10/09	271	8	1	8
04/11/09	274	11	1	11
04/12/09	276	13	1	13
04/13/09	277	14	1	14
04/14/09	277	14	1	14
04/15/09	276	13	1	13
04/16/09	273	10	1	10
04/17/09	272	9	1	9
04/18/09	260	-3	0	0
04/19/09	259	-4	0	0
04/20/09	263	0	1	0
04/21/09	276	13	1	13

04/22/09	280	17	1	17
04/23/09	273	10	1	10
04/24/09	234	-29	0	0
04/25/09	259	-4	0	0
04/26/09	243	-20	0	0
04/27/09	237	-26	0	0
04/28/09	236	-27	0	0
04/29/09	233	-30	0	0
04/30/09	229	-34	0	0
05/01/09	271	8	1	8
05/02/09	297	34	1	34
05/03/09	272	9	1	9
05/04/09	265	2	1	2
05/05/09	248	-15	0	0
05/06/09	248	-15	0	0
05/07/09	251	-12	0	0
05/08/09	250	-13	0	0
05/09/09	249	-14	0	0
05/10/09	251	-12	0	0
05/11/09	258	-5	0	0
05/12/09	261	-2	0	0
05/13/09	258	-5	0	0
05/14/09	259	-4	0	0
05/15/09	267	4	1	4
05/16/09	264	1	1	1
05/17/09	268	5	1	5
05/18/09	260	-3	0	0
05/19/09	239	-24	0	0
05/20/09	237	-26	0	0
05/21/09	247	-16	0	0
05/22/09	258	-5	0	0
05/23/09	259	-4	0	0
05/24/09	262	-1	0	0
05/25/09	264	1	1	1
05/26/09	262	-1	0	0
05/27/09	262	-1	0	0
05/28/09	248	-15	0	0
05/29/09	258	-5	0	0
05/30/09	257	-6	0	0
05/31/09	256	-7	0	0
06/01/09	251	-12	0	0
06/02/09	240	-23	0	0
06/03/09	230	-33	0	0
06/04/09	224	-39	0	0

06/05/09	223	-40	0	0
06/06/09	225	-38	0	0
06/07/09	173	-90	0	0
06/08/09	253	-10	0	0
06/09/09	253	-10	0	0
06/10/09	251	-12	0	0
06/11/09	286	23	1	23
06/12/09	311	48	1	48
06/13/09	313	50	1	50
06/14/09	316	53	1	53
06/15/09	320	57	1	57
06/16/09	323	60	1	60
06/17/09	324	61	1	61
06/18/09	334	71	1	71
06/19/09	335	72	1	72
06/20/09	331	68	1	68
06/21/09	333	70	1	70
06/22/09	328	65	1	65
06/23/09	323	60	1	60
06/24/09	321	58	1	58
06/25/09	304	41	1	41
06/26/09	271	8	1	8
06/27/09	263	0	0	0
06/28/09	261	-2	0	0
06/29/09	282	19	1	19
06/30/09	291	28	1	28
07/01/09	285	22	1	22
07/02/09	275	12	1	12
07/03/09	270	7	1	7
07/04/09	257	-6	0	0
07/05/09	250	-13	0	0
07/06/09	246	-17	0	0
07/07/09	260	-3	0	0
07/08/09	261	-2	0	0
07/09/09	259	-4	0	0
07/10/09	252	-11	0	0
07/11/09	248	-15	0	0
07/12/09	246	-17	0	0
07/13/09	246	-17	0	0
07/14/09	242	-21	0	0
07/15/09	246	-17	0	0
07/16/09	249	-14	0	0
07/17/09	254	-9	0	0
07/18/09	255	-8	0	0

07/19/09	253	-10	0	0
07/20/09	255	-8	0	0
07/21/09	260	-3	0	0
07/22/09	263	0	0	0
07/23/09	264	1	1	1
07/24/09	262	-1	0	0
07/25/09	268	5	1	5
07/26/09	267	4	1	4
07/27/09	264	1	1	1
07/28/09	273	10	1	10
07/29/09	269	6	1	6
07/30/09	265	2	1	2
07/31/09	264	1	1	1
08/01/09	268	5	1	5
08/02/09	268	5	1	5
08/03/09	268	5	1	5
08/04/09	269	6	1	6
08/05/09	268	5	1	5
08/06/09	272	9	1	9
08/07/09	277	14	1	14
08/08/09	275	12	1	12
08/09/09	275	12	1	12
08/10/09	274	11	1	11
08/11/09	274	11	1	11
08/12/09	275	12	1	12
08/13/09	275	12	1	12
08/14/09	275	12	1	12
08/15/09	280	17	1	17
08/16/09	276	13	1	13
08/17/09	276	13	1	13
08/18/09	275	12	1	12
08/19/09	274	11	1	11
08/20/09	271	8	1	8
08/21/09	272	9	1	9
08/22/09	273	10	1	10
08/23/09	274	11	1	11
08/24/09	277	14	1	14
08/25/09	273	10	1	10
08/26/09	272	9	1	9
08/27/09	274	11	1	11
08/28/09	271	8	1	8
08/29/09	270	7	1	7
08/30/09	272	9	1	9
08/31/09	271	8	1	8

09/01/09	268	5	1	5
09/02/09	266	3	1	3
09/03/09	264	1	1	1
09/04/09	260	-3	0	0
09/05/09	258	-5	0	0
09/06/09	257	-6	0	0
09/07/09	255	-8	0	0
09/08/09	250	-13	0	0
09/09/09	248	-15	0	0
09/10/09	246	-17	0	0
09/11/09	243	-20	0	0
09/12/09	243	-20	0	0
09/13/09	240	-23	0	0
09/14/09	244	-19	0	0
09/15/09	251	-12	0	0
09/16/09	249	-14	0	0
09/17/09	254	-9	0	0
09/18/09	258	-5	0	0
09/19/09	262	-1	0	0
09/20/09	275	12	1	12
09/21/09	268	5	1	5
09/22/09	266	3	1	3
09/23/09	271	8	1	8
09/24/09	270	7	1	7
09/25/09	271	8	1	8
09/26/09	269	6	1	6
09/27/09	267	4	1	4
09/28/09	265	2	1	2
09/29/09	266	3	1	3
09/30/09	268	5	1	5
10/01/09	271	8	1	8
10/02/09	267	4	1	4
10/03/09	267	4	1	4
10/04/09	265	2	1	2
10/05/09	263	0	1	0
10/06/09	300	37	1	37
10/07/09	312	49	1	49
10/08/09	285	22	1	22
10/09/09	282	19	1	19
10/10/09	137	-126	0	0
10/11/09	136	-127	0	0
10/12/09	150	-113	0	0
10/13/09	284	21	1	21
10/14/09	287	24	1	24

10/15/09	292	29	1	29
10/16/09	288	25	1	25
10/17/09	287	24	1	24
10/18/09	290	27	1	27
10/19/09	295	32	1	32
10/20/09	294	31	1	31
10/21/09	289	26	1	26
10/22/09	287	24	1	24
10/23/09	287	24	1	24
10/24/09	287	24	1	24
10/25/09	282	19	1	19
10/26/09	280	17	1	17
10/27/09	328	65	1	65
10/28/09	375	112	1	112
10/29/09	308	45	1	45
10/30/09	391	128	1	128
10/31/09	371	108	1	108
11/01/09	372	109	1	109
11/02/09	370	107	1	107
11/03/09	370	107	1	107
11/04/09	367	104	1	104
11/05/09	369	106	1	106
11/06/09	371	108	1	108
11/07/09	370	107	1	107
11/08/09	368	105	1	105
11/09/09	313	50	1	50
11/10/09	377	114	1	114
11/11/09	372	109	1	109
11/12/09	380	117	1	117
11/13/09	324	61	1	61
11/14/09	322	59	1	59
11/15/09	311	48	1	48
11/16/09	367	104	1	104
11/17/09	380	117	1	117
11/18/09	380	117	1	117
11/19/09	367	104	1	104
11/20/09	364	101	1	101
11/21/09	366	103	1	103
11/22/09	237	-26	0	0
11/23/09	377	114	1	114
11/24/09	285	22	1	22
11/25/09	354	91	1	91
11/26/09	352	89	1	89
11/27/09	355	92	1	92

11/28/09	362	99	1	99
11/29/09	351	88	1	88
11/30/09	312	49	1	49
12/01/09	319	56	1	56
12/02/09	132	-131	0	0
12/03/09	289	26	1	26
12/04/09	298	35	1	35
12/05/09	362	99	1	99
12/06/09	353	90	1	90
12/07/09	320	57	1	57
12/08/09	346	83	1	83
12/09/09	371	108	1	108
12/10/09	372	109	1	109
12/11/09	369	106	1	106
12/12/09	357	94	1	94
12/13/09	340	77	1	77
12/14/09	331	68	1	68
12/15/09	330	67	1	67
12/16/09	329	66	1	66
12/17/09	331	68	1	68
12/18/09	319	56	1	56
12/19/09	318	55	1	55
12/20/09	324	61	1	61
12/21/09	326	63	1	63
12/22/09	323	60	1	60
12/23/09	321	58	1	58
12/24/09	251	-12	0	0
12/25/09	344	81	1	81
12/26/09	278	15	1	15
12/27/09	262	-1	0	0
12/28/09	315	52	1	52
12/29/09	340	77	1	77
12/30/09	335	72	1	72
12/31/09	328	65	1	65
01/01/10	322	59	1	59
01/02/10	318	55	1	55
01/03/10	314	51	1	51
01/04/10	311	48	1	48
01/05/10	316	53	1	53
01/06/10	233	-30	0	0
01/07/10	232	-31	0	0
01/08/10	334	71	1	71
01/09/10	338	75	1	75
01/10/10	321	58	1	58

01/11/10	308	45	1	45
01/12/10	309	46	1	46
01/13/10	309	46	1	46
01/14/10	306	43	1	43
01/15/10	304	41	1	41
01/16/10	303	40	1	40
01/17/10	302	39	1	39
01/18/10	302	39	1	39
01/19/10	303	40	1	40
01/20/10	300	37	1	37
01/21/10	300	37	1	37
01/22/10	300	37	1	37
01/23/10	298	35	1	35
01/24/10	301	38	1	38
01/25/10	297	34	1	34
01/26/10	297	34	1	34
01/27/10	297	34	1	34
01/28/10	234	-29	0	0
01/29/10	323	60	1	60
01/30/10	303	40	1	40
01/31/10	294	31	1	31
02/01/10	293	30	1	30
02/02/10	291	28	1	28
02/03/10	290	27	1	27
02/04/10	291	28	1	28
02/05/10	291	28	1	28
02/06/10	293	30	1	30
02/07/10	290	27	1	27
02/08/10	240	-23	0	0
02/09/10	182	-81	0	0
02/10/10	311	48	1	48
02/11/10	326	63	1	63
02/12/10	301	38	1	38
02/13/10	292	29	1	29
02/14/10	289	26	1	26
02/15/10	290	27	1	27
02/16/10	288	25	1	25
02/17/10	288	25	1	25
02/18/10	286	23	1	23
02/19/10	286	23	1	23
02/20/10	271	8	1	8
02/21/10	204	-59	0	0
02/22/10	258	-5	0	0
02/23/10	295	32	1	32

02/24/10	301	38	1	38
02/25/10	292	29	1	29
02/26/10	277	14	1	14
02/27/10	275	12	1	12
02/28/10	273	10	1	10
03/01/10	270	7	1	7
03/02/10	270	7	1	7
03/03/10	271	8	1	8
03/04/10	267	4	1	4
03/05/10	269	6	1	6
03/06/10	266	3	1	3
03/07/10	268	5	1	5
03/08/10	259	-4	0	0
03/09/10	245	-18	0	0
03/10/10	245	-18	0	0
03/11/10	179	-84	0	0
03/12/10	207	-56	0	0
03/13/10	238	-25	0	0
03/14/10	239	-24	0	0
03/15/10	238	-25	0	0
03/16/10	242	-21	0	0
03/17/10	252	-11	0	0
03/18/10	258	-5	0	0
03/19/10	263	0	0	0
03/20/10	194	-69	0	0
03/21/10	209	-54	0	0
03/22/10	283	20	1	20
03/23/10	279	16	1	16
03/24/10	241	-22	0	0
03/25/10	272	9	1	9
03/26/10	273	10	1	10
03/27/10	271	8	1	8
03/28/10	271	8	1	8
03/29/10	279	16	1	16
03/30/10	295	32	1	32
03/31/10	282	19	1	19
04/01/10	279	16	1	16
04/02/10	204	-59	0	0
04/03/10	272	9	1	9
04/04/10	193	-70	0	0
04/05/10	214	-49	0	0
04/06/10	260	-3	0	0
04/07/10	190	-73	0	0
04/08/10	258	-5	0	0

04/09/10	221	-42	0	0
04/10/10	198	-65	0	0
04/11/10	289	26	1	26
04/12/10	290	27	1	27
04/13/10	293	30	1	30
04/14/10	294	31	1	31
04/15/10	262	-1	0	0
04/16/10	248	-15	0	0
04/17/10	257	-6	0	0
04/18/10	235	-28	0	0
04/19/10	233	-30	0	0
04/20/10	281	18	1	18
04/21/10	333	70	1	70
04/22/10	304	41	1	41
04/23/10	264	1	1	1
04/24/10	256	-7	0	0
04/25/10	238	-25	0	0
04/26/10	246	-17	0	0
04/27/10	266	3	1	3
04/28/10	270	7	1	7
04/29/10	264	1	1	1
04/30/10	259	-4	0	0
05/01/10	257	-6	0	0
05/02/10	254	-9	0	0
05/03/10	252	-11	0	0
05/04/10	252	-11	0	0
05/05/10	256	-7	0	0
05/06/10	265	2	1	2
05/07/10	264	1	1	1
05/08/10	257	-6	0	0
05/09/10	270	7	1	7
05/10/10	272	9	1	9
05/11/10	275	12	1	12
05/12/10	274	11	1	11
05/13/10	273	10	1	10
05/14/10	278	15	1	15
05/15/10	284	21	1	21
05/16/10	291	28	1	28
05/17/10	299	36	1	36
05/18/10	312	49	1	49
05/19/10	301	38	1	38
05/20/10	269	6	1	6
05/21/10	263	0	0	0
05/22/10	257	-6	0	0

05/23/10	250	-13	0	0
05/24/10	247	-16	0	0
05/25/10	250	-13	0	0
05/26/10	195	-68	0	0
05/27/10	262	-1	0	0
05/28/10	265	2	1	2
05/29/10	267	4	1	4
05/30/10	262	-1	0	0
05/31/10	259	-4	0	0
06/01/10	261	-2	0	0
06/02/10	266	3	1	3
06/03/10	266	3	1	3
06/04/10	255	-8	0	0
06/05/10	240	-23	0	0
06/06/10	235	-28	0	0
06/07/10	237	-26	0	0
06/08/10	235	-28	0	0
06/09/10	246	-17	0	0
06/10/10	267	4	1	4
06/11/10	269	6	1	6
06/12/10	268	5	1	5
06/13/10	266	3	1	3
06/14/10	266	3	1	3
06/15/10	266	3	1	3
06/16/10	265	2	1	2
06/17/10	264	1	1	1
06/18/10	261	-2	0	0
06/19/10	258	-5	0	0
06/20/10	256	-7	0	0
06/21/10	255	-8	0	0
06/22/10	251	-12	0	0
06/23/10	247	-16	0	0
06/24/10	255	-8	0	0
06/25/10	270	7	1	7
06/26/10	273	10	1	10
06/27/10	273	10	1	10
06/28/10	271	8	1	8
06/29/10	267	4	1	4
06/30/10	265	2	1	2
07/01/10	268	5	1	5
07/02/10	262	-1	0	0
07/03/10	256	-7	0	0
07/04/10	250	-13	0	0
07/05/10	245	-18	0	0

07/06/10	239	-24	0	0
07/07/10	233	-30	0	0
07/08/10	252	-11	0	0
07/09/10	280	17	1	17
07/10/10	275	12	1	12
07/11/10	267	4	1	4
07/12/10	260	-3	0	0
07/13/10	249	-14	0	0
07/14/10	263	0	0	0
07/15/10	277	14	1	14
07/16/10	268	5	1	5
07/17/10	263	0	1	0
07/18/10	261	-2	0	0
07/19/10	267	4	1	4
07/20/10	272	9	1	9
07/21/10	273	10	1	10
07/22/10	276	13	1	13
07/23/10	268	5	1	5
07/24/10	264	1	1	1
07/25/10	263	0	0	0
07/26/10	262	-1	0	0
07/27/10	267	4	1	4
07/28/10	272	9	1	9
07/29/10	272	9	1	9
07/30/10	269	6	1	6
07/31/10	275	12	1	12
08/01/10	59	-204	0	0
08/02/10	176	-87	0	0
08/03/10	242	-21	0	0
08/04/10	242	-21	0	0
08/05/10	243	-20	0	0
08/06/10	242	-21	0	0
08/07/10	240	-23	0	0
08/08/10	241	-22	0	0
08/09/10	246	-17	0	0
08/10/10	253	-10	0	0
08/11/10	252	-11	0	0
08/12/10	252	-11	0	0
08/13/10	255	-8	0	0
08/14/10	254	-9	0	0
08/15/10	253	-10	0	0
08/16/10	251	-12	0	0
08/17/10	250	-13	0	0
08/18/10	254	-9	0	0

08/19/10	258	-5	0	0
08/20/10	259	-4	0	0
08/21/10	260	-3	0	0
08/22/10	260	-3	0	0
08/23/10	265	2	1	2
08/24/10	260	-3	0	0
08/25/10	259	-4	0	0
08/26/10	200	-63	0	0
08/27/10	262	-1	0	0
08/28/10	266	3	1	3
08/29/10	268	5	1	5
08/30/10	266	3	1	3
08/31/10	272	9	1	9
09/01/10	267	4	1	4
09/02/10	267	4	1	4
09/03/10	260	-3	0	0
09/04/10	257	-6	0	0
09/05/10	263	0	0	0
09/06/10	261	-2	0	0
09/07/10	259	-4	0	0
09/08/10	259	-4	0	0
09/09/10	265	2	1	2
09/10/10	287	24	1	24
09/11/10	282	19	1	19
09/12/10	276	13	1	13
09/13/10	272	9	1	9
09/14/10	273	10	1	10
09/15/10	276	13	1	13
09/16/10	274	11	1	11
09/17/10	273	10	1	10
09/18/10	274	11	1	11
09/19/10	275	12	1	12
09/20/10	275	12	1	12
09/21/10	274	11	1	11
09/22/10	272	9	1	9
09/23/10	273	10	1	10
09/24/10	271	8	1	8
09/25/10	267	4	1	4
09/26/10	267	4	1	4
09/27/10	262	-1	0	0
09/28/10	266	3	1	3
09/29/10	269	6	1	6
09/30/10	266	3	1	3
10/01/10	263	0	0	0

10/02/10	267	4	1	4
10/03/10	267	4	1	4
10/04/10	262	-1	0	0
10/05/10	258	-5	0	0
10/06/10	255	-8	0	0
10/07/10	252	-11	0	0
10/08/10	251	-12	0	0
10/09/10	248	-15	0	0
10/10/10	246	-17	0	0
10/11/10	242	-21	0	0
10/12/10	225	-38	0	0
10/13/10	243	-20	0	0
10/14/10	260	-3	0	0
10/15/10	260	-3	0	0
10/16/10	257	-6	0	0
10/17/10	261	-2	0	0
10/18/10	257	-6	0	0
10/19/10	254	-9	0	0
10/20/10	252	-11	0	0
10/21/10	251	-12	0	0
10/22/10	260	-3	0	0
10/23/10	263	0	1	0
10/24/10	265	2	1	2
10/25/10	280	17	1	17
10/26/10	275	12	1	12
10/27/10	275	12	1	12
10/28/10	274	11	1	11
10/29/10	275	12	1	12
10/30/10	275	12	1	12
10/31/10	275	12	1	12
11/01/10	275	12	1	12
11/02/10	275	12	1	12
11/03/10	275	12	1	12
11/04/10	274	11	1	11
11/05/10	274	11	1	11
11/06/10	274	11	1	11
11/07/10	275	12	1	12
11/08/10	277	14	1	14
11/09/10	277	14	1	14
11/10/10	273	10	1	10
11/11/10	274	11	1	11
11/12/10	273	10	1	10
11/13/10	274	11	1	11
11/14/10	275	12	1	12

11/15/10	276	13	1	13
11/16/10	276	13	1	13
11/17/10	275	12	1	12
11/18/10	275	12	1	12
11/19/10	275	12	1	12
11/20/10	271	8	1	8
11/21/10	206	-57	0	0
11/22/10	277	14	1	14
11/23/10	280	17	1	17
11/24/10	290	27	1	27
11/25/10	295	32	1	32
11/26/10	294	31	1	31
11/27/10	293	30	1	30
11/28/10	292	29	1	29
11/29/10	290	27	1	27
11/30/10	286	23	1	23
12/01/10	291	28	1	28
12/02/10	290	27	1	27
12/03/10	292	29	1	29
12/04/10	273	10	1	10
12/05/10	270	7	1	7
12/06/10	296	33	1	33
12/07/10	293	30	1	30
12/08/10	292	29	1	29
12/09/10	291	28	1	28
12/10/10	291	28	1	28
12/11/10	291	28	1	28
12/12/10	292	29	1	29
12/13/10	292	29	1	29
12/14/10	292	29	1	29
12/15/10	281	18	1	18
12/16/10	179	-84	0	0
12/17/10	203	-60	0	0
12/18/10	296	33	1	33
12/19/10	313	50	1	50
12/20/10	307	44	1	44
12/21/10	299	36	1	36
12/22/10	305	42	1	42
12/23/10	285	22	1	22
12/24/10	255	-8	0	0
12/25/10	255	-8	0	0
12/26/10	255	-8	0	0
12/27/10	255	-8	0	0
12/28/10	268	5	1	5

12/29/10	296	33	1	33
12/30/10	285	22	1	22
12/31/10	257	-6	0	0
01/01/11	308	45	1	45
01/02/11	306	43	1	43
01/03/11	292	29	1	29
01/04/11	282	19	1	19
01/05/11	283	20	1	20
01/06/11	282	19	1	19
01/07/11	281	18	1	18
01/08/11	280	17	1	17
01/09/11	277	14	1	14
01/10/11	233	-30	0	0
01/11/11	272	9	1	9
01/12/11	277	14	1	14
01/13/11	271	8	1	8
01/14/11	267	4	1	4
01/15/11	266	3	1	3
01/16/11	267	4	1	4
01/17/11	268	5	1	5
01/18/11	267	4	1	4
01/19/11	267	4	1	4
01/20/11	185	-78	0	0
01/21/11	267	4	1	4
01/22/11	264	1	1	1
01/23/11	225	-38	0	0
01/24/11	264	1	1	1
01/25/11	264	1	1	1
01/26/11	263	0	1	0
01/27/11	263	0	0	0
01/28/11	263	0	0	0
01/29/11	263	0	0	0
01/30/11	262	-1	0	0
01/31/11	195	-68	0	0
02/01/11	256	-7	0	0
02/02/11	281	18	1	18
02/03/11	272	9	1	9
02/04/11	266	3	1	3
02/05/11	264	1	1	1
02/06/11	265	2	1	2
02/07/11	265	2	1	2
02/08/11	231	-32	0	0
02/09/11	241	-22	0	0
02/10/11	249	-14	0	0

02/11/11	237	-26	0	0
02/12/11	238	-25	0	0
02/13/11	239	-24	0	0
02/14/11	250	-13	0	0
02/15/11	288	25	1	25
02/16/11	276	13	1	13
02/17/11	255	-8	0	0
02/18/11	255	-8	0	0
02/19/11	226	-37	0	0
02/20/11	231	-32	0	0
02/21/11	260	-3	0	0
02/22/11	260	-3	0	0
02/23/11	261	-2	0	0
02/24/11	250	-13	0	0
02/25/11	245	-18	0	0
02/26/11	275	12	1	12
02/27/11	266	3	1	3
02/28/11	258	-5	0	0
03/01/11	256	-7	0	0
03/02/11	255	-8	0	0
03/03/11	255	-8	0	0
03/04/11	255	-8	0	0
03/05/11	255	-8	0	0
03/06/11	254	-9	0	0
03/07/11	246	-17	0	0
03/08/11	254	-9	0	0
03/09/11	254	-9	0	0
03/10/11	255	-8	0	0
03/11/11	255	-8	0	0
03/12/11	255	-8	0	0
03/13/11	255	-8	0	0
03/14/11	255	-8	0	0
03/15/11	255	-8	0	0
03/16/11	256	-7	0	0
03/17/11	256	-7	0	0
03/18/11	256	-7	0	0
03/19/11	256	-7	0	0
03/20/11	255	-8	0	0
03/21/11	256	-7	0	0
03/22/11	257	-6	0	0
03/23/11	252	-11	0	0
03/24/11	256	-7	0	0
03/25/11	256	-7	0	0
03/26/11	255	-8	0	0

03/27/11	256	-7	0	0
03/28/11	256	-7	0	0
03/29/11	256	-7	0	0
03/30/11	256	-7	0	0
03/31/11	257	-6	0	0
04/01/11	260	-3	0	0
04/02/11	264	1	1	1
04/03/11	265	2	1	2
04/04/11	263	0	1	0
04/05/11	263	0	0	0
04/06/11	260	-3	0	0
04/07/11	261	-2	0	0
04/08/11	261	-2	0	0
04/09/11	259	-4	0	0
04/10/11	259	-4	0	0
04/11/11	260	-3	0	0
04/12/11	262	-1	0	0
04/13/11	263	0	0	0
04/14/11	265	2	1	2
04/15/11	265	2	1	2
04/16/11	265	2	1	2
04/17/11	268	5	1	5
04/18/11	269	6	1	6
04/19/11	268	5	1	5
04/20/11	237	-26	0	0
04/21/11	267	4	1	4
04/22/11	268	5	1	5
04/23/11	254	-9	0	0
04/24/11	266	3	1	3
04/25/11	268	5	1	5
04/26/11	268	5	1	5
04/27/11	267	4	1	4
04/28/11	268	5	1	5
04/29/11	268	5	1	5
04/30/11	268	5	1	5
05/01/11	268	5	1	5
05/02/11	259	-4	0	0
05/03/11	247	-16	0	0
05/04/11	258	-5	0	0
05/05/11	277	14	1	14
05/06/11	272	9	1	9
05/07/11	274	11	1	11
05/08/11	280	17	1	17
05/09/11	286	23	1	23

05/10/11	281	18	1	18
05/11/11	261	-2	0	0
05/12/11	261	-2	0	0
05/13/11	267	4	1	4
05/14/11	278	15	1	15
05/15/11	273	10	1	10
05/16/11	265	2	1	2
05/17/11	261	-2	0	0
05/18/11	258	-5	0	0
05/19/11	256	-7	0	0
05/20/11	255	-8	0	0
05/21/11	252	-11	0	0
05/22/11	249	-14	0	0
05/23/11	243	-20	0	0
05/24/11	223	-40	0	0
05/25/11	64	-199	0	0
05/26/11	44	-219	0	0
05/27/11	44	-219	0	0
05/28/11	44	-219	0	0
05/29/11	44	-219	0	0
05/30/11	44	-219	0	0
05/31/11	44	-219	0	0
06/01/11	44	-219	0	0
06/02/11	72	-191	0	0
06/03/11	106	-157	0	0
06/04/11	124	-139	0	0
06/05/11	126	-137	0	0
06/06/11	139	-124	0	0
06/07/11	109	-154	0	0
06/08/11	113	-150	0	0
06/09/11	108	-155	0	0
06/10/11	103	-160	0	0
06/11/11	88	-175	0	0
06/12/11	99	-164	0	0
06/13/11	217	-46	0	0
06/14/11	260	-3	0	0
06/15/11	265	2	1	2
06/16/11	273	10	1	10
06/17/11	262	-1	0	0
06/18/11	253	-10	0	0
06/19/11	243	-20	0	0
06/20/11	242	-21	0	0
06/21/11	257	-6	0	0
06/22/11	294	31	1	31

06/23/11	305	42	1	42
06/24/11	289	26	1	26
06/25/11	287	24	1	24
06/26/11	285	22	1	22
06/27/11	285	22	1	22
06/28/11	287	24	1	24
06/29/11	287	24	1	24
06/30/11	268	5	1	5
07/01/11	272	9	1	9
07/02/11	279	16	1	16
07/03/11	267	4	1	4
07/04/11	242	-21	0	0
07/05/11	240	-23	0	0
07/06/11	267	4	1	4
07/07/11	259	-4	0	0
07/08/11	244	-19	0	0
07/09/11	231	-32	0	0
07/10/11	244	-19	0	0
07/11/11	259	-4	0	0
07/12/11	267	4	1	4
07/13/11	263	0	0	0
07/14/11	263	0	0	0
07/15/11	261	-2	0	0
07/16/11	254	-9	0	0
07/17/11	245	-18	0	0
07/18/11	270	7	1	7
07/19/11	283	20	1	20
07/20/11	278	15	1	15
07/21/11	275	12	1	12
07/22/11	273	10	1	10
07/23/11	292	29	1	29
07/24/11	285	22	1	22
07/25/11	281	18	1	18
07/26/11	283	20	1	20
07/27/11	283	20	1	20
07/28/11	279	16	1	16
07/29/11	274	11	1	11
07/30/11	274	11	1	11
07/31/11	275	12	1	12
08/01/11	278	15	1	15
08/02/11	278	15	1	15
08/03/11	277	14	1	14
08/04/11	273	10	1	10
08/05/11	271	8	1	8

08/06/11	272	9	1	9
08/07/11	267	4	1	4
08/08/11	265	2	1	2
08/09/11	260	-3	0	0
08/10/11	268	5	1	5
08/11/11	274	11	1	11
08/12/11	272	9	1	9
08/13/11	270	7	1	7
08/14/11	266	3	1	3
08/15/11	263	0	0	0
08/16/11	260	-3	0	0
08/17/11	254	-9	0	0
08/18/11	251	-12	0	0
08/19/11	249	-14	0	0
08/20/11	247	-16	0	0
08/21/11	244	-19	0	0
08/22/11	250	-13	0	0
08/23/11	257	-6	0	0
08/24/11	265	2	1	2
08/25/11	266	3	1	3
08/26/11	262	-1	0	0
08/27/11	261	-2	0	0
08/28/11	258	-5	0	0
08/29/11	259	-4	0	0
08/30/11	251	-12	0	0
08/31/11	249	-14	0	0
09/01/11	263	0	1	0
09/02/11	285	22	1	22
09/03/11	278	15	1	15
09/04/11	274	11	1	11
09/05/11	272	9	1	9
09/06/11	267	4	1	4
09/07/11	265	2	1	2
09/08/11	265	2	1	2
09/09/11	265	2	1	2
09/10/11	264	1	1	1
09/11/11	263	0	0	0
09/12/11	263	0	1	0
09/13/11	262	-1	0	0
09/14/11	262	-1	0	0
09/15/11	260	-3	0	0
09/16/11	267	4	1	4
09/17/11	268	5	1	5
09/18/11	267	4	1	4

09/19/11	267	4	1	4
09/20/11	265	2	1	2
09/21/11	262	-1	0	0
09/22/11	261	-2	0	0
09/23/11	260	-3	0	0
09/24/11	259	-4	0	0
09/25/11	260	-3	0	0
09/26/11	262	-1	0	0
09/27/11	263	0	0	0
09/28/11	263	0	1	0
09/29/11	262	-1	0	0
09/30/11	264	1	1	1
10/01/11	267	4	1	4
10/02/11	270	7	1	7
10/03/11	276	13	1	13
10/04/11	302	39	1	39
10/05/11	321	58	1	58
10/06/11	328	65	1	65
10/07/11	362	99	1	99
10/08/11	388	125	1	125
10/09/11	394	131	1	131
10/10/11	314	51	1	51
10/11/11	240	-23	0	0
10/12/11	266	3	1	3
10/13/11	275	12	1	12
10/14/11	271	8	1	8
10/15/11	266	3	1	3
10/16/11	261	-2	0	0
10/17/11	256	-7	0	0
10/18/11	252	-11	0	0
10/19/11	247	-16	0	0
10/20/11	242	-21	0	0
10/21/11	238	-25	0	0
10/22/11	234	-29	0	0
10/23/11	239	-24	0	0
10/24/11	245	-18	0	0
10/25/11	280	17	1	17
10/26/11	280	17	1	17
10/27/11	275	12	1	12
10/28/11	266	3	1	3
10/29/11	274	11	1	11
10/30/11	264	1	1	1
10/31/11	261	-2	0	0
11/01/11	254	-9	0	0

11/02/11	256	-7	0	0
11/03/11	250	-13	0	0
11/04/11	271	8	1	8
11/05/11	263	0	1	0
11/06/11	265	2	1	2
11/07/11	246	-17	0	0
11/08/11	273	10	1	10
11/09/11	250	-13	0	0
11/10/11	250	-13	0	0
11/11/11	250	-13	0	0
11/12/11	251	-12	0	0
11/13/11	251	-12	0	0
11/14/11	250	-13	0	0
11/15/11	250	-13	0	0
11/16/11	234	-29	0	0
11/17/11	289	26	1	26
11/18/11	287	24	1	24
11/19/11	284	21	1	21
11/20/11	277	14	1	14
11/21/11	288	25	1	25
11/22/11	287	24	1	24
11/23/11	286	23	1	23
11/24/11	285	22	1	22
11/25/11	285	22	1	22
11/26/11	255	-8	0	0
11/27/11	285	22	1	22
11/28/11	284	21	1	21
11/29/11	284	21	1	21
11/30/11	284	21	1	21
12/01/11	280	17	1	17
12/02/11	271	8	1	8
12/03/11	278	15	1	15
12/04/11	284	21	1	21
12/05/11	225	-38	0	0
12/06/11	292	29	1	29
12/07/11	294	31	1	31
12/08/11	287	24	1	24
12/09/11	285	22	1	22
12/10/11	284	21	1	21
12/11/11	287	24	1	24
12/12/11	285	22	1	22
12/13/11	272	9	1	9
12/14/11	290	27	1	27
12/15/11	286	23	1	23

12/16/11	283	20	1	20
12/17/11	282	19	1	19
12/18/11	281	18	1	18
12/19/11	281	18	1	18
12/20/11	280	17	1	17
12/21/11	281	18	1	18
12/22/11	254	-9	0	0
12/23/11	274	11	1	11
12/24/11	283	20	1	20
12/25/11	282	19	1	19
12/26/11	280	17	1	17
12/27/11	280	17	1	17
12/28/11	279	16	1	16
12/29/11	279	16	1	16
12/30/11	279	16	1	16
12/31/11	274	11	1	11
01/01/12	262	-1	0	0
01/02/12	280	17	1	17
01/03/12	279	16	1	16
01/04/12	278	15	1	15
01/05/12	278	15	1	15
01/06/12	278	15	1	15
01/07/12	211	-52	0	0
01/08/12	250	-13	0	0
01/09/12	264	1	1	1
01/10/12	263	0	1	0
01/11/12	242	-21	0	0
01/12/12	240	-23	0	0
01/13/12	268	5	1	5
01/14/12	265	2	1	2
01/15/12	264	1	1	1
01/16/12	257	-6	0	0
01/17/12	220	-43	0	0
01/18/12	271	8	1	8
01/19/12	266	3	1	3
01/20/12	263	0	0	0
01/21/12	262	-1	0	0
01/22/12	261	-2	0	0
01/23/12	245	-18	0	0
01/24/12	234	-29	0	0
01/25/12	265	2	1	2
01/26/12	262	-1	0	0
01/27/12	249	-14	0	0
01/28/12	217	-46	0	0

01/29/12	262	-1	0	0
01/30/12	262	-1	0	0
01/31/12	261	-2	0	0
02/01/12	260	-3	0	0
02/02/12	272	9	1	9
02/03/12	255	-8	0	0
02/04/12	223	-40	0	0
02/05/12	268	5	1	5
02/06/12	285	22	1	22
02/07/12	277	14	1	14
02/08/12	249	-14	0	0
02/09/12	287	24	1	24
02/10/12	278	15	1	15
02/11/12	274	11	1	11
02/12/12	272	9	1	9
02/13/12	272	9	1	9
02/14/12	270	7	1	7
02/15/12	253	-10	0	0
02/16/12	223	-40	0	0
02/17/12	274	11	1	11
02/18/12	267	4	1	4
02/19/12	268	5	1	5
02/20/12	270	7	1	7
02/21/12	275	12	1	12
02/22/12	278	15	1	15
02/23/12	274	11	1	11
02/24/12	271	8	1	8
02/25/12	273	10	1	10
02/26/12	272	9	1	9
02/27/12	238	-25	0	0
02/28/12	240	-23	0	0
02/29/12	271	8	1	8
03/01/12	273	10	1	10
03/02/12	279	16	1	16
03/03/12	275	12	1	12
03/04/12	274	11	1	11
03/05/12	273	10	1	10
03/06/12	273	10	1	10
03/07/12	260	-3	0	0
03/08/12	266	3	1	3
03/09/12	280	17	1	17
03/10/12	279	16	1	16
03/11/12	285	22	1	22
03/12/12	286	23	1	23

03/13/12	286	23	1	23
03/14/12	286	23	1	23
03/15/12	287	24	1	24
03/16/12	289	26	1	26
03/17/12	290	27	1	27
03/18/12	291	28	1	28
03/19/12	291	28	1	28
03/20/12	284	21	1	21
03/21/12	288	25	1	25
03/22/12	288	25	1	25
03/23/12	289	26	1	26
03/24/12	290	27	1	27
03/25/12	291	28	1	28
03/26/12	293	30	1	30
03/27/12	295	32	1	32
03/28/12	294	31	1	31
03/29/12	294	31	1	31
03/30/12	293	30	1	30
03/31/12	297	34	1	34
04/01/12	301	38	1	38
04/02/12	273	10	1	10
04/03/12	229	-34	0	0
04/04/12	276	13	1	13
04/05/12	264	1	1	1
04/06/12	263	0	0	0
04/07/12	260	-3	0	0
04/08/12	257	-6	0	0
04/09/12	259	-4	0	0
04/10/12	261	-2	0	0
04/11/12	268	5	1	5
04/12/12	157	-106	0	0
04/13/12	247	-16	0	0
04/14/12	251	-12	0	0
04/15/12	246	-17	0	0
04/16/12	244	-19	0	0
04/17/12	243	-20	0	0
04/18/12	237	-26	0	0
04/19/12	232	-31	0	0
04/20/12	239	-24	0	0
04/21/12	262	-1	0	0
04/22/12	272	9	1	9
04/23/12	279	16	1	16
04/24/12	295	32	1	32
04/25/12	304	41	1	41

04/26/12	307	44	1	44
04/27/12	307	44	1	44
04/28/12	297	34	1	34
04/29/12	291	28	1	28
04/30/12	290	27	1	27
05/01/12	294	31	1	31
05/02/12	294	31	1	31
05/03/12	289	26	1	26
05/04/12	289	26	1	26
05/05/12	292	29	1	29
05/06/12	287	24	1	24
05/07/12	272	9	1	9
05/08/12	257	-6	0	0
05/09/12	260	-3	0	0
05/10/12	269	6	1	6
05/11/12	263	0	1	0
05/12/12	257	-6	0	0
05/13/12	253	-10	0	0
05/14/12	254	-9	0	0
05/15/12	258	-5	0	0
05/16/12	265	2	1	2
05/17/12	267	4	1	4
05/18/12	271	8	1	8
05/19/12	265	2	1	2
05/20/12	258	-5	0	0
05/21/12	253	-10	0	0
05/22/12	253	-10	0	0
05/23/12	254	-9	0	0
05/24/12	248	-15	0	0
05/25/12	238	-25	0	0
05/26/12	231	-32	0	0
05/27/12	227	-36	0	0
05/28/12	229	-34	0	0
05/29/12	242	-21	0	0
05/30/12	252	-11	0	0
05/31/12	251	-12	0	0
06/01/12	254	-9	0	0
06/02/12	252	-11	0	0
06/03/12	252	-11	0	0
06/04/12	260	-3	0	0
06/05/12	262	-1	0	0
06/06/12	251	-12	0	0
06/07/12	240	-23	0	0
06/08/12	256	-7	0	0

06/09/12	266	3	1	3
06/10/12	259	-4	0	0
06/11/12	262	-1	0	0
06/12/12	259	-4	0	0
06/13/12	257	-6	0	0
06/14/12	250	-13	0	0
06/15/12	245	-18	0	0
06/16/12	242	-21	0	0
06/17/12	232	-31	0	0
06/18/12	265	2	1	2
06/19/12	281	18	1	18
06/20/12	277	14	1	14
06/21/12	279	16	1	16
06/22/12	263	0	1	0
06/23/12	248	-15	0	0
06/24/12	241	-22	0	0
06/25/12	253	-10	0	0
06/26/12	255	-8	0	0
06/27/12	242	-21	0	0
06/28/12	241	-22	0	0
06/29/12	243	-20	0	0
06/30/12	239	-24	0	0
07/01/12	231	-32	0	0
07/02/12	232	-31	0	0
07/03/12	232	-31	0	0
07/04/12	225	-38	0	0
07/05/12	218	-45	0	0
07/06/12	217	-46	0	0
07/07/12	213	-50	0	0
07/08/12	209	-54	0	0
07/09/12	203	-60	0	0
07/10/12	199	-64	0	0
07/11/12	197	-66	0	0
07/12/12	195	-68	0	0
07/13/12	189	-74	0	0
07/14/12	192	-71	0	0
07/15/12	195	-68	0	0
07/16/12	193	-70	0	0
07/17/12	193	-70	0	0
07/18/12	187	-76	0	0
07/19/12	188	-75	0	0
07/20/12	187	-76	0	0
07/21/12	191	-72	0	0
07/22/12	194	-69	0	0

07/23/12	197	-66	0	0
07/24/12	202	-61	0	0
07/25/12	205	-58	0	0
07/26/12	207	-56	0	0
07/27/12	210	-53	0	0
07/28/12	219	-44	0	0
07/29/12	234	-29	0	0
07/30/12	265	2	1	2
07/31/12	257	-6	0	0
08/01/12	247	-16	0	0
08/02/12	257	-6	0	0
08/03/12	265	2	1	2
08/04/12	266	3	1	3
08/05/12	264	1	1	1
08/06/12	274	11	1	11
08/07/12	270	7	1	7
08/08/12	264	1	1	1
08/09/12	263	0	1	0
08/10/12	265	2	1	2
08/11/12	268	5	1	5
08/12/12	264	1	1	1
08/13/12	261	-2	0	0
08/14/12	260	-3	0	0
08/15/12	261	-2	0	0
08/16/12	261	-2	0	0
08/17/12	258	-5	0	0
08/18/12	255	-8	0	0
08/19/12	255	-8	0	0
08/20/12	255	-8	0	0
08/21/12	253	-10	0	0
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08/31/12	247	-16	0	0
09/01/12	248	-15	0	0
09/02/12	245	-18	0	0
09/03/12	243	-20	0	0
09/04/12	240	-23	0	0

09/05/12	240	-23	0	0
09/06/12	240	-23	0	0
09/07/12	239	-24	0	0
09/08/12	238	-25	0	0
09/09/12	237	-26	0	0
09/10/12	236	-27	0	0
09/11/12	236	-27	0	0
09/12/12	254	-9	0	0
09/13/12	269	6	1	6
09/14/12	268	5	1	5
09/15/12	267	4	1	4
09/16/12	267	4	1	4
09/17/12	268	5	1	5
09/18/12	267	4	1	4
09/19/12	267	4	1	4
09/20/12	266	3	1	3
09/21/12	265	2	1	2
09/22/12	264	1	1	1
09/23/12	265	2	1	2
09/24/12	264	1	1	1
09/25/12	263	0	0	0
09/26/12	262	-1	0	0
09/27/12	254	-9	0	0
09/28/12	268	5	1	5
09/29/12	266	3	1	3
09/30/12	263	0	0	0
10/01/12	261	-2	0	0
10/02/12	258	-5	0	0
10/03/12	260	-3	0	0
10/04/12	252	-11	0	0
10/05/12	252	-11	0	0
10/06/12	252	-11	0	0
10/07/12	252	-11	0	0
10/08/12	93	-170	0	0
10/09/12	0	-263	0	0
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10/14/12	0	-263	0	0
10/15/12	0	-263	0	0
10/16/12	0	-263	0	0
10/17/12	0	-263	0	0
10/18/12	197	-66	0	0

10/19/12	263	0	0	0
10/20/12	263	0	0	0
10/21/12	263	0	0	0
10/22/12	263	0	0	0
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11/18/12	263	0	0	0
11/19/12	263	0	0	0
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11/26/12	263	0	0	0
11/27/12	263	0	0	0
11/28/12	263	0	0	0
11/29/12	263	0	0	0
11/30/12	263	0	0	0
12/01/12	263	0	0	0

12/02/12	263	0	0	0
12/03/12	263	0	0	0
12/04/12	263	0	0	0
12/05/12	263	0	0	0
12/06/12	263	0	0	0
12/07/12	263	0	0	0
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12/16/12	263	0	0	0
12/17/12	263	0	0	0
12/18/12	263	0	0	0
12/19/12	179	-84	0	0
12/20/12	241	-22	0	0
12/21/12	252	-11	0	0
12/22/12	251	-12	0	0
12/23/12	250	-13	0	0
12/24/12	249	-14	0	0
12/25/12	228	-35	0	0
12/26/12	254	-9	0	0
12/27/12	254	-9	0	0
12/28/12	249	-14	0	0
12/29/12	225	-38	0	0
12/30/12	242	-21	0	0
12/31/12	251	-12	0	0
01/01/13	254	-9	0	0
01/02/13	221	-42	0	0
01/03/13	234	-29	0	0
01/04/13	251	-12	0	0
01/05/13	249	-14	0	0
01/06/13	243	-20	0	0
01/07/13	247	-16	0	0
01/08/13	248	-15	0	0
01/09/13	244	-19	0	0
01/10/13	241	-22	0	0
01/11/13	224	-39	0	0
01/12/13	227	-36	0	0
01/13/13	243	-20	0	0
01/14/13	236	-27	0	0

01/15/13	244	-19	0	0
01/16/13	241	-22	0	0
01/17/13	238	-25	0	0
01/18/13	239	-24	0	0
01/19/13	234	-29	0	0
01/20/13	236	-27	0	0
01/21/13	241	-22	0	0
01/22/13	233	-30	0	0
01/23/13	236	-27	0	0
01/24/13	238	-25	0	0
01/25/13	236	-27	0	0
01/26/13	244	-19	0	0
01/27/13	242	-21	0	0
01/28/13	242	-21	0	0
01/29/13	240	-23	0	0
01/30/13	244	-19	0	0
01/31/13	250	-13	0	0
02/01/13	244	-19	0	0
02/02/13	234	-29	0	0
02/03/13	236	-27	0	0
02/04/13	240	-23	0	0
02/05/13	235	-28	0	0
02/06/13	239	-24	0	0
02/07/13	236	-27	0	0
02/08/13	236	-27	0	0
02/09/13	236	-27	0	0
02/10/13	235	-28	0	0
02/11/13	182	-81	0	0
02/12/13	258	-5	0	0
02/13/13	252	-11	0	0
02/14/13	239	-24	0	0
02/15/13	235	-28	0	0
02/16/13	234	-29	0	0
02/17/13	241	-22	0	0
02/18/13	243	-20	0	0
02/19/13	234	-29	0	0
02/20/13	233	-30	0	0
02/21/13	241	-22	0	0
02/22/13	239	-24	0	0
02/23/13	240	-23	0	0
02/24/13	240	-23	0	0
02/25/13	218	-45	0	0
02/26/13	248	-15	0	0
02/27/13	231	-32	0	0

02/28/13	242	-21	0	0
03/01/13	237	-26	0	0
03/02/13	235	-28	0	0
03/03/13	241	-22	0	0
03/04/13	230	-33	0	0
03/05/13	188	-75	0	0
03/06/13	259	-4	0	0
03/07/13	240	-23	0	0
03/08/13	236	-27	0	0
03/09/13	234	-29	0	0
03/10/13	217	-46	0	0
03/11/13	238	-25	0	0
03/12/13	237	-26	0	0
03/13/13	242	-21	0	0
03/14/13	251	-12	0	0
03/15/13	253	-10	0	0
03/16/13	253	-10	0	0
03/17/13	251	-12	0	0
03/18/13	235	-28	0	0
03/19/13	239	-24	0	0
03/20/13	240	-23	0	0
03/21/13	194	-69	0	0
03/22/13	221	-42	0	0
03/23/13	228	-35	0	0
03/24/13	207	-56	0	0
03/25/13	211	-52	0	0
03/26/13	259	-4	0	0
03/27/13	247	-16	0	0
03/28/13	247	-16	0	0
03/29/13	254	-9	0	0
03/30/13	267	4	1	4
03/31/13	266	3	1	3
04/01/13	236	-27	0	0
04/02/13	251	-12	0	0
04/03/13	255	-8	0	0
04/04/13	253	-10	0	0
04/05/13	259	-4	0	0
04/06/13	258	-5	0	0
04/07/13	257	-6	0	0
04/08/13	256	-7	0	0
04/09/13	256	-7	0	0
04/10/13	249	-14	0	0
04/11/13	253	-10	0	0
04/12/13	253	-10	0	0

04/13/13	256	-7	0	0
04/14/13	254	-9	0	0
04/15/13	239	-24	0	0
04/16/13	241	-22	0	0
04/17/13	243	-20	0	0
04/18/13	199	-64	0	0
04/19/13	242	-21	0	0
04/20/13	238	-25	0	0
04/21/13	242	-21	0	0
04/22/13	244	-19	0	0
04/23/13	210	-53	0	0
04/24/13	244	-19	0	0
04/25/13	239	-24	0	0
04/26/13	251	-12	0	0
04/27/13	272	9	1	9
04/28/13	288	25	1	25
04/29/13	290	27	1	27
04/30/13	277	14	1	14
05/01/13	268	5	1	5
05/02/13	260	-3	0	0
05/03/13	267	4	1	4
05/04/13	274	11	1	11
05/05/13	290	27	1	27
05/06/13	299	36	1	36
05/07/13	290	27	1	27
05/08/13	291	28	1	28
05/09/13	266	3	1	3
05/10/13	263	0	1	0
05/11/13	262	-1	0	0
05/12/13	276	13	1	13
05/13/13	304	41	1	41
05/14/13	332	69	1	69
05/15/13	306	43	1	43
05/16/13	322	59	1	59
05/17/13	327	64	1	64
05/18/13	335	72	1	72
05/19/13	267	4	1	4
05/20/13	97	-166	0	0
05/21/13	153	-110	0	0
05/22/13	255	-8	0	0
05/23/13	290	27	1	27
05/24/13	304	41	1	41
05/25/13	320	57	1	57
05/26/13	303	40	1	40

05/27/13	296	33	1	33
05/28/13	309	46	1	46
05/29/13	292	29	1	29
05/30/13	304	41	1	41
05/31/13	334	71	1	71
06/01/13	326	63	1	63
06/02/13	317	54	1	54
06/03/13	315	52	1	52
06/04/13	311	48	1	48
06/05/13	277	14	1	14
06/06/13	258	-5	0	0
06/07/13	293	30	1	30
06/08/13	281	18	1	18
06/09/13	270	7	1	7
06/10/13	246	-17	0	0
06/11/13	298	35	1	35
06/12/13	297	34	1	34
06/13/13	286	23	1	23
06/14/13	304	41	1	41
06/15/13	296	33	1	33
06/16/13	297	34	1	34
06/17/13	282	19	1	19
06/18/13	283	20	1	20
06/19/13	275	12	1	12
06/20/13	268	5	1	5
06/21/13	257	-6	0	0
06/22/13	257	-6	0	0
06/23/13	237	-26	0	0
06/24/13	231	-32	0	0
06/25/13	239	-24	0	0
06/26/13	237	-26	0	0
06/27/13	223	-40	0	0
06/28/13	248	-15	0	0
06/29/13	256	-7	0	0
06/30/13	266	3	1	3
07/01/13	267	4	1	4
07/02/13	253	-10	0	0
07/03/13	255	-8	0	0
07/04/13	218	-45	0	0
07/05/13	217	-46	0	0
07/06/13	211	-52	0	0
07/07/13	211	-52	0	0
07/08/13	202	-61	0	0
07/09/13	211	-52	0	0

07/10/13	211	-52	0	0
07/11/13	200	-63	0	0
07/12/13	200	-63	0	0
07/13/13	200	-63	0	0
07/14/13	200	-63	0	0
07/15/13	200	-63	0	0
07/16/13	200	-63	0	0
07/17/13	200	-63	0	0
07/18/13	200	-63	0	0
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3/13/2014	225	-38	0	0
3/14/2014	218	-45	0	0
3/15/2014	217	-46	0	0
3/16/2014	219	-44	0	0
3/17/2014	228	-35	0	0
3/18/2014	206	-57	0	0
3/19/2014	220	-43	0	0
3/20/2014	224	-39	0	0
3/21/2014	214	-49	0	0
3/22/2014	201	-62	0	0
3/23/2014	217	-46	0	0
3/24/2014	210	-53	0	0
3/25/2014	213	-50	0	0
3/26/2014	223	-40	0	0
3/27/2014	224	-39	0	0
3/28/2014	220	-43	0	0
3/29/2014	223	-40	0	0
3/30/2014	223	-40	0	0
3/31/2014	228	-35	0	0

4/1/2014	220	-43	0	0
4/2/2014	223	-40	0	0
4/3/2014	224	-39	0	0
4/4/2014	224	-39	0	0
4/5/2014	234	-29	0	0
4/6/2014	235	-28	0	0
4/7/2014	345	82	1	82
4/8/2014	224	-39	0	0
4/9/2014	228	-35	0	0
4/10/2014	228	-35	0	0
4/11/2014	227	-36	0	0
4/12/2014	230	-33	0	0
4/13/2014	231	-32	0	0
4/14/2014	218	-45	0	0
4/15/2014	231	-32	0	0
4/16/2014	232	-31	0	0
4/17/2014	225	-38	0	0
4/18/2014	229	-34	0	0
4/19/2014	233	-30	0	0
4/20/2014	242	-21	0	0
4/21/2014	254	-9	0	0
4/22/2014	268	5	1	5
4/23/2014	281	18	1	18
4/24/2014	268	5	1	5
4/25/2014	257	-6	0	0
4/26/2014	262	-1	0	0
4/27/2014	265	2	1	2
4/28/2014	264	1	1	1
4/29/2014	260	-3	0	0
4/30/2014	251	-12	0	0
5/1/2014	256	-7	0	0
5/2/2014	278	15	1	15
5/3/2014	305	42	1	42
5/4/2014	316	53	1	53
5/5/2014	301	38	1	38
5/6/2014	287	24	1	24
5/7/2014	184	-79	0	0
5/8/2014	252	-11	0	0
5/9/2014	264	1	1	1
5/10/2014	263	0	0	0
5/11/2014	258	-5	0	0
5/12/2014	250	-13	0	0
5/13/2014	243	-20	0	0
5/14/2014	243	-20	0	0
5/15/2014	265	2	1	2
5/16/2014	302	39	1	39
5/17/2014	321	58	1	58

5/18/2014	328	65	1	65
5/19/2014	266	3	1	3
5/20/2014	236	-27	0	0
5/21/2014	258	-5	0	0
5/22/2014	306	43	1	43
5/23/2014	306	43	1	43
5/24/2014	279	16	1	16
5/25/2014	275	12	1	12
5/26/2014	270	7	1	7
5/27/2014	265	2	1	2
5/28/2014	267	4	1	4
5/29/2014	267	4	1	4
5/30/2014	251	-12	0	0
5/31/2014	229	-34	0	0
6/1/2014	221	-42	0	0
6/2/2014	218	-45	0	0
6/3/2014	264	1	1	1
6/4/2014	267	4	1	4
6/5/2014	263	0	0	0
6/6/2014	261	-2	0	0
6/7/2014	257	-6	0	0
6/8/2014	252	-11	0	0
6/9/2014	252	-11	0	0
6/10/2014	261	-2	0	0
6/11/2014	274	11	1	11
6/12/2014	267	4	1	4
6/13/2014	270	7	1	7
6/14/2014	263	0	0	0
6/15/2014	258	-5	0	0
6/16/2014	269	6	1	6
6/17/2014	261	-2	0	0
6/18/2014	254	-9	0	0
6/19/2014	249	-14	0	0
6/20/2014	261	-2	0	0
6/21/2014	274	11	1	11
6/22/2014	266	3	1	3
6/23/2014	265	2	1	2
6/24/2014	259	-4	0	0
6/25/2014	266	3	1	3
6/26/2014	270	7	1	7
6/27/2014	290	27	1	27
6/28/2014	267	4	1	4
6/29/2014	260	-3	0	0
6/30/2014	248	-15	0	0
7/1/2014	243	-20	0	0
7/2/2014	255	-8	0	0
7/3/2014	253	-10	0	0

7/4/2014	250	-13	0	0
7/5/2014	235	-28	0	0
7/6/2014	227	-36	0	0
7/7/2014	239	-24	0	0
7/8/2014	239	-24	0	0
7/9/2014	277	14	1	14
7/10/2014	312	49	1	49
7/11/2014	308	45	1	45
7/12/2014	315	52	1	52
7/13/2014	316	53	1	53
7/14/2014	270	7	1	7
7/15/2014	244	-19	0	0
7/16/2014	243	-20	0	0
7/17/2014	232	-31	0	0
7/18/2014	224	-39	0	0
7/19/2014	196	-67	0	0
7/20/2014	256	-7	0	0
7/21/2014	252	-11	0	0
7/22/2014	259	-4	0	0
7/23/2014	268	5	1	5
7/24/2014	271	8	1	8
7/25/2014	267	4	1	4
7/26/2014	263	0	0	0
7/27/2014	264	1	1	1
7/28/2014	277	14	1	14
7/29/2014	287	24	1	24
7/30/2014	289	26	1	26
7/31/2014	295	32	1	32
8/1/2014	305	42	1	42
8/2/2014	311	48	1	48
8/3/2014	305	42	1	42
8/4/2014	283	20	1	20
8/5/2014	272	9	1	9
8/6/2014	269	6	1	6
8/7/2014	266	3	1	3
8/8/2014	269	6	1	6
8/9/2014	263	0	0	0
8/10/2014	263	0	0	0
8/11/2014	266	3	1	3
8/12/2014	266	3	1	3
8/13/2014	265	2	1	2
8/14/2014	259	-4	0	0
8/15/2014	253	-10	0	0
8/16/2014	253	-10	0	0
8/17/2014	250	-13	0	0
8/18/2014	256	-7	0	0
8/19/2014	261	-2	0	0

8/20/2014	275	12	1	12
8/21/2014	289	26	1	26
8/22/2014	309	46	1	46
8/23/2014	331	68	1	68
8/24/2014	356	93	1	93
8/25/2014	336	73	1	73
8/26/2014	328	65	1	65
8/27/2014	301	38	1	38
8/28/2014	274	11	1	11
8/29/2014	270	7	1	7
8/30/2014	273	10	1	10
8/31/2014	276	13	1	13
9/1/2014	272	9	1	9
9/2/2014	265	2	1	2
9/3/2014	265	2	1	2
9/4/2014	262	-1	0	0
9/5/2014	256	-7	0	0
9/6/2014	253	-10	0	0
9/7/2014	251	-12	0	0
9/8/2014	251	-12	0	0
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9/12/2014	251	-12	0	0
9/13/2014	248	-15	0	0
9/14/2014	246	-17	0	0
9/15/2014	243	-20	0	0
9/16/2014	242	-21	0	0
9/17/2014	242	-21	0	0
9/18/2014	246	-17	0	0
9/19/2014	241	-22	0	0
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9/25/2014	254	-9	0	0
9/26/2014	252	-11	0	0
9/27/2014	261	-2	0	0
9/28/2014	254	-9	0	0
9/29/2014	246	-17	0	0
9/30/2014	254	-9	0	0
10/1/2014	275	12	1	12
10/2/2014	251	-12	0	0
10/3/2014	230	-33	0	0
10/4/2014	227	-36	0	0
10/5/2014	221	-42	0	0

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10/7/2014	211	-52	0	0
10/8/2014	218	-45	0	0
10/9/2014	237	-26	0	0
10/10/2014	240	-23	0	0
10/11/2014	247	-16	0	0
10/12/2014	297	34	1	34
10/13/2014	270	7	1	7
10/14/2014	270	7	1	7
10/15/2014	285	22	1	22
10/16/2014	283	20	1	20
10/17/2014	302	39	1	39
10/18/2014	288	25	1	25
10/19/2014	275	12	1	12
10/20/2014	268	5	1	5
10/21/2014	266	3	1	3
10/22/2014	262	-1	0	0
10/23/2014	269	6	1	6
10/24/2014	292	29	1	29
10/25/2014	286	23	1	23
10/26/2014	272	9	1	9
10/27/2014	266	3	1	3
10/28/2014	258	-5	0	0
10/29/2014	261	-2	0	0
10/30/2014	254	-9	0	0
10/31/2014	244	-19	0	0
11/1/2014	245	-18	0	0
11/2/2014	244	-19	0	0
11/3/2014	239	-24	0	0
11/4/2014	237	-26	0	0
11/5/2014	235	-28	0	0
11/6/2014	233	-30	0	0
11/7/2014	252	-11	0	0
11/8/2014	301	38	1	38
11/9/2014	300	37	1	37
11/10/2014	305	42	1	42
11/11/2014	217	-46	0	0
11/12/2014	196	-67	0	0
11/13/2014	250	-13	0	0
11/14/2014	307	44	1	44
11/15/2014	307	44	1	44
11/16/2014	308	45	1	45
11/17/2014	305	42	1	42
11/18/2014	306	43	1	43
11/19/2014	301	38	1	38
11/20/2014	283	20	1	20
11/21/2014	258	-5	0	0

11/22/2014	257	-6	0	0
11/23/2014	257	-6	0	0
11/24/2014	256	-7	0	0
11/25/2014	255	-8	0	0
11/26/2014	257	-6	0	0
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11/29/2014	259	-4	0	0
11/30/2014	236	-27	0	0
12/1/2014	262	-1	0	0
12/2/2014	260	-3	0	0
12/3/2014	144	-119	0	0
12/4/2014	256	-7	0	0
12/5/2014	251	-12	0	0
12/6/2014	256	-7	0	0
12/7/2014	254	-9	0	0
12/8/2014	256	-7	0	0
12/9/2014	258	-5	0	0
12/10/2014	257	-6	0	0
12/11/2014	252	-11	0	0
12/12/2014	254	-9	0	0
12/13/2014	259	-4	0	0
12/14/2014	262	-1	0	0
12/15/2014	256	-7	0	0
12/16/2014	231	-32	0	0
12/17/2014	252	-11	0	0
12/18/2014	244	-19	0	0
12/19/2014	252	-11	0	0
12/20/2014	251	-12	0	0
12/21/2014	252	-11	0	0
12/22/2014	252	-11	0	0
12/23/2014	251	-12	0	0
12/24/2014	253	-10	0	0
12/25/2014	253	-10	0	0
12/26/2014	244	-19	0	0
12/27/2014	215	-48	0	0
12/28/2014	248	-15	0	0
12/29/2014	241	-22	0	0
12/30/2014	205	-58	0	0
12/31/2014	239	-24	0	0
1/1/2015	239	-24	0	0
1/2/2015	234	-29	0	0
1/3/2015	228	-35	0	0
1/4/2015	224	-39	0	0
1/5/2015	220	-43	0	0
1/6/2015	220	-43	0	0
1/7/2015	220	-43	0	0

1/8/2015	220	-43	0	0
1/9/2015	194	-69	0	0
1/10/2015	264	1	1	1
1/11/2015	258	-5	0	0
1/12/2015	253	-10	0	0
1/13/2015	252	-11	0	0
1/14/2015	226	-37	0	0
1/15/2015	254	-9	0	0
1/16/2015	252	-11	0	0
1/17/2015	253	-10	0	0
1/18/2015	251	-12	0	0
1/19/2015	252	-11	0	0
1/20/2015	250	-13	0	0
1/21/2015	247	-16	0	0
1/22/2015	204	-59	0	0
1/23/2015	256	-7	0	0
1/24/2015	253	-10	0	0
1/25/2015	254	-9	0	0
1/26/2015	267	4	1	4
1/27/2015	269	6	1	6
1/28/2015	269	6	1	6
1/29/2015	253	-10	0	0
1/30/2015	245	-18	0	0
1/31/2015	240	-23	0	0
2/1/2015	253	-10	0	0
2/2/2015	264	1	1	1
2/3/2015	268	5	1	5
2/4/2015	265	2	1	2
2/5/2015	269	6	1	6
2/6/2015	268	5	1	5
2/7/2015	274	11	1	11
2/8/2015	273	10	1	10
2/9/2015	276	13	1	13
2/10/2015	279	16	1	16
2/11/2015	279	16	1	16
2/12/2015	277	14	1	14
2/13/2015	277	14	1	14
2/14/2015	186	-77	0	0
2/15/2015	269	6	1	6
2/16/2015	271	8	1	8
2/17/2015	269	6	1	6
2/18/2015	269	6	1	6
2/19/2015	272	9	1	9
2/20/2015	271	8	1	8
2/21/2015	268	5	1	5
2/22/2015	161	-102	0	0
2/23/2015	237	-26	0	0

2/24/2015	265	2	1	2
2/25/2015	264	1	1	1
2/26/2015	268	5	1	5
2/27/2015	223	-40	0	0
2/28/2015	272	9	1	9
3/1/2015	261	-2	0	0
3/2/2015	270	7	1	7
3/3/2015	270	7	1	7
3/4/2015	261	-2	0	0
3/5/2015	273	10	1	10
3/6/2015	266	3	1	3
3/7/2015	264	1	1	1
3/8/2015	265	2	1	2
3/9/2015	271	8	1	8
3/10/2015	265	2	1	2
3/11/2015	266	3	1	3
3/12/2015	265	2	1	2
3/13/2015	263	0	0	0
3/14/2015	260	-3	0	0
3/15/2015	264	1	1	1
3/16/2015	268	5	1	5
3/17/2015	266	3	1	3
3/18/2015	272	9	1	9
3/19/2015	272	9	1	9
3/20/2015	274	11	1	11
3/21/2015	271	8	1	8
3/22/2015	272	9	1	9
3/23/2015	268	5	1	5
3/24/2015	272	9	1	9
3/25/2015	273	10	1	10
3/26/2015	234	-29	0	0
3/27/2015	258	-5	0	0
3/28/2015	274	11	1	11
3/29/2015	276	13	1	13
3/30/2015	275	12	1	12
3/31/2015	275	12	1	12
4/1/2015	277	14	1	14
4/2/2015	268	5	1	5
4/3/2015	266	3	1	3
4/4/2015	263	0	0	0
4/5/2015	266	3	1	3
4/6/2015	263	0	0	0
4/7/2015	269	6	1	6
4/8/2015	274	11	1	11
4/9/2015	273	10	1	10
4/10/2015	269	6	1	6
4/11/2015	263	0	0	0

4/12/2015	266	3	1	3
4/13/2015	264	1	1	1
4/14/2015	264	1	1	1
4/15/2015	265	2	1	2
4/16/2015	259	-4	0	0
4/17/2015	249	-14	0	0
4/18/2015	230	-33	0	0
4/19/2015	227	-36	0	0
4/20/2015	223	-40	0	0
4/21/2015	222	-41	0	0
4/22/2015	228	-35	0	0
4/23/2015	236	-27	0	0
4/24/2015	265	2	1	2
4/25/2015	308	45	1	45
4/26/2015	302	39	1	39
4/27/2015	298	35	1	35
4/28/2015	299	36	1	36
4/29/2015	293	30	1	30
4/30/2015	278	15	1	15
5/1/2015	279	16	1	16
5/2/2015	277	14	1	14
5/3/2015	277	14	1	14
5/4/2015	276	13	1	13
5/5/2015	279	16	1	16
5/6/2015	283	20	1	20
5/7/2015	275	12	1	12
5/8/2015	272	9	1	9
5/9/2015	270	7	1	7
5/10/2015	265	2	1	2
5/11/2015	258	-5	0	0
5/12/2015	257	-6	0	0
5/13/2015	265	2	1	2
5/14/2015	264	1	1	1
5/15/2015	268	5	1	5
5/16/2015	293	30	1	30
5/17/2015	314	51	1	51
5/18/2015	304	41	1	41
5/19/2015	297	34	1	34
5/20/2015	291	28	1	28
5/21/2015	287	24	1	24
5/22/2015	288	25	1	25
5/23/2015	290	27	1	27
5/24/2015	291	28	1	28
5/25/2015	290	27	1	27
5/26/2015	290	27	1	27
5/27/2015	287	24	1	24
5/28/2015	274	11	1	11

5/29/2015	311	48	1	48
5/30/2015	310	47	1	47
5/31/2015	306	43	1	43
6/1/2015	298	35	1	35
6/2/2015	323	60	1	60
6/3/2015	314	51	1	51
6/4/2015	306	43	1	43
6/5/2015	305	42	1	42
6/6/2015	299	36	1	36
6/7/2015	292	29	1	29
6/8/2015	280	17	1	17
6/9/2015	275	12	1	12
6/10/2015	268	5	1	5
6/11/2015	256	-7	0	0
6/12/2015	253	-10	0	0
6/13/2015	238	-25	0	0
6/14/2015	229	-34	0	0
6/15/2015	233	-30	0	0
6/16/2015	239	-24	0	0
6/17/2015	254	-9	0	0
6/18/2015	252	-11	0	0
6/19/2015	237	-26	0	0
6/20/2015	189	-74	0	0
6/21/2015	180	-83	0	0
6/22/2015	182	-81	0	0
6/23/2015	214	-49	0	0
6/24/2015	225	-38	0	0
6/25/2015	180	-83	0	0
6/26/2015	180	-83	0	0
6/27/2015	178	-85	0	0
6/28/2015	172	-91	0	0
6/29/2015	235	-28	0	0
6/30/2015	274	11	1	11
7/1/2015	255	-8	0	0
7/2/2015	238	-25	0	0
7/3/2015	230	-33	0	0
7/4/2015	220	-43	0	0
7/5/2015	206	-57	0	0
7/6/2015	218	-45	0	0
7/7/2015	216	-47	0	0
7/8/2015	218	-45	0	0
7/9/2015	214	-49	0	0
7/10/2015	206	-57	0	0
7/11/2015	217	-46	0	0
7/12/2015	219	-44	0	0
7/13/2015	229	-34	0	0
7/14/2015	240	-23	0	0

7/15/2015	249	-14	0	0
7/16/2015	263	0	0	0
7/17/2015	260	-3	0	0
7/18/2015	223	-40	0	0
7/19/2015	259	-4	0	0
7/20/2015	261	-2	0	0
7/21/2015	263	0	0	0
7/22/2015	271	8	1	8
7/23/2015	286	23	1	23
7/24/2015	289	26	1	26
7/25/2015	286	23	1	23
7/26/2015	280	17	1	17
7/27/2015	301	38	1	38
7/28/2015	328	65	1	65
7/29/2015	306	43	1	43
7/30/2015	299	36	1	36
7/31/2015	290	27	1	27
8/1/2015	286	23	1	23
8/2/2015	283	20	1	20
8/3/2015	278	15	1	15
8/4/2015	280	17	1	17
8/5/2015	281	18	1	18
8/6/2015	287	24	1	24
8/7/2015	269	6	1	6
8/8/2015	280	17	1	17
8/9/2015	280	17	1	17
8/10/2015	270	7	1	7
8/11/2015	262	-1	0	0
8/12/2015	259	-4	0	0
8/13/2015	261	-2	0	0
8/14/2015	260	-3	0	0
8/15/2015	262	-1	0	0
8/16/2015	255	-8	0	0
8/17/2015	253	-10	0	0
8/18/2015	254	-9	0	0
8/19/2015	253	-10	0	0
8/20/2015	250	-13	0	0
8/21/2015	251	-12	0	0
8/22/2015	250	-13	0	0
8/23/2015	247	-16	0	0
8/24/2015	243	-20	0	0
8/25/2015	237	-26	0	0
8/26/2015	240	-23	0	0
8/27/2015	243	-20	0	0
8/28/2015	240	-23	0	0
8/29/2015	236	-27	0	0
8/30/2015	236	-27	0	0

8/31/2015	240	-23	0	0
9/1/2015	236	-27	0	0
9/2/2015	233	-30	0	0
9/3/2015	238	-25	0	0
9/4/2015	233	-30	0	0
9/5/2015	238	-25	0	0
9/6/2015	240	-23	0	0
9/7/2015	225	-38	0	0
9/8/2015	223	-40	0	0
9/9/2015	235	-28	0	0
9/10/2015	242	-21	0	0
9/11/2015	241	-22	0	0
9/12/2015	249	-14	0	0
9/13/2015	256	-7	0	0
9/14/2015	255	-8	0	0
9/15/2015	278	15	1	15
9/16/2015	293	30	1	30
9/17/2015	294	31	1	31
9/18/2015	292	29	1	29
9/19/2015	276	13	1	13
9/20/2015	275	12	1	12
9/21/2015	270	7	1	7
9/22/2015	266	3	1	3
9/23/2015	264	1	1	1
9/24/2015	262	-1	0	0
9/25/2015	264	1	1	1
9/26/2015	265	2	1	2
9/27/2015	264	1	1	1
9/28/2015	260	-3	0	0
9/29/2015	255	-8	0	0
9/30/2015	255	-8	0	0
10/1/2015	260	-3	0	0
10/2/2015	261	-2	0	0
10/3/2015	262	-1	0	0
10/4/2015	256	-7	0	0
10/5/2015	255	-8	0	0
10/6/2015	256	-7	0	0
10/7/2015	254	-9	0	0
10/8/2015	256	-7	0	0
10/9/2015	249	-14	0	0
10/10/2015	245	-18	0	0
10/11/2015	255	-8	0	0
10/12/2015	252	-11	0	0
10/13/2015	251	-12	0	0
10/14/2015	246	-17	0	0
10/15/2015	247	-16	0	0
10/16/2015	237	-26	0	0

10/17/2015	229	-34	0	0
10/18/2015	226	-37	0	0
10/19/2015	231	-32	0	0
10/20/2015	264	1	1	1
10/21/2015	250	-13	0	0
10/22/2015	233	-30	0	0
10/23/2015	226	-37	0	0
10/24/2015	216	-47	0	0
10/25/2015	207	-56	0	0
10/26/2015	205	-58	0	0
10/27/2015	200	-63	0	0
10/28/2015	194	-69	0	0
10/29/2015	193	-70	0	0
10/30/2015	194	-69	0	0
10/31/2015	196	-67	0	0
11/1/2015	196	-67	0	0
11/2/2015	194	-69	0	0
11/3/2015	240	-23	0	0
11/4/2015	295	32	1	32
11/5/2015	268	5	1	5
11/6/2015	266	3	1	3
11/7/2015	257	-6	0	0
11/8/2015	267	4	1	4
11/9/2015	271	8	1	8
11/10/2015	269	6	1	6
11/11/2015	266	3	1	3
11/12/2015	266	3	1	3
11/13/2015	264	1	1	1
11/14/2015	268	5	1	5
11/15/2015	268	5	1	5
11/16/2015	266	3	1	3
11/17/2015	243	-20	0	0
11/18/2015	254	-9	0	0
11/19/2015	253	-10	0	0
11/20/2015	245	-18	0	0
11/21/2015	170	-93	0	0
11/22/2015	255	-8	0	0
11/23/2015	254	-9	0	0
11/24/2015	256	-7	0	0
11/25/2015	251	-12	0	0
11/26/2015	170	-93	0	0
11/27/2015	214	-49	0	0
11/28/2015	250	-13	0	0
11/29/2015	256	-7	0	0
11/30/2015	257	-6	0	0
12/1/2015	255	-8	0	0
12/2/2015	255	-8	0	0

12/3/2015	253	-10	0	0
12/4/2015	253	-10	0	0
12/5/2015	251	-12	0	0
12/6/2015	252	-11	0	0
12/7/2015	250	-13	0	0
12/8/2015	252	-11	0	0
12/9/2015	252	-11	0	0
12/10/2015	252	-11	0	0
12/11/2015	253	-10	0	0
12/12/2015	253	-10	0	0
12/13/2015	252	-11	0	0
12/14/2015	255	-8	0	0
12/15/2015	254	-9	0	0
12/16/2015	252	-11	0	0
12/17/2015	239	-24	0	0
12/18/2015	255	-8	0	0
12/19/2015	251	-12	0	0
12/20/2015	253	-10	0	0
12/21/2015	249	-14	0	0
12/22/2015	252	-11	0	0
12/23/2015	224	-39	0	0
12/24/2015	253	-10	0	0
12/25/2015	244	-19	0	0
12/26/2015	260	-3	0	0
12/27/2015	209	-54	0	0
12/28/2015	261	-2	0	0
12/29/2015	257	-6	0	0
12/30/2015	256	-7	0	0
12/31/2015	252	-11	0	0
1/1/2016	220	-43	0	0
1/2/2016	258	-5	0	0
1/3/2016	260	-3	0	0
1/4/2016	257	-6	0	0
1/5/2016	248	-15	0	0
1/6/2016	234	-29	0	0
1/7/2016	257	-6	0	0
1/8/2016	257	-6	0	0
1/9/2016	256	-7	0	0
1/10/2016	256	-7	0	0
1/11/2016	212	-51	0	0
1/12/2016	262	-1	0	0
1/13/2016	257	-6	0	0
1/14/2016	256	-7	0	0
1/15/2016	257	-6	0	0
1/16/2016	257	-6	0	0
1/17/2016	257	-6	0	0
1/18/2016	258	-5	0	0

1/19/2016	257	-6	0	0
1/20/2016	258	-5	0	0
1/21/2016	257	-6	0	0
1/22/2016	257	-6	0	0
1/23/2016	257	-6	0	0
1/24/2016	257	-6	0	0
1/25/2016	253	-10	0	0
1/26/2016	204	-59	0	0
1/27/2016	256	-7	0	0
1/28/2016	257	-6	0	0
1/29/2016	257	-6	0	0
1/30/2016	259	-4	0	0
1/31/2016	242	-21	0	0
2/1/2016	198	-65	0	0
2/2/2016	247	-16	0	0
2/3/2016	258	-5	0	0
2/4/2016	254	-9	0	0
2/5/2016	259	-4	0	0
2/6/2016	255	-8	0	0
2/7/2016	252	-11	0	0
2/8/2016	253	-10	0	0
2/9/2016	254	-9	0	0
2/10/2016	253	-10	0	0
2/11/2016	253	-10	0	0
2/12/2016	253	-10	0	0
2/13/2016	255	-8	0	0
2/14/2016	252	-11	0	0
2/15/2016	255	-8	0	0
2/16/2016	251	-12	0	0
2/17/2016	255	-8	0	0
2/18/2016	255	-8	0	0
2/19/2016	253	-10	0	0
2/20/2016	253	-10	0	0
2/21/2016	201	-62	0	0
2/22/2016	254	-9	0	0
2/23/2016	241	-22	0	0
2/24/2016	180	-83	0	0
2/25/2016	254	-9	0	0
2/26/2016	251	-12	0	0
2/27/2016	253	-10	0	0
2/28/2016	253	-10	0	0
2/29/2016	251	-12	0	0
3/1/2016	219	-44	0	0
3/2/2016	249	-14	0	0
3/3/2016	249	-14	0	0
3/4/2016	250	-13	0	0
3/5/2016	250	-13	0	0

3/6/2016	252	-11	0	0
3/7/2016	253	-10	0	0
3/8/2016	251	-12	0	0
3/9/2016	250	-13	0	0
3/10/2016	250	-13	0	0
3/11/2016	251	-12	0	0
3/12/2016	251	-12	0	0
3/13/2016	253	-10	0	0
3/14/2016	247	-16	0	0
3/15/2016	252	-11	0	0
3/16/2016	252	-11	0	0
3/17/2016	251	-12	0	0
3/18/2016	248	-15	0	0
3/19/2016	175	-88	0	0
3/20/2016	249	-14	0	0
3/21/2016	250	-13	0	0
3/22/2016	252	-11	0	0
3/23/2016	253	-10	0	0
3/24/2016	252	-11	0	0
3/25/2016	253	-10	0	0
3/26/2016	251	-12	0	0
3/27/2016	248	-15	0	0
3/28/2016	247	-16	0	0
3/29/2016	253	-10	0	0
3/30/2016	251	-12	0	0
3/31/2016	242	-21	0	0
4/1/2016	251	-12	0	0
4/2/2016	251	-12	0	0
4/3/2016	252	-11	0	0
4/4/2016	248	-15	0	0
4/5/2016	261	-2	0	0
4/6/2016	259	-4	0	0
4/7/2016	259	-4	0	0
4/8/2016	261	-2	0	0
4/9/2016	264	1	1	1
4/10/2016	268	5	1	5
4/11/2016	263	0	0	0
4/12/2016	264	1	1	1
4/13/2016	269	6	1	6
4/14/2016	270	7	1	7
4/15/2016	259	-4	0	0
4/16/2016	239	-24	0	0
4/17/2016	240	-23	0	0
4/18/2016	243	-20	0	0
4/19/2016	242	-21	0	0
4/20/2016	268	5	1	5
4/21/2016	287	24	1	24

4/22/2016	300	37	1	37
4/23/2016	313	50	1	50
4/24/2016	326	63	1	63
4/25/2016	329	66	1	66
4/26/2016	323	60	1	60
4/27/2016	312	49	1	49
4/28/2016	304	41	1	41
4/29/2016	297	34	1	34
4/30/2016	291	28	1	28
5/1/2016	285	22	1	22
5/2/2016	285	22	1	22
5/3/2016	289	26	1	26
5/4/2016	298	35	1	35
5/5/2016	309	46	1	46
5/6/2016	321	58	1	58
5/7/2016	324	61	1	61
5/8/2016	324	61	1	61
5/9/2016	326	63	1	63
5/10/2016	317	54	1	54
5/11/2016	311	48	1	48
5/12/2016	312	49	1	49
5/13/2016	321	58	1	58
5/14/2016	325	62	1	62
5/15/2016	328	65	1	65
5/16/2016	329	66	1	66
5/17/2016	324	61	1	61
5/18/2016	327	64	1	64
5/19/2016	337	74	1	74
5/20/2016	348	85	1	85
5/21/2016	353	90	1	90
5/22/2016	344	81	1	81
5/23/2016	334	71	1	71
5/24/2016	327	64	1	64
5/25/2016	317	54	1	54
5/26/2016	317	54	1	54
5/27/2016	315	52	1	52
5/28/2016	327	64	1	64
5/29/2016	326	63	1	63
5/30/2016	322	59	1	59
5/31/2016	313	50	1	50
6/1/2016	314	51	1	51
6/2/2016	308	45	1	45
6/3/2016	309	46	1	46
6/4/2016	309	46	1	46
6/5/2016	316	53	1	53
6/6/2016	320	57	1	57
6/7/2016	314	51	1	51

6/8/2016	286	23	1	23
6/9/2016	258	-5	0	0
6/10/2016	252	-11	0	0
6/11/2016	234	-29	0	0
6/12/2016	228	-35	0	0
6/13/2016	236	-27	0	0
6/14/2016	244	-19	0	0
6/15/2016	244	-19	0	0
6/16/2016	246	-17	0	0
6/17/2016	259	-4	0	0
6/18/2016	259	-4	0	0
6/19/2016	242	-21	0	0
6/20/2016	268	5	1	5
6/21/2016	280	17	1	17
6/22/2016	268	5	1	5
6/23/2016	260	-3	0	0
6/24/2016	257	-6	0	0
6/25/2016	257	-6	0	0
6/26/2016	253	-10	0	0
6/27/2016	250	-13	0	0
6/28/2016	248	-15	0	0
6/29/2016	244	-19	0	0
6/30/2016	247	-16	0	0
7/1/2016	242	-21	0	0
7/2/2016	238	-25	0	0
7/3/2016	229	-34	0	0
7/4/2016	236	-27	0	0
7/5/2016	229	-34	0	0
7/6/2016	226	-37	0	0
7/7/2016	222	-41	0	0
7/8/2016	216	-47	0	0
7/9/2016	206	-57	0	0
7/10/2016	182	-81	0	0
7/11/2016	197	-66	0	0
7/12/2016	186	-77	0	0
7/13/2016	196	-67	0	0
7/14/2016	210	-53	0	0
7/15/2016	221	-42	0	0
7/16/2016	223	-40	0	0
7/17/2016	223	-40	0	0
7/18/2016	212	-51	0	0
7/19/2016	202	-61	0	0
7/20/2016	213	-50	0	0
7/21/2016	230	-33	0	0
7/22/2016	235	-28	0	0
7/23/2016	242	-21	0	0
7/24/2016	245	-18	0	0

7/25/2016	258	-5	0	0
7/26/2016	243	-20	0	0
7/27/2016	250	-13	0	0
7/28/2016	256	-7	0	0
7/29/2016	277	14	1	14
7/30/2016	281	18	1	18
7/31/2016	284	21	1	21
8/1/2016	276	13	1	13
8/2/2016	274	11	1	11
8/3/2016	272	9	1	9
8/4/2016	271	8	1	8
8/5/2016	273	10	1	10
8/6/2016	281	18	1	18
8/7/2016	293	30	1	30
8/8/2016	283	20	1	20
8/9/2016	279	16	1	16
8/10/2016	272	9	1	9
8/11/2016	269	6	1	6
8/12/2016	271	8	1	8
8/13/2016	274	11	1	11
8/14/2016	272	9	1	9
8/15/2016	271	8	1	8
8/16/2016	271	8	1	8
8/17/2016	274	11	1	11
8/18/2016	273	10	1	10
8/19/2016	286	23	1	23
8/20/2016	275	12	1	12
8/21/2016	273	10	1	10
8/22/2016	271	8	1	8
8/23/2016	267	4	1	4
8/24/2016	274	11	1	11
8/25/2016	283	20	1	20
8/26/2016	280	17	1	17
8/27/2016	278	15	1	15
8/28/2016	276	13	1	13
8/29/2016	275	12	1	12
8/30/2016	273	10	1	10
8/31/2016	273	10	1	10
9/1/2016	273	10	1	10
9/2/2016	273	10	1	10
9/3/2016	275	12	1	12
9/4/2016	286	23	1	23
9/5/2016	295	32	1	32
9/6/2016	288	25	1	25
9/7/2016	280	17	1	17
9/8/2016	277	14	1	14
9/9/2016	281	18	1	18

9/10/2016	274	11	1	11
9/11/2016	271	8	1	8
9/12/2016	279	16	1	16
9/13/2016	280	17	1	17
9/14/2016	285	22	1	22
9/15/2016	285	22	1	22
9/16/2016	272	9	1	9
9/17/2016	270	7	1	7
9/18/2016	271	8	1	8
9/19/2016	273	10	1	10
9/20/2016	276	13	1	13
9/21/2016	279	16	1	16
9/22/2016	295	32	1	32
9/23/2016	281	18	1	18
9/24/2016	264	1	1	1
9/25/2016	255	-8	0	0
9/26/2016	251	-12	0	0
9/27/2016	249	-14	0	0
9/28/2016	250	-13	0	0
9/29/2016	254	-9	0	0
9/30/2016	252	-11	0	0
10/1/2016	262	-1	0	0
10/2/2016	267	4	1	4
10/3/2016	280	17	1	17
10/4/2016	293	30	1	30
10/5/2016	265	2	1	2
10/6/2016	257	-6	0	0
10/7/2016	257	-6	0	0
10/8/2016	256	-7	0	0
10/9/2016	261	-2	0	0
10/10/2016	259	-4	0	0
10/11/2016	280	17	1	17
10/12/2016	257	-6	0	0
10/13/2016	266	3	1	3
10/14/2016	265	2	1	2
10/15/2016	277	14	1	14
10/16/2016	267	4	1	4
10/17/2016	259	-4	0	0
10/18/2016	301	38	1	38
10/19/2016	346	83	1	83
10/20/2016	306	43	1	43
10/21/2016	272	9	1	9
10/22/2016	269	6	1	6
10/23/2016	272	9	1	9
10/24/2016	269	6	1	6
10/25/2016	272	9	1	9
10/26/2016	270	7	1	7

10/27/2016	270	7	1	7
10/28/2016	270	7	1	7
10/29/2016	273	10	1	10
10/30/2016	274	11	1	11
10/31/2016	276	13	1	13
11/1/2016	273	10	1	10
11/2/2016	273	10	1	10
11/3/2016	272	9	1	9
11/4/2016	271	8	1	8
11/5/2016	271	8	1	8
11/6/2016	271	8	1	8
11/7/2016	279	16	1	16
11/8/2016	269	6	1	6
11/9/2016	268	5	1	5
11/10/2016	268	5	1	5
11/11/2016	268	5	1	5
11/12/2016	269	6	1	6
11/13/2016	267	4	1	4
11/14/2016	267	4	1	4
11/15/2016	267	4	1	4
11/16/2016	271	8	1	8
11/17/2016	271	8	1	8
11/18/2016	261	-2	0	0
11/19/2016	270	7	1	7
11/20/2016	271	8	1	8
11/21/2016	270	7	1	7
11/22/2016	269	6	1	6
11/23/2016	271	8	1	8
11/24/2016	271	8	1	8
11/25/2016	274	11	1	11
11/26/2016	271	8	1	8
11/27/2016	269	6	1	6
11/28/2016	270	7	1	7
11/29/2016	267	4	1	4
11/30/2016	226	-37	0	0
12/1/2016	270	7	1	7
12/2/2016	270	7	1	7
12/3/2016	268	5	1	5
12/4/2016	269	6	1	6
12/5/2016	265	2	1	2
12/6/2016	189	-74	0	0
12/7/2016	222	-41	0	0
12/8/2016	265	2	1	2
12/9/2016	273	10	1	10
12/10/2016	276	13	1	13
12/11/2016	274	11	1	11
12/12/2016	268	5	1	5

12/13/2016	261	-2	0	0
12/14/2016	259	-4	0	0
12/15/2016	262	-1	0	0
12/16/2016	252	-11	0	0
12/17/2016	210	-53	0	0
12/18/2016	252	-11	0	0
12/19/2016	255	-8	0	0
12/20/2016	253	-10	0	0
12/21/2016	253	-10	0	0
12/22/2016	235	-28	0	0
12/23/2016	254	-9	0	0
12/24/2016	254	-9	0	0
12/25/2016	254	-9	0	0
12/26/2016	249	-14	0	0
12/27/2016	249	-14	0	0
12/28/2016	250	-13	0	0
12/29/2016	232	-31	0	0
12/30/2016	253	-10	0	0
12/31/2016	246	-17	0	0
1/1/2017	248	-15	0	0
1/2/2017	228	-35	0	0
1/3/2017	232	-31	0	0
1/4/2017	255	-8	0	0
1/5/2017	254	-9	0	0
1/6/2017	257	-6	0	0
1/7/2017	255	-8	0	0
1/8/2017	256	-7	0	0
1/9/2017	253	-10	0	0
1/10/2017	248	-15	0	0
1/11/2017	237	-26	0	0
1/12/2017	249	-14	0	0
1/13/2017	226	-37	0	0
1/14/2017	246	-17	0	0
1/15/2017	246	-17	0	0
1/16/2017	241	-22	0	0
1/17/2017	243	-20	0	0
1/18/2017	243	-20	0	0
1/19/2017	244	-19	0	0
1/20/2017	240	-23	0	0
1/21/2017	238	-25	0	0
1/22/2017	237	-26	0	0
1/23/2017	236	-27	0	0
1/24/2017	235	-28	0	0
1/25/2017	239	-24	0	0
1/26/2017	224	-39	0	0
1/27/2017	199	-64	0	0
1/28/2017	237	-26	0	0

1/29/2017	228	-35	0	0
1/30/2017	213	-50	0	0
1/31/2017	225	-38	0	0
2/1/2017	222	-41	0	0
2/2/2017	189	-74	0	0
2/3/2017	227	-36	0	0
2/4/2017	243	-20	0	0
2/5/2017	229	-34	0	0
2/6/2017	229	-34	0	0
2/7/2017	232	-31	0	0
2/8/2017	227	-36	0	0
2/9/2017	236	-27	0	0
2/10/2017	243	-20	0	0
2/11/2017	241	-22	0	0
2/12/2017	202	-61	0	0
2/13/2017	238	-25	0	0
2/14/2017	237	-26	0	0
2/15/2017	240	-23	0	0
2/16/2017	257	-6	0	0
2/17/2017	263	0	0	0
2/18/2017	261	-2	0	0
2/19/2017	260	-3	0	0
2/20/2017	261	-2	0	0
2/21/2017	261	-2	0	0
2/22/2017	260	-3	0	0
2/23/2017	264	1	1	1
2/24/2017	265	2	1	2
2/25/2017	265	2	1	2
2/26/2017	239	-24	0	0
2/27/2017	240	-23	0	0
2/28/2017	219	-44	0	0
3/1/2017	229	-34	0	0
3/2/2017	239	-24	0	0
3/3/2017	235	-28	0	0
3/4/2017	236	-27	0	0
3/5/2017	235	-28	0	0
3/6/2017	236	-27	0	0
3/7/2017	217	-46	0	0
3/8/2017	234	-29	0	0
3/9/2017	234	-29	0	0
3/10/2017	234	-29	0	0
3/11/2017	235	-28	0	0
3/12/2017	238	-25	0	0
3/13/2017	239	-24	0	0
3/14/2017	242	-21	0	0
3/15/2017	242	-21	0	0
3/16/2017	243	-20	0	0

3/17/2017	240	-23	0	0
3/18/2017	240	-23	0	0
3/19/2017	245	-18	0	0
3/20/2017	249	-14	0	0
3/21/2017	249	-14	0	0
3/22/2017	248	-15	0	0
3/23/2017	249	-14	0	0
3/24/2017	246	-17	0	0
3/25/2017	247	-16	0	0
3/26/2017	246	-17	0	0
3/27/2017	245	-18	0	0
3/28/2017	247	-16	0	0
3/29/2017	237	-26	0	0
3/30/2017	251	-12	0	0
3/31/2017	263	0	0	0
4/1/2017	257	-6	0	0
4/2/2017	275	12	1	12
4/3/2017	264	1	1	1
4/4/2017	257	-6	0	0
4/5/2017	256	-7	0	0
4/6/2017	250	-13	0	0
4/7/2017	260	-3	0	0
4/8/2017	272	9	1	9
4/9/2017	272	9	1	9
4/10/2017	270	7	1	7
4/11/2017	267	4	1	4
4/12/2017	265	2	1	2
4/13/2017	268	5	1	5
4/14/2017	280	17	1	17
4/15/2017	279	16	1	16
4/16/2017	276	13	1	13
4/17/2017	278	15	1	15
4/18/2017	281	18	1	18
4/19/2017	291	28	1	28
4/20/2017	290	27	1	27
4/21/2017	292	29	1	29
4/22/2017	291	28	1	28
4/23/2017	296	33	1	33
4/24/2017	301	38	1	38
4/25/2017	307	44	1	44
4/26/2017	309	46	1	46
4/27/2017	312	49	1	49
4/28/2017	307	44	1	44
4/29/2017	303	40	1	40
4/30/2017	305	42	1	42
5/1/2017	305	42	1	42
5/2/2017	306	43	1	43

5/3/2017	301	38	1	38
5/4/2017	302	39	1	39
5/5/2017	327	64	1	64
5/6/2017	354	91	1	91
5/7/2017	362	99	1	99
5/8/2017	360	97	1	97
5/9/2017	351	88	1	88
5/10/2017	342	79	1	79
5/11/2017	342	79	1	79
5/12/2017	311	48	1	48
5/13/2017	294	31	1	31
5/14/2017	283	20	1	20
5/15/2017	269	6	1	6
5/16/2017	265	2	1	2
5/17/2017	265	2	1	2
5/18/2017	258	-5	0	0
5/19/2017	274	11	1	11
5/20/2017	294	31	1	31
5/21/2017	304	41	1	41
5/22/2017	301	38	1	38
5/23/2017	301	38	1	38
5/24/2017	287	24	1	24
5/25/2017	273	10	1	10
5/26/2017	262	-1	0	0
5/27/2017	249	-14	0	0
5/28/2017	244	-19	0	0
5/29/2017	244	-19	0	0
5/30/2017	105	-158	0	0
5/31/2017	2	-261	0	0
6/1/2017	151	-112	0	0
6/2/2017	217	-46	0	0
6/3/2017	227	-36	0	0
6/4/2017	238	-25	0	0
6/5/2017	254	-9	0	0
6/6/2017	261	-2	0	0
6/7/2017	257	-6	0	0
6/8/2017	255	-8	0	0
6/9/2017	253	-10	0	0
6/10/2017	255	-8	0	0
6/11/2017	259	-4	0	0
6/12/2017	255	-8	0	0
6/13/2017	269	6	1	6
6/14/2017	273	10	1	10
6/15/2017	260	-3	0	0
6/16/2017	252	-11	0	0
6/17/2017	256	-7	0	0
6/18/2017	245	-18	0	0

6/19/2017	243	-20	0	0
6/20/2017	235	-28	0	0
6/21/2017	235	-28	0	0
6/22/2017	230	-33	0	0
6/23/2017	236	-27	0	0
6/24/2017	244	-19	0	0
6/25/2017	235	-28	0	0
6/26/2017	246	-17	0	0
6/27/2017	244	-19	0	0
6/28/2017	237	-26	0	0
6/29/2017	238	-25	0	0
6/30/2017	242	-21	0	0
7/1/2017	243	-20	0	0
7/2/2017	234	-29	0	0
7/3/2017	247	-16	0	0
7/4/2017	236	-27	0	0
7/5/2017	225	-38	0	0
7/6/2017	230	-33	0	0
7/7/2017	235	-28	0	0
7/8/2017	247	-16	0	0
7/9/2017	255	-8	0	0
7/10/2017	252	-11	0	0
7/11/2017	263	0	0	0
7/12/2017	252	-11	0	0
7/13/2017	253	-10	0	0
7/14/2017	250	-13	0	0
7/15/2017	241	-22	0	0
7/16/2017	236	-27	0	0
7/17/2017	235	-28	0	0
7/18/2017	236	-27	0	0
7/19/2017	231	-32	0	0
7/20/2017	225	-38	0	0
7/21/2017	241	-22	0	0
7/22/2017	252	-11	0	0
7/23/2017	249	-14	0	0
7/24/2017	253	-10	0	0
7/25/2017	276	13	1	13
7/26/2017	266	3	1	3
7/27/2017	269	6	1	6
7/28/2017	275	12	1	12
7/29/2017	278	15	1	15
7/30/2017	275	12	1	12
7/31/2017	282	19	1	19
8/1/2017	283	20	1	20
8/2/2017	276	13	1	13
8/3/2017	271	8	1	8
8/4/2017	275	12	1	12

8/5/2017	275	12	1	12
8/6/2017	279	16	1	16
8/7/2017	278	15	1	15
8/8/2017	288	25	1	25
8/9/2017	277	14	1	14
8/10/2017	264	1	1	1
8/11/2017	254	-9	0	0
8/12/2017	250	-13	0	0
8/13/2017	252	-11	0	0
8/14/2017	265	2	1	2
8/15/2017	279	16	1	16
8/16/2017	261	-2	0	0
8/17/2017	258	-5	0	0
8/18/2017	251	-12	0	0
8/19/2017	246	-17	0	0
8/20/2017	250	-13	0	0
8/21/2017	245	-18	0	0
8/22/2017	237	-26	0	0
8/23/2017	243	-20	0	0
8/24/2017	246	-17	0	0
8/25/2017	251	-12	0	0
8/26/2017	246	-17	0	0
8/27/2017	237	-26	0	0
8/28/2017	243	-20	0	0
8/29/2017	242	-21	0	0
8/30/2017	244	-19	0	0
8/31/2017	241	-22	0	0
9/1/2017	238	-25	0	0
9/2/2017	238	-25	0	0
9/3/2017	230	-33	0	0
9/4/2017	225	-38	0	0
9/5/2017	216	-47	0	0
9/6/2017	207	-56	0	0
9/7/2017	196	-67	0	0
9/8/2017	206	-57	0	0
9/9/2017	207	-56	0	0
9/10/2017	209	-54	0	0
9/11/2017	219	-44	0	0
9/12/2017	225	-38	0	0
9/13/2017	230	-33	0	0
9/14/2017	236	-27	0	0
9/15/2017	236	-27	0	0
9/16/2017	224	-39	0	0
9/17/2017	220	-43	0	0
9/18/2017	228	-35	0	0
9/19/2017	120	-143	0	0
9/20/2017	0	-263	0	0

9/21/2017	0	-263	0	0
9/22/2017	137	-126	0	0
9/23/2017	244	-19	0	0
9/24/2017	224	-39	0	0
9/25/2017	78	-185	0	0
9/26/2017	0	-263	0	0
9/27/2017	0	-263	0	0
9/28/2017	140	-123	0	0
9/29/2017	258	-5	0	0
9/30/2017	265	2	1	2
10/1/2017	299	36	1	36
10/2/2017	298	35	1	35
10/3/2017	315	52	1	52
10/4/2017	307	44	1	44
10/5/2017	296	33	1	33
10/6/2017	295	32	1	32
10/7/2017	302	39	1	39
10/8/2017	301	38	1	38
10/9/2017	292	29	1	29
10/10/2017	280	17	1	17
10/11/2017	279	16	1	16
10/12/2017	341	78	1	78
10/13/2017	345	82	1	82
10/14/2017	256	-7	0	0
10/15/2017	231	-32	0	0
10/16/2017	216	-47	0	0
10/17/2017	220	-43	0	0
10/18/2017	237	-26	0	0
10/19/2017	260	-3	0	0
10/20/2017	268	5	1	5
10/21/2017	260	-3	0	0
10/22/2017	254	-9	0	0
10/23/2017	251	-12	0	0
10/24/2017	238	-25	0	0
10/25/2017	250	-13	0	0
10/26/2017	241	-22	0	0
10/27/2017	236	-27	0	0
10/28/2017	237	-26	0	0
10/29/2017	237	-26	0	0
10/30/2017	227	-36	0	0
10/31/2017	330	67	1	67
11/1/2017	434	171	1	171
11/2/2017	374	111	1	111
11/3/2017	340	77	1	77
11/4/2017	309	46	1	46
11/5/2017	301	38	1	38
11/6/2017	317	54	1	54

11/7/2017	337	74	1	74
11/8/2017	347	84	1	84
11/9/2017	361	98	1	98
11/10/2017	337	74	1	74
11/11/2017	347	84	1	84
11/12/2017	331	68	1	68
11/13/2017	315	52	1	52
11/14/2017	300	37	1	37
11/15/2017	277	14	1	14
11/16/2017	305	42	1	42
11/17/2017	307	44	1	44
11/18/2017	277	14	1	14
11/19/2017	281	18	1	18
11/20/2017	309	46	1	46
11/21/2017	307	44	1	44
11/22/2017	306	43	1	43
11/23/2017	309	46	1	46
11/24/2017	312	49	1	49
11/25/2017	310	47	1	47
11/26/2017	312	49	1	49
11/27/2017	316	53	1	53
11/28/2017	315	52	1	52
11/29/2017	313	50	1	50
11/30/2017	304	41	1	41
12/1/2017	314	51	1	51
12/2/2017	311	48	1	48
12/3/2017	312	49	1	49
12/4/2017	311	48	1	48
12/5/2017	286	23	1	23
12/6/2017	308	45	1	45
12/7/2017	314	51	1	51
12/8/2017	294	31	1	31
12/9/2017	293	30	1	30
12/10/2017	303	40	1	40
12/11/2017	310	47	1	47
12/12/2017	310	47	1	47
12/13/2017	313	50	1	50
12/14/2017	310	47	1	47
12/15/2017	301	38	1	38
12/16/2017	310	47	1	47
12/17/2017	265	2	1	2
12/18/2017	309	46	1	46
12/19/2017	299	36	1	36
12/20/2017	281	18	1	18
12/21/2017	233	-30	0	0
12/22/2017	286	23	1	23
12/23/2017	238	-25	0	0

12/24/2017	204	-59	0	0
12/25/2017	267	4	1	4
12/26/2017	285	22	1	22
12/27/2017	290	27	1	27
12/28/2017	290	27	1	27
12/29/2017	287	24	1	24
12/30/2017	257	-6	0	0
12/31/2017	295	32	1	32
1/1/2018	275	12	1	12
1/2/2018	246	-17	0	0
1/3/2018	296	33	1	33
1/4/2018	287	24	1	24
1/5/2018	283	20	1	20
1/6/2018	278	15	1	15
1/7/2018	275	12	1	12
1/8/2018	276	13	1	13
1/9/2018	278	15	1	15
1/10/2018	274	11	1	11
1/11/2018	273	10	1	10
1/12/2018	275	12	1	12
1/13/2018	275	12	1	12
1/14/2018	269	6	1	6
1/15/2018	270	7	1	7
1/16/2018	155	-108	0	0
1/17/2018	259	-4	0	0
1/18/2018	281	18	1	18
1/19/2018	278	15	1	15
1/20/2018	275	12	1	12
1/21/2018	266	3	1	3
1/22/2018	218	-45	0	0
1/23/2018	273	10	1	10
1/24/2018	273	10	1	10
1/25/2018	277	14	1	14
1/26/2018	273	10	1	10
1/27/2018	244	-19	0	0
1/28/2018	271	8	1	8
1/29/2018	260	-3	0	0
1/30/2018	265	2	1	2
1/31/2018	252	-11	0	0
2/1/2018	265	2	1	2
2/2/2018	271	8	1	8
2/3/2018	269	6	1	6
2/4/2018	258	-5	0	0
2/5/2018	270	7	1	7
2/6/2018	267	4	1	4
2/7/2018	267	4	1	4
2/8/2018	274	11	1	11

2/9/2018	209	-54	0	0
2/10/2018	222	-41	0	0
2/11/2018	267	4	1	4
2/12/2018	245	-18	0	0
2/13/2018	234	-29	0	0
2/14/2018	280	17	1	17
2/15/2018	281	18	1	18
2/16/2018	264	1	1	1
2/17/2018	283	20	1	20
2/18/2018	271	8	1	8
2/19/2018	205	-58	0	0
2/20/2018	271	8	1	8
2/21/2018	280	17	1	17
2/22/2018	264	1	1	1
2/23/2018	258	-5	0	0
2/24/2018	258	-5	0	0
2/25/2018	256	-7	0	0
2/26/2018	254	-9	0	0
2/27/2018	250	-13	0	0
2/28/2018	245	-18	0	0
3/1/2018	242	-21	0	0
3/2/2018	244	-19	0	0
3/3/2018	244	-19	0	0
3/4/2018	242	-21	0	0
3/5/2018	244	-19	0	0
3/6/2018	241	-22	0	0
3/7/2018	236	-27	0	0
3/8/2018	247	-16	0	0
3/9/2018	237	-26	0	0
3/10/2018	242	-21	0	0
3/11/2018	240	-23	0	0
3/12/2018	249	-14	0	0
3/13/2018	254	-9	0	0
3/14/2018	269	6	1	6
3/15/2018	276	13	1	13
3/16/2018	275	12	1	12
3/17/2018	273	10	1	10
3/18/2018	271	8	1	8
3/19/2018	272	9	1	9
3/20/2018	271	8	1	8
3/21/2018	272	9	1	9
3/22/2018	272	9	1	9
3/23/2018	276	13	1	13
3/24/2018	279	16	1	16
3/25/2018	277	14	1	14
3/26/2018	277	14	1	14
3/27/2018	276	13	1	13

3/28/2018	277	14	1	14
3/29/2018	276	13	1	13
3/30/2018	277	14	1	14
3/31/2018	276	13	1	13
4/1/2018	264	1	1	1
4/2/2018	278	15	1	15
4/3/2018	255	-8	0	0
4/4/2018	278	15	1	15
4/5/2018	277	14	1	14
4/6/2018	278	15	1	15
4/7/2018	275	12	1	12
4/8/2018	280	17	1	17
4/9/2018	280	17	1	17
4/10/2018	276	13	1	13
4/11/2018	279	16	1	16
4/12/2018	282	19	1	19
4/13/2018	284	21	1	21
4/14/2018	285	22	1	22
4/15/2018	287	24	1	24
4/16/2018	288	25	1	25
4/17/2018	289	26	1	26
4/18/2018	285	22	1	22
4/19/2018	284	21	1	21
4/20/2018	295	32	1	32
4/21/2018	316	53	1	53
4/22/2018	342	79	1	79
4/23/2018	365	102	1	102
4/24/2018	348	85	1	85
4/25/2018	332	69	1	69
4/26/2018	320	57	1	57
4/27/2018	338	75	1	75
4/28/2018	365	102	1	102
4/29/2018	368	105	1	105
4/30/2018	363	100	1	100
5/1/2018	326	63	1	63
5/2/2018	286	23	1	23
5/3/2018	280	17	1	17
5/4/2018	282	19	1	19
5/5/2018	291	28	1	28
5/6/2018	300	37	1	37
5/7/2018	299	36	1	36
5/8/2018	296	33	1	33
5/9/2018	294	31	1	31
5/10/2018	301	38	1	38
5/11/2018	283	20	1	20
5/12/2018	265	2	1	2
5/13/2018	253	-10	0	0

5/14/2018	240	-23	0	0
5/15/2018	244	-19	0	0
5/16/2018	264	1	1	1
5/17/2018	275	12	1	12
5/18/2018	275	12	1	12
5/19/2018	275	12	1	12
5/20/2018	271	8	1	8
5/21/2018	270	7	1	7
5/22/2018	273	10	1	10
5/23/2018	277	14	1	14
5/24/2018	278	15	1	15
5/25/2018	276	13	1	13
5/26/2018	274	11	1	11
5/27/2018	274	11	1	11
5/28/2018	271	8	1	8
5/29/2018	271	8	1	8
5/30/2018	251	-12	0	0
5/31/2018	244	-19	0	0
6/1/2018	246	-17	0	0
6/2/2018	246	-17	0	0
6/3/2018	236	-27	0	0
6/4/2018	233	-30	0	0
6/5/2018	229	-34	0	0
6/6/2018	228	-35	0	0
6/7/2018	227	-36	0	0
6/8/2018	220	-43	0	0
6/9/2018	213	-50	0	0
6/10/2018	230	-33	0	0
6/11/2018	259	-4	0	0
6/12/2018	254	-9	0	0
6/13/2018	259	-4	0	0
6/14/2018	254	-9	0	0
6/15/2018	248	-15	0	0
6/16/2018	243	-20	0	0
6/17/2018	242	-21	0	0
6/18/2018	250	-13	0	0
6/19/2018	244	-19	0	0
6/20/2018	252	-11	0	0
6/21/2018	247	-16	0	0
6/22/2018	241	-22	0	0
6/23/2018	232	-31	0	0
6/24/2018	230	-33	0	0
6/25/2018	201	-62	0	0
6/26/2018	233	-30	0	0
6/27/2018	263	0	0	0
6/28/2018	273	10	1	10
6/29/2018	274	11	1	11

6/30/2018	275	12	1	12
7/1/2018	262	-1	0	0
7/2/2018	261	-2	0	0
7/3/2018	254	-9	0	0
7/4/2018	254	-9	0	0
7/5/2018	248	-15	0	0
7/6/2018	256	-7	0	0
7/7/2018	254	-9	0	0
7/8/2018	262	-1	0	0
7/9/2018	260	-3	0	0
7/10/2018	256	-7	0	0
7/11/2018	262	-1	0	0
7/12/2018	304	41	1	41
7/13/2018	284	21	1	21
7/14/2018	248	-15	0	0
7/15/2018	253	-10	0	0
7/16/2018	272	9	1	9
7/17/2018	271	8	1	8
7/18/2018	267	4	1	4
7/19/2018	271	8	1	8
7/20/2018	276	13	1	13
7/21/2018	282	19	1	19
7/22/2018	273	10	1	10
7/23/2018	266	3	1	3
7/24/2018	271	8	1	8
7/25/2018	273	10	1	10
7/26/2018	277	14	1	14
7/27/2018	284	21	1	21
7/28/2018	291	28	1	28
7/29/2018	297	34	1	34
7/30/2018	304	41	1	41
7/31/2018	311	48	1	48
8/1/2018	332	69	1	69
8/2/2018	335	72	1	72
8/3/2018	306	43	1	43
8/4/2018	288	25	1	25
8/5/2018	286	23	1	23
8/6/2018	285	22	1	22
8/7/2018	277	14	1	14
8/8/2018	273	10	1	10
8/9/2018	272	9	1	9
8/10/2018	273	10	1	10
8/11/2018	271	8	1	8
8/12/2018	275	12	1	12
8/13/2018	277	14	1	14
8/14/2018	273	10	1	10
8/15/2018	271	8	1	8

8/16/2018	271	8	1	8
8/17/2018	275	12	1	12
8/18/2018	271	8	1	8
8/19/2018	274	11	1	11
8/20/2018	112	-151	0	0
8/21/2018	0	-263	0	0
8/22/2018	0	-263	0	0
8/23/2018	0	-263	0	0
8/24/2018	83	-180	0	0
8/25/2018	259	-4	0	0
8/26/2018	260	-3	0	0
8/27/2018	272	9	1	9
8/28/2018	262	-1	0	0
8/29/2018	211	-52	0	0
8/30/2018	193	-70	0	0
8/31/2018	222	-41	0	0
9/1/2018	210	-53	0	0
9/2/2018	207	-56	0	0
9/3/2018	212	-51	0	0
9/4/2018	212	-51	0	0
9/5/2018	235	-28	0	0
9/6/2018	252	-11	0	0
9/7/2018	254	-9	0	0
9/8/2018	251	-12	0	0
9/9/2018	248	-15	0	0
9/10/2018	252	-11	0	0
9/11/2018	243	-20	0	0
9/12/2018	248	-15	0	0
9/13/2018	250	-13	0	0
9/14/2018	248	-15	0	0
9/15/2018	250	-13	0	0
9/16/2018	252	-11	0	0
9/17/2018	245	-18	0	0
9/18/2018	247	-16	0	0
9/19/2018	249	-14	0	0
9/20/2018	258	-5	0	0
9/21/2018	259	-4	0	0
9/22/2018	257	-6	0	0
9/23/2018	257	-6	0	0
9/24/2018	258	-5	0	0
9/25/2018	258	-5	0	0
9/26/2018	260	-3	0	0
9/27/2018	258	-5	0	0
9/28/2018	258	-5	0	0
9/29/2018	257	-6	0	0
9/30/2018	257	-6	0	0
10/1/2018	261	-2	0	0

10/2/2018	259	-4	0	0
10/3/2018	260	-3	0	0
10/4/2018	264	1	1	1
10/5/2018	272	9	1	9
10/6/2018	271	8	1	8
10/7/2018	276	13	1	13
10/8/2018	269	6	1	6
10/9/2018	271	8	1	8
10/10/2018	269	6	1	6
10/11/2018	264	1	1	1
10/12/2018	265	2	1	2
10/13/2018	265	2	1	2
10/14/2018	266	3	1	3
10/15/2018	259	-4	0	0
10/16/2018	264	1	1	1
10/17/2018	266	3	1	3
10/18/2018	265	2	1	2
10/19/2018	265	2	1	2
10/20/2018	266	3	1	3
10/21/2018	266	3	1	3
10/22/2018	265	2	1	2
10/23/2018	262	-1	0	0
10/24/2018	253	-10	0	0
10/25/2018	249	-14	0	0
10/26/2018	246	-17	0	0
10/27/2018	266	3	1	3
10/28/2018	264	1	1	1
10/29/2018	260	-3	0	0
10/30/2018	250	-13	0	0
10/31/2018	240	-23	0	0
11/1/2018	230	-33	0	0
11/2/2018	248	-15	0	0
11/3/2018	246	-17	0	0
11/4/2018	246	-17	0	0
11/5/2018	246	-17	0	0
11/6/2018	245	-18	0	0
11/7/2018	245	-18	0	0
11/8/2018	245	-18	0	0
11/9/2018	233	-30	0	0
11/10/2018	247	-16	0	0
11/11/2018	245	-18	0	0
11/12/2018	222	-41	0	0
11/13/2018	246	-17	0	0
11/14/2018	246	-17	0	0
11/15/2018	257	-6	0	0
11/16/2018	269	6	1	6
11/17/2018	268	5	1	5

11/18/2018	202	-61	0	0
11/19/2018	271	8	1	8
11/20/2018	269	6	1	6
11/21/2018	266	3	1	3
11/22/2018	267	4	1	4
11/23/2018	272	9	1	9
11/24/2018	269	6	1	6
11/25/2018	267	4	1	4
11/26/2018	238	-25	0	0
11/27/2018	273	10	1	10
11/28/2018	269	6	1	6
11/29/2018	264	1	1	1
11/30/2018	237	-26	0	0
12/1/2018	265	2	1	2
12/2/2018	186	-77	0	0
12/3/2018	240	-23	0	0
12/4/2018	269	6	1	6
12/5/2018	210	-53	0	0
12/6/2018	230	-33	0	0
12/7/2018	258	-5	0	0
12/8/2018	281	18	1	18
12/9/2018	277	14	1	14
12/10/2018	278	15	1	15
12/11/2018	276	13	1	13
12/12/2018	275	12	1	12
12/13/2018	271	8	1	8
12/14/2018	271	8	1	8
12/15/2018	269	6	1	6
12/16/2018	270	7	1	7
12/17/2018	272	9	1	9
12/18/2018	271	8	1	8
12/19/2018	274	11	1	11
12/20/2018	272	9	1	9
12/21/2018	267	4	1	4
12/22/2018	260	-3	0	0
12/23/2018	210	-53	0	0
12/24/2018	276	13	1	13
12/25/2018	257	-6	0	0
12/26/2018	266	3	1	3
12/27/2018	255	-8	0	0
12/28/2018	265	2	1	2
12/29/2018	253	-10	0	0
12/30/2018	265	2	1	2
12/31/2018	237	-26	0	0
1/1/2019	206	-57	0	0
1/2/2019	273	10	1	10
1/3/2019	276	13	1	13

1/4/2019	269	6	1	6
1/5/2019	266	3	1	3
1/6/2019	264	1	1	1
1/7/2019	263	0	0	0
1/8/2019	212	-51	0	0
1/9/2019	269	6	1	6
1/10/2019	264	1	1	1
1/11/2019	264	1	1	1
1/12/2019	210	-53	0	0
1/13/2019	268	5	1	5
1/14/2019	267	4	1	4
1/15/2019	263	0	0	0
1/16/2019	279	16	1	16
1/17/2019	271	8	1	8
1/18/2019	269	6	1	6
1/19/2019	266	3	1	3
1/20/2019	263	0	0	0
1/21/2019	265	2	1	2
1/22/2019	276	13	1	13
1/23/2019	264	1	1	1
1/24/2019	264	1	1	1
1/25/2019	265	2	1	2
1/26/2019	266	3	1	3
1/27/2019	266	3	1	3
1/28/2019	256	-7	0	0
1/29/2019	180	-83	0	0
1/30/2019	272	9	1	9
1/31/2019	275	12	1	12
2/1/2019	267	4	1	4
2/2/2019	264	1	1	1
2/3/2019	248	-15	0	0
2/4/2019	151	-112	0	0
2/5/2019	246	-17	0	0
2/6/2019	274	11	1	11
2/7/2019	268	5	1	5
2/8/2019	274	11	1	11
2/9/2019	253	-10	0	0
2/10/2019	235	-28	0	0
2/11/2019	264	1	1	1
2/12/2019	257	-6	0	0
2/13/2019	249	-14	0	0
2/14/2019	242	-21	0	0
2/15/2019	243	-20	0	0
2/16/2019	241	-22	0	0
2/17/2019	231	-32	0	0
2/18/2019	210	-53	0	0
2/19/2019	221	-42	0	0

2/20/2019	257	-6	0	0
2/21/2019	244	-19	0	0
2/22/2019	212	-51	0	0
2/23/2019	247	-16	0	0
2/24/2019	233	-30	0	0
2/25/2019	230	-33	0	0
2/26/2019	232	-31	0	0
2/27/2019	246	-17	0	0
2/28/2019	252	-11	0	0
3/1/2019	242	-21	0	0
3/2/2019	234	-29	0	0
3/3/2019	221	-42	0	0
3/4/2019	231	-32	0	0
3/5/2019	242	-21	0	0
3/6/2019	244	-19	0	0
3/7/2019	239	-24	0	0
3/8/2019	238	-25	0	0
3/9/2019	235	-28	0	0
3/10/2019	219	-44	0	0
3/11/2019	221	-42	0	0
3/12/2019	234	-29	0	0
3/13/2019	234	-29	0	0
3/14/2019	233	-30	0	0
3/15/2019	230	-33	0	0
3/16/2019	230	-33	0	0
3/17/2019	231	-32	0	0
3/18/2019	232	-31	0	0
3/19/2019	233	-30	0	0
3/20/2019	243	-20	0	0
3/21/2019	258	-5	0	0
3/22/2019	274	11	1	11
3/23/2019	278	15	1	15
3/24/2019	279	16	1	16
3/25/2019	279	16	1	16
3/26/2019	280	17	1	17
3/27/2019	283	20	1	20
3/28/2019	283	20	1	20
3/29/2019	280	17	1	17
3/30/2019	278	15	1	15
3/31/2019	278	15	1	15
4/1/2019	281	18	1	18
4/2/2019	281	18	1	18
4/3/2019	282	19	1	19
4/4/2019	283	20	1	20
4/5/2019	283	20	1	20
4/6/2019	283	20	1	20
4/7/2019	283	20	1	20

4/8/2019	285	22	1	22
4/9/2019	282	19	1	19
4/10/2019	282	19	1	19
4/11/2019	276	13	1	13
4/12/2019	275	12	1	12
4/13/2019	273	10	1	10
4/14/2019	274	11	1	11
4/15/2019	273	10	1	10
4/16/2019	272	9	1	9
4/17/2019	274	11	1	11
4/18/2019	270	7	1	7
4/19/2019	277	14	1	14
4/20/2019	317	54	1	54
4/21/2019	365	102	1	102
4/22/2019	349	86	1	86
4/23/2019	342	79	1	79
4/24/2019	343	80	1	80
4/25/2019	339	76	1	76
4/26/2019	344	81	1	81
4/27/2019	344	81	1	81
4/28/2019	338	75	1	75
4/29/2019	307	44	1	44
4/30/2019	365	102	1	102
5/1/2019	338	75	1	75
5/2/2019	305	42	1	42
5/3/2019	292	29	1	29
5/4/2019	293	30	1	30
5/5/2019	301	38	1	38
5/6/2019	308	45	1	45
5/7/2019	317	54	1	54
5/8/2019	335	72	1	72
5/9/2019	340	77	1	77
5/10/2019	334	71	1	71
5/11/2019	338	75	1	75
5/12/2019	352	89	1	89
5/13/2019	368	105	1	105
5/14/2019	380	117	1	117
5/15/2019	389	126	1	126
5/16/2019	393	130	1	130
5/17/2019	394	131	1	131
5/18/2019	394	131	1	131
5/19/2019	374	111	1	111
5/20/2019	363	100	1	100
5/21/2019	354	91	1	91
5/22/2019	347	84	1	84
5/23/2019	337	74	1	74
5/24/2019	334	71	1	71

5/25/2019	329	66	1	66
5/26/2019	328	65	1	65
5/27/2019	345	82	1	82
5/28/2019	353	90	1	90
5/29/2019	353	90	1	90
5/30/2019	350	87	1	87
5/31/2019	314	51	1	51
6/1/2019	292	29	1	29
6/2/2019	291	28	1	28
6/3/2019	292	29	1	29
6/4/2019	296	33	1	33
6/5/2019	282	19	1	19
6/6/2019	276	13	1	13
6/7/2019	278	15	1	15
6/8/2019	283	20	1	20
6/9/2019	276	13	1	13
6/10/2019	272	9	1	9
6/11/2019	269	6	1	6
6/12/2019	268	5	1	5
6/13/2019	262	-1	0	0
6/14/2019	264	1	1	1
6/15/2019	261	-2	0	0
6/16/2019	256	-7	0	0
6/17/2019	254	-9	0	0
6/18/2019	258	-5	0	0
6/19/2019	263	0	0	0
6/20/2019	260	-3	0	0
6/21/2019	276	13	1	13
6/22/2019	283	20	1	20
6/23/2019	280	17	1	17
6/24/2019	279	16	1	16
6/25/2019	271	8	1	8
6/26/2019	268	5	1	5
6/27/2019	266	3	1	3
6/28/2019	257	-6	0	0
6/29/2019	246	-17	0	0
6/30/2019	234	-29	0	0
7/1/2019	242	-21	0	0
7/2/2019	245	-18	0	0
7/3/2019	248	-15	0	0
7/4/2019	257	-6	0	0
7/5/2019	248	-15	0	0
7/6/2019	243	-20	0	0
7/7/2019	237	-26	0	0
7/8/2019	238	-25	0	0
7/9/2019	245	-18	0	0
7/10/2019	245	-18	0	0

7/11/2019	258	-5	0	0
7/12/2019	264	1	1	1
7/13/2019	249	-14	0	0
7/14/2019	242	-21	0	0
7/15/2019	233	-30	0	0
7/16/2019	244	-19	0	0
7/17/2019	252	-11	0	0
7/18/2019	260	-3	0	0
7/19/2019	248	-15	0	0
7/20/2019	237	-26	0	0
7/21/2019	245	-18	0	0
7/22/2019	261	-2	0	0
7/23/2019	262	-1	0	0
7/24/2019	268	5	1	5
7/25/2019	264	1	1	1
7/26/2019	257	-6	0	0
7/27/2019	250	-13	0	0
7/28/2019	249	-14	0	0
7/29/2019	261	-2	0	0
7/30/2019	262	-1	0	0
7/31/2019	262	-1	0	0
8/1/2019	262	-1	0	0
8/2/2019	261	-2	0	0
8/3/2019	242	-21	0	0
8/4/2019	251	-12	0	0
8/5/2019	259	-4	0	0
8/6/2019	248	-15	0	0
8/7/2019	248	-15	0	0
8/8/2019	243	-20	0	0
8/9/2019	226	-37	0	0
8/10/2019	214	-49	0	0
8/11/2019	226	-37	0	0
8/12/2019	236	-27	0	0
8/13/2019	236	-27	0	0
8/14/2019	234	-29	0	0
8/15/2019	235	-28	0	0
8/16/2019	240	-23	0	0
8/17/2019	238	-25	0	0
8/18/2019	236	-27	0	0
8/19/2019	239	-24	0	0
8/20/2019	245	-18	0	0
8/21/2019	246	-17	0	0
8/22/2019	245	-18	0	0
8/23/2019	255	-8	0	0
8/24/2019	253	-10	0	0
8/25/2019	256	-7	0	0
8/26/2019	254	-9	0	0

8/27/2019	257	-6	0	0
8/28/2019	258	-5	0	0
8/29/2019	260	-3	0	0
8/30/2019	262	-1	0	0
8/31/2019	259	-4	0	0
9/1/2019	257	-6	0	0
9/2/2019	258	-5	0	0
9/3/2019	258	-5	0	0
9/4/2019	256	-7	0	0
9/5/2019	265	2	1	2
9/6/2019	264	1	1	1
9/7/2019	258	-5	0	0
9/8/2019	251	-12	0	0
9/9/2019	267	4	1	4
9/10/2019	250	-13	0	0
9/11/2019	254	-9	0	0
9/12/2019	255	-8	0	0
9/13/2019	250	-13	0	0
9/14/2019	261	-2	0	0
9/15/2019	267	4	1	4
9/16/2019	265	2	1	2
9/17/2019	262	-1	0	0
9/18/2019	261	-2	0	0
9/19/2019	260	-3	0	0
9/20/2019	266	3	1	3
9/21/2019	291	28	1	28
9/22/2019	284	21	1	21
9/23/2019	281	18	1	18
9/24/2019	276	13	1	13
9/25/2019	268	5	1	5
9/26/2019	265	2	1	2
9/27/2019	271	8	1	8
9/28/2019	270	7	1	7
9/29/2019	269	6	1	6
9/30/2019	266	3	1	3
10/1/2019	269	6	1	6
10/2/2019	265	2	1	2
10/3/2019	258	-5	0	0
10/4/2019	265	2	1	2
10/5/2019	270	7	1	7
10/6/2019	265	2	1	2
10/7/2019	262	-1	0	0
10/8/2019	261	-2	0	0
10/9/2019	262	-1	0	0
10/10/2019	255	-8	0	0
10/11/2019	252	-11	0	0
10/12/2019	263	0	0	0

10/13/2019	271	8	1	8
10/14/2019	273	10	1	10
10/15/2019	267	4	1	4
10/16/2019	262	-1	0	0
10/17/2019	264	1	1	1
10/18/2019	273	10	1	10
10/19/2019	264	1	1	1
10/20/2019	266	3	1	3
10/21/2019	258	-5	0	0
10/22/2019	273	10	1	10
10/23/2019	267	4	1	4
10/24/2019	282	19	1	19
10/25/2019	298	35	1	35
10/26/2019	275	12	1	12
10/27/2019	272	9	1	9
10/28/2019	274	11	1	11
10/29/2019	246	-17	0	0
10/30/2019	261	-2	0	0
10/31/2019	273	10	1	10
11/1/2019	271	8	1	8
11/2/2019	275	12	1	12
11/3/2019	272	9	1	9
11/4/2019	269	6	1	6
11/5/2019	270	7	1	7
11/6/2019	268	5	1	5
11/7/2019	264	1	1	1
11/8/2019	269	6	1	6
11/9/2019	268	5	1	5
11/10/2019	270	7	1	7
11/11/2019	259	-4	0	0
11/12/2019	275	12	1	12
11/13/2019	272	9	1	9
11/14/2019	272	9	1	9
11/15/2019	272	9	1	9
11/16/2019	272	9	1	9
11/17/2019	271	8	1	8
11/18/2019	273	10	1	10
11/19/2019	271	8	1	8
11/20/2019	275	12	1	12
11/21/2019	276	13	1	13
11/22/2019	272	9	1	9
11/23/2019	276	13	1	13
11/24/2019	274	11	1	11
11/25/2019	273	10	1	10
11/26/2019	267	4	1	4
11/27/2019	261	-2	0	0
11/28/2019	270	7	1	7

11/29/2019	250	-13	0	0
11/30/2019	271	8	1	8
12/1/2019	271	8	1	8
12/2/2019	275	12	1	12
12/3/2019	271	8	1	8
12/4/2019	271	8	1	8
12/5/2019	270	7	1	7
12/6/2019	271	8	1	8
12/7/2019	271	8	1	8
12/8/2019	273	10	1	10
12/9/2019	271	8	1	8
12/10/2019	272	9	1	9
12/11/2019	271	8	1	8
12/12/2019	271	8	1	8
12/13/2019	273	10	1	10
12/14/2019	269	6	1	6
12/15/2019	273	10	1	10
12/16/2019	223	-40	0	0
12/17/2019	261	-2	0	0
12/18/2019	275	12	1	12
12/19/2019	277	14	1	14
12/20/2019	273	10	1	10
12/21/2019	272	9	1	9
12/22/2019	280	17	1	17
12/23/2019	284	21	1	21
12/24/2019	287	24	1	24
12/25/2019	278	15	1	15
12/26/2019	270	7	1	7
12/27/2019	154	-109	0	0
12/28/2019	272	9	1	9
12/29/2019	262	-1	0	0
12/30/2019	271	8	1	8
12/31/2019	280	17	1	17
1/1/2020	280	17	1	17
1/2/2020	276	13	1	13
1/3/2020	274	11	1	11
1/4/2020	274	11	1	11
1/5/2020	262	-1	0	0
1/6/2020	274	11	1	11
1/7/2020	273	10	1	10
1/8/2020	272	9	1	9
1/9/2020	273	10	1	10
1/10/2020	237	-26	0	0
1/11/2020	275	12	1	12
1/12/2020	269	6	1	6
1/13/2020	266	3	1	3
1/14/2020	254	-9	0	0

1/15/2020	176	-87	0	0
1/16/2020	249	-14	0	0
1/17/2020	274	11	1	11
1/18/2020	269	6	1	6
1/19/2020	269	6	1	6
1/20/2020	241	-22	0	0
1/21/2020	269	6	1	6
1/22/2020	270	7	1	7
1/23/2020	271	8	1	8
1/24/2020	272	9	1	9
1/25/2020	271	8	1	8
1/26/2020	269	6	1	6
1/27/2020	272	9	1	9
1/28/2020	254	-9	0	0
1/29/2020	269	6	1	6
1/30/2020	268	5	1	5
1/31/2020	261	-2	0	0
2/1/2020	267	4	1	4
2/2/2020	267	4	1	4
2/3/2020	240	-23	0	0
2/4/2020	193	-70	0	0
2/5/2020	278	15	1	15
2/6/2020	276	13	1	13
2/7/2020	279	16	1	16
2/8/2020	279	16	1	16
2/9/2020	263	0	0	0
2/10/2020	277	14	1	14
2/11/2020	196	-67	0	0
2/12/2020	287	24	1	24
2/13/2020	279	16	1	16
2/14/2020	277	14	1	14
2/15/2020	266	3	1	3
2/16/2020	272	9	1	9
2/17/2020	266	3	1	3
2/18/2020	249	-14	0	0
2/19/2020	235	-28	0	0
2/20/2020	180	-83	0	0
2/21/2020	273	10	1	10
2/22/2020	287	24	1	24
2/23/2020	277	14	1	14
2/24/2020	274	11	1	11
2/25/2020	273	10	1	10
2/26/2020	262	-1	0	0
2/27/2020	263	0	0	0
2/28/2020	257	-6	0	0
2/29/2020	266	3	1	3
3/1/2020	264	1	1	1

3/2/2020	218	-45	0	0
3/3/2020	269	6	1	6
3/4/2020	258	-5	0	0
3/5/2020	267	4	1	4
3/6/2020	291	28	1	28
3/7/2020	298	35	1	35
3/8/2020	301	38	1	38
3/9/2020	301	38	1	38
3/10/2020	299	36	1	36
3/11/2020	300	37	1	37
3/12/2020	301	38	1	38
3/13/2020	274	11	1	11
3/14/2020	283	20	1	20
3/15/2020	219	-44	0	0
3/16/2020	292	29	1	29
3/17/2020	300	37	1	37
3/18/2020	307	44	1	44
3/19/2020	300	37	1	37
3/20/2020	294	31	1	31
3/21/2020	296	33	1	33
3/22/2020	297	34	1	34
3/23/2020	298	35	1	35
3/24/2020	297	34	1	34
3/25/2020	299	36	1	36
3/26/2020	297	34	1	34
3/27/2020	283	20	1	20
3/28/2020	296	33	1	33
3/29/2020	296	33	1	33
3/30/2020	298	35	1	35
3/31/2020	299	36	1	36
4/1/2020	300	37	1	37
4/2/2020	289	26	1	26
4/3/2020	264	1	1	1
4/4/2020	287	24	1	24
4/5/2020	300	37	1	37
4/6/2020	300	37	1	37
4/7/2020	301	38	1	38
4/8/2020	303	40	1	40
4/9/2020	305	42	1	42
4/10/2020	306	43	1	43
4/11/2020	311	48	1	48
4/12/2020	309	46	1	46
4/13/2020	290	27	1	27
4/14/2020	301	38	1	38
4/15/2020	308	45	1	45
4/16/2020	308	45	1	45
4/17/2020	302	39	1	39

4/18/2020	298	35	1	35
4/19/2020	285	22	1	22
4/20/2020	275	12	1	12
4/21/2020	271	8	1	8
4/22/2020	270	7	1	7
4/23/2020	280	17	1	17
4/24/2020	287	24	1	24
4/25/2020	296	33	1	33
4/26/2020	335	72	1	72
4/27/2020	337	74	1	74
4/28/2020	342	79	1	79
4/29/2020	341	78	1	78
4/30/2020	348	85	1	85
5/1/2020	333	70	1	70
5/2/2020	302	39	1	39
5/3/2020	293	30	1	30
5/4/2020	281	18	1	18
5/5/2020	271	8	1	8
5/6/2020	281	18	1	18
5/7/2020	291	28	1	28
5/8/2020	279	16	1	16
5/9/2020	269	6	1	6
5/10/2020	268	5	1	5
5/11/2020	260	-3	0	0
5/12/2020	257	-6	0	0
5/13/2020	259	-4	0	0
5/14/2020	259	-4	0	0
5/15/2020	266	3	1	3
5/16/2020	266	3	1	3
5/17/2020	274	11	1	11
5/18/2020	285	22	1	22
5/19/2020	299	36	1	36
5/20/2020	304	41	1	41
5/21/2020	292	29	1	29
5/22/2020	290	27	1	27
5/23/2020	297	34	1	34
5/24/2020	294	31	1	31
5/25/2020	296	33	1	33
5/26/2020	287	24	1	24
5/27/2020	292	29	1	29
5/28/2020	307	44	1	44
5/29/2020	321	58	1	58
5/30/2020	336	73	1	73
5/31/2020	335	72	1	72
6/1/2020	310	47	1	47
6/2/2020	298	35	1	35
6/3/2020	293	30	1	30

6/4/2020	284	21	1	21
6/5/2020	271	8	1	8
6/6/2020	285	22	1	22
6/7/2020	285	22	1	22
6/8/2020	286	23	1	23
6/9/2020	285	22	1	22
6/10/2020	292	29	1	29
6/11/2020	303	40	1	40
6/12/2020	299	36	1	36
6/13/2020	292	29	1	29
6/14/2020	285	22	1	22
6/15/2020	283	20	1	20
6/16/2020	283	20	1	20
6/17/2020	292	29	1	29
6/18/2020	281	18	1	18
6/19/2020	268	5	1	5
6/20/2020	258	-5	0	0
6/21/2020	251	-12	0	0
6/22/2020	240	-23	0	0
6/23/2020	247	-16	0	0
6/24/2020	236	-27	0	0
6/25/2020	210	-53	0	0
6/26/2020	195	-68	0	0
6/27/2020	182	-81	0	0
6/28/2020	165	-98	0	0
6/29/2020	194	-69	0	0
6/30/2020	225	-38	0	0
7/1/2020	240	-23	0	0
7/2/2020	236	-27	0	0
7/3/2020	255	-8	0	0
7/4/2020	266	3	1	3
7/5/2020	261	-2	0	0
7/6/2020	258	-5	0	0
7/7/2020	257	-6	0	0
7/8/2020	256	-7	0	0
7/9/2020	260	-3	0	0
7/10/2020	272	9	1	9
7/11/2020	253	-10	0	0
7/12/2020	247	-16	0	0
7/13/2020	245	-18	0	0
7/14/2020	244	-19	0	0
7/15/2020	247	-16	0	0
7/16/2020	250	-13	0	0
7/17/2020	251	-12	0	0
7/18/2020	243	-20	0	0
7/19/2020	248	-15	0	0
7/20/2020	249	-14	0	0

7/21/2020	255	-8	0	0
7/22/2020	244	-19	0	0
7/23/2020	248	-15	0	0
7/24/2020	251	-12	0	0
7/25/2020	248	-15	0	0
7/26/2020	249	-14	0	0
7/27/2020	251	-12	0	0
7/28/2020	255	-8	0	0
7/29/2020	254	-9	0	0
7/30/2020	254	-9	0	0
7/31/2020	255	-8	0	0
8/1/2020	252	-11	0	0
8/2/2020	251	-12	0	0
8/3/2020	254	-9	0	0
8/4/2020	251	-12	0	0
8/5/2020	252	-11	0	0
8/6/2020	252	-11	0	0
8/7/2020	253	-10	0	0
8/8/2020	246	-17	0	0
8/9/2020	247	-16	0	0
8/10/2020	246	-17	0	0
8/11/2020	247	-16	0	0
8/12/2020	251	-12	0	0
8/13/2020	244	-19	0	0
8/14/2020	240	-23	0	0
8/15/2020	239	-24	0	0
8/16/2020	244	-19	0	0
8/17/2020	247	-16	0	0
8/18/2020	240	-23	0	0
8/19/2020	243	-20	0	0
8/20/2020	242	-21	0	0
8/21/2020	241	-22	0	0
8/22/2020	237	-26	0	0
8/23/2020	237	-26	0	0
8/24/2020	238	-25	0	0
8/25/2020	236	-27	0	0
8/26/2020	235	-28	0	0
8/27/2020	230	-33	0	0
8/28/2020	230	-33	0	0
8/29/2020	226	-37	0	0
8/30/2020	225	-38	0	0
8/31/2020	225	-38	0	0
9/1/2020	222	-41	0	0
9/2/2020	229	-34	0	0
9/3/2020	232	-31	0	0
9/4/2020	232	-31	0	0
9/5/2020	235	-28	0	0

9/6/2020	230	-33	0	0
9/7/2020	225	-38	0	0
9/8/2020	221	-42	0	0
9/9/2020	218	-45	0	0
9/10/2020	221	-42	0	0
9/11/2020	219	-44	0	0
9/12/2020	216	-47	0	0
9/13/2020	223	-40	0	0
9/14/2020	232	-31	0	0
9/15/2020	234	-29	0	0
9/16/2020	239	-24	0	0
9/17/2020	236	-27	0	0
9/18/2020	231	-32	0	0
9/19/2020	232	-31	0	0
9/20/2020	233	-30	0	0
9/21/2020	238	-25	0	0
9/22/2020	238	-25	0	0
9/23/2020	246	-17	0	0
9/24/2020	250	-13	0	0
9/25/2020	244	-19	0	0
9/26/2020	240	-23	0	0
9/27/2020	244	-19	0	0
9/28/2020	237	-26	0	0
9/29/2020	232	-31	0	0
9/30/2020	230	-33	0	0
10/1/2020	228	-35	0	0
10/2/2020	235	-28	0	0
10/3/2020	242	-21	0	0
10/4/2020	241	-22	0	0
10/5/2020	238	-25	0	0
10/6/2020	237	-26	0	0
10/7/2020	237	-26	0	0
10/8/2020	233	-30	0	0
10/9/2020	231	-32	0	0
10/10/2020	233	-30	0	0
10/11/2020	240	-23	0	0
10/12/2020	236	-27	0	0
10/13/2020	232	-31	0	0
10/14/2020	232	-31	0	0
10/15/2020	242	-21	0	0
10/16/2020	266	3	1	3
10/17/2020	270	7	1	7
10/18/2020	266	3	1	3
10/19/2020	268	5	1	5
10/20/2020	267	4	1	4
10/21/2020	271	8	1	8
10/22/2020	273	10	1	10

10/23/2020	266	3	1	3
10/24/2020	274	11	1	11
10/25/2020	241	-22	0	0
10/26/2020	249	-14	0	0
10/27/2020	261	-2	0	0
10/28/2020	261	-2	0	0
10/29/2020	264	1	1	1
10/30/2020	261	-2	0	0
10/31/2020	260	-3	0	0
11/1/2020	260	-3	0	0
11/2/2020	262	-1	0	0
11/3/2020	262	-1	0	0
11/4/2020	259	-4	0	0
11/5/2020	255	-8	0	0
11/6/2020	262	-1	0	0
11/7/2020	264	1	1	1
11/8/2020	257	-6	0	0
11/9/2020	247	-16	0	0
11/10/2020	247	-16	0	0
11/11/2020	264	1	1	1
11/12/2020	261	-2	0	0
11/13/2020	261	-2	0	0
11/14/2020	259	-4	0	0
11/15/2020	257	-6	0	0
11/16/2020	263	0	0	0
11/17/2020	265	2	1	2
11/18/2020	267	4	1	4
11/19/2020	268	5	1	5
11/20/2020	263	0	0	0
11/21/2020	229	-34	0	0
11/22/2020	213	-50	0	0
11/23/2020	256	-7	0	0
11/24/2020	268	5	1	5
11/25/2020	268	5	1	5
11/26/2020	267	4	1	4
11/27/2020	253	-10	0	0
11/28/2020	247	-16	0	0
11/29/2020	243	-20	0	0
11/30/2020	225	-38	0	0
12/1/2020	267	4	1	4
12/2/2020	230	-33	0	0
12/3/2020	248	-15	0	0
12/4/2020	260	-3	0	0
12/5/2020	254	-9	0	0
12/6/2020	261	-2	0	0
12/7/2020	262	-1	0	0
12/8/2020	267	4	1	4

12/9/2020	268	5	1	5
12/10/2020	264	1	1	1
12/11/2020	238	-25	0	0
12/12/2020	264	1	1	1
12/13/2020	241	-22	0	0
12/14/2020	268	5	1	5
12/15/2020	260	-3	0	0
12/16/2020	264	1	1	1
12/17/2020	263	0	0	0
12/18/2020	261	-2	0	0
12/19/2020	263	0	0	0
12/20/2020	261	-2	0	0
12/21/2020	261	-2	0	0
12/22/2020	262	-1	0	0
12/23/2020	253	-10	0	0
12/24/2020	193	-70	0	0
12/25/2020	264	1	1	1
12/26/2020	266	3	1	3
12/27/2020	260	-3	0	0
12/28/2020	151	-112	0	0
12/29/2020	234	-29	0	0
12/30/2020	271	8	1	8
12/31/2020	269	6	1	6
1/1/2021	269	6	1	6
1/2/2021	268	5	1	5
1/3/2021	268	5	1	5
1/4/2021	257	-6	0	0
1/5/2021	265	2	1	2
1/6/2021	257	-6	0	0
1/7/2021	260	-3	0	0
1/8/2021	261	-2	0	0
1/9/2021	209	-54	0	0
1/10/2021	196	-67	0	0
1/11/2021	272	9	1	9
1/12/2021	273	10	1	10
1/13/2021	264	1	1	1
1/14/2021	247	-16	0	0
1/15/2021	198	-65	0	0
1/16/2021	264	1	1	1
1/17/2021	261	-2	0	0
1/18/2021	260	-3	0	0
1/19/2021	226	-37	0	0
1/20/2021	245	-18	0	0
1/21/2021	263	0	0	0
1/22/2021	261	-2	0	0
1/23/2021	255	-8	0	0
1/24/2021	151	-112	0	0

1/25/2021	235	-28	0	0
1/26/2021	211	-52	0	0
1/27/2021	245	-18	0	0
1/28/2021	276	13	1	13
1/29/2021	261	-2	0	0
1/30/2021	239	-24	0	0
1/31/2021	219	-44	0	0
2/1/2021	235	-28	0	0
2/2/2021	238	-25	0	0
2/3/2021	234	-29	0	0
2/4/2021	243	-20	0	0
2/5/2021	239	-24	0	0
2/6/2021	237	-26	0	0
2/7/2021	197	-66	0	0
2/8/2021	249	-14	0	0
2/9/2021	224	-39	0	0
2/10/2021	224	-39	0	0
2/11/2021	246	-17	0	0
2/12/2021	246	-17	0	0
2/13/2021	288	25	1	25
2/14/2021	254	-9	0	0
2/15/2021	258	-5	0	0
2/16/2021	254	-9	0	0
2/17/2021	246	-17	0	0
2/18/2021	250	-13	0	0
2/19/2021	240	-23	0	0
2/20/2021	232	-31	0	0
2/21/2021	229	-34	0	0
2/22/2021	228	-35	0	0
2/23/2021	226	-37	0	0
2/24/2021	232	-31	0	0
2/25/2021	181	-82	0	0
2/26/2021	241	-22	0	0
2/27/2021	231	-32	0	0
2/28/2021	218	-45	0	0
3/1/2021	232	-31	0	0
3/2/2021	226	-37	0	0
3/3/2021	234	-29	0	0
3/4/2021	227	-36	0	0
3/5/2021	227	-36	0	0
3/6/2021	227	-36	0	0
3/7/2021	229	-34	0	0
3/8/2021	231	-32	0	0
3/9/2021	234	-29	0	0
3/10/2021	229	-34	0	0
3/11/2021	215	-48	0	0
3/12/2021	205	-58	0	0

3/13/2021	225	-38	0	0
3/14/2021	229	-34	0	0
3/15/2021	233	-30	0	0
3/16/2021	260	-3	0	0
3/17/2021	258	-5	0	0
3/18/2021	262	-1	0	0
3/19/2021	266	3	1	3
3/20/2021	270	7	1	7
3/21/2021	267	4	1	4
3/22/2021	266	3	1	3
3/23/2021	265	2	1	2
3/24/2021	244	-19	0	0
3/25/2021	264	1	1	1
3/26/2021	263	0	0	0
3/27/2021	257	-6	0	0
3/28/2021	259	-4	0	0
3/29/2021	266	3	1	3
3/30/2021	263	0	0	0
3/31/2021	235	-28	0	0
4/1/2021	261	-2	0	0
4/2/2021	267	4	1	4
4/3/2021	271	8	1	8
4/4/2021	276	13	1	13
4/5/2021	282	19	1	19
4/6/2021	278	15	1	15
4/7/2021	276	13	1	13
4/8/2021	274	11	1	11
4/9/2021	270	7	1	7
4/10/2021	273	10	1	10
4/11/2021	275	12	1	12
4/12/2021	276	13	1	13
4/13/2021	274	11	1	11
4/14/2021	257	-6	0	0
4/15/2021	245	-18	0	0
4/16/2021	253	-10	0	0
4/17/2021	260	-3	0	0
4/18/2021	268	5	1	5
4/19/2021	260	-3	0	0
4/20/2021	264	1	1	1
4/21/2021	257	-6	0	0
4/22/2021	263	0	0	0
4/23/2021	265	2	1	2
4/24/2021	267	4	1	4
4/25/2021	271	8	1	8
4/26/2021	276	13	1	13
4/27/2021	273	10	1	10
4/28/2021	272	9	1	9

4/29/2021	280	17	1	17
4/30/2021	307	44	1	44
5/1/2021	326	63	1	63
5/2/2021	346	83	1	83
5/3/2021	325	62	1	62
5/4/2021	310	47	1	47
5/5/2021	303	40	1	40
5/6/2021	307	44	1	44
5/7/2021	328	65	1	65
5/8/2021	358	95	1	95
5/9/2021	329	66	1	66
5/10/2021	318	55	1	55
5/11/2021	309	46	1	46
5/12/2021	302	39	1	39
5/13/2021	302	39	1	39
5/14/2021	311	48	1	48
5/15/2021	313	50	1	50
5/16/2021	320	57	1	57
5/17/2021	337	74	1	74
5/18/2021	340	77	1	77
5/19/2021	338	75	1	75
5/20/2021	338	75	1	75
5/21/2021	330	67	1	67
5/22/2021	320	57	1	57
5/23/2021	322	59	1	59
5/24/2021	318	55	1	55
5/25/2021	333	70	1	70
5/26/2021	328	65	1	65
5/27/2021	333	70	1	70
5/28/2021	331	68	1	68
5/29/2021	326	63	1	63
5/30/2021	323	60	1	60
5/31/2021	319	56	1	56
6/1/2021	313	50	1	50
6/2/2021	298	35	1	35
6/3/2021	307	44	1	44
6/4/2021	308	45	1	45
6/5/2021	297	34	1	34
6/6/2021	290	27	1	27
6/7/2021	296	33	1	33
6/8/2021	288	25	1	25
6/9/2021	287	24	1	24
6/10/2021	285	22	1	22
6/11/2021	267	4	1	4
6/12/2021	249	-14	0	0
6/13/2021	253	-10	0	0
6/14/2021	253	-10	0	0

6/15/2021	244	-19	0	0
6/16/2021	238	-25	0	0
6/17/2021	234	-29	0	0
6/18/2021	235	-28	0	0
6/19/2021	229	-34	0	0
6/20/2021	211	-52	0	0
6/21/2021	204	-59	0	0
6/22/2021	200	-63	0	0
6/23/2021	201	-62	0	0
6/24/2021	196	-67	0	0
6/25/2021	191	-72	0	0
6/26/2021	192	-71	0	0
6/27/2021	190	-73	0	0
6/28/2021	189	-74	0	0
6/29/2021	192	-71	0	0
6/30/2021	175	-88	0	0
7/1/2021	171	-92	0	0
7/2/2021	180	-83	0	0
7/3/2021	180	-83	0	0
7/4/2021	177	-86	0	0
7/5/2021	174	-89	0	0
7/6/2021	171	-92	0	0
7/7/2021	175	-88	0	0
7/8/2021	178	-85	0	0
7/9/2021	168	-95	0	0
7/10/2021	161	-102	0	0
7/11/2021	162	-101	0	0
7/12/2021	168	-95	0	0
7/13/2021	164	-99	0	0
7/14/2021	169	-94	0	0
7/15/2021	181	-82	0	0
7/16/2021	177	-86	0	0
7/17/2021	175	-88	0	0
7/18/2021	175	-88	0	0
7/19/2021	167	-96	0	0
7/20/2021	171	-92	0	0
7/21/2021	202	-61	0	0
7/22/2021	204	-59	0	0
7/23/2021	211	-52	0	0
7/24/2021	189	-74	0	0
7/25/2021	190	-73	0	0
7/26/2021	184	-79	0	0
7/27/2021	182	-81	0	0
7/28/2021	197	-66	0	0
7/29/2021	193	-70	0	0
7/30/2021	188	-75	0	0
7/31/2021	186	-77	0	0

8/1/2021	185	-78	0	0
8/2/2021	170	-93	0	0
8/3/2021	161	-102	0	0
8/4/2021	175	-88	0	0
8/5/2021	168	-95	0	0
8/6/2021	170	-93	0	0
8/7/2021	172	-91	0	0
8/8/2021	171	-92	0	0
8/9/2021	158	-105	0	0
8/10/2021	155	-108	0	0
8/11/2021	175	-88	0	0
8/12/2021	185	-78	0	0
8/13/2021	183	-80	0	0
8/14/2021	192	-71	0	0
8/15/2021	189	-74	0	0
8/16/2021	179	-84	0	0
8/17/2021	173	-90	0	0
8/18/2021	163	-100	0	0
8/19/2021	141	-122	0	0
8/20/2021	146	-117	0	0
8/21/2021	151	-112	0	0
8/22/2021	148	-115	0	0
8/23/2021	155	-108	0	0
8/24/2021	154	-109	0	0
8/25/2021	174	-89	0	0
8/26/2021	167	-96	0	0
8/27/2021	169	-94	0	0
8/28/2021	173	-90	0	0
8/29/2021	164	-99	0	0
8/30/2021	158	-105	0	0
8/31/2021	160	-103	0	0
9/1/2021	168	-95	0	0
9/2/2021	173	-90	0	0
9/3/2021	180	-83	0	0
9/4/2021	188	-75	0	0
9/5/2021	194	-69	0	0
9/6/2021	214	-49	0	0
9/7/2021	227	-36	0	0
9/8/2021	219	-44	0	0
9/9/2021	238	-25	0	0
9/10/2021	243	-20	0	0
9/11/2021	254	-9	0	0
9/12/2021	254	-9	0	0
9/13/2021	268	5	1	5
9/14/2021	258	-5	0	0
9/15/2021	275	12	1	12
9/16/2021	271	8	1	8

9/17/2021	260	-3	0	0
9/18/2021	263	0	0	0
9/19/2021	268	5	1	5
9/20/2021	274	11	1	11
9/21/2021	280	17	1	17
9/22/2021	275	12	1	12
9/23/2021	260	-3	0	0
9/24/2021	249	-14	0	0
9/25/2021	254	-9	0	0
9/26/2021	263	0	0	0
9/27/2021	259	-4	0	0
9/28/2021	258	-5	0	0
9/29/2021	257	-6	0	0
9/30/2021	263	0	0	0
10/1/2021	274	11	1	11
10/2/2021	267	4	1	4
10/3/2021	266	3	1	3
10/4/2021	267	4	1	4
10/5/2021	267	4	1	4
10/6/2021	271	8	1	8
10/7/2021	269	6	1	6
10/8/2021	266	3	1	3
10/9/2021	272	9	1	9
10/10/2021	268	5	1	5
10/11/2021	261	-2	0	0
10/12/2021	271	8	1	8
10/13/2021	266	3	1	3
10/14/2021	264	1	1	1
10/15/2021	263	0	0	0
10/16/2021	264	1	1	1
10/17/2021	260	-3	0	0
10/18/2021	262	-1	0	0
10/19/2021	257	-6	0	0
10/20/2021	248	-15	0	0
10/21/2021	257	-6	0	0
10/22/2021	257	-6	0	0
10/23/2021	257	-6	0	0
10/24/2021	253	-10	0	0
10/25/2021	252	-11	0	0
10/26/2021	268	5	1	5
10/27/2021	257	-6	0	0
10/28/2021	248	-15	0	0
10/29/2021	254	-9	0	0
10/30/2021	276	13	1	13
10/31/2021	268	5	1	5
11/1/2021	262	-1	0	0
11/2/2021	256	-7	0	0

11/3/2021	245	-18	0	0
11/4/2021	239	-24	0	0
11/5/2021	231	-32	0	0
11/6/2021	228	-35	0	0
11/7/2021	222	-41	0	0
11/8/2021	207	-56	0	0
11/9/2021	211	-52	0	0
11/10/2021	278	15	1	15
11/11/2021	246	-17	0	0
11/12/2021	271	8	1	8
11/13/2021	283	20	1	20
11/14/2021	288	25	1	25
11/15/2021	286	23	1	23
11/16/2021	285	22	1	22
11/17/2021	216	-47	0	0
11/18/2021	202	-61	0	0
11/19/2021	287	24	1	24
11/20/2021	283	20	1	20
11/21/2021	252	-11	0	0
11/22/2021	267	4	1	4
11/23/2021	238	-25	0	0
11/24/2021	257	-6	0	0
11/25/2021	234	-29	0	0
11/26/2021	268	5	1	5
11/27/2021	265	2	1	2
11/28/2021	265	2	1	2
11/29/2021	273	10	1	10
11/30/2021	272	9	1	9
12/1/2021	273	10	1	10
12/2/2021	277	14	1	14
12/3/2021	276	13	1	13
12/4/2021	276	13	1	13
12/5/2021	263	0	0	0
12/6/2021	218	-45	0	0
12/7/2021	278	15	1	15
12/8/2021	265	2	1	2
12/9/2021	201	-62	0	0
12/10/2021	207	-56	0	0
12/11/2021	240	-23	0	0
12/12/2021	274	11	1	11
12/13/2021	273	10	1	10
12/14/2021	271	8	1	8
12/15/2021	227	-36	0	0
12/16/2021	195	-68	0	0
12/17/2021	240	-23	0	0
12/18/2021	198	-65	0	0
12/19/2021	275	12	1	12

12/20/2021	270	7	1	7
12/21/2021	268	5	1	5
12/22/2021	275	12	1	12
12/23/2021	246	-17	0	0
12/24/2021	251	-12	0	0
12/25/2021	215	-48	0	0
12/26/2021	205	-58	0	0
12/27/2021	171	-92	0	0
12/28/2021	253	-10	0	0
12/29/2021	266	3	1	3
12/30/2021	263	0	0	0
12/31/2021	266	3	1	3
1/1/2022	223	-40	0	0
1/2/2022	251	-12	0	0
1/3/2022	258	-5	0	0
1/4/2022	251	-12	0	0
1/5/2022	231	-32	0	0
1/6/2022	232	-31	0	0
1/7/2022	243	-20	0	0
1/8/2022	233	-30	0	0
1/9/2022	213	-50	0	0
1/10/2022	223	-40	0	0
1/11/2022	223	-40	0	0
1/12/2022	226	-37	0	0
1/13/2022	228	-35	0	0
1/14/2022	224	-39	0	0
1/15/2022	221	-42	0	0
1/16/2022	220	-43	0	0
1/17/2022	220	-43	0	0
1/18/2022	223	-40	0	0
1/19/2022	219	-44	0	0
1/20/2022	216	-47	0	0
1/21/2022	225	-38	0	0
1/22/2022	223	-40	0	0
1/23/2022	219	-44	0	0
1/24/2022	222	-41	0	0
1/25/2022	226	-37	0	0
1/26/2022	188	-75	0	0
1/27/2022	231	-32	0	0
1/28/2022	176	-87	0	0
1/29/2022	242	-21	0	0
1/30/2022	230	-33	0	0
1/31/2022	231	-32	0	0
2/1/2022	223	-40	0	0
2/2/2022	152	-111	0	0
2/3/2022	235	-28	0	0
2/4/2022	248	-15	0	0

2/5/2022	231	-32	0	0
2/6/2022	219	-44	0	0
2/7/2022	215	-48	0	0
2/8/2022	218	-45	0	0
2/9/2022	220	-43	0	0
2/10/2022	224	-39	0	0
2/11/2022	219	-44	0	0
2/12/2022	196	-67	0	0
2/13/2022	202	-61	0	0
2/14/2022	225	-38	0	0
2/15/2022	221	-42	0	0
2/16/2022	222	-41	0	0
2/17/2022	211	-52	0	0
2/18/2022	220	-43	0	0
2/19/2022	219	-44	0	0
2/20/2022	220	-43	0	0
2/21/2022	165	-98	0	0
2/22/2022	141	-122	0	0
2/23/2022	176	-87	0	0
2/24/2022	219	-44	0	0
2/25/2022	210	-53	0	0
2/26/2022	197	-66	0	0
2/27/2022	211	-52	0	0
2/28/2022	220	-43	0	0
3/1/2022	240	-23	0	0
3/2/2022	251	-12	0	0
3/3/2022	262	-1	0	0
3/4/2022	263	0	0	0
3/5/2022	247	-16	0	0
3/6/2022	233	-30	0	0
3/7/2022	191	-72	0	0
3/8/2022	244	-19	0	0
3/9/2022	159	-104	0	0
3/10/2022	199	-64	0	0
3/11/2022	258	-5	0	0
3/12/2022	258	-5	0	0
3/13/2022	238	-25	0	0
3/14/2022	236	-27	0	0
3/15/2022	239	-24	0	0
3/16/2022	244	-19	0	0
3/17/2022	238	-25	0	0
3/18/2022	232	-31	0	0
3/19/2022	233	-30	0	0
3/20/2022	242	-21	0	0
3/21/2022	231	-32	0	0
3/22/2022	232	-31	0	0
3/23/2022	235	-28	0	0

3/24/2022	258	-5	0	0
3/25/2022	278	15	1	15
3/26/2022	290	27	1	27
3/27/2022	315	52	1	52
3/28/2022	319	56	1	56
3/29/2022	321	58	1	58
3/30/2022	295	32	1	32
3/31/2022	268	5	1	5
4/1/2022	262	-1	0	0
4/2/2022	263	0	0	0
4/3/2022	259	-4	0	0
4/4/2022	260	-3	0	0
4/5/2022	258	-5	0	0
4/6/2022	257	-6	0	0
4/7/2022	238	-25	0	0
4/8/2022	258	-5	0	0
4/9/2022	267	4	1	4
4/10/2022	265	2	1	2
4/11/2022	240	-23	0	0
4/12/2022	255	-8	0	0
4/13/2022	247	-16	0	0
4/14/2022	219	-44	0	0
4/15/2022	287	24	1	24
4/16/2022	285	22	1	22
4/17/2022	279	16	1	16
4/18/2022	279	16	1	16
4/19/2022	301	38	1	38
4/20/2022	322	59	1	59
4/21/2022	317	54	1	54
4/22/2022	332	69	1	69
4/23/2022	344	81	1	81
4/24/2022	330	67	1	67
4/25/2022	330	67	1	67
4/26/2022	338	75	1	75
4/27/2022	344	81	1	81
4/28/2022	350	87	1	87
4/29/2022	354	91	1	91
4/30/2022	351	88	1	88
5/1/2022	361	98	1	98
5/2/2022	366	103	1	103
5/3/2022	408	145	1	145
5/4/2022	423	160	1	160
5/5/2022	432	169	1	169
5/6/2022	384	121	1	121
5/7/2022	334	71	1	71
5/8/2022	319	56	1	56
5/9/2022	301	38	1	38

5/10/2022	283	20	1	20
5/11/2022	275	12	1	12
5/12/2022	282	19	1	19
5/13/2022	279	16	1	16
5/14/2022	284	21	1	21
5/15/2022	295	32	1	32
5/16/2022	320	57	1	57
5/17/2022	361	98	1	98
5/18/2022	356	93	1	93
5/19/2022	356	93	1	93
5/20/2022	338	75	1	75
5/21/2022	322	59	1	59
5/22/2022	311	48	1	48
5/23/2022	304	41	1	41
5/24/2022	296	33	1	33
5/25/2022	301	38	1	38
5/26/2022	314	51	1	51
5/27/2022	343	80	1	80
5/28/2022	364	101	1	101
5/29/2022	372	109	1	109
5/30/2022	372	109	1	109
5/31/2022	311	48	1	48
6/1/2022	254	-9	0	0
6/2/2022	234	-29	0	0
6/3/2022	271	8	1	8
6/4/2022	304	41	1	41
6/5/2022	304	41	1	41
6/6/2022	309	46	1	46
6/7/2022	325	62	1	62
6/8/2022	340	77	1	77
6/9/2022	318	55	1	55
6/10/2022	302	39	1	39
6/11/2022	294	31	1	31
6/12/2022	290	27	1	27
6/13/2022	289	26	1	26
6/14/2022	283	20	1	20
6/15/2022	272	9	1	9
6/16/2022	274	11	1	11
6/17/2022	288	25	1	25
6/18/2022	288	25	1	25
6/19/2022	288	25	1	25
6/20/2022	287	24	1	24
6/21/2022	296	33	1	33
6/22/2022	287	24	1	24
6/23/2022	282	19	1	19
6/24/2022	278	15	1	15
6/25/2022	272	9	1	9

6/26/2022	270	7	1	7
6/27/2022	265	2	1	2
6/28/2022	261	-2	0	0
6/29/2022	258	-5	0	0
6/30/2022	259	-4	0	0
7/1/2022	249	-14	0	0
7/2/2022	232	-31	0	0
7/3/2022	221	-42	0	0
7/4/2022	227	-36	0	0
7/5/2022	223	-40	0	0
7/6/2022	233	-30	0	0
7/7/2022	227	-36	0	0
7/8/2022	220	-43	0	0
7/9/2022	218	-45	0	0
7/10/2022	207	-56	0	0
7/11/2022	227	-36	0	0
7/12/2022	245	-18	0	0
7/13/2022	257	-6	0	0
7/14/2022	258	-5	0	0
7/15/2022	252	-11	0	0
7/16/2022	253	-10	0	0
7/17/2022	243	-20	0	0
7/18/2022	239	-24	0	0
7/19/2022	256	-7	0	0
7/20/2022	258	-5	0	0
7/21/2022	257	-6	0	0
7/22/2022	251	-12	0	0
7/23/2022	248	-15	0	0
7/24/2022	248	-15	0	0
7/25/2022	239	-24	0	0
7/26/2022	252	-11	0	0
7/27/2022	265	2	1	2
7/28/2022	269	6	1	6
7/29/2022	269	6	1	6
7/30/2022	270	7	1	7
7/31/2022	271	8	1	8
8/1/2022	276	13	1	13
8/2/2022	284	21	1	21
8/3/2022	272	9	1	9
8/4/2022	261	-2	0	0
8/5/2022	255	-8	0	0
8/6/2022	255	-8	0	0
8/7/2022	257	-6	0	0
8/8/2022	264	1	1	1
8/9/2022	275	12	1	12
8/10/2022	281	18	1	18
8/11/2022	283	20	1	20

8/12/2022	285	22	1	22
8/13/2022	284	21	1	21
8/14/2022	286	23	1	23
8/15/2022	283	20	1	20
8/16/2022	285	22	1	22
8/17/2022	289	26	1	26
8/18/2022	287	24	1	24
8/19/2022	285	22	1	22
8/20/2022	284	21	1	21
8/21/2022	281	18	1	18
8/22/2022	277	14	1	14
8/23/2022	279	16	1	16
8/24/2022	278	15	1	15
8/25/2022	276	13	1	13
8/26/2022	276	13	1	13
8/27/2022	273	10	1	10
8/28/2022	263	0	0	0
8/29/2022	260	-3	0	0
8/30/2022	265	2	1	2
8/31/2022	268	5	1	5
9/1/2022	267	4	1	4
9/2/2022	303	40	1	40
9/3/2022	260	-3	0	0
9/4/2022	256	-7	0	0
9/5/2022	300	37	1	37
9/6/2022	258	-5	0	0
9/7/2022	257	-6	0	0
9/8/2022	261	-2	0	0
9/9/2022	260	-3	0	0
9/10/2022	246	-17	0	0
9/11/2022	240	-23	0	0
9/12/2022	247	-16	0	0
9/13/2022	254	-9	0	0
9/14/2022	259	-4	0	0
9/15/2022	249	-14	0	0
9/16/2022	251	-12	0	0
9/17/2022	238	-25	0	0
9/18/2022	235	-28	0	0
9/19/2022	238	-25	0	0
9/20/2022	229	-34	0	0
9/21/2022	236	-27	0	0
9/22/2022	252	-11	0	0
9/23/2022	253	-10	0	0
9/24/2022	245	-18	0	0
9/25/2022	235	-28	0	0
9/26/2022	236	-27	0	0
9/27/2022	248	-15	0	0

9/28/2022	259	-4	0	0
9/29/2022	259	-4	0	0
9/30/2022	267	4	1	4
10/1/2022	262	-1	0	0
10/2/2022	280	17	1	17
10/3/2022	275	12	1	12
10/4/2022	269	6	1	6
10/5/2022	263	0	0	0
10/6/2022	261	-2	0	0
10/7/2022	263	0	0	0
10/8/2022	263	0	0	0
10/9/2022	258	-5	0	0
10/10/2022	263	0	0	0
10/11/2022	263	0	0	0
10/12/2022	267	4	1	4
10/13/2022	266	3	1	3
10/14/2022	261	-2	0	0
10/15/2022	259	-4	0	0
10/16/2022	260	-3	0	0
10/17/2022	260	-3	0	0
10/18/2022	260	-3	0	0
10/19/2022	259	-4	0	0
10/20/2022	262	-1	0	0
10/21/2022	264	1	1	1
10/22/2022	283	20	1	20
10/23/2022	327	64	1	64
10/24/2022	305	42	1	42
10/25/2022	283	20	1	20
10/26/2022	274	11	1	11
10/27/2022	270	7	1	7
10/28/2022	264	1	1	1
10/29/2022	267	4	1	4
10/30/2022	263	0	0	0
10/31/2022	268	5	1	5
11/1/2022	265	2	1	2
11/2/2022	295	32	1	32
11/3/2022	299	36	1	36
11/4/2022	271	8	1	8
11/5/2022	275	12	1	12
11/6/2022	274	11	1	11
11/7/2022	272	9	1	9
11/8/2022	247	-16	0	0
11/9/2022	261	-2	0	0
11/10/2022	268	5	1	5
11/11/2022	265	2	1	2
11/12/2022	267	4	1	4
11/13/2022	270	7	1	7

11/14/2022	271	8	1	8
11/15/2022	270	7	1	7
11/16/2022	270	7	1	7
11/17/2022	256	-7	0	0
11/18/2022	203	-60	0	0
11/19/2022	262	-1	0	0
11/20/2022	260	-3	0	0
11/21/2022	260	-3	0	0
11/22/2022	257	-6	0	0
11/23/2022	258	-5	0	0
11/24/2022	255	-8	0	0
11/25/2022	255	-8	0	0
11/26/2022	256	-7	0	0
11/27/2022	255	-8	0	0
11/28/2022	236	-27	0	0
11/29/2022	246	-17	0	0
11/30/2022	261	-2	0	0
12/1/2022	260	-3	0	0
12/2/2022	258	-5	0	0
12/3/2022	236	-27	0	0
12/4/2022	261	-2	0	0
12/5/2022	262	-1	0	0
12/6/2022	258	-5	0	0
12/7/2022	257	-6	0	0
12/8/2022	246	-17	0	0
12/9/2022	263	0	0	0
12/10/2022	257	-6	0	0
12/11/2022	261	-2	0	0
12/12/2022	265	2	1	2
12/13/2022	262	-1	0	0
12/14/2022	265	2	1	2
12/15/2022	268	5	1	5
12/16/2022	263	0	0	0
12/17/2022	261	-2	0	0
12/18/2022	245	-18	0	0
12/19/2022	246	-17	0	0
12/20/2022	276	13	1	13
12/21/2022	238	-25	0	0
12/22/2022	215	-48	0	0
12/23/2022	247	-16	0	0
12/24/2022	249	-14	0	0
12/25/2022	246	-17	0	0
12/26/2022	246	-17	0	0
12/27/2022	248	-15	0	0
12/28/2022	248	-15	0	0
12/29/2022	246	-17	0	0
12/30/2022	235	-28	0	0

12/31/2022	246	-17	0	0
1/1/2023	246	-17	0	0
1/2/2023	238	-25	0	0
1/3/2023	210	-53	0	0
1/4/2023	250	-13	0	0
1/5/2023	251	-12	0	0
1/6/2023	247	-16	0	0
1/7/2023	244	-19	0	0
1/8/2023	242	-21	0	0
1/9/2023	245	-18	0	0
1/10/2023	245	-18	0	0
1/11/2023	244	-19	0	0
1/12/2023	243	-20	0	0
1/13/2023	245	-18	0	0
1/14/2023	245	-18	0	0
1/15/2023	244	-19	0	0
1/16/2023	245	-18	0	0
1/17/2023	243	-20	0	0
1/18/2023	242	-21	0	0
1/19/2023	221	-42	0	0
1/20/2023	243	-20	0	0
1/21/2023	219	-44	0	0
1/22/2023	234	-29	0	0
1/23/2023	245	-18	0	0
1/24/2023	223	-40	0	0
1/25/2023	245	-18	0	0
1/26/2023	245	-18	0	0
1/27/2023	246	-17	0	0
1/28/2023	224	-39	0	0
1/29/2023	156	-107	0	0
1/30/2023	240	-23	0	0
1/31/2023	256	-7	0	0
2/1/2023	251	-12	0	0
2/2/2023	247	-16	0	0
2/3/2023	245	-18	0	0
2/4/2023	242	-21	0	0
2/5/2023	240	-23	0	0
2/6/2023	240	-23	0	0
2/7/2023	240	-23	0	0
2/8/2023	244	-19	0	0
2/9/2023	236	-27	0	0
2/10/2023	217	-46	0	0
2/11/2023	239	-24	0	0
2/12/2023	218	-45	0	0
2/13/2023	246	-17	0	0
2/14/2023	240	-23	0	0
2/15/2023	199	-64	0	0

2/16/2023	241	-22	0	0
2/17/2023	252	-11	0	0
2/18/2023	243	-20	0	0
2/19/2023	243	-20	0	0
2/20/2023	242	-21	0	0
2/21/2023	241	-22	0	0
2/22/2023	172	-91	0	0
2/23/2023	243	-20	0	0
2/24/2023	259	-4	0	0
2/25/2023	258	-5	0	0
2/26/2023	250	-13	0	0
2/27/2023	240	-23	0	0
2/28/2023	230	-33	0	0
3/1/2023	231	-32	0	0
3/2/2023	232	-31	0	0
3/3/2023	232	-31	0	0
3/4/2023	230	-33	0	0
3/5/2023	232	-31	0	0
3/6/2023	226	-37	0	0
3/7/2023	219	-44	0	0
3/8/2023	226	-37	0	0
3/9/2023	227	-36	0	0
3/10/2023	234	-29	0	0
3/11/2023	227	-36	0	0
3/12/2023	221	-42	0	0
3/13/2023	223	-40	0	0
3/14/2023	230	-33	0	0
3/15/2023	209	-54	0	0
3/16/2023	232	-31	0	0
3/17/2023	202	-61	0	0
3/18/2023	214	-49	0	0
3/19/2023	249	-14	0	0
3/20/2023	253	-10	0	0
3/21/2023	246	-17	0	0
3/22/2023	225	-38	0	0
3/23/2023	224	-39	0	0
3/24/2023	246	-17	0	0
3/25/2023	216	-47	0	0
3/26/2023	271	8	1	8
3/27/2023	256	-7	0	0
3/28/2023	231	-32	0	0
3/29/2023	246	-17	0	0
3/30/2023	241	-22	0	0
3/31/2023	242	-21	0	0
4/1/2023	237	-26	0	0
4/2/2023	234	-29	0	0
4/3/2023	217	-46	0	0

4/4/2023	234	-29	0	0
4/5/2023	229	-34	0	0
4/6/2023	219	-44	0	0
4/7/2023	240	-23	0	0
4/8/2023	251	-12	0	0
4/9/2023	251	-12	0	0
4/10/2023	258	-5	0	0
4/11/2023	267	4	1	4
4/12/2023	274	11	1	11
4/13/2023	274	11	1	11
4/14/2023	274	11	1	11
4/15/2023	268	5	1	5
4/16/2023	266	3	1	3
4/17/2023	272	9	1	9
4/18/2023	266	3	1	3
4/19/2023	253	-10	0	0
4/20/2023	251	-12	0	0
4/21/2023	248	-15	0	0
4/22/2023	239	-24	0	0
4/23/2023	234	-29	0	0
4/24/2023	252	-11	0	0
4/25/2023	262	-1	0	0
4/26/2023	260	-3	0	0
4/27/2023	269	6	1	6
4/28/2023	270	7	1	7
4/29/2023	281	18	1	18
4/30/2023	299	36	1	36
5/1/2023	325	62	1	62
5/2/2023	324	61	1	61
5/3/2023	297	34	1	34
5/4/2023	302	39	1	39
5/5/2023	301	38	1	38
5/6/2023	293	30	1	30
5/7/2023	284	21	1	21
5/8/2023	275	12	1	12
5/9/2023	283	20	1	20
5/10/2023	289	26	1	26
5/11/2023	289	26	1	26
5/12/2023	291	28	1	28
5/13/2023	301	38	1	38
5/14/2023	312	49	1	49
5/15/2023	316	53	1	53
5/16/2023	320	57	1	57
5/17/2023	319	56	1	56
5/18/2023	315	52	1	52
5/19/2023	313	50	1	50
5/20/2023	308	45	1	45

5/21/2023	308	45	1	45
5/22/2023	313	50	1	50
5/23/2023	312	49	1	49
5/24/2023	313	50	1	50
5/25/2023	302	39	1	39
5/26/2023	300	37	1	37
5/27/2023	299	36	1	36
5/28/2023	294	31	1	31
5/29/2023	292	29	1	29
5/30/2023	282	19	1	19
5/31/2023	286	23	1	23
6/1/2023	296	33	1	33
6/2/2023	295	32	1	32
6/3/2023	329	66	1	66
6/4/2023	333	70	1	70
6/5/2023	327	64	1	64
6/7/2023	276	13	1	13
6/8/2023	274	11	1	11
6/9/2023	287	24	1	24
6/10/2023	273	10	1	10
6/11/2023	266	3	1	3
6/12/2023	262	-1	0	0
6/13/2023	256	-7	0	0
6/14/2023	259	-4	0	0
6/15/2023	256	-7	0	0
6/16/2023	248	-15	0	0
6/17/2023	250	-13	0	0
6/18/2023	243	-20	0	0
6/19/2023	243	-20	0	0
6/20/2023	249	-14	0	0
6/21/2023	244	-19	0	0
6/22/2023	240	-23	0	0
6/23/2023	231	-32	0	0
6/24/2023	242	-21	0	0
6/25/2023	230	-33	0	0
6/26/2023	221	-42	0	0
6/27/2023	249	-14	0	0
6/28/2023	275	12	1	12
6/29/2023	271	8	1	8
6/30/2023	259	-4	0	0
7/1/2023	249	-14	0	0
7/2/2023	247	-16	0	0
7/3/2023	241	-22	0	0
7/4/2023	233	-30	0	0
7/5/2023	242	-21	0	0
7/6/2023	252	-11	0	0
7/7/2023	246	-17	0	0

7/8/2023	239	-24	0	0
7/9/2023	243	-20	0	0
7/10/2023	241	-22	0	0
7/11/2023	257	-6	0	0
7/12/2023	247	-16	0	0
7/13/2023	240	-23	0	0
7/14/2023	249	-14	0	0
7/15/2023	245	-18	0	0
7/16/2023	242	-21	0	0
7/17/2023	240	-23	0	0
7/18/2023	243	-20	0	0
7/19/2023	249	-14	0	0
7/20/2023	251	-12	0	0
7/21/2023	249	-14	0	0
7/22/2023	243	-20	0	0
7/23/2023	240	-23	0	0
7/24/2023	231	-32	0	0
7/25/2023	243	-20	0	0
7/26/2023	246	-17	0	0
7/27/2023	267	4	1	4
7/28/2023	241	-22	0	0
7/29/2023	238	-25	0	0
7/30/2023	248	-15	0	0
7/31/2023	244	-19	0	0
8/1/2023	260	-3	0	0
8/2/2023	267	4	1	4
8/3/2023	257	-6	0	0
8/4/2023	256	-7	0	0
8/5/2023	257	-6	0	0
8/6/2023	265	2	1	2
8/7/2023	278	15	1	15
8/8/2023	290	27	1	27
8/9/2023	295	32	1	32
8/10/2023	288	25	1	25
8/11/2023	287	24	1	24
8/12/2023	269	6	1	6
8/13/2023	265	2	1	2
8/14/2023	269	6	1	6
8/15/2023	282	19	1	19
8/16/2023	283	20	1	20
8/17/2023	280	17	1	17
8/18/2023	282	19	1	19
8/19/2023	274	11	1	11
8/20/2023	274	11	1	11
8/21/2023	279	16	1	16
8/22/2023	275	12	1	12
8/23/2023	259	-4	0	0

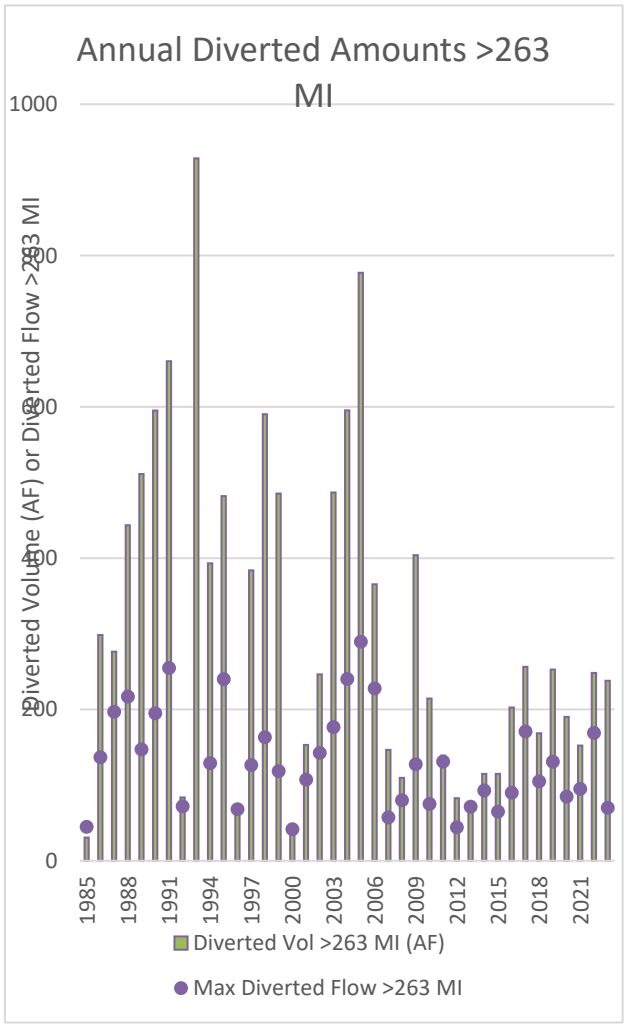
8/24/2023	263	0	0	0
8/25/2023	263	0	0	0
8/26/2023	268	5	1	5
8/27/2023	250	-13	0	0
8/28/2023	272	9	1	9
8/29/2023	251	-12	0	0
8/30/2023	266	3	1	3
8/31/2023	258	-5	0	0
9/1/2023	258	-5	0	0
9/2/2023	261	-2	0	0
9/3/2023	249	-14	0	0
9/4/2023	252	-11	0	0
9/5/2023	260	-3	0	0
9/6/2023	272	9	1	9
9/7/2023	244	-19	0	0
9/8/2023	279	16	1	16
9/9/2023	242	-21	0	0
9/10/2023	225	-38	0	0
9/11/2023	219	-44	0	0
9/12/2023	220	-43	0	0
9/13/2023	251	-12	0	0
9/14/2023	265	2	1	2
9/15/2023	260	-3	0	0
9/16/2023	265	2	1	2
9/17/2023	274	11	1	11
9/18/2023	272	9	1	9
9/19/2023	270	7	1	7
9/20/2023	270	7	1	7
9/21/2023	274	11	1	11
9/22/2023	267	4	1	4
9/23/2023	275	12	1	12
9/24/2023	273	10	1	10
9/25/2023	271	8	1	8
9/26/2023	271	8	1	8
9/27/2023	270	7	1	7
9/28/2023	259	-4	0	0
9/29/2023	254	-9	0	0
9/30/2023	252	-11	0	0
10/1/2023	255	-8	0	0
10/2/2023	266	3	1	3
10/3/2023	277	14	1	14
10/4/2023	274	11	1	11
10/5/2023	274	11	1	11
10/6/2023	272	9	1	9
10/7/2023	272	9	1	9
10/8/2023	271	8	1	8
10/9/2023	273	10	1	10

10/10/2023	271	8	1	8
10/11/2023	280	17	1	17
10/12/2023	311	48	1	48
10/13/2023	313	50	1	50
10/14/2023	307	44	1	44
10/15/2023	302	39	1	39
10/16/2023	299	36	1	36
10/17/2023	267	4	1	4
10/18/2023	297	34	1	34
10/19/2023	293	30	1	30
10/20/2023	291	28	1	28
10/21/2023	285	22	1	22
10/22/2023	284	21	1	21
10/23/2023	291	28	1	28
10/24/2023	301	38	1	38
10/25/2023	312	49	1	49
10/26/2023	306	43	1	43
10/27/2023	307	44	1	44
10/28/2023	264	1	1	1
10/29/2023	310	47	1	47
10/30/2023	297	34	1	34
10/31/2023	308	45	1	45
11/1/2023	311	48	1	48
11/2/2023	312	49	1	49
11/3/2023	311	48	1	48
11/4/2023	321	58	1	58
11/5/2023	320	57	1	57
11/6/2023	319	56	1	56
11/7/2023	316	53	1	53
11/8/2023	313	50	1	50
11/9/2023	312	49	1	49
11/10/2023	310	47	1	47
11/11/2023	310	47	1	47
11/12/2023	309	46	1	46
11/13/2023	312	49	1	49
11/14/2023	309	46	1	46
11/15/2023	309	46	1	46
11/16/2023	309	46	1	46
11/17/2023	306	43	1	43
11/18/2023	306	43	1	43
11/19/2023	309	46	1	46
11/20/2023	309	46	1	46
11/21/2023	292	29	1	29
11/22/2023	311	48	1	48
11/23/2023	310	47	1	47
11/24/2023	251	-12	0	0
11/25/2023	228	-35	0	0

11/26/2023	292	29	1	29
11/27/2023	301	38	1	38
11/28/2023	273	10	1	10
11/29/2023	271	8	1	8
11/30/2023	301	38	1	38
12/1/2023	317	54	1	54
12/2/2023	305	42	1	42
12/3/2023	305	42	1	42
12/4/2023	304	41	1	41
12/5/2023	308	45	1	45
12/6/2023	303	40	1	40
12/7/2023	304	41	1	41
12/8/2023	299	36	1	36
12/9/2023	269	6	1	6
12/10/2023	304	41	1	41
12/11/2023	304	41	1	41
12/12/2023	299	36	1	36
12/13/2023	186	-77	0	0
12/14/2023	256	-7	0	0
12/15/2023	299	36	1	36
12/16/2023	290	27	1	27
12/17/2023	282	19	1	19
12/18/2023	278	15	1	15
12/19/2023	285	22	1	22
12/20/2023	283	20	1	20
12/21/2023	278	15	1	15
12/22/2023	270	7	1	7
12/23/2023	280	17	1	17
12/24/2023	217	-46	0	0
12/25/2023	169	-94	0	0
12/26/2023	283	20	1	20
12/27/2023	290	27	1	27
12/28/2023	270	7	1	7
12/29/2023	252	-11	0	0
12/30/2023	251	-12	0	0
12/31/2023	247	-16	0	0

Column Labels	Qtr1			Qtr2			Qtr3			Qtr4 Oct
Row Labels	Sum of Test	Sum of *MI > 263	Max of *MI > 263_2	Sum of Test	Sum of *MI > 263	Max of *MI > 263_2	Sum of Test	Sum of *MI > 263	Max of *MI > 263_2	Sum of Test
1985	0	0	0	16	616	45	0	0	0	0
1986	0	0	0	29	3228	137	39	1378	44	26
1987	0	0	0	55	4706	197	1	3	3	25
1988	0	0	0	70	8404	217	9	104	15	0
1989	0	0	0	78	9876	147	4	400	114	0
1990	1	1	1	78	11616	195	0	0	0	14
1991	13	55	11	87	12706	255	6	549	93	0
1992	0	0	0	72	1679	72	3	8	7	0
1993	1	43	43	77	8364	256	88	5715	153	29
1994	88	4056	78	84	3674	129	7	84	30	0
1995	81	1292	32	85	5700	240	15	2725	202	0
1996	0	0	0	11	706	68	14	446	59	10
1997	3	24	15	59	3436	105	77	4266	126	1
1998	11	70	12	65	5658	140	91	5306	163	30
1999	71	388	21	87	5548	118	71	2487	94	31
2000	8	16	6	63	700	42	5	13	7	0
2001	0	0	0	48	3026	107	19	62	7	0
2002	0	0	0	74	4639	143	10	179	37	5
2003	14	127	24	82	9576	177	11	105	20	3
2004	5	16	5	82	11451	240	5	395	175	5
2005	0	0	0	85	14155	290	51	1074	85	20
2006	24	119	12	81	6015	228	8	64	28	21
2007	60	1041	50	63	1483	57	59	366	19	3
2008	3	5	4	63	1324	80	47	606	33	9
2009	22	993	93	41	1121	72	56	455	22	28
2010	68	2112	75	45	610	70	46	371	24	11
2011	33	373	45	40	429	42	52	466	29	20
2012	64	996	34	33	591	44	25	81	11	0
2013	2	7	4	49	1511	72	1	4	4	0
2014	0	0	0	38	674	82	40	993	93	16
2015	52	367	16	59	1254	60	32	615	65	1
2016	0	0	0	58	2658	90	58	804	32	23
2017	3	5	2	51	1653	99	20	236	25	15
2018	58	648	33	58	1696	105	38	737	72	20
2019	39	324	20	81	3953	131	19	134	28	20
2020	70	1256	44	76	2445	85	2	12	9	10
2021	17	100	25	64	2482	95	7	70	17	17
2022	7	245	58	74	3856	169	34	515	40	15
2023	1	8	8	55	1675	70	37	412	32	30
Grand Total	**819**	**14686**	**93**	**2416**	**164892**	**290**	**1107**	**32240**	**202**	**458**

Qtr4									Total Sum of Test	Total Sum of *MI > 263	Total Max of *MI > 263_2
Oct		Nov			Dec						
Sum of *MI > 263	Max of *MI > 263_2	Sum of Test	Sum of *MI > 263	Max of *MI > 263_2	Sum of Test	Sum of *MI > 263	Max of *MI > 263_2				
0	0	0	0	0	0	0	0	16	616	45
442	17	29	493	17	28	476	17	151	6017	137
865	37	0	0	0	0	0	0	81	5574	197
0	0	6	432	101	0	0	0	85	8940	217
0	0	7	25	9	2	6	4	91	10306	147
114	18	22	131	14	17	138	17	132	12001	195
0	0	1	2	2	0	0	0	107	13311	255
0	0	0	0	0	0	0	0	75	1687	72
547	35	25	538	39	28	3512	1283	248	18718	1283
0	0	7	22	6	27	90	9	213	7926	129
0	0	0	0	0	0	0	0	181	9717	240
100	13	0	0	0	0	0	0	35	1252	68
5	5	0	0	0	2	9	8	142	7740	126
372	47	27	255	15	29	240	17	253	11901	163
744	51	22	619	39	0	0	0	282	9787	118
0	0	0	0	0	0	0	0	76	729	42
0	0	0	0	0	0	0	0	67	3087	107
24	8	18	98	17	4	29	16	111	4968	143
4	3	2	3	2	0	0	0	112	9814	177
29	14	3	75	46	4	39	14	104	12005	240
148	40	18	118	17	26	177	19	200	15671	290
362	52	25	507	55	26	299	22	185	7366	228
5	4	10	49	9	3	8	5	198	2953	57
30	7	25	144	10	12	97	13	159	2207	80
947	128	29	2703	117	28	1927	109	204	8146	128
98	17	29	464	32	24	670	50	223	4325	75
680	131	17	307	26	29	545	31	191	2800	131
0	0	0	0	0	0	0	0	122	1668	44
0	0	0	0	0	0	0	0	52	1522	72
256	39	10	393	45	0	0	0	104	2316	93
1	1	12	78	32	0	0	0	156	2315	65
351	83	28	204	16	10	68	13	177	4085	90
603	82	30	1720	171	27	953	51	146	5170	171
79	13	12	68	10	20	170	18	206	3398	105
166	35	27	227	13	27	291	24	213	5095	131
55	11	8	27	5	11	39	8	177	3834	85
93	13	14	189	25	15	138	15	134	3072	95
217	64	14	150	36	4	22	13	148	5005	169
785	50	28	1220	58	24	697	54	175	4797	70
8121	**131**	**505**	**11262**	**171**	**427**	**10639**	**1283**	**5732**	**241840**	**1283**


Annual Diverted Amounts >263 MI
1000
0
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
Diverted Vol >263 MI (AF)
Max Diverted Flow >263 MI

YEAR	days >263	MI*Days	Diverted Vol >263 MI (AF)	Max Diverted Flow >263 MI
1985	16	616	31	45
1986	151	6017	298	137
1987	81	5574	276	197
1988	85	8940	443	217
1989	91	10306	511	147
1990	132	12001	595	195
1991	107	13311	660	255
1992	75	1687	84	72
1993	248	18718	928	1283
1994	213	7926	393	129
1995	181	9717	482	240
1996	35	1252	62	68
1997	142	7740	384	126
1998	253	11901	590	163
1999	282	9787	485	118
2000	76	729	36	42
2001	67	3087	153	107
2002	111	4968	246	143
2003	112	9814	487	177
2004	104	12005	595	240
2005	200	15671	777	290
2006	185	7366	365	228
2007	198	2953	146	57
2008	159	2207	109	80
2009	204	8146	404	128
2010	223	4325	215	75
2011	191	2800	139	131
2012	122	1668	83	44
2013	52	1522	75	72
2014	104	2316	115	93
2015	156	2315	115	65
2016	177	4085	203	90
2017	146	5170	256	171
2018	206	3398	169	105
2019	213	5095	253	131
2020	177	3834	190	85
2021	134	3072	152	95
2022	148	5005	248	169
2023	175	4797	238	70

WTP054 – WATER TREATMENT PLANT
UPGRADE 2008



City of Bozeman
Hyalite/Sourdough WTP Replacement Project
Preliminary Design Report

October 2010

HDR
MORRISON MAIERLE, INC.

Water Equivalents Table

1 cubic foot	7.48 gallons	62.4 lbs. of water
1 acre-foot	43,560 cubic feet	325,851gallons
An acre-foot covers one acre of land one foot deep.		
1 miner's inch		11.22 gallons per minute
1 cubic foot per second (cfs)		448.8 gallons per minute
1 cfs		40 Montana statutory miner's inches
1 cfs		646,316 gallons per day
For 24 hours		1.983 acre-feet
For 30 days		59.5 acre-feet
For 1 year		724 acre-feet
1,000 gpm		4.42 acre-feet per day
An acre-foot supplies a family of 5 for 1 year.		

State of Montana

Department of Natural Resources and Conservation

www.dnrc.mt.gov

Kerri Strasheim
Regional Manager

Water Resources Office
2273 Boot Hill Court, Suite 110
Bozeman, MT 59715

MONTANA DNRC

406-556-4504 Fax: 406-587-9726 Email: kstrasheim@mt.gov

burden on the source. In this case, the Applicant or buyer shall provide evidence proving all overlapping rights were historically used. The Applicant will also need to provide evidence of how the proposed change will not create adverse effect to other water users.

Amount of Water Changed

The flow rate and volume to be changed must be identified. An appropriator may only change the maximum amount of water that was historically put to beneficial use and the proposed use (flow rate and volume) must be proven as necessary to accomplish the new beneficial use.

The flow rate and volume to be changed cannot exceed the amount of water historically used. Any increase in diverted flow rate or volume is a new appropriation, which requires a new water right.

When a Change Authorization is Not Required

An appropriator may make certain water right modifications without Department approval. The following are examples of modifications where Department approval is not necessary.

Short-term Lease for Road Construction

As described in §85-2-410, MCA:

(1) An appropriator may lease for a term not to exceed 90 days all or part of an appropriation right for road construction or dust abatement without the prior approval of the Department, subject to the requirements of this section. -

There are additional requirements and limitations to the short-term road construction lease described in MCA §85-2-410.

Emergency Fire Suppression

In accordance with §85-2-113(3), MCA and ARM §36.12.105

Secondary Diversion

A secondary diversion removes water from somewhere other than the original source. For example, a pump is a secondary diversion when located in a ditch, reservoir, or pit. In these examples, the initial diversion would be the headgate, the dam, or the groundwater pit. A secondary diversion location may be altered without Department approval.

Replacement Point of Diversion

The Notice of Replacement Point of Diversion form (Form 644) can be used when a surface water POD has been replaced. The form must be filed within 60 days of the completion of the replacement POD. If a deficient Notice of Replacement POD is received, the Department will send a deficiency letter that allows 30 days to respond. If the Applicant requests additional time, the Department may allow up to 6 months total time in which to respond to the deficiencies (85-2-402(18)(b)(iii)). If the Applicant is unable to finalize the necessary paperwork in that time, they will need to file a full 606 Change Application.

Means of Diversion

The means of diversion is the method used to divert water from the source. The most common means of diversion are dams, ditches, headgates, pipelines, pumps, and wells. An authorization is not necessary to modify the diversion means provided the actual location where water is diverted from the source and the diversion rate are not changed.

Means of Conveyance

The means of conveyance is the method used to convey water from the POD to the POU. Department approval is not required to alter the means of conveyance. For example, the location of ditches, main lines, or pipelines may be altered without Department approval.

Removing Acres

Department approval is not required to remove acres from irrigation. In any given year an appropriator may choose to irrigate less acres than listed on the water right. The owner may do this without any forms or notification to the department. A water right can be legally severed from real property via a deed or other recorded instrument. An authorization is necessary only when water is used on a new place of use. If the appropriator notifies the Department by filing a 642 form when a water right has been legally severed from real property, the Department's water right records may be updated without an authorization. The POU will not be updated, however the 642 will be noted in the database along with a remark stating the right has been severed from the POU.

Maintenance

An appropriator who repairs or replaces a diversion structure or reservoir in the same location as the existing structure is performing maintenance. Department approval is not necessary for maintenance provided the diversion location is not changed. Cleaning or repairing an infiltration gallery, headgate, ditch, or pit is considered maintenance.

Wells

If a new groundwater aquifer is not penetrated, a well deepened in the same casing is maintenance. Replacing a pump is maintenance provided the flow rate is not increased. Repairing or replacing a pipe or pressure tank is considered maintenance.

Method of Irrigation

The method of irrigation is how water is applied to a crop. Graded border, furrow, and contour ditch are all methods of flood irrigation. Pivot, handline or wheel line are all methods of sprinkler irrigation. Department approval is not necessary to alter the irrigation method provided it is within the same POU.

Municipal Systems and Purposes

The use and distribution of water by municipalities varies a great deal. For administrative reasons, the Department recognizes municipalities need broad discretion in the use of water. Rarely would a municipality be required to change the purpose of use. Municipal water encompasses a wide variety of uses such as domestic, commercial, fire protection, street cleaning, industrial, recreation, and selling water for use outside the city limits.

Department approval is not necessary to modify a municipal distribution system. Holding tanks intended to improve efficiency, water treatment plants, pumping stations, and water mains are all part of a municipal distribution system.

Department approval is not needed when a municipality modifies how it disposes of sewage effluent provided the effluent is not intended for further beneficial use.

Ditch Companies, Water Users Association and Irrigation Districts

Ditch companies, water users' associations, and irrigation districts have defined areas where water can be used. Department approval is not required to redistribute water within the place of use identified on their water right abstract. Irrigation Districts are required to expand their boundaries through a District Court process. Once they have gone through the District Court to change or expand their boundaries, they must file a change in place of use application with the Department to add the new place of use to their water right. Department approval is not required when these entities sell or renew water contracts.

Elements of a water Right That Can be Changed

Point of Diversion

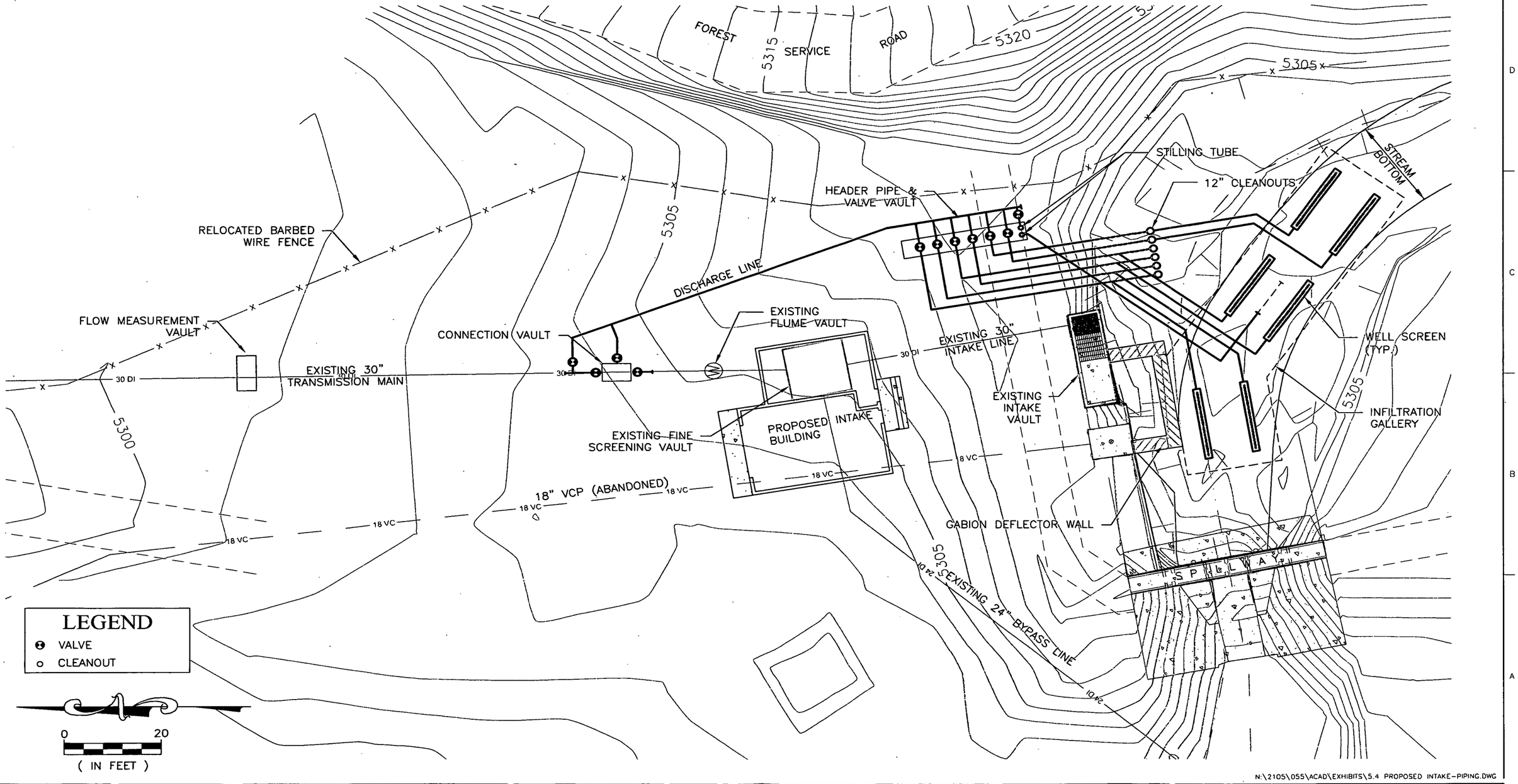
Department approval is required to change the location where water is diverted from its source. Department approval is not necessary to change the means of diversion or a secondary diversion.

One application may be used to change numerous diversion points on numerous rights; see 36.12.1901(7), ARM, for more information on multiple water rights being included on one change application.

- If historical flow rates of points of diversion being changed differ, the flow rate of each individual point of diversion may not increase upon authorization of the change unless the Applicant has proven adequacy of diversion for the point of diversion. An example of this would be an 8-hour drawdown and yield test on a well.
- If the Applicant wants to increase flow rate at one of the points of diversion being changed, they will need to prove adequacy of diversion of the new flow rate and may also need to prove that the change in operation will not create adverse effect to an existing user. The change authorization should reflect the maximum flow rate being authorized for the water right. (Fill in the flow rate for each point of diversion being authorized on the POD tab in the water rights database).
- A fixed diversion may be changed to a transitory diversion. A transitory diversion is movable or portable anywhere along a stream between two defined points. Legal descriptions for a transitory diversion would typically describe the most upstream point and the most downstream point that water is diverted from, with a PD remark included that states the POD is transitory.

Replacing or Adding Points of Diversion

The existing point of diversion is being replaced when the new diversion is the only point where water will be withdrawn from the actual source. If a change is completed (perfected) and then an appropriator wants to go



N:\2105\055\ACAD\EXHIBITS\5.4 PROPOSED INTAKE-PIPING.DWG

MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

PROPOSED INTAKE - PIPING PLAN

FILENAME	
SCALE	1"=50'

SHEET
FIG. 5-4

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

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City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Introduction

Prepared by: Nathan Kutil

Reviewed by: Dan Harmon

Date: November 4, 2010

Purpose and Scope

The 2006 Bozeman Water Facilities Plan (Plan) put forth the water management strategy for the City of Bozeman for the next 20 years. It provides the basis of planning for growth, distribution systems, and water treatment. In accordance with the Plan, the City of Bozeman begins implementation of the recommendations through the design of the Hyalite/Sourdough Water Treatment Plant (WTP) Replacement project.

The purpose of this Preliminary Engineering Report is to document the engineering and operational considerations leading to the design of the replacement project in accordance with applicable sections of Montana Department of Environmental Quality Circular DEQ 1. This facility will be constructed to provide filtration and disinfection treatment to surface water standards. The facility will combine membrane filtration with chlorine disinfection. Equipment from three potential suppliers was pilot tested in the summer of 2009 to determine the actual sizing requirements. Two of these suppliers (Pall and GE Zenon) were subsequently permitted to submit bids to supply membrane and other ancillary equipment for the project. Pall Water Processing was awarded the Bid to supply the membrane filtration equipment and for the remainder of this report Pall will be referred to as the membrane seller.

Background

As discussed in the Plan, the existing Bozeman WTP is reaching the end of its useful life. The plant was designed to take advantage of the relatively clean influent, however, raw water turbidity spikes result in a limitation on the treatment efficiency and capacity of the plant. The plant was originally designed to treat approximately 15 million gallons per day (MGD). Rapid population growth and plant limitations show a need for additional capacity. The existing infrastructure is also beyond its useful life and as a result the Plan recommended a new pressurized membrane filtration treatment plant with chlorine contact disinfection and a new downstream contact channel with additional storage capacity for treated water. The Plan recommended an initial phase of 22 MGD treatment capacity with room for expansion to 36 MGD.

Additional process and instrumentation information is available in the Membrane Procurement Documents.

Report Organization

The following report Sections summarize the engineering design that will occur for each major process area recommended for the Bozeman Hyalite/Sourdough WTP replacement. The report is comprised of 16 Sections and 8 appendices. Due to the size and breadth of the report, the following provides a roadmap for the Sections of key importance to the reader:

- Section 1 – Design Objectives and Criteria: This section provides a concise summary of the recommended improvements for each area.
- Section 4 – Treatment Plant Process and Layout: This section provides a detailed description of the plant layout, processes, and equipment.
- Sections 7 through 9 – These sections define the physical and engineering considerations for each of the key process areas. Included are descriptions of the process design summary, alternatives evaluation, and summary of the recommended improvements.
- Section 10 – Architectural/Structural Approach: Section 10 provides the site considerations, architectural concepts, and proposed layout for the new administration/laboratory and water treatment building.
- Section 15 – Provisions for Future Phases: This section outlines the proposed phasing for all recommended improvements to the Bozeman WTP.
- Section 16 – Summary of Cost Estimate: This section provides a detailed description of the estimated probable construction cost for the project, a comparison of the estimated costs to the costs presented in the plan, and potential cost reduction measures. A detailed cost estimate is also provided in Appendix B.
- Appendix C presents the Environmental Checklist for the project.
- Appendix E provides a detailed design guide for all piping systems and applicable piping materials planned for the project.
- Appendix F provides a detailed design guide for the equipment planned for the project and also presents the guidelines and procedures for equipment identification and naming. The facility process areas are also presented in this Appendix.
- Appendix G includes two geotechnical reports conducted for the project construction at the Hyalite/Sourdough WTP site and at the Sourdough Intake.
- Appendix H describes the options for existing and new sludge monitoring including options for disposal of dewatered residuals generated and stored on site.
- Appendix I presents sustainability concepts and energy efficiency measures that apply to this project.

Recommended Facilities

Process schematic flow diagrams were developed for the proposed plant. These diagrams are not a detailed depiction of the current facility layout, but do provide a close representation of the proposed liquids stream and residuals stream plant processes. Figure 4-1 depicts the liquid stream process, while Figure 4-2 depicts the residuals stream process. Figure 4-3 presents the preliminary floor plan for the new treatment facility and proposed building elevations are depicted in Section 10 and Appendix D of this report. The summary of administrative, laboratory and maintenance facilities is presented in Section 14 of this report.

Modifications will be made to the Sourdough raw water intake. A new infiltration gallery intake and associated support building will be constructed at the Sourdough site. Proposed modifications for the intake facilities are discussed further in Section 5 of this report. Raw water will be metered and controlled from both the Hyalite Creek source and the Sourdough Creek source, then blended prior to entering a flow control headtower. From the headtower, flows will be metered to grit removal prior to introduction to preliminary treatment.

Overflow from the headtower will be directed to Sourdough Creek. Flows will be directed through a vortex grit unit prior to preliminary treatment. Following grit removal, aluminum chlorohydrate (ACH) coagulant will be injected before flow enters the flow split to the open rapid mix chamber. Based on the treatability of the source water investigated during piloting, it was determined that flocculation and sedimentation would be needed during turbid snow melt run-off conditions in the water sources. These processes will be open basins allowing gravity flow from the rapid mix, through the basins, to a membrane feed wet well at the end of the sedimentation basins that is sized for a minimum of 2 minutes storage. Water from the membrane feed wet well will be pumped through two sets of strainers in series to the membrane treatment system.

Membrane filtered water will discharge to a new filtrate conduit and will be disinfected with sodium hypochlorite, pH adjusted with sodium hydroxide, and fluoridated. Sodium hypochlorite would also be added to the discharge of the contact conduit to boost the chlorine residual as needed.

The solids stream process flow diagram in Figure 4-2 illustrates the overall concept of the solids handling process. Solids from the pretreatment operations will be collected by gravity at the pretreatment solids pump station from which it is either pumped or directed by gravity to the gravity thickener. Sodium bisulfite, sodium hydroxide and polymer are available to be added to the gravity thickener influent to facilitate the solids settling efficiency, aluminum removal, and de-chlorination. Clarified effluent from the gravity thickener will normally discharge to the creek but can be discharged to a pump station for recycle to the head of the grit removal facilities.

The solids from the gravity thickener will be pumped to drying beds and the liquid overflow can be directed as gravity flow to the creek discharge or pumped to the front of the plant or directed to the DAF if water quality problems occur. Backwash from the membranes is collected in the backwash waste equalization tank. Residuals from the equalization tank are pumped to either of two dissolved air floatation (DAF) thickeners. The floated solids skimmed from the DAF will be pumped to the drying beds and the effluent will normally

flow by gravity to the creek, but can be diverted to a pump station for recycle to the head of the water treatment plant. Water decanted from the drying beds flows by gravity to the decant (return) pump station. Strainer backwash will be collected in the drain sump in the piping tunnel and pumped to either of the two DAFs.

In addition to the drying beds, a decant lagoon will be provided for collecting various plant overflows and basin drains, and to provide backup for the other solids handling systems.

Opinion of Probable Project Capital Cost

Section 16 of this report provides a detailed capital cost estimate for the recommended facilities, expressed in 2010 dollars. The opinion of probable project capital costs presented in this pre-design were modified to include more detail and more accurately reflect actual allied costs at this level of design. Appendix B presents the detailed preliminary estimate of probable construction and projected cost for the Project.

Table 1 presents a summary of the probable project cost. Please note that the individual line items for cost do not include the allied costs, which are presented in the table separately.

Table 1. Summary of Probable Project Cost

WTP Area	Total ($)
Site Work	$925,392
Site Piping	$5,341,019
Landscaping	$42,000
Waste Handling	$1,228,094
Process Mechanical	$4,027,422
Chemical Systems	$377,123
Operations Building	$3,357,607
Electrical	$2,551,829
Controls	$1,590,942
SUBTOTAL ESTIMATED CONSTRUCTION AMOUNT	$19,441,427
Field Overhead and Mobilization (7%)	$1,360,900
FIELD CONSTRUCTION COSTS - SUBTOTAL	$20,802,327
Contractor's Overhead & Profit (10%)	$2,080,233
Contractor's Bonds & Insurance (1.5%)	$343,238
Undefined Scope of Work (contingencies 20%)	$4,645,160

WTP Area	Total ($)
Subtotal	$27,870,958
Escalation to midpoint of construction (2.63%)	$733,006
Subtotal	$28,603,964
MT Public Works Tax (1%)	$286,040
Total OPCC Contractor Bid	$28,890,004
Owner Furnished Equipment	$5,558,300
Total OPCC Project Construction Cost	**$34,448,304**
Engineering & Administration	$6,425,800
Total Estimated Project Cost	***$40,874,104***

Implementation and Commissioning Plan

The existing water treatment plant is currently processing drinking water for the City and will need to continue to do so throughout construction. Since the new facility will be housed in a separate structure, the existing plant will be relatively undisturbed during construction. Upon completion of the new facility, the raw water connection from the Hyalite source will be made for the new facility while maintaining the raw water feed from both Hyalite and Sourdough to the existing plant. Additionally, a temporary connection will be made to the new overflow lagoon which will allow produced water during startup to be wasted until the water is of satisfactory quality to be delivered to the City's water distribution system.

The return pump station can be used to recycle treated water back to the head of the new plant should the lagoon begin to fill prior to commissioning completion. Once the new facility is on-line, the finished water pipeline can be tied into the existing line, the Sourdough raw water connected to the new plant, and the old plant taken off-line and decommissioned. The following general sequence of construction is anticipated at this time:

- Excavate and remove (or reuse on site) excess WTP residuals stored on site and legally dispose of offsite including land application and/or landfill. See Appendix H for recommendations for legal disposal of the existing plant residuals.
- Decommission existing backwash surge basin to provide space for construction.
- Provide a temporary chemical feed system for sodium hydroxide within the existing water treatment plant.
- Provide a temporary chemical feed system for the Sourdough bypass for providing temporary caustic feed for pH control.
- Decommission the existing sodium hydroxide and caustic feed building.
- Construct the new WTP facility including treatment equipment, finished water storage, drying beds, and lagoon.
- Connect the Hyalite raw water source to the new WTP facility.
- Startup and commission the new WTP facility.
- Disinfect the new WTP facility.

- Connect treated waterline from new WTP (finished water storage) to distribution system.
- Connect Sourdough raw water source to new plant.
- Decommission the existing WTP facility.

Other items to be considered during facility commissioning include:

- A provision will have to be made during construction to protect the construction site from flooding due to backwash basin overflow during periods of excessive backwashing at the existing plant.
- A temporary permit to discharge startup flows to Sourdough Creek may be needed. Some flows with treatment residuals may need to be pumped to the existing WTP for treatment.
- Some construction generated flows may need to be directed to the lagoon and the use of the return pumps to drain the lagoon through the new WTP or on-site septic system. The Contractor may need to provide for temporary pumping should the return pumps not have sufficient capacity.
- Commissioning of equipment may need to be performed individually to save or conserve water. An example would be the individual membrane units.
- Commissioning will likely extend beyond one month, which will require a significant amount of raw water for plant demonstration. Recycle of flows needs to be well planned during the development of the construction documents.
- The membrane Seller will provide the Contractor with a plan for disposal of membrane preservatives considering that there is not a sewer connection at this facility. However, the Contractor will pay for the disposal in accordance with the Sellers plan.
- The new membranes must be physically installed last, to prevent damage to them prior to system startup. All support facilities startup and commissioning, including thorough flushing of all systems, must be completed prior to membrane installation.

Safety Considerations

The new water treatment plant facilities shall be designed with safety in mind as the primary concern throughout design, installation, and operation. Improperly designed facilities could put employees, contractors, and the public at risk. Various safety considerations are emphasized in the specific Sections of this report including Sections 2, 4, and 8. Key safety considerations for the facilities are reiterated here in order to stress their importance to the facility design, construction and operation:

- Confined Spaces - Given the danger and maintenance difficulties associated with confined spaces, the facility should not install confined spaces. If a confined space, as defined by an area large enough for a person to enter which has a restricted entry or exit and is not designed for continuous occupancy, the design should properly address poor air quality and danger of engulfment hazards associated with this type of facility.
- Emergency Eyewash and Showers - Install appropriate eye wash and emergency showers and include conditioned water and associated alarms. Each unit should be

fitted to alarm to the plant foreman/supervisor/fire department. Each unit should also include a bypass to allow for flushing the systems of stagnant water.

- Valve Safety - Manual override switches should be provided on all influent and effluent valves.
- Electric Motor Protection – Disconnects must be located immediately adjacent to all electrical equipment with rotating shafts and all equipment with electrical service larger than 120 Volts.
- Hazardous Materials – Do not install chemical feed over doorways, hallways or any other walkway (pipe trench is the exception). Overhead chemical systems should be avoided.
- Tank Drains - Drains on all tanks should not be back pitched, should be of ample size, and should have proper valving (ball valves). The tanks should be pitched to the available tank drains.
- Chemical Injection and Storage - All chemical injectors should be installed below eye level. Chemical loadout facilities should be installed to enable complete voiding of all fill lines following tank fill or loadout to prevent the opportunity for chemical remaining in the fill lines to drain back to operations or delivery staff involved with chemical deliveries. Water containing polymer and other chemicals can create extreme slip and fall conditions. Care should be taken to provide for worker warnings, ease of floor washdown and floor surfacing to prevent slip and fall injuries.
- Dangerous Waste – Demolition of the existing WTP facilities may encounter hazardous materials. Local and State of Montana rules for handling and disposal of dangerous waste is regulated by the Montana Department of Environmental Quality. Before tank coatings or existing facilities with paint coatings are demolished, they should be tested for cadmium, chromium or lead. Similarly, the facility should be evaluated for the potential for asbestos materials. The concentrations of these constituents will determine whether the dust from construction activities are dangerous or non-dangerous. When removing coatings or other dangerous materials, the Owner is considered the waste generator. In that situation, the Owner is responsible for safely handling the generation and disposal of any waste product associated with the project. In addition, the Owner and Owner's construction contractor(s) must make sure construction workers take precautions to avoid inhaling dangerous materials during removal. The contract specifications will require the use for proper occupational health procedures when dealing with any type of dangerous or hazardous material.
- Cross-Connection Control – The Owner must protect the potable water systems from contamination through cross-connections with non-potable water or other liquids conveyed through piping. This includes treatment systems as well as storage and distributions systems. In addition to the National Plumbing Code, the City of Bozeman has a rigorous cross-connection control program that must be followed for the design of the new treatment facility.
- Excavation and Trench Safety Systems – Excavation and trench safety systems must be based on local site and soil conditions. The project construction specifications will include site specific performance requirements for the construction contractor to meet throughout the construction period.

- Ladder safety and Fall Protection – Guardrails, ladders and fall protection devices must meet State of Montana L&I and Federal OSHA guidelines. In addition, care must be taken to protect openings and holes more than 12-inches across with either a cover that will support at least 200 pounds or a guard railing. Platforms and floor openings must be protected with properly designed guardrails with toe boards. Fixed ladders shall be designed with adequate clearances and will be provided with side rails that extend at least 42-inches above the landing platform.
- Equipment Hoisting and Lifting – Care must be taken to ensure proper lifting and hoisting equipment is provided at all equipment and piping locations that will require lifting or removal of heaving items not easily accessible from floor level.
- Power Lines and Electrical Equipment– According to *National Electric Code (NEC)* guidelines, power lines should be at least 40 feet from work areas. If work must be performed within 10 feet of power lines, the electric utility should insulate the lines against contact. Only qualified persons with proper gear and equipment may work within 10 feet of power lines. Under certain circumstances, electricity can arc to equipment that is close to a power line or to personnel performing maintenance on electrical gear. Arc flash protection per NEC guidelines must be followed by all personnel on site.
- Lock-out and Tag-out – All personnel on site should properly identify hazards with stored energy, including such items as raw water pipelines under pressure, pipelines extending from water reservoirs, and electrical equipment. To properly protect personnel from an accidental release of the energy, workers should use blind flanges and lock-out and tag-out systems at all times.

In order to ensure safety is maintained a high priority throughout the facility design process, an Operations and Safety Design Quality Control Checklist found on the following pages will be used by all personnel involved with design.

OPERATIONS AND SAFETY DESIGN QUALITY CONTROL CHECKLIST

1. **Operations**
2. **Safety and Environmental System Design**
3. **Design Standardization Features**
4. **Design Features for Routine Maintenance**
5. **Design Features for Troubleshooting**
6. **Design Features for Repair and Replacement**
7. **Visual Inspections and Accessibility**
8. **Design for Physical Accessibility**
9. **Electrical System Maintenance Design**
10. **Safety Systems**
11. **Equipment**
12. **Piping and Valves**
13. **Pressure and Vacuum Relief**
14. **Machinery**
15. **Instrumentation Control**
16. **Malfunctions**
17. **Location and Plot Plan**

Phase of Review

PDR – Preliminary Design Report

60% – 60% Design Submittal

95% – 95% Design Submittal

Evaluation Area	PDR	60%	95%	Comments
1.0 Operations				
1.1 Are all cables and hoses protected to minimize exposure to impact or fall?			x	
1.2 Do power feed cables enter the machine or the cable reel from the side to minimize exposure to vehicle wheels or tracks?			x	
1.3 Are all exterior mounted machine features and components protected from impact, scraping, or collision damage?			x	
1.4 Are lubricating points for all bearings, joints and other wear points on the machine accessible to operators?			x	
1.5 Does design provide hour meters (e.g., on strainer circuits), volt meters and ammeters (e.g., on electric drive motors) to assist in wear assessment and maintenance management.		x	x	
1.6 Are shock and vibration isolation provided for critical components?		x	x	
1.7 Is grating used for floors or other designs to prevent accumulation of water, mud, and other materials in equipment bays, crevices, and containment areas?		x		

Evaluation Area	PDR	60%	95%	Comments
1.8 Are all local monitoring devices such as local transmitter readouts, pressure gauges, temperature gauges and others installed for easy visibility.			x	
1.9 Are equipment located in drive areas and loading docks protected by fenders, bumpers, or guards from collision and rib impact?			x	
2.0 Safety And Environmental System Design Features				
2.1 Is lighting equipment properly installed and protected, but easily accessed for repair?		x		
2.2 Are high noise areas provided with sound dampening or noise attenuation devices?		x		
2.3 Are emergency showers provided at all chemical equipment areas?		x		
2.4 Are equipment motors appropriate for the room area classification and readily accessed for repair or replacement.	x			
3.0 Design Standardization Features				
3.1 Is there standardization with existing equipment for the following items:	x			
o All mechanical components.				
o Hydraulic connectors, valves, hoses.				
o Electrical components and connectors.				
o Variable frequency drives				
o Water hoses and connectors.				
o Pumps				
o Instrumentation elements				
3.2 What equipment has been sole sourced to maintain uniformity with existing equipment?	x			
4.0 Design Features For Routine Maintenance				
4.1 Are adequate hose bibs and outlets available for housekeeping and maintenance?		x		
4.2 Are all mechanical adjustment points located in primary maintenance zones?		x	x	

Evaluation Area	PDR	60%	95%	Comments
4.3 Are quick connect type couplers installed on frequently changed hydraulic lines, water hoses, and cables?		x	x	
4.4 Are quick-release fasteners used on doors or covers for routine inspection points?			x	
4.5 Are routine service points located behind other components or structural members, in enclosed spaces, or in the secondary maintenance zone (e.g., more than 18 inches from the side or the end of the machine).			x	
4.6 Are all routine inspection and sampling points are all clearly visible and accessible including:		x		
o Relief valves.				
o Drain plugs.				
o Calibration columns.				
o Flushing line connections.				
o Personnel safety equipment.				
5.0 Design Features For Troubleshooting				
5.1 Are test points located to identify recommended or acceptable pressure, temperature, or voltage ranges?		x		
5.2 Are test points labeled and located close to the control or display they are associated with?		x		
5.3 For equipment monitored "on-line" are run times and equipment start / stop events logged in a PLC or SCADA system?		x		
5.4 The following pertinent information is immediately available to the operators:			x	
o Component or system identification.				
o Proper direction of motion or fluid flow.				
o Proper adjustment, pressure level, or setting.				
o Correct fluids.				
o Amperage and other electrical information.				
6.0 Design Features For Repair And Replacement				

Evaluation Area	PDR	60%	95%	Comments
6.1 Are all areas of the machine designed to be self-cleaning and designed to eliminate (minimize) the accumulation of rock, sludge, chemical, and water.		x		
6.2 Are hoists and cranes designed to eliminate the need for special tools or jigs to perform required maintenance.	x			
6.3 Are design features incorporated to facilitate lifting, hoisting, or manipulating heavy components and machine features:	x			
o Built-in attachment hooks.				
o Lift bolt attachment points.				
o Lifting guides or pins.				
o Provisions for forklift arms.				
o Built in swing boom arm.				
o Designated lift points.				
7.0 Visual Inspections And Accessibility				
7.1 All maintenance points should be visually accessible from the side or the end of the machine and should provide line-of-sight inspection capability.			x	
7.2 Design provides for clear and rapid visual identification of parts that may have to be replaced or repaired.			x	
7.3 Approved glass covers should be installed in all access opening covers if routine visual inspections are required.			x	
7.4 Access openings should be large enough to permit visual contact with the component while the work is being performed on it.		x		
7.5 For less frequently performed maintenance tasks, the maintenance point may be located behind a protective cover.		x		
7.6 Maintenance and service points should be located no further than 36 inches from the maintainer's head at time of inspection.		x		
8.0 Design For Physical Accessibility				
8.1 Are all drain valves for compressor tanks, reservoirs, and sumps accessible from the side or end of the machine?		x		

Evaluation Area	PDR	60%	95%	Comments
8.2 Are all other maintenance points accessible from the sides or ends of the machine.		x		
8.3 Hinged or quick-release access opening covers should be used where practical with the hinges on the side or bottom so that door will remain open during maintenance.		x		
8.4 A minimum number of bolts or fasteners should be used on access covers, equipment bay doors, or other protective shielding.		x		
8.5 For components weighing more than 100 pounds, access openings and work space should be sufficient to permit the attachment of hoisting or lifting devices.	x			
8.6 At least 18 inches of space should be provided to permit use of requisite hand tools to remove or replace them.	x			
9.0 Electrical System Maintenance Design				
9.1 Route all electrical cables on machine to avoid damage from abrasion, pinching, or cutting.		x		
9.2 All electrical cabling is routed to permit easy removal and replacement. Cabling is not routed under machine chassis, in the center of boom arms, or in other difficult-to-access locations.		x		
9.3 Electrical connectors are isolated from hydraulic fluid leaks, fuels, water, and other liquids.		x		
9.4 All electrical equipment cabinets are equipped with interlock that terminates power to the unit when the access cover is removed.		x		
9.5 A manual override is provided for all cabinets equipped with shutoff interlock.		x		
9.6 Design provides overload or other electrical protective devices for all major electrical circuits, each of which is equipped with an indicator light for easy troubleshooting.		x		
10.0 Safety Systems				
10.1 Are hazardous areas and equipment protected or labeled with warning signs?			x	
10.2 Emergency showers provided?	x			

Evaluation Area	PDR	60%	95%	Comments
10.3 For equipment with "emergency stop" devices, is the emergency stop accessible?	x			
10.4 Are heat detectors, smoke sensing devices, lower explosion limit, chlorine, low oxygen sensors located in the appropriate rooms? Are they shown in the appropriate location to detect the condition? Do all of the devices have a back-up power supply?	x			
10.5 Do alarms activate audibly and visually at the equipment or in the room as well as the central SCADA system and fire panel?		x		
10.6 Are manual pull stations accessible and located in the appropriate places within the room?		x		
10.7 In wet locations, are electrical equipment GFI protected?		x		
10.8 In actuating or inspecting equipment or controls, is there a serious risk of tripping, falling, or contacting electrical parts, moving equipment, surfaces or objects operating at high temperatures or other hazardous equipment?	x			
10.9 Do control and electrical panels have 36 inches of clear space in front of the panel?	x			
10.10 Does equipment which requires clearance have the adequate clear space?	x			
10.11 Are electrical disconnects provided for every motor and equipment? Are disconnects located in an appropriate and accessible location?		x		
10.12 Is all equipment provided with valves to isolate equipment for removal?	x			
10.13 Are all equipment and tanks restrained against sway and seismic events? Are restraints shown on the drawings and specified? Are the locations of tie-ins, attachments and seismic anchorage clearly identified?				
10.14 Are all equipment, tanks, and pipes secured to resist overturning?		x		
10.15 Is secondary containment sized to hold 110% of the volume of the single largest container or largest expected volume for a single point failure?				
10.16 Chemical Storage:		x		
o Is the tank material appropriate for the fluid to be stored? Is the tank lined?				

Evaluation Area	PDR	60%	95%	Comments
o Is the tank suitable for the exterior environment? Weather conditions if installed outside?				
o Are there mixers or control devices that require access from the top of the tank?				
o Is there a ladder with a landing and guard rail to access equipment on the top of the tank? Does the ladder bottom terminate on an OSHA required 3 foot landing?				
o How does the driver know when the level in the tank and when to stop filling? Sight glass? Control panel?				
o Is there an automatic shutoff valve to close the feed line when the tank is full? Is there an alarm when the tank is almost full?				
o Are the tanks and storage area appropriately labeled?				
o Is level monitoring provided by a pressure sensor or float (not ultrasonic) device?				
o Will chemicals freeze, thicken, or combust given the range of ambient conditions?				
o Check location of exhaust. If exhausted outside, will weather conditions such as freezing or heat cause problems? If exhausted in the room, are additional ventilation requirements needed? Does the exhaust need to be diffused or treated?				
o Are appropriate warning labels placed at all chemical enclosure access openings?				
10.17Secondary Containment:				
o Does the operator walk on the floor of the containment or on a raised grating? If on the floor what provisions are there to contain minor spills?				
o Is there piping or trip hazards in the containment area? Are there reasons why the operator would need to be in the containment area?				
o Does secondary containment have alarms, gas detection, or liquid sensing as appropriate?				
o Is the containment piped to drain? Is that appropriate?				
o Is there a normally closed valve on the drain line?				

Evaluation Area	PDR	60%	95%	Comments
o Is there a sump?				
o Does the floor slope to the sump?				
o Is there a permanent sump pump? Is the pump materials appropriate for the spill fluid?				
o Does the pump have a stop float switch?				
o Is there any equipment installed below the top of the containment area? Will that equipment fail if submerged by water or fluid?				
o Are the tanks installed on the floor of the containment area or on a raised slab? If on the floor, are they connected sufficiently to resist the forces of buoyancy during a spill?				
o Is containment provided for the delivery vehicle? Is it adequately sized for the largest vehicle? How is stormwater managed?				
o Are pumps located within the containment area? Do pumps have a housekeeping containment area?				
o If more than one chemical is stored in the same secondary containment, will those chemicals react with each other?				
o Is there complete segregation of effluents, wastes, and emissions where chemicals are incompatible?				
11.0 Equipment				
11.1 Are any venting systems manifolded, and if so, what hazards can result?		x		
11.2 What procedure is there for assuring adequate liquid level in liquid seals?		x		
11.3 What is the potential for external fire which may create hazardous internal process conditions?				
11.4 Is explosion suppression equipment needed to stop an explosion once started?	x			
11.5 In confined areas, how is open fired equipment protected from spills?				
11.6 What safety control is maintained over storage areas?	x			
11.7 In the case of equipment made of glass or other fragile material, can a more durable material be used? If not, is the fragile material adequately protected to minimize breakage? What is the hazard resulting from breakage?				

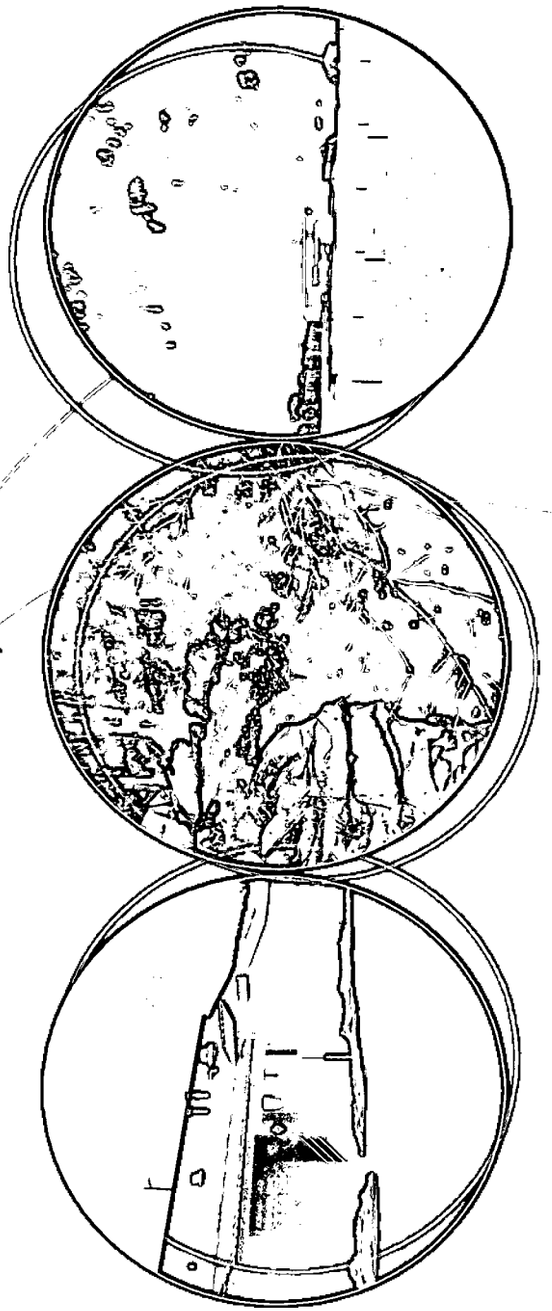
Evaluation Area	PDR	60%	95%	Comments
11.8 Are sight glasses on reactors provided only where positively needed? On pressure or toxic reactors, are special sight glasses provided which have a capability to withstand high pressure?				
11.9 What emergency valves and switches cannot be reached readily?				
11.10 When was pertinent equipment, especially process vessels, last checked for pressure rating?				
11.11 What hazards are introduced by failure of agitators?				
11.12 What plugging of lines can occur and what are the hazards?				
11.13 What provisions are needed for complete drainage of equipment for safety in maintenance?				
11.14 How was adequacy of ventilation determined?				
11.15 What provisions have been made for dissipation of static electricity to avoid sparking?				
11.16 What requirements are there for concrete bulkheads or barricades to isolate highly sensitive equipment and protect adjacent areas from disruption of operations?				
12.0 Piping and Valves				
12.1 Were piping systems analyzed for stresses and movement due to thermal expansion?	x			
12.2 Are piping systems adequately supported and guided?				
12.3 Are piping systems provided for anti-freezing protection, particularly cold water lines, instrument connections and lines in dead-end service such as piping at standby pumps?	x			
12.4 Are provisions made for flushing out all piping during start-up?	x			
12.5 Are cast iron valves avoided in strain piping?				
12.6 Are non-rising stem valves being avoided?		x		
12.7 Are double block and bleed valves used on emergency inter-connections where possible cross-contamination is undesirable?		x		
12.8 Are controllers and control valves readily accessible for maintenance?		x		

Evaluation Area	PDR	60%	95%	Comments
12.9 Are bypass valves readily reached for operation? Are they so arranged that opening of valves will not result in an unsafe condition?	x			
12.10 Are all control valves reviewed for safe action in event of power or instrument air failure?		x		
12.11 Are means provided for testing and maintaining primary elements of alarm and interlock instrumentation without shutting down processes?		x		
12.12 What provisions for draining and trapping steam piping are provided?			x	
13.0 Pressure and Vacuum Relief				
13.1 What provisions is there for flame arresters on discharge of relief valves or rupture discs on pressurized vessels?		x		
13.2 What provisions are there for removal, inspection, and replacement of relief valves and rupture discs, and what scheduling procedure?		x		
13.3 What need is there for emergency relief devices: breather vents, relief valves, rupture discs, and liquid seals? What are the bases for sizing these?		x		
13.4 Where rupture discs are used to prevent explosion damage, how are they sized relative to vessel capacity and design?		x		
13.5 Where rupture discs have delivery lines to or from the discs, what has been done to assure adequate line size relative to desired relieving dynamics? To prevent whipping of discharge end of line?		x		
13.6 Are discharges from vents, relief valves, rupture discs, and flares located to avoid hazard to equipment and personnel?		x		
13.7 What equipment, operating under pressure, or capable of having internal pressures developed by process malfunction, is not protected by relief devices and why not?		x		
13.8 Is discharge piping of relief valves independently supported? Make piping as short as possible and with minimum changes in direction.		x		
13.9 Are drain connections provided in discharge piping of relief valves where condensate could collect?		x		
13.10 Are relief valves provided on discharge side of positive displacement pumps; between positive displacement compressor and block valves?		x		

Evaluation Area	PDR	60%	95%	Comments
13.11 Where rupture discs are in series with relief valves to prevent corrosion on valve or leakage of toxic material, install rupture disc next to the vessel and monitor section of pipe between disc and relief valve with pressure gauge and pressure bleed-off line. Have any rupture discs been installed on discharge side of relief valve?		x		
13.12 What provisions for keeping piping to relief valves and vacuum breakers at proper temperature to prevent accumulation of solids from interfering with action of safety device are provided?		x		
14.0 Machinery				
14.1 Are adequate piping supports and flexibility provided to keep forces on machinery due to thermal expansion of piping within acceptable limits?		x		
14.2 What is separation of critical and operating speeds?		x		
14.3 Are check valves adequate and fast acting to prevent reverse flow and reverse rotation of pumps, compressors and drivers?		x		
14.4 Are adequate service factors on speed changing gears in shock service provided?		x		
14.5 Are non-lubricated construction or non-flammable synthetic lubricants used for air compressors with discharge pressures of greater than 75 psig to guard against explosion?		x		
14.6 What provisions are made for emergency lubrication of critical machinery during operation and during emergency shutdowns?		x		
14.7 Are provisions made for spare machines or critical spare parts for critical machines?		x		
14.8 Are there provisions for operation or safe shutdown during power failures?		x		
15.0 Instrumentation Control	**PDR**	**60%**	**95%**	**Comments**
15.1 What hazards will develop if all types of motive power used in instrumentation should fail nearly simultaneously?			x	
15.2 If all instruments fail simultaneously, is the collective operation still fail -safe?			x	

Evaluation Area	PDR	60%	95%	Comments
15.3 What provision is made for process safety when an instrument, instrumental in process safety as well as in process control, is taken out of service for maintenance? When such an instrument goes through a dead time period for standardization or when, for some other reason, the instrument reading is not available?			x	
15.4 What has been done to minimize response time lag in instruments directly or indirectly significant to process safety? Is every significant instrument or control device backed up by an independent instrument or control operating in an entirely different manner? In critical processes, are these first two methods of control backed up by a third ultimate safety shutdown?			x	
15.5 Has the process safety function of instrumentation been considered integrally with the process control function throughout plant design?			x	
15.6 What are the effects of extremes of atmospheric humidity and temperature on instrumentation?			x	
15.7 What gauges, meters, or recorders cannot be read easily? What modifications are being made to cope with or solve this problem?			x	
15.8 Is the system completely free of sight glasses or direct reading liquid level gauges or other devices which, if broken, could allow escape of the materials in the system?			x	
15.9 What is being done to verify that instrument packages are properly installed? Grounded? Proper design for the environment?			x	
15.10 What procedures have been established for testing and proving instrument functions?			x	
15.11 What periodic testing to check performance and potential malfunction is scheduled?			x	
			x	
16.0 Malfunctions	**PDR**	**60%**	x	**Comments**
16.1 What hazards result from loss of utility?			x	
16.2 What is the severest credible incident, i.e., the worst conceivable combination of reasonable malfunctions, which can occur?			x	

Evaluation Area	PDR	60%	95%	Comments
16.3 What is the potential for spills and what hazards would result from them?			X	
17.0 Location and Plot Plan	**PDR**	**60%**	**95%**	**Comments**
17.1 Has equipment been adequately spaced and located to permit anticipated maintenance during operation without danger to the process?		X		
17.2 In the event of the foreseeable types of spills, what dangers will there be to the community?		X		



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 1. Design Objectives and Criteria

Prepared by: Nathan Kutil

Reviewed by: Dan Harmon

Date: June 29, 2010

1.1. Overview

The City of Bozeman Hyalite/Sourdough Water Treatment Plant (WTP) Replacement project is based on historical data, the existing water characteristics from the Bozeman WTP, and an extensive pilot testing effort which took place on-site the summer of 2009. The water characteristics and growth projections for the service area were originally projected in the Bozeman Water Facility Plan 2007 (Plan) by Allied Engineering Services, Inc., Robert Peccia and Assoc., and BETA Eng.

The Plan recommended the City enhance their water rights/water supply, improve the Lyman Creek system, plan for increased storage and improve the Hyalite/Sourdough WTP system. To address deficiencies/recommendations identified in the Plan the following upgrades are intended for this project:

- New office/laboratory facility.
- New workshop and maintenance facilities.
- Reconstruction of the Sourdough intake.
- New Sourdough Raw Water flow control facilities.
- New grit removal facilities.
- New chemical rapid mix, coagulation, flocculation, and sedimentation facilities.
- Membrane filtration system with 22 MGD capacity, expandable to 36 MGD, including the following systems:
    - Membrane feed (MF) pumping,
    - Raw water Strainers arranged in series,
    - Compressed air,
    - Reverse filtration (RF) pumping,
    - Chemical cleaning,
    - Cleaning waste neutralization, and

  - Instrumentation and control.

- A new chlorine contact conduit.
- Hypochlorination, fluoridation, sodium hydroxide and aluminum chlorohydrate chemical feed systems.
- Backwash waste handling facilities, including waste sump, dissolved air floatation thickener, gravity thickener flexibility, vacuum-assisted drying beds and system upset standby lagoon.
- Standby power generation, instrumentation and control, fire suppression, and security systems.

The following paragraphs summarize the design objectives and design criteria used for preliminary design of the recommendations presented in the Plan that are described above.

1.2. Analysis of Raw Water Characteristics

For the time period 1998 through July of 2008, average monthly flow, temperature, total organic carbon (TOC), turbidity, and coagulant use data are shown in Table 1-1-1. Seasonal trends for temperature and turbidity are plotted in Figure 1-1 and Figure 1-2, respectively.

Table 1-1-2 presents a summary of raw water quality data, including hardness, alkalinity, iron, sulfate, aluminum, sodium, manganese, and color, collected from 1998 through July 2008.

Table 1-1-1. Bozeman WTP Raw Water Monthly Data (1998-2008).

Date	Average Flow (mgd)	Average Temp, °C	Average TOC (mg/L)	Average Turbidity (NTU)*			
				Inst. Peak**	1-day	7-day	28-day
January	4.5	0.1	1.1	21.0	2.5	2.0	1.0
February	5.0	0.2	0.9	21.0	2.5	2.0	1.0
March	5.0	0.5	0.8	21.0	10.8	7.5	4.0
April	5.0	1.4	2.3	34.0	2.5	6.1	2.6
May	6.5	2.8	3.5	97.7	17.6	34.4	18.7
June	8.5	3.5	2.8	203.0	9.6	17.4	10.0
July	10.0	9.1	1.7	10.0	5.1	3.0	1.5
August	9.0	9.4	1.3	24.0	3.6	3.0	1.5
September	8.0	2.7	1.4	24.0	6.7	2.5	1.5
October	5.0	1.0	1.2	24.0	10.9	2.5	1.5
November	5.0	0.1	3.2	69.0	10.9	3.5	1.5
December	4.5	0.1	0.9	21.0	3.0	1.3	0.7

*Turbidity data was analyzed for the period 1998 – 2008 with the exception of the April, May, and June months due to data excursions associated with snowmelt events. For April, May, and June, data is presented for only 2008.

**On 8/1/10 at 1:00 AM Sourdough Creek turbidities in excess of 600 NTUs were observed. It took about a day for Sourdough raw water to return to normal turbidity levels. It is thought that this was due to a landslide along the creek; there had been heavy rain events during the evening of 7/31.

Table 1-1-2. Bozeman WTP Raw Water Data (1998-2008).

Occurence	Total Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L) $CaCO_3$)	Iron (mg/L)	SO_4 (mg/L)	Al (mg/L)	Na (mg/L)	Mn* (mg/L)	True Color (CU)
Min	36.80***	33.60***	0.00	0.00	0.00	0.00	0.10	0.00
Avg	88.40	81.61	0.07	2.59	0.01	3.59	0.36	6.26
Max	116.80	110.80	0.98	20.50	0.11	13.46	0.80	31.00
10%**	63.12	59.60	0.02	0.00	0.00	1.78	0.10	2.00
50%**	94.40	85.20	0.04	0.70	0.00	3.27	0.25	4.00
90%**	105.76	97.76	0.14	9.00	0.02	5.81	0.71	14.50

*Manganese data are for samples collected from February through July of 2008
** Values listed are percentiles (i.e. total hardness is below 105.76 in 90% of the samples)
***Occurred during a period when Sourdough raw water was off line during repairs to the Sourdough transmission main, and are therefore not very representative

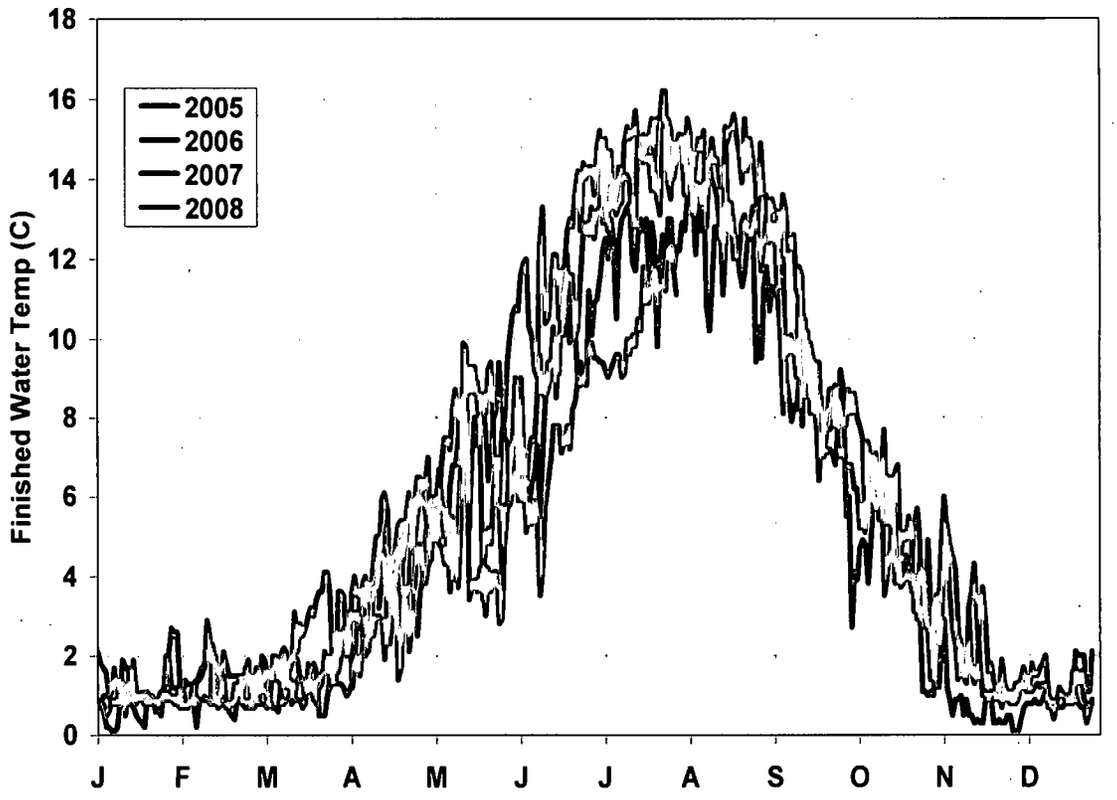


Figure 1-1. Bozeman WTP Finished Water Temperature (2005 – 2008)

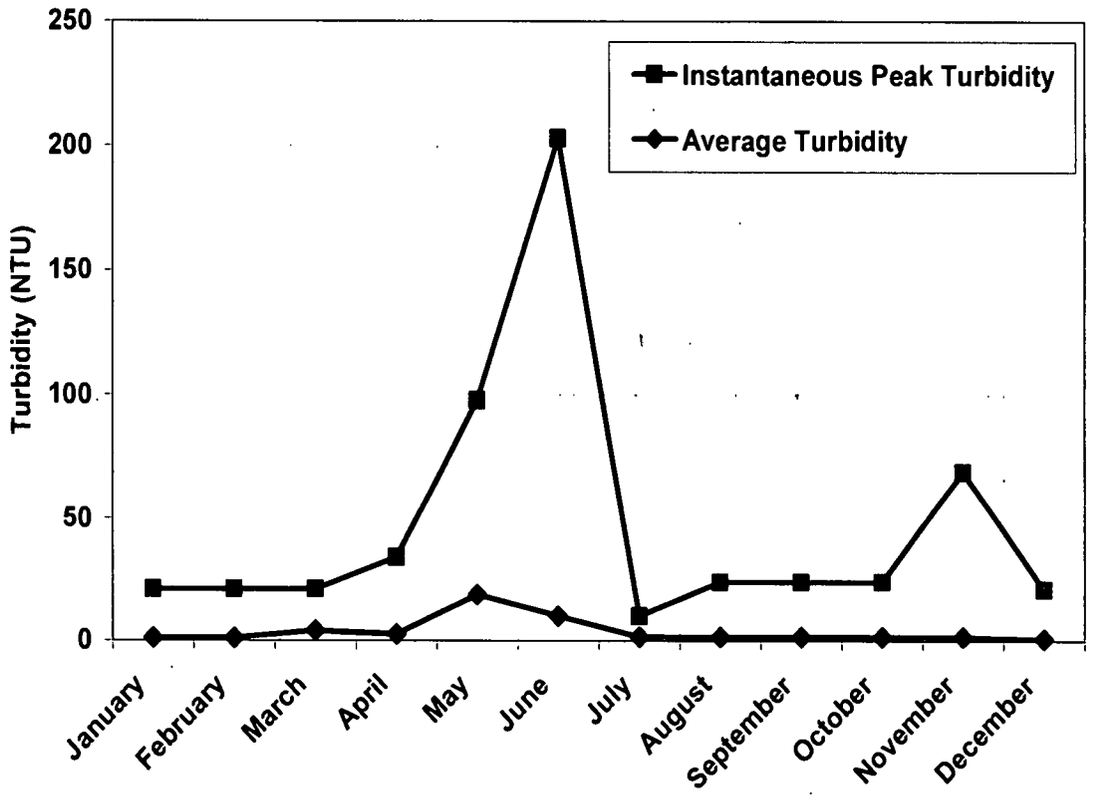


Figure 1-2. Bozeman WTP Raw Water Turbidity (2004 – 2008)

Based on the available data, the water source has a relatively low turbidity for most of the year, with a normal increase in May and June during snow melt run-off. Occasionally spikes in turbidity occur during storm events in the watershed. Water temperature throughout the year is relatively low with the temperatures just above freezing during the winter months.

1.3. Pretreatment Design Criteria

The pretreatment design criterion is intended to allow some degree of flexibility. For that reason a percentile was used to allow for disturbances in raw water quality which can result in infrequent spikes in pretreatment effluent quality, see Table 1-3. For instance, the turbidity should be below 2 NTU as an average on 292 days out of the year and should be below 20 NTU on 361 days out of the year.

Table 1-3. Pretreatment Effluent Quality Goal

Parameter	80th percentile	90th percentile	95th percentile	99th percentile
Turbidity (NTU)	2	4	8	20
TOC (mg/L)	2	2.6	3.5	4
pH	7.8-8.4	7.7-8.5	7.6-8.5	6.9-8.9
Total Hardness (mg/L as CaCO3)	100	105	110	115

Parameter	80th percentile	90th percentile	95th percentile	99th percentile
Alkalinity (mg/L as CaCo3)	95	100	105	110
Manganese (mg/L)	0.7	0.8	0.8	0.8
Notes: All values listed are daily average. Buyer may choose to bypass flocculation & sedimentation when raw water quality allows.				

The primary reason for using percentiles was because of the variability in raw water quality during the spring runoff. Another consideration is the threat for a wildfire in the water shed. A wildfire in the watershed can result in extremely deteriorated raw water quality. Many provisions will be provided to allow for handling raw water should a wildfire occur.

Prior to the grit removal equipment a connection will be provided in the plant influent pipe which will allow for a provisionary inlet screen to be installed in the future under emergency conditions. Additionally, the flocculation basins will be designed to allow for the addition of powder activated carbon (PAC) should that level of pretreatment be required following a wildfire in the watershed.

Additional discussion of the pretreatment design is included in Section 7.

1.4. Design Flow

Design flow needs and projections are based on information presented in the 2007 Water Facility Plan. Population projections are based on an assumed growth rate for the service area of 5.0%. The treatment plant capacity will be accommodated in two phases. The initial phase of the project will produce 22 mgd under peak day demand conditions. According to the population projections, this flow will be sufficient until 2015. Flow projections under initial phase design conditions are presented in Figure 1-3. This projection is based on current yearly usage patterns. Ultimate buildout capacity of the treatment plant will be 36 mgd. This capacity will be achieved in the second phase of the plant design and construction. Assuming a constant 5.0% growth for the service area, 36 mgd of treatment plant capacity is project to be sufficient through 2025.

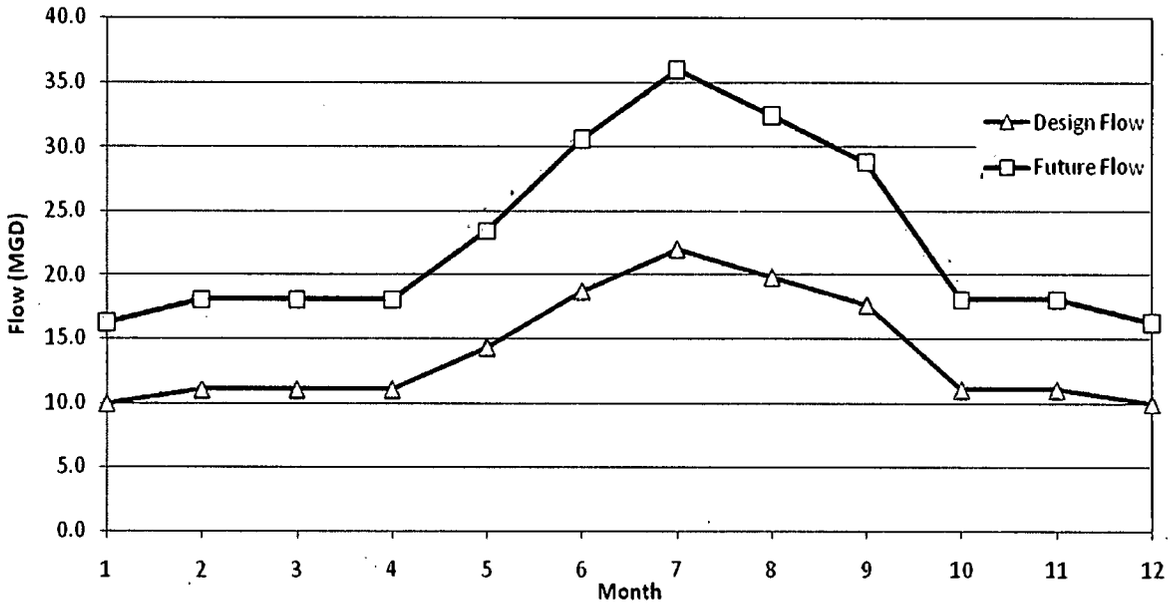


Figure 1-3. Projected Peak Day Water Demand

Filtered (treated) water quality goals are based on previous experience with the anticipated capabilities of low pressure membrane treatment plants, and regulatory requirements. The goals listed in Table 1-4 are slightly more restrictive than those imposed by the Montana Department of Environmental Quality (MDEQ).

Table 1-4. Water Quality and Treatment Goals

Parameter	Location	Goal	Condition	Comments
Turbidity	Settled Water	≤ 5.0 NTU	90% of time	Only if sedimentation process in operation
Turbidity	Membrane Filtrate	≤ 0.15 NTU	100% of time	Achieve LT2 microbial toolbox credit
Turbidity	Membrane Filtrate	≤ 0.10 NTU	95% of time	Achieve LT2 microbial toolbox credit
Total Iron	Entry Point	≤ 0.05 mg/L		EPA SMCL: 0.3 mg/l
Total Manganese	Entry Point	≤ 0.01 mg/L		EPA SMCL: 0.05 mg/l
Total Aluminum	Entry Point	≤ 0.05 mg/L		EPA SMCL: 0.2 mg/l
Aesthetics				
Apparent Color	Entry Point	≤ 1.0 CU		Minimize DBP formation
Organics/DPB's				
TOC	Plant Removal	≥ 30%	95% of time	Not regulated for membrane plants

Parameter	Location	Goal	Condition	Comments
TOC	Entry Point	≤ 1.5 mg/l	95% of time	Minimize DBP formation
TTHM	Dist. System	≤ 60 µg/l	LRAA	75 % of MCL
HAA5	Dist. System	≤ 45 µg/l	LRAA	75 % of MCL
Disinfection/Residuals				
Chlorine Residual	Entry Point	≤ 1.5 mg/l Cl2	95% of time	EPA MRDL: 4 mg/l
Chlorine Residual	Entry Point	≤ 2.0 mg/l Cl2	99% of time	EPA MRDL: 4 mg/l
Chlorine Residual	Dist. System	≤ 0.5 mg/l Cl2	95% of time	EPA MRDL: 4 mg/l
Chlorine Residual	Dist. System	≤ 0.2 mg/l Cl2	99% of time	EPA MRDL: 4 mg/l
Corrosion Control				
pH	Entry Point	8.4		
Alkalinity	Entry Point	60-110 mg/l		

The finished water color goal is recommended to be less than 1 PCU, which is significantly lower than the EPA's suggested secondary standard of 15 PCU. The City's existing WTP has been able to meet this goal and the proposed new WTP should continue to produce color-free water. In order to achieve this goal, coagulation will be required a majority of the year. However, the WTP membrane filtration treatment process should have no difficulty meeting the finished water turbidity requirements, even if coagulation, flocculation and sedimentation are not part of the process train.

1.5. Solids Handling Design Criteria

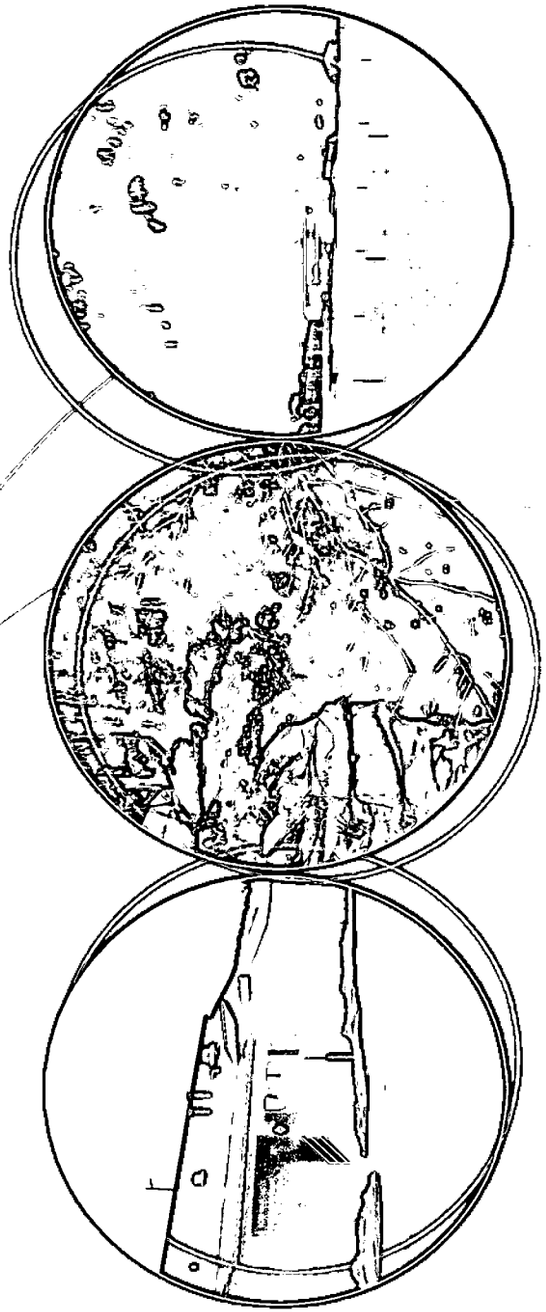
Due to the absence of a sanitary sewer in the location of the Sourdough/Hyalite WTP all solids will be handling initially onsite and then hauled by truck to the Bozeman WRF. A complete discussion of the solids handling criteria is included in Section 9.

1.6. Disinfection Credits

As a result of the direct filtration barrier using the Pall Microza UNA-620A membranes, the City is requesting the following disinfection credits for the membranes: 4-log for Giardia; 4-log for Cryptosporidium; and 0.5-log for viruses from Montana DEQ. The system will additionally be operated with a 0.5-log Giardia disinfection requirement as well as numerous membrane integrity testing requirements to verify filtration efficacy.

1.7. Additional Design Criteria

Bozeman WTP staff have created detailed listings of features they would like included in the new facility. These listings should be reviewed often during the design phase of this project. One such listing is included in the original RFP for the project. Additionally, reference the Conceptual Design Memorandum dated October 15, 2009 Appendix A – Staff Design Items for Consideration and Evaluation and Appendix C – Membrane Trip Staff Notes. These lists are valuable resources for ensuring a detailed and high-quality facility design for the City of Bozeman.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 2. Codes, Regulations and Permit Requirements

Prepared by: James Nickelson

Reviewed by: Nathan Kutil/Dan Harmon

Date: January 19, 2010

2.1. *Purpose and Content*

The Bozeman Hyalite/Sourdough Water Treatment Facility Project will require several permits. Design standards are presented in this section to provide a uniform approach to designing facilities that will satisfy the requirements necessary to obtain permits in an efficient and economical manner.

The applicable codes and standards are divided into the following categories: land use codes; building codes; storm water management; Montana Department of Environmental Quality standards; MPDES discharge permit; wetlands, streams and floodplains regulations; and site specific development criteria.

2.2. Land Use

The Bozeman Hyalite/Sourdough Water Treatment Facility is located on a combination of parcels consisting of approximately 34.129 acres located in Gallatin County. The property is owned by the City of Bozeman, however is not within the city limits of Bozeman. The water treatment plant property is within the Hyalite Zoning District. The Hyalite Zoning District regulations are located on the internet at the following address:

http://www.gallatin.mt.gov/public_documents/gallatincomt_plandept/gallatincomt_zonedist/zoningdistricts/hyalite

The zoned property is located in a combination of RR-5 (Rural Residential, One Single Family Dwelling per 5 acres) and RR-10 (Rural Residential, One Single Family Dwelling per 10 acres). The existing plant is located on a 10.109 acre parcel and the new plant will be likely located on the parcel which is zoned RR-5. The remaining property is a 24.020 acre parcel that is zoned RR-10; this parcel is part of a residential development which has additional covenant restrictions

The Sourdough Intake portion of the project is located on City of Bozeman owned property approximately 1.2 miles south of the water treatment plant. The intake is on a large tract of land with no known zoning or covenants.

2.2.1. Hyalite Zoning District Regulations

The following applicable rules apply to the zoning district:

- Land Use Permit Required.
- Conformance to Regulations Required – Exceptions may be requested due to public health and safety. Determination made by the Zoning Enforcement Agent.
- Conforming Use – The project is not a conforming use and will need to go through the conditional use permit process.
- Parcel Size – New parcels need to conform to lot size minimums and also have lot width minimums. This does not apply to existing parcels.
- Lot Coverage – No restrictions exclusive of yard setbacks.
- Yard Requirement – Yard is defined as open space.
    - RR-5 and RR-10 District.
        - Front Yard 25 feet.
        - Side Yard 15 feet.
        - Rear Yard 25 feet.
- Irrigation Ditch Setbacks – Structure setback.
    - RR-5 and RR-10 District.
        - 100 feet.
- Fence Height Limitations.
    - 6 feet in rear and side yards.
    - 5 feet in front yard.
    - No limitation outside of yard setbacks.
- Accessory Buildings.
    - 10 feet from principal structure.
    - No reflective siding.
    - Height limitation – 24 feet.
- Signs – One sign no larger than 6 square feet is allowed.
- Height Limitations – Defined for conforming uses.
- Conditional Use Relevant Issues.
    - Conditional uses not specifically defined.
    - Intent of plan and zoning regulations should be followed.

The Conditional Use Permit and Land Use Permit process is through the Gallatin County Planning Office. It is recommended that the conditional use permit process commence as soon as layout and structure sizing is fully developed.

2.2.2. Covenants

In addition to zoning restrictions the parcel zoned RR-10 is protected by covenants. The property generally known as Skyridge Estates is covered by two sets of covenants. The original covenants are dated April 5, 1983 and generally only allow for single family residences. The covenants were amended in 1989 at the request of the City of Bozeman as a condition of obtaining the tract of land. The 1989 amendment generally provided for the construction of a surge pond and provides for specific conditions related to that use.

The Skyridge Estates Homeowners' Association should be contacted as soon as scope and magnitude of project is clearly developed in order to develop an acceptable agreement regarding land use and develop an amendment to the covenants that clearly allows for the use anticipated.

2.3. Building Codes

This section is intended to provide project designers with guidance to applicable codes and standards for the civil, structural, architectural, mechanical, and electrical design disciplines.

A building permit must be obtained through the State of Montana Department of Labor and Industry. The following is a link to the rules adopted by the Department which provide exceptions and additions to the standard adopted codes.

http://mt.gov/dli/bsd/bc/rules.asp

The specific code standards that are adopted by the State are as follows:

2009 International Building Code **

2009 International Energy Conservation Code **

2009 International Mechanical Code **

2009 International Fuel Gas Code **

2009 Uniform Plumbing Code **

2008 National Electric Code **

**Adoption of this code is pending.

Designers should become familiar with State of Montana exceptions and additions that impact their disciplines. In addition to State of Montana exception and additions to the listed codes the state has adopted separate "Building Accessibility Rules" which are in Administrative Rule of Montana 24.301. Sub-Chapter 9. These rules can be found under the above link.

2.3.1. Fire

The facility is located within the Sourdough Fire Department District. The fire department is a volunteer rural department. Once the design is moved beyond a conceptual stage, both the Sourdough Fire Department and the Bozeman Fire Department will be contacted for input.

The applicable code is the latest version of the Uniform Fire Code adopted by the State of Montana.

2.3.2. Civil

Applicable codes relative to civil work include the following:

- City of Bozeman Design Standards.
- Montana Public Works Standard Specifications (MPWSS).
- City of Bozeman Modifications to MPWSS.
- MDEQ Circular 1.

- MDEQ Circular 4.
- Gallatin County Wastewater Treatment Regulations.
- Administrative Rule of Montana 24.301. Sub-Chapter 9 regarding accessibility.
- Fire protection provision guidelines per fire department.

Review and approval is through the City of Bozeman Engineering Division, Gallatin County Department of Environmental Health and the Montana Department of Environmental Quality.

2.3.3. Process Equipment and Piping

The Montana Department of Environmental Quality Circular 1 is the regulatory standard that applies to the project.

2.3.4. Structural

2009 International Building Code (IBC)

- Minimum basic Wind Speed 90 miles per hour, Exposure C
- Seismic Design Parameters: Site Class C, $_{SDS}$ = 0.600 (g), $_{SD1}$ = 0.300 (g), Seismic Design Category = D
- Ground snow load = 53 psf
- Minimum Design Loads for Buildings and Structures, ASCE/SEI 7-05

American Concrete Institute (ACI)

- Reinforced Concrete Design ACI-318-05
- Environmental Engineering Structures ACI-350-05

American Institute of Steel Construction (AISC)

- Specifications for the Design, Fabrications, and Erection of Structural Steel Buildings, March 9, 2005
- Manual of Steel Construction, Third Edition.
- Specifications for Structural Joints Using ASTM A 325 or A 490 bolts, June 30, 2004

American Welding Society (AWS)

- Structural Welding Code AWS D1 1-2004

American Society for Testing and Materials (ASTM)

American National Standards Institute (ANSI)

National Design Specifications for Wood Construction, 2005 Edition

National Association of Architectural Metal Manufactures (NAAMM) Metal Grating Manual

Steel Structures Painting Council (SSPC)

Factory Mutual System (FM)

Underwriters Laboratories, Inc. (UL)

2.3.5. Architectural

2009 International Building Code (IBC)

International Fire Code, 2006

National Fire Protection Association (NFPA)

- Life Safety Code, 1996

American Society for Testing and Materials (ASTM)

American National Standards Institute (ANSI)

National Association of Architectural Metal Manufactures (NAAMM)

Sheet Metal and Air Conditional Contractors National Association (SMACNA)

- Architectural Sheet Metal Manual, Architectural Sheet Metal Specifications

Steel Structures Painting Council (SSPC)

International Energy Conservation Code, 2003

Underwriters Laboratories, Inc. (UL)

2.3.6. Mechanical

International Building Code, 2009

International Mechanical Code, 2009

Uniform Plumbing Code (UPC), 2009

International Fire Code, 2006

National Fire Protection Association (NFPA)

- Installation of Sprinkler Systems NFPA 13
- Installation of Air Conditioning and Ventilating Systems NFPA 90A
- Installation of Warm Air Heating and Ventilating Systems NFPA 90B
- Exhaust Systems for Air Conveying of Materials NFPA 91

American Society for Testing and Materials (ASTM)

Steel Structures Painting Council (SSPC)

American National Standards Institute (ANSI)

Sheet Metal and Air Conditional Contractors National Association (SMACNA)

American Water Works Association (AWWA)

International Energy Conservation Code, 2003

Underwriters Laboratories, Inc. (UL)

2.3.7. Electrical

National Electric Code (NEC), 2008

International Fire Code, 2006

National Fire Protection Association (NFPA)

- Fire Alarm Code NFPA 72
- Emergency and Standby Power Systems NFPA 110
- Stored Energy Emergency and Standby Power Systems NFPA 111

American Society for Testing and Materials (ASTM)

American National Standards Institute (ANSI)

Factory Mutual System (FM)

ETL Testing Laboratories, Inc. (ETL)

Underwriters Laboratories, Inc. (UL)

2.4. Storm Water Management

Storm water management requirements are divided into two categories; 1) permanent controls and, 2) temporary construction controls.

2.4.1. Permanent Storm Water Management Facilities

Detention and/or retention facilities are required to meet normal design standards. While no specific design standards are in force for this particular project, it is recommended that standards adopted by the City of Bozeman be utilized. Design standards are included in the City of Bozeman Design Standards and Specifications Policy. This document can be found on the internet at http://www.bozeman.net/engineering/engineering_documents.aspx.

The review and approval process for permanent storm water management facilities is by the City of Bozeman Engineering Department through the Owner's plan review process.

2.4.2. Temporary Construction Storm Water Management Facilities

A Storm Water Pollution Prevention Plan is required for this project. A Storm Water Discharge Permit will need to be obtained by the Owner or Contractor.

The review and approval process for construction storm water management facilities is through the Montana Department of Environmental Quality.

2.5. Montana Department of Environmental Quality Standards

The project requires approval from the Montana Department of Environmental Quality (MDEQ). Specific design standards are included in DEQ-1 Design Standards for Water Work. There are specific standards in this document that are applicable to most design disciplines working on this project.

The sanitary wastewater generated from the facility will be treated and disposed of onsite. The applicable regulations are DEQ Circular 4 and the Gallatin County Wastewater Treatment rules.

2.6. MPDES Discharge Permit

The current discharge permit to Sourdough Creek (Bozeman Creek) allows discharge of filter backwash water after treatment. Treatment consists of settling basins and de-chlorination. Permit limits, effective June 1, 2010, consist of the following:

Parameter	Average Monthly (mg/l)	Maximum Daily (mg/l)
TSS	30	45
TRC	0.016	0.021
TDA	1.0	1.5

TSS = Total Suspended Solids

TRC = Total Residual Chlorine

TDA = Total Dissolved Aluminum

pH of the effluent is limited to between 6.0 and 9.0.

Monitoring is required prior to the discharge entering Sourdough Creek. A 300 foot long mixing zone is allowed for total residual chlorine and total dissolved aluminum.

The Technology-Based Effluent Limits in the permit include TSS. While not included in the permit as a limit, non-degradation limits are included in the Statement of Bass for TSS. Daily Maximum limit was calculated to be 215 lb/day based on a monthly average 323 lb/day based on a daily maximum.

The Water Quality- Based Effluent Limits in the permit include TRC and TDA. The 7Q10 value used in determining the water quality- based limits was determined to be 4.3 cfs based on a limited number of data points. The limits for TRC were reduced during the last permit cycle. The limits for TDA were maintained at the previous permit levels; however, it is likely that the limit would be reduced if the plant utilizes an aluminum based coagulant. The Statement of Basis for the permit includes calculations that would place the TDA limits at 0.215 mg/l on a monthly average basis and 0.279 on a maximum daily basis. For planning purposes it should be noted that the 7Q10 is based on a limited amount of data and could change if additional data is collected. A TMDL has not been completed for Sourdough Creek which also has implications relative to future permit requirements.

2.7. Wetlands, Streams, Floodplains and Irrigation Ditches

A wetland delineation of the property was completed and wetland delineation report has been sent to the Army Corp of Engineers for concurrence on jurisdictional status. Wetlands exist at the intake site and are associated with the irrigation ditch between the water treatment plant and Sourdough Canyon Road. Based on a review of the conceptual layout of the project the only facility of concern in terms of location is the clearwell. Permitting will be required at the intake site.

There are no known streams on the project site however one of the irrigation ditches will need to be assessed as to its status as a possible stream/ditch which may have implications

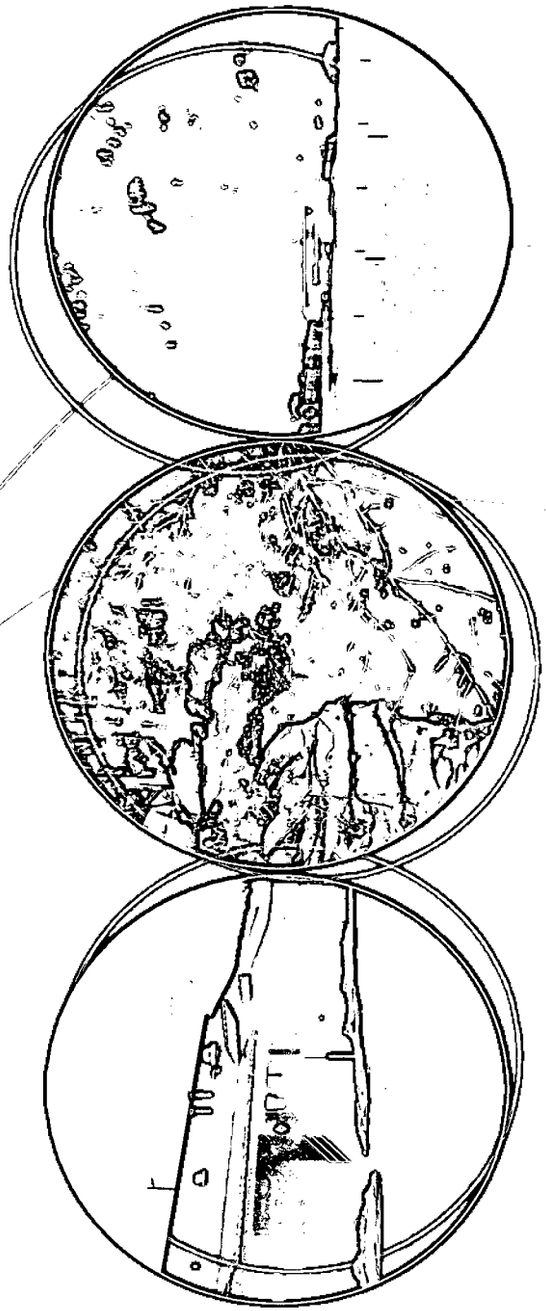
to the project. Sourdough Creek obviously is a stream permitting issue when it comes to the intake portion of the project.

The floodplain of Sourdough Creek is defined from Nash Road to south of the City's current intake structure. The floodplain is graphically delineated as Zone A where flood elevations have not been determined. The floodplain is on the west side of Sourdough Canyon Road at the location of the water treatment plant is not a regulatory concern at this location. The intake work will be done within the graphical floodplain area. While this should have minimal impact on the project, permitting through the Gallatin County Planning Office will likely be required.

The plant property is bisected by two irrigation ditches. The "68" Ditch is located near Sourdough Canyon Road and runs south to north across the west side of the City's property. The second ditch is the Lower Williams Ditch which generally runs from southwest to northeast above and to the east of the current plant facilities. The ditches need to be maintained as part of the project. Setback requirements will need to be addressed during design.

2.8. Site Specific Development Criteria

Site specific development criteria will be generated during the initial design of the project. This memorandum will be updated as appropriate to include site specific development criteria.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 3. Hydraulic Profile and Plant Hydraulic Constraints

Prepared by: James Nickelson

Reviewed by: Travis Meyer

Date: July 30, 2010

3.1. Introduction

This section examines the hydraulics of the proposed improvements. Hydraulic parameters were developed for a 22 MGD capacity plant. Comments have been provided relative to the 36 MGD future plant capacity (14 MGD expansion.)

The hydraulic parameters are divided into three sections. The first section identifies elements associated with the primary treatment train, the second section identifies elements directly associated with the discharge to Sourdough Creek and the third section identifies elements associated with liquid and solid waste streams.

3.2. Primary Treatment Train

This section identifies hydraulic profile flow elements associated with the primary treatment train for the proposed plant.

Table 3-1 summarizes the flow elements used for development of the process hydraulic profile.

Table 3-1. Flow Element Summary

Flow Element	22 MGD	36 MGD
Flow Rates	Ave Day = 9.6 mgd Peak Capacity = 22 mgd	Ave Day = 15.7 mgd Peak Capacity = 36 mgd

Flow Element	22 MGD	36 MGD
Raw Water Supply	Raw water will be supplied to the plant through multiple transmission pipelines and a combination of operating conditions and feed a head tower to control the starting hydraulic condition for the plant. The preliminary overflow elevation for the head tower is 5227.5 feet. The raw water pipelines serving the plant are all capable of providing water to this elevation. The Sourdough Transmission Main (30") can supply is limited to 4.26 MGD based on water rights and available stream flow. The pipe line capacity is much higher than this value and if the Sourdough Dam is constructed it may be possible to utilize the existing pipe line to provide additional flow. At 4.26 MGD the pipeline will have a hydraulic grade line of approximately 5,290 feet at the new flow control valve. The primary Hyalite Transmission Main and intake has a design capacity of 17.5 MGD which is limited by the intake screen design. The pipeline has a maximum capacity of 19.7 MGD which is limited based on meeting the head tower requirements. During unusual or emergency operation water may be supplied through the backup Hyalite Transmission main. This pipeline has a maximum capacity of 8.6 MGD based on hydraulic restrictions in the pipe line upstream of the plant. The pipeline can provide this flow at a hydraulic grade line sufficient to feed the proposed head tower.	The likely source for the additional 14 MGD is a new Sourdough Dam. It is unknown how this water would be supplied to the plant; however, it would need to connect to a separate pretreatment train:

Flow Element	22 MGD	36 MGD
Grit Removal	The grit removal system will operate on gravity flow from the head tower. Headloss through the grit removal basin will be minimal and will be determined during final design.	Additional pretreatment train required.
Rapid Mix Tank	The rapid mix tank will operate on gravity flow from the grit removal basin. The only headloss will be through the overflow weirs. The headloss will be determined during final design based on final weir configuration.	Additional pretreatment train required.
Flocculation Basin	The flocculation basin will operate on gravity flow from the rapid mix tank. The only headloss will be through the weirs. The headloss will be minimal.	Additional pretreatment train required.
Plate Settler Basins	The plate settles will operate on gravity flow from the flocculation basins. The only headloss will be through the plates. The headloss will be minimal.	Additional pretreatment train required.
MF Feed Wet Well	Wet well will operate between overflow level and low level of wet well. The operating condition provided to the MF Supplier range from a high water level of 5219.5 feet to a low water level of 5,210 feet.	Future pretreatment train to provide MF feed water at same hydraulic conditions as proposed MF Feed Wet Well. Pipe will need to be stubbed from wet well to outside building wall.
MF Feed Pumps	By MF Supplier	By MF Supplier (future)
MF Feed Strainers	By MF Supplier	By MF Supplier (future)
Permeate Pumps	By MF Supplier	By MF Supplier (future)
Contact Time Chamber (Pipe)	The MF Supplier is to provide water at a head of 5,212.5 feet to allow for filling of the contact pipe which will overflow to the existing clearwell. No changes are proposed to the piping downstream of the existing clearwell with this project.	Additional contact chamber will be required

3.3. Sourdough Creek Discharge

This section identifies hydraulic profile flow elements associated with the Sourdough Creek Discharge and process elements that directly flow to the creek.

Table 3-2. Flow Element Summary

Flow Element	22 MGD	36 MGD
Discharge Pipe	Diameter = 24 inch from discharge manhole to creek (existing) Outlet invert = 5,187.18 feet at creek	Review of the overflow and discharge capacity will be required as the plant capacity is expanded. It is probable that a second discharge line to the creek will be required.
Discharge Conditions	The maximum creek water level at the outlet pipe has been conservatively estimated to be 4 feet above the pipe invert based on field observations.	
Discharge Capacity	The existing controlling element on the inlet side of the discharge pipe is a connection manhole located near the head tower of the existing plant. The new plant floor elevation will be lower than the rim of this manhole. Based on a 30" pipe from the new plant to the existing connection manhole and maintaining the water level 1.5 feet below the proposed finish floor of the plant of 5,207.0 the line has a capacity of 24.2 MGD.	

3.4. Liquid and Solids Waste Streams

This section identifies hydraulic profile flow elements associated with the liquid and solid waste streams.

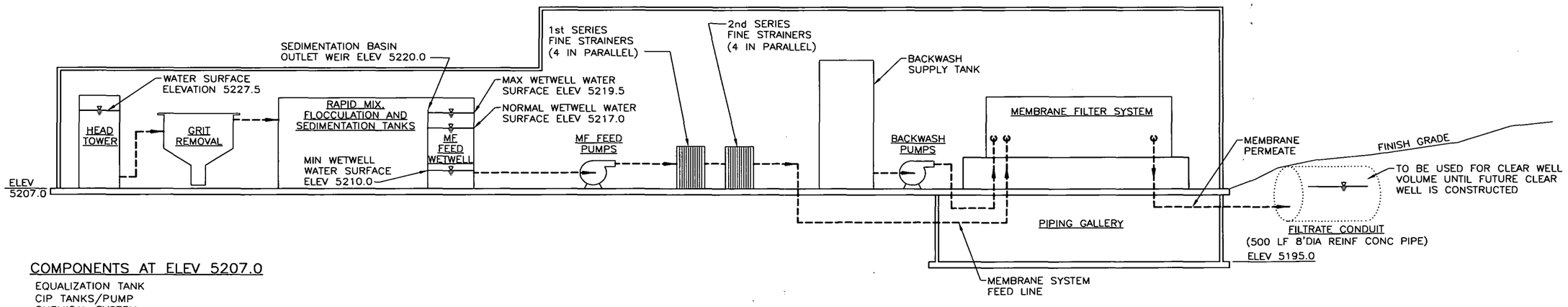
Table 3-3. Flow Element Summary

Flow Element	22 MGD	36 MGD
Grit Removal Waste	Pump to classifier	Additional pretreatment train required
Rapid Mix/Flocculation/ Sedimentation Drain	Gravity flow to lagoon	Additional pretreatment train required

Flow Element	22 MGD	36 MGD
Sedimentation Waste	Vacuum system will send waste to gravity thickener	Additional pretreatment train required
Pretreatment Train Overflow	Gravity flow to lagoon	Additional pretreatment train required
Strainer Waste	Pump to DAFT	Additional strainers required
MF Chemical Clean	To neutralization tank - by MF Supplier	Future by MF Supplier
MF Backwash	To DAFT - by MF Supplier	Future by MF Supplier
Gravity Thickener Solids	Pump to drying beds	Additional Solids handling train required
Gravity Thickener Effluent	Gravity flow to Sourdough Creek discharge pipe or pumped to the head of the plant	Additional Solids handling train required
DAFT Float	Pump to drying beds	Additional Solids handling train required
DAFT Effluent	Pump to head of plant or gravity flow to Sourdough Creek discharge pipe	Additional Solids handling train required
Drying Bed Drain	Pump to head of plant or pump to Sourdough Creek discharge pipe	Additional Solids handling train required
Drying Bed Overflow	Gravity flow to lagoon or pump to head of plant	Additional Solids handling train required
Lagoon Discharge	Ability to pump to head tower, DAF or to Sourdough Creek discharge pipe.	Modifications required when additional lagoon is built

3.5. Hydraulic Profile

The preliminary 22 MGD hydraulic profile for treatment train is presented in Figure 3-1. The hydraulic profile will be expanded to include additional elements and detail during the final design phase.



COMPONENTS AT ELEV 5207.0

EQUALIZATION TANK
CIP TANKS/PUMP
CHEMICAL SYSTEM
COMPRESSORS/BLOWERS
NEUTRALIZATION TANK

SECTION
NTS

MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

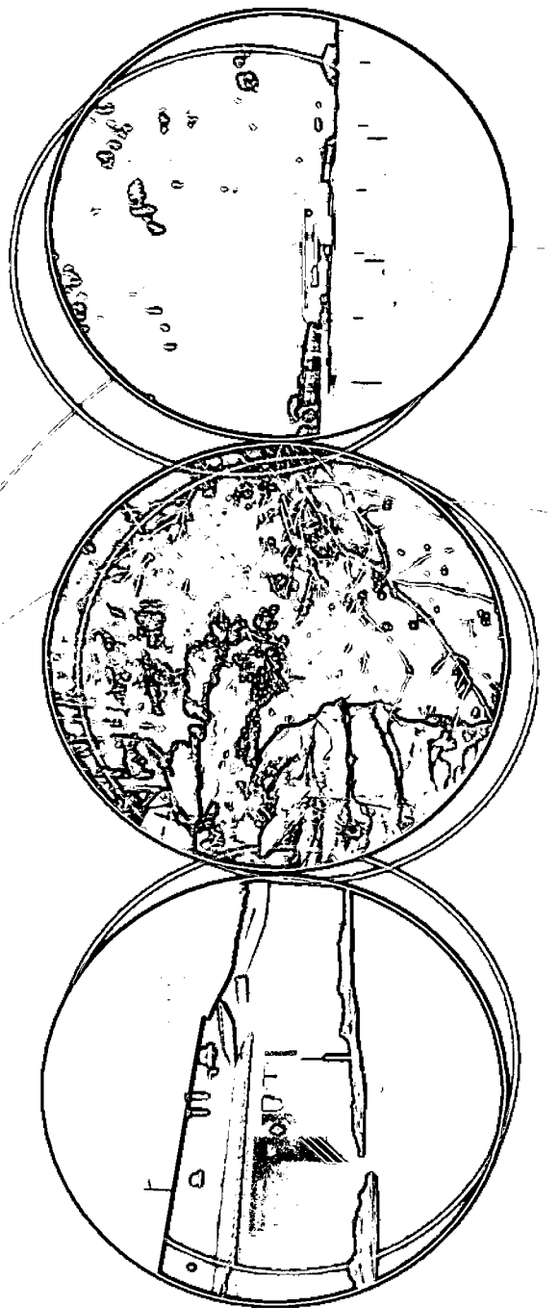
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PRELIMINARY WTP BUILDING HYDRAULIC SECTION

DATE
August, 2010

FIGURE
3–1



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 4. Treatment Plant Process and Layout

Prepared by: Sean Everett, Nathan Kutil

Reviewed by: Craig Habben, Dan Harmon

Date: September 14, 2010

4.1. Introduction

This section presents the proposed plant layout and processes. The proposed plant will utilize the existing raw water intake on Hyalite Creek, an upgraded intake on Sourdough Creek, existing raw water piping, existing flow control valves on the newer Hyalite raw waterline, a new flow control valve structure on the Sourdough raw waterline, distribution system reservoirs, and distribution piping. The remaining existing facilities will be demolished once the proposed plant is constructed. A single large building will be constructed to contain the entire proposed plant with the exception of the new Sourdough flow control structure..

The fundamental system processes and equipment to be used for final design are presented herein. The process dictates the equipment requirements which in turn determine the final plant layout.

4.2. City Staff Design Preferences

Following raw water flow controls located at the existing and new flow control buildings, the new water treatment facilities will be housed in a new building, located immediately north of the existing treatment facility on the existing plant site. The new plant facilities will be distinct from the existing plant, with the existing plant being abandoned once the new WTP construction is completed.

The new building will be generally divided into the following areas:

- Preliminary treatment,sedimentation and residuals handling,
- Membrane strainers, feed pumps and membrane filtration,
- Chemical storage and feed facilities,
- Administration, laboratory and locker room facilities, and
- Maintenance facilities.

Due to cost constraints some of the project components may need to be bid as alternates. See Section 16 for more discussion on this matter.

City Staff provided a list of needs for administrative, laboratory and maintenance facilities. These requests, along with the requirements for treatment facilities, provided the basis for developing the footprint of the various components and the overall facility layout. A detailed summary of the City Staff items for design consideration are as follows:

Building

- Provide I-beams and hoists over all equipment, valve clusters on racks, and over the primary workshop work bench. Provide plentiful head room over equipment.
- Pipe high pressure air throughout shop and production areas, with convenient connection points and air tool assemblies. Air must be dried to -40°F dew point lubricators at all tool stations with option to use lube or non-lube air.
- Provide ample connections for wash down hoses.
- Design building not prone to fly infestations. Pay close attention to prevent vector intrusion at all openings.
- Install building access doors on the south side to the greatest extent possible. Do not face main entrance north due to ice buildup where all human traffic is.
- Design a simple roof with no North side valleys.
- Roof drainage diverted away from roadways, parking, and sidewalks.
- Provide all offices on the North side with large windows, in accordance with LEED principles.
- Provide location for clothes washer and dryer.
- Include Janitors closet with mop sink.
- Make process areas totally wash down quality and include ample floor drains or gutters.
- Include resilient interior finishes.
- Provide plentiful ambient light.
- Provide plentiful artificial light.
- Include sound dampening, similar to the Edwards plant.
- Provide easy access to all pipes, wires, and equipment.
- Provide potable water service to adjacent operations house.
- **Do not install confined spaces.**
- Provide ample room to roll carts, toolboxes, portable stairs, etc. around all equipment.
- Install phones in every room with several places in large areas.
- Install appropriate eye wash and emergency showers and include conditioned water and associated alarms. Alarm to foreman/supervisor/fire department. Add bypass to allow for flushing systems of stagnant water.
- Install combination door locks. Install model that works when it is cold.
- Carefully consider building heat. Pneumatic valve actuators will not work well unless they are kept warm. Cold weather climate in Bozeman is extreme at times with essentially no solar perspective.
- Include dedicated lunchroom.
- Fiberglass (chemical resistant) stairs and handrails throughout plant.

Laboratory

- Configure sample taps with continuous flow
- Provide a Fume hood.
- Include several sinks.
- Specify chemical resistant counter tops.
- Plan for plentiful cabinetry, some with glass doors.
- Lab and process instrumentation separate from main office area with ample room.
- Large storage capacity for glassware and analytical process storage.

Lab Equipment

- Lab dishwasher.
- Glassware drying rack.
- Lab water conditioning system (deionized and/or distillation water units).
- Acid storage cabinet.
- Base storage cabinet.
- Lab grade refrigerator.
- Provide an ice maker for sample shipping.
- Bench PH meter.
- Bench Spectrophotometer.
- Bench Turbidimeter.
- Scales.
- Desiccator.
- Vacuum Pump.
- Glassware.
- TDS/Conductivity Meter.
- Handheld PH meter, turbidity meter, Chlorine meter.
- Magnetic Mixer.
- Lab Chairs to go with benches.

Workshop(s)

- One heavy duty maintenance area.
- One light duty for electronic and instrument repair.
- Shop air in both maintenance areas.
- Plentiful electrical outlets in both maintenance areas.
- Dedicated oil room and parts washing room so clearwell contamination is eliminated. This room classification will need to be researched to verify if a fire wall is required and if an outside entrance is the only allowable egress.

Workshop Equipment

- Drill press, ¾ hp industrial

- Pedestal grinder, 10" industrial.
- Wire feed welder in welding bay.
- Large, heavy bench with large vice.
- Work table.
- Hoist on rail over bench.
- Storage cabinetry and shelving.
- Pipe rack.
- Electronic repair bench.
- Parts Washer.

Vehicle Maintenance Bay

- Tool box.
- Cabinet.
- Workbench with vice.

Control Systems

- Provide maintenance management software.
- Machine/motor hours download into maintenance management software for preventative maintenance purposes.
- Consider radio telemetry for Lyman.
- Provide large monitor screen split into quadrants for security monitoring of the plant and remote sites.
- Several process control HMIs located at convenient locations through the plant.
- Automation for caustic feed, fluoride, chlorine should use all available data: caustic flow, pH, fluoride background, chlorine flow, chlorine residual.
- Provide manual override switches on all influent and effluent valves.
- Hach WIMS (water information management software) will be installed with the SCADA to allow automated transfer of information.
- Existing water treatment sites will be integrated to the new Sourdough plant SCADA to allow unmanned operation with monitoring from home via laptop.
- Existing telemetry at Lyman plant may be converted to radio as part of this project to improve reliability; this will depend on cost and complexity evaluations during final design.

Electrical

- Disconnects immediately adjacent to rotating shafts.
- Safety mats.
- Generator in a heated and enclosed structure protected from the outdoor elements with enough amperage plus 20% to operate plant.
- Electrical matt in front of panels and control centers
- Install electrical wire trays and cable trays versus conduit.

Grounds

- All native plantings, preserve as much of the existing native vegetation as possible, no irrigation system.
- Almost flat parking and outside work areas.
- Easy to plow snow, all straight shots with ample stacking area at the end of plowing runs.
- Grades down and away from buildings for drainage away from buildings.
- Access for semi-trucks and chemical trucks with chemical tanks near the offloading point and injection points close to chemical tanks.

Process

- Consider the problems we have had with quills plugging when designing Sodium Hydroxide and Sodium Hypochlorite addition.
- Provide easy and open access to all chemical injection points and feed lines where there is room to work. (i.e. ladders, tool carts).
- Provide for sludge and brine removal.
- Provide easy access to all valves and fittings on the filter skids.
- No chemical feed over doorways, hallways or any other walkway (pipe trench is the exception).
- Provide adequate pretreatment before self-cleaning strainers.
- No LMI diaphragm pumps in entire plant.

Process Equipment

- Wherever possible, match contractor provided equipment to that provided by the primary equipment vendor.
- We will need lots of space around equipment items for maintenance (minimum 3 feet).
- Include full redundancy in screening.
- Wash down equipment.
- Drains on all tanks should not be back pitched, should be of ample size, and should have proper valving (ball valves). Tanks pitched to drains.
- Tanks with sloped bottoms, adequate (large diameter) bottom drains. No head pressure or free gravity discharge.
- Provide liquid chemicals: chlorine and fluoride with day tanks with capacity for a one week run time.
- Provide convenient and needed sampling points.
- Place chemical injectors at eye level.
- Limit to no short circuiting in clearwell.
- No chemical feed pumps in the chemical confinement areas.
- Consider the use of sumps in the bottom of tanks at drain connections.
- Place chemical injectors below eye level.

- Provide ample cleanouts in residual piping.
- Wash down compatible feed pumps.

LEED Principles Design

- Potentially recycle existing asphalt.
- Crush old concrete and use at new trailhead or stockpile in hole for future use.
- Limit exterior lighting.

4.3. Plant Facility Components

Process schematic flow diagrams were developed for the proposed plant. These diagrams are not a detailed depiction of the current facility layout, but do provide a close representation of the proposed liquids stream and residuals stream plant processes. Figure 4-1 depicts the liquid stream process, while Figure 4-2 depicts the residuals stream process. Figure 4-3 presents the preliminary floor plan for the new treatment facility. City staff provided a list of needs for administrative, laboratory and maintenance facilities. These requests, along with the requirements for treatment facilities, provided the basis for development of the footprint depicted in Figure 4-3. The summary of administrative, laboratory and maintenance facilities is presented in Section 14 of this report.

The liquid stream process flow diagram presented in Figure 4-1 illustrates the overall concept of the treatment process. Raw water will be metered and controlled from both the Hyalite Creek source and the Sourdough Creek source, then blended prior to entering a flow control headtower. The amount of flow from each source will be controlled by globe metering valves. From the headtower, flows will be metered to grit removal prior to introduction to preliminary treatment. Overflow from the headtower will be directed to Sourdough Creek. Flows will be directed through a vortex grit unit prior to preliminary treatment. Alternatively, the grit removal chamber may be eliminated and the headtower configured for grit removal. Following grit removal, aluminum chlorohydrate (ACH) coagulant will be injected before flow enters the flow split to the open rapid mix chamber. Based on the treatability of the source water investigated during piloting, it was determined that flocculation and sedimentation would be needed during turbid snow melt run-off conditions in the water sources. These processes will be open basins allowing gravity flow from the rapid mix, through the basins, to a membrane feed wet well at the end of the sedimentation basin sized for a minimum of 2 minutes storage. Water from the membrane feed wet well would be pumped through two sets of strainers in series to the membrane treatment system.

Membrane filtered water will discharge to a new contact conduit and will be disinfected with sodium hypochlorite, pH adjusted with sodium hydroxide, and fluoridated. Sodium hypochlorite would also be added to the discharge of the contact conduit to boost the chlorine residual as needed.

When the raw water is of satisfactory quality, it can be allowed to bypass the rapid mix, flocculation and sedimentation basins and be fed directly to the membranes systems via the membrane feed pumps and strainers. Additionally, raw water can be directed to bypass the grit system and feed directly into the flow split and rapid mix.

The solids stream process flow diagram in Figure 4-2 illustrates the overall concept of the solids handling process. Several waste solids streams will be generated by the pretreatment and membrane systems including:

- Grit removal basin slurry
- Sedimentation basin sludge removal
- Strainer flush water
- Membrane backwash waste

Solids from the pretreatment operations will be collected by gravity at the pretreatment solids pump station from which it is either pumped or directed by gravity to the gravity thickener. Sodium bisulfite, sodium hydroxide and polymer are available to be added to the gravity thickener influent to facilitate the solids settling efficiency, aluminum removal, and de-chlorination. Clarified effluent from the gravity thickener will normally discharge to the creek but can be discharged to the decant pump station for recycle to the head of the grit removal facilities.

The solids from the gravity thickener will be pumped to drying beds and the liquid overflow can be directed as gravity flow to the creek discharge or pumped to the front of the plant or directed to the DAF if water quality problems occur. Backwash from the membranes is collected in the backwash waste equalization tank. Residuals from the equalization tank are pumped to either of two dissolved air floatation (DAF) thickeners. Polymer is added ahead of the DAF. The floated solids skimmed from the DAF will be pumped to the drying beds and the effluent will normally flow by gravity to the creek but can be diverted to the decant pump station for recycle to the head of the water treatment plant. Water decanted from the drying beds also flows by gravity to the decant (return) pump station. The water collected in the decant (return) pump station can be directed to the DAF or to the front of the plant or to the creek discharge.

Strainer backwash will be collected in the drain sump in the piping tunnel and pumped to either of the two DAFs.

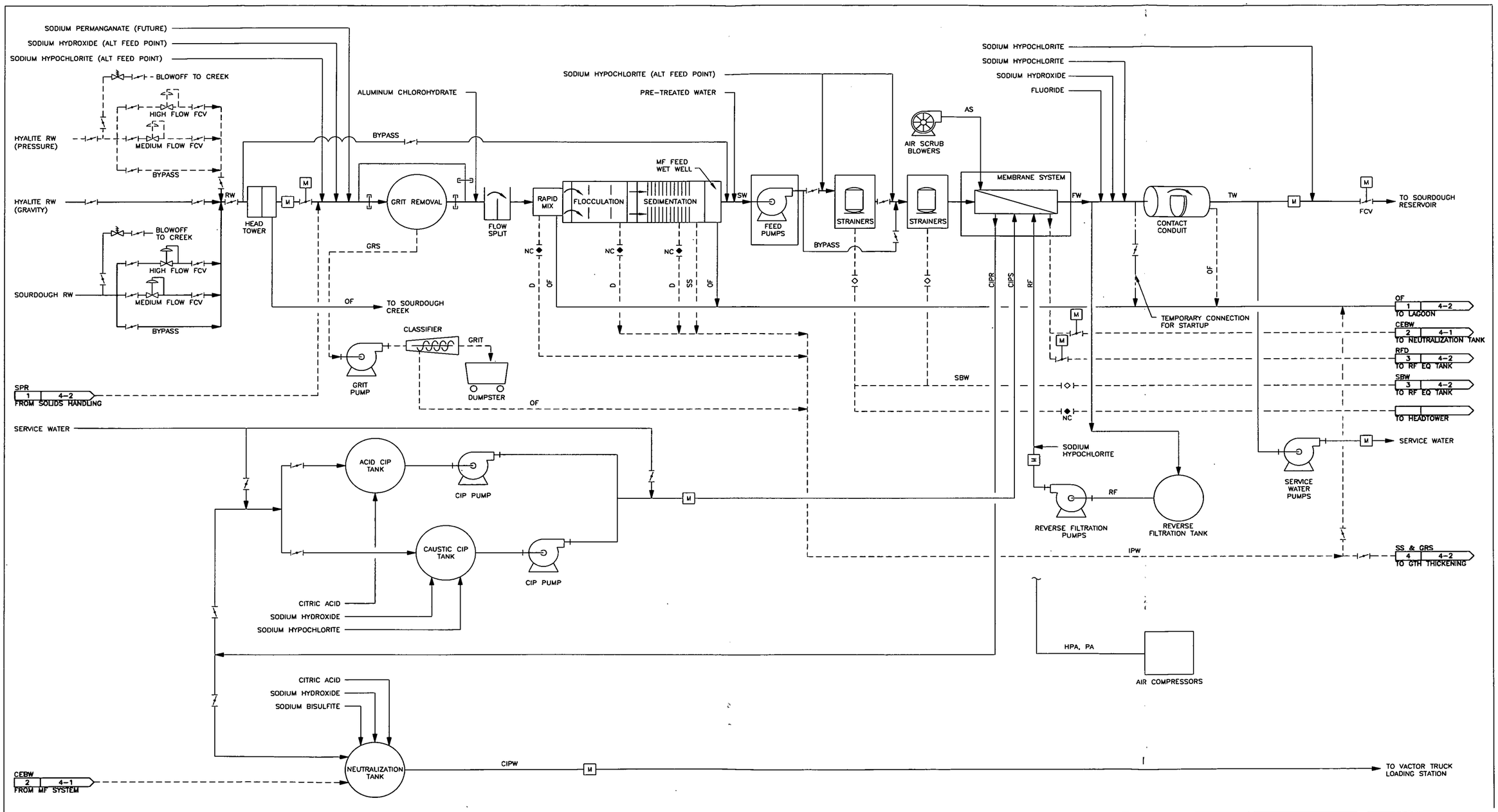
In addition to the parallel flow-type scenario of the gravity thickener and DAF, overflow from the gravity thickener can be directed to the drain sump for treatment in the DAF. Additionally, all residuals can be treated through only the DAF process or only the gravity thickener in the event one or the other unit processes are out of service. The gravity thickener will be evaluated during the initial final design, and may be eliminated as a cost savings measure.

Should that occur, all flows originally planned for the gravity thickener will be directed to the drying beds. In addition to the drying beds, a decant lagoon will be provided for collecting various plant overflows and basin drains, and to provide backup for the other solids handling systems.

4.4. Facility Water Balance

A DRAFT water balance is presented in the attached Figure 4-4. The water balance includes all planned unit processes and presents projected water flows for the following flow conditions:

- Maximum Day (22.0 mgd)
- Average Day (9.6 mgd)
- Minimum Day (3.0 mgd)
- Buildout Maximum Day (36.0 mgd)



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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

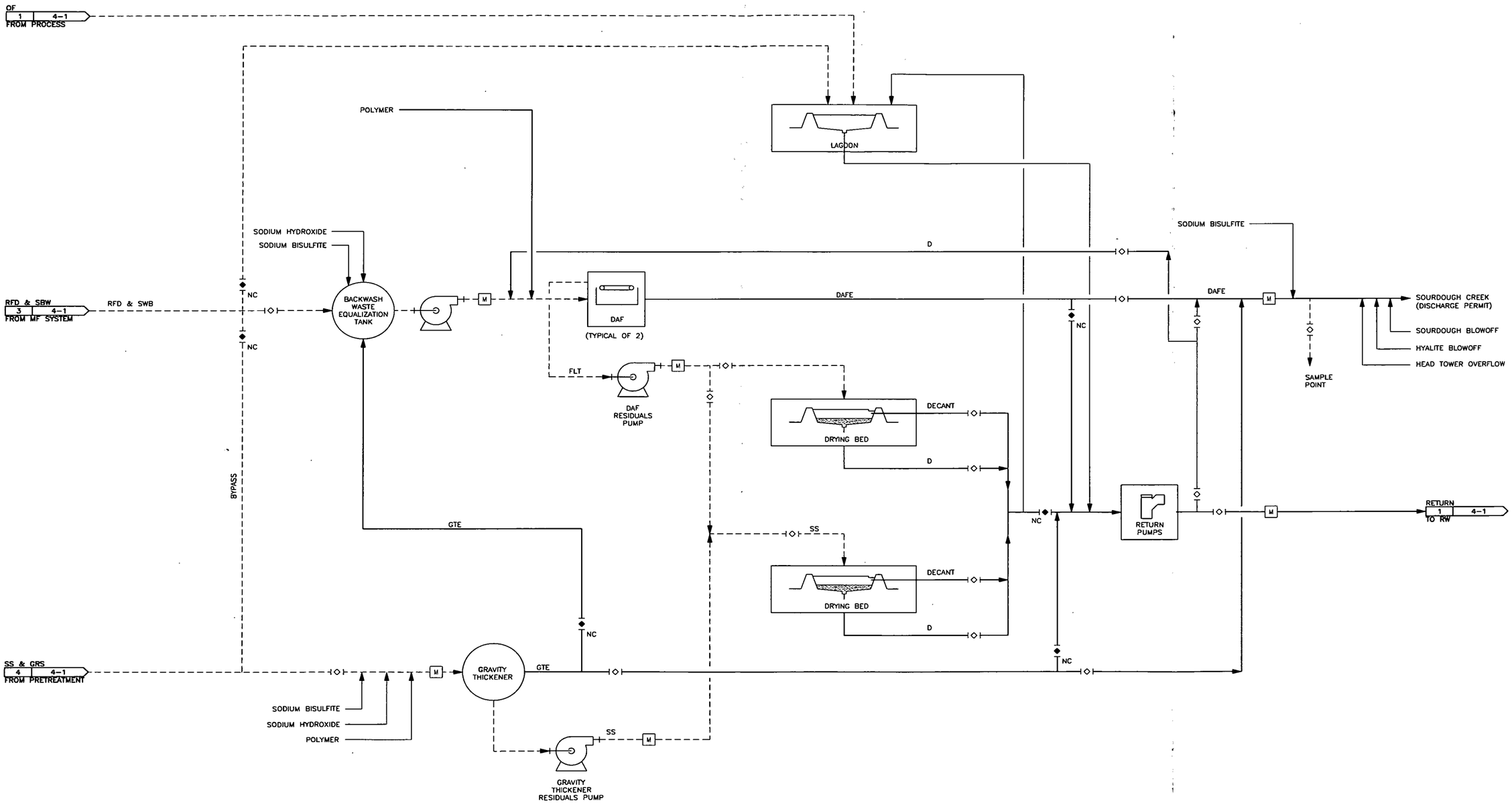
PRELIMINARY DESIGN

PROCESS FLOW DIAGRAM / LIQUID STREAM

DATE
August, 2010

FIGURE
4-1

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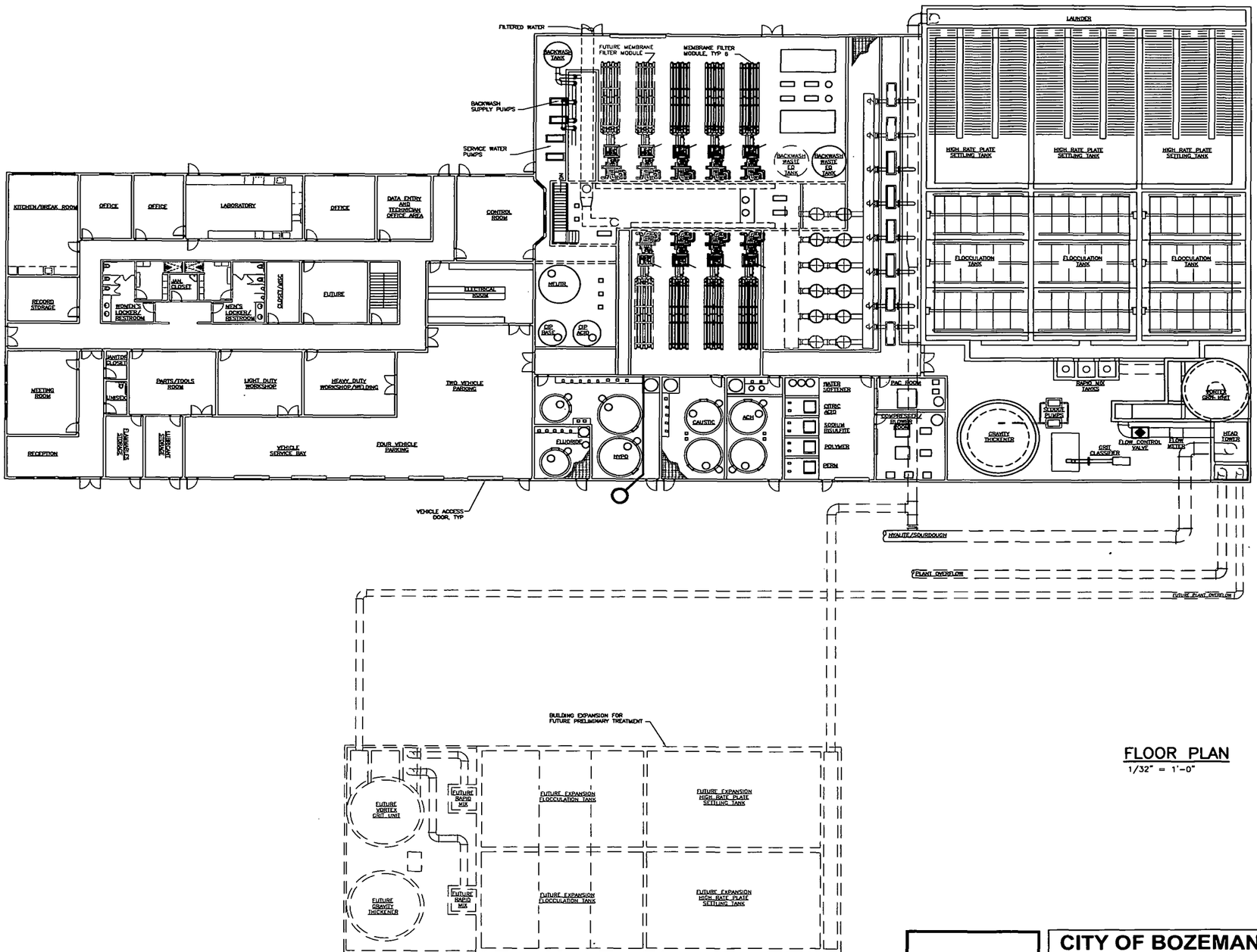
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PROCESS FLOW DIAGRAM / RESIDUALS STREAM

DATE
August, 2010

FIGURE
4-2



FLOOR PLAN

1/32" = 1'-0"

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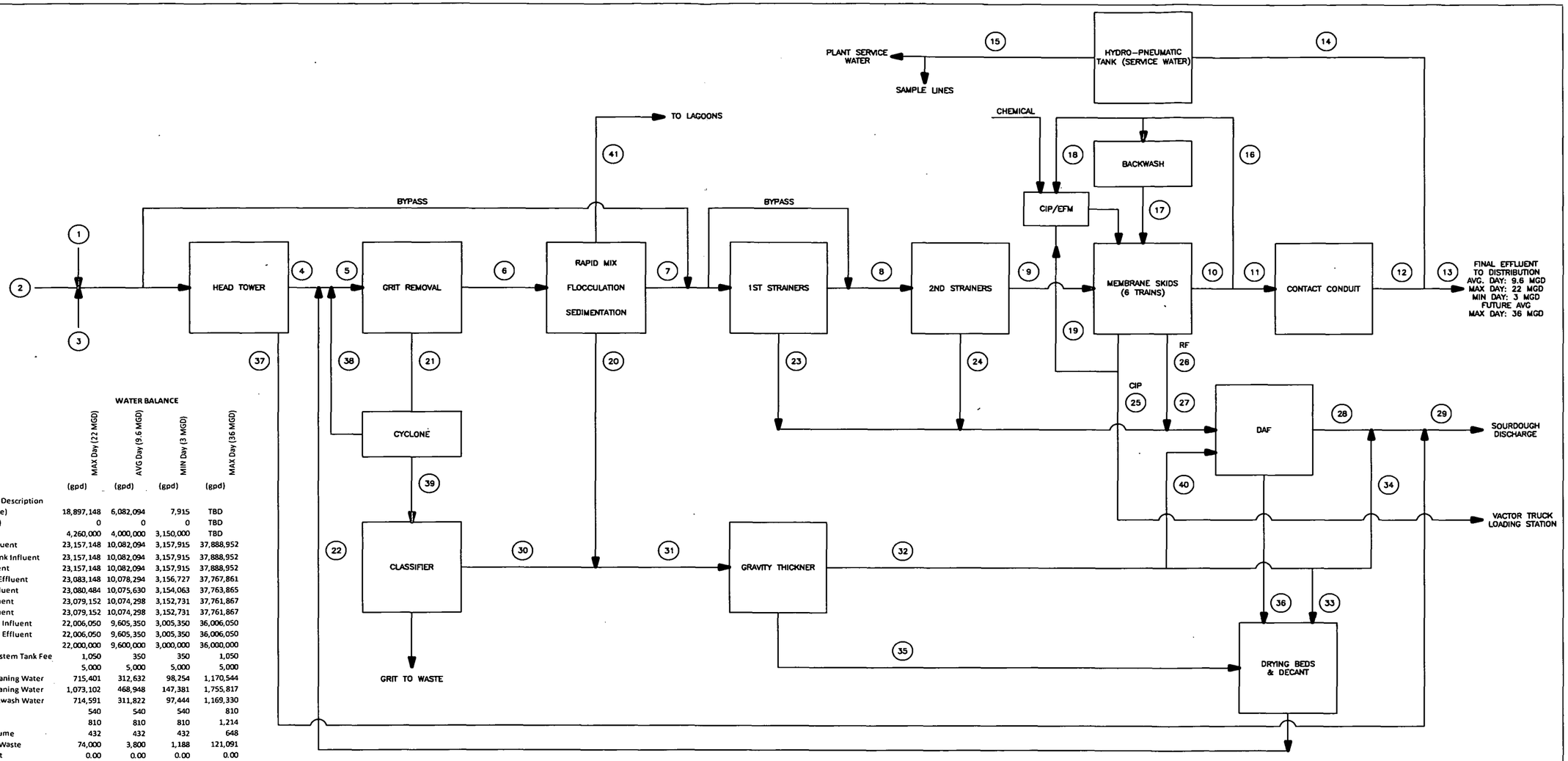
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PRELIMINARY WTP BUILDING FLOOR PLAN

DATE
August, 2010

FIGURE
4-3



WATER BALANCE

Units	MAX Day (22 MGD) (gpd)	AVG Day (9.6 MGD) (gpd)	MIN Day (3 MGD) (gpd)	MAX Day (36 MGD) (gpd)
Flow Segment / Description				
1 Hyalite (Pressure)	18,897,148	6,082,094	7,915	TBD
2 Hyalite (Gravity)	0	0	0	TBD
3 Sourdough	4,260,000	4,000,000	3,150,000	TBD
4 Head Tower Effluent	23,157,148	10,082,094	3,157,915	37,888,952
5 Grit Removal Tank Influent	23,157,148	10,082,094	3,157,915	37,888,952
6 Rapid Mix Influent	23,157,148	10,082,094	3,157,915	37,888,952
7 Sedimentation Effluent	23,083,148	10,078,294	3,156,727	37,767,861
8 1st Strainers Effluent	23,080,484	10,075,630	3,154,063	37,763,865
9 Membrane Influent	23,079,152	10,074,298	3,152,731	37,761,867
10 Membrane Effluent	23,079,152	10,074,298	3,152,731	37,761,867
11 Contact Conduit Influent	22,006,050	9,605,350	3,005,350	36,006,050
12 Contact Conduit Effluent	22,006,050	9,605,350	3,005,350	36,006,050
13 To Distribution	22,000,000	9,600,000	3,000,000	36,000,000
14 House Water System Tank Fee	1,050	350	350	1,050
15 Service Water	5,000	5,000	5,000	5,000
16 Backwash & Cleaning Water	715,401	312,632	98,254	1,170,544
16A Backwash & Cleaning Water	1,073,102	468,948	147,381	1,755,817
17 Membrane Backwash Water	714,591	311,822	97,444	1,169,330
18 CIP Volume	540	540	540	810
18A CIP Volume	810	810	810	1,214
19 CIP Recycle Volume	432	432	432	648
20 Sedimentation Waste	74,000	3,800	1,188	121,091
21 Cyclone Influent	0.00	0.00	0.00	0.00
22 Decant Water	0	0	0	0
23 1st Strainer Waste	1,332	1,332	1,332	1,998
23A 1st Strainer Waste - available	2,664	2,664	2,664	3,996
23B Minor Process Waste Streams	14,000	10,000	7,000	20,000
24 2nd Strainer Waste	444	444	444	666
24A 2nd Strainer Waste	1,332	1,332	1,332	1,998
25 Membrane Cleaning Waste	540	540	540	810
26 Membrane Backwash Waste	714,591	311,822	97,444	1,169,330
27 DAF Influent	733,031	326,262	108,884	1,195,990
28 DAF Effluent	730,151	325,686	108,704	1,191,277
29 Sourdough Discharge	767,151	327,586	109,298	1,251,823
30 Effluent from Classifier	0.00	0.00	0.00	0.00
31 Gravity Thickener Influent	74,000	3,800	1,188	121,091
32 Gravity Thickener Effluent	37,000	1,900	594	60,545
33 Drying Bed Influent I	0	0	0	0
34 Gravity Thickener Sourdough I	37,000	1,900	594	60,545
35 Gravity Thickener to Drying Be	37,000	1,900	594	60,545
36 DAF to Drying Beds	2,880	576	180	4,713
37 Continuous OF from Head Tow	0	0	0	0
38 Cyclone Recycle	0.00	0.00	0.00	0.00
39 Classifier Inlet	0.00	0.00	0.00	0.00
40 Gravity Thickener to DAF	0	0	0	0
41 OF to Lagoons	0	0	0	0

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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

WATER BALANCE (DRAFT)

DATE
August, 2010

FIGURE
4-4

4.5. Unit Process Design Criteria

Generally, the facility requirements identified in this preliminary design report are based on projected flows, raw water quality, and treated water quality requirements for the year 2025. For some unit processes, facility requirements were based on a 2015 design condition to allow for effective phasing of the processes into the ultimate capacity of 2025 conditions. The design criteria are presented in Table 4-1.

Table 4-1. Unit Process Design Criteria.

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
General					
Design flow	MGD	3	9.6	22	36
Maximum filtered water turbidity	NTU	0.15			
Maximum filtered water turbidity 95% of time	NTU	0.1			
Giardia lamblia	% removal	99.99			
Cryptosporidium	% removal	99.99			
Minimum LRV		4			
Raw Water Intake and Transmission					
Sourdough intake	Diameter	30			
Design flow	MGD	0	4	6.5	unknown
Control valve inlet pressure	psi	40		37	unknown
Hyalite pressure intake	Diameter	24			
Hyalite gravity intake	Diameter	21			
Influent Overflow Control					
Head tower					
Number		1			
Capacity	MGD	36			
Preliminary size (Alternate)	L x W x D	14'8" x 9'6" x 19' (18'x18'x19')			
Weir length	FT	9			
HL over weir	FT	0.28	0.63	1.09	1.50
Overflow					
Number		1			2
Preliminary OVF elevation	FT	5227.50			
Pipe diameter	IN	30			30 & 24
Raw Water Flow Meter					
Type		Sum flows from various raw water sources and subtract a measured overflow			
Pretreatment Bypass					

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Size	IN		30		Same
Grit Removal					
Grit tank					
Number			1		2
Type			Vortex		
Capacity, each	MGD		30		
Diameter, each	FT		18		
Hopper diameter, each	FT		5		
Hopper depth, each	FT		7		
Grit pump (4-inch)					
Number			2		3
Capacity, each	gpm		250		250
Power, each	HP		10		
Grit cyclones					
Number			2		4
Decant volume, total	gpm		230 ea		460
Underflow volume, total	gpm		20		40
Grit Classifier					
Number			1		
Capacity	lb/hr		2000		
Loading rate	cu ft/hr		15		
Motor size	HP		1		
Preliminary Treatment					
Rapid Mixing					
Tank					
Number			1		2
Length	ft		15		15
Width	ft		5		5
Depth	ft		4.5		4.5
Capacity, each tank	gal		2,500		2,500
Minimum detention time	sec		30		30
Mix gradients	1/sec		1,000		1,000
Mixers					
Number			3		3
Type			Top Entry		
Motor size, each	HP		10		

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Flocculation					
Tanks		3			5
Detention time	min	88	27	12	
Stages per tank		3			
Length per tank	ft	45			
Width, each tank	ft	30			
Depth, each tank	ft	15			
Volume, each tank	gal	61,000			
Flocculators					
Number		9			15
Type		Horizontal Paddle Wheel			
Mix gradients	1/sec	80/50/30			
Paddle speed, each	ft/sec	0.5 to 3.0			
Motor size, by stage	HP	1HP – 1st stage, 2HP-2nd stage, 3HP-3rd stage			
Sedimentation					
Tank					
Number		3			5
Volume, each tank	gal	134,000			
Length, each	ft	50			
Width, each	ft	30			
Depth, each	ft	15			
Max velocity	ft/s	0.03			
Incline plates					
Surface loading rate	gpm/SF	0.04	0.21	0.5	0.46
Total plate area	SF	71,136			118,560
Inclination angle	degrees	60			
Plate length, each	ft	10			
Number		1,581			2,635
Plate width, each	ft	4.5			
Hoseless Cable Vacuum System					
Number		3			5
Head loss	ft	2			
Motor, each	HP	1			
Membrane Feed Wet Well					
Volume, total	gal	35,314			57,922

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Detention Time	min	17	5	2	2
Membrane Feed Pumping and Straining					
Feed pumps					
Number		5			8
Type		Horizontal Centrifugal, Split Case			
Capacity, each	gpm	4357 @ 110 ft TDH			
Motor size, each - VFD driven	HP	150			
Strainers					
Number		8			12
Type		Amiad 18" EBS			
Capacity, each strainer	gpm	5,809			
Underflow (Backwash)	gpd	1,332	2,664	3,996	3,996
Power, each strainer	HP	0.5			
Membrane Treatment System, Backwash, and Cleaning					
Membrane system skids					
Number		6			9
Type		Microza UNA-620A			
Flux, each	gfd	77.3			
Area per Module	SF	538			
Number of modules per unit		124			
Number of membrane modules		744			1,116
Air scrub blowers					
Number		2			
Type		Roots EasyAir X2 w/refrigerant drier			
Air flow	cfm	372			
Motor size, VFD driven	HP	50			
After coolers					
Number		2			
Type		Electric			
Power, each	HP	2			
High pressure air compressors					
Number		3			4
Type		Atlas Copco GA5			
Motor size, each		7.5			
Chemical cleaning					
Acid CIP tank					

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Number		1			
Type		FRP			
Capacity	gal	3,200			
Diameter	IN	96			
Caustic CIP Tank					
Number		1			
Type		FRP			
Capacity	gal	3,200			
Diameter	IN	96			
CIP Circulation Pump					
Number		2 (no additional required at build-out)			
Capacity	gpm	372			
Motor size, each	HP	15			
CIP Drain Pump					
Number		2 (no additional required at build-out)			
Capacity	gpm	372			
Motor size, each	HP	15			
Chemical cleaning flow meter					
Number		1			
Type		Magnetic			
Size	IN	3			
Capacity	gpm	0 - 400			
Neutralization Tank					
Number		1			
Type		FRP			
Capacity	gal	11,500			
Diameter	IN	144			
Neutralization Flow Meter					
Number		1			
Type		Magnetic			
Size	IN	3			
Capacity	gpm	0 - 400			
Reverse Filtration (RF)					
RF supply pumps					
Number		2			

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Type		Horizontal Centrifugal, Split Case			
Capacity, each	gpm	992 @ 70 ft TDH			
Motor size, VFD driven	HP	25			
RF supply tank					
Number		1			
Type		FRP			
Capacity	gal	3,000			
Diameter	IN	90			
RF flow meter					
Number		2 (one on the shelf)			
Type		Magnetic			
Size	IN	6			
Capacity, each	gpm	0 – 1,000			
Backwash waste equalization tank					
Number		1			1
Capacity, each	gal	9,000			
Diameter	IN	120			
DAF feed pump					
Number		2			
Motor size	HP	25			
Capacity	gpm	765			
RF waste flow meter					
Number		1			
Type		Magnetic			
Size		TBD			
Capacity		TBD			
Service Water					
Service water pumps					
Number		2			
Type		End Suction Centrifugal			
Capacity	gpm	TBD			
Motor size	HP	TBD			
Service water flow meter					
Number		1			
Type		Magnetic			

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Size	IN	TBD			
Capacity	gpm	TBD			
Residuals Handling					
Dissolved air flotation (DAF) thickener					
DAF thickening unit					
Number		2			
Capacity	gpm	764			
Size (w x l x h), each unit	ft	7 x 16 x 10			
Blower motor size, each	HP	20			
Rake motor size, each	HP	0.5			
DAF solids pump					
Number		2 (no additional required at build-out)			
Type		Rotary lobe			
Capacity	gpm	100			
Motor size, each	hp	2			
DAF flow meter					
Number		1			
Type		Magnetic			
Size	IN	6			
Capacity	gpm	800			
DAF solids flow meter					
Number		1			
Type		Magnetic			
Size	IN	4			
Capacity	gpm	100			
Gravity thickening					
Influent GT flow meter					
Number		1			
Type		Magnetic			
Size	IN	4			
Capacity	gpm	200			
Gravity thickener tank					
Number		1			1
Size (diameter)	FT	25			20
Mechanism motor	HP	1			1
Gravity thickened solids pump					

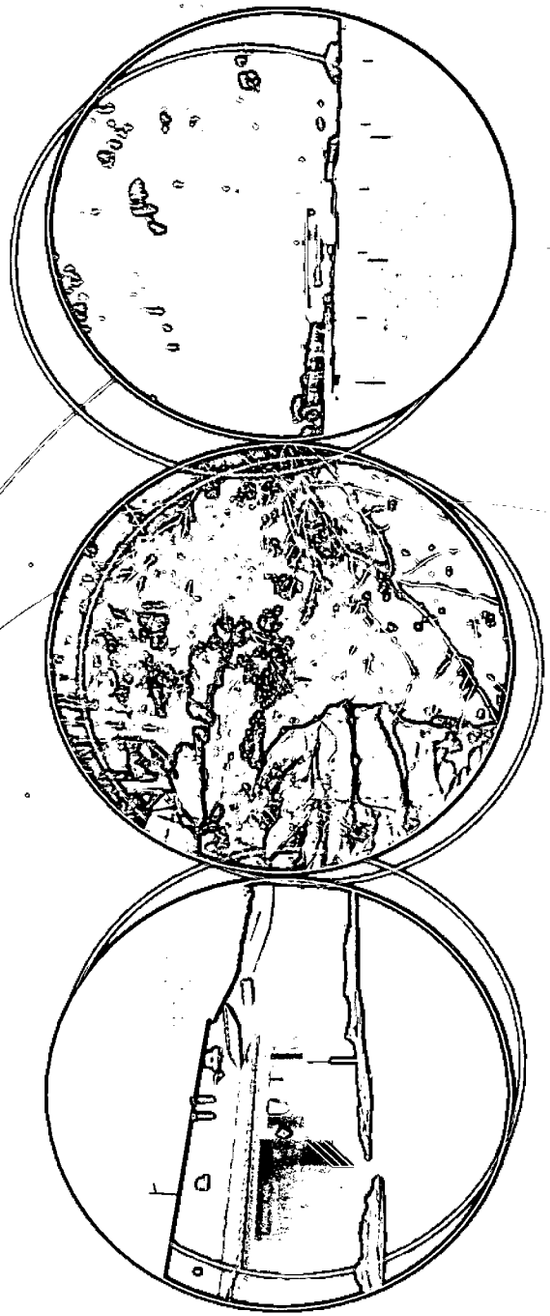
Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Number		2			2
Type		Rotary lobe			
Capacity	gpm	50			
Motor size, each	HP	2			
Effluent GT flow meter					
Number		1			
Type		Magnetic			
Size	IN	4			
Capacity	gpm	200			
Effluent thickener flow meter					
Number		1			
Type		Magnetic			
Size	IN	4			
Capacity	gpm	50			
Sludge Drying Beds					
Number		10			16
Size, (l x w x d)	FT	30 x 130 x 2.5			
Capacity	gal	590,000			965,000
Lagoon					
Number		1 (no additional required at build-out)			
Capacity	gal	1,500,000			
Lagoon/drying beds return pump station					
Number of Pumps		2 (no additional required at build-out)			
Type		Submersible			
Capacity	gpm	200 to 800 (peak)			
Motor Size, VFD driven	gpm	20			
Chemical Feed System					
Polyaluminum Chloride (ACH)					
Concentration	% as Al_2O_3	23.5			
Average Dosage	mg/L	5			
PACl tank					
Number		1 bulk + 1 day			*
Total capacity, min	gal	11,800 + 775 = 12,575			*
Max diameter	FT	12			
Max height	FT	14			

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Containment		Concrete with 100% capacity plus 6-inch freeboard			
PACl pump					
Number		1 duty + 1 standby			*
Type		Peristaltic			
Capacity	gal/hr	2 - 15			*
Sodium hydroxide					
Concentration	%	35			
Average Dosage	mg/L	10			
Sodium hydroxide tanks					
Number		2 bulk + 1 day			*
Total capacity, min	gal	2*8,460 + 775 = 17,695			*
Max diameter	FT	12			
Max height	FT	14			
Containment		Concrete with 100% capacity plus 6-inch freeboard			
Sodium hydroxide pumps					
Number		2 duty + 1 standby			*
Type		Peristaltic			
Capacity	gal/hr	2.6 - 200			*
Sodium permanganate					
Concentration	%	20			
Average Dosage	mg/L	0.6			
Sodium permanganate totes					
Number		2			*
Total capacity, min	gal	2*275 = 550			*
Max length/width	IN	48			*
Max height	IN	48			*
Containment		Portable tote storage tub			
Sodium permanganate pumps					
Number		1 duty + 1 standby			*
Type		Peristaltic			
Capacity	gal/hr	0.4 – 2.4			*
Sodium hypochlorite					
Concentration	%	12.5			
Sodium hypochlorite tanks					

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Number		3 bulk + 1 day			*
Total capacity, min	gal	6,700 + 2*16,000 + 775 = 39,675			*
Max diameter	FT	14			
Containment		Concrete with 100% capacity plus 6-inch freeboard			
Raw sodium hypochlorite feed pump					
Application		Pre-oxidant			
Average dosage	mg/L	2.0			
Number		1			*
Type		Peristaltic			
Capacity	gal/hr	3.5 - 26			*
Distribution sodium hypochlorite feed pump					
Application		Distribution residual trim			
Average dosage	mg/L	0.5			
Number		1			*
Type		Peristaltic			
Capacity	gal/hr	0.9 – 6.4			*
Disinfection sodium hypochlorite feed pump					
Application		Disinfection			
Average dosage	mg/L	2.2			
Number		2 duty + 1 standby			*
Type		Peristaltic			
Capacity	gal/hr	3.8 - 28			*
Fluoride					
Concentration	%	23 - 30			
Average dosage	mg/L	3.0			
Fluoride tank					
Number		1 bulk + 1 day			*
Total capacity, min	gal	6,900 + 775 = 7,695			*
Max diameter	FT	10			
Max height	FT	14			
Containment		Concrete with 100% capacity plus 6-inch freeboard			
Fluoride pump					
Number		1 duty + 1 standby			*
Type		Peristaltic			

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Capacity	gal/hr	0.18 – 2			*
Citric acid					
Citric Acid	%	50			
Citric acid totes					
Number		2			
Total capacity	gal	2 *275 = 550			
Containment		Portable tote storage tub			
Citric acid pump					
Number		1			
Type		Air diaphragm			
Capacity	gpm	11			
Sodium bisulfite					
Concentration	%	38 - 40			
Sodium bisulfite totes					
Number		2			
Total capacity	gal	2*275 = 550			
Containment		Portable tote storage tub			
Sodium bisulfite pump					
Number		1			*
Type		Air diaphragm			
Capacity	gal/hr	0.1			*
Motor size	HP				*
Polymer					
Concentration	%	TBD			
Polymer totes					
Number		2			*
Total capacity	gal	2*275 = 550			*
Containment		Portable tote storage tub			
Polymer pump					
Number		2			*
Type		Peristaltic			
Capacity	gpm	TBD			*
Motor size	HP	TBD			*
Disinfection					
Contact conduit					
Number		1			

Item	Units	Min Flow	Average Flow	Peak Flow	Build-out Flow
Length	FT	1100			
Diameter	FT	8			
Effluent flow meter					
Number		1			
Type		Magnetic			
Size	IN	30			
Capacity	gpm	25,000			
Footnotes					
* At buildout, additional building space is required for chemical storage or chemical deliveries will be required more frequently than 30 days. Additional chemical pumping may be required.					



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 5. Intakes and Raw Water Transmission

Prepared by: Mike Hickman

Reviewed by: James Nickelson

Date: March 10, 2010 DRAFT

5.1 Introduction

Raw water is brought to the City's water treatment plant on Sourdough Canyon Road from two separate water sources: Bozeman Creek and Hyalite Creek. The Sourdough intake is located on Bozeman Creek, about 1.2 miles south of the City's primary water treatment plant on Sourdough Canyon Road. Bozeman Creek, also known as Sourdough Creek, will be referred to herein as Bozeman Creek in conformance with USGS quad maps. The Hyalite intake is located on Hyalite Creek, about 3.1 miles southwest of the water treatment plant. Intake and transmission main locations are shown on Figure 5-1.

The Hyalite Creek source has the advantages of a reservoir to store water for the peak summer season, and a larger drainage basin than the Sourdough intake. The City has water purchase contracts that allow reservoir releases into Hyalite Creek, to provide supplemental flows at the Hyalite intake during periods of high demand. However, the City has limited water rights in the Hyalite drainage. Therefore, the Sourdough intake remains the City's base water source, and must be utilized to the maximum extent possible while meeting stream flow and water rights constraints.

Raw water is delivered to the plant by one transmission main from the Sourdough intake, and two transmission mains (primary and secondary) from the Hyalite intake. This section describes the existing and proposed raw water facilities. Section 5.2 describes the existing Sourdough intake and operational issues, identifies alternative solutions to address the operational issues, and based on discussions with City staff, describes the preferred alternative for intake improvements. Section 5.3 briefly describes the Hyalite intake, where no improvements are proposed. Section 5.4 describes the existing raw water transmission facilities, proposed improvements and connections to the proposed water treatment plant, and operations for the three transmission mains including a table of estimated line pressures at the proposed water treatment plant. Table 5-1 lists record drawings that were referenced for information on the intakes and transmission mains. Estimated construction costs for the proposed facilities are included in Section 16 (Summary of Cost Estimate).

Table 5-2 Record Drawings

Plan Set	Description
Water Supply System Improvements - Phase II (March 1957, Morrison-Maierle, Inc.)	Hyalite spillway, secondary transmission main and miscellaneous abandoned structures
Water Works Betterment - Bozeman Creek Diversion Structures (December 1969, Thomas, Dean & Hoskins, Inc.)	Sourdough spillway and miscellaneous abandoned structures
Water Transmission Main Replacement (August 1974, Thomas, Dean & Hoskins, Inc.)	Sourdough transmission main and miscellaneous abandoned structures
Water Treatment Plant (April 1982, Thomas, Dean & Hoskins, Inc.)	At existing WTP: overflow (wasting) drain lines, and connecting structures for all three transmission mains
Sourdough Creek Supply Line - Water System Improvements (May 1985, Thomas, Dean & Hoskins, Inc.)	At existing WTP: overflow (wasting) drain lines, and connecting structures for all three transmission mains
Bozeman Creek Water Line (July 1996, Thomas, Dean & Hoskins, Inc.)	Sourdough transmission main
Sourdough Transmission Main (July 2002, Thomas, Dean & Hoskins, Inc.)	Sourdough surface intake and transmission main
Transmission Main Composite (unknown origin, one sheet)	Sourdough transmission main and Hyalite secondary transmission main
Bozeman Water Supply - Hyalite Transmission Main (January 2007, Morrison-Maierle, Inc.)	Hyalite intake and primary transmission main

5.2 Sourdough Intake

5.2.1 Existing Facilities

The existing Sourdough intake consists of a concrete spillway structure with earth containment berms on either side, a surface intake trash rack and vault, a fine screening vault with a curved metal (Coanda) screen housed in a temporary building, and a flow measurement flume. Other facilities and structures on the site are mostly abandoned components of previous intakes. Existing intake facilities are shown on Figure 5- 2.

During normal operation, stream water backs up behind the spillway, flows under a wood baffle and into the intake vault, through a steel bar screen with 6-inch bar spacing, a slide gate and a 30-inch ductile iron pipe, and into the fine screening vault. Water flowing through the screen drops into the 30-inch ductile iron Sourdough transmission main, through a flow measurement flume, and then continues by gravity flow to the water treatment plant. A slide gate can be opened to bypass the fine screen in the event of blockage. Excess water and debris that washes over but not through the fine screen exits the vault through a 24-inch bypass line back to the stream.

Spillway pool elevation is controlled by wood timbers placed above the spillway's center concrete overflow weir, and by two manually operated sluice gates at the bottom of the spillway that can be opened to flush out sediment. Flow to the transmission main is regulated using a manual slide gate in the intake vault.

The intake site is accessed by driving south from the water treatment plant on Sourdough Canyon Road about 0.6 miles to a locked gate, continuing another 0.5 miles past the gate, then turning right onto a spur road through a meadow. The spur road and intake area are accessible to non-motorized public use. The main (Forest Service) road south of the gate is used all year as a recreational trail, and is groomed for skiing in the winter. Winter use has become increasingly popular since regular grooming began; this use discourages winter vehicular access by City staff for intake maintenance.

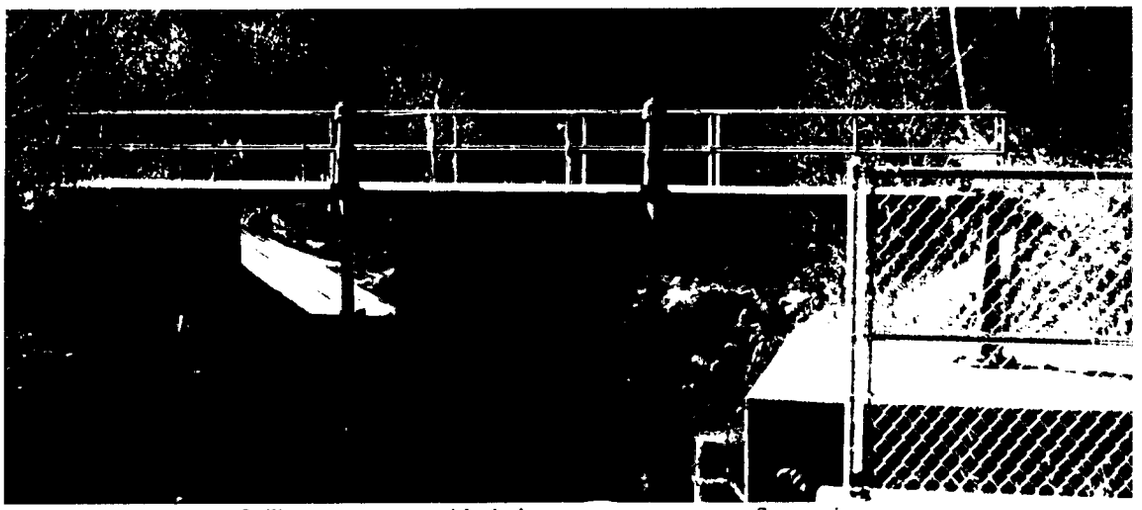
Topographic surveys of the Sourdough intake and water treatment plant sites were completed and used in combination with record drawings to compile base maps of existing ground elevations, utilities, structures and vegetation at each site. The two sites were then connected with approximate locations of the transmission main and access road on a USGS topographic quad map.

Spillway and Spillway Pool

The spillway pool is contained by a concrete spillway between two earth berms. The spillway uses three broad-crested concrete weirs and two manually operated sluice gates to pass stream flow. The crest elevation of the two side weirs is about 2.0 feet higher, and the bottom (flowline) of the sluice gates is about 4.4 feet lower, than the center weir crest elevation.

At times of seasonal high demand, the spillway pool depth is increased by closing the sluice gates and by manually raising the center weir crest elevation to match the crest elevation of the side weirs. The center weir crest is raised by placing 2-inch x 10-inch timbers across its face.

The raised pool elevation increases head at the existing surface intake, and results in a higher flow rate to the treatment plant.



Spillway structure, with timbers across center overflow weir.

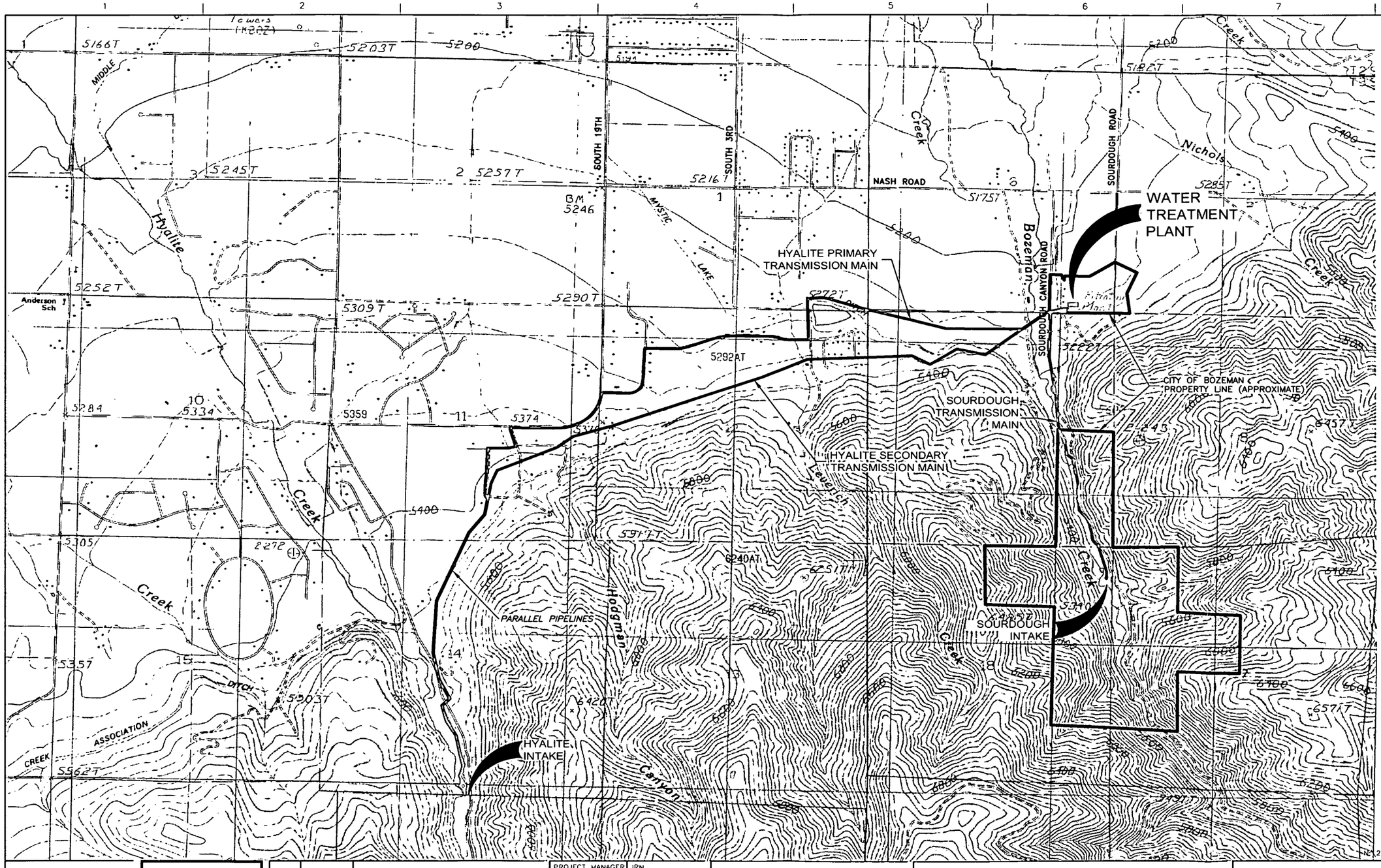
Preliminary calculations show that under the above "worst case" operational scenario (sluice gates closed and boards across center weir), the spillway can pass a 50-year flood (about 810 cfs) with 0.1 feet of freeboard to the existing overtopping elevation of 5309.4. In a 100-year flood, overtopping would first occur over the north berm near the intake vaults. Therefore, there is a significant risk of overtopping when the center weir crest is raised. This should be taken into consideration when designing and operating a new intake.

The condition of the existing concrete spillway, constructed in 1969, has not been evaluated. The concrete walkway has cracked at the stem anchor for the north sluice gate and needs to be repaired; the gate itself may also be damaged. Additionally, the mounting areas for both gate stem anchors should be reinforced to withstand the forces exerted by gate operation. Because it is uncertain whether the north sluice gate can be closed again after it is opened, the gate's condition will be evaluated during the construction phase and serviced, repaired or replaced as required. Downstream of the spillway, the stream bed and banks show no signs of excessive scour or erosion, and appear to be stable.



Damaged stem mount for north slide gate

On the north side of the spillway pool, a submerged retaining wall extends from the spillway to the original, abandoned intake structure. Over time, large debris carried by stream flow tends to accumulate in front of the spillway near this wall. As part of regular maintenance, City staff hauls out debris over the retaining wall using tow chains and a small truck. This works reasonably well, and City staff did not request any improvements to this operation.



N:\2105\055\ACAD\EXHIBITS\5.1 LOCATION-MAP.DWG

MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	JRN
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

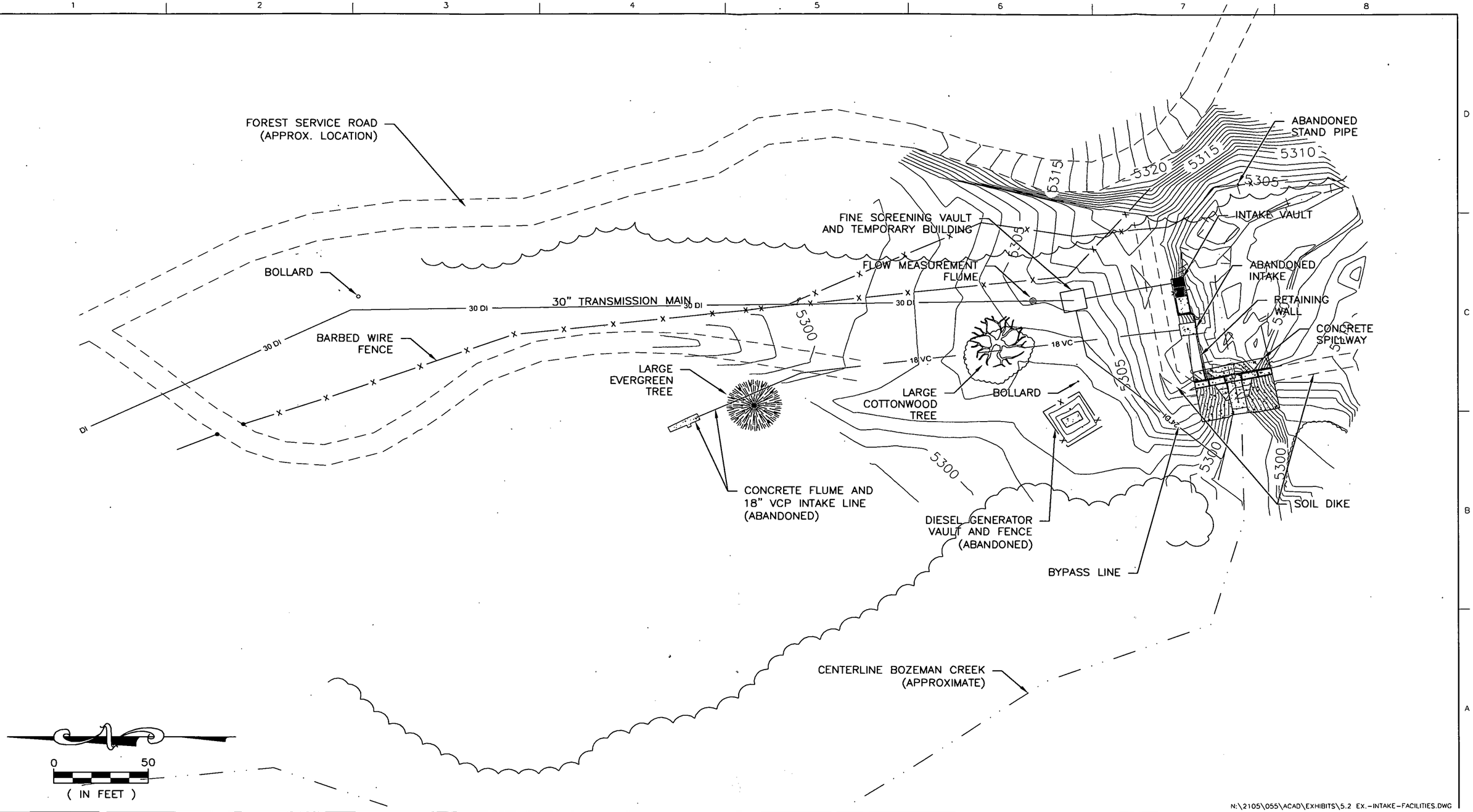
City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

LOCATION MAP

FILENAME	
SCALE	1"=2000'

SHEET
FIG. 5-1



N:\2105\055\ACAD\EXHIBITS\5.2 EX.-INTAKE-FACILITIES.DWG

MORRISON MAIERLE, INC.

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

EXISTING INTAKE FACILITIES

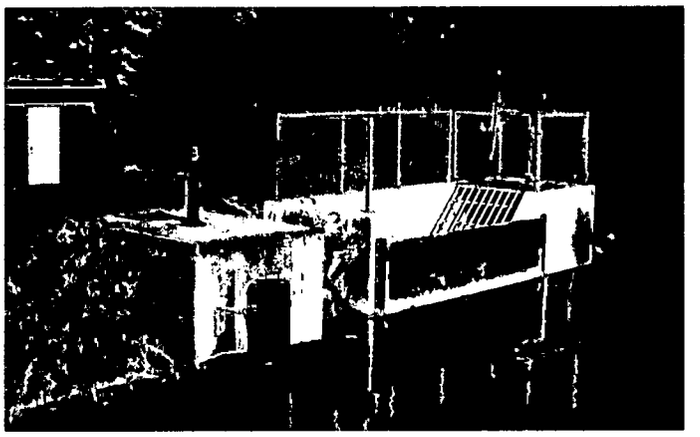
FILENAME	
SCALE	1"=50'

SHEET
FIG. 5-2

Intake Vault

There are two intake vaults side-by-side along the north side of the spillway pool: the original intake vault that has since been abandoned, and a larger vault that was installed in 2002 to replace the original vault. The larger (east) vault will be referred to as the "intake vault." The smaller abandoned vault is described below under "Abandoned Intake Structures."

The intake vault supplies and regulates surface water flow from the spillway pool to the fine screening vault. Water from the spillway pool first flows into a sediment forebay (under wood baffle in photo), and then continues through a sloped steel bar screen, a slide gate, and a 30-inch pipe to the fine screening vault housed in a small temporary building. The wood baffle was added to prevent excessive floating debris (sticks, etc.) from passing through the bar screen and slide gate.



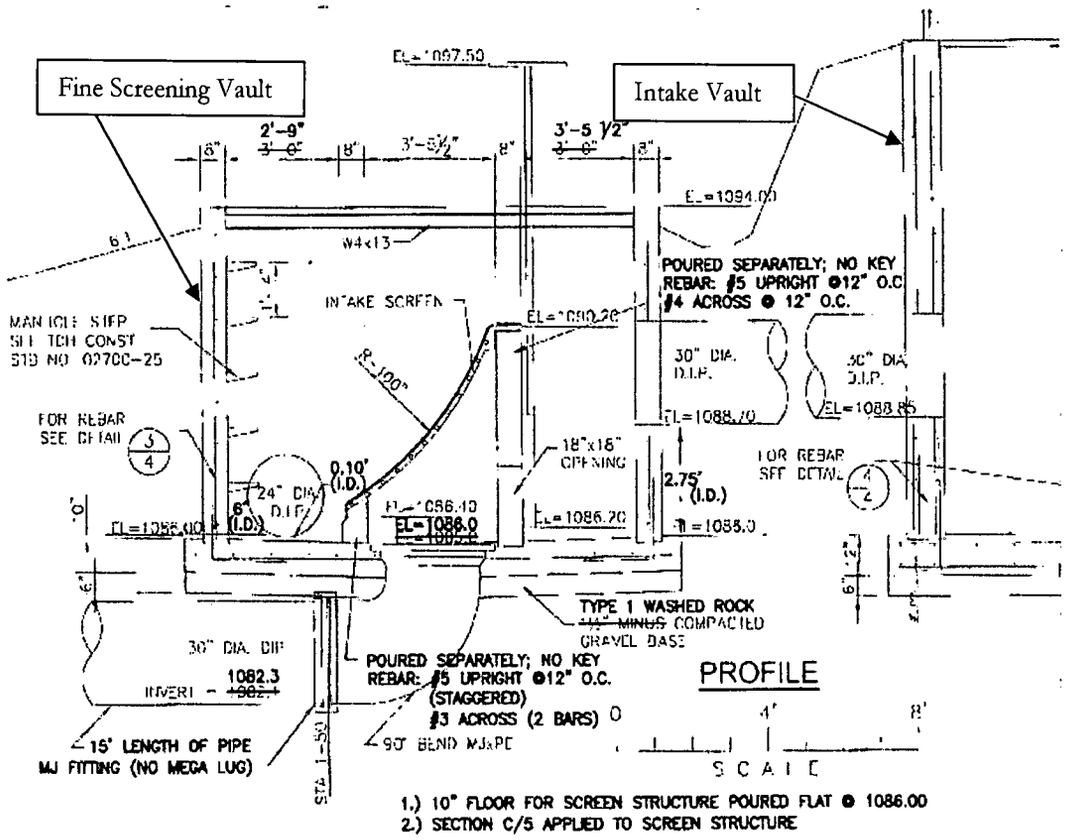
Abandoned intake vault (left) and intake vault (right)

In the winter, icing of the intake has been a problem. Possible reasons are fluctuations in spillway pool elevation that allow ice chunks to go under the baffle, and the formation of frazil ice which during especially cold weather can attach to suspended particles, flow under the baffle, and then adhere to each other and to hard surfaces. Under certain conditions, ice can also accumulate inside the 30-inch pipe between the intake vault and the fine screening vault; large debris (sticks, etc.) inside the pipe may contribute to this problem.

Fine Screening Vault

The fine screening vault is a three-chamber concrete vault. The first chamber backs water up to flow over a broad-crested weir onto a Coanda intake screen. A Coanda screen is a curved metal V-wire screen designed to be self-cleaning as water, flowing over it at high velocity, sweeps away solid particles too large to fit through the openings. Water passing through the screen enters the second chamber where it drops vertically into the inlet end of the transmission main. Water and solids that wash over the screen fall into the third chamber, which drains to a 24-inch bypass line back to the stream.

This system works well except in sub-freezing conditions when it tends to ice up, often to the point of total blockage which occurs quite often at the Sourdough intake. A bypass sluice gate built into the concrete weir wall can be opened to allow direct flow to the transmission main, but using it defeats the fine screening that is desired at the intake. A temporary building was constructed over the vault in an attempt to reduce winter icing problems; this has not fully resolved the problem. As a result, the bypass sluice gate is typically left open most of the winter, allowing unscreened raw water through the transmission main.



Fine screening vault (from *Sourdough Transmission Main*, July 1992, Thomas, Dean & Hoskins, Inc.)

Flow Measurement Flume

The flow measurement flume is a parshall flume installed in a manhole on the 30-inch gravity transmission main, about 15 feet north of the fine screening vault. Flow measurement is inaccurate due to turbulence from the nearby transmission main inlet (a vertical 90-degree bend in the fine screening vault). Additionally, the flume is about 10 feet below the top of the access riser, which is where the measurements are read from. The combination of turbulence and poor lighting makes accurate readings difficult.

Abandoned Intake Structures

The intake site also includes several abandoned structures, some of which date back to the original stream intake. The original stream intake discharged through an 18-inch pipe and concrete flume into a settling pond, and then out through a transmission main intake to the now-abandoned 18-inch transmission main. The settling pond's outlet structures (for the transmission main intake and a 12-inch bypass line) have since been removed; the pond was backfilled and is now a flat, grassy meadow. Improvements were made to the original intake structures in 1969; these structures were abandoned in place in 2002 when the current intake structures were installed. The concrete spillway was constructed in 1969 and remains in use. All currently existing (remaining) abandoned structures are shown on Table 5-3, and consist of an abandoned stream intake and attached retaining wall, a concrete generator vault (fenced, with vent pipes), a concrete flume, an 18-inch pipe from the abandoned intake to the flume, a barbed wire fence and a stand pipe. City staff wishes to remove all of these structures except the pipe and the barbed wire fence.

Operational Issues

The current intake facilities have functioned adequately except in the winter, when ice in the stream, intake vault, fine screening vault, and in the pipe between the two vaults can result in complete blockage of flow to the transmission main. Once frozen, it is difficult to thaw the intake. Furthermore, site access is difficult in the winter because the access road is groomed for recreational use as a ski and walking trail. When the Sourdough intake freezes, water must be supplied from the Hyalite intake. Winter use of Hyalite water is undesirable because it cuts into the fixed volume, available by water rights, normally reserved for the high demand (summer) periods. Operational issues at the intake are summarized as follows:

Ice Dams

Winter ice dams occur frequently on Bozeman Creek, blocking stream flow for up to 12 hours before eventually breaking. Following ice dam formation, the cold weather combined with decreasing flow to the intake creates ice blockage that can be very difficult to remove. Ice dam formation is strictly weather dependent and cannot be controlled.

Intake Freezing

Even without ice dam formation, freezing can occur at the intake vault and the fine screening vault. The fine screen is made of steel and is highly susceptible to glazing over with ice; this has occurred frequently enough in the past that the fine screen is now regularly bypassed through most of the winter. Even with the bypass open it has been observed by City staff on several occasions that, long after an ice dam in the stream has broken and the spillway pool has re-filled, flow blockage can persist in the intake vault and in the pipe between the bar screen and the fine screening vault. It's possible that ice and slush from the spillway pool may be freezing onto large debris in the pipe, causing this pipe to ice up. In any case, there are several issues related to winter icing at the intake.

Accumulation of Debris and Sediment at Spillway

Logs, branches and other debris too large or too heavy to float over the spillway crest collects and sinks at the upstream side of the spillway. As part of regular maintenance, City staff periodically removes large debris by cutting it down to manageable size, pulling it out with a tow chain attached to a vehicle, and hauling it away. This works reasonably well; improvements to this operation are not considered to be a high priority. When the sluice gates are opened to flush out sediment, large debris can lodge up into the gate openings and prevent them from being fully closed. This discourages use of the sluice gates and accelerates accumulation of sediment and other debris that, in a natural stream, is transported downstream.

Inoperable Sluice Gate at Spillway

The concrete walkway to which the sluice gate stem anchors are attached is badly cracked at the north sluice gate, rendering it inoperable. The concrete mounting point and/or bolted connection may not be strong enough to withstand the pressure exerted by the gate stems; the south gate may also be at risk. Current practice is to leave the north gate closed, and to open the south gate every other year to flush sediment out of

the spillway pool. This has not been very effective in moving bed load. The south gate is the one farthest away from the intake vault, which reduces its effectiveness in moving material away from the intake area.

Flood Conveyance Capacity at Spillway

Current practice is to place 2 IN x10 IN wooden timbers across the center spillway crest to raise the spillway pool's water surface elevation. The timbers are held in place by ropes tied to the handrail for the concrete walkway across the spillway structure; water pressure seals the timbers against the concrete face of the spillway. The wooden timbers are used to raise the spillway pool's water surface elevation and create more hydraulic head, thereby increasing intake flow capacity. As noted previously, this raising of the spillway crest increases the risk of stream flow overtopping the north berm near the intake vault during a major flood or runoff event.

Accumulation of Debris and Sediment at Intake Vault and Bar Screen

Smaller debris such as sticks, silt, decomposing leaves and other organic matter is drawn toward the intake vault along with the water being pulled in for the City's use. With varying specific gravities, some of this debris floats, some is suspended subsurface, and some settles near the bottom of the intake vault. As part of regular maintenance, the larger floating debris is manually raked up to the top of the bar screen and hauled away, but in the process much of it falls through the bars. Eventually, the remaining heavier (sinking) debris and sediment can accumulate on both sides of the sediment cutoff wall below the bar screen, to a point where it begins to enter the fine screening vault. For much of the year, most or all of the stream flow goes through the intake. The result is that there is not enough bypass flow to direct the undesirable materials toward the spillway's sluice gates, and away from the intake vault.

Inaccurate Flow Measurement

The existing measurement flume, located in the manhole south of the fine screening building, does not provide accurate flow measurement. The staff gage in the flume is difficult to read from outside the manhole, and the water level fluctuates due to its close proximity to the screening vault. The 30-inch diameter transmission main leaves the fine screening vault through a 90-degree vertical bend. This bend, located about 15 feet upstream of the flume, is most likely the primary cause of turbulent flow and inaccurate measurement in the flume. Poor access and lighting also make flow depth measurement difficult in the flume vault. The flume does not include a data recorder or telemetry connection to the water treatment plant.

Deteriorating Building Over Fine Screening Vault

A temporary wood building was constructed over the fine screening vault to reduce icing problems on the screen. The building is beginning to deteriorate from the moisture, and should be replaced with a permanent structure.

5.2.2 Improvement Alternatives

Several potential solutions were evaluated to determine the most economical and effective way to meet current and future operational and performance requirements. Several alternatives were evaluated to arrive at the preferred design concept described in Section 5.2.3. Based on discussions with City staff, development of design alternatives was guided by the following considerations and project goals:

- Design Flow: Provide intake capacity of 400 miner's inches (10.0 cfs, or about 4,500 gpm).
- Winter Icing: Reduce or eliminate the need for fine screen bypass in the winter, reduce or eliminate seasonal interruptions to intake flow, and reduce maintenance activities associated with winter icing.
- Reliability: The Sourdough intake is the City's primary water source, and must be reliable in the winter season as well as in the warmer months.
- Reduced Maintenance: Reduce overall maintenance requirements, including debris removal and sediment control. Low maintenance is important because access to the intake site is along a very popular hiking and ski trail to nearby U.S. Forest lands. Winter access to the intake is over a groomed ski trail and is possible only on snow machines, on skis, or on foot.
- Fine Screening: Provide fine screening with $^3/_8$-inch maximum opening size. It is more cost-effective to return the larger particles to the stream via bypass piping at the intake than to remove and dispose of them at the treatment plant. Sediment removal at the intake will also reduce accumulations in the transmission main. While screens with $^3/_8$-inch openings are acceptable, screening out even smaller particles is desirable for overall treatment plant operations.
- Flood Conveyance: Maintain the spillway's existing capacity to pass major floods, and protect intake facilities from erosion and flooding.
- Flow Control at WTP: Provide flow control at the water treatment plant rather than at the intake.
- Flow Measurement: Provide for measurement of transmission main flow rate.
- Access: Provide easy access to facilities.
- Electrical Power: The nearest source of electrical power is an existing overhead line located on Sourdough Canyon Road at the water treatment plant, approximately 6,200 feet north of the intake. Given the high volume of recreational use in the area, overhead power lines are unacceptable, and underground power lines are not economically feasible for this project. Therefore, electrical power would need to be provided by generator, battery or solar power.
- Site Cleanup and Visual Screening: Remove the abandoned facilities except the 18-inch pipe, and visually screen the proposed facilities.

Alternative #1 - Improve Existing Surface Intake as Primary Intake

The existing surface intake functions well except in the winter, when icing is a major problem. Alternative #1 proposes to modify other components of the existing surface intake and spillway to address current operational issues and improve winter reliability, while continuing to use the existing fine screen facility throughout the year. Existing intake facilities are shown on Figure 5-2.

There are two problems at this particular site that are very difficult to overcome with a surface intake: debris and sediment accumulation, and intake freezing.

Debris and Sediment Accumulation

Debris and sediment accumulates in the spillway pool and intake due to the much lower downstream flow velocity through the pool. Flow to the intake is often a large percentage of total stream flow; to maximize use of Bozeman Creek water rights, most of the stream flow goes through the intake much of the year. As a result, much of the sediment is directed toward the intake rather than toward the spillway. During these frequent times when bypass flow is minimal, debris will tend to migrate toward and into the intake vault. This cannot be avoided due to the low base flow in the stream.

Spring runoff brings the opportunity to open the sluice gates and flush out some of the sediment, but because the intake is so far upstream of the sluice gates (about 40 feet), the scouring action at the gates does not have much effect at the intake. The top of the intake vault's sediment cutoff wall is only about 2.2 feet higher than the invert elevation of the two sluice gates. Sediment storage volume is minimal, and sediment quickly builds up to the point of overtopping the cutoff wall.

Intake Freezing

Winter freezing at the intake falls into two categories: floating ice chunks, and frazil ice suspended in supercooled water. Floating ice chunks can be screened out of the intake with a baffle, but only if the baffle extends above and below the water surface enough to hold back the ice. Large fluctuations in the spillway pool's water surface elevation, caused by frequent ice dams, make this difficult if not impossible.

The other type of ice, frazil ice, forms when supercooled water comes in contact with objects such as the steel screen in the fine screening vault. Frazil ice is difficult if not impossible to deal with unless a stable, large volume pool can be kept in place at the intake. Under a large ice-covered pool, the supercooled water from the open stream will warm up as it flows slowly to the intake under the insulating ice layer of the spillway pool. If the travel time is adequate, the small particles of frazil ice suspended in the water will melt before reaching the intake screen. Due to the low stream flow, small spillway pool and frequent ice dams at the Sourdough intake, the ice layer covering the spillway pool breaks up often and formation of a stable insulating ice layer is unlikely.

Relocating the fine screening facility to a point well downstream of the intake vault could resolve icing of the fine screens, but sediment deposition in the transmission main between the intake vault and fine screening vault may be significant, and would be a major consideration with respect to maintenance. If fine screening were moved

to the treatment plant, the entire transmission main would see higher sediment accumulations, especially at the low point in the line.

In summary, the reliability of the existing intake is compromised by unreliable base flow in the stream and the lack of a stable ice cover on the spillway pool, and low maintenance cannot be achieved without a significant bypass flow. Therefore, modifications to the existing surface intake were not pursued as a stand-alone intake solution.

Alternative #2 - Construct New Surface Intake as Primary Intake

For the same reasons identified in Alternative #1, a new surface intake is not feasible. Winter freezing cannot be fully addressed with any surface intake at the current Sourdough intake site, due to lack of a stable base flow and lack of a large spillway pool to dampen the effects of stream flow fluctuations.

After discussing the difficulties of a surface intake with City staff, it was decided that the existing surface intake should be retained as a backup, with minor modifications. This leads us to a search for a new intake that is reliable in the winter. The intent is to use the new intake continuously as the primary intake, and to provide for use of the existing (backup) intake during maintenance activities on the primary intake.

Alternative #3 - Infiltration Gallery Above Spillway

This alternative proposes a submerged infiltration gallery under the spillway pool as the primary intake. The infiltration gallery would consist of several zones of collection piping, each with a submerged stainless steel well screen connected to solid pipe draining to a common header pipe. A discharge line would route the water from the header pipe to the existing transmission main. The well screens would be bedded horizontally in a gravel pack under the stream. The discharge line would discharge into a connection vault installed in-line on the existing 30-inch transmission main.

Because infiltration galleries will eventually clog to some degree, a backwash system would be included as an essential component of the facility. The backwash system uses a combination of high pressure air near the well screens and high water flow rates in reverse direction through the well screens. The air causes turbulence to dislodge and suspend the sediment, and the water pushes it out through the gravel pack into the stream flow so it can be carried away.

Compressed air would be supplied by a high volume diesel compressor housed in a new building. Backwash water would be supplied by the 24-inch Hyalite primary transmission main in combination with the 30-inch Sourdough transmission main; this eliminates the need for large water pumps. During backwash of the proposed Sourdough intake, valves and a new bypass line at the water treatment plant will be used to temporarily divert a portion of the Hyalite water back up in reverse through the Sourdough transmission main to the Sourdough intake. Because of the higher elevation at the Hyalite intake, water pressure would be sufficient to supply the required backwash flow rate and pressure.

The location of the infiltration gallery in this alternative was chosen to take advantage of the spillway pool and the close proximity of the surface intake. The existing spillway protects the infiltration gallery from stream erosion and provides additional operating head. Close proximity to the existing surface intake keeps pipe lengths and construction cost to a minimum, and allows for easy access.

Being just upstream of the spillway, the location proposed in this alternative also presents a disadvantage. The fact that stream flow velocity drops as water enters the spillway pool will enable more sediment to settle out over the infiltration gallery than if installed under an open stream reach. To address this, the spillway pool bottom would be re-graded to create a narrower base flow stream channel centered over the infiltration gallery; this will maximize stream flow velocity at times when the spillway's two sluice gates are open. Sediment accumulation, and therefore backwash frequency, can be significantly reduced by opening up the sluice gates as often as possible, especially during backwash and during times of high sediment load and high flow rate (i.e., spring runoff). Based on prior experience with similar intakes, the required backwash frequency may be on the order of as little as once per year depending on the sediment loading and use of the sluice gates to transport the sediment through the spillway. Backwash operations will be supervised by City staff to assure public safety.

An infiltration gallery would eliminate winter ice formation on the fine screens. Winter reliability will be greatly enhanced because the rock filter material and perennial stream flowing over the intake screens will prevent ice blockage. Because winter ice dams on the stream break up within about 12 hours or less, freezing down to the buried screens is unlikely, and subsurface stream flow should continue to supply a small but possibly significant flow of water to the infiltration gallery after the spillway pool has drained out.

Alternative #4 - Infiltration Gallery Below Spillway

Alternate #4 proposes to move the infiltration gallery of Alternative #3 to a point downstream of the spillway, where stream flow velocities and scour action are greater, and sediment deposition would be less than in Alternative #3.

Downstream of the spillway, flood flows have the potential to significantly alter the stream bed and damage the infiltration intake screens. Therefore, Alternative #4 would require protective gabion baskets surrounding the infiltration gallery. Alternative #4 would need to be about 50 feet downstream of the existing surface intake and transmission main, making it more difficult to coordinate backwash operations because air and water controls will be farther away from the intake gallery. The additional pipe and gabions would also make Alternative #4 more expensive to build.

Unlike Alternative #3, the water stored in the spillway pool would not be available to feed the infiltration gallery in the event of short-term stream blockage by ice dams. Additionally, the absence of a spillway pool means the infiltration gallery would operate under a lower head (water pressure) than Alternative #3, and would therefore need to cover a larger area to supply the same flow rate.

For the reasons described above, it was decided that Alternative #4 provides no significant advantages over Alternative #3, and has several less desirable characteristics. Therefore, Alternative #4 was removed from further consideration.

Alternative #5 - Intake at a New Location

Another possibility would be to construct a new intake at a new location. There are several reasons this option will not be pursued at this time. Bozeman Creek is in a narrow canyon with difficult access. The existing location is ideal in that it is in a large, open meadow with

plenty of room for the facilities, it has a serviceable dam and spillway, existing access, and it is on City-owned property.

A new surface intake at a different location would require a costly new diversion structure including a new dam and spillway to provide enough hydraulic head to supply the design flow of 10 cfs. As stated above, a surface intake is not recommended due to the unreliable water supply in the winter (i.e., ice dams). A new infiltration gallery and/or surface intake at a different location would require significant tree removal and re-grading for access and for construction. The existing location minimizes impacts.

At some time in the future, a large reservoir may be constructed on Forest Service land several miles upstream of the current intake. A new reservoir would provide enough depth for a reliable surface intake, but would require a costly extension of the existing transmission main. There are many hurdles to overcome before a reservoir could be permitted and built, and there is an immediate need for intake improvements and higher flow capacity. Therefore, deferring intake improvements is not an option.

5.2.3 Preferred Alternative

Based on discussions with City staff, Alternative #3 (Infiltration Gallery Above Spillway) was chosen as the preferred alternative for a primary intake, for the following reasons:

- Any surface intake on Bozeman Creek is unreliable in the winter due to low base flow, frequent ice dams, and ice blockage of the intake.
- The infiltration gallery can draw surface and subsurface water stored behind the spillway and dam. This will have a dampening effect on sudden, brief interruptions in winter stream flow, as the stored water continues to feed the intake.
- Flow control will be moved to the water treatment plant, and can be more easily adjusted to reduce the amount of overflow water diverted back to Bozeman Creek at the plant.
- An infiltration gallery under the spillway pool is close to the existing facilities, and provides more operating head and higher flow capacity per square foot than a gallery downstream of the spillway pool. The higher sediment deposition rate above the spillway can be managed and is offset by the higher head and corresponding higher flow capacity (flow rate per square foot).
- The ability to maintain full design flow capacity with the spillway's sluice gates open will allow more prolonged or frequent use of the gates, which will increase sediment transport through the spillway.
- An intake at a new location would result in greater cost with no offsetting advantages. Environmental impacts, for construction and for permanent access, would be much greater than at the existing intake location.

An infiltration gallery would reduce the time and effort required to keep the intake clear of sediment and debris, and would provide a reliable winter water supply that alleviates concerns about ice formation on screens. An infiltration gallery provides the best assurance of an uninterrupted, steady water supply during sub-freezing weather.

The existing surface intake has considerable value as a secondary (backup) intake, and will be retained for that purpose. Although there are operational issues with the existing surface

intake, major improvements to this intake are unnecessary because it will be used only rarely once the infiltration gallery is in place.

5.2.4 Proposed Improvements

The proposed improvements are built around the preferred Alternative #3, constructing a new infiltration gallery under the spillway pool and retaining the existing surface intake as a secondary or backup facility. This arrangement will involve some modifications to connect the two intakes to the same transmission main. A new intake building is proposed to house the existing fine screening vault, backwash equipment for the new infiltration gallery, and miscellaneous equipment and controls. Proposed improvements to the intake area are described below. Transmission main improvements are described in Section 5.4.

Infiltration Gallery

The infiltration gallery is proposed as a set of six zones of equal size and capacity. Each zone's water supply piping would consist of a submerged 18-inch diameter stainless steel intake screen (a standard well screen with continuous $^{1}/_{8}$-inch slot openings) connected to a 12-inch pipe that discharges to a common 24-inch header pipe.

The intake screens would be bedded horizontally in a "gravel pack" under the stream, with the screen bottom being about 6 feet below the stream bottom. The gravel pack would be covered with protective rock-filled gabion baskets. Each zone would also include air piping for backwash, as described below under "Backwash Facilities." To align all six zones under the stream bottom, three sets of two zones each will be installed end-to-end along the stream flow direction. Figure 5- 3 shows a typical plan and section of two zones under the stream bottom.

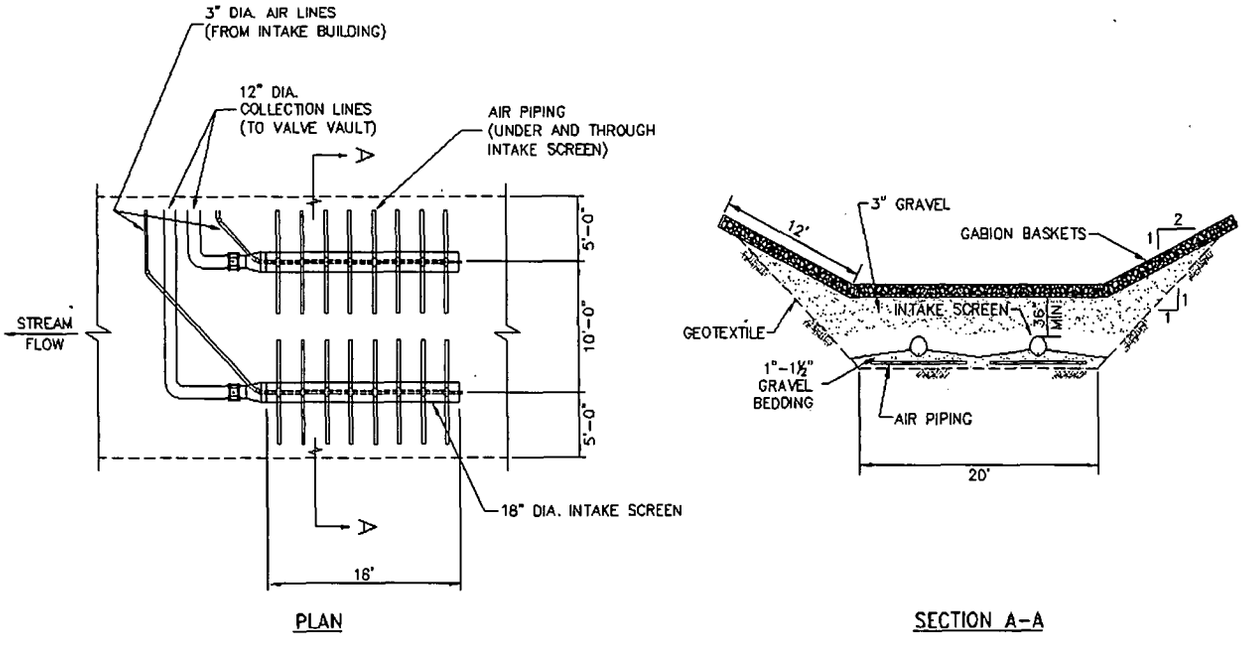


Figure 5- 4 Intake Screens and Air Piping

Each zone's 12-inch water supply piping would slope away from the stream bottom and connect to a valve vault and a common 24-inch header pipe. The header pipe would lead to a 24-inch discharge line that discharges into the existing 30-inch transmission main at a

proposed connection vault. The connection vault would have a sediment collection sump to allow the larger sediment particles to settle where they can be removed. Refer to Figure 5-5 for an overall piping plan.

The infiltration gallery's size and shape are oriented to generally match the plan location of the constructed stream bottom above the gallery; this will maximize flow velocity and sediment transport directly above the gallery. The stream bottom and a 2-3 foot deep "base flow" channel will be constructed of galvanized, PVC coated gabion baskets having a design life of approximately 75 to 100 years. The alignment of the infiltration gallery's edges can be permanently marked on the stream bank and spillway as a guide for future dredging operations, should they become necessary. The gabions will provide a vertical barrier to limit dredging depth, and will protect the infiltration gallery from damage by dredging or by stream bed erosion.

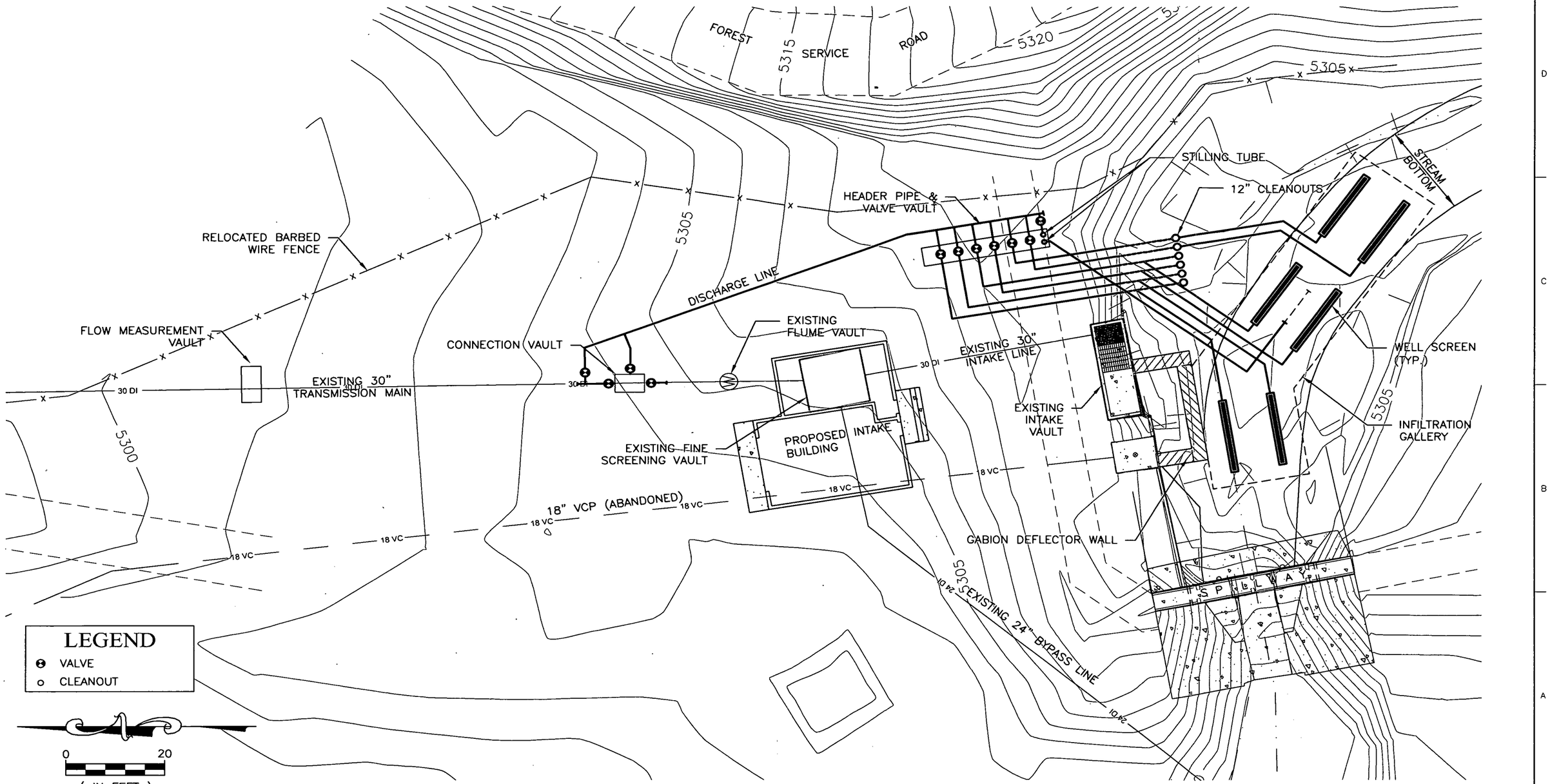
Backwash Facilities

The backfill surrounding the infiltration gallery will filter out most of the sand and larger particles. Because infiltration galleries will eventually clog to some degree, a combined air/water backwash system would be included as an essential component of the facility. The backwash system will deliver a combination of high air pressure and high water flow rates to dislodge and suspend the sediment so it can be carried away by the stream flow.

Compressed air on the order of 750 to 900 cubic feet per minute (cfm) will be supplied by a high volume diesel compressor housed in a proposed intake building. Each zone would include a supply line connected to several laterals, with small discharge nozzles evenly spaced along the laterals around and inside of each well screen. The air piping is shown on Figure 5- 6.

Backwash water will be supplied by the 24-inch Hyalite primary transmission main in combination with the Sourdough transmission main. Valves and a new bypass line at the water treatment plant will be used to temporarily divert a portion of the Hyalite water back up in reverse through the Sourdough transmission main to the Sourdough intake. Because of the higher elevation at the Hyalite intake, water pressure from unobstructed flow would exceed the Sourdough transmission main's maximum pressure rating; therefore a pressure reducing valve will be installed on the bypass line. The reduced pressure will be sufficient for backwash.

To be effective, backwash flow capacity should be on the order of twice the intake design flow, or about 9,000 gpm (13 MGD) to backwash the entire facility (six zones) at once. Subtracting this value from the 17.5 MGD design capacity of the Hyalite primary transmission main would leave only 4.5 MGD available to supply the WTP during backwash. For this reason, it is proposed to backwash no more than two zones at a time. Backwashing two zones at a time would require 3,000 gpm (4.3 MGD), allowing up to 13.2 MGD supply to continue through the Hyalite primary transmission main to the WTP during backwash. Similarly, backwashing one zone at a time would require 1,500 gpm (2.2 MGD), allowing up to 15.3 MGD to continue through the Hyalite primary transmission main to the WTP during backwash. If desired, an additional 8.6 MGD could be routed directly to the WTP through the Hyalite secondary transmission main.



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MORRISON MAIERLE, INC.
An Amphitheater Environmental Company

HDR
HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

PROPOSED INTAKE - PIPING PLAN

FILENAME	
SCALE	1"=50'

SHEET
FIG. 5-4

The proposed maximum backwash flow rate of 3,000 gpm equates to about 6.7 cfs being discharged into the stream bed above the infiltration gallery. Stream flow records for Bozeman Creek just upstream of the intake site (*USGS, Sourdough Creek Gaging Station, 1937-1986*) indicate seasonal low flow rates ranging from 5.5 to 13.4 cfs (typically January through March), and seasonal highs ranging from 20.1 to 157.4 cfs (typically May or June). Scheduling of backwash operations will take into consideration impacts to the stream, as dictated by the applicable discharge or other permits to be obtained for the facility.

"Drawdown," or head loss through the gallery at different flow rates, can be monitored and used to predict when a screen backwash may be needed. Refer to discussion below under "Flow Measurement."

Gallery Piping and Vaults

Gallery piping and vaults are shown on Figure 5-7. Zone piping is gathered into a pipe field between the existing intake and the toe of the fill slope of the Forest Service road. The zone pipes cross so the valve locations in the vault can relate directly to the location of the corresponding well screen. For example, for each pair of well screens, the south valve operates the south screen and the north valve operates the north screen. Operation of the valves is discussed in Section 5.2.4.

Piping from the infiltration gallery to the connection vault will be sloped continuously to drain toward and into the connection vault. The slope, combined with water flowing toward the connection vault, will aid in transporting sediment through the pipes and into the connection vault for storage and removal. It will also allow complete drainage of water stored in and above the infiltration gallery during interruptions in stream flow, for example during winter ice dam blockage upstream of the intake. As a result, the piping will be as deep as 18-20 feet below existing grade, and about 6-8 feet deeper than the bottom of the existing surface intake vault. Refer to Figure 5-8 for a schematic profile view of this system.

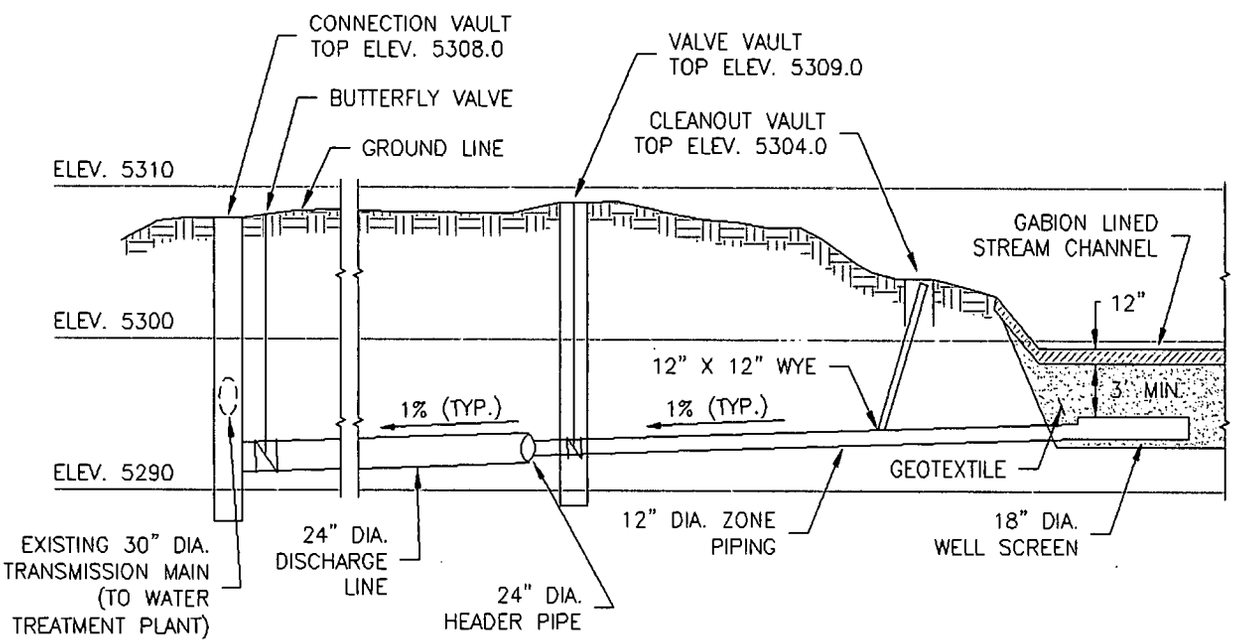


Figure 5- 9 Intake Piping Profile

The header and zone pipes were located to minimize the height of cut slopes during construction. However, some type of temporary shoring will probably be needed.

The valve vault will extend below the groundwater table and will be designed to be water-tight. However, the vault may leak a bit with age, and pumping may be necessary before entering. Automated vault drainage options, such as automatic sump pumps powered by hydraulics (water pressure) or solar panels, will be evaluated during final design.

In the unlikely event that one of the valves in the valve vault fails, there needs to be a way to isolate the valve from the infiltration gallery for valve removal and replacement. As an alternative to diverting the stream and dewatering the area, the currently proposed solution is to install six cleanouts, one for each intake line. Each cleanout would consist of a 12-inch pipe dropping at a 45-degree angle (shown as red dashed lines in Figure 5- 10) to a vertically oriented 12-inch x12-inch wye on the horizontal zone piping. A pipe plug (7-inch deflated dia.) can be inserted through the cleanout and pushed into the through line with a pole, and then inflated to block the flow from the intake screens. The air hose, tether and solid pole mechanism required to insert and remove the plug are available. The plug can be filled with water to reduce buoyancy caused by static head, as the pipes will be submerged to the stream/pool water surface elevation. The cleanouts would be capped with blind flanges and designed to withstand high (backwash) pressure. Because vehicular access is required over the cleanouts, they would be buried in washed rock to one foot over the blind flange. The washed rock would facilitate the excavation required to access the cleanout flanges. The washed rock backfill is proposed rather than a concrete cleanout vault due to the lower cost and the low probability of use. Options other than the above-described sewer plug and cleanout, such as line freezing, will be evaluated during final design.

Spillway Pool

The entire spillway pool, and its containment dike east of the existing surface intake vaults, will be excavated and re-constructed during installation of the infiltration gallery. The constructed stream bed above the infiltration gallery will be lined with a rock-filled gabions. The gabions will define a 21-foot-wide channel with 2:1 side slopes to about 2 to 4 feet above the channel bottom. The gabion-lined channel dimensions will be as required to withstand erosion from the higher stream velocities that would occur when both of the spillway's sluice gates are fully opened. Erosion protection on either side of the gabions will be provided as necessary to prevent undercutting of the gabions. At higher water surface elevations the constructed stream bed will be submerged, and stream flow velocity in the pool will be reduced.

In Section 5.2.1 it was noted that there is only about 0.1 feet of freeboard above the 50-year spillway pool elevation, and that the portion of stream flow not able to pass through the spillway would first begin to overtop at the north berm near the existing intake vaults. As part of the project, the emergency overflow path will be moved to the other (south) side of the spillway by filling the north berm across its length, and excavating a designated emergency overflow path into the south berm. The emergency overflow will incorporate erosion control measures.

The existing surface intake is located on the outside of a bend in the stream. Therefore, stream flow, including sediment and floating debris, is directed toward the intake. Additionally, the bottom of the existing surface intake vault is lower in elevation than the

invert of the spillway sluice gates and the stream bottom, and sediment gravitates toward the intake when pulled in that direction by intake use. To address these issues, a gabion deflector and sediment cutoff wall is proposed as a way to re-direct stream flow, debris and sediment toward the spillway, while allowing overflow into the surface intake at any spillway pool elevation. Referring to Figure 5-11, the proposed wall has three top (TW) elevations: the east end wall (TW=04) will deflect floating debris under normal operating conditions; the long wall (TW=02) will deflect bottom sediment and bed load but will allow overflow into the intake when the spillway's sluice gates are closed; and the west end wall (TW=00) will allow flow into the surface intake under low stream flow conditions (i.e., sluice gates open). When the spillway's sluice gates are closed, most of the wall will be submerged.

As mentioned in Section 5.2.1, the spillway's north sluice gate is not being used because of a damaged upper stem anchor point, located on the edge of the concrete access walkway over the spillway. As part of this project the damaged concrete will be repaired and gate stem anchors and connections for both gates will be reinforced to handle the forces exerted by gate operation. Before repairs are made to the sluice gate anchors, the gates will be evaluated to be sure they are both functioning as designed, and will be replaced if necessary.

Intake Building

A new intake building is proposed to permanently house the existing surface intake's fine screening vault, and to provide a secure area for the infiltration gallery's diesel air compressor and for miscellaneous intake equipment, controls and accessories. The proposed intake building will have two separate rooms with separate access and different floor elevations:

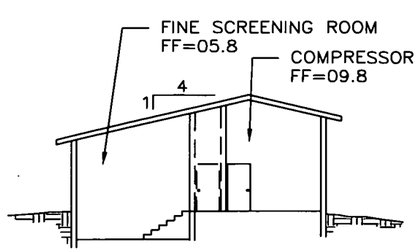
Fine Screening Room

Finished floor elevation is set level with the top of the existing fine screening vault, and stairs will provide access to an upper level landing and 3-foot door out of the building. The upper landing at the exit door will be level with the floor elevation of the adjoining compressor room, a rise of about 4 to 5 feet. Because turbulent flow in the fine screening vault can produce high humidity, this room's interior will incorporate water-resistant materials and/or coatings as needed to protect the building from moisture. Since the surface intake will be used only as a backup, tarps or rubber mats can be placed over the vault to reduce moisture and humidity in the room.

Compressor Room

The compressor room will house equipment for the infiltration intake including a large, permanently mounted diesel powered air compressor. Access will be provided by an overhead door on the north side, and a 3-foot door on the south side next to the door into the fine screening room. The compressor room's floor elevation will be set high enough to provide a level work area south of the building, outside the two 3-foot doors. Exhaust ductwork, shrouding and louvers will be provided as needed for a safe installation.

Heat and electricity will not be required for normal operation of the intake, but may be needed occasionally during maintenance activities. A heat source, such as propane heaters, will be provided and kept safely inside the intake building's compressor room in a standby mode that allows for easy manual startup and adequate ventilation. The fine screening room



SECTION A–A
(INTAKE BUILDING)

FOREST SERVICE ROAD
5315
5320
5305
5300
5310
RELOCATED BARBED WIRE FENCE
VALVE VAULT (TOP EL. 09.0)
12" CLEANOUTS
MAINTENANCE VEHICLE PAD
EXIST. FL=03.1
STREAM BOTTOM
FL=01.2
6.5%
2%
2:1
01
2.6%
20%
3:1
DISCHARGE LINE
FLOW MEASUREMENT VAULT
ACCESS DRIVE (TYP.)
30 DI
CONNECTION VAULT
EXISTING FLUME VAULT
FINE SCREENING ROOM FF=05.8
COMPRESSOR ROOM FF=09.8
18 VC
10%
3%
1%
4:1
16' TYP.
8%
09.5
09.0
09.8
00
TW=04
TW=02
TW=00
INFILTRATION GALLERY
GABION DEFLECTOR WALL
SPILLWAY SLUICE GATES
24.0
10.24
A

0 20
(IN FEET)

N:\2105\055\ACAD\EXHIBITS\5.6 PROPOSED INTAKE-SITE-PLAN.DWG

MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

PROPOSED INTAKE - SITE PLAN

FILE NAME	
SCALE	1"=50'

SHEET
FIG. 5-6

will not require heating. Electrical wiring for lights and accessory power outlets will be installed with the building and designed for connection to a small, portable electrical generator that can be kept in the building when not in use. Translucent wall panels will be included to bring in ambient lighting.

To help with snow removal in front of the two 3-foot doors, finished floor and concrete landing elevation will be about one foot higher than the surrounding finished grade elevation. The building's roof should be high enough to discourage people from climbing onto it (see Figure 5-12, Section A-A). Building size will be approximately 1,000 square feet.

The intake building will be a significant addition to the site, and should be visually screened from the recreational users of the Forest Service road. If desired, berming and/or use of native plants and trees could be added to provide visual screening.

The existing building over the fine screening vault will be removed and disposed of. The aluminum decking over the existing fine screening vault will be retained.

Connection Vault

The surface intake and the infiltration intake will both discharge into a proposed connection vault. The main purpose of the connection vault is to provide a way to switch between use of the existing surface intake under open channel flow conditions with flow control at the intake, and the proposed infiltration intake under full flow conditions with flow control at the treatment plant. Valves are provided around the connection vault to shut off flow to the intake not in use, and to bypass the vault for pressure backwash of the infiltration gallery. Under the proposed scenario, switching the raw water supply between the two intakes is simply a matter of opening and closing a few valves. However, it will not be possible to use either of the intakes during backwash of the primary (infiltration) intake.

A secondary purpose of the connection vault is to provide a sediment collection and storage sump for the two intakes that precedes flow into the transmission main. Because the infiltration gallery discharge line would be about 7 feet lower in elevation than the stream, it will not be feasible to install a gravity cleanout line for removing accumulated sediment and the sump will need to be cleaned using a trash pump. Very little sediment is expected to get through the infiltration gallery's well screens, and what does get through will be fine-grained materials.

Flow Measurement

Accurate flow measurement is required for flow into the transmission main from the primary (infiltration) intake, and to a lesser extent for flow into the transmission main from the secondary (surface) intake. If possible, continuous transmission of real-time flow data to the water treatment plant is desired.

For the primary intake, an electromagnetic probe type flow meter (AquaProbe II) will be installed in a new flow meter vault. This type of meter can be either battery or solar powered; battery power is proposed. The flow meter will be hard-wired to the intake building. Transmission of real-time data directly to the water treatment plant appears to be feasible.

For the existing intake, automated flow measurement will not be necessary. Open channel flow into the transmission main from this intake can be measured using the existing flow

measurement flume, or by measuring total flow into the fine screening vault (over the concrete weir) and then subtracting the flow into the 24-inch bypass line. Given that the existing intake will be relegated to a backup role, the inaccuracies of the existing flow measurement flume are acceptable to City staff; therefore, the existing flume will remain in place.

As fine sediment migrates through the infiltration gallery's gravel filter and toward the well screens, the gallery's efficiency will drop in response to increased blockage. To predict when a screen backwash may be needed, the efficiency of the infiltration gallery (as measured by "drawdown," or head loss through the gallery at different flow rates) can be monitored over time, and compared to baseline values determined just after gallery construction. The baseline drawdown (head loss) values will be recorded for a full range of flow rates up to the design flow. Flow rate will be measured by the proposed flow meter. Drawdown will be measured by installing two stilling tubes with pressure transducers: the headwater stilling tube transducer will record the stream/spillway pool water surface elevation, and the drawdown stilling tube transducer will record hydraulic grade line in the 24-inch header pipe east of the valve vault. The difference between the two elevation readings will be the drawdown head, or head loss through the gallery, at the flow rate occurring when the readings were taken. All values can be recorded by data loggers and transmitted to the water treatment plant. Stilling tubes are proposed inside the south end of the valve vault (see Figure 5-13).

The infiltration gallery will be sized for twice the design flow to provide for up to 50 percent blockage with no reduction below the design flow. As blockage slowly occurs over several months, the gradual drop in efficiency can be monitored, and the data can be used to schedule the next backwash operation well in advance of any reduction below the design flow.

Site Improvements

Drivable access roads will loop around the intake building, with a separate approach to the overhead door on the north side of the building. Vehicle-accessible areas are shown on Figure 5-14. These areas will be surfaced with gravel base course. The area between the proposed intake building and the existing surface intake will be fairly level for vehicle access.

The building's upper (compressor room) finished floor elevation is about 6 feet above existing grade at the north end of the building. Fill material will be needed around this end of the building, and is available in the spillway pool and in the dredge spoils area south of the spillway.

Also shown on Figure 5-15, a 20 percent (5H:1V) slope east of the existing intake allows vehicle access to the edge of the base flow channel of the stream, to remove stream debris. From this angle, debris lodged in the spillway's sluice gates can be removed more easily than under existing conditions.

The following abandoned structures exist onsite, and will be removed and disposed of:

- The concrete generator vault, vent pipes and perimeter fencing
- The concrete flume located about 300 feet north of the spillway
- The standpipe located on the east bank of the spillway pool

- The large cottonwood tree located about 40 feet northwest of the fine screening vault, and the surrounding vegetation.
- The existing barbed wire fence, as required for construction of the new facilities.

The existing barbed wire fence that is removed will be replaced along the perimeter of the new intake facilities. The existing 18-inch pipe from the abandoned intake to the flume will be plugged and abandoned in place. It is proposed to remove the upper portion of the abandoned intake vault to the top of the adjacent concrete wall, plug the outlet pipe, and abandon the lower portion of the structure in place. This will allow the remaining vault and retaining wall to provide retainage that is required due to the steep drop into the spillway pool, and eliminate the additional cost of a replacement wall.

Surface Intake - Bypass Flap Gate

It is proposed to change the status of the existing surface intake from the primary intake to a secondary intake that will, under most circumstances, be unused. The 24-inch bypass line will therefore be dry, and could become a route for small mammals and other creatures to enter the fine screening vault. To prevent this, a flap gate will be added to the 24-inch pipe outfall at the stream.

5.2.4 Proposed Operation of Primary and Secondary Intakes

The proposed infiltration gallery would operate under a headwater elevation equal to the stream or spillway pool's water surface elevation. The existing surface intake, however, operates at a much lower headwater elevation out of the fine screening vault. Because of this difference, retaining use of the existing intake as well as a new infiltration gallery intake will require several valves and/or slide gates installed in and around the proposed connection vault on the existing transmission main.

Under normal operation (i.e., using the proposed infiltration intake), the surface intake would be shut off at the intake vault to stop flow to the fine screening room, and at the connection vault to prevent backflow into the screening vault and bypass line. To use the surface intake, the infiltration intake would be shut off at the connection vault, and the surface intake valves would be opened. It will not be possible to draw water from both intakes at the same time, or to use either of them during backwash operations. The following is a general backwash operation sequence.

At the Sourdough Intake

1. Open the sluice gates and drain the spillway pool.
2. Remove as much large debris as possible from the stream bed above the infiltration gallery.
3. To prepare for pressurizing the transmission main:
   a. close the valves on the north and east sides of the connection vault.
   b. open the valve at the 30-inch x 24-inch tee north of the connection vault.
   c. close the water valves to the stilling tubes.
   d. close all the valves in the valve vault.

At the Water Treatment Plant (WTP)

1. Shut off flow from the Sourdough intake at the inlet vault, and reduce flow from the Hyalite intake at the connection building. For the duration of backwash, use water stored at the WTP and/or reservoir on Sourdough Road to supplement the reduced supply.
2. Open the valve on the proposed WTP bypass line; this will run Hyalite water in reverse up to the Sourdough intake and pressurize the entire Sourdough transmission main up to the intake.

At the Sourdough Intake

1. Start compressor and pressurize air lines to air header pipe.
2. At the valve vault, open one or more air valves as desired, then after a few minutes open the corresponding water valves. Work from upstream to downstream end of gallery.
3. Remove any additional large debris that is loosened during backwash operations.
4. Shut off air, then water, and then move to next zone or zones.
5. Open air valve for the headwater stilling tube for several minutes, then close it.

At the WTP

1. When finished backwashing all zones and the headwater stilling tube, close the valve on the proposed WTP bypass line, and restore Sourdough and Hyalite flows to the WTP.

At the Sourdough Intake

1. To restore operation of the infiltration intake:
   a. close the valves on the north and east sides of the connection vault.
   b. close the valve at the 30-inch x 24-inch tee north of the connection vault.
   c. open the water valves to the stilling tubes.
   d. open all the valves in the valve vault.

5.3 Hyalite Intake

The Hyalite intake consists of a concrete spillway and earth berm constructed in 1957, and a new surface intake structure constructed in 2005 and 2006. The surface intake facilities are attached to the east end of the spillway and completely replaced the previous surface intake. The intake serves an irrigation ditch and two transmission mains: the Hyalite primary transmission main and the Hyalite secondary transmission Main.

No additional improvements are proposed with this project. The existing facilities are described below.

5.3.1 Existing Facilities

The Hyalite intake is a surface intake that consists primarily of a spillway structure with an earth containment berm on the west side and an intake building on the east side. Other facilities include an irrigation ditch intake, flow meter vault, retaining walls and other miscellaneous items. The intake building houses a series of underground concrete vaults that utilize two large stainless steel tee screens to provide screened raw water to the Hyalite primary and secondary transmission mains. Flow control is provided at the intake for the older (secondary) transmission main, which operates under open channel flow. Although fine screening is routinely provided for both transmission mains, under unusual circumstances unscreened water may enter the secondary transmission main.

5.4 Raw Water Transmission Facilities

Raw water is brought to the City's water treatment plant on Sourdough Canyon Road from two separate water sources: Bozeman Creek and Hyalite Creek. The Sourdough intake, on Bozeman Creek, is the City's base (primary) water source and must be utilized to the maximum extent possible while meeting stream flow and water rights constraints. The Hyalite intake, on Hyalite Creek, provides supplemental flows during periods of high demand.

Raw water is delivered from the Sourdough intake through a single transmission main. With the addition of the proposed infiltration intake, there will be two modes of operation:

- Primary Operation: When the proposed infiltration gallery is in use, the transmission main will operate under pressure flow with flow control provided at the WTP.
- Secondary or Emergency Operation: When the existing surface intake is in use, the transmission main will operate under open channel (gravity) flow with flow control provided at the intake.

Raw water is delivered from the Hyalite intake through two separate transmission mains. Due to the presence of two transmission mains, there will be two modes of operation:

- Primary Operation: The newer transmission main, primarily 24-inch diameter, is considered the primary transmission main and operates under pressure flow with flow control provided at the WTP.
- Secondary or Emergency Operation: The older line, primarily 21-inch diameter, is considered the secondary or backup transmission main and operates under open channel (gravity) flow with flow control provided at the intake.

The following sub-sections describe the facilities, operation and operational constraints of the three transmission mains with respect to their capacity to deliver raw water to the water treatment plant. Backwash operations for the proposed Sourdough infiltration intake facility that utilize the Sourdough transmission main and the Hyalite primary transmission main, are described in Section 5.2.4. The three transmission mains are shown on Figure 5-16.

5.4.1 Sourdough Transmission Main

Existing Facilities

The original 18-inch diameter Sourdough Transmission Main has been replaced in segments over the years, and now exists as a 30-inch diameter pipeline throughout with a total length of about 6,700 feet. The current alignment, line lengths and years of construction are shown on Figure 5-7.

The pipeline is made up of segments of ductile iron pipe, reinforced concrete pipe, and concrete cylinder pipe. There is a low point on the reinforced concrete portion of the pipeline having a maximum operating pressure rating of 100 psi. This point defines a constraint on the use of this pipeline for backwash of the proposed infiltration intake, but is not a limitation for transmission of raw water from either the existing surface intake or the proposed infiltration intake.

The Sourdough transmission main currently operates under open channel flow conditions (i.e., pipe flowing partially full), with flow control at the intake. The line's pressure rating is limited to 100 psi by the reinforced concrete (RCP) portion of the pipeline, which starts at the water treatment plant. The maximum line pressure occurs at the RCP/irrigation ditch crossing near the treatment plant. Based on estimates made from the record drawings, maximum static line pressure at the RCP/irrigation ditch crossing would increase from about 52.8 psi using the surface intake to about 54.7 psi using the proposed infiltration gallery intake, still well below the rated maximum for this pipe. At the maximum design flow of 400 miner's inches (10 cfs), flow velocity would be about 2 feet per second. Therefore, head losses will remain low and the line will respond to flow control at the treatment plant.

Proposed Facilities

To allow full flow conditions using the proposed infiltration gallery, air release valves should be added at all existing and proposed high points on the line. Other than the treatment plant and intake ends of the pipeline, only one existing high point was identified on the record drawings, at the D.I.P/CCP connection point located about 1,300 feet south of the intake (see Figure 5-7). A stream crossing would be required to access this high point. A second high point, also requiring an air release valve, will be created at the south end of the proposed intake's header pipe.

5.4.2 Hyalite Transmission Mains

No additional improvements are proposed to the existing Hyalite primary and secondary transmission mains, except for connections at the water treatment plant as described in Section 5.4.3. The existing facilities are described below.

Hyalite Primary Transmission Main

The Hyalite Primary Transmission Main was installed in 2005 and 2006 and has a total length of about 22,900 feet. The upstream 1,700 feet is made of 30-inch ductile iron pipe, and the rest is made of 24-inch ductile iron pipe. The pipeline is designed for pressure flow, and provides higher operating head to the water treatment plant than the secondary transmission main.

Hyalite Secondary Transmission Main

The Hyalite Secondary Transmission Main was installed in 1957 and has a total length of about 20,100 feet. Starting at the upstream end, the pipeline is made of about 200 feet of 24-inch ductile iron pipe, 18,000 feet of 21-inch reinforced concrete pipe, and 1,900 feet of 18-inch reinforced concrete pipe. The pipeline is designed for open channel (gravity) flow, and provides much less operating head to the water treatment plant than the primary transmission main due to an open-air gradient box manhole located about 1,900 feet upstream of the water treatment plant, at the start of the 18-inch pipe. In terms of pressure, pipe materials are not a limitation for open channel (gravity) transmission of raw water through this line as currently configured. However, sealing or otherwise modifying the gradient box to allow increased line pressure and capacity is not recommended, and could be a concern due to seal damage and leaks either created or enlarged by the increased pressure (refer to *Hyalite Water Transmission Main and Raw Water Intake Project - Pre-Design Report,* May 2003, Morrison-Maierle, Inc., Chapter 5.3.5).

5.4.3. Connection Facilities at the Water Treatment Plant Site

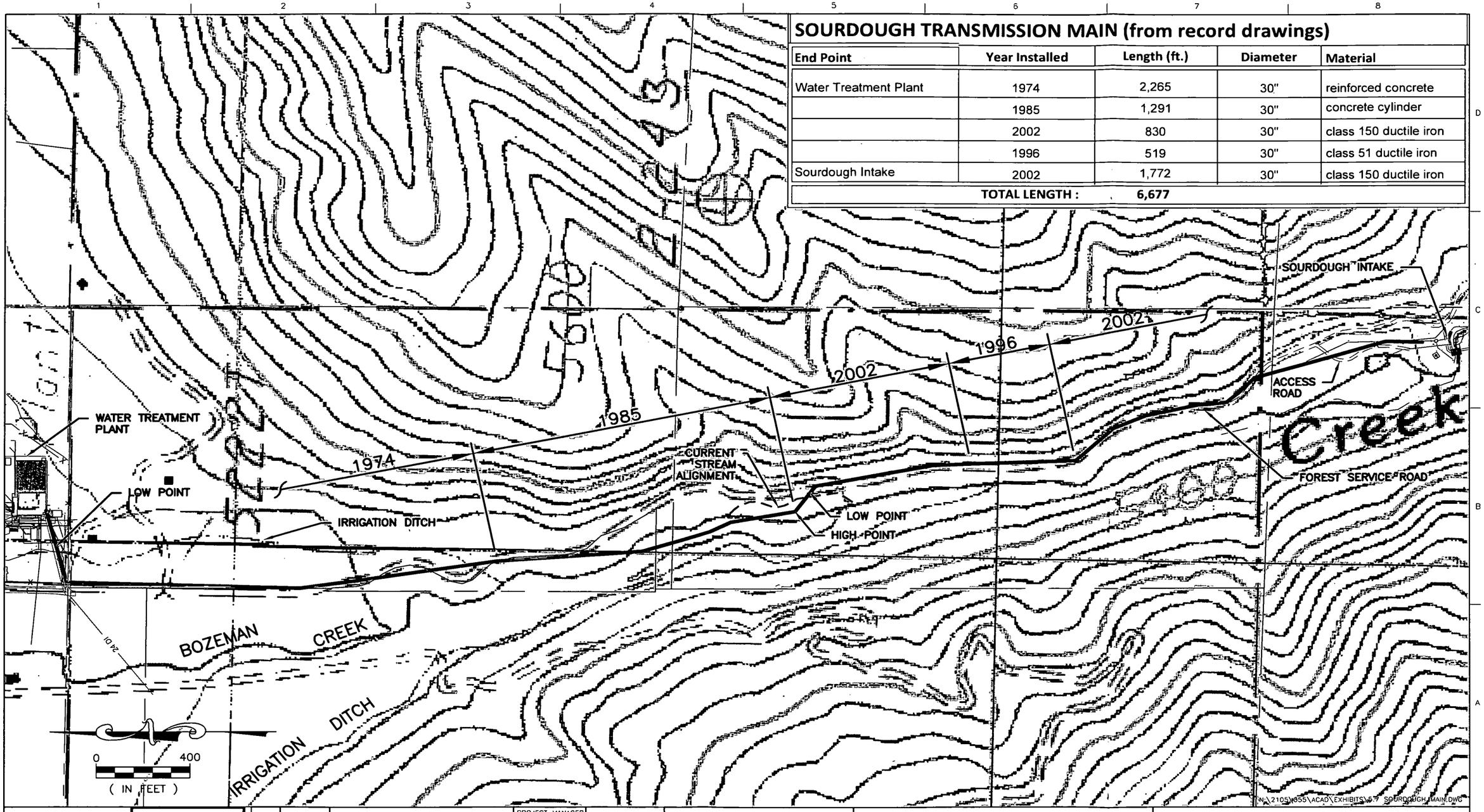
The proposed WTP building will be constructed several hundred feet north of the existing inlet meter vault, where the three transmission mains now terminate. To maintain flexibility at the proposed WTP, all three transmission mains will be extended to the new plant from the vicinity of the existing connection building and inlet meter vault at the southwest corner of the existing WTP building. These connections will involve some modifications to existing piping outside the existing WTP building. Additionally, some temporary connections will be needed to allow uninterrupted use of the existing WTP while the proposed plant undergoes construction, testing and commissioning. This sub-section describes the existing and proposed facilities at the WTP site that are required for raw water delivery to both WTP buildings during and immediately following proposed WTP construction.

Existing Facilities

Existing facilities at the WTP related specifically to raw water transmission include a connection building, inlet meter vault, head tower, and an overflow drain line. The connection building provides flow control for the Hyalite primary transmission main. Raw water leaving the connection building merges with raw water from the Hyalite secondary transmission main at a connection tee, and the combined flow enters the inlet meter vault. The Sourdough transmission main also enters the inlet meter vault, and the combined flow from all three transmission mains enters a head tower located in the southwest corner of the WTP building. The head tower's overflow weir sets the operating head for the water treatment plant. Overflow water is wasted by discharge into a 24-inch ductile iron drain line that runs west to Bozeman Creek.

SOURDOUGH TRANSMISSION MAIN (from record drawings)

End Point	Year Installed	Length (ft.)	Diameter	Material
Water Treatment Plant	1974	2,265	30"	reinforced concrete
	1985	1,291	30"	concrete cylinder
	2002	830	30"	class 150 ductile iron
	1996	519	30"	class 51 ductile iron
Sourdough Intake	2002	1,772	30"	class 150 ductile iron
TOTAL LENGTH :		6,677		



N:\2105\055\ACAD\EXHIBITS\5-7 SOURDOUGH_MAIN.DWG

MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	MGH
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	2105.055

City of Bozeman
Water Treatment Plant

Bozeman, Montana 2010

SOURDOUGH TRANSMISSION MAIN

FILENAME	
SCALE	1"=400'

SHEET FIG. 5-7

Proposed Facilities

Proposed facilities at the WTP related specifically to raw water transmission include extensions to the three transmission mains and drain line to the proposed WTP building, and a connecting bypass line from the Hyalite primary transmission main to the Sourdough transmission main that is needed to provide backwash water to the proposed Sourdough primary (infiltration) intake. Proposed facilities are shown schematically on Figure 5-8, and are described below.

Transmission Main Extensions

The inlet meter vault will be removed, and its functions will be moved into or near the proposed WTP building. The existing connection building will remain in use with the proposed WTP, to provide flow metering and control for the Hyalite primary transmission main as it does now. Similar equipment will be installed in the proposed WTP building to control pressure flow from the Sourdough transmission main. The transmission mains will be extended as follows:

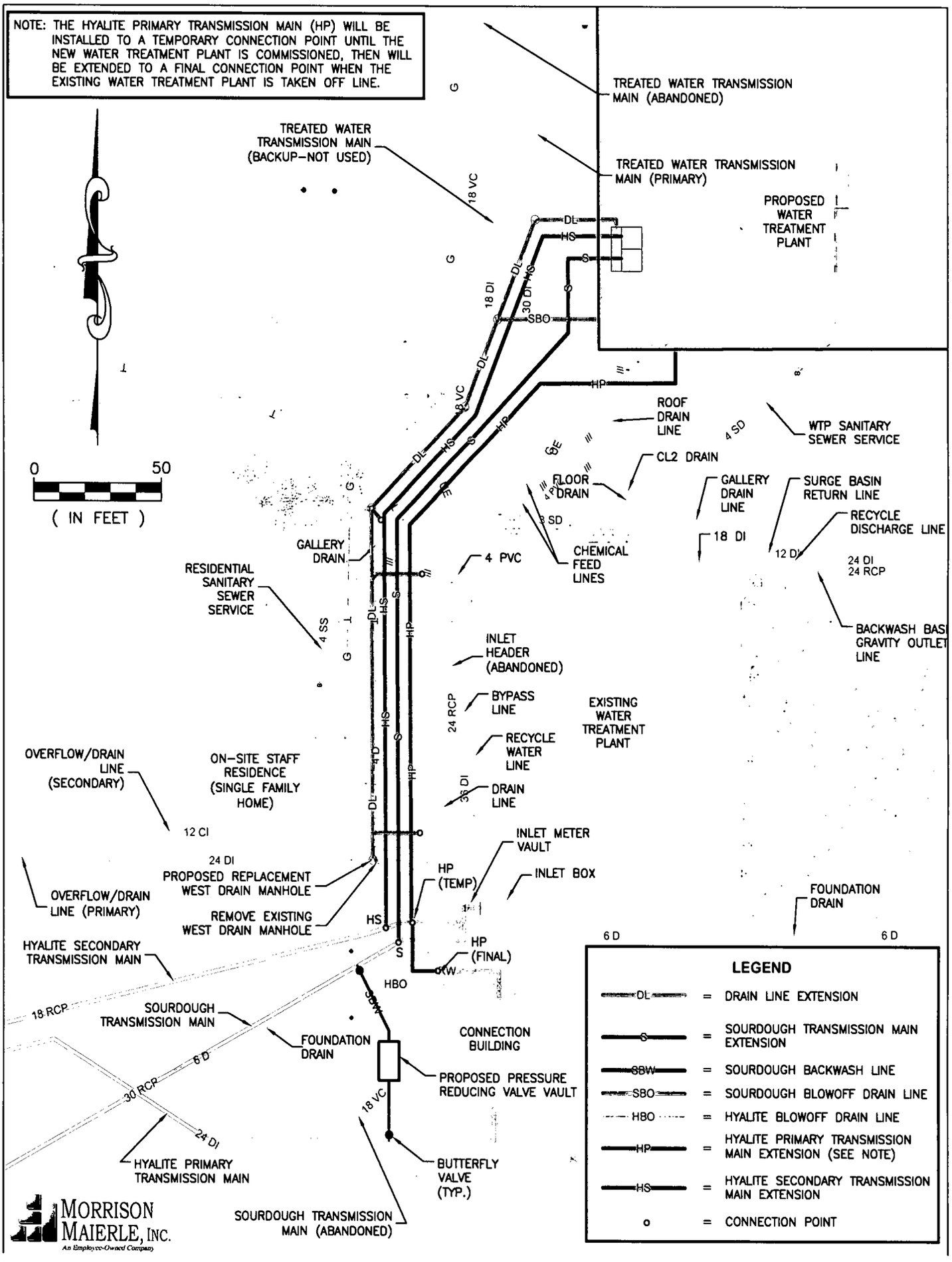
- Sourdough Transmission Main Extension: This extension will connect west of the inlet meter vault, and will extend north to the proposed WTP. The line will be split outside the building using valves to route pressure flow (primary operation) to flow metering and control equipment, and gravity flow (secondary and emergency operation) to a head tower and/or an alternate, pressure wasting system inside the proposed WTP building.

- Hyalite Primary Transmission Main Extension: This extension will connect northwest of the existing connection building, and will extend to the proposed WTP. A temporary connection will be made west of the inlet meter vault, and will be used until the proposed WTP is tested and commissioned (see "Temporary Connections").

- Hyalite Secondary Transmission Main Extension: This extension will connect west of the inlet meter vault, and will extend to the proposed WTP. The line will discharge into a head tower and/or an alternate, pressure wasting system inside the proposed WTP building.

Head Towers and Overflow (Wasting) Systems

The Hyalite secondary transmission main will operate only under open channel (gravity) flow conditions with flow control provided at the intake, and the Sourdough transmission main will operate in this manner when the existing surface intake is used. Head towers, or a combined head tower structure, are proposed to stabilize fluctuating gravity flow through these two pipelines and provide for wasting of excess water. It may be feasible, and would be preferable in terms of plant operations, to bypass the head towers and use some type of pressurized flow control and wasting system. However, head towers with raw water pre-screening equipment should be included as a backup system for use in the event that unscreened water is supplied to the WTP. A head tower is not required for the Hyalite primary transmission main, which will only operate under pressure flow conditions and with screened raw water



HDR

CITY OF BOZEMAN

CONNECTIONS AT WATER TREATMENT PLANT

DATE 02/2010

FIGURE FIG. 5-8

Drain Line Extension

The existing drain line is a 24-inch gravity line running from the existing WTP to Bozeman Creek. Pipe length from the stream outfall to the west drain manhole (located about 40 feet west of the existing WTP building) is 563 feet. It is proposed to extend the drain line from the west drain manhole to the proposed WTP building using approximately 290 feet of 30-inch ductile iron pipe. It appears that the drain line can be extended at the proposed alignment and still maintain adequate soil cover.

Preliminary calculations indicate the extended drain line will have a capacity of 24.2 MGD, which is greater than the combined (Sourdough + Hyalite) primary raw water transmission capacity of 23.96 MGD. If the proposed WTP and raw water supply capacity are increased beyond the scope of this project, a second drain line may be required.

All drain lines from the existing WTP need to remain operational during construction and commissioning of the proposed WTP. These drain lines can be connected to the proposed drain line extension, or the discharge water can be pumped and discharged to a drain line manhole, surface outlet or to the existing WTP as appropriate. Once the proposed WTP is commissioned, the connections to the existing WTP can be plugged or removed if no longer needed.

Backwash Connection Line

During backwash of the proposed Sourdough primary (infiltration) intake, backwash water will be supplied by the Hyalite intake by routing a portion of the Hyalite flow through a proposed backwash line that bypasses both the existing and proposed WTP buildings. The backwash line will be located west of the existing connection building, as shown on Figure 5-8.

Unobstructed flow from the Hyalite intake would charge the Sourdough transmission main to a static pressure of up to 127 psi at its lowest point, the RCP/irrigation ditch crossing. Since the existing RCP is rated to 100 psi maximum, a pressure reducing valve will be required on the proposed bypass line to assure that pressures do not exceed 100 psi at the low point. The backwash connection line will be closed except during backwash activities.

Temporary Connections

Temporary connections will be necessary in order to operate the existing and proposed WTP buildings simultaneously while the proposed (newly constructed) WTP undergoes testing and commissioning. The number and location of planned temporary connections is subject to change as final design proceeds, and will be dependent on construction phasing. When the existing WTP is no longer needed, the temporary connections will be removed.

With respect to construction of the proposed raw water transmission and wasting facilities, the following temporary connections are anticipated at this time (refer to Figure 5-8). Additional temporary connections not listed here will be required for facilities unrelated to raw water transmission and wasting.

- Treated Water Transmission Mains (Primary and Backup): The four proposed raw water transmission main/drain line extensions will need to cross the existing treated water transmission mains.
- Miscellaneous Drain Lines: Several gravity drain lines leave the existing WTP building and either cross, or run parallel to, the four proposed raw water transmission main/drain line extensions. Temporary pumping or piping will be needed to collect water from these lines and, depending on the water source, to discharge it to either surface water or to the existing WTP backwash basin as appropriate.
- Hyalite Primary Transmission Main Extension: As it leaves the connection building , the existing Hyalite primary transmission main drops steeply to cross under the existing Sourdough transmission main, and then rises abruptly to terminate at a tee just west of the inlet meter vault. This tee connects the Hyalite primary and secondary transmission mains. At this time, we anticipate installing a temporary replacement tee at this location to connect the existing Hyalite primary transmission main to its proposed extension and to the existing WTP. After the existing WTP is taken off-line, the connection to the existing WTP can be removed, and the numerous vertical bends and other fittings in the vicinity can be removed and replaced with a single 90° horizontal bend.
- Temporary Power Line: An overhead power line exists above the proposed alignment for the four proposed raw water transmission main/drain line extensions. Rather than working under this line with heavy equipment, the Contractor may prefer to temporarily relocate it.

The above list is not comprehensive; the need for additional temporary connections may be identified during final design.

5.5 Operations

Due to the raw water delivery system having three transmission mains, two existing intakes and one proposed intake, several modes of operation will be possible. These have been broken down into primary, secondary and emergency operational modes. Each mode of operation will have its own unique flow capacity and pressure. In every case, it is intended to provide as much operational (residual) head at the WTP building as possible. Maximum pressure that will be available for pretreatment processes at the WTP has been estimated based on the maximum flow rate that can be supplied for that particular operational mode. Lower than maximum flow rates will result in higher residual head values.

Primary operation will utilize transmission facilities delivering the highest possible flow rate and residual pressure to the WTP; this residual pressure can be used for pre-treatment processes in the proposed WTP. For both raw water sources, primary operation will include fine screening at the intake and flow control at the WTP. Wasting of excess raw water will be through the use of blowoff valves discharging to an extended drain line.

Secondary operation will utilize open channel (gravity) transmission to the WTP from the existing surface intakes at Hyalite Creek and Bozeman Creek. For both raw water sources, flow control will be provided at the intake. Under normal operation fine screening will be

provided at the intake; this is considered secondary operation. Emergency operation covers the possibility that fine screening at the intake needs to be bypassed, resulting in unscreened water flowing through the Hyalite secondary transmission main and/or the Sourdough transmission main.

Wasting of excess raw water will occur as overflow from a head tower or an alternate wasting system. Under emergency operation, the flow entering the treatment plant needs to be pre-screened in order to keep large sticks, leaves, fish and other debris out of the plant. Following emergency operation, accumulations of these materials in the head tower may need to be removed or routed through the drain line extension. Excess raw water will be discharged to the extended drain line and into Bozeman Creek west of the WTP.

Bozeman Creek Supply

- Primary Operation: Primary operation of the Bozeman Creek water supply will utilize screened water from the proposed infiltration intake and the existing Sourdough transmission main, which will provide pressure flow with flow control at the WTP. At the WTP, water in the Sourdough transmission main will be routed directly to flow control equipment located inside the proposed WTP building. If the infiltration intake is not constructed, the secondary mode of operation will apply and will become the primary mode.
- Secondary Operation: Secondary operation will utilize screened water from the existing surface intake and transmission main, with flow control provided at the intake. At the WTP, water in the Sourdough transmission main will be routed through a transmission main extension to a head tower or an alternate wasting system. The head tower or alternate system will divert excess raw water to the proposed drain line extension.
- Emergency Operation: Emergency operation will utilize unscreened water from the existing surface intake and transmission main, with flow control provided at the intake. At the WTP, water in the Sourdough transmission main will be routed through a transmission main extension to a head tower or an alternate wasting system. The head tower or alternate system will pre-screen the unscreened raw water before it enters the WTP, and will divert unscreened excess raw water to the proposed drain line extension.

Hyalite Creek Supply

- Primary Operation: Primary operation of the Hyalite Creek water supply will utilize screened water from the existing intake and the Hyalite primary transmission main, which will provide pressure flow with flow control at the WTP. At the WTP, water in the Hyalite primary transmission main will be routed through flow control equipment inside the existing connection building, and then will continue north through a transmission main extension and into the proposed WTP building.
- Secondary Operation: Secondary operation will utilize screened water from the existing surface intake and the existing Hyalite secondary transmission main, with flow control provided at the intake. At the WTP, water in the Hyalite secondary transmission main will be routed through a transmission main extension to a head tower or an alternate wasting system. The head tower or alternate system will divert excess raw water to the proposed drain line extension.

- Emergency Operation: Emergency operation will utilize unscreened water from the existing surface intake and the existing Hyalite secondary transmission main, with flow control provided at the intake. At the WTP, water in the Hyalite secondary transmission main will be routed through a transmission main extension to a head tower or an alternate wasting system. The head tower or alternate system will pre-screen the unscreened raw water before it enters the WTP, and will divert excess raw water to the proposed drain line extension.

Preliminary Hydraulic Summary

Due to the multiple modes of operation and the effect of flow rate on the residual pressure available for pretreatment processes at the WTP, preliminary hydraulic calculations are provided in a hydraulic summary table (Table 5-2.). Preliminary hydraulics are based partially on proposed system components; therefore, they are subject to change as final design proceeds.

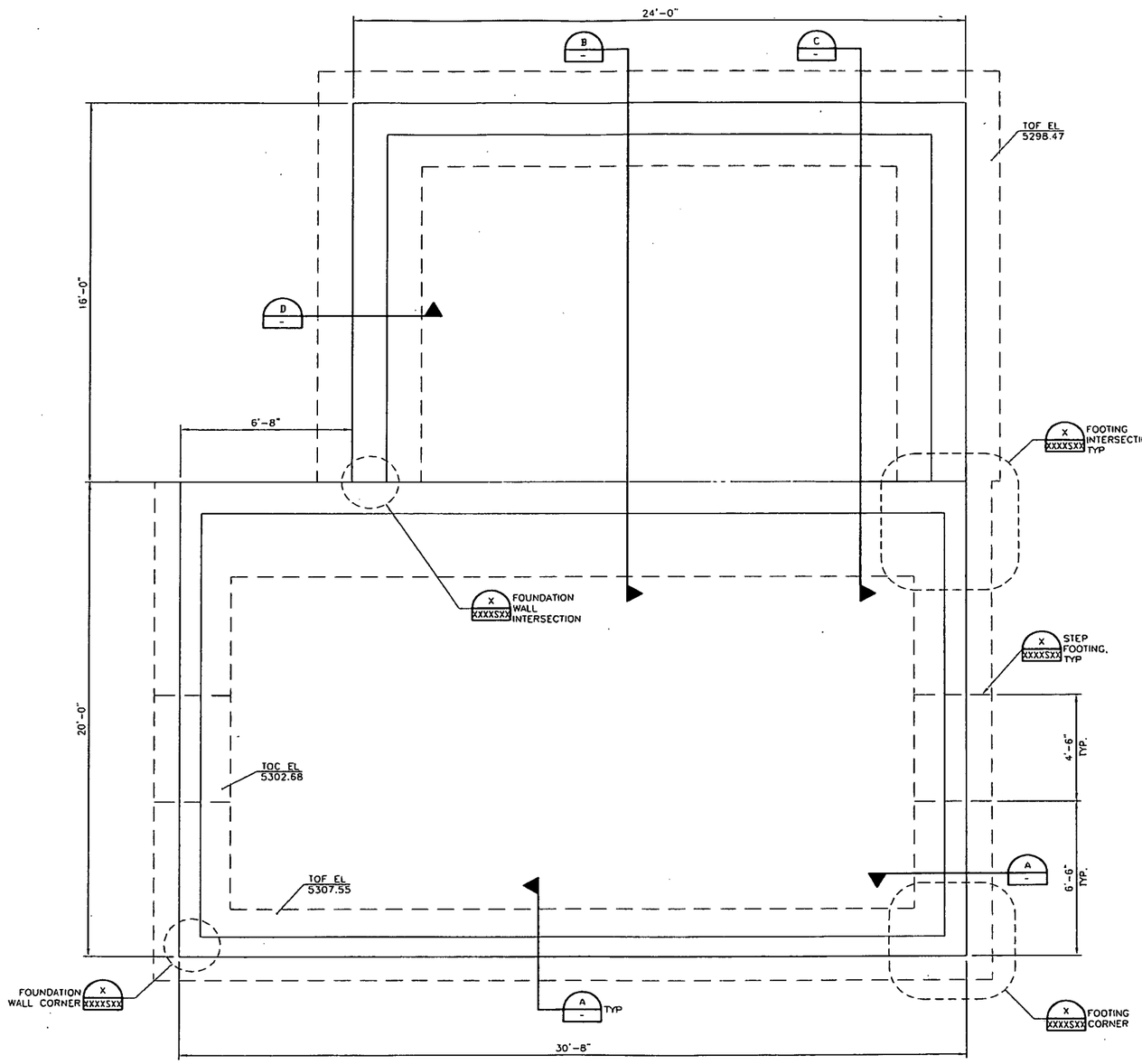
TABLE 5-2: Hydraulic Summary

Description	Residual Pressure at the Proposed Water Treatment Plant (psi)[1]						
flow rate (cfs)	3.09	6.58	10.00	13.31	20.12	27.08	31.72
flow rate (MGD)	**2.00**	**4.25**	**6.46**	**8.60**	**13.00**	**17.50**	**20.50**
SOURDOUGH TRANSMISSION MAIN							
Primary Operation (capacity = 6.46 MGD)							
Screened Water from Infiltration Intake	**39.44**	**38.63**	**37.32**	-	-	-	-
Secondary Operation (capacity = 4.25 MGD)[2,3]							
Screened Water from Surface Intake	36.98	36.36	-	-	-	-	-
Emergency Operation (capacity = 4.25 MGD)[2,3]							
Unscreened Water from Surface Intake	36.98	36.36	-	-	-	-	-
HYALITE TRANSMISSION MAIN							
Primary Operation (design capacity = 17.50 MGD)[4]							
Screened Water, Primary Transmission Main	**111.46**	**107.24**	**100.56**	**91.79**	**66.92**	**30.15**	**1.23**
Secondary Operation (capacity = 8.60 MGD)[2]							
Screened Water, Secondary Transmission Main	33.65	33.31	32.76	32.01	-	-	-
Emergency Operation (capacity = 8.60 MGD)[2]							
Unscreened Water, Secondary Transmission Main	33.65	33.31	32.76	32.01	-	-	-

NOTES:

1. Residual pressures are at the proposed WTP finished floor elevation of 5207.00, and assume pressure flow to the WTP with no head tower or other facilities open to atmospheric pressure. If a head tower is used, residual pressure is limited by the head tower's overflow elevation.
2. Under gravity flow conditions, the indicated residual pressure at the WTP is based on back-pressuring the transmission main to the maximum possible headwater depth without affecting intake or transmission main operation or capacity. Full utilization of the indicated pressures will require the use of a pressure wasting system at the WTP.
3. The capacity of the existing Sourdough surface intake has not been determined, but is assumed equal to the current demand.
4. Design capacity of the existing Hyalite intake is 17.5 MGD, but the intake was oversized to allow for partial blockage of the tee screens. The calculated capacity of the Hyalite primary transmission main is approximately 20.5 MGD.

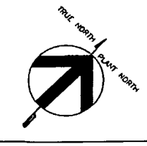
N:\2105\055\PreDesign Docs\Reports\Section 5 Intakes and Raw Water Transmission\Section 5 Intakes and Raw Water Transmission.doc



INTAKE BUILDING – FOUNDATION PLAN
3/8" = 1'-0"

KEY NOTES:

1. SEE ARCHITECTURAL FOR STAIR FRAMING LAYOUT AND DIMENSIONING
2. MECHANICAL HOUSE KEEPING PAD. COORDINATE LOCATION WITH MECHANICAL/ PROCESS DRAWINGS. SEE STANDARD DETAILS FOR CONSTRUCTION AND REINFORCEMENT REQUIREMENTS
3. SEE STANDARD CONCRETE REINFORCING DETAILS ON SHEET 160050Z.
4. HORIZONTAL AND/OR VERTICAL CONSTRUCTION JOINTS NOT INDICATED. SEE STANDARD DETAIL <03311-18> AND SPECS FOR JOINT REQUIREMENTS SUBMIT PROPOSED JOINT LAYOUT LOCATION W/ REBAR SHOP DRAWING SUBMITTAL ALL CONSTRUCTION JOINTS BELOW GRADE REQUIRE 6" WATERSTOP
5. REFER TO CIVIL/MECHANICAL/PROCESS DRAWINGS FOR LOCATION OF ALL PIPE OPENINGS IN FLOOR AND WALL. REINFORCE OPENINGS PER STANDARD DETAILS
6.
7.



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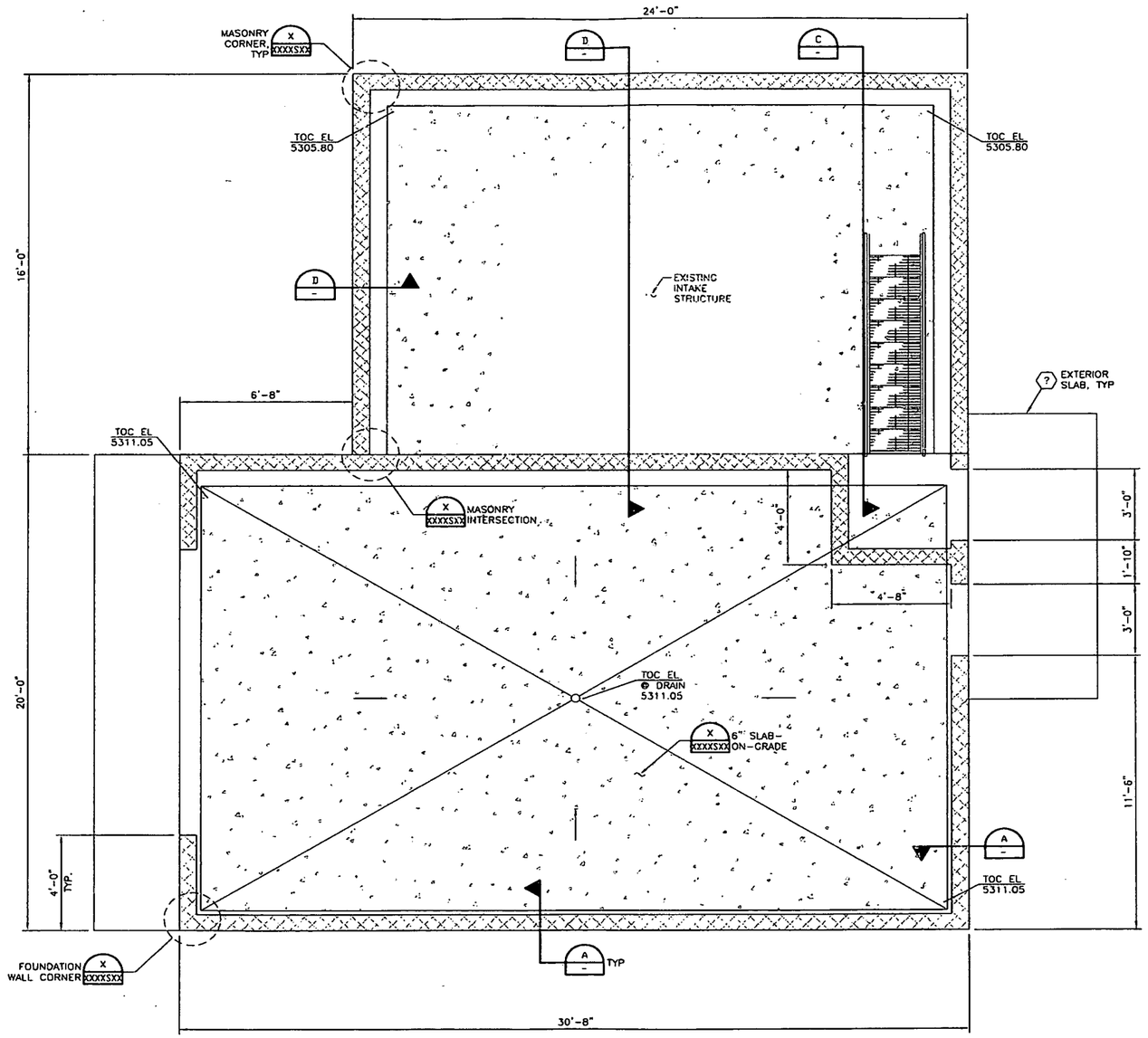
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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

INTAKE BUILDING - FOUNDATION PLAN

DATE
March, 2010

FIGURE



INTAKE BUILDING – FOUNDATION/FLOOR FRAMING PLAN

3/8" = 1'-0"

KEY NOTES:

1. REFER TO CIVIL/MECHANICAL/PROCESS DRAWINGS FOR LOCATION AND ELEVATIONS OF ALL PIPE OPENINGS. REINFORCE PIPE OPENINGS PER STANDARD DETAILS
2. SEE STANDARD DETAILS <05505-27> THRU <05505-32> FOR ALL STEEL STAIR FRAMING AND CONNECTION REQUIREMENTS.
3. SEE MECHANICAL DRAWINGS FOR ALL REQUIRED OPENINGS IN CMU WALL. SEE DETAIL 4/0100S06 FOR WALL REINFORCEMENT REQUIREMENTS.
4. SEE ARCHITECTURAL DRAWINGS FOR ALL CMU CONTROL JOINT LOCATIONS AND DETAIL REQUIREMENTS
5.
6. SEE SHEET 0000A01 FOR MECHANICAL ENCLOSURE WALL LAYOUT.
7.
8. PROVIDE GALVANIZED LOOSE STEEL LINTELS AT MASONRY VENEER OPENINGS. FOR CLEAR SPAN <= 4'-0" USE L4x4x3/8, FOR CLEAR SPAN > 4'-0" AND <= 8'-6" USE L6x4x3/8, AND FOR CLEAR SPAN > 8'-6" USE L8x4x3/8.
9. CONCRETE SLAB-ON-GRADE CONTROL JOINT LAYOUT NOT SHOWN. CONTRACTOR IS REQUIRED TO SUBMIT PROPOSED JOINT LAYOUT TO ENGINEER FOR APPROVAL PRIOR TO POURING SLAB. SEE DETAIL 3/0100S06 FOR CONTROL JOINT REQUIREMENTS.
10.
11.
12.

TRUE NORTH, PLANT NORTH

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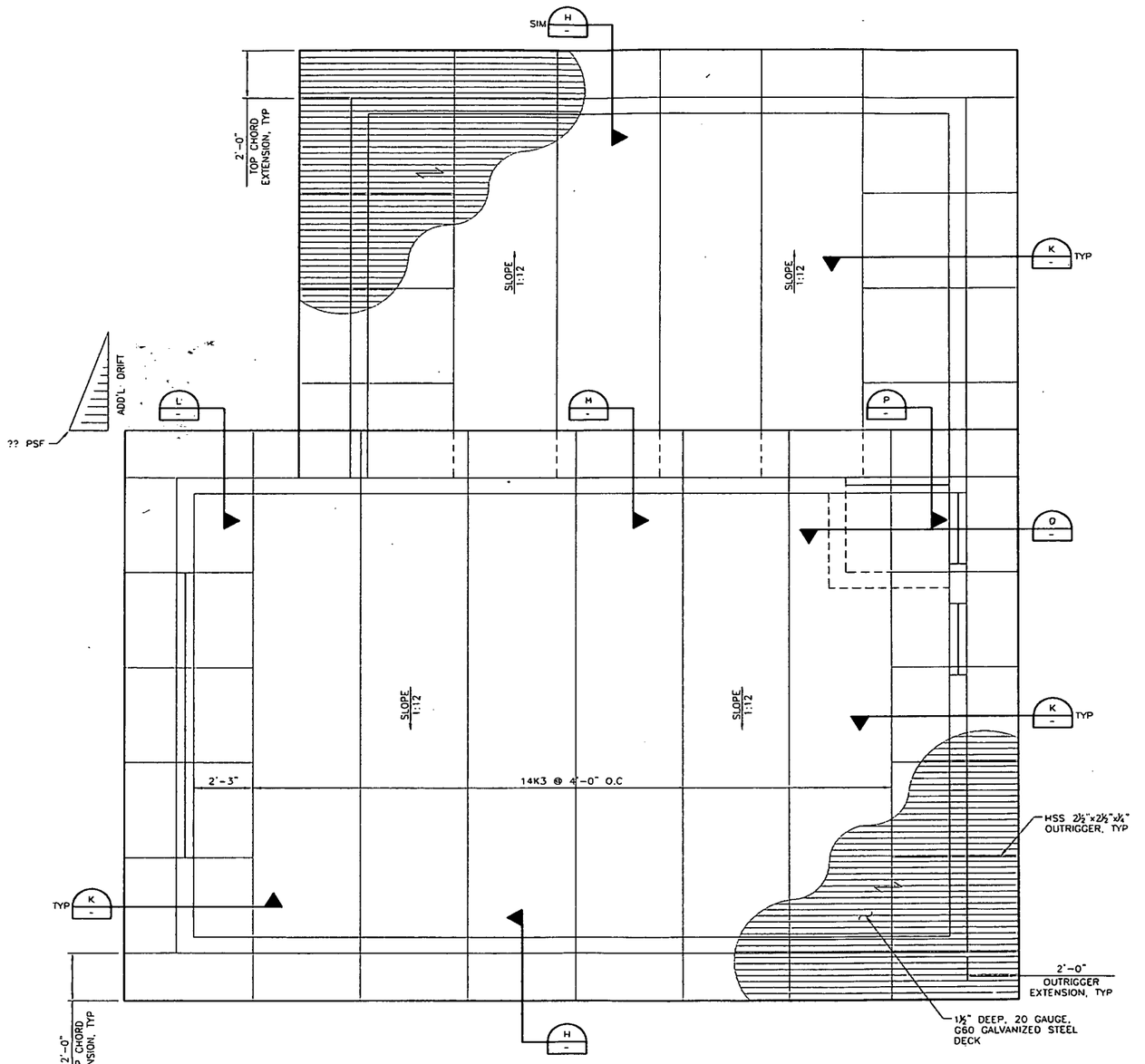
HDR Engineering, Inc

CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

INTAKE BUILDING - FDN/FLOOR FRAMING PLAN

DATE
March, 2010

FIGURE



INTAKE BUILDING – ROOF FRAMING PLAN
3/8" = 1'-0"

KEY NOTES:

1. HORIZONTAL JOIST BRIDGING NOT SHOWN FOR CLARITY PROVIDE BRIDGING FOR ALL OPEN WEB STEEL JOISTS PER MANUFACTURERS REQUIREMENTS CONNECT BRIDGING TO WALL PER DETAIL EE/0100SD6.
2. SEE ARCHITECTURAL FOR LAYOUT AND EXTENTS OF AWNING



MORRISON MAIERLE, INC.

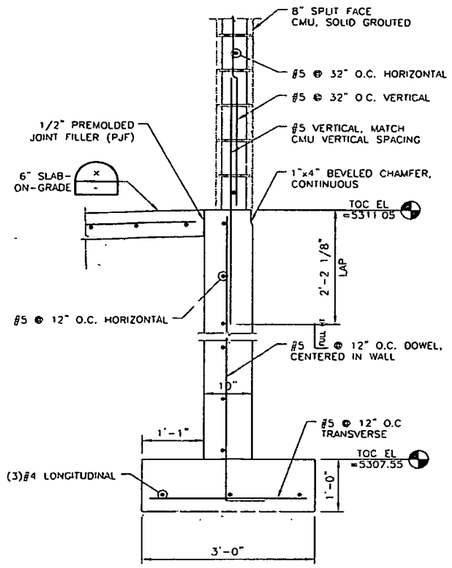
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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

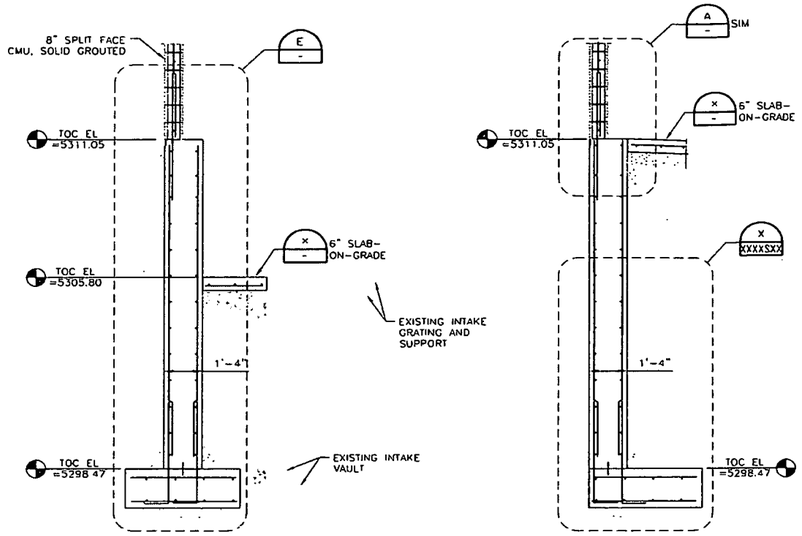
INTAKE BUILDING - ROOF FRAMING PLAN

DATE
March, 2010

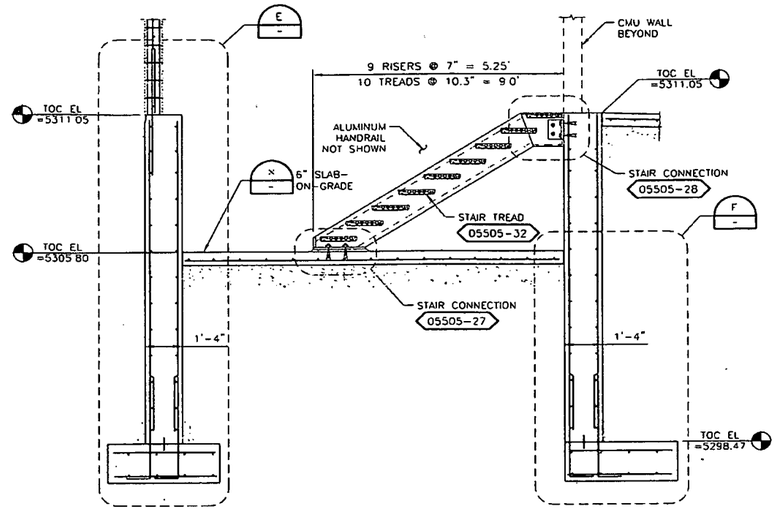
FIGURE



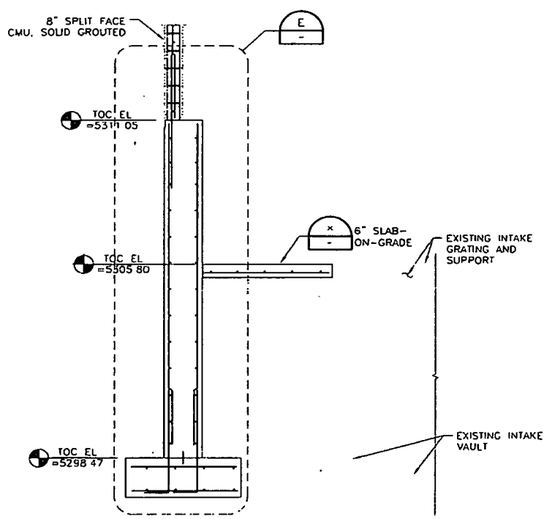
FOUNDATION SECTION A
3/4" = 1'-0"



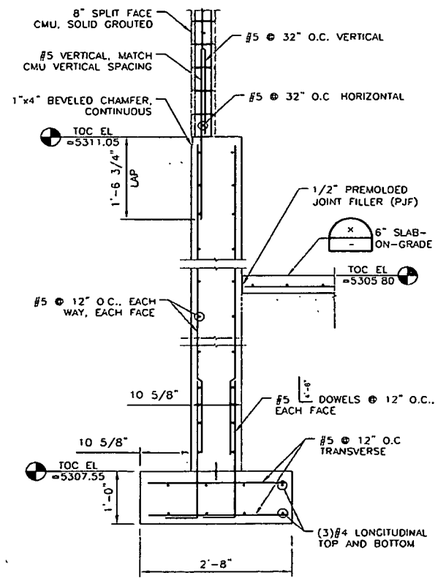
FOUNDATION SECTION B
3/8" = 1'-0"



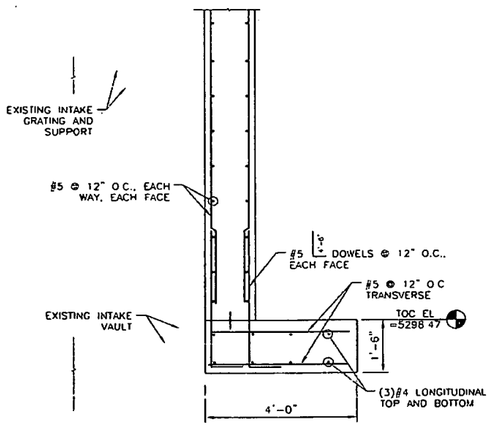
FOUNDATION SECTION C
3/8" = 1'-0"



FOUNDATION SECTION D
3/8" = 1'-0"



FOUNDATION SECTION E
1/2" = 1'-0"



FOUNDATION SECTION F
1/2" = 1'-0"

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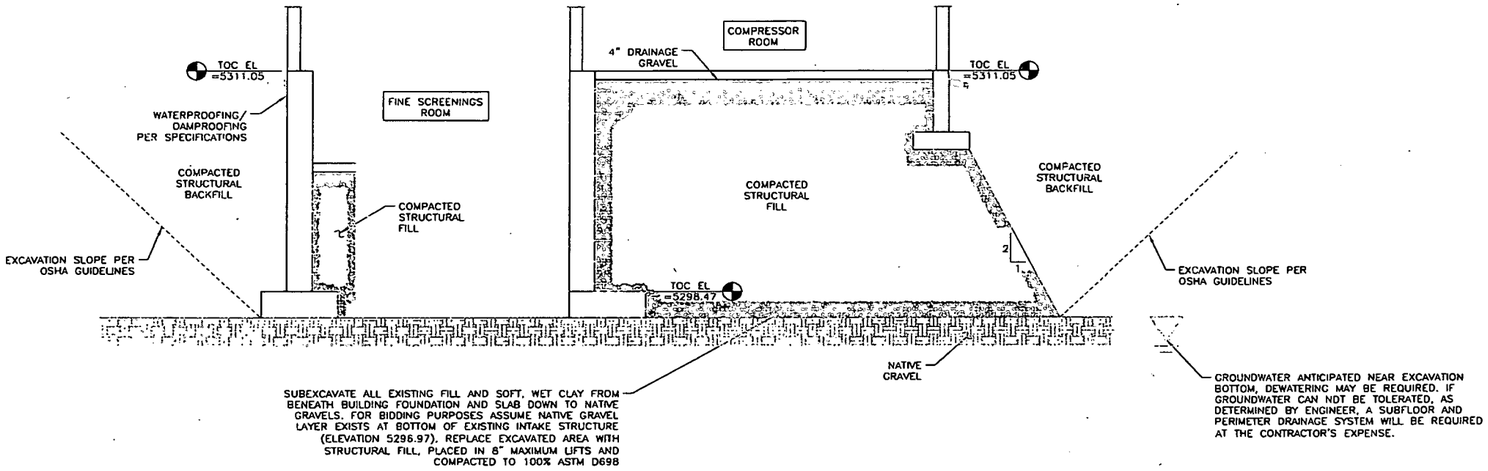
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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

FOUNDATION SECTIONS AND DETAILS

DATE
March, 2010

FIGURE



MORRISON MAIERLE, INC.

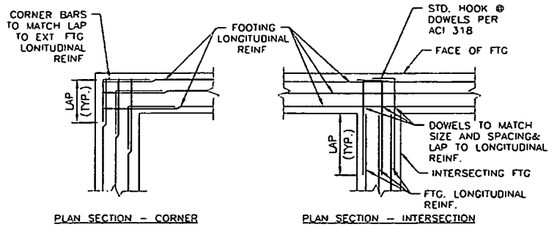
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CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

FOUNDATION SECTIONS AND DETAILS

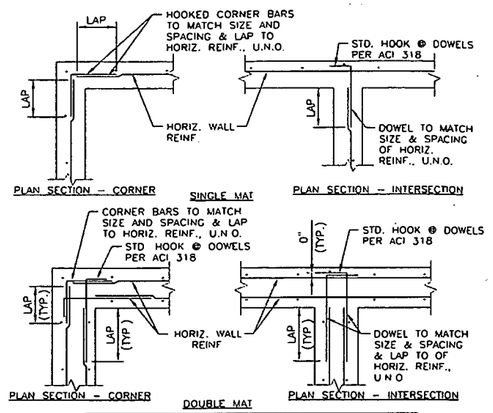
DATE: March, 2010

FIGURE:



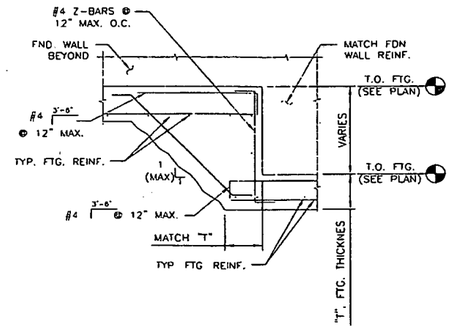
NOTES:
1 TRANSVERSE & DOWEL REINF. NOT SHOWN. PROVIDE PER FDN. DETAILS.
2. SEE GENERAL STRUCTURAL NOTES FOR LAP LENGTHS.

FTG. CORNER/INTS. REINF. DETAIL 1 0100S01
NTS

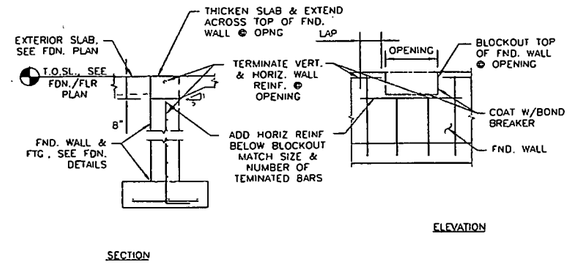


NOTES:
1. SEE GENERAL STRUCTURAL NOTES FOR LAP LENGTHS.

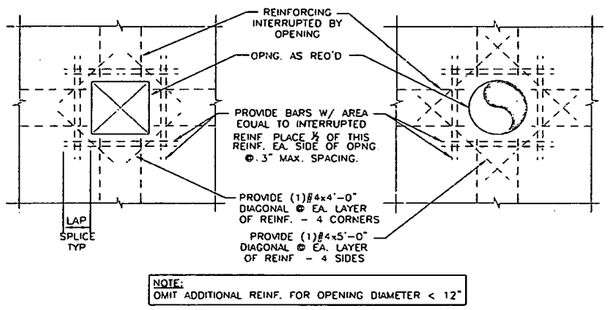
FDN. WALL CORNER/INTS. REINF. 2 0100S01
NTS



FDN. FOOTING STEP DETAIL 3 0100S01
NTS

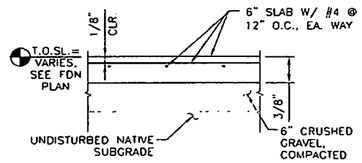


SLAB/FDN. WALL @ WALL OPNG. 4 0100S01
NTS

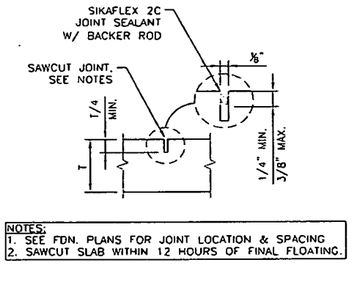


NOTE:
OMIT ADDITIONAL REINF. FOR OPENING DIAMETER < 12"

OPENING REINFORCING DETAIL 5 0100S01
NTS

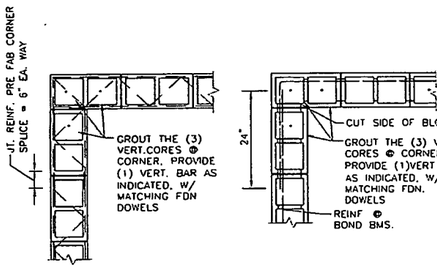


6" SLAB-ON-GRADE DETAIL 6 0100S01
NTS

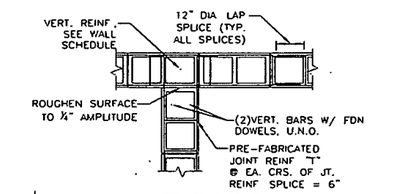


NOTES:
1. SEE FDN. PLANS FOR JOINT LOCATION & SPACING
2. SAWCUT SLAB WITHIN 12 HOURS OF FINAL FLOATING.

SLAB CONTRACTION JOINT (SCJ) 7 0100S01
NTS

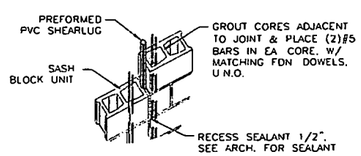


MASONRY WALL CORNERS 8 0100S01
NTS



NOTE:
AT PARTITION WALL TO STRUCTURAL MASONRY WALL INTERSECTIONS, PROVIDE JOINTS PER SHT. ARCH

MASONRY WALL INTERSECTIONS 8 0100S01
NTS



NOTES:
1 COORDINATE FINAL LOCATION OF M.C.J.'S WITH MASON'S BLOCK LAYOUT AND REINFORCING STEEL SHOP DRAWINGS

2 BOND BEAM REINFORCING BARS & JOINT REINF ARE TO STOP AT THE CONTROL JOINTS EXCEPT FOR THE BOND BEAMS WITH CONTINUOUS REINFORCING LOCATED AT THE ROOF AND TOP OF WALLS AS NOTED ON THE DWGS.

3 BOND BEAMS WITH CONTINUOUS REINFORCING SHALL HAVE DUMMY JOINTS PROVIDED IN LINE WITH THE CONTROL JOINTS

CMU WALL CONTROL JOINT (M.C.J.) 8 0100S01
NTS

MORRISON MAIERLE, INC.

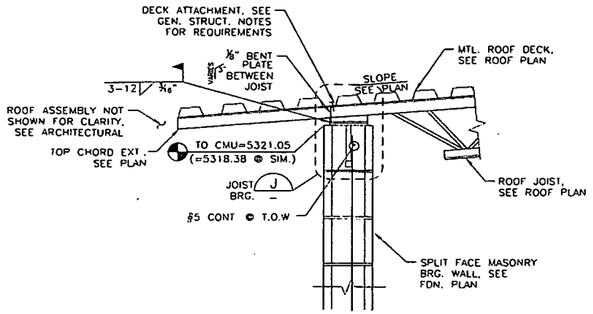
HDR
HDR Engineering, Inc.

CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

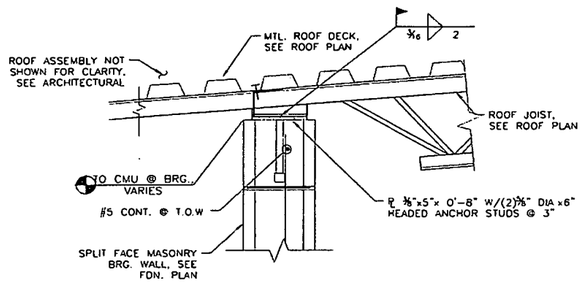
FOUNDATION SECTIONS AND DETAILS

DATE
March, 2010

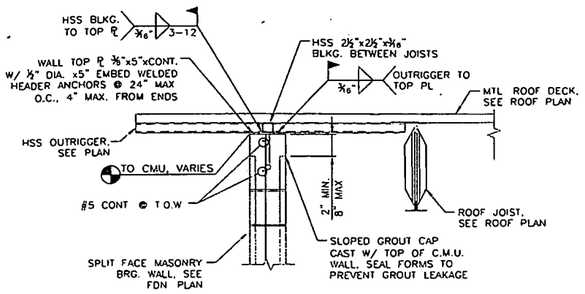
FIGURE



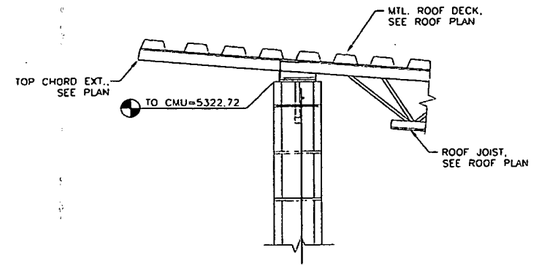
ROOF FRAMING SECTION H
1" = 1'-0"



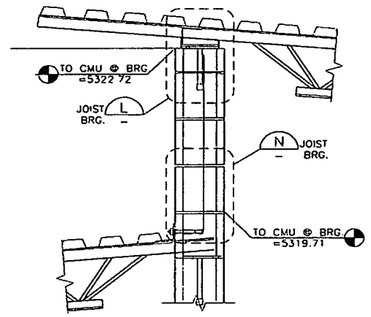
ROOF FRAMING SECTION J
1 1/2" = 1'-0"



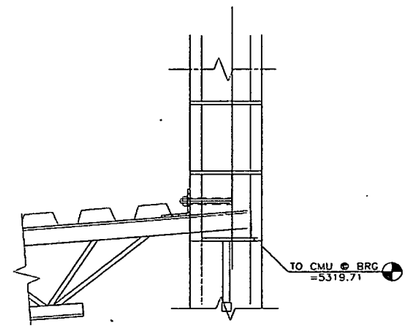
ROOF FRAMING SECTION K
3/4" = 1'-0"



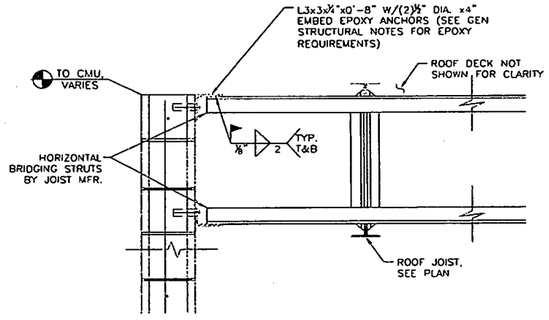
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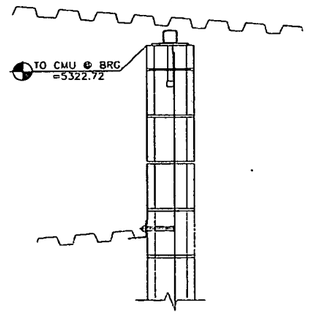
ROOF FRAMING SECTION M
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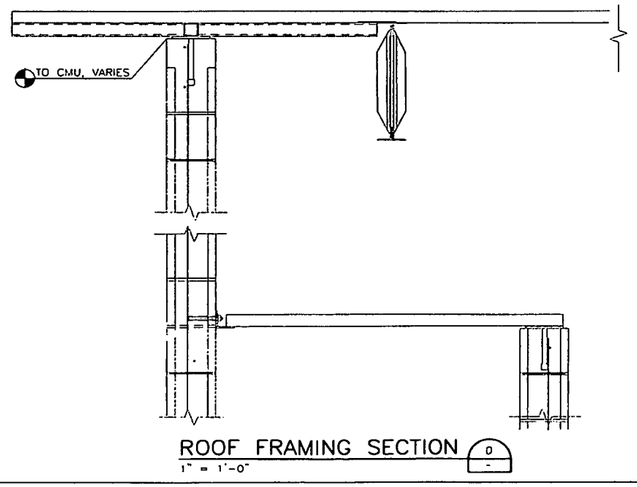
ROOF FRAMING SECTION N
1 1/2" = 1'-0"



ROOF FRAMING SECTION O
1" = 1'-0"



ROOF FRAMING SECTION P
1" = 1'-0"



ROOF FRAMING SECTION Q
1" = 1'-0"

MORRISON MAIERLE, INC.

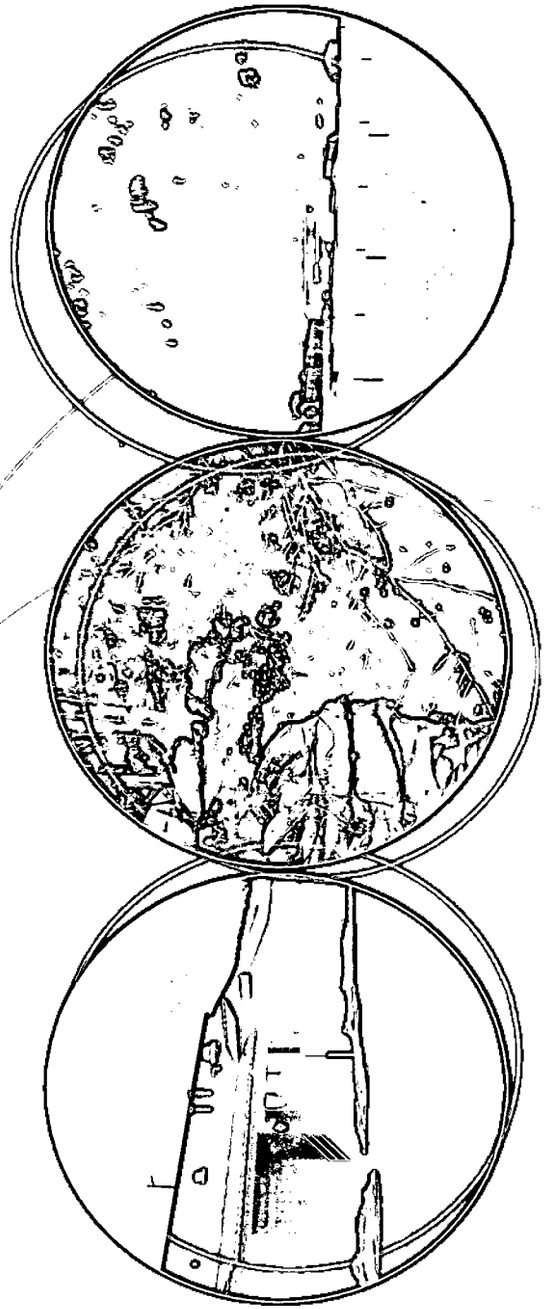
HDR Engineering, Inc

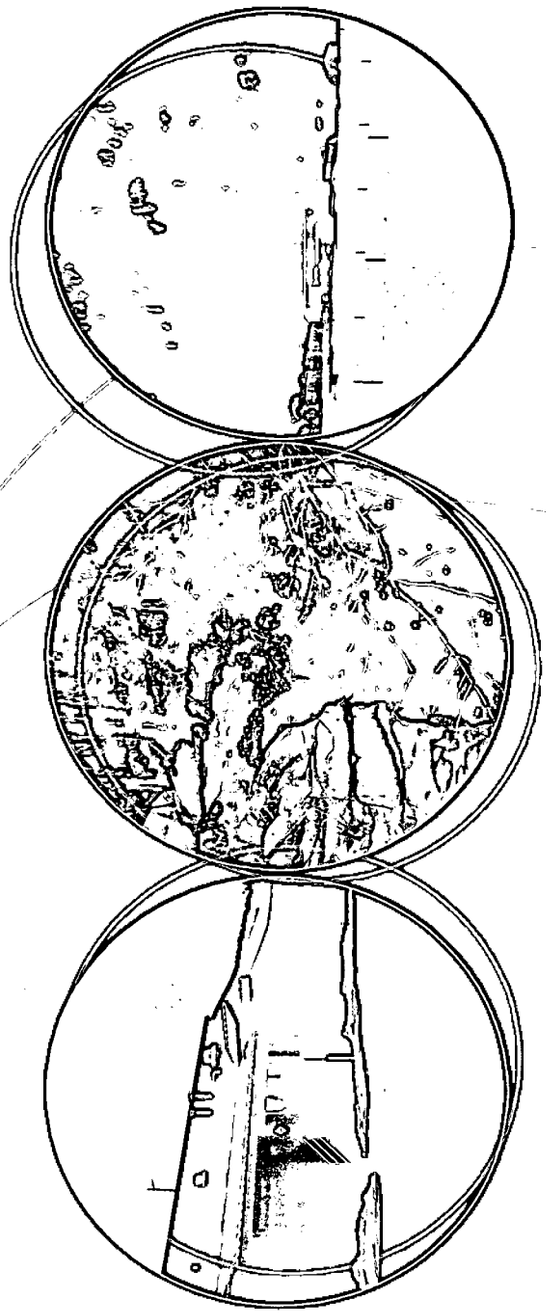
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

ROOF FRAMING DETAILS

DATE
March, 2010

FIGURE





City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 7. Grit Removal, Rapid Mix, Flocculation and Sedimentation

Prepared by: Jeff Ashley

Reviewed by: James Nickelson

Date: August 6, 2010

7.1. Introduction

Pretreatment processes are typically used in surface water treatment facilities to physically and/or chemically condition raw surface water prior to further treatment. For the new water treatment plant, pretreatment is especially important in order to protect the downstream membrane filtration system. This section discusses the pretreatment unit processes proposed for the new plant.

7.2. Regulatory Standards

The Montana Department of Environmental Quality (MDEQ) has specific design standards included in DEQ-1 Design Standards for Water Works. A review of these design standards was performed and they are incorporated in the pretreatment unit process design in this Section. Design standards applicable to individual unit processes are discussed in this section.

7.3. Description of Pretreatment Unit Processes

The pretreatment system proposed for the new water treatment plant includes the following unit processes:

- Grit removal,
- Rapid mix, and
- Flocculation/Sedimentation.

Each of these processes is discussed in detail below. Strainers are also included for pre-treatment but are located just prior to membrane filtration.

7.3.1. Grit Removal

The pilot testing identified sandy grit present in the raw water requiring removal in the pretreatment process. A gravity fed grit removal system is proposed for the plant, similar to systems used in wastewater treatment plants. Options for these types of systems include aerated grit chambers, vortex-type grit removal systems, and horizontal flow grit chambers. The horizontal flow type is not as effective compared to the other options under changing flow rates, and the aerated type requires additional energy consumption for a blower system. A vortex-type grit removal system is very effective with varying raw water flow rates, and requires little energy. For these reasons a vortex-type grit removal system is proposed for the new treatment plant.

A vortex grit chamber consists of a cylindrical tank in which the flow enters tangentially, creating a vortex flow pattern. With the assistance of a slowly rotating paddle wheel, grit settles by gravity into in a grit hopper at the bottom of the tank while effluent exits at the top of the tank. The grit that settles into the grit hopper is removed by a grit pump. Types of pumps used for grit pumping include submersible, air lift, self-priming and recessed impeller. It is proposed to utilize a self-priming grit pump for the new plant. The grit slurry will then be pumped into a grit cyclone/classifier.

Grit removal from the raw water will occur prior to any chemical additions to the water under normal operating conditions. The amount of grit removed by the process will vary throughout the time of year.

DEQ-1 Design Standards for Water Works does not specifically address grit removal since this primarily is a wastewater treatment process.

Table 7-1. Grit Removal System Design Parameters

Description	Size or Design Criteria	
	23.1 mgd	36 mgd Expansion
Type	Vortex-type grit chamber, self-priming grit pump, and cyclone/classifier	
Number	1 unit	1 additional unit
Design Flow Rate	23.1 mgd	Up to 36 mgd
Diameter of Chamber	16 to 18 feet, each unit	
Horsepower	1 hp - paddle wheel, 10 hp - grit pump, 1 hp - cyclone/classifier (each unit)	
Potential Equipment Supplier	Smith & Loveless, Pista	

Future facility expansion includes the addition of an additional vortex chamber. This addition would give the facility grit removal capacity of up to 46.2 mgd depending on the diameter of grit chamber selected.

7.3.2. Rapid Mix

Natural organic matter is often present in surface raw water, which can form disinfection byproducts when combined with chlorine during final disinfection. Certain other raw water contaminants such as iron and manganese can discolor the water when these contaminants are oxidized by chlorine. This may also lead to membrane fouling if not removed in the pretreatment process. It is common to include chemical addition and mixing, and subsequent flocculation and sedimentation in surface water treatment plants to enhance the removal of turbidity, natural organic matter, and specific contaminants such as iron and manganese. Pilot testing for the new water treatment plant showed that coagulant addition will reduce operating costs for membrane filtration due to reduced fouling of the membranes. Therefore, chemical addition, mixing of the chemicals, flocculation and sedimentation systems have been added to the pretreatment process. An oxidant feed system will also be accounted for in the design for future removal of iron and manganese if required.

For proper chemical addition to the raw water, mixing is needed to blend coagulants and other conditioning chemicals into the raw water stream. The mixing is accomplished by imparting energy to the flow stream either mechanically or hydraulically with head loss devices. The goal is to quickly and evenly disperse the chemical in the raw water.

The primary mixing regime used in pretreatment is rapid mixing. Rapid mixing provides high energy input and is used for mixing primary coagulants, such as alum or ferric, which have a very fast reaction time. The proposed ACH and PACL also require rapid mixing to fully disperse the chemical within the raw water. Pretreatment rapid mixing can be accomplished by a variety of devices, including:

- Hydraulic mixing, such as provided by a hydraulic jump, Parshall flume or a baffled chamber.
- Mixing chamber with large mechanical mixers to provide a velocity gradient of at least 750 feet per second per foot (fps/ft.)
- High intensity in-line static mixing elements, jet injection pump mixers, or small in-line mechanical mixers that provide a velocity gradient of approximately 1000 to 2000 fps/ft and a detention time of about one second or less.

The Montana Department of Environmental Quality (MDEQ) Circular DEQ1-Standards for Water Works contains several regulations pertaining to rapid mix design and sizing:

1. The rapid mix basin must have a detention time of no more than 30 seconds with a mixer capable of imparting a minimum velocity gradient (G) of at least 750 fps/ft.
2. Mixing device must be capable of providing adequate mixing for all treatment flow rates. Static mixers may be used where flow is relatively constant and high enough to maintain necessary turbulence for complete chemical reactions.
3. Rapid mix and flocculation basins must be as close together as possible.

For the new water treatment plant, it is proposed to utilize rapid mixing with three parallel chambers (tanks). Each tank will have a vertical shaft mixer a minimum velocity gradient (G) of 1000 fps/ft. One tank can be on-line to treat 7.7 mgd, with a detention time of 10 seconds. All three tanks can be on-line at 23.1 mgd, and retain detention time of 10 seconds

each. For lower flows, tanks can be taken off-line as needed to maintain detention times below 30 seconds. For the low flow condition of 5.0 mgd, one tank will provide a detention time of approximately 15 seconds. Mixing tanks with higher detention times where evaluated, but require larger mixers, and more horsepower, thus increasing capital and operational cost.

Possibilities for future expansion to a 36 mgd facility include the addition of two additional mixing tanks of the same mixer characteristics. This would provide additional rapid mix capacity of up to 38.5 mgd.

Table 7-2. Rapid Mix System Design Parameters

Description	Size or Design Criteria	
	23.1 mgd	**36 mgd Expansion**
Type	Mixing Chamber	
Number	3 Units	2 Additional Units
Design Flow Rate	1 unit at 7.7 mgd → 10 second detention time 2 units at 11.5 mgd each → 13 second detention time 3 units at 23.1 mgd each → 10 second detention time 1 unit at 5.0 mgd → 15 second detention time 5 units at 38.5 mgd → 10 second detention time	
Dimensions	5 x 5 x 4.5 feet deep	
Horsepower	10 hp, each mixer	
G Value (sec^{-1})	1,000	
Potential Equipment Supplier	Hayward Gordon	

In order to provide flexibility in operation, it is possible to include a common channel in between the rapid mix tanks and the flocculation basins. This would allow plant staff to take a rapid mix tank off-line, yet still maintain all of the flocculation basin trains on-line. This would require the use of slide gates or valves to isolate each rapid mix tank. This option will be explored in additional detail during the final design of the project.

7.3.3. Flocculation/Sedimentation

As discussed in a previous section, flocculation and sedimentation processes have been proposed as part of pretreatment design. The goal of the flocculation/sedimentation process is to reliably produce settled water which will reduce membrane fouling and increase membrane flux.

Once coagulant has been added and mixed in the rapid mix process, particles in the water begin to coagulate and collect into floc particles. A flocculator imparts gentle mixing to increase the efficiency of floc formation. These larger floc particles are more easily settled.

Immediately following flocculation, sedimentation is used to remove flocs large enough to settle in a reasonable time period. Sedimentation basins are either rectangular or circular basins designed maximize the settling efficiency of the particles. Low settling velocities and

even distribution across the flow path are key components to high efficiency settling. Additionally, the use of plate settlers increases the effective surface area, which increasing the settling efficiency of the sedimentation basin.

The Montana Department of Environmental Quality (MDEQ) Circular DEQ1-Standards and the Recommended Standards for Water Works regulations pertaining to the proposed flocculation and sedimentation design and sizing are summarized below:

- The flocculation basin must have a flow-through velocity between 0.5 to 1.5 feet per minute and provide a detention time for floc formation of at least 30 minutes.
- Flocculation agitators must be driven by variable speed drives with the peripheral speed of paddles ranging from 0.5 to 3.0 feet per second.
- Flocculation and sedimentation basins must be as close together as possible. The velocity of flocculated water through pipes or conduits to settling basins shall be not less than 0.5, nor greater than 1.5 feet per second. Allowances must be made to minimize turbulence at bends and changes in direction.
- Sedimentation must follow flocculation. The detention time for conventional sedimentation basins must be a minimum of 4 hours. Reduced sedimentation time may be approved when equivalent effective settling is demonstrated.
- The velocity through settling basins must not exceed 0.5 feet per minute. The basins must be designed to minimize short-circuiting. Fixed or adjustable baffles must be provided as necessary to achieve the maximum potential for clarification.
- The rate of flow over the outlet weirs may not exceed 20,000 gallons per day per foot of weir length. Where submerged orifices are used as an alternate for overflow weirs, they should be not lower than three feet below the flow line with flow rates equivalent to weir loadings.
- Mechanical sludge collection equipment must be provided.
- Tube or plate settlers will be considered; however, proposals for settler unit clarification must include pilot plant and/or full scale demonstration satisfactory to the reviewing authority prior to the preparation of final plans and specifications for approval. Overflow rates must be a maximum of 2 gallons per minute per square foot based on the portion of the basin covered by the settlers unless higher rates are successfully shown through pilot plant or full scale demonstration studies.

Mixing in the flocculation process is essential to increase particle collision and floc growth. Too much mixing, however, will shear the floc particles reducing their settling efficiency. Due to this balance, higher mixing velocities early in the process provides more mixing and collision of particles, while lower mixing velocities in downstream portions prevent floc shearing. A horizontal paddle type flocculator has been proposed for this application. The paddle type mixer consists of a shaft with arms protruding out to support paddle blades that span the tank transverse to the flow. As the central shaft slowly rotates, the blades gently mix the basin. Three paddles in-series allow for stages of flocculation with different velocities to achieve the velocity gradient previously mentioned. It is proposed to incorporate three parallel flocculation basins with three stages each, to meet the 23.1 mgd design condition.

Downstream of the flocculation basins, Dissolved Air Flotation (DAF) was evaluated as an alternative pretreatment process to follow the flocculation unit process. DAF is based on the principle that the naturally occurring and coagulated particles can be made to float with the help of dissolved air bubbles. The flocculation time used in DAF plants are typically less than those used by a conventional coagulation/sedimentation plant. Advantages of DAF include:

- Small tanks compared with those for sedimentation.
- Possibly lower coagulant and flocculent aid dosages can operate without polymer addition.
- Provide better removal of low density particles and algae.
- Less affected by changes in water temperature.

Based on the above advantages, it was determined that DAF should be considered as suitable pretreatment option for the membrane filters being used for the Bozeman WTP.

Additional telephone research was conducted to discuss DAF application for the Bozeman Hyalite and Sourdough water sources. The evaluation found that for water supplies with a heavier (denser) particle load and high amount of turbidity from lighter colloidal solids, DAF units experience difficulty in handling a rapid fluctuation in solids loading and tend to foam. Raw water data shows a heavier particle load in the raw water at Bozeman which does not lend itself to DAF. Additionally, conversations with plant operations staff indicate there has not been a problem with algae in the raw water.

The telephone survey of existing water treatment plants using DAF as pretreatment turned up some unfavorable installations and recommendations to use a different technology. For these reasons DAF will not be considered further for pretreatment at the Bozeman WTP.

High rate sedimentation using plate settlers is proposed for the Bozeman WTP. The preliminary design consists of rectangular sedimentation basins with plate settlers to maximize settling in a reduced footprint at low cost. Plate settlers consist of plates that are inserted into the effluent end of sedimentation basins, usually at an angle of about 55 degrees from horizontal. Incorporating settlers in a sedimentation basin significantly increases the settling surface area of the basin. Therefore, a smaller basin can provide adequate settling with a significantly reduced detention time. It is proposed to incorporate three parallel sedimentation basins to meet the 23.1 mgd design condition.

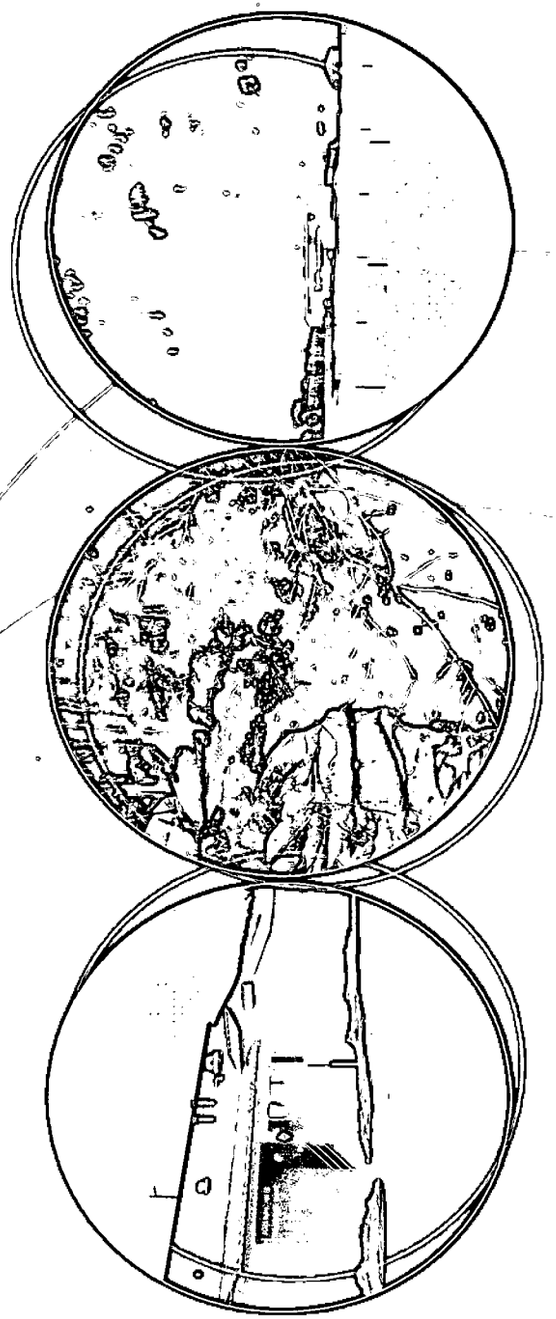
A Hoseless Cable-Vac™ as manufactured by Meurer Research, Inc. is proposed for removal of sludge as is settles off of the plate settlers and to the bottom of the basins. This sludge collection technology consists of a perforated header with a telescoping manifold. The settled solids are fed through orifices in the suction header and removed from the basin through the manifold as the assembly travels along the basin.

Table 7-3. Flocculation/Sedimentation System Design Parameters

Description	Size or Design Criteria	
Flocculation	**23.1 mgd**	**36 mgd Expansion**
Type	Horizontal Paddle Flocculator Basins	
Number	3 parallel basins of 3 stages each	2 additional parallel basins of 3 stages each

Description	Size or Design Criteria	
Design Flow Rate	7.7 mgd per basin ➔ Detention time: 34 minutes per basin ➔ Flow-through Velocity: 1.4 ft/min per basin	
Basin Dimensions	30 x 16 x 17 feet deep per basin	
# of motors per Basin	3	
Horsepower per Basin	6 hp (1 hp - stage 1, 2 hp - stage 2, 3 hp - stage 3)	
G Values (sec^{-1})	80, 50, 30 (stages 1, 2, 3)	
Potential Equipment Supplier	Meurer Research, Inc.	
Sedimentation		
Type	Basins with Plate Settlers	
Number	3 basins	2 additional basins
Design Flow Rate	23.1 mgd through 3 basins 10.32 gpm per plate	15.4 mgd through 2 additional basins 10.32 gpm per plate
Basin Dimensions	40 x 28 x 16 feet deep per basin	
Plate Dimensions	4.5 x 10 feet each	
Plates per Basin	527	
Potential Equipment Supplier	Meurer Research, Inc.	

The future 36 mgd facility expansion would require the two additional parallel basins of the same paddle flocculator and sedimentation basin characteristics. This would provide additional capacity of up to 38.5 mgd.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 8. Chemical Feed Systems, Disinfection and Corrosion Control

Prepared by: Nathan Kutil and Tricia Quigley

Reviewed by: Gary Fuller

Date: November 4, 2010

8.1. Introduction

This section covers treatment chemical feed and storage requirements, as well as chemical sequencing constraints. Intended chemicals for use within the plant are listed in Table 8-1 and injection points are shown on Figure 4-1.

Table 8-1. Chemicals Required at New WTP.

Chemical	Liquid Concentration	Injection Point	Use
Aluminum Chlorohydrate (ACH) or Polyaluminum Chloride (PACl)	23.5% as Al_2O_3	At Rapid Mix	Remove organics and suspended solids
Ferric Chloride (FeCl3)	TBD	At Rapid Mix (should aluminum based coagulants not suffice)	Remove organics and suspended solids
Sodium Hydroxide (SH)	35%	At acid CIP neutralization, after disinfection, alternative at plant influent	pH Control, acid CIP Neutralization
Sodium Permanganate (SPM)	20%	Provisionary injection point at plant influent	Metals precipitation and taste and order
Sodium Hypochlorite (SHC)	12.5%	At membrane CIP system, at membrane effluent, alternative at	Pre-oxidant, Disinfection

		plant influent, after clearwell and prior to the strainers	
Citric Acid (CA)	50%	At membrane acid CIP system	CIP
Sodium Bisulfite (SB)	38-40%	At the CIP neutralization tank and the backwash equalization tank	Hypochlorite CIP neutralization
Hydrofluorosilicic acid (HFA)	23-30%	At membrane effluent	Fluoridation
Polymer	TBD	At residuals handling	Aid in dewatering

The following sections provide a discussion of the chemicals used by treatment processes:

- Pretreatment
- Metals precipitation
- Membrane cleaning
- Disinfection
- Fluoridation
- Corrosion control

8.2. Pretreatment

Pretreatment at the new WTP is planned to include grit removal, rapid mix, flocculation, sedimentation, and straining. Although not anticipated to be required year round, coagulant (chemical addition) is planned during some portions of the year to assist with the following water treatment objectives:

- Reduce large sediment load present in Sourdough and Hyalite Creeks during snowmelt runoff conditions.
- Remove color for compliance with the secondary maximum contaminant level requirement.
- Reduce the formation of disinfection byproducts.
- Reduce premature fouling of the membranes and associated energy consumption.

Either an iron or aluminum-based coagulant can be used to meet these objectives. However, an aluminum-based coagulant has been selected for initial use at the new WTP due to a preference by the membrane filter manufacturers, reduced chemical safety and handling hazards for operators, and less impact on water pH that reduces downstream chemical use.

The aluminum-based coagulant planned for use is polyaluminum chloride (PACl). PACl can be used interchangeably with a similar coagulant called aluminum chlorohydrate (ACH). Additionally, the chemical feed systems and treatment processes at the WTP will be designed to accommodate iron-based coagulants (ferric chloride or FeCl3) in the future, should the WTP operators determine use of ferric chloride is preferred. A switch to ferric chloride could be determined to be beneficial based on a change in raw water quality, new discharge or monitoring requirements or other factors, including treatment performance.

8.2.1. Polyaluminum Chloride

PACl will be used as the primary coagulant to remove color and suspended solids as Al_2O_3 at a 23.5 percent concentration. The chemical will be delivered in bulk form by a delivery truck, with an expected delivery capacity of 4,000 – 5,000 gallons. The delivered chemical will be unloaded by the trucks delivery pump into an on-site storage tank. A chemical transfer pump will transfer PACl to the day tank and a chemical metering pump will feed the PACl directly from the day tank to the injection point. The Rapid Mix will mix the coagulant with the raw water. A standby chemical metering pump and feed dosage monitoring will be provided. The design data for the PACl chemical feed system is summarized in Table 8-2.

Table 8-2: PACl Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Remove Organics and Suspended Solids
Average Dosage, mg/L	5
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	10,500
Actual Tank Volume, gallons	Two 6,500 gallon bulk storage tanks One 400 gallon day tank Total tank volume = 13,400 gallons
Containment	Structural Concrete with 100% Capacity Plus 6-inch Freeboard
Number of Pumps, duty + standby = total	1+1=2
Required Pump Capacity Range, gph	1.9 to 14.2
Feed Control	Flow Pacing

Tanks, pumps, and ancillary equipment for the coagulant system are not included in the scope of supply for the previously procured membrane system. All equipment associated with the receiving, storage, and use of this chemical will be provided as part of the Construction Contract.

8.2.2. Sodium Hydroxide

Sodium Hydroxide or caustic soda (NaOH) will be added at the CIP neutralization tank for to neutralize the acid chemical cleaning solution, and after disinfection for pH adjustment prior to the distribution system for corrosion control. An alternative dosing point will be located at the Rapid Mix Tank for pH control prior to coagulation (the alternate dosing locations may not be used at all times). To avoid chemical scaling that occurs at the injection points with Sodium Hydroxide, provisions will be made for a feed point that will be located above the water surface. Denser than water, sodium hydroxide will tend to sink to the bottom of the tank, so provisions for proper mixing by mechanical or hydraulic means shall be implemented at each feed point.

Caustic soda will be received at the facility in truckloads of bulk 35 percent liquid solution, similar to the PACl system. The bulk storage tanks will be located in a designated room. Chemical metering pumps will be used to feed NaOH directly from the day tank to the feed points. The design data for the raw caustic soda chemical feed system is summarized in Table 8-3.

Table 8-3: Raw Caustic Soda Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	pH Control, CIP Neutralization
Average Dosage, mg/L	9.0
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	13,000
Actual Tank Volume, gallons	Two 6,500 gallon bulk storage tanks One 400 gallon day tank Total tank volume = 13,400 gallons
Containment	Structural Concrete with 100% Capacity Plus 6-inch Freeboard
Number of Pumps, duty + standby = total	2+1=3
Required Pump Capacity Range, gph	2.6 to 200
Feed Control	A Set Volume with pH Residual Feedback for CIP Neutralization and Flow Pacing with pH Residual Feedback for pH Control

As part of the membrane procurement contract, certain equipment associated with the caustic soda system for use on the membrane equipment has already been purchased. Examples of pre-purchased equipment include; CIP tanks, transfer pumps, flow meters, valving, and various associated equipment. Detailed review of the procurement shop drawings will be required during design to avoid duplication of equipment purchase and to clearly define equipment which is supplied and installed by the Construction Contractor vs. that which is supplied by the Membrane Seller and installed by the Construction Contractor.

8.2.3. Metals Precipitation

Metal (such as iron and manganese) compounds are typical constituents of lake bottom sediments. When oxic conditions exist (dissolved oxygen is present in the water column), metals are confined to the anoxic sediment, where they are biologically acted on by reducing bacteria. Soluble metals are released in the sediment through microbiological action. If the water column above the sediment becomes anoxic, as it does after lake stratification, the biological processes which operate in the sediment also become active in the water column, creating a zone in which soluble metals are present

From the perspective of treatment of metals in drinking water, the objective generally is to foster the formation of the solid phase so that the metals can be removed in a particulate form. The first step in ensuring effective removal of metals in a treatment plant is to chemically oxidize them. The purpose of oxidation is to convert the dissolved metals to colloidal or particulate forms that can be coagulated and removed by settling. This is particularly critical for membrane treatment plants, as dissolved iron/manganese can foul the membranes. Various oxidants can be used to change the oxidation state of metals including sodium permanganate and sodium hypochlorite.

Sodium permanganate is highly effective at oxidizing metals over a wide range of pH and water temperature. The reactions are rapid (laboratory reaction rates are 1 to 2 minutes) and complete at pH above 5.0. The efficiency of permanganate oxidation goes down significantly at water temperatures below 10°C. Permanganate doses must be controlled so that no excess passes through the treatment plant to the distribution system as it can cause pink/red water.

Sodium hypochlorite is also capable of removing metals such as iron and manganese through the oxidation process. Sodium hypochlorite is a less efficient oxidizer, with reactions taking up to 30 minute. A highly effective disinfection agent, when introduced into the raw water stream, sodium hypochlorite has the potential to increase disinfection by-products (DBPs) by reacting with organics. Used primarily as a disinfectant, sodium hypochlorite is often readily available in many water plants. Although it is not a highly efficient oxidizer, provisions will be made to provide a plant influent feed as an alternative to sodium permanganate, because of its availability in this facility. This provision is used as an alternative that will only be used to protect the membranes in case of sodium permanganate feed system failure or if disinfection of raw water is required at the front of the plant.

Although historic records do not show metals in the surface water being a problem at the Bozeman Hyalite/Sourdough WTP, metals are subject to accumulation and periodic release from lakes and reservoirs. In anticipation of the possibility of metals release from the Sourdough and Hyalite Reservoirs, a sodium permanganate chemical feed system will be incorporated into the design of the pretreatment system at the new WTP.

Provisions will include an intermediate bulk container (IBC) and containment, chemical feed pumps, and a chemical injection quill positioned ahead of the rapid mix chamber. In general, the sodium permanganate system will be completely installed for provisionary use and only the stored chemical itself will be absent from the completed treatment plant.

Sodium Permanganate

The layout will accommodate an IBC system for small volume storage (chemical will not be stored on-site until needed). The design includes one in-service chemical metering pump

and one standby chemical metering pump. A feed dosage monitoring system will also be provided. Chemical metering pumps will be used to feed permanganate directly from the an IBC to the injection points. The design data for the sodium permanganate chemical feed system is summarized in Table 8-4.

Table 8-4: Sodium Permanganate Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Oxidizing Agent
Average Dosage, mg/L	0.6
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	100
Actual IBC Volume, gallons	300
Containment	Structural Concrete with 100% Capacity Plus 6-inch Freeboard
Number of Pumps, duty + standby = total	1+1=2
Required Pump Capacity Range, gph	0.3 to 2.4
Feed Control	Flow Pacing

The metals precipitation system will in its entirety by supplied and installed by the Construction Contractor.

8.3. Membrane Chemical Cleaning

In addition to normal, frequent backwashing with air scour, the membrane filters will be cleaned monthly using what is called "clean in place" (CIP) procedure. The CIP system will utilize a base rinse that comprises a mixture of both sodium hydroxide and sodium hypochlorite in sequence with an acid rinse to clean both inorganic and organic foulants from the membrane surface. CIP cleaning solutions can be re-used so a means to recover the used CIP solutions is needed. Membrane racks are anticipated to be cleaned in sequence in order to optimize the re-use of the heated cleaning solution. Approximately 80 percent of the cleaning solution used on the first train can typically be reused to clean the second train. Once all of the racks are cleaned, the spent cleaning solution will be discharged to the neutralization tank for pH neutralization and/or dechlorination.

Enhanced flux maintenance (EFM) is a less aggressive form of a CIP (shorter duration & less chemical). In general these will not be required since the membrane surface area purchased requires a CIP more frequently than an EFM. However, provisions are included in the programming provided by the membrane supplier that allows the operators to initiate an EFM manually from the HMI. EFMs utilize the CIP equipment, so no additional equipment is required.

8.3.1. Base Rinse

The purpose of the Base Rinse is to distribute a mixture of sodium hydroxide and sodium hypochlorite during the CIP sequences to provide a more aggressive cleaning of the membranes by dissolving any inorganic contaminants that may have adhered to the membranes during normal operation that could not be removed any other way.

Sodium hypochlorite storage as part of the Construction Contractor installed system will be used as the chemical source for the base rinse system. This amount is included in the storage requirements and feed rate considerations. Base rinse CIP systems will be provided by Membrane Seller as part of the membrane procurement contract. Careful review of the membrane shop drawings will be required to avoid duplication of equipment and to clearly define the responsibilities of the Construction Contractor.

8.3.2. Acid Rinse

The purpose of the membrane Acid Rinse is to distribute citric acid during the CIP sequences to provide a more aggressive cleaning of the membranes by dissolving all organic contaminants that may have adhered to the membranes during normal operation that could not be removed any other way.

Acid rinse CIP systems will be provided by Membrane Seller as part of the membrane procurement contract. Careful review of the membrane shop drawings will be required to avoid duplication of equipment and to clearly define the responsibilities of the Construction Contractor.

Softening

To prevent possible scaling of the tanks, pumps and piping, a water softener will be used to soften the water used to dilute delivered hypochlorite at the discharge of the metering pumps. A commercial grade softener with adequate capacity to keep regeneration cycles over 24-hours will be sized and located within the Chemical Room. In addition, the regeneration wastes from the softener (primarily a strong brine solution) will have to be conveyed to the Residuals Handling processes.

A water softener provided by the Membrane Seller will be available to provide sodium hypochlorite dilution water. The water softener provided by the membrane provider shall be sized with a minimum continuous flow rate of 25 gpm, which will adequately fill the sodium hypochlorite tanks. This softener will be utilized when it is in standby mode within the membrane process, so it does not disrupt the membrane process and cause unwanted plant shutdowns.

The dilution of hypochlorite with softened water will help minimize scaling, but will not eliminate it. To reduce the likelihood of scaling even further, the hypochlorite feed shall be located above the water surface of the tanks that it is feed into. To provide adequate dispersion of the diluted hypochlorite mixing provisions must be made at each feed point.

8.3.3. Neutralization

The purpose of the Neutralization system is to provide a means to neutralize the CIP and chemical washing solutions before final disposal. Neutralization will be accomplished in a designated tank with a mixer provided by the Membrane Seller as part of the procurement

contract. The neutralization system will utilize citric acid for high pH waste adjustment and sodium hydroxide for low pH waste adjustment, to obtain an acceptable range of 6 < pH < 9. Additionally, free chlorine concentrations must be less than 0.01 mg/L and adjustment will be made using sodium bisulfate.

In addition to the pH probe provided by the Membrane Supplier, a second differential pH/ORP probe and an additional chlorine probe will be supplied as a redundant measure that will alarm SCADA if waste leaving the neutralization tank does not meet the criteria required to send it to the vactor truck loading station. The elements in these instruments are scheduled to be replaced fairly frequently, so a second transmitter is a simple addition to the design that can reduce the risk of releasing un-neutralized waste.

8.3.4. Disinfection

Disinfection is accomplished both by filtering out harmful microorganisms and also by adding disinfectant chemicals. The design will provide primary disinfection with chlorine downstream of the membrane filtration system. Primary disinfection by chlorine will achieve a minimum of 0.5-log inactivation of Giardia. This level of disinfection will result in viral inactivation greatly exceeding 4-log. The City will provide secondary disinfection by maintaining a free chlorine residual in its distribution system consistent with the Total Coliform Rule (TCR) for distribution system protection.

Log removal credits have been awarded by MDEQ for this treatment plant based on results from the pilot study and LT2ESWTR. Table 8-5 includes, more information regarding the filtration credits that were requested, the anticipated disinfection treatment that shall be provided, along with the overall treatment that will be provided by the new Water Treatment Plant.

The overall system filtration and disinfection requirements are summarized in Table 8-5. Microbial treatment requirements as mandated by state and federal regulations require removal or inactivation of 4-log viruses, 3-log Giardia, and 2-log Cryptosporidium (based on the Surface Water Treatment Rule and the Interim Enhanced SWTR).

Table 8-5. Treatment Provisions and SDWA Requirements

Treatment Process	*Cryptosporidium*	*Giardia*	Viruses
Membrane Filtration	>3-log removal credit	>3-log removal credit	0-log removal credit
Chlorine Disinfection	Not operated to inactivate Cryptosporidium	Operated to achieve minimum 0.5-log inactivation	Operated to achieve greater than 4-log inactivation[1]
Overall Treatment to be Provided	>3-log	>3.5-log	>4-log
Minimum Treatment Required by SDWA[2]	2-log	3-log	4-log

Notes:

[1]Operating the chlorine disinfection system to achieve a minimum of 0.5-log *Giardia* inactivation will result in a viral inactivation greatly exceeding the 4-log requirement.
[2]SDWA: Safe Drinking Water Act

Sodium hypochlorite solution will be used as a disinfectant injected before the contact conduit to provide adequate disinfection credit. Water with lower pH requires less contact time for disinfection. In order to take advantage of this, the pH adjustment for corrosion control will be completed after the disinfection requirement has been met. Additional feed points shall be located prior to discharge of finished water to the distribution system to trim chlorine residual and at the head of the plant to provide oxidation. For infrequent use an additional alternative dosing point shall also be installed as a provision to clean the strainers prior to the membranes if they become clogged with algae or organic debris.

The chemical will be delivered in bulk form by a delivery truck, with an expected delivery capacity of 4,000 – 5,000 gallons. The delivery chemical will be unloaded by the trucks delivery pump into an on-site storage tank. One bulk storage tank will be provided to accept delivery of commercial bleach at 12.5 percent solution, but two additional tanks will be used to dilute (using softened water) to a 6.0 percent by weight solution for long term storage. Additionally, a 4-foot diameter day tank will be used in the sodium hypochlorite room. Transfer pumps will be provided to deliver bulk tank chemical to the day tanks, with chemical metering pumps used to feed sodium hypochlorite directly from the day tank to the injection point. The 12.5 percent solution will be diluted to 6 percent with softened water and injected to the various feed points in accordance with the design data for CIP neutralization, disinfection, and distribution uses summarized in Tables 8-6, 8-7 and 8-8 respectively. The total chemical storage requirement includes the dosage requirements for membrane cleaning, disinfection, and distribution only and is summarized in Table 8-10. Additional storage volume can be provided by the transfer tank at times when a greater volume of chemical is required for pre oxidation or strainer and membrane cleaning. With two tanks available for bulk chemical storage of the diluted solution, one tank can be taken offline when the demand for sodium hypochlorite is low.

Table 8-6: Distribution NaOCl Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Distribution Residual Trim
Average Dosage, mg/L	0.5
Number of Pumps, duty + standby = total	1+0=1
Required Pump Capacity Range, gph	0.9 to 6.4
Feed Control	Flow Pacing with Analyzer Feed Back Loop

Table 8-7: Membrane NaOCl Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Monthly Membrane CIP
Average Dosage, mg/L	0.5
Number of Pumps, duty + standby = total	1+0=1

Required Pump Capacity Range, gph	Provided by the Membrane Seller
Feed Control	Provided by the Membrane Seller

Table 8-7: Disinfection NaOCl Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Disinfection
Average Dosage, mg/L	2.2
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	25,600
Number of Pumps, duty + standby = total	1+1=2
Required Pump Capacity Range, gph	3.8 to 28.0
Feed Control	Flow Pacing with Analyzer Feed Back Loop

Table 8-8: Total NaOCl Chemical Feed Storage System Design Criteria

Unit Processes	Values
Total Average Dosage, mg/L	4.3
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	25,600
Actual Tank Volume, gallons	One 6,500 gallon transfer tank Two 12,000 gallon bulk storage tanks One 900 gallon day tank Total storage volume =34,400 gallons
Containment	Structural Concrete with 100% Capacity Plus 6-inch Freeboard

Metering pumps will provide a feed rate proportional to the plant flow rate or chlorine residual as controlled through the plant SCADA system or as controlled by the membrane system.

Sodium hypochlorite degrades over time, which can cause the formation of chlorates. If the chlorates are allowed to degrade further perchlorates can be produced. Most sodium hypochlorite products have a small amount of perchlorates present from the manufacturing process, which increases as the chemical ages. Perchlorates have been proven to cause thyroid issues in consumers, so the formation should be limited. With proper storage and handled, the degradation of sodium hypochlorite can be minimized along with the formation

of perchlorates. Diluting the chemical to a 6 percent concentration with softened water will not only aid in the prevention of scaling, but also decreases the rate at which the chemical degrades. Another key to proper storage that will be implemented in this design includes HVAC provisions to insure that the chemical is stored in a cool environment away from UV light. Proper bulk tank sizing that limits the chemical storage duration to approximately 45 days is an additional element that aids in the prevention of perchlorate formation. Proper sizing of the bulk tanks will require more frequent chemical delivers, but it can also prevent improper dosing that occurs when there is a lower concentration of available chlorine in solution due to chemical degradation.

The sodium hypochlorite handling facilities will be configured to allow for the ability to transfer stored chemical to a truck or trailer mounted tank for transport to the Lyman plant or during emergency situations, to the Bozeman WRF. This will allow the City to take advantage of bulk chemical pricing.

8.3.5. Dechlorination

Dechlorination is required to maintain free chlorine concentrations less than 0.01 mg/L prior to discharge of any liquid streams for the plant. Adjustment will be made using sodium bisulfate which will be stored in an IBC located in the chemical room.

Sodium bisulfate systems will be supplied as part of the Construction Contract. The chemical feed system will be similar to the sodium permanganate system, feeding chemical directly from the IBC system using chemical metering pumps.

8.4. Fluoridation

Liquid hydrofluorosilicic acid (H_2SiF_6) will be added to the filtered water in the pipe prior to entering the contact conduit. The recommended level of fluoride in potable water is 1 mg/L and is added to reduce tooth decay. Liquid hydrofluorosilicic acid (23 to 30 percent solution) will be delivered in bulk truckload to an isolated chemical tank two or three times per year (a 4,000 to 5,000 gallon truckload of H_2SiF_6 will last approximately 4 to 6 months). The storage of fluoride must be isolated in order to avoid contamination by hazardous fluoride vapors. This containment can be provided by isolating the fluoride tank inside a dedicated storage area.

The fluoride chemical feed configuration consists of a 6,500 gallon storage tank, a 75 gallon day tank with a scale to monitor daily usage and mitigate overdosing, a load cell, one duty and one standby dosing pump, one duty and one standby transfer pump, and a vapor neutralization tank. Fluoride will be pumped with transfer pumps to a day tank. Metering pumps will deliver fluoride to the injection point.

Fluoride vapors are corrosive and considered hazardous, so they must be neutralized. Fluoride vapors are collected under vacuum from the bulk tank, day tank, and calibration column and blown into a vapor neutralization tank. In the vapor neutralization tank, the fluoride vapors will bubble through the water creating a diluted solution that is at a more desirable concentration. Under normal operating conditions only a small amount of vapor will be released for neutralization. When the tank is being filled the quantity increases due to the air displacement that occurs. The amount of neutralized chemical required to be disposed of is directly related to the amount and frequency of chemical deliveries. At the

suggested dosing rate, Fluoride will be delivered approximately 3 times a year, which equates to the production of only a few gallons of neutralized vapor solution that must be properly disposed of. The contents in the neutralization tank will need to be picked up by a waste company equipped to handle hydrogen fluoride spills. If greater neutralization is required for disposal an alkaline chemical can be added in small quantities.. The design data for the fluoride chemical feed system is summarized in Table 8-9.

Table 8-9: Fluoride Chemical Feed System Design Criteria

Unit Processes	Values
Treatment Applications	Fluoridation
Average Dosage, mg/L	0.7
Required Storage at Average Dosage at 22 MGD for 30 days, gallons	1,500
Actual Tank Volume, gallons	One 6,500 gallon bulk storage tank One 75 gallon day tank Total storage volume = 6,575 gallons
Containment	Structural Concrete with 100% Capacity Plus 6-inch Freeboard
Number of Pumps, duty + standby = total	1+1=2
Required Pump Capacity Range, gph	0.18 to 1.94
Feed Control	Flow Pacing

The hydrofluorosilicic acid handling facilities will be configured to allow for the ability to transfer stored chemical to a truck or trailer mounted tank for transport to the Lyman plant. This will allow the City to take advantage of bulk chemical pricing.

All fluoride systems will be supplied as part of the Construction Contract.

8.5. Corrosion Control

Corrosion control measures for water distribution system lead and copper control will be put in place in the new treatment facility to meet regulatory requirements. Corrosion control will include injection of sodium hydroxide to increase the effluent water pH reduces the amount of lead and copper able to dissolve in the finished water. With the varying alkalinity in the raw water, and the periodic use of coagulant chemicals in the pretreatment process, the required dose of sodium hydroxide for pH adjustment will vary. In accordance with the distribution system RTW model a minimum effluent pH of 8.0 will be maintained during normal operating conditions. The chemical feed system needed for corrosion control was described previously.

8.6. Polymer

Polymer is used to condition residuals prior to dewatering in the solids handling operations at the plant. Selection of the polymer used will need to be coordinated with the Membrane Seller to assure there are no negative impacts on the membranes due to recycled decant streams off the solids handling processes. As a liquid, the useful storage life of polymer can be measured in days; however, in solid form it can be stored up to two years. During normal plant operations the anticipated daily dose rate of polymer is low. With very little polymer required per month, it will be provided in dry form to reduce the amount of chemical that is wasted. Additional discussion of the polymer systems/requirements are described in Section 9 – Backwash, Residuals, and Waste Streams.

Polymer systems will be supplied as part of the Construction Contract. Details regarding the dry polymer system must be taken under careful review in the final design to ensure that it meets all of the proper requirements.

8.6.1. Chemical Receiving

The bulk chemical delivery receiving facility will include lockable quick connections for each chemical system for the trucks to connect to a truck offload panel with digital tank level indication, high level alarm indicators, and containment for any offload spills as shown in figure 8-1. Chemical delivery truck will utilize their trailer mounted pumps for transfer of chemicals to the bulk storage tanks, with return vent piping provided where necessary to contain vapors.

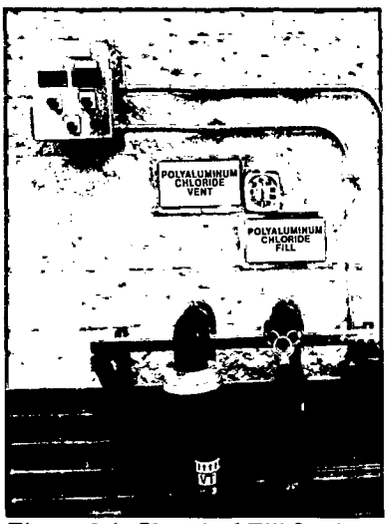


Figure 8-1: Chemical Fill Station [1]

All piping and valving mounted on the outside of the building will be positioned so that accidental spills can not occur at eye level as a safety measure. Each chemical connection will have clear signage indicating the chemical type and storage tank volume. To prevent chemical mixing due to spills or overflows, acids and base will be separated into two filling stations with independent spill containment. Additionally, chemical delivery lines will be sloped away from the delivery connection point to limit the volume of chemical that may spill near the receiving facility.

8.6.2. Bulk Storage

The sizing of storage tanks will be based on a 30 day average use at the future 22 MGD plant capacity for the primary dosing point. Storage is not provided for alternate chemical feed points as use of alternate chemical feed points is not anticipated to significantly change total daily chemical usage. Also alternate chemical feed points or dosing locations may not be used at all times.

As some fiberglass chemicals tank age they can pose a risk of leaching Bisphenol A or BPA, which can be introduced into the permeate water from chemical dosing. This risk can be minimized if the fiberglass chemical tanks are manufactured with vinyl ester, or chlorinated polyester resins. These resins are compatible with all of the chemicals proposed in this

section at ambient temperatures. Vinyl ester is compatible with both caustic Soda and the chemicals that will be used to clean the membranes up to 150 degrees F, which is higher than the maximum design temperature of the system (100 degrees F).

The life expectancy of indoor fiberglass tanks can range between 10 years to the life of the plant depending on what type of chemical is being stored. Sodium hypochlorite tanks typically have the shortest lifespan, however, when operated and maintained properly they have been known to operate without failures for over 25 years. Proper operation and maintenance is as simple as never exceeding the tanks design criteria and conducting a visual inspection on a yearly base, so small problems can be fixed before they turn into larger issues. If life expectancy is still a concern, the tank manufacturers that have been specified can provide up to a 5 year warranty if requested.

To prevent overdosing of any of the chemicals, each storage tank will be equipped with level sensors that shall be equipped with both a digital signal for alarming and an analog signal for trending. For ease of operation, the instantaneous and daily average dose can be calculated and recorded from the analog signal that will be sent back to SCADA.

8.6.3. Day Tanks

Day tanks will be provided for polyaluminum chloride, sodium hydroxide, sodium hypochlorite disinfection system and the hydrofluorosilicic acid fluoridation system. Each day tank will be equipped with a scale to monitor daily usage and mitigate overdosing. Transfer pumps will be used to deliver bulk tank stored chemicals to the day tanks.

8.6.4. Chemical Containment

Storage tanks and feed pumps will be situated inside the new WTP building on the south side of the building in individualized concrete containment cells. A minimum of 6 inches of containment freeboard will be provided. A typical chemical truck delivery is 4,000 to 5,000 gallons. The minimum bulk storage tank size will be 6,000 gallons to accommodate a typical delivery while still maintaining a working volume of chemical. Double containment pipe will be utilized for all piping outside of containment.

All chemical feed systems which require an IBC for monthly storage will be located in the chemical feed room. To prevent unwanted mixing of chemicals all of the IBCs will have their own individual vents and chemical containment. As a further precaution, feed systems that contain chemicals that have undesirable reactions when mixed will not be located next to each other. Many existing membrane plants have chemical CIP rooms designed in this fashion. If adequate safety precautions are provided, these chemicals can be stored in the same room with out incidence.

8.6.5. Chemical Valves

All valves over ½ inch that are connected to chemical tanks and hazardous chemical piping shall be metal (stainless steel) diaphragm valves for safety were compatible with chemical. All other chemical system valves shall be PVC diaphragm valves.

8.7. Chemical Feed Systems

The chemical feed pumps will have a feeding capacity that is broad enough to accommodate the variations in plant flow rate (1.9 MGD to 22 MGD) and appropriate chemical dosages.

8.7.1. Metering Pumps

Per the request of the Bozeman WTP staff a peristaltic hose pump will be used for the chemical feed pumps. Peristaltic hose pumps are pulsation pumps; the apparatus includes a calibration column, pulsation dampener (to smooth out the discharge flow), high pressure cut-off switch, pressure relief valve and a meter. The feed pumps should be able to cover both maximum and minimum chemical feed requirements; in cases where the specified range cannot be met, more than one duty pump should be installed. A reasonable turn-down ratio for selection of peristaltic pumps is 100:1. Standby chemical feed units will be provided for all systems; for systems requiring more than one feed pump a single common standby will be provided.

During the 2009 summer pilot study various makes of peristaltic pumps were tested on-site by Bozeman staff. Results of the testing led Bozeman staff to have a preference for pumps made by Blue-White Industries called Flex-Pro A3 metering pumps. With the wide range of dosing requirements between chemicals there may be some variation in pump requirements, but when possible the same model and tube size will be used throughout the system. For redundancy, each chemical system will include a duty pump and a standby pump. To reduce downtime due to equipment malfunction repair kits and spare pumps will also be provided for each pump model specified.

8.7.2. Transfer Pumps

The Membrane Seller is providing a few chemical transfer pumps with their membrane equipment. Any additional chemical transfer pumps which are required should be specified to match those provided by Membrane Seller. See the Membrane Seller equipment submittal for specifics.

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 9. Backwash, Residuals, and Waste Streams

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9.1. Introduction

The new water treatment plant will generate a number of solid and liquid waste streams. Based on the conceptual design, the following waste streams need to be addressed:

- Raw Water Overflow
- Grit Removal Waste
- Plate Sedimentation Waste
- Strainer Backwash
- Membrane Unit Backwash
- Membrane Clean in Place Waste
- Process Overflow
- Process Drains
- Process Area Floor Drains
- Domestic Sewage

A number of options for addressing the waste streams have been evaluated and recommendations have been developed.

9.2. Waste Streams

The characterization of the various waste streams has been developed based on the conceptual design and data collected during the pilot testing. The following sections provide information on the various waste streams.

9.2.1. Raw Water Overflow

The existing plant configuration requires constant overflow of raw water to Sourdough Creek from the head tower of the plant. The plant has three pipe lines that supply water to

the head tower. These include the Sourdough supply, the Hyalite pressure supply and the Hyalite gravity supply. The three pipe lines will be connected at the southwest corner of the existing water treatment plant building and combined into a single pipe to feed the new head tower located in the southeast corner of the new water treatment plant building.

The raw water overflow will be directed to a pipeline that ties into the existing Sourdough Creek discharge line. Water quality is not anticipated to be a concern as the overflow water either comes directly from Sourdough Creek or from Hyalite Creek. The overflow water will be directed back to the creek without going through any plant process components and water will be discharged into this pipeline downstream of dechlorination and sampling locations.

The flow rate from the head tower will vary dependent on what pipe lines are in operation and changes in water production rates or raw water supply rates. The capacity of the Sourdough Creek discharge line will be designed to slightly exceed raw water demand for the 22 MGD plant design. This is the maximum capacity of the existing line based on head constraints. For the 36 MGD expansion a new discharge pipe to the creek will be required. A pipe line will be stubbed out of the head tower to allow for the future extension of the second discharge line in the future.

9.2.2. Grit Removal Waste

The grit removal basin will have a periodic waste stream that will be pumped to a cyclone/classifier. The sand and grit will be sent to a dumpster to be disposed of either on or off site. The liquid stream will be pumped to the raw water supply line that feeds into the rapid mix tanks.

The amount of grit generated is highly dependent on the stream conditions and the status of the raw water intakes. During normal flow conditions and normal operation of the screen intakes the quantity of grit will be relatively low. There is no plant specific data available to provide specific design criteria. Based on literature sources it is anticipated that at maximum day water production during high stream flow conditions the grit volume will be less than 10 cubic feet per day. This quantity of grit can be easily handled with a dumpster sized container. During emergency operation of the intakes and pipelines without screening and with high stream flows and high water demands it is probable that girt volumes will exceed this estimate, during these events the dumpster may need to be supplemented by a small loader.

Due to the configuration of the future grit basin, a separate cyclone/classifier will be required at the second pretreatment building.

9.2.3. Plate Sedimentation Waste

The plate sedimentation system will provide an intermittent flow of waste. The quantity and quality of this waste stream will vary based on the raw water quality. It is anticipated that sludge will be removed intermittently as needed to remove the settled solids. This waste stream will be sent to the gravity thickener.

During the pilot test program, settled waste from the pilot plate settler unit was collected and sent to WesTech Engineering, Inc. for bench scale testing. The settled waste sample had a TSS concentration of 430 mg/l which was much lower than typically is removed from a

plate settler system. It is likely that the duration and flow rate of the pilot test, which was focused on the membrane units, was not sufficient to produce an adequate volume of sludge from the plate settler unit. It is anticipated that the plate settler will produce a waste stream containing a TSS concentration of approximately 3,000 mg/l.

Based on preliminary information from the plate settler manufacturer it is anticipated that the plate settler effluent will be 2 NTU. Based on historical data, during peak water production periods the highest turbidity anticipated is 32 NTU. This will result in a projected peak day solids production of 6,100 pounds per day for the 22 MGD plant. The solids will be removed from the plate settler basins by a vacuum system which will operate intermittently at approximately 200 gallons per minute at a solids concentration of approximately 1%. During the peak day at historically high turbidity events the vacuum system is estimated to operate approximately 25% of the time producing an average of 51 gallons per minute. On an annual average basis the plate settlers are estimated to produce 312 pounds of solids per day and a volume of 3,800 gallons per day for the 22 MGD plant. The expansion to a 36 MGD plant will generate additional solids and will require additional plate settler basins. The future basins will be equipped with separate waste handling systems.

The following table summarizes the estimated loading from the plate settler for the 22 MGD and 36 MGD expansion:

Table 9-1. Plate Settler Solids Production Parameters

Description	22 MGD	36 MGD Expansion
Peak day solids production (lbs/day)	6,100	3,900
Average day solids production (lbs/day)	312	200
Solids Concentration	1%	1%
Discharge rate (gpm)	200	200

9.2.4. Strainer Backwash and Membrane Unit Backwash

The strainers are located downstream of the sedimentation basin to provide protection to the membrane filtration units. The waste stream from the strainers will be directed to the DAFT. The volume and quality of this waste stream will vary based on plant demands and source water quality. The membrane unit backwash is also variable and will be directed to the DAFT. The waste stream generated from these two processes is estimated based on a 95% recovery rate. Therefore during peak production the units will produce a combined 1.1 MGD of waste. On peak days during historically high turbidity events it is estimated that the waste stream will contain approximately 470 pounds of solids per day for the 22 MGD plant. On an annual average basis the combined waste stream is estimated to be 330 gallons per minute and produce 97 pounds of solids per day for the 22 MGD plant.

The following table summarizes the estimated loading from the backwash operation for the 22 MGD and 36 MGD expansion:

Table 9-2. Backwash Parameters

Description	22 MGD	36 MGD Expansion
Peak day solids production (lbs/day)	470	300
Average day solids production (lbs/day)	97	62
Peak flow rate (gpm)	764	490
Average flow rate (gpm)	330	210

9.2.5. Membrane Clean In Place Waste

The membrane units require periodic chemical cleaning. The waste stream from this source varies depending on the type of cleaning. The waste will be treated by neutralizing the acid or base chemical used for cleaning. This waste stream is relatively small and the best disposal method is to discharge to a holding tank for trucking to the wastewater treatment plant. Water quality testing of the clean in place waste stream from the pilot plant is listed in the following table:

Parameter	Result	Units
Total Suspended Solids	118	mg/L
pH	7.6	su
Apparent Color	900	cu
True Color	300	cu
Dissolved Aluminum	122	mg/L
Total Aluminum	151	mg/L
BOD (Biochemical Oxygen Demand)	2,800	mg/L
COD (Chemical Oxygen Demand)	5,200	mg/L

The quality of the waste stream is low and as such, treatment and disposal at the wastewater treatment plant is appropriate.

The quantity of clean in place waste will be determined by the MF Supplier during the final design phase of the project.

9.2.6. Process Overflow

Provisions for handling the overflow of water from the various process components are important for emergency events. The preliminary design allows for these waste streams to gravity flow to a lagoon. The lagoon is intended to hold the overflow until it can be reprocessed or wasted.

9.2.7. Process Drains

Many of the process units will include drains for maintenance purposes. It is anticipated that process drains will be connected to the gravity thickener; however, during the final design phase these discharge points will be further evaluated. Due to the infrequent use and low volume of waste from these drains, it is not critical as to which solid stream unit they are directed to as long as they are connected to some form of treatment or containment.

9.2.8. Process Area Floor Drains

The floor drains in the process area will contain waste from wash downs, leaks, condensation and various maintenance activities. This waste stream will contain low quantities of cleaning agents, general contaminants associated with equipment and floor cleaning and has the potential to contain process chemicals in the rare case of a chemical spill. It is recommended that this waste stream be combined with the domestic sewage and be processed with a conventional septic system. Provisions will be included in the design to allow for the isolation of the flow stream when a chemical spill occurs. The discharge for the process area floor drains will require a discharge permit. Discussions with DEQ indicate this discharge can be included in the overall plant discharge permit; however, it will be considered a separate outfall for monitoring and fee determination purposes.

9.2.9. Domestic Sewage

The domestic sewage generated from the water treatment plant's fixtures and from the operator's house will be treated and disposed of on site. It is anticipated that septic tanks will be provided for the two facilities and that effluent from the two systems will be combined and sent to a conventional drainfield for final treatment and disposal.

The estimated flow from the operator's house is 300 gpd based on a three bedroom dwelling. Domestic waste from the water treatment plant is estimated to be 130 gallons based on 10 employees and 13 gpd/employee. In addition, miscellaneous flow from the laboratory and ancillary facilities is estimated to be 300 gpd. The total sewage flow is therefore estimated to be 730 gpd.

Sewage generation will not be impacted by the plant expansion to 36 MGD.

9.3. Gravity Thickener Waste Stream

Flow from the plate settler unit basin will be directed to the gravity thickener. The effluent from the gravity thickener will be directed to the inlet of the plant downstream of the head tower or to Sourdough Creek. The solid stream from the gravity thickener will be sent to the drying beds. Polymer will be added upstream of the gravity thickener to assist with the thickening process.

During the pilot testing process, a sample of plate settler underflow was sent to WesTech Engineering, Inc. for a bench scale thickening test. The bench scale testing resulted in the following recommendations:

- A polymer is needed to assist in effectively flocculating the solids for settling. The polymer used in the test was Ciba Magnafloc dosed at 2 mg/l.

- The thickened underflow is expected to be pumpable.
- The supernatant was very clean and resulted in a turbidity of 0.57 NTU, un-measurable TSS concentration and un-measurable aluminum concentration.

For the 22 MGD plant and the estimated peak day solids production of 6,100 pounds per day and a loading rate of 12 pounds per square foot per day the required size of the gravity thickener is 25 feet in diameter. Similarly on a peak day production of 74,000 gallons per day and a loading rate of 150 gallons per square foot per day the required size of the gravity thickener is 25 feet in diameter.

Peak flow rates to the gravity thickener will be in the range of 200 gallons per minute. The supernatant from the thickener will overflow to the Sourdough Creek discharge. The piping configuration from the thickener will allow for the supernatant to be sent to the head of the plant. The solids will be drained on a periodic basis to a pump station to be sent to the drying beds.

For the 36 MGD expansion a second gravity thickener will be required. Based on the potential location for the additional pretreatment facility a gravity thickener dedicated to this pretreatment train is likely. For the additional 14 MGD capacity a 20 foot diameter gravity thickener will be required.

The following table summarizes the gravity thickener parameters.

Table 9-3. Gravity Thickener Sizing

Description	22 MGD	36 MGD Expansion
Gravity Thickener Size (diameter in feet)	25	20
Peak solids loading rate (lbs/day)	6,100	3,900
Peak flow rate (gpm)	200	200
Mechanism Horsepower	1	1
Potential Supplier	Westech Engineering	

9.4. Dissolved Air Flotation Thickener Waste Stream

Flow from the strainer backwash and the membrane unit backwash will be directed to the dissolved air flotation thickener (DAFT). The effluent from the DAFT will be directed to the inlet of the plant downstream of the head tower or to Sourdough Creek. The solid stream from the DAFT will be sent to the drying beds. Polymer will be added upstream of the DAFT thickener to assist with the thickening process.

During the pilot testing process, a sample of the backwash water was collected and sent to WesTech Engineering, Inc. for bench scale dissolved air flotation clarification. The bench scale study resulted in the following recommendations:

- A polymer is needed to float the solid particles. Ciba Magnafloc 155 at a dosage of 0.3 mg/l worked well to flocculate the solid particles.

- A recycle rate of 25% is desirable.
- A design rise rate of 4.6 gpm/ft^2 is recommended.
- A saturation pressure of 65 psi is recommended.
- A float solids content of 1.8% was developed during the test.
- The subnatant had a turbidity of 2.4 NTU, a TSS of 4.3 mg/l and un-measurable aluminum levels.
- The solids removal rate was 98.3%.

For the 22 MGD plant, based on a loading rate of 4.6 gallon per minute per square foot and a peak loading of 1,100,000 gallons per day a total surface area of 166 square feet is required. It is recommended that two units be utilized each with a surface area of approximately 84 square feet. This will allow for more efficient operation during non-peak flow times. The 36 MGD plant will require the ability to process an additional 700,000 gallons per day which requires a process unit with a surface area of 106 square feet.

Table 9-3. Dissolved Air Flotation Thickener Sizing

Description	22 MGD	36 MGD Expansion
DAFT size (square feet required)	166	106
Peak flow rate (gpm)	764	486
Number of units	2	1
Dimension of unit (feet)	7 w x 16 l x 10 h (each)	7 w x 16 l x 10 h
Blower Horsepower	20 each	20
Rake Horsepower	0.5 each	0.5
Potential equipment supplier	World Water Works	

9.5. Drying Bed Waste Stream

The solids stream from the gravity thickener and the DAFT will be directed to the drying beds to settle out solids for final processing of the solid waste stream. Polymer can be added to the influent to assist in the settling process if desired. The drying beds will be equipped with overflow capabilities and drains. Normal operation of the drying bed system will include filling an individual bed to capacity and then begin filling the subsequent bed. Once a bed is full, the under drain system will be opened to assist in the dewatering of the sludge. The overflow and under drain discharge will be directed to the lagoon lift station to be pumped to the DAFT for treatment. Once the sludge has dried to a point where it can be removed from the bed with a loader it can be stockpiled and trucked to the landfill. The design capacity of the beds will allow for storage of the annual estimated solids stream production plus a buffer of ten percent. If the solids loading from the raw water source is higher than expected or the thickening process in the DAFT or the gravity thickener results

in a lower solids content than anticipated the drying beds may need to be flooded more than once which will result in a thicker solids mat.

The combined DAFT and gravity thickener waste stream is expected to produce an average solids content of three percent. For the 22 MGD plant it is estimated that the annual solids production will be approximately 149,000 pounds and the annual volume at three percent will be approximately 590,000 gallons. The proposed drying bed configuration consists of ten beds each with an operating depth of 27 inches, a width of 30 feet and a length of 130 feet. The expansion to a 36 MGD plant will require approximately 60 percent more bed area or 6 additional beds.

The following table provides information on the proposed drying beds.

Table 9-4. Drying Bed Sizing

Description	22 MGD	36 MGD Expansion
Solids production (pounds)	149,000	95,000
Solids volume based on 3% (gallons)	590,000	375,000
Number of beds	10	6
Proposed Bed Size (feet)	30 w x 130 l x 2.5 d (each)	30 w x 130 l x 2.5 d (each)

9.6. Lagoon

A lagoon is recommended for addressing unusual conditions, plant overflows, maintenance activities and operational flexibility. During these events, flow will be directed to the lagoon and depending on the quality of the water it will be wasted through the solids treatment processes or sent to the head of the plant for re-processing. Proposed sizing of the lagoon is to allow for one hour of wasting during peak flow demands. The lagoon for the 22 MGD plant would require approximately 900,000 gallons in volume. The expansion to the 36 MGD plant would require an additional 600,000 gallons. It is proposed to construct one 1,500,000 gallon lagoon with the initial project which will allow for additional flexibility in operation of the plant and avoid the construction of a second lagoon with the expansion project.

9.7. Discharge Permit Considerations

The current discharge permit to Sourdough Creek (Bozeman Creek) allows discharge of filter backwash water after treatment. Treatment consists of settling basins and de-chlorination. Permit limits, effective June 1, 2010, consist of the following:

Parameter	Average Monthly (mg/l)	Maximum Daily (mg/l)
TSS	30	45
TRC	0.016	0.021
TDA	1.0	1.5

TSS = Total Suspended Solids

TRC = Total Residual Chlorine

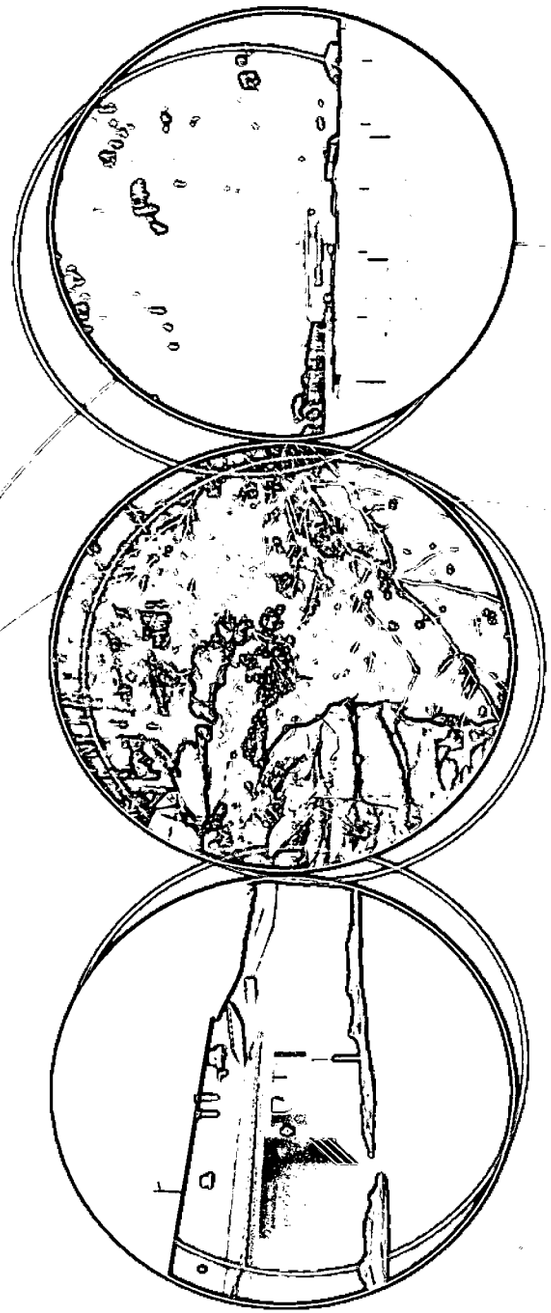
TDA = Total Dissolved Aluminum

pH of the effluent is limited to between 6.0 and 9.0.

Monitoring is required prior to the discharge entering Sourdough Creek. A 300 foot long mixing zone is allowed for total residual chlorine and total dissolved aluminum.

The Technology-Based Effluent Limits in the permit include TSS. While not included in the permit as a limit, non-degradation limits are included in the Statement of Basis for TSS. Daily Maximum limit was calculated to be 215 lb/day based on a monthly average 323 lb/day based on a daily maximum.

The Water Quality- Based Effluent Limits in the permit include TRC and TDA. The 7Q10 value used in determining the water quality- based limits was determined to be 4.3 cfs based on a limited number of data points. The limits for TRC were reduced during the last permit cycle. The limits for TDA were maintained at the previous permit levels; however, it is likely that the limit would be reduced if the plant utilizes an aluminum based coagulant. The Statement of Basis for the permit includes calculations that would place the TDA limits at 0.215 mg/l on a monthly average basis and 0.279 on a maximum daily basis. For planning purposes it should be noted that the 7Q10 is based on a limited amount of data and could change if additional data is collected. A TMDL has not been completed for Sourdough Creek which also has implications relative to future permit requirements.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 10. Architectural/Structural Approach

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Date: August 31, 2010

10.1. Introduction

This section summarizes the project architectural design standards and outlines the architectural approach for the new facility structures. This approach was developed to provide consistency in design of new facilities and visually mitigate structures adjacent to adjacent properties. Items included within this section are architectural design elements, site layout, colors, materials and textures, interior finishes, access, landscaping, energy conservation and maintenance.

10.2. Definitions

Architectural element – architectural design feature or component.

Complementary color – compatible or harmonious colors.

Interior finish –building interior surfaces consisting of walls, ceilings, floors, doors, trim and built-in furnishings.

Massing – building form or shape.

10.3. Architectural Codes and Standards

10.3.1. Architectural

The following codes should be adhered to in the architectural design of this project.

- 2009 International Building Code (IBC).
- 2006 International Mechanical Code (IMC).
- 2006 Uniform Plumbing Code (UPC).
- National Fire Protection Association (NFPA).
    - Uniform Fire Code (UFC), 2006.

  - Life Safety Code, 2006.
- American Society for Testing and Materials (ASTM).
- American National Standards Institute (ANSI).
- Occupational Health and Safety Administration (OSHA).
- National Association of Architectural Metal Manufactures (NAAMM).
- Sheet Metal and Air Conditional Contractors National Association (SMACNA).
- Architectural Sheet Metal Manual, Architectural Sheet Metal Specifications.
- Steel Structures Painting Council (SSPC).
- 2003 International Energy Conservation Code (IECC).
- 2005 National Electric Code (NEC).
- Underwriters Laboratories, Inc. (UL).
- American With Disabilities Act (ADA).

10.4. Architectural Guidelines and Procedures

10.4.1. Visual Image Policies and Guidelines

Architectural Elements

The architectural design should strive for visual continuity throughout the facility. The structure may be expressed individually in form or mass, with continuity achieved through use of color, texture, material and detail. The following design criteria should apply to the new structure:

- Architectural design elements should employ detailing and massing strategies that minimize the building's visual impact to the surrounding area and that are consistent with the surrounding site contours and grading.
- Architectural elements should be simple, yet clearly articulated, to help minimize the building's visual impact on its surroundings.
- Architectural massing should be consistent with the overall facility and of the surrounding setting.
- Process structures should respond to the expression of their internal functions.
- Building and wall surfaces should use distinctive horizontal relief elements to respond to the site context and adjacent structures.
- Building character shall be in conformance with rural character of area and take on a "barn-like" unassuming look.
- Egress shall account for winter time icing conditions and shall take advantage of warm (south facing) solar orientation.

Colors

All building exterior colors should be integral with the material used and provide a continuous design element throughout the facilities. The following policies will result in architectural continuity through the use of color. Painted or tinted concrete will not be used.

Colors should be natural tones - grays, tans, ochres and similar hues that are consistent with the rural "barn-like" character desired and the surrounding natural environment.

Accent colors may be complementary, but should be used to a lesser degree.

Bright colors and light tones can be used to emphasize or highlight building forms, while darker hues tend to minimize building features.

Materials and Textures

Material and textures will play a major role in design. Textures, like colors, will tend to mitigate visual impacts with smooth surfaces highlighting building features and rough textures toning these features down. Materials such as metals, glass, glass block and unit masonry present opportunities for harmonious contrast within the overall design.

The following are guidelines for materials use:

- Wood-like materials should be used as the general material for architectural features. Natural concrete can be used as a secondary material.
- Corrosive resistant metals should be considered for use in architectural details (frames, railing, fixtures and other components), and should be consistent throughout the facility.

Facility Architectural Concepts - Water Treatment Plant (WTP)

The existing Bozeman WTP consists of several buildings and structures that will be replaced by the new water treatment facility. The City has requested that the new facility have a barn-like look that will match the nearby agricultural and livestock structures. The form of the new facility will also reflect the dynamic landscape and mountains of this southern edge of the Gallatin Valley. Preliminary elevation views are presented in Appendix 10.1 located at the end of this Section. These figures were drawn based on previous preliminary building layout so the final details such as roof lines, and doorway and window sizes and locations may change to accommodate the final layout and structural requirements.

The building entrance to the administration area and access areas to the process areas will be oriented toward the south in order to take full advantage of the sun's orientation. This approach will provide plenty of natural daylight and solar heat gain during the cold winter months as well as help to keep sidewalks and driveways clear of snow as much as possible.

The administration area will also be designed to take advantage of sweeping views to the north toward the valley and the Bridger Mountains. The process area will be located in the center of the building to allow for as much flexibility as possible for phasing of preliminary treatment systems and to maintain safe and convenient access to chemical loadout facilities. All major process areas will have high clerestory windows to illuminate the interior process spaces providing a positive work environment for facility operators.

The steeply sloped roof pitches will be standing seam metal roofing and the exterior siding is shown to be a variegated metal siding to blend in with the landscape. A concrete wainscot will protect the exterior walls from snow buildup during the winter. Canopies at the window areas will provide solar control throughout the year and the canopies at the process areas will provide weather protection as well as keeping the facility doors clear of snow and ice. All exterior doors, windows and louvers will be prefinished or painted to match the other exterior materials.

Open basins and process areas are made of cast-in-place concrete with aluminum railings with painted equipment and mechanical components to match the other building features. Where basins share exterior walls (northeast corner) the concrete on the exterior walls could be finished or plated with siding matching the remainder of the structure. Further evaluations for finishing concrete basin exterior walls will be completed during detailed design based on owner preference and cost.

Facility Architectural Concepts - Sourdough Intake Structure

The existing sourdough intake consists of a concrete spillway structure with earth containment berms on either side, a surface intake trash rack and vault, a fine screening vault with a curved metal (Coanda) screen housed in a temporary building, and a flow measurement flume. The intake site is located south from the existing water treatment plant on Sourdough Canyon Road about 1.1 miles in an area designated as non-motorized public use.

A new intake building is proposed to permanently house the existing surface intake's fine screening vault, and to provide a secure area for the infiltration gallery's diesel air compressor and for miscellaneous intake equipment, controls and accessories. The proposed intake building will have two separate rooms, with separate access and different floor elevations that will include a fine screening room and air compressor room.

The City has indicated that because the building is located near Forest Service property in a high access recreation corridor, architectural features should match typical Forest Service facilities so as not to attract public attention (blend into its surroundings). Also, since there is limited access to the site, the facility should require little to no regular maintenance.

Preliminary elevation views are presented in Appendix 10.2 at the end of this Section. The building will have a Forest Service maintenance facility look that includes decorative concrete walls and masonry colored with earth tones to blend in with the landscape and a steep architectural metal roof. The steeply sloped roof pitch will be standing seam metal. A concrete wainscot will protect the exterior walls from snow buildup during the winter. Glass block windows at roof height will provide solar control throughout the year and required equipment ventilation will be achieved using similarly shaped louvers that match the windows shape and form. All exterior doors, windows and louvers will be prefinished or painted to match the other exterior materials.

10.4.2. Site Layout and Massing

Pavement areas around the site should be screened whenever possible from offsite views.

Freestanding structures, tanks or equipment that cannot be enclosed should be arranged in an orderly fashion to give an uncluttered appearance and should adhere to the building guidelines.

The new plant structures are to be designed to blend with the rural character of the area. Massing, form and color should be used to minimize the visual impacts of the plant structures. Landscaping shall be minimized, with the use of low or zero maintenance native materials

10.4.3. Barrier Free Access

New administration areas will be accessible per Americans with Disabilities Act Accessibility (ADA) Guidelines, although the new process facilities are not required to be accessible.

10.4.4. Interior Finishes

Interior areas will be provided with natural lighting whenever possible. This natural lighting will be provided by skylights, windows and glass unit masonry wherever possible. Interior finishes will be dictated by use and determined by the City of Bozeman during the detailed design.

10.4.5. Coordination

Close and continuous coordination and cooperation among the various discipline designers are essential to the project progress and completion. Architects provide input to the various disciplines working on the structures to be built for this project. The checklist that follows is intended to stimulate the coordination process.

Site-Architectural

- Participate in developing the site layout, traffic circulation and orientation for all structures on the site.
- Review grading and drainage and their impact on the structures.
- Coordinate landscaping with site grading and drainage.
- Coordinate Building Code requirements.

Landscaping-Architectural

- Develop landscape placement and coordinate planting materials to prevent blocking of building openings (doors, windows) and damage to the plantings from ventilation (heat, fumes). Use low or zero maintenance native materials and concepts.
- Coordinate the location of building hose bibs with yard piping layout.

Structural-Architectural

- Verify concrete finishes for slabs.
- Coordinate location and type of construction, expansion, and control joints.

- Establish railing material, type and detail; determine railing conformance with codes and safety regulations.
- Establish rise, run, material and detail of all stairs; verify conformance with codes and safety regulations.
- Coordinate size, detail and location of all floor, wall and roof openings.
- Establish roof and floor slopes and floor drain elevations for proper drainage. Verify need for sloping structure or topping material. Verify need for depressed slab areas.
- Review framing schemes for column locations and size, beam clearances and impacts on other disciplines' work.
- Coordinate construction materials to comply with Building Code requirements.

HVAC and Plumbing - Architectural

- Work with mechanical designer to determine insulation R values required for walls and roof to meet energy code requirements.
- Verify size, location and types of wall and door louvers.
- Coordinate required roof and wall penetrations.
- Verify plumbing fixture count, type, layout and location.
- Verify all floor and roof drain locations.
- Provide background floor plans and building sections for HVAC designer's use.
- Verify size, location and access requirements for all HVAC equipment.
- Review air diffuser and grille selection for compatibility with ceiling system.

Electrical - Architectural

- Review lighting selection, layout and compatibility with ceiling system and air diffusers and grilles.
- Provide up-to-date background floor plans for electrical designer's use.
- Verify size, location and access requirements for all motor control centers, panels and instrumentation and control equipment. Verify that equipment will fit through openings provided and at locations shown.
- Review electrical outlets locations for both inside and outside areas and verify sufficient outlets are provided for operations and maintenance.

Corrosion Control - Architectural

- Verify types of exposed metals and finishes to be used to prevent corrosion.

10.4.6. Products

Building Insulation

Great care will be necessary in the selection of insulation type and vapor barriers for this facility due to the high humidity environment of the water treatment plant.

Roofing

Roofing will be a complete system, with compatible insulation, accessories and walking surfaces. Proper drainage for low-slope roofs will be provided with preferred roof slope of 1/2-inch per foot and an absolute minimum of 1/4-inch per foot. Sloped roof structures, or portions of structures will be a minimum of 3 in 12 pitch for snow clearance.

Acceptable roofing products are:

- Elastomeric coating on decks or low slope roofs.
- Standing seam metal roofing.
- Rigid polyiso or polystyrene roof insulation.

Roofing systems will include flashing and both the materials and the installation will be guaranteed for a minimum of ten years.

Doors

Doors will be steel, aluminum, fiberglass or stainless steel as required. Steel doors and frames will be galvanized including fixed glass windows, gas or airtight windows and acoustical window. Doors will be a minimum of 1-3/4-inch thick and will have a minimum width of 3-feet and a minimum height of 7-feet 10-inches.

Fiberglass doors and frames will be used in highly corrosive environments. Metal frames with a gelcoat top coat will be used with fire rated doors.

In chlorine, sulfur dioxide, ozone or other hazardous gas handling areas, doors will be gas tight with viewing window. There will be no windows however in the doors to the sodium hypochlorite room due to the degradation of the chemical with UV light. Heavy duty weatherstripping usually is adequate for normal doors. Special scribed plates with neoprene edges are required to seal around projecting hoist monorails. The doors on the chemical rooms will be equipped with panic bars and combination locks suitable for arctic conditions.

In tunnels, outfall structures or other areas subject to flooding, water tight doors may be required.

Exterior doors will swing outward and have non-removable pin type hinges.

Door stiles will be wide enough to accommodate heavy duty mortise type locks.

Finish hardware will be heavy duty commercial mortise hardware. Stainless steel, anodized aluminum or other corrosion resistant materials will be used. Locks and master keying will be comparable with locking and keying systems to be established by the City of Bozeman

Windows

The following will be considered in the selection of windows:

- Function.
- Water/air penetration rate.
- Light transmission.
- Comfort.

Windows will be anodized aluminum, fixed or opening light windows, heavy commercial type. Thermal break window sections and low-E insulating glass units will be used. All insulated glazing will have a minimum thickness of 1-inch.

Interior Walls

Gypsum wallboard may be used as needed for interior wall construction. Special care will be taken to use water resistant gypsum wallboard where needed. Cement backer boards will be used behind ceramic tile.

Concrete and concrete masonry will be used for interior walls of process areas.

Flooring

Ceramic tile should be used for toilet areas. Quarry tile, sheet vinyl, or resilient vinyl tile may be used for high traffic, plant staff areas and visible areas.

Top set base will be used in most locations where floor and wall finishes are specified.

Epoxy floor finish will be used for special areas such as special laboratory areas, very high moisture rooms, and chemical containment areas.

Ceilings

Acoustical ceilings will be typical 2x2 foot or 2x4 foot ceiling tile in a suspended heavy duty grid. These will be used only in office and public areas. Aluminum grid and moisture-resistant panels will be used in areas having moisture vapor.

Acoustical Panels

Acoustical panels will be perforated aluminum panels backed with fiberglass sound absorption insulation. Insulation will be wrapped in water proof plastic or fiberglass cloth. Panels will be attached to walls and ceiling with stainless steel or aluminum clips. Panels will be mill finish or have a standard factory applied coating.

Architectural Paint Finishes

Paint will be semi-gloss or gloss. Flat paint will be used only after evaluation and discussion with the Bozeman Staff.

Epoxy coatings will be used for general chemical resistance. Epoxy should not be used in areas exposed directly to sun.

Chemical resistant coatings will be used in chemical storage areas.

Louvers and Vents

Louvers will be anodized or prefinished aluminum. Acoustical louvers will be used to control sound transmission from generator rooms or other noisy environments.

10.4.7. Energy Conservation

Energy conservation is an important concern to the City of Bozeman. It is, therefore, necessary to design for energy conservation during the planning, layout and orientation of all buildings and when selecting building service systems. The HVAC design guide addresses energy conservation considerations, including utilization of hot water heating and cooling from the ground or from the raw water sources.

10.4.8. Life Cycle Cost Effectiveness

Obtaining optimum value for every dollar spent should be a goal of every designer. Designers have the greatest impact on total costs because they are the chief decision-makers in the selection of materials and equipment. Designers should be aware of how one discipline's decision affects another. The cost of each element should be justified by its function, reliability or aesthetic value. The cost of each element includes the cost to construct, operate, maintain and replace it.

10.4.9. Maintenance

To help control maintenance costs, durable, low maintenance materials and finishes are preferred. When possible, the same kind of items will be used in all facilities. One-of-a-kind elements will be avoided. Elements include doors, door hardware, lighting fixtures that require the same kind of lamps, and a coordinated lock keying system for all facilities.

10.5. Structural Purpose and Content

This report describes the structural engineering design criteria for new construction on the project. Included in the criteria are required design loads for buildings, tankage, miscellaneous structures and components. Also included are analysis and design methodologies for various materials of construction including cast-in-place and pre-cast concrete, steel, masonry, aluminum, fiberglass and stainless steel.

10.6. Structural Definitions

Allowable Stress Design (or ASD or Working Stress Design) - A method of structural design which applies actual loads to structural elements, and limits the stress on elements to a code-prescribed fraction of the yield or ultimate strength of the material(s).

CMU - Concrete masonry unit (concrete block).

CIP - Cast-in-place (refers to concrete construction).

FRP - Fiber-reinforced plastic.

Strength Method (or Ultimate Strength Method) - A method of structural design which applies factored design loads to structural elements, and strength reduction factors to the yield or ultimate strength of the material(s) being designed.

10.7. Structural Codes and Standards

Governing structural design codes are indicated in the Section 2. The designs fall under the jurisdiction of the 2009 International Building Code (IBC) referred to hereafter as "Building Code."

In addition to the codes and regulations listed above HDR/MMI will use Specifications for Aluminum Structures, published by the Aluminum Association, for design of aluminum structures or components. Concrete masonry will be designed in accordance with ACI 530-05/ASCE 5-05/TMS 402-05, Building Code Requirements for Masonry Structures, with due consideration of any Building Code modifications.

Water containing concrete structures will also be designed to meet the requirements of the American Concrete Institute's design document ACI-350-05, Environmental Engineering Structures. Structures will be designed for normal sanitary exposure, according to the requirements of ACI-350.

10.7.1. Structural

2009 International Building Code (IBC)

- Minimum basic Wind Speed 90 miles per hour, Exposure C.
- Seismic Design Parameters: Site Class C, S_{DS} = 0.600 (g), S_{D1} = 0.300 (g), Seismic Design Category = D.
- Ground snow load = 53 psf.
- Minimum Design Loads for Buildings and Structures, ASCE/SEI 7-05.

American Concrete Institute (ACI)

- Reinforced Concrete Design ACI-318-05.
- Environmental Engineering Structures ACI-350-05.

American Institute of Steel Construction (AISC)

- Specifications for the Design, Fabrications, and Erection of Structural Steel.
- Buildings, March 9, 2005.
- Manual of Steel Construction, Third Edition.
- Specifications for Structural Joints Using ASTM A 325 or A 490 bolts, June 30, 2004.

American Welding Society (AWS)

- Structural Welding Code AWS D1 1-2004.

American Society for Testing and Materials (ASTM)

American National Standards Institute (ANSI)

2006 International Mechanical Code (IMC)

2006 Uniform Plumbing Code (UPC)

Occupational Health and Safety Administration (OSHA)

2005 National Electric Code (NEC)

National Design Specifications for Wood Construction, 2005 Edition

National Association of Architectural Metal Manufactures (NAAMM) Metal Grating Manual

Steel Structures Painting Council (SSPC)

Factory Mutual System (FM)

Underwriters Laboratories, Inc. (UL)

American with Disabilities Act (ADA)

10.8. Structural Guidelines and Procedures

10.8.1. General

All structural engineering for the project will be done in accordance with the Owner's project requirements and applicable building codes, as well as to reflect the judgment and experience of the engineer responsible for the professional engineering certification of the drawings. Design engineers will use the practices contained in this guide unless there is an overriding reason not to use them for particular components of the project. In that event, the reason will be documented in the calculations.

Calculations

Structural design may be performed either manually or using computer programs. Computer programs will be either the current HDR/MMI programs or other appropriate industry-standard programs. Specific industry-standard software used on the project may include:

- The ISDS structural analysis and design program from Research Engineers.
- PCA Column, MATS, PCA Bear and ADOSS from the Portland Cement Association.
- RISA 2D from the RISA Technologies.
- Visual Analysis V6.0.
- Enercalc V6.0.

In addition to manual calculations, HDR/MMI has adapted computer spreadsheets to several structural engineering tasks. Spreadsheet assisted manual calculations will include the same identifying markings as HDR/MMI Computation Pad calculations. These calculations will clearly state input, output, equations used, etc.

All calculations will be checked according to HDR/MMI Quality Control Guidelines.

Design Method (unless otherwise noted)

For concrete design: Strength Method.

All other design: Allowable stress design.

10.8.2. Loads

General

Loads used for design will be obtained using the sources listed on the Structural Design Checklist. Loads to be considered include lateral load and gravity load. Lateral loads are imposed by wind, seismic, soil pressure, equipment loads on soil adjacent to walls and liquid pressure. Gravity loads include dead loads, live loads, snow load, and suction and uplift loads imposed by wind or uplift loads imposed by groundwater. Equipment loads, large piping loads and pipe thrust loads will be accurately determined before design, and the structure design will account for them.

The following loads will be used for structural analysis of roofs and framing:

- Roof live loads.
- Roof snow loads.
- Roof dead loads.
- Roof wind (uplift) loads.
- Floor and platform live loads.
- Floor and platform dead loads.
- Ceiling loads.
- Interior wall loads.
- Exterior wall loads, including horizontal loads.
- Erection and construction loads.
- Future loads, if known.
- Hoist loads and laydown loads.
- Equipment loads.
- Piping loads.
- Phantom[1] loads (if used).

[1] Phantom loads are used in conjunction with piping loads when the location of miscellaneous piping is undetermined. Phantom loads will be one kip on secondary beams and 2 kips on primary beams, placed at the point of maximum moment for bending calculations and at the ends for shear and connection calculations. Phantom loads will not be used for large piping loads.

- Seismic loads.
- Any other appropriate loads.

Each of the large piping loads will be calculated separately, and their locations determined. Large pipes are designated as over 12 inch diameter.

Design Dead and Live Loads

For dead load, include all permanent or semi-permanent loads. This includes equipment, piping, banks of conduit, electrical trays, floors, supporting members, walls, partitions, chemicals in bins or on storage floors, and liquid contents of piping, containers and equipment. Dead load also includes weight of soil on soil-covered roofs, if applicable.

Storage area loads for bagged chemicals will be in accordance with ACI 350. Assume material to 2/3 of ceiling height over entire area.

Roofing dead loads will be assumed to be 10 psf (non-ballasted) or 20 psf (ballasted), unless actual loads are known.

Live loads include all loads not included as dead loads including people, tools and equipment which may be placed on floors temporarily. Live loads will not be applied to floor areas permanently covered by equipment, unless the live load is higher than the equipment load.

Several common design dead and live loads are summarized in Appendix 10.3. Design uniform live loads will be indicated on drawings as required by the Building Code.

Design Loads for Liquid-Containing Structures

Structural design will be performed for maximum liquid levels indicated by process engineers. Applicable load factors and durability coefficients from ACI 318 and 350 will be applied to the loads from these levels. Conservatively, it will be assumed that there is no soil outside of the structure when it is loaded internally with liquid, and no liquid inside the structure when it is externally loaded with lateral earth pressure.

Liquid-containing structures will also be checked for worst case loading. This load is typically from an overtopping condition, unless there is an absolutely fail safe overflow below the overtopping level. The worst case loading level will be indicated in the calculations.

The following unit weights will be used for design:

- Water: 62.4 pcf.

Uplift Loads

Structures will be designed against flotation (buoyant) forces. Dead load only will be used to resist uplift with a minimum factor of safety of 1.10. In the event that construction becomes uneconomical, the use of ground anchors or pressure relief valves will be considered.

The minimum groundwater level to be used in uplift calculations is the 100 year flood elevation. The geotechnical consultant will be asked to recommend if a higher groundwater elevation is warranted. Water unit weight for uplift calculations is 62.4 pcf.

Lateral Stability

Lateral stability will be checked for all appropriate structures and will include the following:

- Wind loads.
- Seismic loads.
- Thrust loads.
- Column stability loads (if used).

Column stability loads will be used where normal structural framing provides minimum lateral support for the column. Bracing will be designed to resist these loads. The magnitude of these loads will be one percent of the vertical load on the column.

Impact Loads

The following allowances will be made to account for impact:

Table 10-1. Impact Loads

Elevators	100% of the lifted load
Cab operated traveling cranes and hoists	25% of the lifted load
Pendant operated traveling cranes and hoists	10% of the lifted load
Rotating equipment	20% of the total machine weight
Reciprocating equipment	50% of the total machine weight
Railroads and forklifts	25% of the wheel loads

Consideration will be given to the deflection of beams supporting reciprocating and rotating machines. To help dampen vibration, equipment will be supported on concrete having a weight at least three times the total weight of the equipment or 15 times the rotating weight whichever is greater. Impact loads for rotating or reciprocating equipment will be considered as dead loads.

For heavy equipment on ground supported slabs, consideration will be given to separate isolated equipment foundations. In this case, expansion joint material will be provided between the machine foundation and the remainder of the slab.

Horizontal Crane Loads

The lateral force on crane or hoist runways will be 20 percent of the sum of the weights of the lifted load and the crane trolley or hoist, exclusive of other parts. The force will be assumed to be applied at the top of the rails, acting in either direction normal to rails and distributed with due regard to lateral stiffness of the supporting structure. The longitudinal force will be 10 percent of the maximum wheel load.

Wind and Seismic Loads

Refer to the Building Code for complete derivation of these loads. Appendix 10.4 gives some basic parameters for wind and seismic loads.

Earth Loads

Lateral earth pressures will be obtained from the geotechnical report (Appendix G).

Loads on Vendor-Designed Items:

Certain structural components are commonly specified to be designed by the vendor (e.g. precast concrete hollow-core planks and double tee sections, aluminum domes, specialty FRP components, etc.). For vendor designed items, all loads will be indicated on drawings or in related specification sections. Load information will include uniform dead and live loads, point loads from piping, hoists, etc., strip loads from walls, future loads, etc.

Future Loads

Consideration will be given to loads from future expansions and equipment to the extent directed by the Owner.

10.8.3. Foundations

General

Before foundations are designed, a subsurface investigation will be made to establish the proper type of footings and allowable bearing loads.

Footings, except for those bearing on rock, hard shale, or bearing piles driven to refusal in a non-yielding soil, will be proportioned to minimize differential settlement.

Foundations Subject to Overturning

For structures founded on yielding bases, the resultant of all forces will fall within the middle one third of the base. All foundations, with the exception of shale and solid rock, are considered to be yielding soils.

All structures subject to overturning will be checked for compliance with the following:

For structures founded on rock, hard shale, piling or piers the structure will be designed for a factor of safety against overturning of not less than 2.0.

Horizontal soil pressures will not be considered as resisting liquid pressures on the opposite face of a wall. Buoyancy and uplift forces will be included in calculating the position of the resultant force and the factor of safety against overturning.

10.8.4. Deflection

Cast-in-place concrete framing members meeting the minimum depth criteria listed in the reinforced concrete design procedure will generally not need to be checked for deflection. Spot-checks for deflection will be performed where the design engineer deems necessary. Deflections will be calculated for concrete members not meeting these depth criteria. Prestressed concrete members will meet the limitations of ACI 318, Paragraph 9.5.4.

Framing members will not exceed the allowable deflection.

Cast-in-Place Concrete Framing

Table 10-2. Cast-in-Place Concrete Framing

Member	Allowable Live Load Deflection, in[1]
Flat roof slabs	L/180
Roof beam	L/240[2]
Roof beam supporting ceiling below	L/360[2]
Floor beam	L/360
Floor beam supporting ceiling below	L/480
Floor beam supporting masonry wall	L/480

[1] See ACI 318, Section 9.5 for limitations affecting deflection calculations.

[2] Beam may be cambered for dead load and partial live load deflection. Ponding will be investigated.

Structural Steel Framing

Table 10-3. Structural Steel Framing

Member	Allowable Live Load Deflection
Roof beam	L/240[1]
Roof beam support ceiling below	L/360[1]
Floor beam	L/360
Floor beam supporting ceiling below	L/480
Floor beam supporting masonry wall	1/8 IN for L<60 IN
	for L/480 or L > 60 IN
Crane support beam and monorails	L/800 (not including impact)
Monorails for underslung hoists	L/450
Girt (horizontal)	L/360
Girt (vertical)	L/240
Girt supporting window (vertical)	1/8 IN for L< 100 IN
	L/480 for L > 100 IN

[1] Beam may be cambered for dead load and partial live load deflection. Ponding will be investigated. The span length L is in inches.

10.8.5. Materials of Construction

Material Types

New tankage and below grade structures exposed to soil will be made of reinforced CIP concrete. Generally, above grade walls will be steel framing with metal siding for the Water Treatment Plant and CMU for the Sourdough Intake Structure. Roofs of tanks may be truss

supported flat aluminum or reinforced CIP. The roof of the WTP will generally be steel framing with metal decking. The roof structure for the Intake building will be pre-engineered wood trusses with wood sheathing.

Where above or below grade structures are subject to wet or corrosive atmosphere, floors, walls and ceilings will be made of reinforced CIP. Materials for other structures or components in corrosive areas are described below. Structures not in wet or corrosive environments will be designed as standard industrial type structures. HDR/MMI will consider economics and speed of construction, as well as any Owner dictated material requirements when deciding upon materials for non-corrosive environments.

Material Properties

Material specifications are summarized in Appendix 10.4 of this section.

Corrosion

For corrosive conditions, consideration will be given to the usage of inherently corrosion resistant materials or conventional materials with corrosion resistant coatings. The Owner will be consulted to determine which material to pursue. Structural engineer will participate in the decision to the extent of providing relative cost comparisons for Owner's consideration.

For moderate corrosion areas, aluminum or series 302 or 304 stainless steel will be recommended. In heavily corrosive areas, series 316 stainless or FRP will be recommended. For ease of detailing, and less chance for confusion on the Contractor's part, all expansion or epoxy adhesive drilled anchors (into concrete) will be specified as stainless steel.

10.8.6. Design and Analysis Methodologies

Concrete

Standard Details

Standard Concrete Detail drawings will be included with this project. The standard drawings require extra corner reinforcement. This reinforcement will not be repeated on the drawings detailing the structures. This extra reinforcing will be considered when design calculations are performed.

Minimum Dimensions

All members will be sized using the minimum concrete cover and clear spacing between bars for reinforcement as given in the Specifications and Standard Detail notes.

Slabs

Slabs supporting members that could be damaged by deflection such as partitions, minimum thickness of slabs will be in accordance with Table 9.5(a) or Table 9.5(c) of ACI 318. If higher values of ρ than recommended in this document are used, deflections will be calculated for members supporting construction that could be damaged by deflection of the slabs, and thickness increased as required.

Beams

Minimum depth will be in accordance with Table 9.5(a) of the ACI 318. Deflection of beams will be further limited by increasing the depth for those cases where deflections exceed allowables.

Designer engineers will consider the location of construction joints at the top of walls, and the advisability of a constant depth of beams framing into the wall allowing a joint in the wall at the bottom of the beams.

Beams will have a minimum width of 12 IN.

Walls

Liquid containment structures will have a thickness of at least 12 IN. All other walls will be at least 8 IN thick. Bearing walls will have a minimum thickness of 1/25 of the supported height or length (whichever is shorter). The designer will also consider whether the structure must be backfilled before the top of the wall is supported or braced, and design it accordingly.

Footings

Footings will have a minimum depth above the bottom reinforcement of 6 IN for footings on soil or rock and 12 IN for pile footings.

Construction and Control Joints

All required construction and control joints (expansion and contraction) will be indicated on the drawings, and are required for any structure with a dimension of 100 FT or more in any direction. This includes joints affecting the reinforcement, such as the top and bottom of walls, or where required in connection with a required concrete placement sequence. This will also determine the amount of shrinkage and temperature reinforcement required as outlined herein.

Construction joints will be used in slabs on grade. Construction and contraction joints will be used in walls, suspended or cantilever slabs of basins, flumes and galleries, and in pavements. Expansion joints will be used only when absolutely necessary.

Horizontal spacing of construction and control joints will not exceed 60 FT for non-liquid containing structures and 30 FT for liquid containing structures, or as specified in the Specifications. Further guidelines for spacing of control joints in liquid containment structures are listed in ACI-350 and will be considered.

At tops of cantilevered walls, walkway slabs and flumes which are not designed as horizontal beams will be provided with expansion joints periodically to prevent them from acting as horizontal beams.

Undesignated construction joints are permitted by the specifications. Their location is given in the Specifications.

Waterstops

Construction and control joints will have water stops at the following locations:

- All walls and bottom slabs of dry pits or rooms where below finish grade and in contact with backfill or subgrade material on the opposite side.

- All walls in contact with liquid where the opposite face is above finish grade, faced with brick, or exposed to a dry pit or room.
- All slabs in contact with liquid where the opposite face is exposed to a dry pit or room.
- All walls and floors of filters and reservoirs.
- All other locations shown on the drawings or specified.

PVC, metal or adhesive (without bentonite) water stops will be used in construction joints and PVC water stops will be used in expansion joints. The specifications for water stops will be performance based. Waterstop details will be shown on the Standard Detail sheets.

Typical joints are indicated on the Standard Detail Sheets. The designer will consider the embedded length of water stops to avoid interference with the reinforcement.

Splices, Connections and Development of Reinforcement

Development lengths and splice lengths will be in accordance with the Code and will be shown on the Concrete Standard Detail Sheets. Welded splices will not be used, unless allowed by the Contract Documents. Mechanical connectors will be as indicated in the Specifications. Mechanical connectors will be staggered except for couplers used at the face of a construction joint and will comply with the requirements of the specifications.

Dowels for compressive reinforcement will meet compression development length shown on the Concrete Standard Detail Sheets and will be hooked.

Splices in tension tie members will be avoided if possible. Where splices cannot be avoided, mechanical connectors will be used. Drawings will show location of splices.

Horizontal bars in walls in direct tension will be spliced as shown on the Standards Sheets.

Arrangement of Reinforcement

Concrete is difficult to place when reinforcement is congested. Beam and column joints, wall corners, and extra reinforcement at openings are places that will be considered when selecting member sizes and reinforcement size and spacing. Reinforcement will be spaced according to the following:

Slabs and Footings

The center-to-center spacing of flexural and shrinkage and temperature reinforcement will be at least 4-inch for #6 and larger, and 3-inch for #5 and smaller, and not more than 12-inch for structures designed in accordance with ACI 350. For other structures spacing will be not more than 18-inch. Bars smaller than #4 will not be used except in pavements, roof slabs, beam stirrups or column ties.

Reinforcement in one way or square two-way footings will be spaced uniformly across the entire width or area of the footing. Reinforcement in rectangular two-way footings will be spaced uniformly across the long direction and distributed across the short direction as outlined in Paragraph 15.4 of the ACI 318.

Beams

The clear vertical distance between parallel flexural reinforcement in the same plane, will be at least one inch. Horizontal spacing will not be less than 1-1/2 times the bar diameter. Bars

smaller than #5 will not be used for flexural reinforcement. Bars larger than #5 will not be used for stirrups. Where nominal stirrups are required, they will be a single size and spaced equally across the length of the beam. When greater than nominal reinforcement is required, stirrups will be of a single size with a maximum of two different spacings across the length of the beam. When stirrups are required, they will be spaced at least 3 inches apart, but not more than one-half or one-fourth, as applicable per the Building Code, of the "d" dimension of the beam or 12 inches, whichever is smaller. Nominal shear reinforcement will be spaced at least the "d" dimension of the beam but not more than 18 inches apart.

Where beams intersect at columns, designer will decide which beam will have depressed top bars. Steel area will be calculated based on the reduced "d" dimension. Drawings will show which beams have depressed top steel.

Walls

All walls 10-inch thick or less will have one layer of reinforcement in both vertical and horizontal directions. Walls greater than 10-inch thick will have reinforcement in both faces in both vertical and horizontal directions. The spacing of vertical or horizontal reinforcement will be at least 6-inchbut not more than 12-inch. Bars smaller than #4 will not be used except in non-load bearing walls.

Circular Walls

For best crack control, horizontal reinforcement in direct tension in circular walls will be kept as small as possible, with tighter spacing. Bars will be at least #4 bars with a minimum spacing of 4-inch and a maximum spacing of 12-inch.

Compression Members .

The clear distance between longitudinal reinforcement in compression members including splices will be in accordance with Paragraph 7.6 of the ACI 318. Interaction of column bars and beam bars will be considered in order to avoid congestion.

Tie spacing will be as outlined in Paragraph 7.10 of the ACI 318.

Shrinkage and Temperature Reinforcement

Control of shrinkage and temperature cracking is essential, particularly in liquid containment structures. The percentages of this reinforcement will vary with the spacing of construction and control joints as detailed and/or specified and will be sized as follows:

Table 10-4. Minimum Percentage of Gross Concrete Section

Spacing of Control Joints	Liquid Containment Structures	Other Structures
30 feet or less	0.3 (0.003)	0.18 (0.0018)
31 to 40 feet	0.4 (0.004)	0.18 (0.0018)
41 feet or more	0.5 (0.005)	0.3 (0.003)

Concrete sections 24-inch or thicker will have minimum shrinkage and temperature reinforcement based on a 24- IN thickness. Minimum size of shrinkage and temperature reinforcement will be #4, except in roof slabs and pavements, which may be #3 or welded wire fabric. Synthetic fibers blended in mix may be used for non-structural members.

Shrinkage and temperature reinforcement will be divided equally between the two surfaces of the concrete section. The shrinkage and temperature reinforcement in the bottom of slabs reinforced top and bottom, in contact with the subgrade, may be reduced to one-half the values calculated.

Analysis And Design

Design Methods

- Reinforced members will be proportioned using the methods and factors that follow:
- Slab panels with a ratio of length to width of 1.5 or greater will be analyzed as one-way slabs.
- Two-way and flat slabs will be analyzed by the direct-design method outline in Chapter 13 of the ACI 318 providing the limitations Paragraph 13.6 (UBC 1913.6) are met. Two-way and flat slabs that do not meet these limitations will be analyzed by the equivalent frame method.
- Beams will be analyzed as rectangular beams unless depth limitations require the use of T-beams. Minimum shear reinforcement will be provided when the factored force Vu exceeds one-half the shear strength provided by the concrete, ØVc, except as provided by Paragraph 11.5 of ACI 318.
- Wall panels supported on three or four sides, and having an aspect ratio of less than or equal to 2, may be analyzed using the moment coefficients tabulated in Moments and Reactions for Rectangular Plates, U.S. Bureau of Reclamation Engineering Monograph No. 27 or PCA Publication Rectangular Concrete Tanks. Supporting walls and slabs will be designed to adequately resist the moments calculated by this method.

Straight walls supported top and bottom will be analyzed according to the degree of stiffness provided by the foundation as outlined by the three cases that follow:

- Case I - The base slab or footing is placed on yielding subgrade. In this case, the wall will be analyzed as follows:
  - (a) Pinned at the top and at the bottom for positive moment.
  - (b) Pinned at the top and fixed at the bottom for negative moment. The wall/base joint design negative moment will be one-half the calculated fixed end moment.
- Case II - The base slab or footing is placed on nonyielding subgrade (rock). In this case the wall will be analyzed as pinned at the top and fixed at the bottom.
- Case III - The base slab or footing has a high degree of stiffness which induces or resists wall moments. In this case the wall/base joint negative moment will be determined using approximate or rigid analysis as required for the degree of stiffness assumed.

The designer will ensure by notes or specifications that members (such as walls that are to support backfill) will not be loaded until all supporting members are constructed and cured. The designer may have to allow for the above condition in the structural design of the walls, if support cannot be assured, or if constructability concerns dictate that the walls must be backfilled before support or bracing can be constructed.

Walls fixed at the bottom transfer moment to the footing and the footing must be designed to accommodate this moment.

Circular walls in direct tension will be analyzed using the coefficients tabulated in PCA publication Circular Concrete Tanks Without Prestressing. Reinforcement will be sized to develop the full factored/modified tensile load. Tensile stress of concrete will be calculated by Equation 1 with T being the unfactored ring tension. Basin walls will be analyzed as having both a hinged base and a fixed base. Details will be coordinated with design assumptions.

Walls may be designed for axial loads, with or without flexure, by either Chapter 10 or Chapter 14 of ACI 318 (IBC Chapter 16). Walls exceeding the limits of Paragraph 14.5.1 of ACI 318 (IBC Chapter 16) will be designed by the requirements of Chapter 10 (IBC Chapter 16). The horizontal length of wall considered as effective for each concentrated load will not exceed either the width of the loaded area plus four times the wall thickness or the center-to-center distance between the concentrated loads. Pilasters will be used for concentrated loads when the load Pu exceeds Ø (0.85) f'cA1 where A1 equals the loaded area and Ø=0.70. For determining A1, the effective horizontal length of wall will be at least the width of the load area.

Columns will be analyzed with the following limitations:

- The longitudinal reinforcement will be at least one percent but not more than five percent of the gross concrete section. If column longitudinal bars are lap spliced, reinforcement percentage will be limited to four percent.
- Unless the moment magnification procedure outlined in Chapter 10 of ACI 318 (IBC Chapter 16) is used, unbraced columns will have a klu/r equal to or less than 22 such that slenderness effects can be neglected and braced columns will have a klu/r equal to or less than [34-12(M1/M2)]. The k factor for unbraced columns will be 1.5 for columns pinned at the top and 2.0 for cantilevered columns. The k factor for braced columns will be 1.0.
- Columns with klu/r greater than 100 will not be used.

Load Factors

Load factors for all structures except liquid containment structures will be as tabulated in Section 9.2 of ACI 318 (IBC Chapter 16).

For liquid-containing structures, lateral liquid (F) and earth pressure loads (H) will be treated as live loads with a factor of 1.6F instead of 1.2F as indicated in the Code. Impact loads will be included in the factor for Live Loads.

Strength Factors

Strength factors will be as tabulated in Chapter 9 of ACI 318 (IBC Chapter 16).

Reinforcement Factors

Reinforcement factors for singly reinforced flexural members are: (f'c = 4,000 psi; Fy = 60,000 psi)

- ρmin = 0.0033

- ρmax = 0.021
- The reinforcement factor ρmin may be reduced as provided in Chapter ACI 318 (IBC Chapter 16). In no case will flexural reinforcement be less than that provided for shrinkage and temperature reinforcement.

Shear and Torsion

Shear strength will be calculated in accordance with Chapter 11 of the ACI 318 (IBC Chapter 16). For members subject to shear and flexure only, use $Vc = 2\sqrt{f'c}\ bd$. For members subject to axial compression, use equation 11-4 of the Code.

High torsional moments usually occur in structures with undesirable framing. It may be preferable to reframe the structure to avoid the high torsion rather than design for the torsion. When torsion cannot be avoided, the members will be designed in accordance with Section 11.6 of the Code.

Steel

Steel design will be performed in accordance with the requirements of the American Institute of Steel Construction Manual of Steel Construction and Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

No special requirements are applicable to design of steel in water treatment facilities. Members will be designed with due consideration for maximizing durability and minimizing corrosion potential.

Masonry

Concrete unit masonry design will be by the working stress method or strength design method in accordance with ACI 530-05/ASCE 5-05/TMS 402-05 Building Code Requirements for Masonry Structures. Special inspection will be assumed.

Aluminum

Aluminum design will be done in accordance with the Aluminum Association publication Specifications for Aluminum Structures. Deflection is of special concern in aluminum design due to the lower modulus of elasticity, so deflection checks will be done.

Fiberglass

Fiberglass design will generally be specified to be performed by the vendor. Where necessary to arrive at accurate preliminary sizes, engineering data from manufacturers will be used in preliminary calculations.

Stainless Steel

Stainless steel design for thin sections will follow the requirements of ANSI/ASCE-8-90, Specification for the Design of Cold-Formed Stainless Steel Structural Members.

10.9. References

A partial list of structural engineering reference material for the project follows:

- ACI-318-95, Building Code Requirements for Structural Concrete and Commentary, 1995.
- ACI-350-89, Concrete Sanitary Engineering Structures, 1989.
- ACI-530-05/ASCE 5-05/TMS 402-05, Building Code Requirements for Masonry Structures and Commentary, 1996.
- ACI, Masonry Designers Guide.
- AISC, Manual of Steel Construction-Allowable Stress Design 9th Ed.
- Aluminum Association, Engineering Data, 1986.
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- Ancho, R.D., Design of Liquid Retaining Concrete Structures, 2nd Ed..
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- Batty and Westbrook, The Design of Water-Retaining Structures.
- Bowles, J., Foundation Analysis and Design.
- CRSI, CRSI Handbook.
- Englekirk and Hurt, Earthquake Design of Concrete Masonry Buildings, Vol. 2.
- Gaylord and Gaylord, Design of Structural Steel, 2nd Ed.
- HDR Engineering, Inc., Structural Design Criteria, 1998.
- Merritt, F., Standard Handbook for Civil Engineers.
- NTIS, TID-7024, Nuclear Reactors and Earthquakes.
- PCA, Circular Concrete Tanks Without Prestressing, 1993.
- PCA, Concrete Masonry Handbook, 5th Ed.
- PCA, Rectangular Concrete Tanks, 1994 and 1998.
- PCA, Design of Concrete Buildings for Earthquake and Wind Forces, 2nd Ed.
- PCI, Notes on ACI 318-95, 1996.
- PCI, PCI Design Handbook, Precast & Prestressed Concrete, 4th Ed, 1992.
- Research Engineers, STAAD-III Program User's Manual, Release 21, 1995.
- Schneider, R. and Dickey, W., Reinforced Masonry Design, 3rd Ed., 1987.

- U.S.A.C.E. User's Guide: Computer Program for Design and Analysis of Sheet Pile Walls by Classical Methods, 1985.
- U.S. Dept. of the Interior, Moments and Reactions for Rectangular Plates, 1983.
- U.S. Grout, Grouting Handbook.
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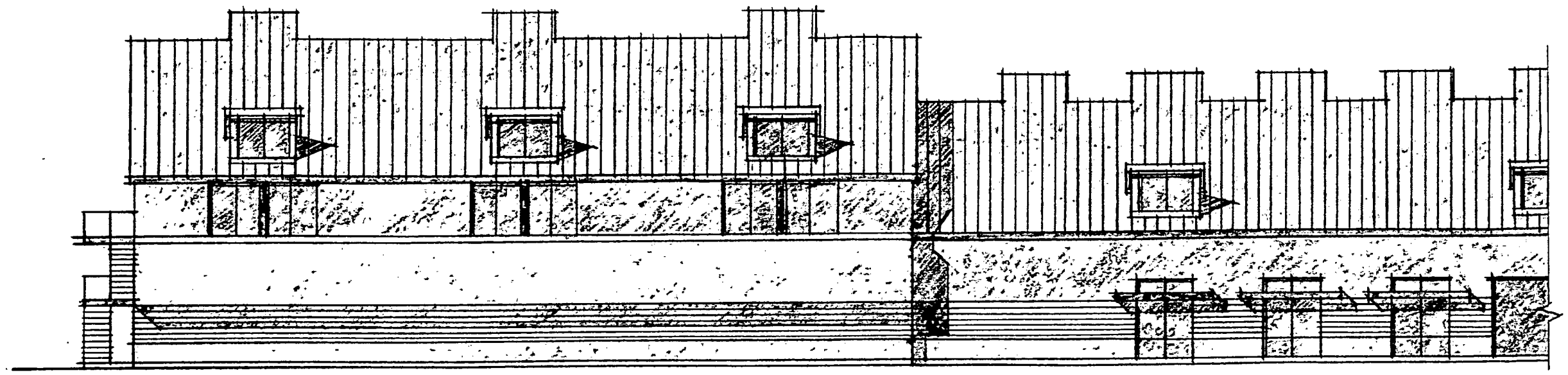
10.10. Examples and Attachments

The following appendices are attached:

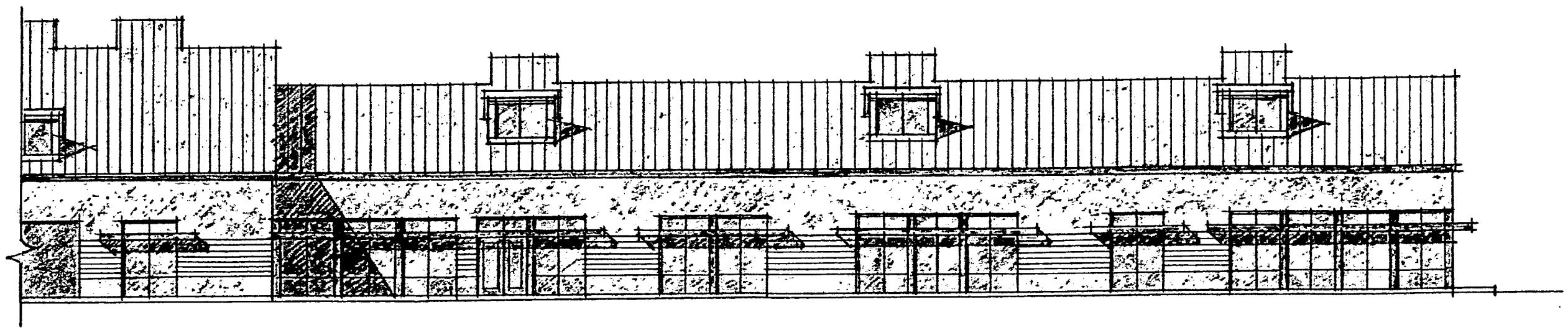
- Appendix 10.1 Water Treatment Facility Preliminary Building Elevations
- Appendix 10.2 Sourdough Intake Structure Preliminary Building Elevations
- Appendix 10.3 Structural Design Loads.
- Appendix 10.4 Structural Material Specifications.

Appendix 10.1

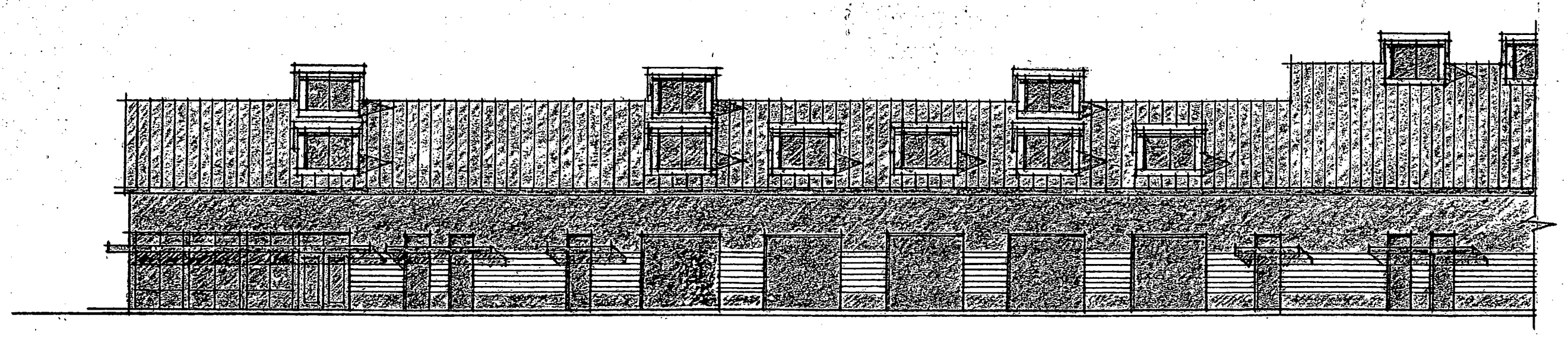
Water Treatment Facility Preliminary Building Elevations



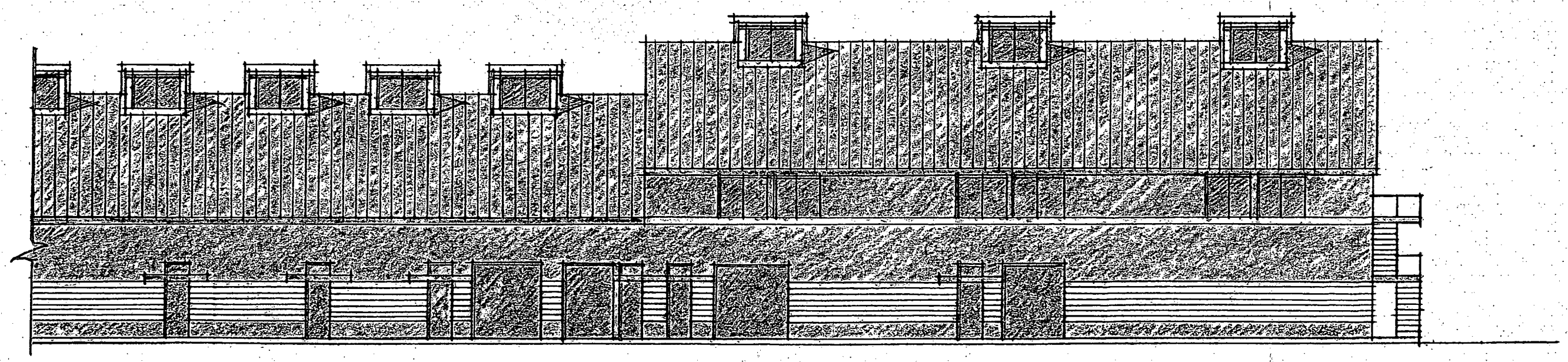
North Elevation – E. End 1/16" = 1'=0"



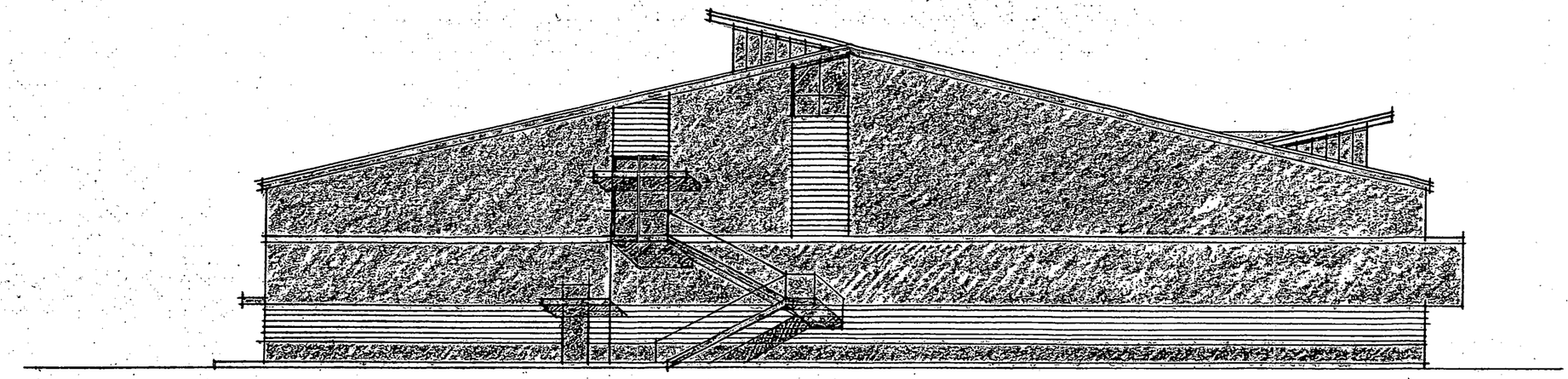
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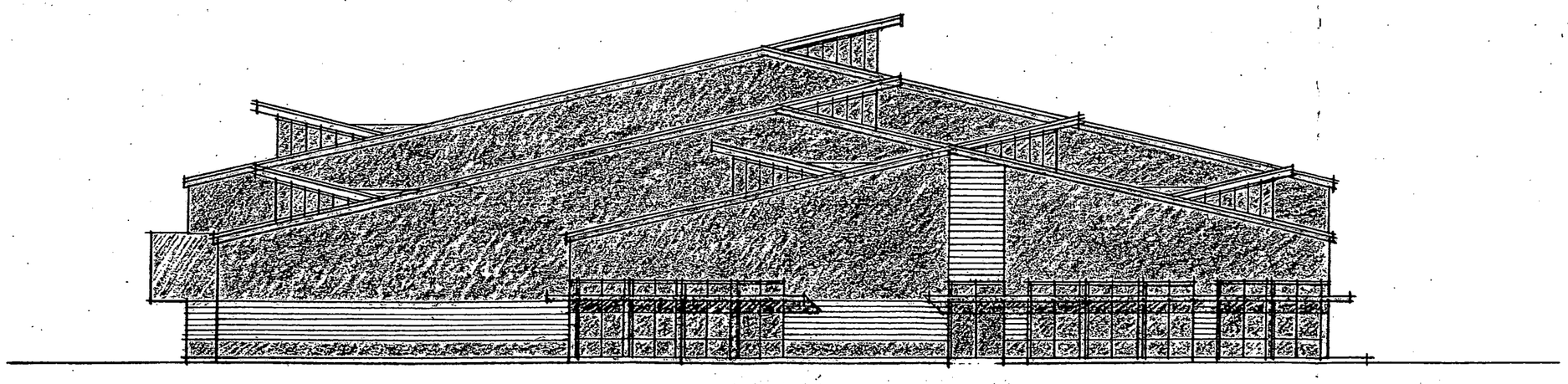
South Elevation – W. End 1/16" = 1'=0"



South Elevation – E. End 1/16" = 1'=0"



East Elevation 1/16" = 1'=0"



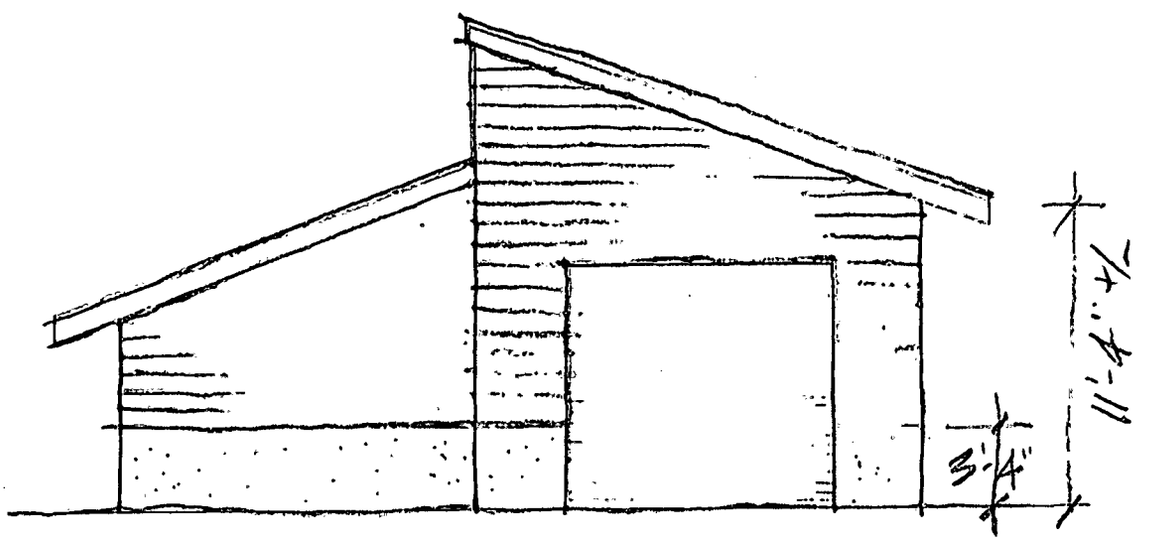
West Elevation 1/16" = 1'=0"

Appendix 10.2

Sourdough Intake Structure Preliminary Building Elevations

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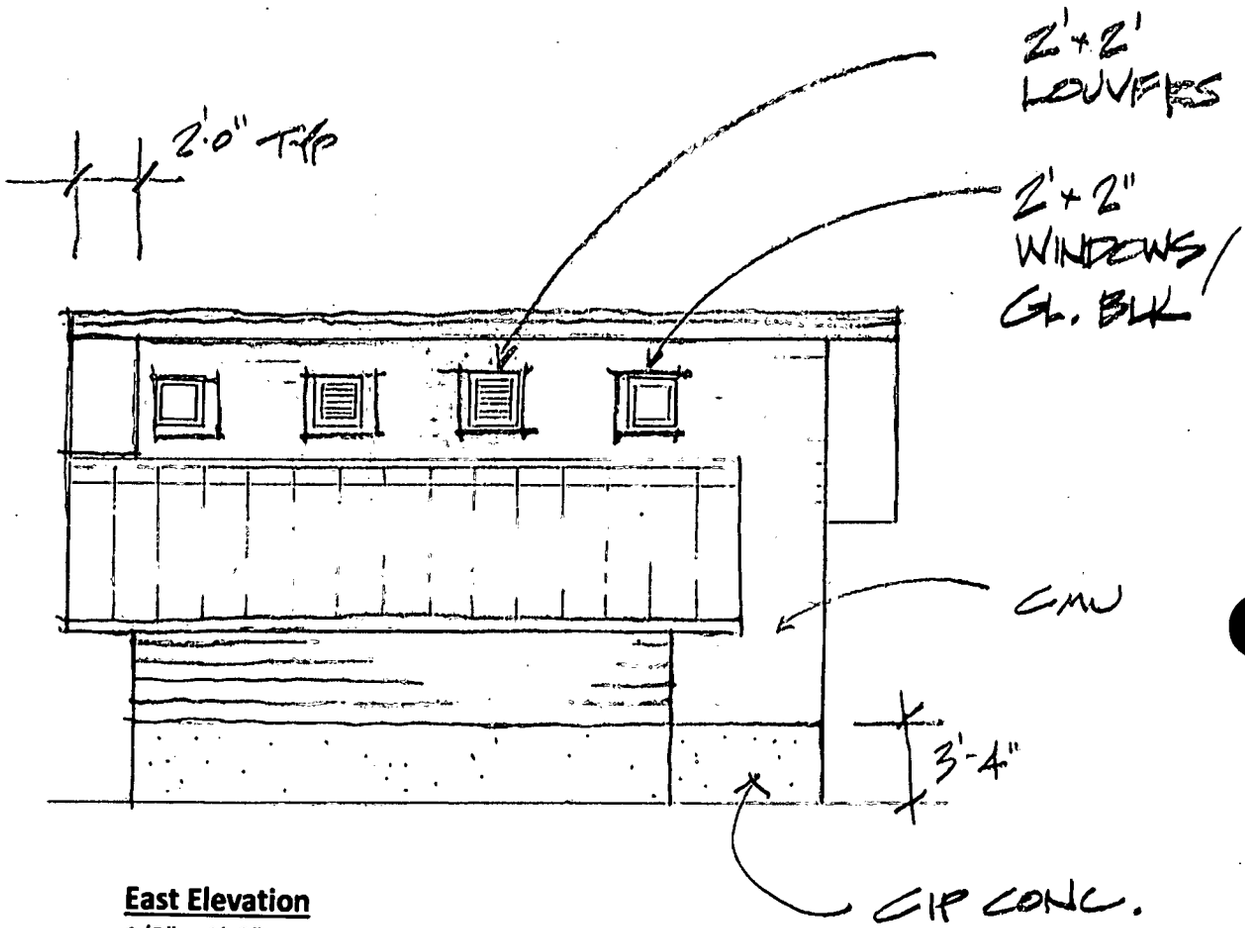
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Task:		Page:	of:
Job #:		No:	



North Elevation
1/8" = 1'-0"

HDR | ONE COMPANY *Many Solutions™*

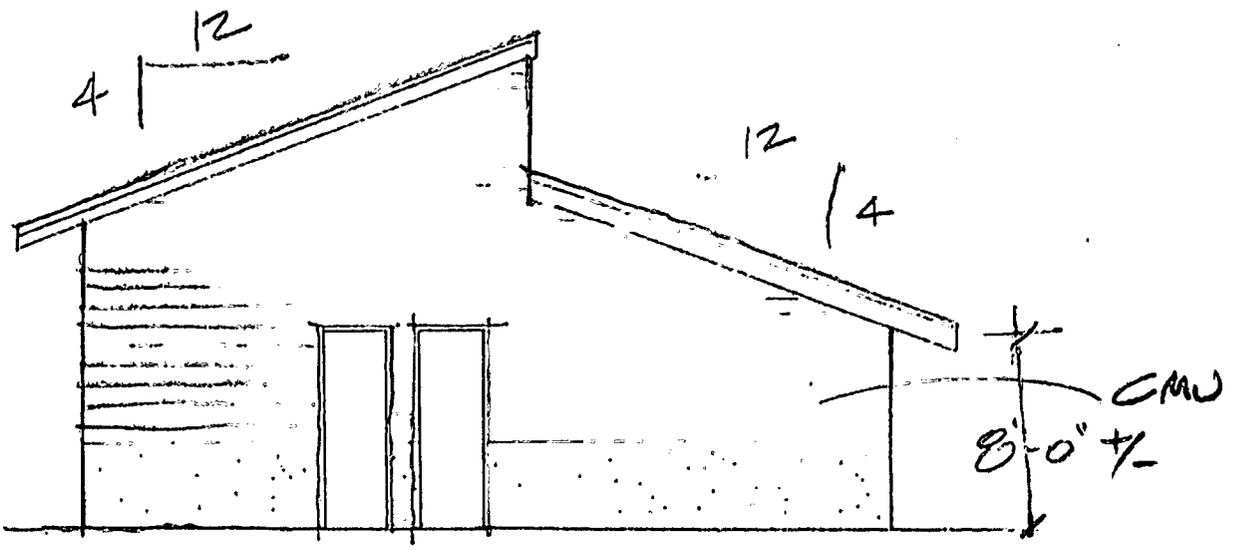
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Subject: ELEVATIONS		Checked:	Date:
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East Elevation
1/8" = 1'-0"

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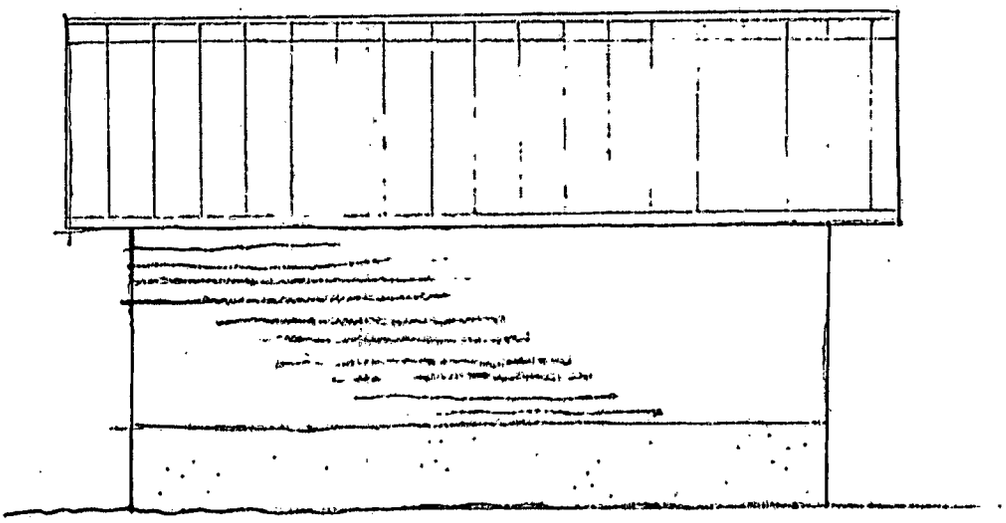
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Subject: ELEVATIONS		Checked:	Date:
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Job #:		No:	



South Elevation
1/8" = 1'-0"

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Project: BOZEMAN INTAKE		Computed: CS	Date: 8/26/10
Subject: ELEVATIONS		Checked:	Date:
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Job #:		No:	



West Elevation
1/8" = 1'-0"

Appendix 10.3

Typical Structural Design Loads

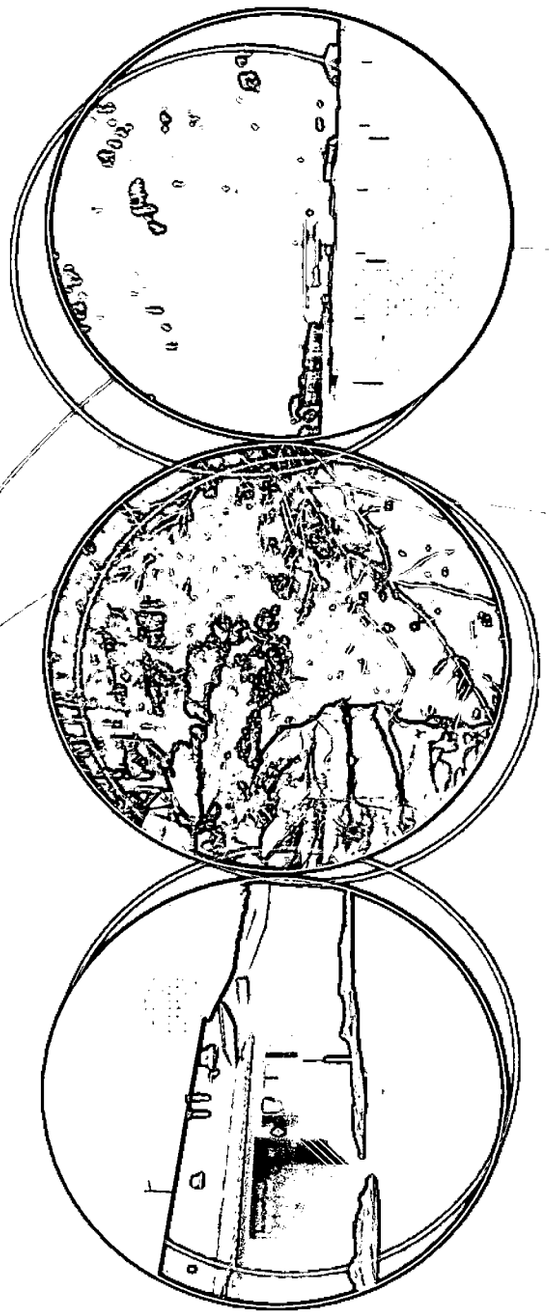
Criteria	Value	Unit
Wind		
Basic wind speed	90	mph
Exposure	C	NA
Snow		
Basic Ground Snow Load	53	psf
Drifting	(a)	NA
Seismic (IBC)		
Site Class	C	NA
Design Category	D	NA
S_{DS}	0.600	g
S_{D1}	0.300	g
Other Live Loads		
Process Equipment Areas	300	psf
Electrical Rooms	250	psf
Storage, Shop, Maintenance	200	psf
Chemical Feed Rooms	150	psf
Corridors, Walkways, Stairways	100	psf (b)
Offices, Labs, Lunchrooms	100	psf
Soil Loads	(c)	NA
Dead Loads		
Cast-in-place concrete	150	pcf

Per requirements of Code or 1000 pound point load, whichever results in the larger design.
In accordance with recommendations of geotechnical engineering report (Appendix G).

Appendix 10.4

Structural Material Specifications

Item	Value	Unit
Cast-in-place concrete f'c	**4,000**	**psi**
Precast concrete f'c	**5,000**	**psi**
Reinforcing Steel Fy	60,000	psi
Structural Steel Fy	36,000	psi
Structural Aluminum alloy	6061-T6	NA
Concrete Masonry f'm	1,500	psi
Stainless Steel Fy	30,000	psi



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 11. Electrical System and Standby Power Generation

Prepared by: Dan Harmon

Reviewed by: Ernie Swanson

Date: October 15, 2010

11.1. Introduction

The Bozeman Hyalite/Sourdough Water Treatment Plant (WTP) Replacement Project includes the power provisions for the new plant building, new site facilities and existing site facilities. The power system will include a standby diesel engine generator (generator) which will be sized sufficiently to power the entire plant capacity with five (5) membrane filter feed pumps operating at full capacity for a plant flow of 22 mgd, plus all ancillary components and building support facilities.

11.2. System Design

11.2.1. Existing Facilities

Existing power service comes from the Utility into a Utility furnished transformer located on west side of the existing WTP, towards the NE corner. The transformer powers a main panel board, inside the building, that distributes power to all of the existing facilities. Due to the age and location of the existing power distribution system and the need to have two plants operational at the same time, none of the existing power distribution system will be utilized once the existing plant is permanently taken out of service. Existing services, service entrance and panelboards will be left in place to the extent possible.

11.2.2. New Electrical Distribution System

The new primary service (medium voltage) service from the utility will come underground along the plant entrance to a utility furnished pad-mounted transformer on the north side of the building. The transformer secondary will feed the main service switchboard which will distribute the power to the plant loads via this double-ended switchboard. Power can be fed to this switchboard from one end. One end will be fed by the utility and the other end (in the event of a utility power failure) will be fed by the standby engine generator. The switchboard main, tie and generator main circuit breakers will be electrically operated to provide an automatic throwover scheme when utility power fails. The normal status of these

three circuit breakers will be; utility main breaker closed, tie breaker closed and generator main breaker open. During a utility power failure event the automatic throwover control system starts the standby engine generator, opens the utility main breaker and (when the standby generators voltage has stabilized) closes the generator main breaker. In this configuration the standby engine generator feeds power to the entire plant.

Including anticipated future connected loads there is approximately 1800 KVA of connected load in the future. Assuming a 60% load diversity, a peak demand load of 1080 KVA is assumed at this stage of the design. The design team would anticipate asking the utility to provide a 1000 KVA rated service transformer with 480/277 volt, three phase, four wire secondary voltage. This type of transformer has a minimum 15 percent overload rating which shall adequately handle the anticipated peak demand load. Near final design completion service transformer sizing will be revisited to confirm the above assumptions. Utility power metering will be accommodated with a current transformer compartment (approved by utility) built into the main switchboard with a remote power meter as required by utility.

Power from the main switchboard will then distribute power to the MCCs within the electrical room, any 480 volt panelboards, and each site facility requiring 480 volt power. The two buses from the switchboard will power loads and MCCs so that if one bus is down for maintenance the other bus will still power all process streams to keep the plant operational at the design flow rate. The MCCs will include small horsepower rated VFDs, motor starters and power feeders for all equipment within the building. Larger horsepower VFDs will be free-standing units with harmonics mitigation equipment integrally mounted within the VFD enclosure. Transformers and lighting panels will be located throughout the building and site facilities as needed to meet the various 120/208 volt load requirements.

11.2.3. Electrical Loads

New project facilities and equipment, as well as planned future equipment, are listed in Table 11-1. These loads are estimated and do not include lighting or HVAC load requirements. All the loads will be operated at 480 volt or less.

Table 11-1. New Process Equipment

Process Area	Facility/ Equipment Name	Connected Load (Buildout)
17	Sourdough Intake (remote not connected)	40 KVA
16 &18	Hyalite & Sourdough Connection Bldgs.	10 KVA
17	Dosing Tank	1 KVA
85	Lagoon Lift Station	10 KVA
65	Generator Block Heater	~ 5 KW
65	Generator Battery Charger	0.5 KW
65	Operator House	5 KVA
19	Influent Flow Meter	200 watts
19	Influent Control Valve	~ 1 HP
19	Head Tower Level	200 watts
21	Grit Mechanism	10 HP
21	Grit Mechanism (future)	(10 HP)
21	Grit Pump 1	7.5 HP
21	Grit Pump 2	7.5 HP
21	Grit Pump 3 (future)	(7.5 HP)
21	Grit Classifier/Cyclone	1 HP
22	Rapid Mixer 1	10 HP
22	Rapid Mixer 2	10 HP
22	Rapid Mixer 3	10 HP
22	Rapid Mixer 4 (future)	(10 HP)
22	Rapid Mixer 5 (future)	(10 HP)
22	Rapid Mixer 6 (future)	(10 HP)
23	Flocculation Drive 1	1 HP
23	Flocculation Drive 2	2 HP
23	Flocculation Drive 3	3 HP
23	Flocculation Drive 4	1 HP
23	Flocculation Drive 5	2 HP
23	Flocculation Drive 6	3 HP
23	Flocculation Drive 7	1 HP
23	Flocculation Drive 8	2 HP
23	Flocculation Drive 9	3 HP

Process Area	Facility/ Equipment Name	Connected Load (Buildout)
23	Flocculation Drive 10 (future)	(1 HP)
23	Flocculation Drive 11 (future)	(2 HP)
23	Flocculation Drive 12 (future)	(3 HP)
23	Flocculation Drive 13 (future)	(1 HP)
23	Flocculation Drive 14 (future)	(2 HP)
23	Flocculation Drive 15 (future)	(3 HP)
24	Sludge Collector 1	1 HP
24	Sludge Collector 2	1 HP
24	Sludge Collector 3	1 HP
24	Sludge Collector 4 (future)	(1 HP)
24	Sludge Collector 5 (future)	(1 HP)
31	MF Feed Pump 1	150 HP
31	MF Feed Pump 2	150 HP
31	MF Feed Pump 3	150 HP
31	MF Feed Pump 4	150 HP
31	MF Feed Pump 5	150 HP
31	MF Feed Pump 6 (future)	(150 HP)
31	MF Feed Pump 7 (future)	(150 HP)
31	MF Feed Pump 8 (future)	(150 HP)
31	Bridge Crane	3 HP
32	Strainer 1	0.5 HP
32	Strainer 2	0.5 HP
32	Strainer 3	0.5 HP
32	Strainer 4	0.5 HP
32	Strainer 5	0.5 HP
32	Strainer 6	0.5 HP
32	Strainer 7	0.5 HP
32	Strainer 8	0.5 HP
32	Strainer 9 (future)	(0.5 HP)
32	Strainer 10 (future)	(0.5 HP)
32	Strainer 11 (future)	(0.5 HP)
32	Strainer 12 (future)	(0.5 HP)

Process Area	Facility/ Equipment Name	Connected Load (Buildout)
43	RF Pump 1	25 HP
43	RF Pump 2	25 HP
52	CIP Circulation Pump 1	15 HP
52	CIP Circulation Pump 2	15 HP
52	CIP Drain Pump 1	15 HP
52	CIP Drain Pump 2	15 HP
56	Neutralization Pump	15 HP
56	Neutralization Flow Meter	120 V
60	Air Compressor 1	7.5 HP
60	Air Compressor 2	7.5 HP
60	Air Compressor 3	7.5 HP
60	Air Compressor 4 (future)	(7.5 HP)
60	Blower 1	50 HP
60	Blower 2	50 HP
60	After Cooler 1	2 HP
60	After Cooler 2	2 HP
62	Service Water Pump 1	25 HP
62	Service Water Pump 2	25 HP
82	Gravity Thickener Mechanism	1 HP
82	Gravity Thickener Solids Pump 1	2 HP
82	Gravity Thickener Solids Pump 2	2 HP
82	Gravity Thickener Flow Meter	120 V
83	DAF Rake 1	0.5 HP
83	DAF Rake 2	0.5 HP
83	DAF Blower 1	20 HP
83	DAF Blower 2	20 HP
83	DAF Flow Meter	120 V
85	Decant Pump 1	20 HP
85	Decant Pump 2	20 HP
	Overhead Door Opener 1	0.5 HP
	Overhead Door Opener 2	0.5 HP
	Overhead Door Opener 3	0.5 HP
	Overhead Door Opener 4	0.5 HP
	Overhead Door Opener 5	0.5 HP
	Overhead Door Opener 5	0.5 HP
	Overhead Door Opener 7	0.5 HP
	Overhead Door Opener 8	0.5 HP
	Overhead Door Opener 9	0.5 HP

Process Area	Facility/ Equipment Name	Connected Load (Buildout)
	Overhead Door Opener 10	0.5 HP

11.2.4. Standby Power

The standby power will be provided by a new diesel engine generator that is proposed to be located outdoors with a Walk-In Weather Protective Enclosure with Sound Attenuation. The generator would be located on the south side of the driveway and parking area on the south side of the building.

The associated Automatic Throwover System will be located in the main switchboard and can be set in manual or automatic. In the automatic mode, when the throwover system senses loss of power from the Utility, the throwover system will start the generator. Once the generator voltage has stabilized the throwover system will switch to generator power. When the Utility power returns the throwover system will switch back and begin the engine cool down cycle.

In the manual mode, the generator would be started by the plant operator and then the throwover system will be switched to feed power from the generator or by the operator.

11.2.5. Uninterruptable Power Supply

All of the control system including PLCs, remote I/O panels and essential control and instrumentation equipment will be powered from an uninterruptable power supply (UPS) so that the associated components always have power. The length of time the UPS can supply power is limited, typically for 20/30 minutes, and is based on load and battery provisions. The main goal of the UPS is to provide instantaneous and continuous power during brief power outages and/or until the generator comes on-line.

11.2.6. Codes and Standards

The design will be in conformance with adapted codes of the Authority Having Jurisdiction, including:

- National Fire Protection Association (NFPA) 70 – National Electrical Code (NEC)

11.3. Design Criteria

11.3.1. Switchboard

The new plant main switchboard (SWBD-101) will be an outdoor switchboard housed in a walk-in type weather-proof enclosure. The switchboard will consist of normal (utility) power source main and standby engine generator main circuit breakers and a tie breaker and each of these circuit breakers will be electrically operated. Feeder circuit breakers (manually operated) will power plant load centers and be located in the new switchboard. Main circuit breakers will be the draw-out, insulated case type circuit breakers with programmable solid

state trip units. Feeder circuit breakers will be fixed mounted, molded case circuit breakers with programmable solid state trip units.

The switchboard will include an automatic throw over system that will be capable of detecting a utility power failure, starting the standby engine generator, opening the utility main circuit breaker and closing the standby engine generator circuit breaker, and powering the plant with the standby engine generator. The switchboard will include dedicated station service transformer and panelboard for heaters, status, control and other functions.

11.3.2. Standby Generator

The new standby diesel engine generator will operate at 480Y/277 volts, 3-phase, 4-wire and will comply with NEC 2008 – Article 702 (Optional Standby System) requirements. The initial generator sizing is based upon providing standby power for the new facility (active) loads identified in

Table 11-22. All building lighting circuits and power for the I&C and PLC controls will be considered standby power active loads. The standby loads for the new facilities are estimated at approximately 1,080 kVA. Assuming a 60% demand factor and future desired growth, the standby engine generator with a rating of 1,000 kW (1,250 kVA at 0.8 power factor) is required.

The final size of the generator will be determined during the design phase. It will be installed on a reinforced concrete equipment pad with seismically rated vibration isolators. It will be located outdoors with a Walk-In Weather Protective Enclosure with Sound Attenuation. The diesel storage tank will have a minimum storage capacity to allow full load operation of the generator for 24 continuous hours.

Table 11-2. New Equipment Identified for Standby Power

Process Area	Facility/Equipment Name	HP/Load
17	Sourdough Intake (remote not connected)	40 KVA
16 & 18	Hyalite & Sourdough Connection Bldgs.	10 KVA
17	Dosing Tank	1 KVA
85	Lagoon Lift Station	20 KVA
65	Generator Block Heater	~5 KW
65	Generator Battery Charger	0.5 KW
65	Operator House	5 KVA
19	Influent Flow Meter	200 W
19	Influent Control Valve	~1 HP
19	Head Tower Level	200 W
21	Grit Mechanism	10 HP

Process Area	Facility/Equipment Name	HP/Load
21	Grit Pump 1	7.5 HP
21	Grit Classifier/Cyclone	1 HP
22	Rapid Mixer 1	10 HP
22	Rapid Mixer 2	10 HP
23	Flocculation Drive 1	1 HP
23	Flocculation Drive 2	2 HP
23	Flocculation Drive 3	3 HP
23	Flocculation Drive 4	1 HP
23	Flocculation Drive 5	2 HP
23	Flocculation Drive 6	3 HP
24	Sludge Collector 1	1 HP
24	Sludge Collector 2	1 HP
31	MF Feed Pump 1	150 HP
31	MF Feed Pump 2	150 HP
31	MF Feed Pump 3	150 HP
31	MF Feed Pump 4	150 HP
31	MF Feed Pump 5	150 Hp
32	Bridge Crane	3 HP
32	Strainer 1	0.5 HP
32	Strainer 2	0.5 HP
32	Strainer 3	0.5 HP
32	Strainer 4	0.5 HP
32	Strainer 5	0.5 HP
32	Strainer 6	0.5 HP
32	Strainer 7	0.5 HP
32	Strainer 8	0.5 HP
43	RF Pump 1	25 HP
52	CIP Circulation Pump 1	15 HP
52	CIP Drain Pump 1	15 HP
56	Neutralization Pump	15 HP
56	Neutralization Flow Meter	120 V
60	Air Compressor 1	7.5 HP
60	Blower 1	50 HP

Process Area	Facility/Equipment Name	HP/Load
60	After Cooler 1	2 HP
62	Service Water Pump 1	25 HP
82	Gravity Thickener Mechanism	1 HP
82	Gravity Thickener Solids Pump 1	2 HP
82	Gravity Thickener Flow Meter	120 V
82	Gravity Effluent Pump 1	2 HP
83	DAF Feed Pump 1	25 HP
83	DAF Rake 1	0.5 HP
83	DAF Blower 1	20 HP
83	DAF Residuals Pump	1 HP
83	DAF Flow Meter	120 V
85	Decant Pump 1	20 HP

11.3.3. Motor Controls

Motor Control Centers (MCCs) will be used in areas with motor loads, which are specifically designed for the control and protection of low voltage motors. All MCCs are proposed to be installed in the electrical room. Constant speed motors will be powered and controlled by full voltage non-reversing (FVNR) combination motor starters in the MCC or included in a package system control panel. Each motor starter will include a magnetic-only circuit breaker, a motor starter contactor, an ambient compensated overload relay and heaters, and a dedicated control power transformer. All motor controls will include provisions to allow the equipment to be automatically restarted after a power outage.

Variable Frequency Drives (VFDs) will be housed in the MCC with small enough ampacity rating or in NEMA 1 rated, free-standing enclosures. VFD enclosure doors will include a keypad and display, with provisions for HAND/OFF/AUTO control, local speed control. VFD driven pumps with a rating of 50 Hp or smaller will use standard 6-pulse input drives. VFD driven pumps with a rating of 60 Hp or larger motors will use clean-power, 18-pulse input drives or low pass filter input drives in order to limit negative impacts to the plant from electrical harmonics created by the drives.

11.3.4. Safety Switches

Safety switches will be installed for all powered machines, with disconnects also provided immediately adjacent to the machine. This includes all electric motors, motor actuated valves and gates, and for all HVAC equipment as required by the NEC. NEMA Type HD, heavy-duty, quick-make/quick-break, visible blade, non-fused will be used. NEMA 12 rated enclosures will be used for general purpose, indoor use. NEMA 4X rated enclosures for outdoor applications and for applications in corrosive areas.

11.3.5. Panelboards

Panelboards are used for the distribution and protection of branch circuits to receptacles, lights and other low voltage loads. Dead-front type, 1-phase/3-wire or 3-phase/4-wire as required, 120/208 or 480 volt, solid neutral bar with mechanical lugs, and non-insulated grounding strip. Thermal magnetic, bolt-on circuit breakers will be used.

11.3.6. Surge Protection Devices

Transient voltage surge protection will be provided on each 480 volt bus and some distribution equipment to provide a degree of protection for the electronic equipment loads against transient voltage spikes caused by utility switching and lightning.

11.3.7. Raceways

Interior exposed conduits will be galvanized rigid steel (GRS). Conduits embedded in walls and floor slabs, and conduits routed under floor slabs and equipment pads will be schedule 40 PVC. Exterior exposed conduits will be GRS. Underground concrete-encased conduits will be schedule 40 PVC, except underground low-voltage discrete control (less than 120 volts) and analog circuits, which will be installed in GRS conduits to provide additional electromagnetic shielding.

11.3.8. Device and Junction Boxes

In interior dry locations, device and junction boxes will be NEMA 12 galvanized steel. In interior clear well and damp locations, and in all exterior locations, device and junction boxes will be NEMA 4X type 316 stainless steel water tight and corrosion resistant.

11.3.9. Conductors

Conductors will be constructed from stranded copper and include a 600 volt type XHHW-2 insulation. Multi-conductor control cables will include No. 14 AWG conductors with 600-volt type XHHW-2 insulation and a common PVC outer jacket. Cables for analog signals will be of the twisted shielded pair (TSP) type and include 600-volt type THHN/THWN insulation and aluminum/synthetic polymer shield, drain wire, and PVC outer jacket. Conductors for VFD driven motors shall be 600-volt type, multi-conductor, shielded power cable to mitigate electromagnetic interference with adjacent wiring circuits.

11.3.10. Lighting

In general, lighting will be designed for energy conservation and will meet the Illuminating Engineering Society's (IES) recommended practices. Where feasible, T5 style fluorescent lamp fixtures will be used to maximize energy conservation.

General purpose interior illumination will be provided by fluorescent fixtures mounted in or near the ceiling with additional task lighting provided under wall mounted cabinets. Additional fixture requirements will be addressed during the detailed design of the facility. A separate lighting panel with a surge suppressor and isolating transformer will be provided to serve analytical instruments and computer equipment.

On site lighting for the building entrance, parking lot, and entrance road will be designed to minimize offsite glare by use of full cut-off type fixtures.

11.4. Special Electrical Systems

11.4.1. Communication System

Phone service will be provided with a main switchboard in the reception area with lines to each office, the laboratory, kitchen/break room, meeting room, control room and two service bay/vehicle parking area. The meeting room and each office will be equipped with phones capable of performing conference calls.

Internet service will be provided via a main server with a dedicated T1 or better line interconnected with the City offices. Each office, the control room, and the meeting/training room will be equipped with a communication cable. The control room will have a communication cable for each computer plus spares.

11.4.2. Fire Alarm System

The Admin/Lab portion of the building will be evaluated during final design for possible installation of a fire sprinkler system and alarm system. The service area and vehicle parking areas as well as the main process areas will not include a sprinkler system. Telephone service will be connected to the new access control system for remote monitoring services.

11.4.3. Access Control System

The new plant building will include an access control system, which will include card readers, PIN keypads, door position switches, motion sensors and glass break sensors as deemed appropriate during final design. Alarm Lock brand key pad systems will be evaluated for use during final design for ke-pad locks for the facility. The access telephone service will be connected to the new access control system for remote monitoring services.

11.4.4. Public Address (PA) System

No PA system will be installed as part of this project.

11.4.5. Fiber Optic Network System

The new fiber optic network will be used for Ethernet communications of the process control equipment. This includes communications between programmable logic controllers, remote input/output devices, and the human-machine interface workstations. Reference Chapter 12 for more information regarding the proposed expansion of the fiber optic network.

11.4.6. SCADA System and Control Room Wiring

SCADA system and control room wiring will be located in an in-floor access flooring system to allow for ease in future modification and expansion.

11.5. Design Drawings

11.5.1. One-Line Diagrams

An electrical one-line diagram will define the distribution system. This schematic representation of the overall system indicates the relationship of the utility to the distribution equipment, the relationship of the distribution equipment to the utilization equipment and the type and rating of equipment to be used. The one-line diagram will be used to communicate electrical design information to the Owner, to the construction Contractor, to the utility and to all design team members.

11.5.2. Electrical Site Plans

A site plan will be used to show the location of the incoming power, location of all structures and location of site lighting and other miscellaneous equipment requiring electrical service. The desired routing of conduits between the served units will be shown on this plan. The conduit runs will be tagged to identify the quantity and type of each conduit, the load served by each conduit and if the routing is overhead or underground. Underground conduit will be further identified as direct buried, concrete encased or reinforced concrete encased.

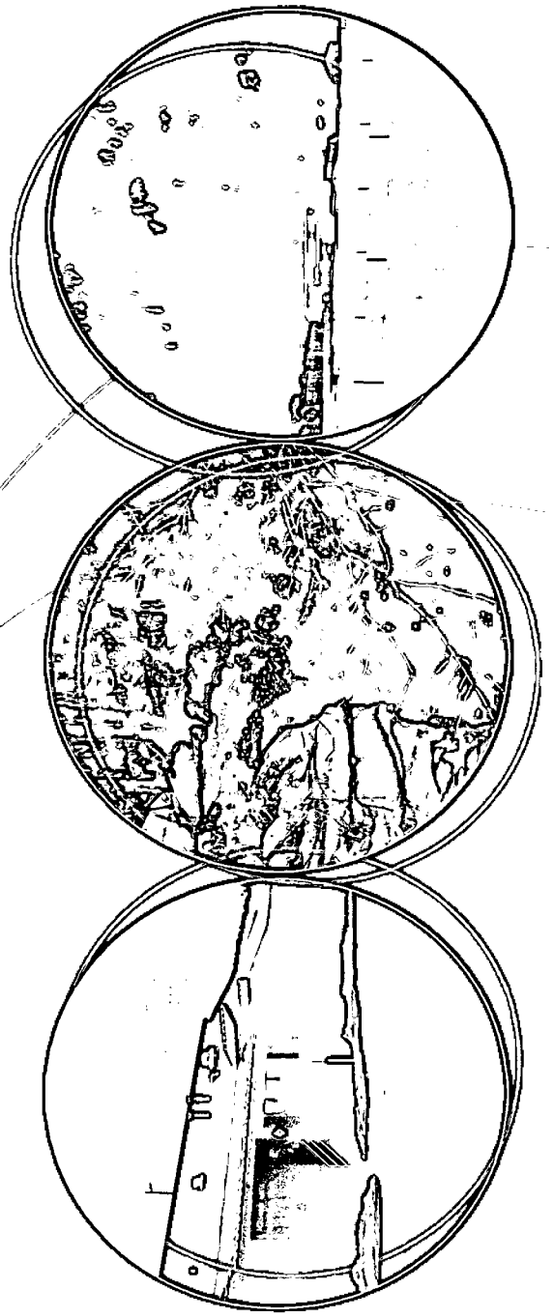
11.5.3. Lighting and Power Plan Drawings

Plan drawing(s) of the structure(s) will be used to show the location of electrical distribution equipment, the location of equipment requiring electrical service, the interior lighting layout, the location of exterior area luminaries mounted on the structure and the location of switches and receptacles. General 120 volt receptacles will be provided with 240 volt receptacles provided at specific locations as necessary to meet equipment requirements.

- Classified areas relevant to the structure will be identified on this plan.
- Home run symbols will be used to identify the source of power for the load equipment.
- Wire and conduit sizes not identified on the electrical one-line diagram, control block diagrams, scheduled or specified will be indicated on the lighting and power plan drawings.

11.5.4. Control Diagrams

Electrical schematic control diagrams are provided to define the devices required and to show the interlocking between control devices and the controlled equipment. The schematic diagrams may be used for single phase and three phase circuits but are not intended to provide interconnect wiring information.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 12. Instrumentation and Controls

Prepared by: Don Best

Reviewed by: Dan Harmon

Date: October 31, 2010

12.1. Introduction

The Bozeman Hyalite/Sourdough Water Treatment Plant (WTP) Replacement project will require an installation of an entirely new automated facility control system. Programmable Logic Control (PLC) and Human-Machine Interface (HMI) equipment will be installed to provide automatic process controls and operator supervision. The membrane treatment system requires a high level of automation that is not practical without the use of a modern Supervisory Control and Data Acquisition (SCADA) System.

The purpose of this section is to provide procedures and direction that will be used in the development of contract documents for the control system for the Water Treatment Plant (WTP), and for integration of the new water treatment plant controls with the existing City Public Works SCADA network that both monitors and controls the City storage and distribution system.

12.2. General

This section describes the control, SCADA and instrumentation systems for the facilities installed under the plant replacement project. The instrumentation and control system consists of field mounted control devices and instruments, communication systems, and the supervisory control and data acquisition (SCADA) system.

12.3. PLC Control Panels

The programming for the automatic controls will reside completely in the PLC logic. The PLC(s) will automatically operate the plant even if the SCADA workstation is not currently operating. The SCADA workstation is used only as a window, or operator interface to the automatic controls residing in the PLC.

The PLC equipment at the WTP will be furnished through two separate implementation avenues. The membrane filtration equipment manufacturer will provide full PLC control and system responsibility for the membrane filtration system and all equipment provided by the membrane filtration system manufacturer. The remainder of the plant processes and function will be addressed by a plant wide PLC system provided and installed by the

construction Contractor. Software integration of the plant wide PLC system will be completed by the City's engineer or designated integrator. Allen-Bradley ControlLogix PLC hardware will be used.

Due to the construction of the new building and treatment system and abandonment of the existing system, the City's existing Public Works Contrologix PLC and associated HMI workstation will be eliminated. Required communications with the City Public Works Shop will be sent via the Sourdough WTP server via land line communication. PLC panels will also be located in areas with high concentration of process control signals (such as near motor control centers or the membrane treatment area).

The type and location of the PLC hardware will be examined further during the design process when the facility locations and I/O requirements are better known. In general, ControlLogix PLCs and Remote I/O Racks will be used in areas with large quantities of Input/Output modules are located and high levels of automation are required. FlexI/O type Racks may be used to save costs where the Input/Output requirements are not significant.

12.4. Existing SCADA and Plant Controls

The existing control panels at the WTP originally included hard-wired control automation of the filtration process. An in-plant SCADA system, manufactured by TSR (Salt Lake City, Utah) was also employed as a parallel system to the hard-wired controls and is used principally to monitor the plant process and provide limited plant control function. In addition to the TSR SCADA system, the City also has full control of all off-site storage and distribution facilities via the City's Public Works SCADA Network. The existing Public Works SCADA network, as detailed in the SCADA Network Architecture Figure included at the end of this Section, includes the following general functions:

- The Sourdough Water Treatment Plant communicates with the City Shop SCADA system via a City owned Wide Area Network (WAN). The communication link has not been working well and will not be relied upon for operation of the new water treatment plant.
- Long range telephone (direct buried cable) modems are used for a connection between the Sourdough Water Treatment Plant and the Hyalite Intake Building. Communications to the Hyalite Intake have not been reliable. A different communication path may need to be included in the design if the existing communication link cannot be satisfactorily repaired.
- The Sourdough Bypass communicates directly with the Sourdough Water Treatment Plant via licensed frequency radios. (Data Radio Integra-TR).
- The Hilltop Tank level may be monitored at the Sourdough Water Treatment Plant via a radio communication link (Data Radio Integra-TR with 900 MHz unlicensed frequency). This communication link has been functioning very reliably. Data from the hilltop facility is also transmitted directly to the City Public Works Shop via a direct Ethernet connection between the City Shop via two (Cisco Aironet Series 350) radios.

- Status of other City remote sites (Lyman Creek, Pear Street Booster, Baxter Meadows, Hilltop Tank, Knolls Booster) are obtained via the Bozeman City WAN to the City Shop. As stated above the Sourdough WTP connection to the City Shop has not been working reliably. As part of the design, the installation of new radios at Lyman Creek, Knolls Booster, and Pear Street will be considered to allow the new Water Treatment Plant to communicate with these sites directly (instead of through the City Shops).
- The Lyman and Pear Street stations both communicate to the Hilltop Tank Station PLC via licensed frequency radios. Information is gathered at the PLC, introduced into the City Wonderware Intouch software over an Ethernet radio bridge between the City Shop and the Hilltop PLC.
- The Lyman Station also serves as a repeater for the Bridger Lift Station.

The SCADA System at the Sourdough Water Treatment Plant currently relies on the SCADA Servers located at the City Shops to operate. This architecture will be changed such that new SCADA Servers will be located at the Sourdough Water Treatment Plant. This will eliminate the challenges being created due to an unreliable WAN (T1) link to the City Shops. The Distribution Superintendent at the City Shops may access the WTP SCADA System either by including a SCADA Terminal at the City Shops or by using remote access software such as PCAnywhere.

The Sourdough Water Treatment Plant SCADA system will not include the Lift Station Sites (Cattail, Loyal Garden, Bridger Center, Burrup, Laurel Glen, and Baxter Meadows). The Sourdough Water Treatment Plant SCADA system will be configured to communicate necessary information to the City Shops via a land line communication system. All the existing Public Works and Wonderware supported control panels have been more recently fabricated by Industrial Automation Consulting (Three Forks, MT).

12.5. HMI System

The main HMI system currently consists of two separate SCADA workstation/servers located in the main control room at the Sourdough Water Treatment Plant. One system is based on the TSR (Total System Resource) HMI package, and the other is based on Wonderware InTouch.

The TSR user interface is provided via a separate computer workstation. The TSR user interface will no longer be required once the new plant upgrades are completed.

The Wonderware InTouch graphical user interface currently in use is a single desktop workstation. This system is currently connected to the plant ControlLogix PLC for monitoring and control of Sourdough Bypass and Hyalite Intake Building. The Wonderware InTouch version 8.02 running on Windows 2000 is proposed to be upgraded to Version 10.0 or the most current available running on Windows XP. The terminal services architecture would still be used. The number of Wonderware InTouch tags needed for the plant expansion will require upgrading to a 3000 tag license. The current Wonderware InTouch license is a 1000 tag license, and there are approximately 700 tags currently in the database. It is also recommended that the Wonderware software support agreement be re-instated to facilitate keeping the system current.

At this time, it is anticipated that the existing Control Room will be demolished following completion of the new treatment facilities. It is proposed that a new InTouch Client Workstation be installed within the new control room of the new facility. The Client Workstation will become the primary I/O server for the facility and will communicate directly with the Pall Corporation provided PLC system that will be located in the main filtration area adjacent to the new membrane filtration skids. A new Ethernet network using fiber optic cables will be extended to the new facilities. The existing Sourdough Water Plant connection with the existing Public Works SCADA network will be changed to a new land-line communications link to replace the existing City Wide Area Network (WAN) communications link.

A new HMI workstation/server will be purchased at the time of final system integration and will utilize the latest technology for processor and memory. It will be installed in a free-standing, enclosed rack with a UPS and Ethernet networking hardware. The functions provided by the HMI Workstation/Server are listed in

Table 12-1.

Table 12-1. HMI Workstation/Server Functions

Function	Description	Comment
I/O Server	Rockwell Automation RSLinx rev 2.43	Allows for communication between the PLCs and the HMI System
HMI Runtime	Wonderware InTouch Runtime ver. 8.02	Provides graphical user interface
HMI Development	Wonderware InTouch Development ver. 8.02	Allows graphical user interface screen and tagname dictionary development
HMI Screen Server	Wonderware InTouch Terminal Services ver. 8.02	Provides graphics for the two Client workstations
PLC Programming	Rockwell Automation RSLogix5000 Professional ver. 13	Software for the development and troubleshooting of the PLCs
Remote Access	Symantec PCAnywhere	Allows system integrator remote access to the system via phone lines to provide troubleshooting services
Alarm Notification	Wonderware SCADAlarm ver. 5.0	Software that provides the alarm dialing functionality

The proposed Wonderware package will include a historian function which will run on a new server designated to handle this function. The package will also include Active Factory, the Wonderware report generating software. This new server will also be located at the new Administration Building.

The HMI system will include operator terminals in the control room. Additional operator terminals may also be installed in other locations throughout the plant for easy access. The HMI system will also have to ability for remote access via a City Owned laptop running PCAnywhere.

It is anticipated that the project will include the installation of a Hach WIMS (Water Information Management Solution) software with WIMS add-in that allows it to access with the Wonderware Historian (InSQL) data on a separate computer workstation.

The HMI System will have the ability to communicate with Hach WIMS to transfer process data. The Hach WIMS will provide the following functions:

- Prepare regulatory reports
- Trending and data management functions.
- Track and Manipulate water rights information, chemical consumption, energy consumption, instrument readings.

12.6. SCADA Communications Network

A fiber optic cable network will be installed throughout the plant building allowing the SCADA system components to pass information via Ethernet communications. The network is configured with a star type topology where each of the PLCs within the plant is connected directly to the main Ethernet Switch at the Control Room.

The SCADA Communication (Ethernet) system will have all networking for the PLCs and HMIs connected to the Main Ethernet switch location in the Control Room of the treatment building.

12.7. Control Systems

This section provides a description of the features of the plant expansion controls.

12.7.1. PLC Control Panels

PLC Control Panels will be provided to house the PLC hardware and associated power supplies, networking hardware, and field terminal strips. The control panels will be similar to the existing panels currently being installed at the wastewater facility. The control panels shall be UL508A (Industrial Control Equipment). The panels will be free-standing and constructed from either painted steel or stainless steel.

Where vendor/manufacturer supplied control panels are provided with PLC hardware, they will be required to use Allen-Bradley ControlLogix hardware to match the Owner's equipment currently installed at the Bozeman Hyalite/Sourdough Water Treatment Plant and also at the wastewater facility (WRF). This will help simplify spare parts requirements, troubleshooting, and integration with the Plant Control System.

12.7.2. Control Hierarchy

In general, each piece of process or mechanical equipment will be provided with controls at the field equipment and through the SCADA system. Control panels provided by manufacturers for control of stand-alone equipment shall be considered as local control panels. Intermediate control panels will not be used.

Field Controls

Where feasible, the controls that will be field-mounted adjacent to the controlled equipment will be provided with a LOCAL-REMOTE selector, a START pushbutton and a LOCK-OUT-STOP button in a local control station. In general, no local indicator/status lights will be provided at a local control station. If a LOCK-OUT-STOP button is not provided, a local disconnect will be provided for lockout of equipment at the motor location. Valves and similar equipment will be provided with a LOCAL-REMOTE selector, an OPEN pushbutton, a STOP pushbutton and a CLOSE pushbutton which allows local position control when needed. A local disconnect will be provided for lockout of valves at the valve location. Other control functions will be provided as applicable to the equipment.

The PLC will monitor the position of the LOCAL-REMOTE selector and display this on the SCADA terminals. The PLC will also monitor the VFD SPEED feedback signals, and POSITION feedback signals (analog) from modulating flow control valves.

All process transmitters will be furnished with an integrated display. For example, a flowmeter will include a display to indicate the measured flow in engineering units. Local disconnects will allow isolation of equipment from electrical service for maintenance.

MCC Controls

No controls will be provided on the full-speed (across-the line) motor starters for except the standard disconnect and the overload reset. If motor starter is equipped with safety interlocks, it will include indicator lights to indicate the fault status and also include the associated RESET pushbutton.

VFD Controls

All Variable Frequency Drives (VFDs) will be provided with the ability to locally adjust the motor speed, LOCAL-REMOTE selection, and START/STOP commands from the operator keypad. The VFD cabinet will be equipped with a speed control potentiometer which will be used to determine the operating speed of the pump when started from the local control station (field controls) or from the VFD cabinet.

HMI Controls

The equipment will be provided with two control modes that are selectable from the HMI graphic display: MANUAL and AUTOMATIC. In MANUAL mode, if the local control mode is in the REMOTE position, equipment can be started and stopped manually from the graphic display. In AUTO the equipment will be controlled according to the PLC automatic control logic programming, or if there is no automatic control logic, then the control will be manual only from the HMI graphic display. Process operational set points will be adjustable from the HMI graphic displays. HMI graphics will display process signals (e.g., flow, level) in engineering units. Pump speed feedback signals from VFDs will be displayed as 0-100% signals corresponding to the motor operating speed between 0-60 Hz.

Safety Interlocks

All personnel and equipment safety interlocks will be implemented through hardwired connections to the equipment motor control circuits. Interlocking for personnel and

equipment safety will not be done through the PLC or SCADA system. Safety interlocks must be manually RESET at either the local control station or motor starter.

General Equipment Monitoring Requirements

Operational status of each piece of equipment will be available on the HMI terminals. The status signals to be monitored for standard process devices are listed in Table 12-2.

Table 12-2. Standard Process Devices HMI Status Monitoring

Equipment with Constant Speed Motor	Pump with Variable Frequency Drive	Motor-Operated Valve or Gate with Open/Close Control	Motor-Operated Flow Control Valve (modulating)
Remote Status	Remote Status	Remote Status	Remote Status
Run Status	Run Status	Open Position	Valve position signal
Fault Status	Fault Status	Closed Position	
Run-Time Counter	Run-Time Counter	Fail to Open Alarm	
Fail to Start Alarm	Fail to Start Alarm	Fail to Close Alarm	
Fail to Stop Alarm	Fail to Stop Alarm		
Specific Alarms (if used)	Speed Feedback signal		

Alarm contacts for equipment interlocking and alarming will be provided as direct input to the PLC. Alarms will be annunciated on the SCADA. Field annunciation panels will not be used unless they are included in equipment manufacturer's local control panels. The control system will include beacons and horns located throughout the plant to alert operators of active alarm conditions.

The ISA Alarm sequence used on the HMI terminals will be the same as what is currently used.

12.7.3. Offsite Communications and Monitoring

The existing offsite communications is outlined above in paragraph 12.4. The monitoring and controls functions for the offsite facility will be integrated into the new HMI system. This will provide single point of monitoring and controls for the operators, as well as make it easier for offsite controls via remote access software.

The HMI system will have the remote access capabilities for remote monitoring and controls of the facility using PCAnywhere software.

Additional radio communication paths may need to be installed to some of the remote sites to improve the reliability of communications. These options will be further explored during the design.

12.7.4. Instrumentation Numbering

See Appendix D – Equipment Design Guide for instrument numbering for this project.

12.7.5. Equipment Identification

See Appendix D – Equipment Design Guide for facility numbering which will be used for this project.

NETWORK INFORMATION

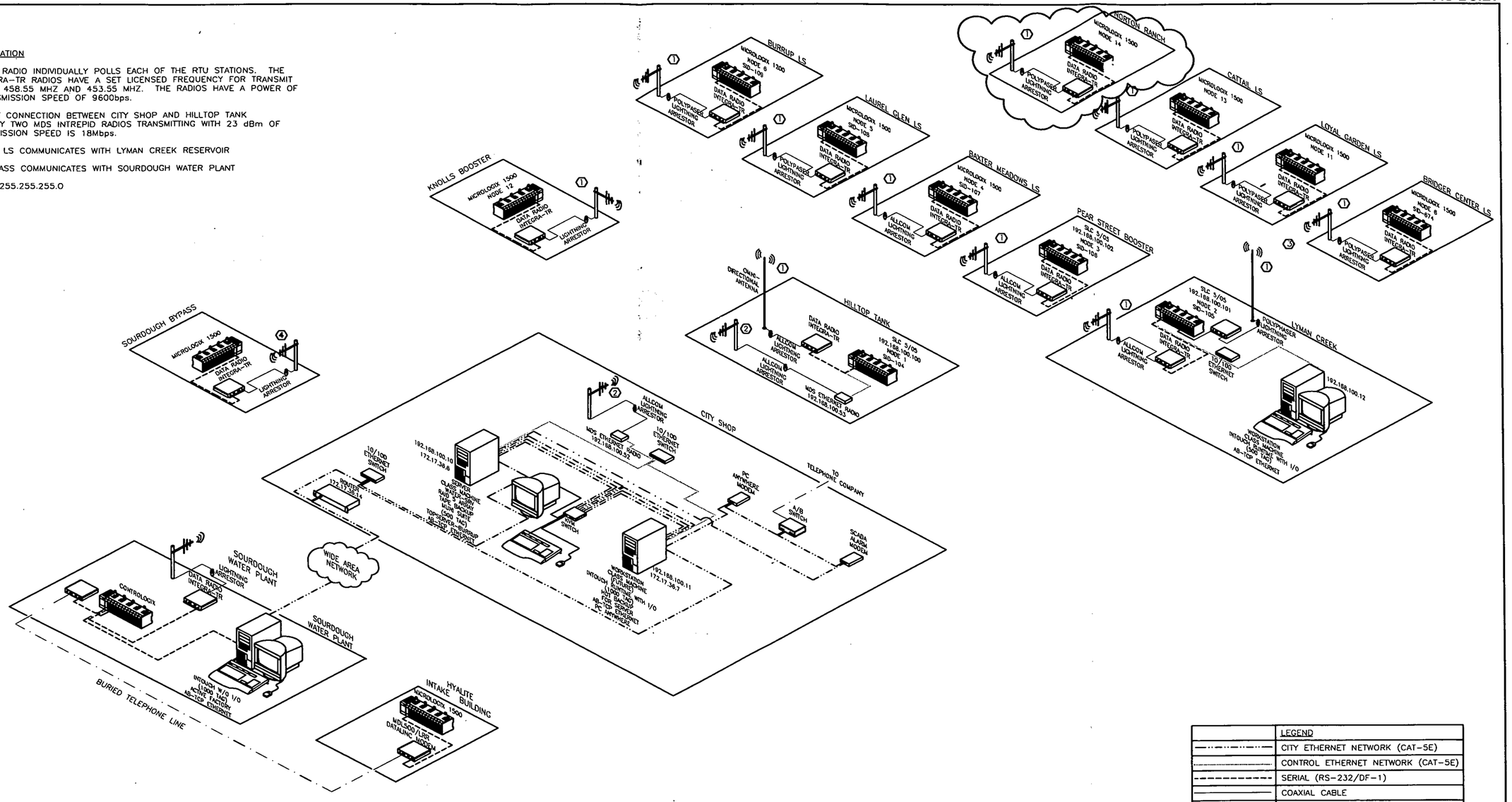
(1) POLLING MASTER RADIO INDIVIDUALLY POLLS EACH OF THE RTU STATIONS. THE DATARADIO INTEGRA-TR RADIOS HAVE A SET LICENSED FREQUENCY FOR TRANSMIT AND RECEIVE OF 458.55 MHZ AND 453.55 MHZ. THE RADIOS HAVE A POWER OF 5W AND A TRANSMISSION SPEED OF 9600bps.

(2) DIRECT ETHERNET CONNECTION BETWEEN CITY SHOP AND HILLTOP TANK ACCOMPLISHED BY TWO MDS INTREPID RADIOS TRANSMITTING WITH 23 dBm OF POWER. TRANSMISSION SPEED IS 18Mbps.

(3) BRIDGER CENTER LS COMMUNICATES WITH LYMAN CREEK RESERVOIR

(4) SOURDOUGH BYPASS COMMUNICATES WITH SOURDOUGH WATER PLANT

SUBNET MASK: 255.255.255.0



	LEGEND
	CITY ETHERNET NETWORK (CAT-5E)
	CONTROL ETHERNET NETWORK (CAT-5E)
	SERIAL (RS-232/DF-1)
	COAXIAL CABLE
	TELEPHONE LINE

BOZEMAN PUBLIC WORKS

BOZEMAN, MONTANA

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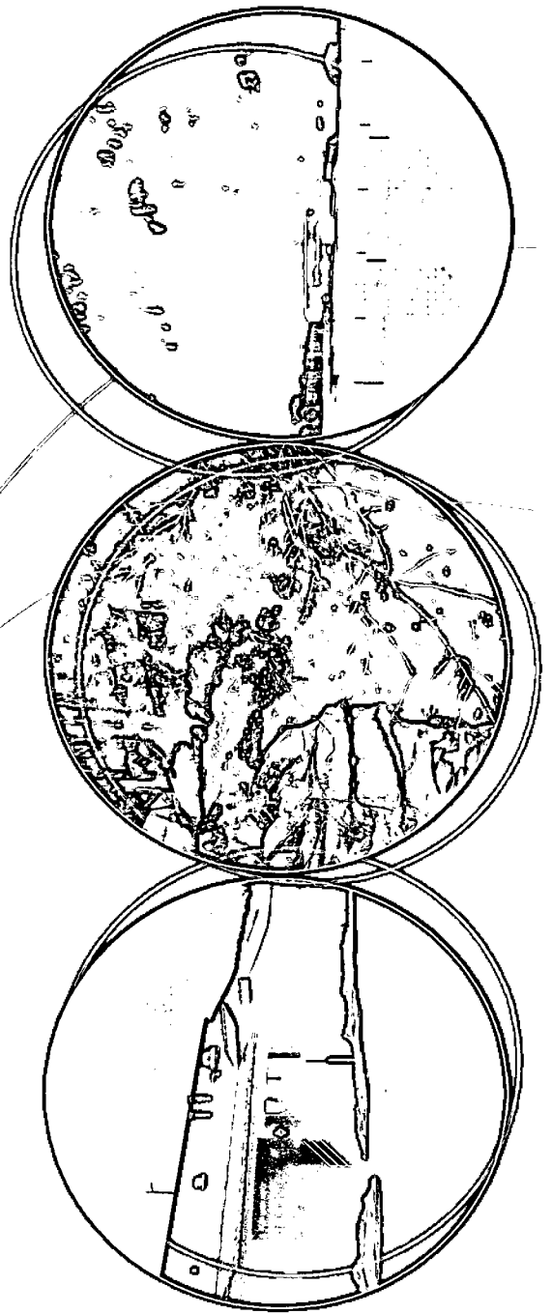
Phone: 406 285-4627
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CITY OF BOZEMAN, MONTANA
SCADA NETWORK ARCHITECTURE

PROJECT NO.	BPW06053
DATE:	09/17/2006
REVISED:	
FILE NAME:	NETWORK.dwg
DRAWN:	KTC
APPROVED:	
SHEET	N

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Section 13. Site Civil/Yard Piping/Residuals Discharge/Landscaping

Prepared by: James Nickelson

Reviewed by: Mike Hickman

Date: August 27, 2010

13.1. Introduction

The City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement project will require numerous changes to the existing site. This section provides preliminary design information on the listed topics.

13.2. Survey and Control

Survey work was completed by Morrison Maierle utilizing conventional and GPS equipment. Information included in the survey included topographic, utilities, and adequate documentation of the property boundary for purposes of design. A control network was established to be utilized for construction of the project. The control data will be included in the construction plans.

13.3. Grading and Drainage

The site of the water treatment plant generally slopes from south to north. Drainage will be directed away from structures and conveyed to the west and north portion of the project. Runoff from the parking/service drive area will be sent to a retention pond. Runoff from the roof and overall site will be directed to the lagoon. These steps will be utilized to reduce runoff to pre-development levels. A storm sewer collection system will be required on the south side of the treatment plant to adequately provide for drainage while allowing the grades in the access roads and service areas to be serviceable for normal uses.

13.4. Geotechnical Survey

A geotechnical investigation has been completed as part of the preliminary design phase of the project. The investigation included an investigation of the water treatment plant site as well as the Sourdough Intake site. The geotechnical report is included in Appendix G. Noted recommendations are as follows:

- Water Treatment Plant Building

  The borings for the Water Treatment Plant Building site encountered fill extending to depths ranging from 8.5 to 11 feet which is underlain by soft wet clays in two of the boring to depths ranging from 11.5 to 16 feet. It is SK Geotechnical's opinion that the Water Treatment Plant building cannot be supported on the existing fill and soft wet clays. It is recommended to subexcavate all of the existing fill and soft clays and replace it with compacted sandy gravel. The building could then be supported on conventional spread footings bearing on the compacted gravel fill. Another alternative would be support the structure on deep foundations such as driven closed end pipe pile or drill piers with a grade beam and structural floor system.

  If the subexcavate/replace method is used, the existing fill and soft wet clay will need to be removed and replaced with structural fill on an oversize zone of ½:1 (horizontal to vertical out from and below outer edge of concrete spread footings). The structural fill would need to be compacted to 100% of its maximum dry density. It is recommended that the structural fill meet a gradation of 100% passing the 4", 35-65% passing the No. 4, less than 8% passing the 200 sieve and having a plastic index less than 6. It is believed that the onsite native gravels will meet the gradations specification after sizing the native gravels through a grizzly screen. It is recommended that all below grade foundations have a perimeter foundation drain. After the necessary earth work has been performed, it is SK Geotechnical's opinion that the Water Treatment Plant building footings can be designed for a net allowable bearing pressure up to 4000 PSF.

  If a deep foundation system is used, the closed end pipe pile or drill piers will need to extend into the native alluvial gravels. The depth that the pile or drilled pier will need to extend into the native gravels will depend on the required loads on the deep foundation system. This option is not being pursued due to cost concerns.

- Intake Building

  The boring performed in the Intake building area encountered 1.5 feet of fill over rather stiff wet clays underline by silty gravels. Below the silty gravels, poorly graded gravel with sand, cobbles, and boulders was observed to the termination depth of the boring. It is SK Geotechncial's opinion that the Intake building should not be built on the clay and the site should be excavated to native gravels, with materials and compaction matching the above stated requirements for the Water Treatment Plant Building. It is recommended that the footings be designed for a net allowable bearing pressure up to 4000 PSF.

13.5. Access Roads, Parking and Service Areas

13.5.1. Site Access

Access to the site will not be changed by this project. The Sourdough Canyon Road access point will remain at the same location and configuration. It is anticipated that improvements with this project will include an asphalt overlay to the access road.

13.5.2. Site Security and Fencing

No changes in site security are proposed with this project. Plant staff has indicated a preference to remove existing fence where possible. The desire is to remove the fence from the Sourdough Canyon Road frontage with the exception of the access gate. During the final design phase, existing fencing will be reviewed with plant staff to determine what additional fence they would like added or removed with the project.

13.5.3. Site Parking

Parking at the site is required for employee vehicles as well as Water Treatment Plant vehicles. Water Treatment Plant vehicles will be provided garage parking. Parking for employee vehicles and visitors will be provided on site. It is proposed to provide a total of nine delineated parking spaces near the building which will include one accessible parking spot. In addition to the delineated parking spaces, additional parking for approximately 20 vehicles needs to be provided for tours and other occasional events. It is intended that the paved area needed for large truck access and turning motions will be utilized for this occasional parking need.

13.5.4. Site Service Roads

The main site service access roads will include the parking/service drive on the south side of the new plant and improvements to the road to the connection buildings. These service roads will be paved.

In addition, access will be needed to the north side of the new plant, the sludge drying beds and the lagoon. The surfacing for these roads could range from no surfacing (native grass) to asphalt. Plant staff have indicated a desire to keep the grass field intact as much as possible. The only critical facility needing year around access is the lagoon lift station which could be accessed by plant's all terrain vehicle if needed. The project will not include formal surfacing of this area which will require sludge maintenance activities to be scheduled for summer or fall to find a dry period where trucks can drive on the native soils. As plant flows increase over time there may be a need to access the drying beds more frequently which might require access during wetter times of the year, if this occurs, the area will need to improved to include gravel access to some of the drying beds.

Semi truck access is needed for chemical and other deliveries. Based on input from plant staff, a 100 foot wide asphalt parking/service drive will be provided to allow for semi truck turning movements.

The service road layout allows for ease of snow plowing. Adequate snow storage space is available on the site with the relocation of the fence on the east end of the parking/service drive.

13.6. Landscaping

Formal landscaping at the site is not desired. The general landscape theme is to utilize short native grasses in areas near the plant and to continue the haying operation on the property where possible. No irrigation facilities are desired.

13.7. Stormwater Management

13.7.1. During Construction

The Contractor will be required to obtain a stormwater discharge permit for the project for the duration of the construction project. The Contractor will be required to prepare a Stormwater Pollution Prevention Plan and maintain the plan until the site is stabilized adequately to submit a Notice of Termination. With Best Management Practices in place there does not appear to be any significant concerns with stormwater management during construction. The Contractor's plans will need to address potential overflow water from the existing plant's backwash basins.

13.7.2. During Operation

Long term stormwater management will include detention/retention ponds constructed in accordance with the City of Bozeman's Design Standards. The site plan shows a small pond to accommodate floor drains for vehicle melt off in the garage area and a series of larger ponds to collect parking, service drive, roof and general site runoff. Periodic maintenance will be required on the storm drainage system and the detention/retention ponds.

13.8. Yard Piping

A considerable amount of yard piping will be required for the new plant. The following is a listing of the various yard piping components required for the project:

- Raw water supply lines
    - Sourdough Supply – Project will connect to the existing 30-inch pipe to the proposed Sourdough Connection Building, and will reconnect to the existing 30-inch pipe. Expanding the Hyalite Connection Building to allow room for the Sourdough connection building will be explored during the final design phase to see if this can be completed cost effectively.
    - Hyalite Connection Building Supply – No changes are proposed
    - Secondary Hyalite Supply – No changes are proposed
    - Supply to new head tower – The existing 36-inch bypass line, located west of the existing building, can potentially be used to supply the proposed 42-inch supply pipe. If this existing pipe is not used, connections will need to be made near the existing meter/valve vault located near the south west corner of the existing plant.
- Connection line to existing creek outfall line – A 30-inch outfall line will be extended from the proposed head tower to the existing outfall pipe.
- Supply line (42-inch) to 8 foot (96-inch) diameter chlorine contact pipe
- Supply line (42-inch) from end of contact pipe to existing transmission pipes
- Supply line (4-inch) from chlorine contact pipe to plant for potable use

- Potable service line (1-inch) from plant to operator house
- DAFT overflow and Gravity Thickener line to drying bed
- Process drains
- Drying bed overflow and drain to lagoon lift station
- Lagoon lift station to DAFT or de-chlorination process
- Process area floor drains
- Sanitary sewer piping
- Storm drain piping

The yard piping layout makes allowances for long-term future improvements and plant expansion, in some cases including stub-outs to provide for future connections.

13.9. Chlorine Contact Pipe

In order to achieve chlorine contact time on site, a 1,100 foot - eight foot diameter pipe is proposed. The end of the pipe will be graded to maintain a water elevation of 5 feet above the plant floor elevation for proper operation of the membrane treatment train. The contact pipe will provide adequate time for contact for the 22 MGD plant. When the plant is expanded to 36 MGD additional clearwell storage will be required to meet contact time requirements.

The last 400 feet of the contact pipe will be utilized as storage during the initial operation of the plant until additional storage is constructed on site. This will provide approximately 150,000 gallons of storage to buffer the difference in plant production and the setting of the flow control valves at the Sourdough Reservoir. The additional contact time will be developed in the transmission main between the plant and the Sourdough Reservoir.

As service connections are made upstream of the Sourdough Reservoir the available contact time to the first service will be reduced and the future planned clearwell will need to be constructed at the plant site. The construction of the future clearwell will provide storage to service the new connections as well as storage to account for the differences in plant production and the Sourdough flow control valves. Once this new clearwell is constructed the full length of the contact pipe can be fully converted to use as contact pipe.

13.10. Potable Water

Potable water is needed for both plant use and the operator house. It is proposed to supply the plant from the end of the contact pipe. A water service will be required from the main plant potable water system to the operator's house. A booster pump will be installed in the new water treatment plant building.

13.11. Fire Protection

Preliminary discussions with the Sourdough Fire Department have indicated they have very minimal requirements. They will require the construction of an adequate turn-around on the site. If holding ponds are included in the project they would like the ability to draft out of the ponds; however, since no ponds are included in the project a fire hydrant fed off the raw water lines will be proposed. This is the limit of their requirements.

It is proposed to provide a fire hydrant off of the Hyalite Supply line to provide limited fire protection to the site. The proposed location for the hydrant is north of the proposed Sourdough Connection Building.

The Bozeman Fire Department was contacted but deferred the fire protection requirements to the Sourdough Fire Department.

13.12. Sanitary Sewer

The water treatment plant and operator's house are each served by a conventional on-site subsurface wastewater system. The systems are located to the north of the existing plant site generally at the same location as the proposed plant. Both wastewater systems were installed in 1983.

The operator's house system consists of a 1,000 gallon metal septic tank and two 75 foot long drainfield laterals. The system was designed for a two bedroom house. The septic tank is located southeast of the garage just north of the entrance drive to the plant. The drainfield is located just east of the garage.

The water treatment plant's wastewater system consists of a 1,000 gallon metal septic tank and two 65 foot long drainfield laterals. The tank and drainfield are located to the north of the existing plant.

The proposed sanitary sewer system will need to be one of the initial facilities constructed at the site in order to allow for construction of the new plant.

The estimated flow from the operator's house is 300 gpd based on a three bedroom dwelling. Domestic waste from the water treatment plant is estimated to be 130 gallons based on 10 employees and 13 gpd/employee. In addition, miscellaneous flow from the laboratory and ancillary facilities is estimated to be 300 gpd. The total sewage flow is therefore estimated to be 730 gpd.

These domestic sewage flows will be combined with the process area floor drains to be treated with a conventional septic/drainfield system.

13.13. Natural Gas

Natural gas is supplied by NorthWestern Energy to the plant. The feed is from the north and parallels the transmission mains exiting the plant. During the initial final design phase, gas demands will be determined and the utility will be contacted.

13.14. Electrical Service

Electrical service is provided by NorthWestern Energy via an overhead service line. Overhead power lines exist along the south side of the entrance road and continue to the south between the operator's house the existing water treatment plant. Service is provided to the house by an underground line that runs from the overhead power line near the Hyalite Connection Building to the house. Service is provided to the water treatment plant by an underground service located near the northwest corner of the plant.

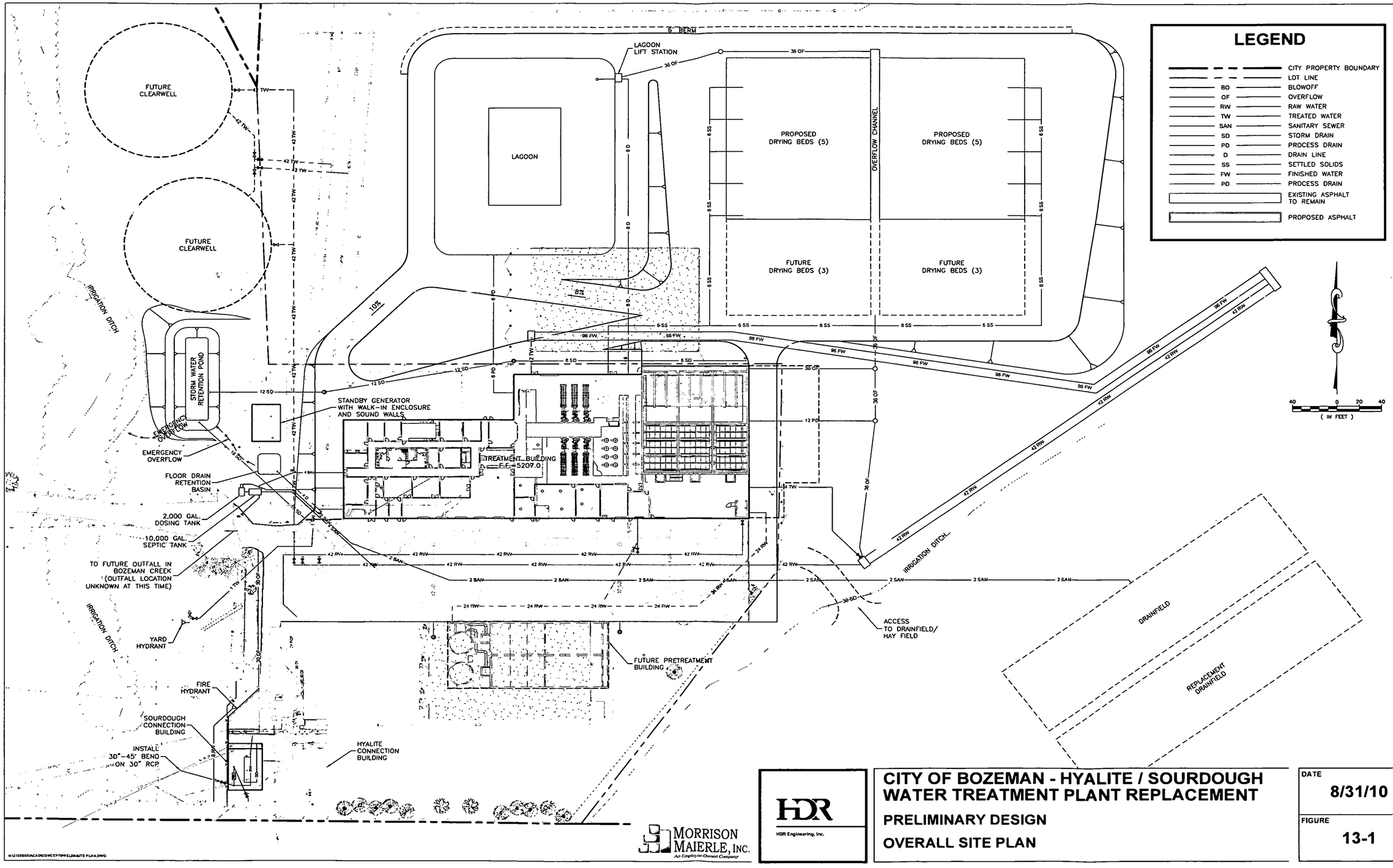
The overhead line running north-south between the plant and the house is a NorthWestern Energy line. This line will make construction of pipe lines along this corridor difficult and it may be cost effective to have this line relocated. This will be explored during the final design phase of the project.

The existing service is a 500 amp three-phase service. The service is provided from a dead end feeder line being fed from Goldenstein Road approximately three miles from the water treatment plant. The existing electrical service results in frequent power outages. A standby generator will be installed to provide backup power to the facility.

During the initial final design phase, electrical demands will be determined and the utility will be contacted. Refer to Section 11, Electrical Supply, for additional detail

13.15. Preliminary Site Plan

Based on the preliminary building design, a preliminary site plan has been developed. See Figure 13-1.



MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

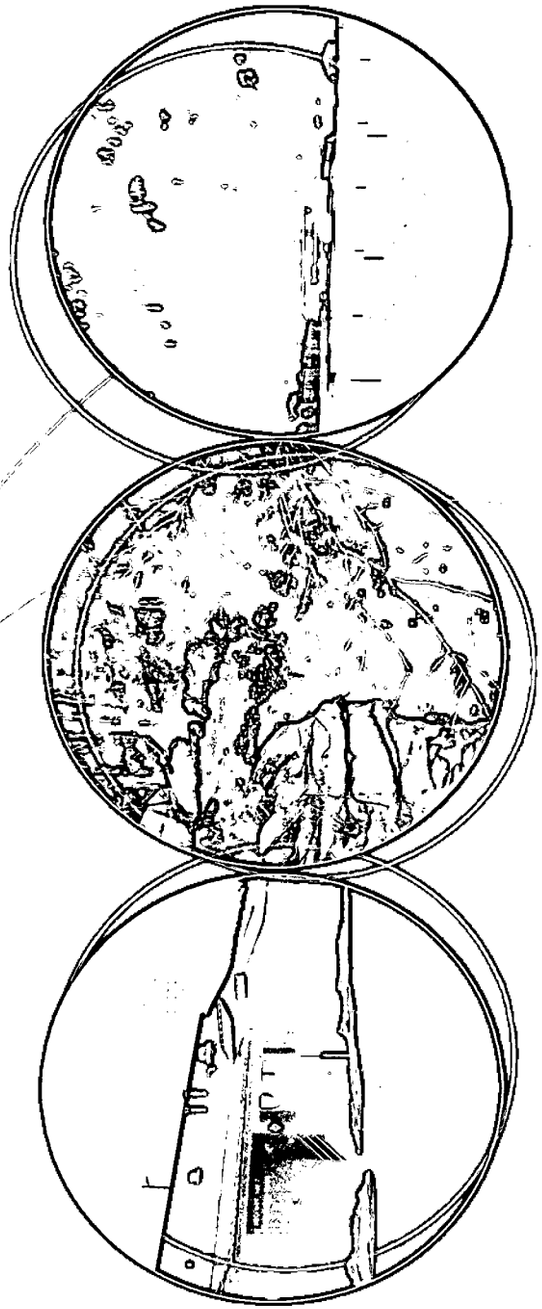
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

OVERALL SITE PLAN

DATE
8/31/10

FIGURE
13-1



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 14. Administration/Laboratory Building Program Summary

Prepared by: Nathan Kutil, Craig Habben

Reviewed by: Bryan Black, James Nickelson

Date: August 24, 2010

14.1. Introduction

As part of the City of Bozeman's 2005 Water Facility Plan, a new Hyalite/Sourdough membrane water filtration plant is being planned to accommodate the Cities drinking water treatment needs. The building will house the 22 MGD treatment facility which will be expandable to 36 MGD. The building will also replace the existing WTP and so will require additional areas for administration, laboratory, maintenance, and storage.

The purpose of this program summary is to further define the proposed facilities layout, construction type, and architecture and; as a result, further define the estimated project cost.

14.2. Program Summary

Programming of this facility has been an interactive process with key agency personnel and HDR/MMI design team members. To initiate the programming effort, the HDR project team conducted a preliminary survey of space needs with key City staff. This program summary defines City needs and design concepts for site layout, laboratory layout, administration facilities, operations/maintenance requirements, facility architecture, structural, electrical, mechanical, and communications and provides an estimate of probable construction cost for the facility.

14.3. Site Considerations

The new Hyalite/Sourdough WTP Building will be located adjacent to the existing building to the north. The existing building will remain in service during construction and then will be demolished if there is adequate budget (the building is in poor shape and plant staff prefers to have it demolished). The new building will be oriented lengthwise east to west allowing for nearly all entrances and material handling facilities to be located on the south side of the building. South facing entrances will minimize drifting in front of doors during the winter months. This south wall will be a continuous straight wall to facilitate snow removal.

Landscaping will be designed to be low maintenance and require little water. This will be accomplished by planting native "hay" type grasses which can be harvested by local ranchers. City staff has noted the preference to not have any perimeter fencing. However, perimeter fencing may be required at this facility. If perimeter fencing is used, much of the existing fencing can be maintained with minor modifications. New fencing would be required on the north side and any new fencing will be maintenance free with a mow strip below.

14.4. Facility Architectural Concepts

The proposed look of the new Hyalite/Sourdough WTP building will be similar to that of a modern barn or horse stable, drawing from the same color palette and materials as is typically used on these structures. The setting for this facility is right at the foot of a forest near predominantly ranching/pasture land. A structure with a barn-like appearance will blend effectively with the surrounding community. Dormers will be included to help breakup the long stretch of straight roof and to provide additional height in the pretreatment area. The metal roofs will be adequately sloped to shed snow in winter.

Sustainable design strategies will be incorporated into the building. Care will be taken to be environmentally responsible which will include incorporating as many LEED initiatives as possible without unduly affecting overall project construction cost or the functionality of the facility. Primary objectives will be energy efficiency, reduced water usage, and the use of environmentally friendly materials.

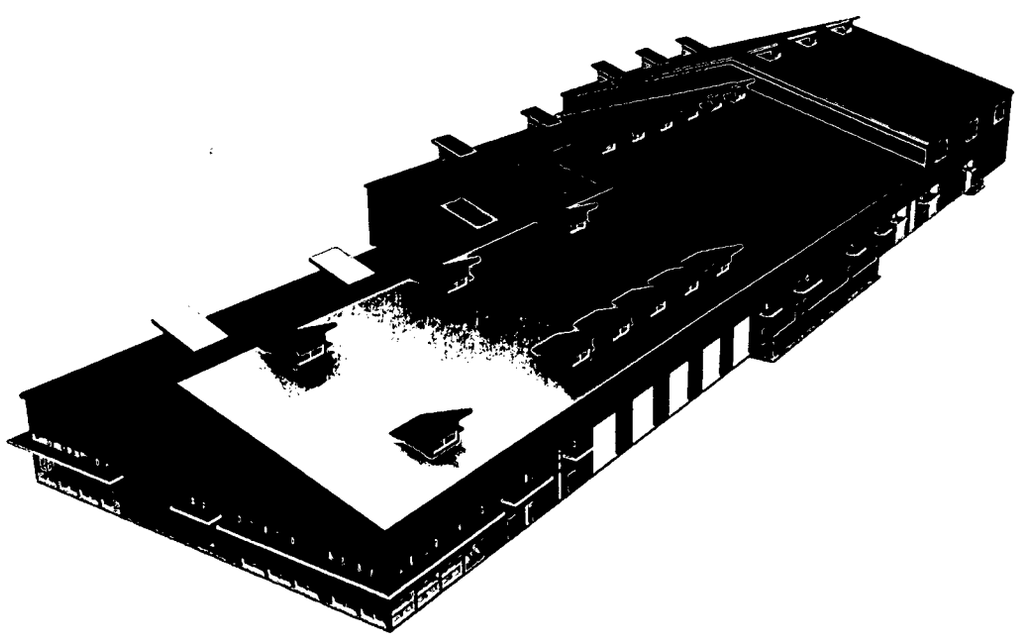


Figure 14-1. Proposed Bozeman WTP - External Iso View.

14.5. Building Concepts

The treatment areas make up the bulk of the total building area with the second largest area being the maintenance area. . The maintenance area is directly connected to the treatment area to facilitate parts and equipment movement between the areas. All treatment and maintenance areas will be designed to allow for easy wash down for cleaning. The proposed floor plan for the building (Figure 4-3) results in a total area of roughly 49,620 square feet as summarized in Table 14-1. This includes the approximate 4,800 square foot mezzanine area for mechanical equipment and storage.

In general the administration and maintenance area are located closest to the plant entrance as they will be the areas most frequently accessed by visitors and vehicles. The control room adjoins the main treatment area and includes bay type windows for viewing the processes. The electrical room is also right next to the process area to minimize wire length and cost. The pretreatment area is located on the east end. This will facilitate bidding one or more pretreatment trains and alternates and then allow train(s) to be added on later. .

Discussions with City of Bozeman WTP staff will continue to determine needs for additional equipment such as refrigerators, tools, workbenches, shelving, countertops, sinks, laboratory analysis equipment, etcetera.

Table 14-1. Building Floor Plan Summary

Area	Square Footage (SF)
Treatment	
Pretreatment/Solids Handling	14,460 SF
Membrane Filtration	10,810 SF
Chemical Storage/Dosing	4,450 SF
Treatment Subtotal	***29,820 SF***
Maintenance	
Heavy Duty Workshop/Welding	580 SF
Light Duty Workshop/Electronics Repair	530 SF
Parts/Tools Storage	530 SF
Vehicle Service Bay	550 SF
Flammables Storage	230 SF
Lubricant Storage	230 SF
Six Vehicle Storage	2,540 SF
Maintenance Subtotal	***5,180 SF***
Administration	
Office Areas	1,130 SF
Reception/Waiting/Lobby	390 SF

Area	Square Footage (SF)
Library/Archive/Future	700 SF
Kitchen/Break Room	750 SF
Meeting/Training	610 SF
Administration Sub-total	***3,570 SF***
General	
Electrical/ Telephone/ Server Room	560 SF
Corridor Areas	2,420 SF
Mechanical Room/Storage (Mezzanine)	4,800 SF
Closets/Janitor	330 SF
General Sub-total	***8,350 SF***
Operations	
SCADA/Control Room	780 SF
Men's Locker Room/Restroom	430 SF
Women's Locker Room/Restroom	430 SF
Unisex Restroom	80 SF
Operations Sub-total	***1,730 SF***
Laboratory	
Wet Chemistry Lab Area	730 SF
Data Entry and Technician Office Areas	350 SF
Laboratory Sub-Total	***1,080 SF***
Program Areas	
Treatment	29,820 SF
Maintenance	5,180 SF
Administration	3,570 SF
General	8,350 SF
Operations	1,730 SF
Laboratory	1,080 SF
Total Program Area (including Mezzanine)	**49,620 SF**

14.6. Structural Concepts

The Building will essentially be a two story structure with the middle portion of the Administration/Maintenance section including a mezzanine area for mechanical equipment and storage. Construction will be of cast-in-place concrete footings and footing walls; CMU

starter walls with metal sheeting continuing up exterior wall as part of overall pre-engineered metal building.

A bridge crane will be included over the membrane feed pumps and strainers area to facilitate maintenance on these items. Other areas will include monorails and lift eyes over equipment.

14.7. Electrical Concepts

Lighting and electrical systems in general will be designed using energy efficient design practices and will meet all requirements of the applicable National Electrical Code.

General purpose interior illumination will be provided by fluorescent fixtures mounted in the ceiling with additional task lighting provided under wall mounted cabinets. Additional fixture requirements will be addressed during the detailed design of the facility. A separate lighting panel with a surge suppressor and isolating transformer will be provided to serve analytical instruments and computer equipment. General 120 volt receptacles will be provided with 240 volt receptacles provided in the Admin/Lab area at specific locations as necessary to meet equipment requirements. 120 volt, 240 volt and 480 volt power will be provided to instruments and equipment throughout the treatment area. An MCC will include the plant main breaker, motor starters, disconnects, lighting transformers and lighting panels.

SCADA system and control room wiring will be located in accessible in-floor cable tray to allow for ease in future modification and expansion.

On site lighting for the building entrance, parking lot, and entrance road will be designed to minimize offsite glare.

14.8. Mechanical Concepts

The HVAC system will be designed to provide comfortable working conditions, adequate ventilation for safety, proper operating temperatures for equipment and processes, and dust reduction while taking energy efficiency into consideration. Heat for the facility will be run off a conventional natural gas system. Separate air handling units will be provided for the administrative/office/ SCADA/kitchen and laboratory areas. Heat recovery equipment will be installed on laboratory fume hoods.

The administration, laboratory, and restroom/locker areas require different levels of space conditioning and ventilation rates. The laboratory will be designed for a constant summer and winter temperature of 72 DegF and 100 percent outside air (OSA) with a ventilation rate that is dependent on the cooling load. The administrative areas including offices, conference rooms, lunch room, control room and reception area will be designed for a summer temperature of 75 DegF, a winter temperature of 72 DegF, and a ventilation rate of 25 CFM/person OSA. Restrooms and locker rooms will be designed for a summer temperature of 80 DegF, a winter temperature of 70 DegF, and a ventilation rate of 12 air changes per hour.

Humidity in the water treatment plant will consistently be at above average levels. The HVAC systems will be designed with this in mind to not only mitigate the humidity levels as much as possible but also protect the equipment.

14.9. Communication

Phone service will be provided with a main switchboard in the control room with lines to each office, the laboratory, kitchen, and meeting/training room. The conference room will be equipped with phones capable of performing conference calls. The control room will be equipped with a phone for each work station. Internet service will be provided via a main server with a dedicated T1 or better line interconnected with the City offices. Each office, the control room, and the meeting/training room will be equipped with a communication cable. The control room will have a communication cable for each work station.

14.10. Construction Cost Estimate

A detailed cost estimate was developed for these facilities and is included in Appendix B of the overall report. The total estimate of probable construction cost for the facilities as outlined in this report is $5.697 million as outlined in Table 14-2.

Table 14-2. Estimate of Probable Construction Cost

Item	Cost
Site Work	$23,000
WTP Facility	$3,031,000
Mechanical	$178,000
Electrical/Instrumentation	$136,000
Subtotal	***$3,367,000***
Contractor Field Overhead and Mob (7%)	$236,000
Subtotal	***$3,603,000***
Contractor's Profit (10%)	$360,000
Contractor's Bond and Insurance (1.5%)	$54,000
Contingency (20%)	$721,000
Subtotal	***$4,738,000***
Escalation to Mid Point of Construction (2.63%)	$125,000
Subtotal	***$4,863,000***
MGRT	$49,000
Subtotal	***$4,911,000***
Engineering, Legal and Fiscal (16%)	$786,000
Total Estimated Project Cost	**$5,697,000**

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 15. Provisions for Future Phases

Prepared by: Nathan Kutil, Craig Habben

Reviewed by: James Nickelson, Dan Harmon

Date: August 30, 2010

15.1. Introduction

Based on the priority of the needed treatment facilities, population growth projections, provisions for varying water quality and the desire of the City to spread out the capital outlays necessary to construct the ultimate facilities, it is recommended the Bozeman Hyalite/Sourdough Water Treatment Plant (WTP) Replacement project be implemented in phases. This section outlines the proposed upgrades and expansions for all recommended improvements to the Bozeman WTP.

15.2. Pretreatment Upgrades and Expansion

15.2.1. Powder Activated Carbon

If a wildfire takes place in the watershed, source water quality will likely deteriorate. The robust design of the intake screens, grit removal and rapid mix/flocculation/sedimentation will help significantly with the potential increased turbidity and sediment. Addition of powder activated carbon (PAC) would provide additional benefit of organics removal including those associated with taste and odor as well as color. These are organics that would potentially increase in the event of a wildfire within the watershed.

As part of the facility design, space for PAC equipment and storage is included; however, no equipment will be included in the bid documents. In the future, the City of Bozeman may want to consider installing PAC equipment to be ready when the use of PAC would be needed in an emergency or to further benefit the process. A room within the facility has been designated for future PAC equipment and storage to be located immediately west of the Compressor/Blower Room along the south side of the facility as shown in Figure 4-3.

15.2.2. Second Grit Removal Unit

One vortex grit unit and associated grit pumps and classifier are planned to be installed with the initial project. This grit unit will have a de-rated capacity of 25 mgd. When the additional pretreatment trains are added to increase capacity from 22 mgd to 36 mgd, then a second vortex grit unit will be added and be associated with these two future trains. The effluent

channels of these two grit units will be interconnected by a pipe to allow either grit unit to be taken out of service.

Since it is not desirable to pump grit long distances, two additional pumps and an additional classifier will be installed adjacent to the future grit removal systems.

15.2.3. Pretreatment Trains

Three rapid mix/flocculation/sedimentation trains are included in the initial design to meet peak demands of 22 mgd. To meet the ultimate projected demand of 36 mgd, two additional trains will be required. These trains would be located across the drive area to the south as shown on Figure 13-1. Water from the head tower would be split by overflow weirs and associated isolation gates to divide water to the grit units associated with each set of trains. A stub-in the head tower will be included initially for future connection to the future pretreatment trains. The overflow weirs and isolation gates associated with the future trains will be located adjacent to the overflow and flow split structure to allow easy expansion in the future.

Water from the future pretreatment trains would then be routed back to the main plant and into the suction wetwell of the membrane feed pumps which is sized for a 2-minute hydraulic retention time at 22 mgd plant capacity. A 24-inch pipeline will be included in the initial project below the main process floor for connection to the membrane feed pumps wetwell from an additional wetwell constructed as part of the expansion of the preliminary treatment facilities.

The waste stream from the additional pretreatment train will be processed by a dedicated gravity thickener. The supernatant and underflow from the gravity thickener will need to be routed to the main plant building for processing. These two 6-inch lines will be stubbed out of the building with the project for future extension to the new pretreatment train.

15.3. Treatment Expansion

15.3.1. Membrane Feed Pumps

Five membrane feed pumps are required initially. For expansion to 36 mgd, 3 more membrane feed pumps will be required. Space for these pumps and blind flanges on the suction and discharge header will be included in the initial project. As shown in Figure 4-3, the future membrane pumps will be configured for one additional pump on the south and two on the north.

15.3.2. Strainers

Four sets of strainers are required initially with 6 sets required at 36 mgd. Space in the initial building and blind flanges on the membrane filter feed pump discharge header as well as the membrane influent header will be provided. One set on the south and one set on the north are designated as the future strainers.

15.3.3. Membrane Units

Six membrane units are required initially and nine units are required for expansion to 36 mgd. Room for the future membrane units will be included in the initial layout. Providing for future membrane units requires a moderate amount of additional space be included in the treatment area of the facility. In order to keep the administration/maintenance area separate from the treatment area, and the membranes closest to the maintenance area, the layout of the overall building flows from the administration/maintenance area to the membrane treatment area to the pretreatment area. Additionally, if budget is not sufficient to enclose all pretreatment trains or if two of more of the trains are enclose by a greenhouse type enclosure, then its logical to place the pretreatment facilities on the end. Because of these reasons the membrane treatment area ends up in the middle and cannot be easily expanded and therefore provisions for future membrane units are included in the initial design.

Figures 4-3 and 13-1 show the units that are planned to be installed with the 36 mgd expansion. An overhead door is included in the north wall to enable installation of these additional units.

15.4. Residuals Handling Future Requirements

15.4.1. Backwash Equalization

When additional membrane units are added, a second backwash equalization tank will be needed. This second tank will avoid the need for a second dissolved air flotation unit. Space will be included in the initial design next to the first tank.

15.4.2. Gravity Thickener

A second gravity thickener will be required when the fourth and fifth pretreatment trains are added. This allows the initial gravity thickener to be smaller and facilitates future residuals handling by having the thickeners closer to the associated sedimentation basins.

15.4.3. Drying Beds

Additional drying beds will be required for the plant expansion. Six additional drying beds are proposed as shown on Figure 13-1.

15.4.4. Sourdough Creek Discharge

The existing 24-inch outfall pipe to Sourdough Creek does not have the capacity to allow for wasting of the full 36 MGD flow. A future outfall line will be required with the plant expansion. The outfall line crosses private ownership and an easement will be required to install this future line. Due to the unknowns regarding the future location of this line as it is subject to easement negotiations, a connection point is not proposed with this project.

15.5. Finished Water Distribution and Storage

15.5.1. Distribution Piping

The City of Bozeman Water Facility Plan 2005 (Plan) by Robert Peccia and Associates recommends numerous upgrades to the distribution system based on computerized hydraulic modeling and system evaluation. One recommendation pertinent to WTP is the installation of a 48-inch transmission line to parallel the existing 30-inch main from the WTP to Nash Road and then is directed to the City of Bozeman's distributions system via South Third Street.

The second line will provide redundancy and additional capacity enhancement since it was estimated that the existing 30-inch transmission line will be at capacity by 2020. It is proposed that the new 48-inch line be connected downstream of the future reservoirs (see Plan, Section 15.5.2). With the construction of the new WTP and associated contact conduit, it is anticipated that the existing plant clearwell will be abandoned. When the future reservoirs are constructed, the 42-inch supply line to the existing distribution system will need to be extended to the reservoir site. Provisions for the extension from the contact conduit terminus structure will be included in this project.

15.5.2. Storage

The Plan identifies the need for 5.3 MG of additional storage just downstream of the WTP to meet diurnal demands and fire flow requirements. This storage could be phased by installing two reservoirs each with approximately 2.7 MG of capacity to allow for redundancy and removal of one reservoir during lower demands. The Plan calls for the additional storage capacity to be installed by 2017. If one reservoir is installed around this time period, the second one would be installed as storage demands warrant but for planning this can be estimated to be an additional 10 years out or 2027.

Other than reserving land space, no provisions will be included for the future storage tanks.

15.6. Water Rights and Supply

The Plan outlines future deficiencies in the City's currently owned water rights and the reliable yield of its sources. The Plan describes in detail a resolution and a timeline for addressing these deficiencies. Depending on the point of supply, additional control valves and additional lines maybe required between the point supply and the 42-inch raw water pipe line being installed with this project. Due to the numerous unknowns, no provisions for this future supply are proposed for this project.

15.7. Preliminary Implementation Schedule for Future WTP Upgrades and Expansions

Based on population projections outlined in the Plan, the peak design flow for 2015 is 22 MGD. The Plan projects the peak hour design flow for 2025 to be 36 MGD. Growth has slowed down to where these dates, for planning purposes, could be moved back 5 years. The new WTP which will be installed in this phase will have that capacity. Beyond that the

additional membrane filter area will be required. The membrane filters and new WTP plant will be designed to be expandable to a 36 MGD plant capacity.

Table 15-1 provides a preliminary schedule for implementation of the recommended improvements.

Table 15-1. Preliminary Implementation Schedule for WTP Upgrade and Expansions

Upgrade/Expansion	Year
PAC Pretreatment Equipment	When Needed
Additional Grit Removal Unit	2030
Additional Pretreatment Trains	2020
Treatment Expansion	2020
Residuals Handling Expansion	2020
Redundant Treated Waterline	2020
Distribution Storage Phase I	2017
Distribution Storage Phase II	2027
Obtain Additional Water Rights	Ongoing

Section 10 Summary of Cost Estimate

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Section 16. Summary of Cost Estimate

Prepared by: Richard Glassen, Scott Bishop

Reviewed by: Nathan Kutil, Dan Harmon

Date: September 15, 2010

16.1. Summary Estimate

Capital costs are expressed in 2010 dollars. The accuracy of all costs is order of magnitude. These estimates are approximations made without detailed engineering or site-specific data. However, HDR has completed preliminary site layouts and facility modeling for use in preparation of the cost estimates. Estimates of this AACE International 17R-97 (classification System) Class 3 type can be expected to vary from 10-40% project definition (Accuracy Range Index of 2 = +30% to -15% range of accuracy).

The sources of construction data are:

- Basis of unit pricing is RS Means, 2nd quarter 2010 using Open Shop rates for the Butte, MT area.
- Construction cost data for the recent HDR/MMI-designed expansions at the Bozeman and Kalispell Wastewater Treatment Plants, the HDR-designed Mount St. Helens Water Treatment Plant, and the MMI-designed City of Missoula Wastewater Treatment Plant, escalated to midpoint of construction. The project is assumed to have an approximate bid date of February 29, 2011, and estimated midpoint of construction date of February 26, 2012.
- Recent construction costs for other, similar facilities, adjusted to regional market conditions and 2010 dollars.
- Equipment pricing from manufacturers, including installation, structure and housing costs.

For the most part, the estimates presented in the individual sections of this report conform to the allied costs used in the 2009 Bozeman Conceptual Design Memorandum. The opinion of probable construction cost presented in this pre-design were modified to include more detail and more accurately reflect actual allied costs at this level of design.

In this preliminary design summary estimate, allied costs for contractor mobilization/bonds and insurance, contractor markup, contractor profit, contingencies, engineering, legal, and fiscal elements have been incorporated as presented in Table 16-1.

Table 16-1. Illustration of Cost Estimating Procedure

Base Construction Cost (A)	$1,000
Mobilization, Bonds & Insurance (7% of A)	$70
Field Construction Cost (B)	**$1,070**
Contractor's Overhead & Profit (10% of B)	$107
Contractor's Bonds & Insurance (1.5% of B)	$16
Undefined Scope of Work (contingencies 20% of B)	$214
Subtotal (C)	**$1,407**
Escalation to midpoint of construction (2.63% of C)	$37
Subtotal (D) - Probable Construction Cost	**$1,444**
Engineering, Legal & Fiscal (20%[2] of D)	$288
Total Estimated Probable Project Cost[1]	***$1,732***

[1] Total compound markup of 73%

[2] Engineering amount fixed, using approximately 20% of original project estimated capital cost.

Appendix B provides a detailed preliminary estimate of probable construction and projected cost for the Project.

Table 16-2 presents a summary of the project cost. Please note that the individual line items for cost do not include the allied costs, which are presented in the table separately.

Table 16-2. Summary of Probable Project Cost

WTP Area	Total ($)
Site Work	$925,392
Site Piping	$5,341,019
Landscaping	$42,000
Waste Handling	$1,228,094
Process Mechanical	$4,027,422
Chemical Systems	$377,123
Operations Building	$3,357,607
Electrical	$2,551,829
Controls	$1,590,942
SUBTOTAL ESTIMATED CONSTRUCTION AMOUNT	$19,441,427
Field Overhead and Mobilization (7%)	$1,360,900
FIELD CONSTRUCTION COSTS - SUBTOTAL	$20,802,327
Contractor's Overhead & Profit (10%)	$2,080,233
Contractor's Bonds & Insurance (1.5%)	$343,238
Undefined Scope of Work (contingencies 20%)	$4,645,160

WTP Area	Total ($)
Subtotal	$27,870,958
Escalation to midpoint of construction (2.63%)	$733,006
Subtotal	$28,603,964
MT Public Works Tax (1%)	$286,040
Total OPCC Contractor Bid	$28,890,004
Owner Furnished Equipment	$5,558,300
Total OPCC Project Construction Cost	**$34,448,304**
Engineering & Administration	$6,425,800
Total Estimated Project Cost	***$40,874,104***

16.2. Comparison of Costs with Conceptual Design Memorandum Estimate

It is anticipated that the facilities identified in this report will be implemented as part of one single installation contract. The City of Bozeman will pre-purchase the treatment membranes and associated membrane equipment as part of the separate procurement contract and will likely assign the equipment contract to the successful installation contractor for final installation and startup. However, during detailed design, additional construction phasing will be considered if there is a cost advantage to the City of Bozeman.

The opinion of probable construction cost (including Owner furnished equipment) is included in Appendix B of this report. A summary of the estimated project cost is presented in Table 16-2. The current probable construction cost exceeds the previous estimate presented as part of the 2009 Conceptual Design Memorandum. The current estimate includes a more robust preliminary treatment facilities including redundancy in raw water straining, additional residuals drying bed capacity, larger residuals decant lagoon capacity and modified concept for provision of chlorine contact time for full disinfection of treated water before leaving the treatment plant site.

A cost comparison between the Conceptual Design cost projection and the cost estimate for the current Preliminary Design is presented in Table 16-3. This is consistent with the cost summary presented in Appendix B of the Conceptual Design Memorandum. The comparison in Table 16-3 indicates that, when the revised clearwell strategy and more robust and expanded preliminary treatment and residuals management facilities are included, the estimated cost for the facilities now proposed has increased from $38.6 million to $40.9 million (approximately +6.0%).

Table 16-3. Phase 1 Cost Comparison to Conceptual Design

WTP Area	2010 Pre-design Estimate	2009 Conceptual Design Estimate
Site Work	$1,375,000	$4,521,000
Site Piping	$7,937,000	$3,261,000
Landscaping	$62,000	$81,000
Waste Handling	$1,825,000	$1,383,000
Process Mechanical	$5,986,000	$4,636,000
Chemical Systems	$560,000	$1,571,000
Operations Building	$4,989,000	$7,764,000
Electrical	$3,792,000	$1,911,000
Controls	$2,364,000	$1,446,000
Total OPCC Contractor Bid	**$28,890,000**	**$26,574,000**
Owner Furnished Equipment	$5,558,300	$5,555,000
Total OPCC Project Construction Cost	**$34,448,304**	**$32,129,000**
Engineering & Administration	$6,425,800	$6,425,800
TOTAL	***$40,874,104***	**$38,555,800**

16.2.1. Factors Modifying the Project Cost

The preliminary design cost estimate attempted to follow the previous cost estimate completed during the development of the conceptual design. However, the revised preliminary design estimate does move cost items between cost categories to better fit planned building layout and unit process segregation. Therefore an exact comparison should not be made between estimates presented in Table 16-3 above. Below are general observations that highlight modifications made to the overall project cost by process area.

Site Work and Site Piping

The site work presented in the conceptual design estimate included less residuals drying beds area and smaller residuals decant lagoon volume than the current design presented. In addition, the Sourdough flow metering valves and raw water control facility were originally planned to be located at the new treatment facility and it was assumed that the existing raw water Headbox would be retained at its present location. The conceptual plan also included a new 2.0 million gallon concrete clearwell to provide for treated water storage and chlorine contact at the treatment facility site.

The site work and yard piping costs have reduced from the conceptual design estimate. The current design plans for the installation of a new raw water Headbox within the treatment facility and construction of a new Sourdough flow control structure (remote form the new treatment facility adjacent to the Hyalite Raw Water Control building) which all have a greater capital cost. However, the current plan also includes a modification of the new Clearwell plan to an 84 IN diameter reinforced concrete pipeline (contact conduit) approximately 1,400 LF in length. The Contact Conduit allows the City to reduce the contact storage volume from an originally estimated 2.0 million gallons to approximately

415,000 gallons by eliminating a significant amount of baffling factor reduction in the contact time calculation. The Contact Conduit ensures a more uniform plug flow for chlorine disinfection and thus a higher baffling factor.

Residuals and Waste Handling

The residuals and waste handling unit processes have increased slightly from the conceptual design. The increase in capital cost is primarily due to the increase in the size of the residuals drying beds and residuals decant lagoon from the conceptual design, and a greater understanding of the site process water management and storm water plan. The design continues to include two small DAF Thickening Units for thickening of the more colloidal and floatable residuals from the strainers prior to discharge to gravity thickening or drying beds. The residuals handling plan also includes a single gravity thickener unit to treat waste residuals from preliminary treatment and overflow from the grit removal facilities prior to discharge to Sourdough Creek. The drying beds will be fitted with decant return pumping and will overflow to a residuals decant lagoon facility.

Process Mechanical

The main membrane treatment process equipment was originally planned to be located on the east end of the treatment floor separated from the preliminary treatment facilities by the administration and maintenance shop facility. The conceptual design also planned for building area to accommodate a single preliminary treatment process train made up of a single flocculation tank, single high rate settler tank and three membrane feed strainers.

During preliminary design, the following critical modifications to the conceptual plan were identified by the project team:

- The administration facilities should be located remote from chemical handling and chemical load-out facilities. The preferred location for these administration functions is on the west side of the facility away from chemical handling and with visibility to visitors from the west site entrance.
- The Sourdough raw water flow control facility should be located remote from the treatment building adjacent to the existing Hyalite raw water flow control structure.
- The preliminary treatment facilities should be located at the east end of the treatment building to allow the membrane treatment skids to be located adjacent to the administration and maintenance facilities. Location of preliminary treatment on the east side will also enable easier expansion of the preliminary treatment facilities in the future.
- The flocculation and sedimentation tanks and associated equipment should be configured for multiple smaller treatment units for system redundancy still sized to accommodate 22 mgd design flow, expandable to 36 mgd. Three preliminary treatment process trains are proposed for the revised plan.
- The membrane filter feed pumps require a wetwell, with a minimum of 2 minutes clearwell storage to function properly with membrane backwash sequences. Provisions for a small wetwell ahead of feed pumping and straining were added to the current plan.
- The conceptual plan included three primary strainers ahead of the membrane filtration skids. During the pilot program, facility tours and preliminary design, it

was identified that primary and secondary straining should be included in the design for proper protection of the membrane modules. The revised design plans for four primary strainers and a second set of redundant primary strainers for the initial 22 mgd capacity. At buildout capacity of 36 mgd, an additional 4 strainers would be installed.

- The conceptual design planned for a single chemical storage and storage room. The preliminary design has identified the need for separation of chemicals for proper storage and added personnel safety. In addition, day tanks and remote pumping stations were also added for operations convenience and personnel safety. The revised facility plan has included greater capacity for bulk chemical storage to better match expected delivery quantities.
- A bridge crane has been proposed for the membrane feed pump and strainer area of the facility to better enable equipment maintenance.

Chemical Systems

The conceptual design chemical storage and feed requirements have been designed to include greater bulk storage capacity for high use chemicals and day tanks for chemical feed and control. The chemical systems costs are estimated to be much lower than originally planned in the conceptual design.

Operations Building

The Operations and Administration facilities were originally planned to be constructed within the center of the treatment facility. The revised floor layout now plans for these facilities to be located on the west end of the treatment facility, with the vehicle maintenance garage and electrical and control rooms separating treatment area from the administration areas. An upper level mezzanine has been added above the locker rooms and workshop areas for use as additional storage and to stage heating and ventilation systems. The cost for this item went down primarily from relocating items to other cost categories to facilitate cost estimating. The overall building size only increased 2,700 square feet even though the pretreatment area increased 9,200 square feet.

Summary

As a result of the above changes to the conceptual plan, the total preliminary design project cost has increased in cost by approximately $2,318,000, or approximately 6.0%. The additional strainers identified as a necessary process enhancement above and the more robust preliminary treatment facilities are primary reasons for the cost increase from the conceptual plan. Additional costs associated with placing the entire preliminary treatment facilities indoors and larger residuals drying beds and lagoon are also significant contributors. The preliminary treatment and strainer enhancements have been added out of concern for potential raw water impacts from wildfire in the watershed.

16.2.2. Potential Cost Reduction Measures

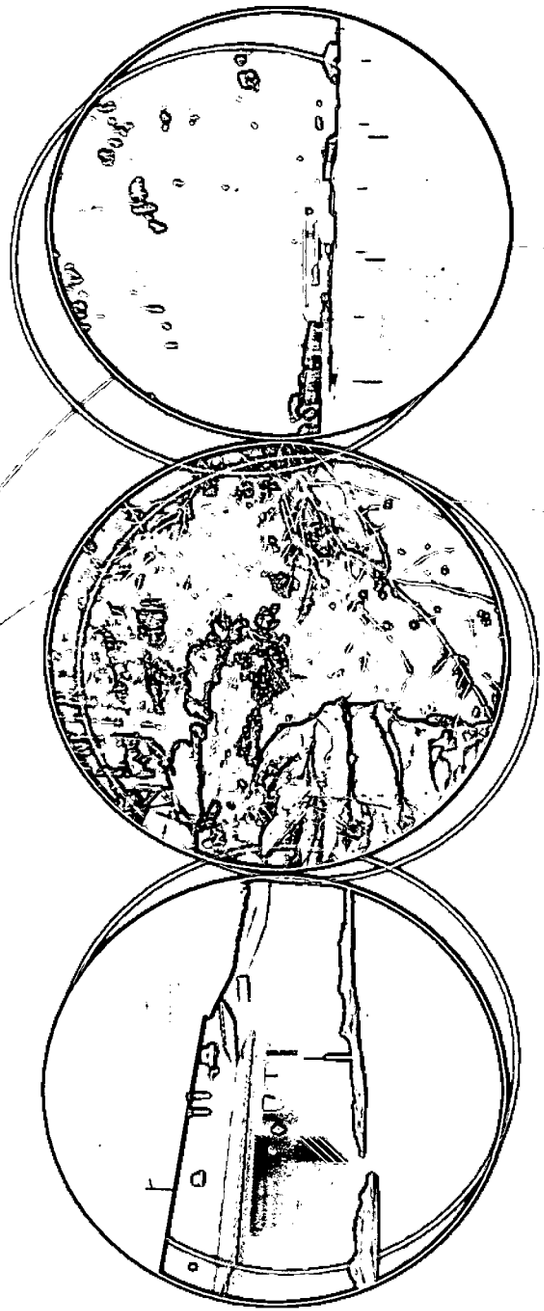
Although the current established cost of the recommended Phase 1 facilities exceeds the project budget, several cost reduction measures have been identified for City consideration provided project cost reduction is needed. It is recommended the City consider the following project cost reduction measures (In no particular order or ranking) as outlined in

Table 16-4. Following project design, the City can format the project bid process with bid alternates that will enable the City to maximize the facilities constructed. This the same approach used successfully for the City during their recent project under-way at the City's Water Reclamation Facility, and it afforded the City greater flexibility to commence construction of critical facilities and work to add more project elements using project contingency at a later date.

Table 16-4. Potential Cost Reduction Measures

Item No.	Cost Reduction Measure	Approximate Project Capital Cost Reduction Amount[1]
1	Eliminate the construction of the contact conduit for disinfection contact on site and construct a smaller clearwell (200,000 gallons) on site. Continue to operate as is currently performed and achieve the contact time in the transmission pipeline to the Sourdough reservoir.	$750,000
2	Delete the gravity thickener and do not include in the project design. Direct all residual flows from grit removal and the preliminary treatment trains to the residuals drying beds. Overflow the drying beds to the residuals decant lagoon or return back to the raw water feed.	$120,000
3	Enlarge the headbox and install grit removal at the headbox. Delete the vortex grit removal process unit(s), yet still design the headbox to provide some vortex grit removal capability.	$250,000
4	Reduce the size of the drying beds & residuals decant lagoon by 20%.	$400,000
5	Delay installation of the new intake at Sourdough Creek. Include as a project additive alternate in the project bid.	$1,140,000
6	Delay construction of one of the three preliminary treatment trains including: 1) one concrete tank, 2) one plate settler group with vacuum solids collector, 3) three flocculators and 4) building necessary for covering the preliminary treatment train delayed.	$750,000
7	Reduce the amount of membrane skids installed at facility startup by 16%. This would involve reducing the number of membrane skids initially installed from 6 to 5, or a reduction in production capacity from 22 mgd to 18.5 mgd.	$500,000

[1] Construction activities including all associated allied costs. Engineering, legal and administrative costs wouldn't be saved from these items if detailed designs are completed and they are treated as bid alternatives.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix A. Equipment Data

HDR MORRISON MAIERLE, INC.
An Employee-Owned Company

BOZEMAN HYALITE/SOURDOUGH WTP REPLACEMENT PROJECT EQUIPMENT DATA SHEET

ENGINEER: _____ **DATE:** _____

AREA: _____

NAME: _____ **QUANTITY:** _____

IDENTIFICATION NO.: _____

MATERIAL HANDLED: _____

CAPACITY: _____

MANUFACTURER; SIZE; CONFIGURATION: _____

SPECIAL CONSTRUCTION MATERIAL: _____

POWER REQUIRED: (HP, Volts, Φ) _____

DRIVE: (Elect., Var. – Mech., Var. – Belt, Const. – Belt, Var. – Direct)

SPEED, RPM: _____ **MAXIMUM:** _____ **MINIMUM:** _____

SUPPORT UTILITIES REQUIRED: (Seal Water, Comp. Air, Drains, etc.) [qty., if known]

EQUIPMENT WEIGHT: _____ LBS. **NOISE LEVEL:** _____ dbA **MANUFACTURER'S COST:** _____

MISCELLANEOUS COMMENTS, DATA AND INFORMATION: (Vibration; Equipment Pads, Types, and Sizes; Special Electrical, Structural, etc.)

INSTRUMENTATION & CONTROLS TO BE PROVIDED BY THE EQUIPMENT MANUFACTURER: (Control Panels, Pressure Indicators, etc)

SPECIFICATION NO: _____

LOCATION OF EQUIPMENT: P&ID Sheet No. _____ **Construction Sheet No.** _____

REVISIONS	REVISION NO.	REVISION DATE	REVISION BY

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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See far right column for revisions to update

Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
CEH	9/10/2010	Contractor	Globe Metering Valve (High Flow)			Globe		
CEH	9/10/2010	Contractor	Globe Metering Valve (Med Flow)			Globe		
CEH	9/10/2010	Contractor	Pressure Relief Valve			Globe		
NDK	9/9/2010	Pall	Hyalite (pressure) Turbidity	TURB-16xx-A		Hach		
NDK	9/9/2010	Pall	Hyalite (gravity) Turbidity	TURB-16xx-B		Hach		
NDK	9/9/2010	Pall	Hyalite (pressure) pH & ORP	PHM-16xx		Hach		
NDK	9/9/2010	Pall	Sourdough Turbidity	TURB-18xx-B		Hach		
NDK	9/9/2010	Pall	Sourdough pH & ORP	PHM-18xx		Hach		
NDK	9/9/2010	Pall	Common Raw Turbidity	TURB-19xx		Hach		
NDK	9/9/2010	Pall	Common Raw pH, ORP, & Temp	PHM-19xx		Hach		
CEH	9/2/2010	Pall?	Influent flow meter	FE-19xx	22 mgd	Flow Tube?		
CEH	9/2/2010	Contractor	Influent control valve	BFV-19xx		Motorized BFV		
CEH	9/2/2010	Contractor	Head Tower Level	LE-19xx				
CEH	12/2/2009	Contractor	Grit Mechanism	GR-21xx	30 mgd	Vortex Grit Removal		10
CEH	8/31/2010	Contractor	Grit Pump 1	P-21xx-A	220gpm	Recessed Impellor		7.5
CEH	8/31/2010	Contractor	Grit Pump 2	P-21xx-B	220gpm	Recessed Impellor		7.5
CEH	9/2/2010	Contractor	Grit classifier/cyclone	GC-21xx		Grit classifier/cyclone		1
NDK	12/2/2009	Contractor	Level					
NDK	8/31/2010	Contractor	Rapid Mixer 1	MX-22xx-A		Top Entry		10
NDK	8/31/2010	Contractor	Rapid Mixer 2	MX-22xx-B		Top Entry		10
NDK	8/31/2010	Contractor	Rapid Mixer 3	MX-22xx-C		Top Entry		10
NDK	12/2/2009	Pall	Floc pH/Temperature	PHM-23xx				
NDK	12/2/2009	Contractor	Floccualtion Drive 1	FL-23xx-A		Hor. Paddle Wheel		1
NDK	12/2/2009	Contractor	Floccualtion Drive 2	FL-23xx-B		Hor. Paddle Wheel		2
NDK	12/2/2009	Contractor	Floccualtion Drive 3	FL-23xx-C		Hor. Paddle Wheel		3

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
NDK	8/31/2010	Contractor	Floccualtion Drive 4	FL-23xx-D		Hor. Paddle Wheel		1
NDK	8/31/2010	Contractor	Floccualtion Drive 5	FL-23xx-E		Hor. Paddle Wheel		2
NDK	8/31/2010	Contractor	Floccualtion Drive 6	FL-23xx-F		Hor. Paddle Wheel		3
NDK	8/31/2010	Contractor	Floccualtion Drive 7	FL-23xx-G		Hor. Paddle Wheel		1
NDK	8/31/2010	Contractor	Floccualtion Drive 8	FL-23xx-H		Hor. Paddle Wheel		2
NDK	8/31/2010	Contractor	Floccualtion Drive 9	FL-23xx-I		Hor. Paddle Wheel		3
NDK	12/2/2009	Contractor	Plate Settler 1	PS-24xx-A		Incline Plate		NA
NDK	8/31/2010	Contractor	Plate Settler 2	PS-24xx-B		Incline Plate		NA
NDK	8/31/2010	Contractor	Plate Settler 3	PS-24xx-C		Incline Plate		NA
NDK	12/2/2009	Contractor	Telescoping Sludge Collector 1	SC-24xx-A				1
NDK	8/31/2010	Contractor	Telescoping Sludge Collector 2	SC-24xx-B				1
NDK	8/31/2010	Contractor	Telescoping Sludge Collector 3	SC-24xx-C				1
NDK	12/2/2009	Contractor	Level in wet well					
NDK	12/2/2009	Contractor	Low Level Float Swtich in wet well					
NDK	12/2/2009	Contractor	High Level Float Swtich in wet well					
NDK	12/2/2009	MF Seller	Low Pressure Switch (pump 1)					
NDK	12/2/2009	MF Seller	Low Pressure Switch (pump 2)					
NDK	12/2/2009	MF Seller	Low Pressure Switch (pump 3)					
NDK	12/2/2009	MF Seller	Low Pressure Switch (pump 4)					
NDK	12/2/2009	MF Seller	Low Pressure Switch (pump 5)					
NDK	8/31/2010	Pall	Feed Pump 1	P-3102-A	4357gpm @ 110 ft TDH	Centrifugal, Split Case		150
NDK	8/31/2010	Pall	Feed Pump 2	P-3102-B	4357gpm @ 110 ft TDH	Centrifugal, Split Case		150
NDK	8/31/2010	Pall	Feed Pump 3	P-3102-C	4357gpm @ 110 ft TDH	Centrifugal, Split Case		150
NDK	8/31/2010	Pall	Feed Pump 4	P-3102-D	4357gpm @ 110 ft TDH	Centrifugal, Split Case		150
NDK	12/2/2009	Pall	Feed Pump 5	P-3102-E	4357gpm @ 110 ft TDH	Centrifugal, Split Case		150
NDK	8/31/2010	Pall	Strainer 1	S-3203-A	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 2	S-3199-A	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 3	S-3203-B	300 micron, 5809gpm	Amiad 18" EBS		0.5

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
NDK	8/31/2010	Pall	Strainer 4	S-3199-B	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 5	S-3203-C	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 6	S-3199-C	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 7	S-3203-D	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	8/31/2010	Pall	Strainer 8	S-3199-D	300 micron, 5809gpm	Amiad 18" EBS		0.5
NDK	9/9/2010	Pall	Strainer Pressure Differential	PIT-3005				
NDK	9/10/2010	Pall	Strainer Pressure Differential	PIT-3009				
CEH	9/10/2010	Pall	Strainer Pressure Differential					
CEH	9/10/2010	Pall	Strainer Pressure Differential					
CEH	9/10/2010	Pall	Strainer Pressure Differential					
CEH	9/10/2010	Pall	Strainer Pressure Differential					
CEH	9/10/2010	Pall	Strainer Pressure Differential					
CEH	9/10/2010	Pall	Strainer Pressure Differential					
NDK	9/9/2010	Pall	Membrane Feed Turbidity Meter	AIT-3006				
NDK	9/9/2010	Pall	Membrane Feed Flow Meter	FE-1005				
NDK	8/31/2010	Pall	Membrane Unit 1	MF-10xx-A		membranes	the entire plant	NA
NDK	8/31/2010	Pall	Membrane Unit 2	MF-10xx-B		membranes	the entire plant	NA
NDK	8/31/2010	Pall	Membrane Unit 3	MF-10xx-C		membranes	the entire plant	NA
NDK	8/31/2010	Pall	Membrane Unit 4	MF-10xx-D		membranes	the entire plant	NA
NDK	8/31/2010	Pall	Membrane Unit 5	MF-10xx-E		membranes	the entire plant	NA
NDK	8/31/2010	Pall	Membrane Unit 6	MF-10xx-F		membranes	the entire plant	NA
CEH	9/10/2010	Pall	Membrane 1 Turbidity Meter	TURB-10xx-A				
CEH	9/10/2010	Pall	Membrane 2 Turbidity Meter	TURB-10xx-B				
CEH	9/10/2010	Pall	Membrane 3 Turbidity Meter	TURB-10xx-C				
CEH	9/10/2010	Pall	Membrane 4 Turbidity Meter	TURB-10xx-D				
CEH	9/10/2010	Pall	Membrane 5 Turbidity Meter	TURB-10xx-E				
CEH	9/10/2010	Pall	Membrane 6 Turbidity Meter	TURB-10xx-F				
CEH	9/10/2010	Pall	Membrane 1 Flow Meter					

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
CEH	9/10/2010	Pall	Membrane 2 Flow Meter					
CEH	9/10/2010	Pall	Membrane 3 Flow Meter					
CEH	9/10/2010	Pall	Membrane 4 Flow Meter					
CEH	9/10/2010	Pall	Membrane 5 Flow Meter					
CEH	9/10/2010	Pall	Membrane 6 Flow Meter					
CEH	9/10/2010	Pall	Membrane 1 Pressure transmitter					
CEH	9/10/2010	Pall	Membrane 2 Pressure transmitter					
CEH	9/10/2010	Pall	Membrane 3 Pressure transmitter					
CEH	9/10/2010	Pall	Membrane 4 Pressure transmitter					
CEH	9/10/2010	Pall	Membrane 5 Pressure transmitter					
CEH	9/10/2010	Pall	Membrane 6 Pressure transmitter					
CEH	9/10/2010	Pall	pH/Temperature					
NDK	9/9/2010	Pall	Filtrate Header Turbidity Meter	TURB-4001				
NDK	9/9/2010	Pall	Filtrate Header Particle Counter	PART-4006				
CEH	9/10/2010	Pall	Treated Water Residual Analyzer	AE/AIT-40xx				
CEH	9/10/2010	Pall	Treated Water pH/Temperature Meter	PHM-40xx				
CEH	9/10/2010	Pall	Effluent pH/Temperature Meter	PHM-76xx				
CEH	9/10/2010	Pall	Effluent Residual Analyzer	AE/AIT-76xx				
NDK	12/2/2009	Pall	RF Supply Pump 1	P-4302-A	992gpm @ 70 ft TDH			25
NDK	12/2/2009	Pall	RF Supply Pump 2	P-4302-B	992gpm @ 70 ft TDH			25
NDK	9/9/2010	Pall	RF Supply Flow Meter	FE-4305				
NDK	12/1/2009	Pall	RF Supply Tank	T-4360	3000 gallons	FRP		NA
CEH	9/10/2010	Pall	RF Tank Level Indicator/Transmitter					
CEH	9/10/2010	Pall	RF Tank Level Low Level					
CEH	9/10/2010	Pall	RF Tank Level High Level					

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
NDK	12/2/2009	Pall	BWW Equalization Tank	T-4400-A	9000 gallons	FRP		NA
CEH	9/13/2010	Pall	EQ Tank Level Indicator/Transmitter					
CEH	9/13/2010	Pall	EQ Tank Level Low Level					
CEH	9/13/2010	Pall	EQ Tank Level High Level					
NDK	8/31/2010	Pall	CIP Caustic Tank	T-5001	3200 gallons	FRP		NA
CEH	9/13/2010	Pall	Caustic Tank Level Indicator/Trans					
CEH	9/13/2010	Pall	Caustic Tank Level Low Level					
CEH	9/13/2010	Pall	Caustic Tank Level High Level					
NDK	12/2/2009	Pall	CIP Caustic Tank Heater	H-5004				
NDK	9/9/2010	Pall	Caustic Tank Temerature Transmitter	TT-5007				
NDK	9/9/2010	Pall	Caustic Transfer Pump	P-5015	11gpm @ 60TDH	Air Diaphragm (80psi)		NA
NDK	9/9/2010	Pall	Caustic Transfer Flow Meter	FE-5017				
NDK	9/9/2010	Pall	NaOCl Transfer Pump	P-5402	11gpm @ 60TDH	Air Diaphragm (80psi)		NA
NDK	9/9/2010	Pall	NaOCl Transfer Flow Meter	FE-5405				
NDK	8/31/2010	Pall	CIP Acid Tank	T-5101	3200 gallons	FRP		NA
CEH	9/13/2010	Pall	CIP Acid Tank Level Indicator/Trans					
CEH	9/13/2010	Pall	CIP Acid Tank Level Low Level					
CEH	9/13/2010	Pall	CIP Acid Tank Level High Level					
NDK	8/31/2010	Pall	CIP Acid Tank Heater	H-5104				
NDK	9/9/2010	Pall	CIP Acid Tank Temerature Transmitter	TT-5107				
NDK	12/2/2009	Contractor	Citric Acid Metering Pump	P-51xx		Peristaltic		
NDK	9/9/2010	Pall	Acid Transfer Pump	P-5115	11gpm @ 60TDH	Air Diaphragm (80psi)		NA
NDK	9/9/2010	Pall	Acid Transfer Flow Meter	FE-5121				
NDK	8/31/2010	Pall	CIP Circulation Pump 1	P-5204-A	372gpm			15
NDK	8/31/2010	Pall	CIP Circulation Pump 2	P-5204-B	372gpm			15
CEH	9/14/2010	Pall	CIP Circ Pump 1 Low Flow Switch					

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
CEH	9/14/2010	Pall	CIP Circ Pump 2 Low Flow Switch					
NDK	8/31/2010	Pall	CIP Drain Pump 1	P-5214-A	372gpm			15
NDK	8/31/2010	Pall	CIP Drain Pump 2	P-5214-B	372gpm			15
CEH	9/14/2010	Pall	CIP Drain Pump 1 Low Flow Switch					
CEH	9/14/2010	Pall	CIP Drain Pump 2 Low Flow Switch					
NDK	12/2/2009	Pall	CIP Neutralization Tank	T-5601	11500 gallons	FRP		NA
CEH	9/14/2010	Pall	CIP Neutr. Tank Level Indicator/Trans					
CEH	9/14/2010	Pall	CIP Neut. Tank Level Low Level					
CEH	9/14/2010	Pall	CIP Neutr. Tank Level High Level					
NDK	9/9/2010	Pall	Neutralization Flow Meter	FE-56xx				
NDK	9/9/2010	Pall	Neutralization pH Meter	PHM-5605				
NDK	9/9/2010	Pall	Neutralization ORP Meter	ORP-5619				
NDK	9/9/2010	Pall	Neutralization Drain Pump	P-5609	372gpm @ 70TDH	Inline		15
NDK	9/9/2010	Pall	Sodium Bisulfite Transfer Pump	P-5502	3gpm @ 60TDH	Air Diaphragm (80psi)		NA
NDK	9/9/2010	Pall	Sodium Bisulfite Transfer Flow Meter	FE-5505				
CEH	9/14/2010	Pall	CIP Skid 1 Solenoid Rack					
CEH	9/14/2010	Pall	CIP Skid 2 Solenoid Rack					
CEH	9/14/2010	Pall	CIP Transfer Solenoid Rack					
CEH	9/14/2010	Pall	CIP Circulation Solenoid Rack					
NDK	8/31/2010	Contractor	Bulk Sodium Hypochlorite Tank A	T-5412-A	6700 gallons	FRP		NA
CEH	9/14/2010	Contractor	Hypo Tank A Level Indicator/Trans					
CEH	9/14/2010	Contractor	Hypo Tank A Level Low Level					
CEH	9/14/2010	Contractor	Hypo Tank A Level High Level					
NDK	8/31/2010	Contractor	Bulk Sodium Hypochlorite Tank B	T-5412-B	1600 gallons	FRP		NA
CEH	9/14/2010	Contractor	Hypo Tank B Level Indicator/Trans					
CEH	9/14/2010	Contractor	Hypo Tank B Level Low Level					

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
CEH	9/14/2010	Contractor	Hypo Tank B Level High Level					
NDK	8/31/2010	Contractor	Bulk Sodium Hypochlorite Tank C	T-5412-C	1600 gallons	FRP		NA
CEH	9/14/2010	Contractor	Hypo Tank C Level Indicator/Trans					
CEH	9/14/2010	Contractor	Hypo Tank C Level Low Level					
CEH	9/14/2010	Contractor	Hypo Tank C Level High Level					
NDK	8/31/2010	Contractor	Sodium Hypochlorite Day Tank	T-5412-D	775 gallons	FRP		NA
CEH	9/14/2010	Contractor	Hypo Day Tank Level Indicator/Trans					
CEH	9/14/2010	Contractor	Hypo Day Tank Level Low Level					
CEH	9/14/2010	Contractor	Hypo Day Tank Level High Level					
NDK	9/9/2010	Contractor	Sodium Bisulfite Metering Pump	P-55xx-A				
NDK	12/2/2009	Contractor	Sodium Hypochlorite Metering Pump	P-54xx		Peristaltic		
CEH	9/14/2010	Contractor	Sodium Hypochlorite Metering Pump	P-54xx		Peristaltic		
CEH	9/14/2010	Contractor	Sodium Hypochlorite Metering Pump	P-54xx		Peristaltic		
NDK	9/9/2010	Contractor	Sodium Bisulfite Tote 1	T-5501-A	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Sodium Bisulfite Tote 1 LL Switch					
NDK	9/9/2010	Contractor	Sodium Bisulfite Tote 2	T-5501-B	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Sodium Bisulfite Tote 2 LL Switch					
NDK	8/31/2010	Contractor	Bulk Caustic Tank A	T-5010-A	10850 gallons	FRP		NA
CEH	9/13/2010	Contractor	Caustic Tank A Level Indicator/Trans					
CEH	9/13/2010	Contractor	Caustic Tank A Level Low Level					
CEH	9/13/2010	Contractor	Caustic Tank A Level High Level					
NDK	8/31/2010	Contractor	Bulk Caustic Tank B	T-5010-B	10850 gallons	FRP		NA
CEH	9/13/2010	Contractor	Caustic Tank B Level Indicator/Trans					
CEH	9/13/2010	Contractor	Caustic Tank B Level Low Level					
CEH	9/13/2010	Contractor	Caustic Tank B Level High Level					
NDK	8/31/2010	Contractor	Caustic Day Tank	T-5010-C	775 gallons	FRP		NA
CEH	9/13/2010	Contractor	Caustic Day Tk Level Indicator/Trans					

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
CEH	9/13/2010	Contractor	Caustic Day Tank Level Low Level					
CEH	9/13/2010	Contractor	Caustic Tank Level High Level					
NDK	8/31/2010	Contractor	Caustic Metering Pump 1	P-50xx-A	4.5-27 gph	Peristaltic		
NDK	8/31/2010	Contractor	Caustic Metering Pump 2	P-50xx-B	4.5-27 gph	Peristaltic		
NDK	12/1/2009	Contractor	Citric Acid Tote 1	T-5110-A	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Citric Acid Tote 1 LL Switch					
NDK	12/2/2009	Contractor	Citric Acid Tote 2	T-5110-B	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Citric Acid Tote 2 LL Switch					
NDK	9/9/2010	Contractor	Polymer Tote 1	T-71xx-A	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Polymer Tote 1 LL Switch					
NDK	9/9/2010	Contractor	Ploymer Tote 2	T-71xx-B	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Polymer Tote 2 LL Switch					
NDK	9/9/2010	Contractor	Polymer Metering Pump	P-71xx				
CEH	9/14/2010	Contractor	Polymer Metering Pump	P-71xx				
NDK	8/31/2010	Contractor	Bulk Sodium Permanganate Tote 1	T-73xx-A	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Sodium Perm. Tote 1 LL Switch					
NDK	8/31/2010	Contractor	Bulk Sodium Permanganate Tote 2	T-73xx-B	275 gallons	Tote		NA
CEH	9/14/2010	Contractor	Sodium Perm. Tote 2 LL Switch					
NDK	8/31/2010	Contractor	Sodium Permanganate Metering Pump	P-73xx-A	0.4-2.4 gph	Peristaltic		
NDK	8/31/2010	Contractor	Sodium Permanganate Metering Pump	P-73xx-B	0.4-2.4 gph	Peristaltic		
NDK	12/2/2009	Contractor	Bulk Flouride Tank	T-72xx-A	6900 gallons	FRP		NA
CEH	9/14/2010	Contractor	Bulk Fluoride Level Indicator/Trans					
CEH	9/14/2010	Contractor	Bulk Fluoride Tk Level Low Level					
CEH	9/14/2010	Contractor	Bulk Fluoride Tk Level High Level					
NDK	8/31/2010	Contractor	Flouride Day Tank	T-72xx-B	775 gallons	FRP		NA

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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CEH	9/14/2010	Contractor	Fluoride Day Tk Level Indicator/Trans					
CEH	9/14/2010	Contractor	Fluoride Day Tk Level Low Level					
CEH	9/14/2010	Contractor	Fluoride Day Tk Level High Level					
CEH	9/14/2010	Contractor	Fluoride Break Tank					
CEH	9/14/2010	Contractor	Fluor Break Tk Level Indicator/Trans					
CEH	9/14/2010	Contractor	Fluoride Break Tk Level Low Level					
CEH	9/14/2010	Contractor	Fluoride Break Tk Level High Level					
NDK	12/2/2009	Contractor	Flouride Metering Pump	P-72xx		Peristaltic		
CEH	9/14/2010	Contractor	Flouride Metering Pump	P-72xx		Peristaltic		
CEH	9/14/2010	Contractor	ACH Bulk Tank					
CEH	9/14/2010	Contractor	ACH Bulk Tk Level Indicator/Trans					
CEH	9/14/2010	Contractor	ACH Bulk Tk Level Low Level					
CEH	9/14/2010	Contractor	ACH Bulk Tk Level High Level					
CEH	9/14/2010	Contractor	ACH Metering Pump	P-72xx		Peristaltic		
CEH	9/14/2010	Contractor	ACH Metering Pump	P-72xx		Peristaltic		
NDK	12/2/2009	Contractor	Bulk PACL Tank	T-74xx-A	11800 gallons	FRP		NA
CEH	9/14/2010	Contractor	PACL Feed Unit					
NDK	8/31/2010	Contractor	PACL Day Tank	T-74xx-B	775 gallons	FRP		NA
NDK	12/2/2009	Contractor	PACL Metering Pump	P-74xx	2-15 gph	Peristaltic		
NDK	9/9/2010	Pall	Water Softener	WS-69xx-A	67gpm			
NDK	9/9/2010	Pall	Water Softener	WS-69xx-B	67gpm			
NDK	9/9/2010	Pall	WS Brine Tank	T-69xx				
NDK	12/2/2009	Contractor	Gravity Thickener Mechanism	GT-82xx				1
NDK	9/9/2010	Contractor	Gravity Thickener Solids Pump 1	P-82xx-A	50gpm			2
NDK	9/9/2010	Contractor	Gravity Thickener Solids Pump 2	P-82xx-B	50gpm			2

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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CEH	9/14/2010	Contractor	Gravity Thickener Effl. Pump 1					
CEH	9/14/2010	Contractor	Gravity Thickener Effl. Pump 2					
NDK	9/9/2010	Contractor	DAF Feed Pump 1	P-83xx-A	765gpm			25
NDK	9/9/2010	Contractor	DAF Feed Pump 2	P-83xx-B	765gpm			25
NDK	9/9/2010	Contractor	DAF 1 Bottom Rake	DAFT-83xx-A				0.5
CEH	9/14/2010	Contractor	DAF 1 Skimmer Rake					
NDK	9/9/2010	Contractor	DAF 1 Compressor	BLR-83xx-A				20
CEH	9/14/2010	Contractor	DAF 1 Saturation Tank					
NDK	9/9/2010	Contractor	DAF Residuals Pump 1	P-83xx-A	100gpm	rotary lobe		2
NDK	12/2/2009	Contractor	Return Pump 1	P-85xx-A	200-800gpm			20
NDK	9/9/2010	Contractor	DAF 2 Rake Bottom	DAFT-83xx-B				0.5
CEH	9/14/2010	Contractor	DAF 2 Skimmer Rake					
NDK	9/9/2010	Contractor	DAF 2 Compressor	BLR-83xx-B				20
CEH	9/14/2010	Contractor	DAF 2 Saturation Tank					
NDK	9/9/2010	Contractor	DAF Residuals Pump 2	P-83xx-B	100gpm	rotary lobe		2
NDK	12/2/2009	Contractor	Return Pump 2	P-85xx-B	200-800gpm			20
NDK	8/31/2010	Pall	Air Compressor 1/Refrig Dryer	AC-6001-A	17.6cfm @ 150psig	Atlas Copco GA5		7.5
NDK	8/31/2010	Pall	Air Compressor 2/Refrig Dryer	AC-6001-B	17.6cfm @ 150psig	Atlas Copco GA6		7.5
NDK	8/31/2010	Pall	Air Compressor 3/Refrig Dryer	AC-6001-C	17.6cfm @ 150psig	Atlas Copco GA7		7.5
NDK	9/9/2010	Pall	Air Compressor Dew Point	AE/AIT-6009				
NDK	9/9/2010	Pall	Reciever Tank	RCVR-6010	620gal, 200psig			NA
NDK	8/31/2010	Pall	Blower 1	BLR-6039-A	372cfm @ 14psig	Roots EasyAir X2		50
NDK	8/31/2010	Pall	Blower 2	BLR-6039-B	372cfm @ 14psig	Roots EasyAir X3		50
NDK	8/31/2010	Pall	After Cooler 1	AFC-6038-A	372cfm @ 25psig			2
NDK	8/31/2010	Pall	After Cooler 2	AFC-6038-B	372cfm @ 25psig			2
NDK	9/9/2010	Pall	Blower Flow Meter	FE-6035			shelf spare	

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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Last Edited By	Date	Supplier	Equipment	Equipment Number	Design Condition	Equipment Type	Accessories	HP
NDK	12/2/2009	Contractor	Service Water Pump 1	P-62xx-A				
NDK	12/2/2009	Contractor	Service Water Pump 2	P-62xx-B				
NDK	9/9/2010	Contractor	Service Water Flow Meter	FE-62xx				
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
CEH	9//2/10	Contractor	Aluminum Rolling Overhead Doors	GD-xxxx				0.5
NDK	9/9/2010	Contractor	Bridge Crane	HBC-32xx				

Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

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Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Equipment List

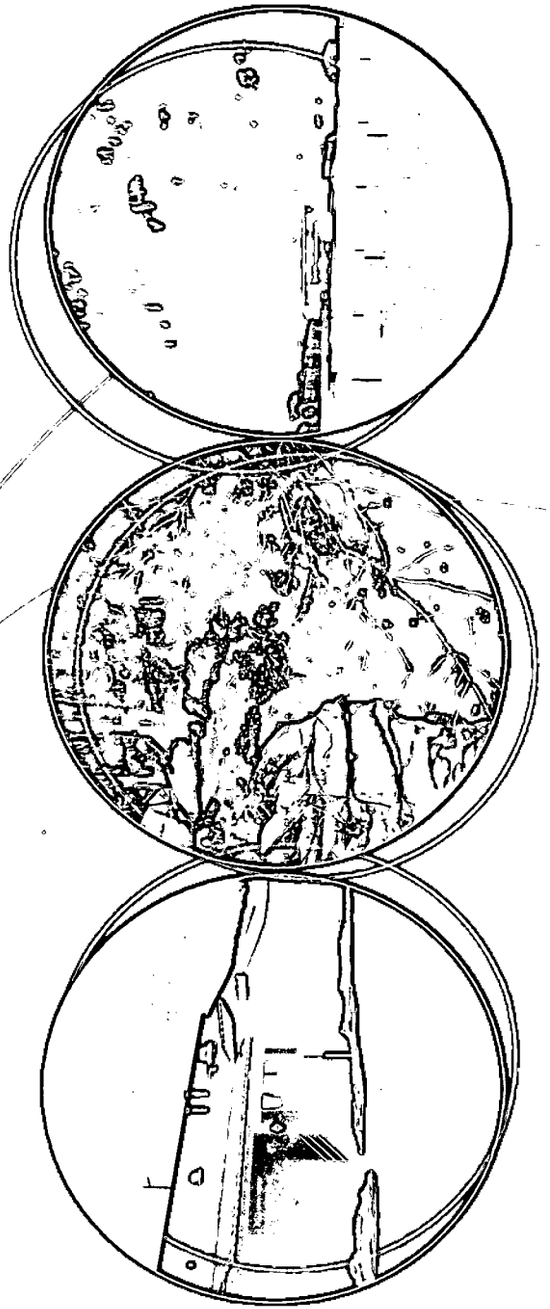
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City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix B. Detailed Cost Estimates

City Of Bozeman WTP Replacement
Hyalite/Sourdough Plant 22 MGD
Bozeman, MT
30% Design OPCC

Estimate Summary Report

Description	Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
1 GENERAL SITEWORK	1.00	LS	155,376	271,390	270,675	227,952		925,392
2 SITE PIPING	1.00	LS	1,522,035	2,508,240	800,488	505,256	5,000	5,341,019
3 LANDSCAPING	1.00	LS			42,000			42,000
4 WASTE HANDLING	1.00	LS	297,271	755,915	1,906	173,004		1,228,094
5 PROCESS EQUIPMENT	1.00	LS	928,988	3,062,644	19,055	15,645	1,090	4,027,422
6 CHEMICAL EQUIPMENT	1.00	LS	44,184	325,086	3,811		4,042	377,123
7 OPERATIONS BUILDING	43,965.00	SF	927,715	2,081,541	179,875	168,475		3,357,607
8 ELECTRICAL	1.00	LS	14,687	79,205	2,455,956	1,981		2,551,829
9 CONTROLS	1.00	LS			1,590,942			1,590,942

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Estimate Totals

Description	Amount	Totals	Hours	Rate
Labor	3,890,256		65,666.343 hrs	
Material	9,084,020			
Subcontract	5,364,707			
Equipment	1,092,312			
Other	10,131			
Direct Cost - Subtotal		**19,441,426**		
Contractor's Fld Ovhd & Mob	1,360,900			7.000 %
Field Const Cost - Subtotal		**20,802,326**		
Contractor's Fee	2,080,233			10.000 %
Contractor's Bonds & Insurance	343,238			1.500 %
Undefined SOW (Contingency)	4,645,160			20.000 %
Subtotal		**27,870,957**		
Escal Mid-Pnt Const (02-26-12)	733,006			2.630 %
Subtotal	**733,006**	**28,603,963**		
Sales Tax	286,040			1.000 %
Total OPCC Contractor Bid		**28,890,003**		
Owner Furnished PALL Equip	5,558,300			
Total OPCC Project Const Cost		**34,448,303**		
Engineering and Administration	6,425,800			
TOTAL PROJECT COST		**40,874,103**		

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Description	Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
1 GENERAL SITEWORK								
DIVISION 01	**GENERAL REQUIREMENTS**							
01060.000 Special Conditions	1.00	ls			87,600			87,600
DIVISION 01 GENERAL REQUIREMENTS					**87,600**			**87,600**
DIVISION 02	**SITE CONSTRUCTION**							
02072.000 Demolition, Cutting and Patching	1.00	ls	58,630		20,000	57,348		135,978
02072.010 Demolition Existing Drying Beds	1.00	ls	13,086	19,608		13,394		46,088
02110.000 Site Clearing	3.00	ac	6,845			4,243		11,088
02200.000 Earthwork	25,000.00	cy	8,802			24,647		33,448
02200.600 Earthwork, Structural Backfill, Native Material includes compaction	25,000.00	cy	41,877			107,278		149,154
02513.000 Asphaltic Concrete Vehicular Paving	46,000.00	sf	24,123	234,707		20,365		279,195
02515.000 Precast Concrete Manhole Structure	3.00	ea			49,500			49,500
03002.300 Concrete_Walls Exterior	1.00	cy			44,000			44,000
03002.800 Concrete_Equipment Pads	45.00	cy			17,325			17,325
03002.890 Concrete_Sidewalks	3,000.00	sf			24,750			24,750
DIVISION 02 SITE CONSTRUCTION			**153,363**	**254,316**	**155,575**	**227,273**		**790,527**
3,084.42 Labor hours								
2,436.504 Equipment hours								
DIVISION 05	**METALS**							
05505.000 Metal Fabrications	1.00	ls	2,013	17,074	27,500	678		47,265
DIVISION 05 METALS			**2,013**	**17,074**	**27,500**	**678**		**47,265**
48.00 Labor hours								
16.00 Equipment hours								
1 GENERAL SITEWORK			***155,376***	***271,390***	***270,675***	***227,952***	***0***	***925,392***
1.00 LS								
3,132.42 Labor hours								
2,452.504 Equipment hours								
2 SITE PIPING								
DIVISION 02	**SITE CONSTRUCTION**							

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
02500.000	Utility Services	1.00	ls	1,130	15,464	770,000	429		787,023
02515.000	Precast Concrete Manhole Structure	9.00	ea	7,924	26,350		3,139		37,414
DIVISION 02 SITE CONSTRUCTION				**9,055**	**41,813**	**770,000**	**3,568**		**824,436**
255.904	Labor hours								
78.623	Equipment hours								
DIVISION 03	**CONCRETE**								
03002.100	Concrete_Foundations	34.00	cy	6,051	10,119		774		16,944
DIVISION 03 CONCRETE				**6,051**	**10,119**		**774**		**16,944**
121.075	Labor hours								
18.51	Equipment hours								
DIVISION 04	**MASONRY**								
04220.009	Concrete Masonry_8" Regular	1,440.00	sf	15,553	13,563		323		29,438
DIVISION 04 MASONRY				**15,553**	**13,563**		**323**		**29,438**
338.932	Labor hours								
17.62	Equipment hours								
DIVISION 07	**THERMAL& MOISTURE PROTECTION**								
07412.000	Metal Roofing	900.00	sf	7,176	15,590		323		23,090
DIVISION 07 THERMAL& MOISTURE PROTECTION				**7,176**	**15,590**		**323**		**23,090**
159.56	Labor hours								
5.14	Equipment hours								
DIVISION 11	**EQUIPMENT**								
11076.000	Pumping Equipment: Submersible Non-Clog	2.00	ea	482	979				1,461
DIVISION 11 EQUIPMENT				**482**	**979**				**1,461**
10.323	Labor hours								
DIVISION 15	**MECHANICAL**								
02221.000	Trenching, Backfilling and Compacting for Utilities	1.00	ls	769,028	192,435		164,659		1,126,122
15060.000	Pipe and Pipe Fittings: Basic Requirements	1.00	ls	4,429	5,500				9,929
15062.000	Pipe: Ductile	3,645.00	lf	230,189	733,400		150,911		1,114,501
15063.000	Pipe: Copper	1,080.00	lf	8,426	15,042				23,467
15064.000	Pipe: Plastic	8,600.00	lf	220,084	184,757		17,394	5,000	427,235
15069.008	Pipe: RCP (8-SD)	200.00	lf	14,404	4,314		3,498		22,216
15069.012	Pipe: RCP (12-SD)	27.00	lf	2,210	794		514		3,519
15069.200	Pipe: RCP (Contact) w/ 2 ea 10' x 10' & 1 ea 20' x 10' CIP Boxes	1,100.00	lf	212,873	734,426		147,742		1,095,040
15101.000	Gate Valves	32.00	ea	7,668	148,776		7,199		163,644
15102.000	Plug Valves	11.00	ea	2,645	89,673		2,213		94,531

AACE Classification Accuracy Range

Upper Range +30%%

Lower Range -15%%

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
15103.000	Butterfly Valves	13.00	ea	11,762	317,061		6,136		334,959
15605.000	HVAC: Equipment	1.00	ls			15,488			15,488
DIVISION 15 MECHANICAL				**1,483,718**	**2,426,176**	**15,488**	**500,268**	**5,000**	**4,430,650**
30,696.23	Labor hours								
7,067.59	Equipment hours								
DIVISION 16	**ELECTRICAL**								
16010.000	Electrical: Basic Requirements	1.00	ls			15,000			15,000
DIVISION 16 ELECTRICAL						**15,000**			**15,000**
2 SITE PIPING				***1,522,035***	***2,508,240***	***800,488***	***505,256***	***5,000***	***5,341,019***
1.00	***LS***								
31,582.02	Labor hours								
7,187.472	Equipment hours								
	3 LANDSCAPING								
DIVISION 02	**SITE CONSTRUCTION**								
02930.000	Seeding, Sodding, and Landscaping	1.00	ls			42,000			42,000
DIVISION 02 SITE CONSTRUCTION						**42,000**			**42,000**
3 LANDSCAPING				***0***	***0***	***42,000***	***0***	***0***	***42,000***
1.00	***LS***								
	4 WASTE HANDLING								
DIVISION 02	**SITE CONSTRUCTION**								
02200.010	Earthwork_Lagoon	2,000.00	cy	41,517			113,841		155,358
02200.500	Earthwork, Structural Excavation	8,148.00	cy	17,872			36,317		54,189
02200.600	Earthwork, Structural Backfill, Native Material includes compaction	787.00	cy	1,127			2,509		3,636
02775.100	PVC Membrane Liner at Lagoon	1,000.00	sy	4,914	2,466				7,380
02775.500	Asphalt Over PVC Membrane Liner	4,333.33	sy	33,129	198,930		10,209		242,269

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
DIVISION 02 SITE CONSTRUCTION				**98,559**	**201,396**		**162,877**		**462,832**
2,094.784 Labor hours									
1,362.444 Equipment hours									
DIVISION 03	**CONCRETE**								
03002.100	Concrete_Foundations	164.00	cy	39,207	49,221		5,047		93,475
03002.300	Concrete_Walls Exterior	220.00	cy	126,564	62,337		2,098		190,999
DIVISION 03 CONCRETE				**165,770**	**111,558**		**7,145**		**284,474**
3,834.08 Labor hours									
172.92 Equipment hours									
DIVISION 11	**EQUIPMENT**								
11071.000	Pumping Equipment: Horizontal Split-Case Centrifugal Pumps	1.00	ls	17,792	200,000				217,792
11120.000	Sludge Collection and Thickening: Circular General Req	1.00	ls	4,290	86,960		2,982		94,232
11336.000	Solids Collection Equipment (DAF)	2.00	ea	10,859	156,000	1,906			168,765
DIVISION 11 EQUIPMENT				**32,941**	**442,960**	**1,906**	**2,982**		**480,788**
101.000 Labor hours									
21.00 Equipment hours									
4 WASTE HANDLING				***297,271***	***755,915***	***1,906***	***173,004***	***0***	***1,228,094***
1.00 LS									
6,029.861 Labor hours									
1,556.363 Equipment hours									
5 PROCESS EQUIPMENT									
DIVISION 11	**EQUIPMENT**								
11005.000	Equipment: Basic Requirements	1.00	ls	285		19,055			19,340
11066.000	Pumps: Water Seal System	1.00	ls	5,750	36,000				41,750
11071.000	Pumping Equipment: Horizontal Split-Case Centrifugal Pumps	1.00	ls	17,792	70,000				87,792
11077.000	Pumping Equipment: Inline Centrifugal Pumps	1.00	ls	563	1,000				1,563
11077.010	Pumping Equipment: Inline Centrifugal Pumps (Service Water PS)	1.00	ls	1,352				515	1,867
11091.000	Grit Removal Equipment: VortexGrit Collecting Equipment	2.00	ea	19,520	266,276		198	205	286,199
11126.000	Inclined Plate Clarifier	1.00	ls	244,476	841,050				1,085,526

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
11127.000	High Rate Clarification System	9.00	ea	48,627	300,150		2,684		351,461
11301.000	Membrane Filtration System	1.00	ls	480,000					480,000
11373.000	Mixers	1.00	ea	3,606	32,400			370	36,376
11385.000	Solids Mixers	3.00	ea	6,435	105,000		0		111,435
11980.000	Compressed Air System	3.00	ea	399	8,262				8,661
DIVISION 11 EQUIPMENT				**828,805**	**1,660,138**	**19,055**	**2,882**	**1,090**	**2,511,969**
1,979.37	Labor hours								
67.83	Equipment hours								
DIVISION 13	**SPECIAL CONSTRUCTION**								
13200.000	Storage Tanks	1.00	ea	852	47,573				48,425
13200.060	Storage Tanks (Service Water System)	1.00	ea	604	1,100				1,704
DIVISION 13 SPECIAL CONSTRUCTION				**1,456**	**48,673**				**50,129**
26.00	Labor hours								
10.00	Equipment hours								
DIVISION 15	**MECHANICAL**								
15061.000	Pipe: Steel	2,000.00	lf	23,344	28,274				51,618
15061.050	Pipe: Steel (Fabricated)	1.00	ls	59,430	655,232				714,661
15064.000	Pipe: Plastic	200.00	lf	2,984	958				3,942
15101.000	Gate Valves	50.00	ea	12,970	669,369		12,763		695,103
DIVISION 15 MECHANICAL				**98,727**	**1,353,833**		**12,763**		**1,465,324**
2,200.91	Labor hours								
103.00	Equipment hours								
5 PROCESS EQUIPMENT				***928,988***	***3,062,644***	***19,055***	***15,645***	***1,090***	***4,027,422***
1.00	***LS***								
4,206.274	Labor hours								
180.83	Equipment hours								
	6 CHEMICAL EQUIPMENT								
DIVISION 11	**EQUIPMENT**								
11005.000	Equipment: Basic Requirements	1.00	ls			3,811			3,811
11926.000	Chemical Feed: Liquid Systems	1.00	ls	29,072	156,000			4,042	189,114
DIVISION 11 EQUIPMENT				**29,072**	**156,000**	**3,811**		**4,042**	**192,925**
504.00	Labor hours								
DIVISION 13	**SPECIAL CONSTRUCTION**								
13200.000	Storage Tanks	1.00	ea	2,384	5,500				7,884
13200.010	Storage Tanks (Chlorine System)	4.00	ea	4,233	72,669				76,901

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
13200.020	Storage Tanks (Aluminum Chlorohydrate System)	2.00	ea	1,757	30,460				32,218
13200.030	Storage Tanks (Sodium Bisulfate System)	1.00	ea	2,384	7,700				10,084
13200.040	Storage Tanks (Fluoride System)	2.00	ea	1,452	16,796				18,248
13200.050	Storage Tanks (Sodium Hydroxide System)	3.00	ea	2,901	35,961				38,862
DIVISION 13 SPECIAL CONSTRUCTION				**15,111**	**169,086**				**184,198**
173.14	Labor hours								
6 CHEMICAL EQUIPMENT				***44,184***	***325,086***	***3,811***	***0***	***4,042***	***377,123***
1.00	***LS***								
677.14	Labor hours								
	7 OPERATIONS BUILDING								
DIVISION 02	**SITE CONSTRUCTION**								
02200.500	Earthwork, Structural Excavation	5,300.00	cy	3,391			5,325		8,715
02200.600	Earthwork, Structural Backfill, Native Material includes compaction	2,300.00	cy	3,853			9,870		13,722
DIVISION 02 SITE CONSTRUCTION				**7,243**			**15,194**		**22,438**
135.54	Labor hours								
127.18	Equipment hours								
DIVISION 03	**CONCRETE**								
03002.100	Concrete_Foundations			2,207	3,121		139		5,466
03002.300	Concrete_Walls Exterior	756.00	cy	309,846	223,581		7,516		540,943
03002.305	Concrete_Walls Exterior_Radius	68.00	cy	31,981	19,578		648		52,207
03002.500	Concrete_Columns			4,898	6,090		141		11,129
03002.700	Concrete_Slab on Grade	1,206.00	cy	215,825	320,249		30,957		567,031
DIVISION 03 CONCRETE				**564,756**	**572,619**		**39,401**		**1,176,776**
12,648.09	Labor hours								
1,117.581	Equipment hours								
DIVISION 04	**MASONRY**								
04220.008	Concrete Masonry_8" Split Face	2,056.00	sf	24,506	22,521		496		47,523
04220.009	Concrete Masonry_8" Regular	6,146.00	sf	60,043	51,307		1,363		112,713
DIVISION 04 MASONRY				**84,549**	**73,828**		**1,860**		**160,236**
1,834.14	Labor hours								
101.594	Equipment hours								
DIVISION 05	**METALS**								

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
05120.000	Structural Steel	1.00	ls	6,186	34,209		2,326		42,721
05505.000	Metal Fabrications	1.00	ls	14,231	423,545		1,150		438,925
05522.000	Aluminum Railings	55.00	lf	1,892	9,516		153		11,561
DIVISION 05 METALS				**22,308**	**467,271**		**3,628**		**493,207**
354.94	Labor hours								
83.93	Equipment hours								
DIVISION 08	**DOORS & WINDOWS**								
08110.030	Metal Doors & Frames (3070)	39.00	ea	7,715	48,203				55,919
08110.060	Metal Doors & Frames (6070)	9.00	ea	3,293	21,173				24,466
08332.000	Steel Rolling Overhead Doors	4.00	ea	2,969	10,873				13,842
08525.000	Aluminum Windows	11.00	ea	1,480	9,767				11,247
DIVISION 08 DOORS & WINDOWS				**15,457**	**90,016**				**105,473**
371.672	Labor hours								
DIVISION 09	**FINISHES**								
09250.000	Gypsum Board	1.00	ls	23,871	11,475				35,346
DIVISION 09 FINISHES				**23,871**	**11,475**				**35,346**
623.404	Labor hours								
DIVISION 10	**SPECIALTIES**								
10162.000	Metal Toilets Partitions	1.00	ls	1,667	8,805				10,472
10800.000	Toilet, Bath & Laundry Accessories	1.00	ls	114	235				348
DIVISION 10 SPECIALTIES				**1,781**	**9,040**				**10,820**
37.60	Labor hours								
DIVISION 11	**EQUIPMENT**								
11601.000	Laboratory Equipment					25,000			25,000
11999.000	Appliances	1.00	ls	1,029	4,978				6,007
DIVISION 11 EQUIPMENT				**1,029**	**4,978**	**25,000**			**31,007**
20.00	Labor hours								
DIVISION 12	**FURNISHINGS**								
12346.100	Kitchen Casework (Wood)	1.00	ls	5,212	22,337				27,549
DIVISION 12 FURNISHINGS				**5,212**	**22,337**				**27,549**
93.280	Labor hours								
DIVISION 13	**SPECIAL CONSTRUCTION**								
13121.000	Metal Building Systems	43,965.00	sf	187,899	738,964		106,898		1,033,761
DIVISION 13 SPECIAL CONSTRUCTION				**187,899**	**738,964**		**106,898**		**1,033,761**
3,372.56	Labor hours								
481.86	Equipment hours								
DIVISION 14	**CONVEYING SYSTEMS**								

Description		Quantity		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Total Amount
14305.000	Bridge Cranes	1.00	ea	8,601	75,765		1,494		85,859
DIVISION 14 CONVEYING SYSTEMS				**8,601**	**75,765**		**1,494**		**85,859**
154.401	Labor hours								
22.201	Equipment hours								
DIVISION 15	**MECHANICAL**								
15440.000	Plumbing Fixtures & Equipment	16.00	ea	5,010	15,249				20,259
15605.000	HVAC: Equipment	1.00	ls			154,875			154,875
DIVISION 15 MECHANICAL				**5,010**	**15,249**	**154,875**			**175,134**
107.311	Labor hours								
7 OPERATIONS BUILDING				***927,715***	***2,081,541***	***179,875***	***168,475***	***0***	***3,357,607***
43,965.00	***SF***								
19,752.92	Labor hours								
1,934.34	Equipment hours								
	8 ELECTRICAL								
DIVISION 16	**ELECTRICAL**								
16010.000	Electrical: Basic Requirements	1.00	ls	14,687	79,205	2,455,956	1,981		2,551,829
DIVISION 16 ELECTRICAL				**14,687**	**79,205**	**2,455,956**	**1,981**		**2,551,829**
285.714	Labor hours								
57.143	Equipment hours								
8 ELECTRICAL				***14,687***	***79,205***	***2,455,956***	***1,981***	***0***	***2,551,829***
1.00	***LS***								
285.714	Labor hours								
57.143	Equipment hours								
	9 CONTROLS								
DIVISION 13	**SPECIAL CONSTRUCTION**								
13440.000	Instrumentation for Process Control: Basic Requirements	1.00	ls			1,590,942			1,590,942
DIVISION 13 SPECIAL CONSTRUCTION						**1,590,942**			**1,590,942**
9 CONTROLS				***0***	***0***	***1,590,942***	***0***	***0***	***1,590,942***
1.00	***LS***								

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Estimate Totals

Description	Amount	Totals	Hours	Rate
Labor	3,890,256		65,666.343 hrs	
Material	9,084,020			
Subcontract	5,364,707			
Equipment	1,092,312			
Other	10,131			
Direct Cost - Subtotal		**19,441,426**		
Contractor's Fld Ovhd & Mob	1,360,900			7.000 %
Field Const Cost - Subtotal		**20,802,326**		
Contractor's Fee	2,080,233			10.000 %
Contractor's Bonds & Insurance	343,238			1.500 %
Undefined SOW (Contingency)	4,645,160			20.000 %
Subtotal		**27,870,957**		
Escal Mid-Pnt Const (02-26-12)	733,006			2.630 %
Subtotal	**733,006**	**28,603,963**		
Sales Tax	286,040			1.000 %
Total OPCC Contractor Bid		**28,890,003**		
Owner Furnished PALL Equip	5,558,300			
Total OPCC Project Const Cost		**34,448,303**		
Engineering and Administration	6,425,800			
TOTAL PROJECT COST		**40,874,103**		

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	1 GENERAL SITEWORK										
DIVISION 01	**GENERAL REQUIREMENTS**										
	01060.000 Special Conditions										
n	0925 Stormwater Pollution Prevention Plan	1.00	ls			15,000				15,000.00 /ls	15,000
n	0925 Temporary Water Pollution Control	1.00	ls			20,000				20,000.00 /ls	20,000
n	0925 Permanent Water Pollution Control	1.00	ls			15,000				15,000.00 /ls	15,000
n	0925 Entrance Sign	1.00	ls			2,000				2,000.00 /ls	2,000
n	0925 Accessible Mark Sign	1.00	ls			600				600.00 /ls	600
n	0925 Site Security System	1.00	ls			35,000				35,000.00 /ls	35,000
	01060.000 Special Conditions					*87,600*				*87,600.00 /ls*	*87,600*
	1.00 ls										
	DIVISION 01 GENERAL REQUIREMENTS			0	0	87,600		0	0		87,600
DIVISION 02	**SITE CONSTRUCTION**										
	02072.000 Demolition, Cutting and Patching										
n	0675 Selective demolition, chain link fences & gates, fence,	700.00	lf	2,040	-	-		594	-	3.762 /lf	2,633
n	0080 Existing Building Demolition and Salvage	360,000.00	cf	56,591	-	-		56,754	-	0.32 /cf	113,345
—	Miscellaneous Demolition	1.00	ls			20,000				20,000.00 /ls	20,000
	02072.000 Demolition, Cutting and Patching			*58,630*		*20,000*		*57,348*		*135,977.80 /ls*	*135,978*
	1.00 ls										
	1,186.80 Labor hours										
	586.40 Equipment hours										
	02072.010 Demolition Existing Drying Beds										
—	Demolition of existing drying beds	1.00	ls	4,201				11,842		16,043.45 /ls	16,043
n	0100 Selective demolition, dump charges, typical urban city, building construction materials, includes tipping fees only	195.75	ton	-	19,608	-		-	-	100.17 /ton	19,608
n	0060 Selective concrete demolition, average reinforcing, break into small pieces, excludes shoring, bracing, saw torch cutting, loading, hauling, dumping	100.00	cy	8,885	-	-		1,552	-	104.37 /cy	10,437
	02072.010 Demolition Existing Drying Beds			*13,086*	*19,608*			*13,394*		*46,088.29 /ls*	*46,088*
	1.00 ls										
	330.00 Labor hours										
	290.00 Equipment hours										
	02110.000 Site Clearing										
n	0020 Clearing & grubbing, cut & chip light trees, to 6" diameter	3.00	acre	6,845	-	-		4,243	-	3,695.943 /acre	11,088

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	02110.000	*Site Clearing*			*6,845*				*4,243*		*3,695.943/ac*	*11,088*
		3.00 ac 144.000 Labor hours 96.00 Equipment hours										
	02200.000	*Earthwork*										
	0305	Excavating, bulk bank measure, 3.5 C.Y. capacity = 160 C.Y./hour, backhoe, hydraulic, crawler mounted, excluding truck loading	25,000.00	bcy	8,802	-	-		24,647	-	1.34 /bcy	33,448
		02200.000 Earthwork			*8,802*				*24,647*		*1.34 /cy*	*33,448*
		25,000.00 cy 166.750 Labor hours 83.25 Equipment hours										
	02200.600	*Earthwork, Structural Backfill, Native Material includes compaction*										
n	1600	Backfill, bulk, 6" to 12" lifts, dozer backfilling	25,000.00	ecy	20,263	-	-		51,022	-	2.851 /ecy	71,285
n	1700	Backfill, bulk, 6" to 12" lifts, dozer backfilling, compaction with sheepsfoot roller	25,000.00	ecy	21,614	-	-		56,255	-	3.12 /ecy	77,869
		02200.600 Earthwork, Structural Backfill, Native Material includes compaction			*41,877*				*107,278*		*5.97 /cy*	*149,154*
		25,000.00 cy 775.00 Labor hours 1,033.25 Equipment hours										
	02513.000	*Asphaltic Concrete Vehicular Paving*										
n	5050	Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees	2,900.00	sy	13,891	-	-		8,166	-	7.61 /sy	22,057
n	0300	Base course drainage layers, aggregate base course for roadways and large paved areas, stone base, compacted, 3/4" stone base, to 12" deep	5,111.111	sy	5,060	154,356	-		9,016	-	32.954 /sy	168,432
	0200	Plant-mix asphalt paving, for highways and large paved areas, binder course, 4" thick, no hauling included	5,111.111	sy	5,172	80,352	-		3,183	-	17.36 /sy	88,706
		02513.000 Asphaltic Concrete Vehicular Paving			*24,123*	*234,707*			*20,365*		*6.07 /sf*	*279,195*
		46,000.00 sf 481.87 Labor hours 347.604 Equipment hours										
	02515.000	*Precast Concrete Manhole Structure*										
—		Access Vaults	3.00	ea			49,500				16,500.00 /ea	49,500
		02515.000 Precast Concrete Manhole Structure					*49,500*				*16,500.00 /ea*	*49,500*
		3.00 ea										
	03002.300	*Concrete_Walls Exterior*										
—		Retaining Walls	1.00	ls			44,000				44,000.00 /ls	44,000

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Item	Description	Takeoff Qty	Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.300 Concrete_Walls Exterior				*44,000*				*44,000.00 /cy*	*44,000*
	1.00 cy									
03002.800	*Concrete_Equipment Pads*									
—	Exterior Conctrete Pads	45.00 cy			17,325				385.00 /cy	17,325
	03002.800 Concrete_Equipment Pads				*17,325*				*385.00 /cy*	*17,325*
	45.00 cy									
03002.890	*Concrete_Sidewalks*									
—	Sidewalks	3,000.00 sf			24,750				8.25 /sf	24,750
	03002.890 Concrete_Sidewalks				*24,750*				*8.25 /sf*	*24,750*
	3,000.00 sf									
	DIVISION 02 SITE CONSTRUCTION		**153,363**	**254,316**	**155,575**		**227,273**	**0**		**790,527**
	3,084.42 Labor hours									
	2,436.504 Equipment hours									
DIVISION 05	**METALS**									
05505.000	*Metal Fabrications*									
—	Access Gate	1.00 ea			27,500				27,500.00 /ea	27,500
n 1400	Metal parking bumpers, pipe bollards, conc filled/painted, 8' L x 4' D hole, 8" diam.	30.00 ea	2,013	17,074	-		678	-	658.841 /ea	19,765
	05505.000 Metal Fabrications		*2,013*	*17,074*	*27,500*		*678*		*47,265.24 /ls*	*47,265*
	1.00 ls									
	48.00 Labor hours									
	16.00 Equipment hours									
	DIVISION 05 METALS		**2,013**	**17,074**	**27,500**		**678**	**0**		**47,265**
	48.00 Labor hours									
	16.00 Equipment hours									
	1 GENERAL SITEWORK		***155,376***	***271,390***	***270,675***		***227,952***	***0***	***925,392.35 /LS***	***925,392***
	1.00 LS									
	3,132.42 Labor hours									
	2,452.504 Equipment hours									
	2 SITE PIPING									
DIVISION 02	**SITE CONSTRUCTION**									
02500.000	*Utility Services*									
n 0925	Project Allowance_Site Improvements- Raw Water Intake Mods	1.00 ls			770,000				770,000.00 /ls	770,000

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	02500.000	*Utility Services*										
	0200	Utility Septic Tank and Effluent Wet Wells, septic tanks precast concrete, 5,000 gallon, excludes excavation or piping	2.00	ea	1,130	15,464	-		429	-	8,511.39 /ea	17,023
		02500.000 Utility Services			*1,130*	*15,464*	*770,000*		*429*		*787,022.78 /ls*	*787,023*
		1.00 ls										
		32.00 Labor hours										
		4.571 Equipment hours										
	02515.000	*Precast Concrete Manhole Structure*										
n	1563	Utility area drains,catch basins manholes grates only,for pipe bells,gray iron,heavy duty,18"diameter pipe,excludes footing,excavation,and backfill	7.00	ea	57	838	-		-	-	127.83 /ea	895
n	2500	Utility area drains, catch basins manholes frames and covers, cast iron, watertight, 24" diameter, 350 lb., excludes footing, excavation, and backfill	2.00	ea	218	872	-		87	-	588.47 /ea	1,177
	1210	Storm Drainage Manholes, Frames, and Covers, concrete, precast, 6' inside diameter, 8' deep, excludes footing, excavation, backfill, frame and cover	9.00	ea	7,649	24,640	-		3,052	-	3,926.872 /ea	35,342
		02515.000 Precast Concrete Manhole Structure			*7,924*	*26,350*			*3,139*		*4,157.064/ea*	*37,414*
		9.00 ea										
		223.904 Labor hours										
		74.051 Equipment hours										
		DIVISION 02 SITE CONSTRUCTION			**9,055**	**41,813**	**770,000**		**3,568**	**0**		**824,436**
		255.904 Labor hours										
		78.623 Equipment hours										
	DIVISION 03	**CONCRETE**										
	03002.100	*Concrete_Foundations*										
n	3061	C.I.P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	120.00	sfca	435	65	-		-	-	4.17 /sfca	500
n	9011	C.I.P. concrete forms, bulkhead for foundation w/ keyway, 12" and greater, exp metal, includes erecting, bracing, stripping and cleaning	120.00	sfca	167	29	-		-	-	1.63 /sfca	196
n	3005	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_FOUNDATIONS	120.00	lf	277	859	-		-	-	9.461 /lf	1,135
n	0605	Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	3.83	ton	3,167	3,406	-		-	-	1,718.431 /ton	6,573
n	2005	Reinforcing steel, unload and sort, add to base_FOUNDATIONS	3.83	ton	124	-	-		32	-	40.68 /ton	156
n	2211	Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	3.83	ton	135	-	-		34	-	44.22 /ton	169

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.100	*Concrete_Foundations*										
n	4652	Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	34.00	cy	442	-	-		162	-	17.77 /cy	604
n	0300	Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	34.00	cy	-	4,819	-		-	-	141.74 /cy	4,819
n	0105	Concrete finishing, floors, manual screed, bull float_FOUNDATIONS	900.00	sf	215	-	-		-	-	0.24 /sf	215
n	0205	Control joint, clean out control joint of debris_FOUNDATIONS	120.00	lf	7	-	-		-	-	0.06 /lf	7
n	0365	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_FOUNDATIONS	120.00	lf	150	26	-		-	-	1.47 /lf	176
n	0305	Concrete surface treatment, curing, sprayed membrane compound_FOUNDATIONS	9.00	csf	53	76	-		-	-	14.31 /csf	129
n	1005	Fill, gravel fill, compacted, under floor slabs, alternate pricing method, 4" deep_FOUND	33.00	ecy	626	840	-		42	-	45.693 /ecy	1,508
n	1135	Hauling, excavated borrow material, loose cubic yards, 20 mile round trip, 0.4 loads/hour, 16.5 c.y. dump trailer, highway haulers, excludes loading	38.00	lcy	254	-	-		503	-	19.94 /lcy	758
		03002.100 Concrete_Foundations			*6,051*	*10,119*			*774*		*498.354/cy*	*16,944*
		34.00 cy 121.075 Labor hours 18.51 Equipment hours										
		DIVISION 03 CONCRETE			6,051	10,119	0		774	0		16,944
		121.075 Labor hours 18.51 Equipment hours										
	DIVISION 04	MASONRY										
	04220.009	*Concrete Masonry_8" Regular*										
n	0080	Scaffolding, steel tubular, regular, labor only to erect & dismantle, building exterior, wall face, 6'-4" x 5' frames, 1 to 5 stories, excl. planks	14.00	csf	2,435	-	-		-	-	173.96 /csf	2,435
n	0906	Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excl. planks	14.00	csf	-	504	-		-	-	36.00 /csf	504
n	2850	Scaffolding, steel tubular, regular, accessory, plank, rent/mo, 2" x 10" x 16' long	15.00	ea	-	90	-		-	-	6.00 /ea	90
n	0020	Grout, bond beams and lintels, 8" deep, 8" thick, 0.20 C.F. per L.F., pumped, excludes blockwork	120.00	lf	119	166	-		13	-	2.473 /lf	297
n	0250	Grout, concrete masonry unit (CMU) cores, 8" thick, 0.258 C.F./S.F., pumped, excludes blockwork	1,440.00	sf	2,931	2,208	-		310	-	3.784 /sf	5,450
n	0020	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	396.53	lb	191	221	-		-	-	1.04 /lb	412
n	0060	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	1,784.38	lb	1,055	995	-		-	-	1.15 /lb	2,051

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	04220.009	*Concrete Masonry_8" Regular*										
n	0130	Concrete block,bond beam,normal weight,2000 psi,8"x8"x16",includes mortar,excludes scaffolding,horizontal reinforcing,vertical reinforcing and grout	120.00	lf	374	423	-		-	-	6.641 /lf	797
n	6200	Concrete block, decorative, split face or scored split face, 2000 psi, 8" x 8" x 16", excludes scaffolding, grout and reinforcing	1,440.00	sf	8,447	7,575	-		-	-	11.13 /sf	16,022
n	6500	Concrete block, decorative, split face or scored split face, 8" thick, for special deeper colors, add	1,440.00	sf	-	1,381	-		-	-	0.96 /sf	1,381
		04220.009 Concrete Masonry_8" Regular			*15,553*	*13,563*			*323*		*20.443/sf*	*29,438*
		1,440.00 sf										
		338.932 Labor hours										
		17.62 Equipment hours										
		DIVISION 04 MASONRY			**15,553**	**13,563**	**0**		**323**	**0**		**29,438**
		338.932 Labor hours										
		17.62 Equipment hours										
DIVISION 07		**THERMAL& MOISTURE PROTECTION**										
	07412.000	*Metal Roofing*										
n	0800	Aluminum coping, stock units, for 12" wall, excludes scaffolding	138.00	lf	1,197	2,558	-		-	-	27.213 /lf	3,755
n	0600	Open web bar joist, K Series, 40-ton job lots, 24K10, 13.1 plf, 30' to 50' spans, shop fabricated, incl shop primer, horizontal bridging	300.00	lf	707	2,389	-		286	-	11.272 /lf	3,382
n	2600	Metal roof decking, steel, open type B wide rib, galvanized, under 50 Sq, 1-1/2" D, 20 gauge	900.00	sf	496	1,663	-		38	-	2.441 /sf	2,196
n	2780	2" x 8" miscellaneous wood blocking, to steel construction	0.414	mbf	611	124	-		-	-	1,776.62 /mbf	736
n	0030	Underlayment, plywood, underlayment grade, 3/8" thick	900.00	flr	372	496	-		-	-	0.97 /flr	868
n	1725	Polyisocyanurate Insulation, for roof decks, 2" thick, 2#/CF density	900.00	sf	225	756	-		-	-	1.09 /sf	981
n	1745	Polyisocyanurate Insulation, for roof decks, 3" thick, 2#/CF density	900.00	sf	248	1,090	-		-	-	1.49 /sf	1,338
n	0825	Asphalt Shingles, #30 felt underlayment	9.00	sq	44	108	-		-	-	16.952 /sq	153
n	0601	Standing Seam Metal Roof - Kynar Finish	9.00	sq	2,826	6,010	-		-	-	981.75 /sq	8,836
n	0100	Sheet metal flashing, aluminum, flexible, mill finish, .032" thick, including up to 4 bends	240.00	sf	450	395	-		-	-	3.52 /sf	845
		07412.000 Metal Roofing			*7,176*	*15,590*			*323*		*25.66 /sf*	*23,090*
		900.00 sf										
		159.56 Labor hours										
		5.14 Equipment hours										
		DIVISION 07 THERMAL& MOISTURE PROTECTION			**7,176**	**15,590**	**0**		**323**	**0**		**23,090**
		159.56 Labor hours										
		5.14 Equipment hours										

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
DIVISION 11		**EQUIPMENT**										
	11076.000	*Pumping Equipment: Submersible Non-Clog*										
n	0510	Pump,sewage ejector,simplex system,plythyl tank,12 gpm,1/2 hp, 15'head,37 gallon,3"discharge,includes operating and level controls,tank,cover and pump	2.00	ea	482	979	-		-	-	730.56 /ea	1,461
		11076.000 Pumping Equipment: Submersible Non-Clog			*482*	*979*					*730.56 /ea*	*1,461*
		2.00 ea										
		10.323 Labor hours										
		DIVISION 11 EQUIPMENT			**482**	**979**	**0**		**0**	**0**		**1,461**
		10.323 Labor hours										
DIVISION 15		**MECHANICAL**										
	02221.000	*Trenching, Backfilling and Compacting for Utilities*										
n	0050	Excavating, trench or continuous footing, common earth, 3/8 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	4,957.00	bcy	27,389	-	-		11,207	-	7.79 /bcy	38,596
n	0060	Excavating, trench or continuous footing, common earth, 1/2 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	500.00	bcy	2,072	-	-		973	-	6.09 /bcy	3,045
n	0062	Excavating, trench or continuous footing, common earth, 3/4 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	1,309.00	bcy	4,095	-	-		3,299	-	5.65 /bcy	7,394
n	0090	Excavating, trench or continuous footing, common earth, 1/2 C.Y. excavator, 4' to 6' deep, excludes sheeting or dewatering	12,569.880	bcy	52,087	-	-		24,458	-	6.09 /bcy	76,545
n	0120	Excavating, trench or continuous footing, common earth, 1 C.Y. excavator, 4' to 6' deep, excludes sheeting or dewatering	1,473.00	bcy	3,110	-	-		2,964	-	4.123 /bcy	6,074
n	0300	Excavating, trench or continuous footing, common earth, 1/2 C.Y. excavator, truck mounted, 4' to 6' deep, excludes sheeting or dewatering	152.00	bcy	642	-	-		620	-	8.303 /bcy	1,262
n	0500	Excavating, trench or continuous footing, common earth, 3/4 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	3,301.00	bcy	12,391	-	-		9,985	-	6.78 /bcy	22,376
n	1370	Excavating, trench or continuous footing, common earth, 1 C.Y. excavator, 6' to 10' deep, includes trench box, excludes dewatering	3,111.00	bcy	6,987	-	-		7,600	-	4.69 /bcy	14,588
n	1371	Excavating, trench or continuous footing, common earth, 1-1/2 C.Y. excavator, 6' to 10' deep, includes trench box, excludes dewatering	6,720.00	bcy	10,063	-	-		13,523	-	3.51 /bcy	23,586
n	0050	Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	5,744.32	lcy	44,862	192,435	-		12,987	-	43.571 /lcy	250,284
n	8050	Compaction, 3 passes, 6" to 11", 4" lifts, rammer tamper	5,002.04	ecy	18,600	-	-		2,423	-	4.203 /ecy	21,023

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	02221.000	*Trenching, Backfilling and Compacting for Utilities*										
n	0015	Backfill, TRENCH, light soil, by hand, no compaction	17,056.24	lcy	439,456	-	-		-	-	25.77 /lcy	439,456
n	0400	Backfill, TRENCH, 6" layers, compaction in layers, roller compaction with operator walking, add to above	19,614.24	ecy	127,181	-	-		29,460	-	7.99 /ecy	156,641
n	1900	Backfill, trench, to 300' haul, dozer backfilling, excludes compaction	11,254.00	lcy	8,106	-	-		14,967	-	2.05 /lcy	23,073
n	2200	Backfill, TRENCH, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	12,943.00	ecy	11,987	-	-		30,193	-	3.26 /ecy	42,180
		02221.000 Trenching, Backfilling and Compacting for Utilities			*769,028*	*192,435*			*164,659*		*1,126,122.21 /ls*	*1,126,122*
		1.00 ls										
		16,084.383 Labor hours										
		3,985.81 Equipment hours										
	15060.000	*Pipe and Pipe Fittings: Basic Requirements*										
n	1180	Pipe repair,clamp,stainless steel,with threaded service tap,full seal for iron,steel,pvc pipe,6"long,24"diameter pipe,excludes excavation backfill	4.00	ea	4,429	5,500	-		-	-	2,482.34 /ea	9,929
		15060.000 Pipe and Pipe Fittings: Basic Requirements			*4,429*	*5,500*					*9,929.36 /ls*	*9,929*
		1.00 ls										
		90.73 Labor hours										
	15062.000	*Pipe: Ductile*										
n	2040	Distribution piping,DIP,cement lined,fastite,20' lengths, 6"dia, Press Class 350, Excludes excavation, backfill, bedding	1,200.00	lf	13,524	16,959	-		6,036	-	30.433 /lf	36,519
n	2060	Distribution piping,DIP,cement lined,fastite,20' lengths, 8"dia, Press Class 350, Excludes excavation, backfill, bedding	100.00	lf	1,352	1,762	-		604	-	37.184 /lf	3,718
n	2179	Distribution piping,DIP,cement lined,fastite,20' lengths, 24"dia, Press Class 200, Excludes excavation, backfill, bedding	35.00	lf	1,286	2,522	-		759	-	130.511 /lf	4,568
n	3200	Distribution piping,DIP,cement lined,fastite,20 lengths, 30"dia, Press Class 150, Excludes excavation, backfill, bedding	670.00	lf	32,266	66,373	-		23,604	-	182.451 /lf	122,242
n	3220	Distribution piping,DIP,cement lined,fastite,20' lengths, 36"dia, Press Class 150, Excludes excavation, backfill, bedding	560.00	lf	32,363	74,680	-		23,674	-	233.423 /lf	130,717
n	3240	Distribution piping,DIP,cement lined,fastite,20' lengths, 42"dia, Press Class 150, Excludes excavation, backfill, bedding	1,080.00	lf	73,057	165,681	-		71,937	-	287.661 /lf	310,674
n	4002	Distribution Piping,DIP,Fast-Grip Gasket,8" dia,additional per linear foot of restrained pipe	100.00	lf	76	401	-		27	-	5.04 /lf	504
n	4009	Distribution Piping,DIP,Fast-Grip Gasket,24" dia,additional per linear foot of restrained pipe	35.00	lf	204	1,071	-		72	-	38.503 /lf	1,348
n	4010	Distribution Piping,DIP,Fast-Grip Gasket,30" dia,additional per linear foot of restrained pipe	670.00	lf	8,866	46,505	-		3,122	-	87.302 /lf	58,492
n	4401	Distribution Piping,DIP,Protecto 401-Lining,6"dia,additional per linear foot	1,200.00	lf	3,064	12,842	-		1,085	-	14.16 /lf	16,991
n	4402	Distribution Piping,DIP,Protecto 401-Lining,8"dia,additional per linear foot	100.00	lf	317	1,327	-		111	-	17.56 /lf	1,756

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15062.000	*Pipe: Ductile*										
n	4409	Distribution Piping,DIP,Protecto 401-Lining,24"dia,additional per linear foot	35.00	lf	288	1,209	-		102	-	45.70 /lf	1,599
n	4410	Distribution Piping,DIP,Protecto 401-Lining,30"dia,additional per linear foot	670.00	lf	7,018	29,441	-		2,476	-	58.112 /lf	38,935
n	4411	Distribution Piping,DIP,Protecto 401-Lining,36"dia,additional per linear foot	560.00	lf	6,951	29,161	-		2,451	-	68.863 /lf	38,563
n	4412	Distribution Piping,DIP,Protecto 401-Lining,42"dia,additional per linear foot	1,080.00	lf	14,833	60,655	-		5,226	-	74.74 /lf	80,714
n	4602	Fitting,DIP,Megalug Kit,6"dia	48.00	ea	10,668	1,683	-		-	-	257.31 /ea	12,351
n	4603	Fitting,DIP,Megalug Kit,8"dia	6.00	ea	1,334	285	-		-	-	269.78 /ea	1,619
n	4610	Fitting,DIP,Megalug Kit,24"dia	4.00	ea	1,111	1,233	-		-	-	586.123 /ea	2,344
n	4612	Fitting,DIP,Megalug Kit,36"dia	4.00	ea	1,270	3,592	-		-	-	1,215.39 /ea	4,862
n	4613	Fitting,DIP,Megalug Kit,42"dia	18.00	ea	6,155	16,262	-		-	-	1,245.381 /ea	22,417
n	8005	Fitting,90 degree bend,DIP,cement lined,MJ,6"dia,C110 water piping with Protecto 401 or SP2000 Coating	24.00	ea	2,705	5,122	-		72	-	329.15 /ea	7,900
n	8010	Fitting,90 degree bend,DIP,cement lined,MJ,8"dia,C110 water piping with Protecto 401 or SP2000 Coating	3.00	ea	406	942	-		12	-	453.09 /ea	1,359
n	8045	Fitting,90 degree bend,DIP,cement lined,MJ,24"dia,C110 water piping with Protecto 401 or SP2000 Coating	2.00	ea	736	5,883	-		435	-	3,526.63 /ea	7,053
	8050	Fitting,90 degree bend,DIP,cement lined,MJ,30"dia,C110 water piping with Protecto 401 or SP2000 Coating	4.00	ea	1,929	22,900	-		1,411	-	6,559.94 /ea	26,240
	8055	Fitting,90 degree bend,DIP,cement lined,MJ,36"dia,C110 water piping with Protecto 401 or SP2000 Coating	4.00	ea	2,315	33,761	-		1,695	-	9,442.48 /ea	37,770
	8060	Fitting,90 degree bend,DIP,cement lined,MJ,42"dia,C110 water piping with Protecto 401 or SP2000 Coating	9.00	ea	6,096	131,148	-		6,002	-	15,916.21 /ea	143,246
		15062.000 Pipe: Ductile			*230,189*	*733,400*			*150,911*		*305.761/lf*	*1,114,500*
		3,645.00 lf 4,167.82 Labor hours 728.21 Equipment hours										
	15063.000	*Pipe: Copper*										
n	1200	Pipe, copper, tubing, solder, 1" diameter, type K	680.00	lf	4,276	6,066	-		-	-	15.21 /lf	10,341
n	1260	Pipe, copper, tubing, solder, 2" diameter, type K,	400.00	lf	4,150	8,976	-		-	-	32.82 /lf	13,126
		15063.000 Pipe: Copper			*8,426*	*15,042*					*21.73 /lf*	*23,467*
		1,080.00 lf 162.423 Labor hours										
	15064.000	*Pipe: Plastic*										
n	1150	Pipe, plastic, PVC, high impact/pressure, 4" diameter, schedule 80, includes couplings 10' OC	1,000.00	lf	16,239	22,000	-		-	-	38.24 /lf	38,239
n	1880	Pipe, plastic, PVC, 1" diameter, schedule 40, includes couplings 10' OC, and hangers 3 per 10'	220.00	lf	1,985	538	-		-	-	11.47 /lf	2,523

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15064.000	*Pipe: Plastic*										
n	1910	Pipe, plastic, PVC, 2" diameter, schedule 40, includes couplings 10' OC, and hangers 3 per 10'	900.00	lf	11,395	3,544	-		-	-	16.60 /lf	14,939
n	1940	Pipe, plastic, PVC, 4" diameter, schedule 40, includes couplings 10' OC, and hangers 3 per 10'	390.00	lf	6,069	4,201	-		-	-	26.333 /lf	10,270
	0090	Elbow, 90 Deg., plastic, epoxy resin, fiberglass reinforced, general service, 2"	10.00	ea	226	920	-		-	-	114.572 /ea	1,146
	0110	Elbow, 90 Deg., plastic, epoxy resin, fiberglass reinforced, general service, 4"	8.00	ea	362	1,167	-		-	-	191.133 /ea	1,529
n	2140	Elbow, 90 Deg., plastic, PVC, socket joint, 1", schedule 80	5.00	ea	91	23	-		-	-	22.85 /ea	114
n	2190	Elbow, 90 Deg., plastic, PVC, socket joint, 4", schedule 80	5.00	ea	226	171	-		-	-	79.494 /ea	397
n	2200	Elbow, 90 Deg., plastic, PVC, socket joint, 6", schedule 80	3.00	ea	222	289	-		-	-	170.45 /ea	511
n	2210	Elbow, 90 Deg., plastic, PVC, socket joint, 8", schedule 80	4.00	ea	500	1,068	-		-	-	391.99 /ea	1,568
n	0060	Excavating, trench or continuous footing, common earth, 1/2 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	4,000.00	bcy	16,575	-	-		7,783	-	6.09 /bcy	24,358
n	0050	Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	450.00	lcy	3,514	16,583	-		1,017	-	46.921 /lcy	21,114
n	8050	Compaction, 3 passes, 6" to 11", 4" lifts, rammer tamper	392.00	ecy	1,458	-	-		190	-	4.203 /ecy	1,648
n	0015	Backfill, TRENCH, light soil, by hand, no compaction	3,600.00	lcy	92,754	-	-		-	-	25.77 /lcy	92,754
n	0400	Backfill, TRENCH, 6" layers, compaction in layers, roller compaction with operator walking, add to above	4,140.00	ecy	26,844	-	-		6,218	-	7.99 /ecy	33,062
	2000	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 20' lengths, 4" diameter, SDR 35, excludes excavation or backfill	100.00	lf	234	187	-		-	-	4.211 /lf	421
	2040	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 20' lengths, 6" diameter, SDR 35, excludes excavation or backfill	150.00	lf	375	609	-		-	-	6.563 /lf	984
	2080	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 13' lengths, 8" diameter, SDR 35, excludes excavation or backfill	290.00	lf	758	2,539	-		-	-	11.371 /lf	3,298
	2160	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 13' lengths, 12" diameter, SDR 35, excludes excavation or backfill	290.00	lf	953	4,399	-		126	-	18.89 /lf	5,478
	2160	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 13' lengths, 12" diameter, SDR 35, excludes excavation or backfill	3,000.00	lf	9,858	45,507	-		1,300	5,000	20.56 /lf	61,665

	Item		Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15064.000		*Pipe: Plastic*										
		2300	Public Sanitary Utility Sewerage Piping, piping polyvinyl chloride pipe, B & S, 13' lengths, 18" diameter, SDR 35, excludes excavation or backfill	360.00	lf	1,893	6,425	-		250	-	23.80 /lf	8,567
		3765	Public Sanitary Utility Sewerage Piping, piping SDR 35, 90< elbow, 18" diameter	2.00	ea	150	1,227	-		-	-	688.32 /ea	1,377
n		0066	Pipe,plastic, HDPE,single wall,straight,welded,40' lengths,2" dia,DR 11,add 1weld per joint;excl hanger,trench,backfill,hoist dig equip	500.00	lf	6,769	18,425	-		-	-	50.39 /lf	25,194
n		0074	Pipe,plastic, HDPE,single wall,straight,welded,40' lengths,4" dia,DR 11,add 1weld per joint;excl hanger,trench,backfill,hoist dig equip	500.00	lf	6,769	2,816	-		-	-	19.171 /lf	9,585
n		0090	Pipe,plastic, HDPE,single wall,straight,welded,40' lengths,8" dia,DR 11,add 1weld per joint;excl hanger,trench,backfill,hoist dig equip	300.00	lf	-	5,065	-		-	-	16.883 /lf	5,065
n		0114	Pipe,plastic, HDPE,single wall,straight,welded,40' lengths,18" dia,DR 11,add 1weld per joint;excl hanger,trench,backfill	600.00	lf	13,344	33,762	-		-	-	78.51 /lf	47,106
n		008	Gate Valve MJ Res Wedge: 16" / 2" Nut Operator NRS, Gear Operator Option	2.00	ea	519	13,291	-		511	-	7,160.32 /ea	14,321
			15064.000 Pipe: Plastic			*220,084*	*184,757*			*17,394*	*5,000*	*49.68 /lf*	*427,235*
			8,600.00 lf 4,164.005 Labor hours 599.852 Equipment hours										
	15069.008		*Pipe: RCP (8-SD)*										
n		1354	Excavating, trench or continuous footing, common earth, 5/8 C.Y. excavator, 4' to 6' deep, includes trench box, excludes dewatering	406.00	bcy	1,459	-	-		1,607	-	7.552 /bcy	3,066
n		0015	Backfill, light soil, by hand, no compaction	321.00	lcy	8,271	-	-		-	-	25.77 /lcy	8,271
n		0400	Backfill, 6" layers, compaction in layers, roller compaction with operator walking, add to above	273.00	ecy	1,770	-	-		410	-	7.99 /ecy	2,180
n		0050	Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	87.00	lcy	679	2,915	-		197	-	43.571 /lcy	3,791
n		1255	Hauling, excavated or borrow material, loose cubic yards, 20 mile round trip, 0.5 loads/hour, 20 C.Y. dump trailer, highway haulers, excludes loading	101.00	lcy	468	-	-		945	-	13.992 /lcy	1,413
n		8050	Compaction, 3 passes, 6" to 11", 4" lifts, rammer tamper	76.00	ecy	283	-	-		37	-	4.203 /ecy	319
		1020	Public Storm Utility Drainage Piping, non-reinforced concrete pipe,extra strength, B&S or T&G joints, 8" diameter, excludes excavation or backfill	200.00	lf	1,474	1,399	-		303	-	15.881 /lf	3,176

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
		15069.008 Pipe: RCP (8-SD)			*14,404*	*4,314*			*3,498*		*111.081/lf*	*22,216*
		200.00 lf 317.24 Labor hours 88.252 Equipment hours										
	15069.012	*Pipe: RCP (12-SD)*										
n	1356	Excavating, trench or continuous footing, common earth, 3/4 C.Y. excavator, 4' to 6' deep, includes trench box, excludes dewatering	62.00	bcy	186	-	-		175	-	5.812 /bcy	360
n	0015	Backfill, light soil, by hand, no compaction	47.00	lcy	1,211	-	-		-	-	25.77 /lcy	1,211
n	0400	Backfill, 6" layers, compaction in layers, roller compaction with operator walking, add to above	40.00	ecy	259	-	-		60	-	7.99 /ecy	319
n	0050	Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	15.00	lcy	117	503	-		34	-	43.571 /lcy	654
n	1255	Hauling, excavated or borrow material, loose cubic yards, 20 mile round trip, 0.5 loads/hour, 20 C.Y. dump trailer, highway haulers, excludes loading	19.00	lcy	88	-	-		178	-	13.992 /lcy	266
n	8050	Compaction, 3 passes, 6" to 11", 4" lifts, rammer tamper	14.00	ecy	52	-	-		7	-	4.202 /ecy	59
	2010	Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP), 12" diameter, 6' lengths, class 3, excludes excavation or backfill, gaskets	27.00	lf	297	292	-		61	-	24.07 /lf	650
		15069.012 Pipe: RCP (12-SD)			*2,210*	*794*			*514*		*130.324/lf*	*3,519*
		27.00 lf 49.32 Labor hours 14.01 Equipment hours										
	15069.200	*Pipe: RCP (Contact) w/ 2 ea 10' x 10' & 1 ea 20' x 10' CIP Boxes*										
n	2150	C.I.P. concrete forms, elevated slab, flat slab with drop panels, to 15' high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	400.00	sf	1,437	557	-		-	-	4.99 /sf	1,994
n	7000	C.I.P. concrete forms, elevated slab, edge forms, to 6" high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	140.00	lf	355	16	-		-	-	2.654 /lf	372
n	3061	C.I.P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	400.00	sfca	1,451	216	-		-	-	4.17 /sfca	1,667
n	9000	C.I.P. concrete forms, slab on grade, hung edge form, 12" to 24" high, 4 use, includes erecting, bracing, stripping and cleaning	200.00	lf	3,983	495	-		-	-	22.39 /lf	4,478
n	0500	C.I.P. concrete forms, wall, wood bulkhead with 2 piece keyway, 1 use, includes erecting, bracing, stripping and cleaning	89.00	lf	656	113	-		-	-	8.64 /lf	769
n	2550	C.I.P. concrete forms, wall, job built, plywood, 8 to 16' high, 4 use, includes erecting, bracing, stripping and cleaning	4,424.00	sfca	21,885	2,526	-		-	-	5.52 /sfca	24,410
n	5200	Chamfer strip, wood, 3/4" wide	178.00	lf	113	34	-		-	-	0.83 /lf	148
n	1400	Tie cones, plastic, for coil tie system, for CIP wall forms, 1/2" bolt diameter x 1" setback length, includes material only	6.00	c	-	708	-		-	-	117.962 /c	708

					Labor	Material	Subcontract		Equipment	Other	Total	
	Item	Description	Takeoff Qty		Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	15069.200	*Pipe: RCP (Contact) w/ 2 ea 10' x 10' & 1 ea 20' x 10' CIP Boxes*										
n	3005	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_FOUNDATIONS	200.00	lf	461	1,431	-		-	-	9.461 /lf	1,892
n	3010	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_WALLS	316.00	lf	729	2,261	-		-	-	9.461 /lf	2,990
n	0400	Reinforcing Steel, in place, elevated slabs, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	1.69	ton	1,109	1,681	-		-	-	1,652.54 /ton	2,789
n	0605	Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	7.65	ton	6,335	6,811	-		-	-	1,718.43 /ton	13,146
n	0700	Reinforcing Steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	10.763	ton	6,833	9,583	-		-	-	1,525.21 /ton	16,416
n	2005	Reinforcing steel, unload and sort, add to base_FOUNDATIONS	7.65	ton	248	-	-		63	-	40.681 /ton	311
n	2020	Reinforcing steel, unload and sort, add to base_WALLS	10.763	ton	349	-	-		89	-	40.682 /ton	438
n	2040	Reinforcing steel, unload and sort, add to base_ELEVATE SLABS	1.69	ton	55	-	-		14	-	40.68 /ton	69
n	2211	Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	7.65	ton	270	-	-		69	-	44.22 /ton	338
n	2214	Reinforcing steel, crane cost for handling, average, add_WALLS	10.763	ton	379	-	-		97	-	44.22 /ton	476
n	2218	Reinforcing steel, crane cost for handling, average, add_ELEVATED SLABS	1.69	ton	60	-	-		15	-	44.224 /ton	75
n	1600	Structural concrete, placing, elevated slab, pumped, over 10" thick, includes strike off & consolidation, excludes material	15.00	cy	200	-	-		74	-	18.261 /cy	274
n	4652	Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	68.00	cy	884	-	-		325	-	17.77 /cy	1,208
n	5350	Structural concrete, placing, walls, pumped, 15" thick, includes strike off & consolidation, excludes material	123.00	cy	2,464	-	-		905	-	27.392 /cy	3,369
n	0300	Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	68.00	cy	-	9,638	-		-	-	141.74 /cy	9,638
n	0520	Struct WALLS concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	123.00	cy	-	17,434	-		-	-	141.74 /cy	17,434
n	0820	Struct ELEV SLAB concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	15.00	cy	-	2,126	-		-	-	141.74 /cy	2,126
n	0254	Concrete finishing, floors, manual screed, bull float, machine float & steel trowel (walk-behind)_FOUND	825.00	sf	459	-	-		26	-	0.59 /sf	485
n	0256	Concrete finishing, floors, manual screed, bull float, machine float & steel trowel (walk-behind)_ELEV SLAB	400.00	sf	223	-	-		13	-	0.59 /sf	235
n	0020	Concrete finishing, walls, includes breaking ties and patching voids	4,424.00	sf	2,759	185	-		-	-	0.67 /sf	2,944

AACE Classification Accuracy Range

Upper Range +30%%

Lower Range -15%%

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15069.200	*Pipe: RCP (Contact) w/ 2 ea 10' x 10' & 1 ea 20' x 10' CIP Boxes*										
n	0050	Concrete finishing, walls, burlap rub with grout, includes breaking ties and patching voids	2,212.00	sf	1,656	92	-		-	-	0.791 /sf	1,749
n	0305	Concrete surface treatment, curing, sprayed membrane compound_FOUNDATIONS	8.25	csf	49	69	-		-	-	14.31 /csf	118
n	0400	Ladder, shop fabricated, aluminum, 20" W, bolted to concrete, excl cage	42.00	vlf	985	2,605	-		80	-	87.372 /vlf	3,670
n	0200	Railing, pipe, aluminum, satin finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	140.00	lf	2,037	8,997	-		165	-	79.99 /lf	11,198
n	1500	Doors, specialty, access, floor, industrial, aluminum, 300 psf L.L., double leaf, 4' x 4', 160 lb	3.00	opng	483	5,546	-		-	-	2,009.65 /opng	6,029
n	1100	Fine grading, fine grade for slab on grade, machine	91.67	sy	73	-	-		55	-	1.40 /sy	128
n	1378	Excavating, trench or continuous footing, common earth, 3 C.Y. excavator, 10' to 14' deep, includes trench box, excludes dewatering	14,830.00	bcy	9,519	-	-		27,977	-	2.53 /bcy	37,496
n	0300	Excavating, bulk bank measure, 3 C.Y. capacity = 160 C.Y./hour, backhoe, hydraulic, crawler mounted, excluding truck loading	2,403.00	bcy	975	-	-		2,739	-	1.55 /bcy	3,714
n	0050	Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	2,454.00	lcy	19,165	82,209	-		5,548	-	43.571 /lcy	106,923
n	1005	Fill, gravel fill, compacted, under floor slabs, alternate pricing method, 4" deep_FOUND	30.00	ecy	569	764	-		38	-	45.694 /ecy	1,371
n	1255	Hauling, excavated or borrow material, loose cubic yards, 20 mile round trip, 0.5 loads/hour, 20 C.Y. dump trailer, highway haulers, excludes loading	256.450	lcy	1,188	-	-		2,400	-	13.992 /lcy	3,588
n	8050	Compaction, 3 passes, 6" to 11", 4" lifts, rammer tamper	2,134.00	ecy	7,935	-	-		1,034	-	4.203 /ecy	8,969
n	1130	Hauling, agg base borrow material, loose cubic yards, 20 mile round trip, 0.4 loads/hour, 16.5 c.y. dump trailer, highway haulers, excludes loading	36.00	lcy	241	-	-		477	-	19.94 /lcy	718
n	1300	Backfill, bulk, to 300' haul, dozer backfilling, excludes compaction	2,507.00	lcy	1,355	-	-		2,502	-	1.54 /lcy	3,856
n	1600	Backfill, bulk, 6" to 12" lifts, dozer backfilling	2,180.00	ecy	1,767	-	-		4,449	-	2.851 /ecy	6,216
n	1900	Backfill, trench, to 300' haul, dozer backfilling, excludes compaction	10,648.00	lcy	7,670	-	-		14,161	-	2.05 /lcy	21,830
n	2200	Backfill, TRENCH, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	12,245.00	ecy	11,341	-	-		28,564	-	3.26 /ecy	39,905
	0310	Seeding, mechanical seeding, fine grading and seeding, with equipment	681.00	sy	1,504	105	-		231	-	2.701 /sy	1,840
	2140	Reinforced concrete pipe (RCP), 96" diameter, class 5, excludes excavation or backfill, gaskets	1,100.00	lf	90,666	578,224	-		55,634	-	658.66 /lf	724,523
		15069.200 Pipe: RCP (Contact) w/ 2 ea 10' x 10' & 1 ea 20' x 10' CIP Boxes			*212,873*	*734,426*			*147,742*		*995.491/lf*	*1,095,041*
		1,100.00 lf										
		5,136.180 Labor hours										
		1,426.052 Equipment hours										
	15101.000	*Gate Valves*										

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

					Labor	Material	Subcontract		Equipment	Other	Total	
Item		Description	Takeoff Qty		Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	15101.000	*Gate Valves*										
n	001	Gate Valve MJ Res Wedge: 4" / 2" Nut Operator NRS	3.00	ea	541	994	-		402	-	645.820 /ea	1,937
n	002	Gate Valve MJ Res Wedge: 6" / 2" Nut Operator NRS	2.00	ea	361	859	-		268	-	744.04 /ea	1,488
n	008	Gate Valve MJ Res Wedge: 16" / 2" Nut Operator NRS, Gear Operator Option	24.00	ea	6,226	144,996	-		6,126	-	6,556.17 /ea	157,348
n	503	Gate Valve Flange Res Wedge: 8" / Handwheel Operator NRS	3.00	ea	541	1,927	-		402	-	956.703 /ea	2,870
		15101.000 Gate Valves			*7,668*	*148,776*			*7,199*		*5,113.87 /ea*	*163,644*
			32.00	*ea*								
			176.000	Labor hours								
			58.67	Equipment hours								
	15102.000	*Plug Valves*										
n	002	Plug Valve MJ: 6" / 2" Nut Operator / Includes Gear Operator	11.00	ea	2,645	11,952	-		2,213	-	1,528.19 /ea	16,810
n	0190	Valve Operator, Electric, Modulating, 6" dia	11.00	ea	-	77,721	-		-	-	7,065.50 /ea	77,721
		15102.000 Plug Valves			*2,645*	*89,673*			*2,213*		*8,593.69 /ea*	*94,531*
			11.00	*ea*								
			58.67	Labor hours								
			22.00	Equipment hours								
	15103.000	*Butterfly Valves*										
n	0020	Butterfly Valve MJ Res Seated: 8" / 2" Nut Operator / 250 lb Rated	1.00	ea	287	1,113	-		150	-	1,550.23 /ea	1,550
n	0055	Butterfly Valve MJ Res Seated: 24" / 2" Nut Operator with Gearing / 250 lb Rated	5.00	ea	4,108	52,176	-		2,143	-	11,685.42 /ea	58,427
n	0060	Butterfly Valve MJ Res Seated: 30" / 2" Nut Operator with Gearing / 250 lb Rated	4.00	ea	3,737	62,611	-		1,949	-	17,074.293 /ea	68,297
n	0070	Butterfly Valve MJ Res Seated: 42" / 2" Nut Operator with Gearing / 250 lb Rated	3.00	ea	3,630	89,743	-		1,894	-	31,755.563 /ea	95,267
n	0195	Valve Operator, Electric, Modulating, 8" dia	1.00	ea	-	7,066	-		-	-	7,065.50 /ea	7,066
n	0230	Valve Operator, Electric, Modulating, 24" dia	5.00	ea	-	43,480	-		-	-	8,696.00 /ea	43,480
n	0235	Valve Operator, Electric, Modulating, 30" dia	4.00	ea	-	34,784	-		-	-	8,696.00 /ea	34,784
n	0240	Valve Operator, Electric, Modulating, 36" dia	3.00	ea	-	26,088	-		-	-	8,696.00 /ea	26,088
		15103.000 Butterfly Valves			*11,762*	*317,061*			*6,136*		*25,766.053/ea*	*334,959*
			13.00	*ea*								
			289.470	Labor hours								
			144.74	Equipment hours								
	15605.000	*HVAC: Equipment*										
	0025	HVAC System for Blower Building	5.00	ton	-	-	15,488		-	-	3,097.50 /ton	15,488
		15605.000 HVAC: Equipment					*15,488*				*15,487.50 /ls*	*15,488*
			1.00	*ls*								

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 15 MECHANICAL			**1,483,719**	**2,426,176**	**15,488**		**500,268**	**5,000**		**4,430,650**
	30,696.23 Labor hours										
	7,067.59 Equipment hours										
DIVISION 16	**ELECTRICAL**										
16010.000	*Electrical: Basic Requirements*										
0010	Electrical Work - Septic System	1.00	ls			6,000				6,000.00 /ls	6,000
0010	Electrical Work	900.00	sf			9,000				10.00 /sf	9,000
	16010.000 Electrical: Basic Requirements					*15,000*				*15,000.00 /ls*	*15,000*
	1.00 ls										
	DIVISION 16 ELECTRICAL			**0**	**0**	**15,000**		**0**	**0**		**15,000**
	2 SITE PIPING			***1,522,035***	***2,508,240***	***800,488***		***505,256***	***5,000***	***5,341,018.67 /LS***	***5,341,019***
	1.00 LS										
	31,582.02 Labor hours										
	7,187.472 Equipment hours										
	3 LANDSCAPING										
DIVISION 02	**SITE CONSTRUCTION**										
02930.000	*Seeding, Sodding, and Landscaping*										
n 0999	Irrigation	0.00	ls								
n 0999	Stone Mulch	1.00	ls			5,000				5,000.00 /ls	5,000
n 0999	Hydroseeding	1.00	ls			12,000				12,000.00 /ls	12,000
n 0999	Plants and Planting	1.00	ls			20,000				20,000.00 /ls	20,000
n 0999	Miscellaneous	1.00	ls			5,000				5,000.00 /ls	5,000
	02930.000 Seeding, Sodding, and Landscaping					*42,000*				*42,000.00 /ls*	*42,000*
	1.00 ls										
	DIVISION 02 SITE CONSTRUCTION			**0**	**0**	**42,000**		**0**	**0**		**42,000**
	3 LANDSCAPING			***0***	***0***	***42,000***		***0***	***0***	***42,000.00 /LS***	***42,000***
	1.00 LS										
	4 WASTE HANDLING										

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 02	**SITE CONSTRUCTION**										
	02200.010	*Earthwork_Lagoon*										
n	1300	Backfill, bulk, to 300' haul, dozer backfilling, excludes compaction	23,000.00	lcy	12,428	-	-		22,950	-	1.54 /lcy	35,377
n	1600	Backfill, bulk, 6" to 12" lifts, dozer backfilling	20,000.00	ecy	16,210	-	-		40,818	-	2.851 /ecy	57,028
n	2010	Hauling, excavated material, loose cubic yards, 1000' round trip, 4.5 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers	23,000.00	lcy	12,879	-	-		50,074	-	2.74 /lcy	62,953
		02200.010 Earthwork_Lagoon			*41,517*				*113,841*		*77.68 /cy*	*155,358*
		2,000.00 cy 815.20 Labor hours 838.610 Equipment hours										
	02200.500	*Earthwork, Structural Excavation*										
n	0300	Excavating, bulk bank measure, 3 C.Y. capacity = 160 C.Y./hour, backhoe, hydraulic, crawler mounted, excluding truck loading	8,148.00	bcy	3,307	-	-		9,287	-	1.55 /bcy	12,595
n	0330	Hauling, excavated or borrow material, loose cubic yards, 1 mile round trip, 2.7 loads/hour, 12 C.Y. dump truck, highway haulers, excludes loading	8,465.15	lcy	14,564	-	-		27,030	-	4.914 /lcy	41,594
		02200.500 Earthwork, Structural Excavation			*17,872*				*36,317*		*6.651/cy*	*54,189*
		8,148.00 cy 385.180 Labor hours 353.892 Equipment hours										
	02200.600	*Earthwork, Structural Backfill, Native Material includes compaction*										
n	1300	Backfill, bulk, to 300' haul, dozer backfilling, excludes compaction	905.00	lcy	489	-	-		903	-	1.54 /lcy	1,392
n	1600	Backfill, bulk, 6" to 12" lifts, dozer backfilling	787.00	ecy	638	-	-		1,606	-	2.851 /ecy	2,244
		02200.600 Earthwork, Structural Backfill, Native Material includes compaction			*1,127*				*2,509*		*4.62 /cy*	*3,636*
		787.00 cy 20.86 Labor hours 21.78 Equipment hours										
	02775.100	*PVC Membrane Liner at Lagoon*										
	1100	Liners, membrane lining systems PVC, 30 mil thick	9,000.00	sf	4,914	2,466	-		-	-	0.82 /sf	7,380
		02775.100 PVC Membrane Liner at Lagoon			*4,914*	*2,466*					*7.38 /sy*	*7,380*
		1,000.00 sy 116.73 Labor hours										
	02775.500	*Asphalt Over PVC Membrane Liner*										
n	1255	Hauling, excavated or borrow material, loose cubic yards, 20 mile round trip, 0.5 loads/hour, 20 C.Y. dump trailer, highway haulers, excludes loading	450.00	lcy	2,084	-	-		4,212	-	13.992 /lcy	6,296

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Item		Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
02775.500		*Asphalt Over PVC Membrane Liner*										
	0560	Asphalt Paving, plant mixed asphaltic base courses for roadways and large paved areas, bituminous concrete, 8" thick	4,333.333	sy	6,049	137,211	-		3,722	-	33.92 /sy	146,982
	0160	Plant-mix asphalt paving, for highways and large paved areas, binder course, 3" thick, no hauling included	4,333.333	sy	3,700	51,034	-		2,275	-	13.16 /sy	57,009
	1100	Liners, membrane lining systems PVC, 30 mil thick	39,000.00	sf	21,296	10,686	-		-	-	0.82 /sf	31,982
		02775.500 Asphalt Over PVC Membrane Liner			*33,129*	*198,930*			*10,209*		*55.91 /sy*	*242,269*
		4,333.33 sy										
		756.82 Labor hours										
		148.17 Equipment hours										
		DIVISION 02 SITE CONSTRUCTION			**98,559**	**201,396**	**0**		**162,877**	**0**		**462,832**
		2,094.784 Labor hours										
		1,362.444 Equipment hours										
DIVISION 03		**CONCRETE**										
03002.100		*Concrete_Foundations*										
n	3061	C.I.P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	3,250.023	sfca	11,786	1,759	-		-	-	4.17 /sfca	13,545
n	9011	C.I.P. concrete forms, bulkhead for foundation w/ keyway, 12" and greater, exp metal, includes erecting, bracing, stripping and cleaning	106.44	sfca	148	26	-		-	-	1.63 /sfca	174
n	3005	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_FOUNDATIONS	158.87	lf	366	1,137	-		-	-	9.461 /lf	1,503
n	0605	Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	18.45	ton	15,090	16,427	-		-	-	1,708.21 /ton	31,516
n	2005	Reinforcing steel, unload and sort, add to base_FOUNDATIONS	18.45	ton	591	-	-		152	-	40.282 /ton	743
n	2211	Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	18.45	ton	642	-	-		166	-	43.784 /ton	808
n	4652	Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	164.00	cy	2,131	-	-		783	-	17.77 /cy	2,914
n	0300	Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	164.00	cy	-	23,245	-		-	-	141.74 /cy	23,245
n	0105	Concrete finishing, floors, manual screed, bull float_FOUNDATIONS	6,354.60	sf	1,517	-	-		-	-	0.24 /sf	1,517
n	0205	Control joint, clean out control joint of debris_FOUNDATIONS	158.87	lf	9	-	-		-	-	0.06 /lf	9
n	0365	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_FOUNDATIONS	158.87	lf	198	35	-		-	-	1.47 /lf	233
n	0305	Concrete surface treatment, curing, sprayed membrane compound_FOUNDATIONS	63.55	csf	376	533	-		-	-	14.31 /csf	909

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.100	*Concrete_Foundations*										
n	1005	Fill, gravel fill, compacted, under floor slabs, alternate pricing method, 4" deep_FOUND	238.00	ecy	4,513	6,059	-		303	-	45.694 /ecy	10,875
n	1135	Hauling, excavated borrow material, loose cubic yards, 20 mile round trip, 0.4 loads/hour, 16.5 c.y. dump trailer, highway haulers, excludes loading	275.00	lcy	1,840	-	-		3,644	-	19.94 /lcy	5,483
		03002.100 Concrete_Foundations			*39,207*	*49,221*			*5,047*		*569.97 /cy*	*93,475*
		164.00 cy 834.653 Labor hours 121.71 Equipment hours										
	03002.300	*Concrete_Walls Exterior*										
n	0500	C.I.P. concrete forms, wall, wood bulkhead with 2 piece keyway, 1 use, includes erecting, bracing, stripping and cleaning	440.00	lf	3,244	557	-		-	-	8.64 /lf	3,801
n	2550	C.I.P. concrete forms, wall, job built, plywood, 8 to 16' high, 4 use, includes erecting, bracing, stripping and cleaning	17,469.20	sfca	86,417	9,973	-		-	-	5.52 /sfca	96,390
n	5200	Chamfer strip, wood, 3/4" wide	879.00	lf	560	170	-		-	-	0.83 /lf	730
n	1400	Tie cones, plastic, for coil tie system, for CIP wall forms, 1/2" bolt diameter x 1" setback length, includes material only	18.00	c	-	2,123	-		-	-	117.962 /c	2,123
n	0700	Reinforcing Steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	19.25	ton	12,221	17,139	-		-	-	1,525.21 /ton	29,360
n	2020	Reinforcing steel, unload and sort, add to base_WALLS	19.25	ton	624	-	-		159	-	40.682 /ton	783
n	2214	Reinforcing steel, crane cost for handling, average, add_WALLS	19.25	ton	678	-	-		173	-	44.22 /ton	851
n	5100	Structural concrete, placing, walls, pumped, 12" thick, includes strike off & consolidation, excludes material	220.00	cy	4,808	-	-		1,766	-	29.882 /cy	6,574
n	0520	Struct WALLS concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	220.00	cy	-	31,182	-		-	-	141.74 /cy	31,182
n	0210	Control joint, clean out control joint of debris_WALLS	440.00	lf	25	-	-		-	-	0.06 /lf	25
n	0366	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_WALLS	440.00	lf	549	97	-		-	-	1.47 /lf	646
n	0020	Concrete finishing, walls, includes breaking ties and patching voids	17,469.20	sf	10,896	730	-		-	-	0.67 /sf	11,627
n	0050	Concrete finishing, walls, burlap rub with grout, includes breaking ties and patching voids	8,734.60	sf	6,541	365	-		-	-	0.791 /sf	6,906
		03002.300 Concrete_Walls Exterior			*126,564*	*62,337*			*2,098*		*868.18 /cy*	*190,999*
		220.00 cy 2,999.424 Labor hours 51.214 Equipment hours										

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 03 CONCRETE			**165,770**	**111,558**	**0**		**7,145**	**0**		**284,474**
	3,834.08 Labor hours										
	172.92 Equipment hours										
DIVISION 11	**EQUIPMENT**										
11071.000	*Pumping Equipment: Horizontal Split-Case Centrifugal Pumps*										
—	DAFT Waste Pumps - 12" Suction	2.00	EA	4,448	50,000	-		-	-	27,224.00 /EA	54,448
—	Solids Waste Pumps - 12" Suction	2.00	EA	4,448	50,000	-		-	-	27,224.00 /EA	54,448
—	Lagoon Pumps - 12" Suction	2.00	EA	4,448	50,000	-		-	-	27,224.00 /EA	54,448
—	Decant Pumps - 12" Suction	2.00	EA	4,448	50,000	-		-	-	27,224.00 /EA	54,448
	11071.000 Pumping Equipment: Horizontal Split-Case Centrifugal Pumps			*17,792*	*200,000*					*217,792.00 /ls*	*217,792*
	1.00 ls										
11120.000	*Sludge Collection and Thickening: Circular General Req*										
9001	Solids waste, Spiral Scraper Style, Center Drive, All Painted Carbon Steel, for ___' diameter mechanism	1.00	ea	4,290	86,960	-		2,982	-	94,231.86 /ea	94,232
	11120.000 Sludge Collection and Thickening: Circular General Req			*4,290*	*86,960*			*2,982*		*94,231.86 /ls*	*94,232*
	1.00 ls										
	100.000 Labor hours										
	20.00 Equipment hours										
11336.000	*Solids Collection Equipment (DAF)*										
—	DAFT Unit - P-TEC, HS-175 or HS-200	2.00	ea	10,831	150,000	-		-	-	80,415.26 /ea	160,831
9999	Vendor Test and Startup	1.00	day	28	6,000	1,906			-	7,933.99 /day	7,934
	11336.000 Solids Collection Equipment (DAF)			*10,859*	*156,000*	*1,906*				*84,382.26 /ea*	*168,765*
	2.00 ea										
	1.00 Labor hours										
	1.00 Equipment hours										
	DIVISION 11 EQUIPMENT			**32,941**	**442,960**	**1,906**		**2,982**	**0**		**480,788**
	101.000 Labor hours										
	21.00 Equipment hours										
	4 WASTE HANDLING			***297,271***	***755,915***	***1,906***		***173,004***	***0***	***1,228,094.360/LS***	***1,228,094***
	1.00 LS										
	6,029.861 Labor hours										
	1,556.363 Equipment hours										
	5 PROCESS EQUIPMENT										
DIVISION 11	**EQUIPMENT**										

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	11005.000	*Equipment: Basic Requirements*										
	9999	Vendor Test and Startup	10.00	day	285		19,055			-	1,934.00 /day	19,340
		11005.000 Equipment: Basic Requirements			*285*		*19,055*				*19,339.95 /ls*	*19,340*
		1.00 ls										
		10.00 Labor hours										
		10.00 Equipment hours										
	11066.000	*Pumps: Water Seal System*										
n	0010	Seal Water System- Control Panel,Solenoid Valves, Cominbation Strainer/PRV,Pressure Gage, Flow Meter	18.00	EA	5,750	36,000	-				2,319.441 /EA	41,750
		11066.000 Pumps: Water Seal System			*5,750*	*36,000*					*41,749.93 /ls*	*41,750*
		1.00 ls										
		108.000 Labor hours										
		18.00 Equipment hours										
	11071.000	*Pumping Equipment: Horizontal Split-Case Centrifugal Pumps*										
—		BWS Pumps - 12" Suction	2.00	EA	4,448	0	-		-	-	2,224.00 /EA	4,448
—		SW/ Decant Pumps - 4" Suction	2.00	EA	4,448	20,000	-		-	-	12,224.00 /EA	24,448
—		BWW Equalization Tank Pumps - 12" Suction	2.00	EA	4,448	0	-		-	-	2,224.00 /EA	4,448
—		Heated Water Pumps - 12" Suction	2.00	EA	4,448	50,000	-		-	-	27,224.00 /EA	54,448
		11071.000 Pumping Equipment: Horizontal Split-Case Centrifugal Pumps			*17,792*	*70,000*					*87,792.00 /ls*	*87,792*
		1.00 ls										
	11077.000	*Pumping Equipment: Inline Centrifugal Pumps*										
—		200 gallon air blatter, pressurized tank	1.00	ls	563	1,000					1,563.41 /ls	1,563
		11077.000 Pumping Equipment: Inline Centrifugal Pumps			*563*	*1,000*					*1,563.41 /ls*	*1,563*
		1.00 ls										
		10.00 Labor hours										
		10.00 Equipment hours										
	11077.010	*Pumping Equipment: Inline Centrifugal Pumps (Service Water PS)*										
	0010	250 gpm, In-Line Centrigular Pumps	2.00	ea	1,352		-			515	933.59 /ea	1,867
		11077.010 Pumping Equipment: Inline Centrifugal Pumps (Service Water PS)			*1,352*					*515*	*1,867.17 /ls*	*1,867*
		1.00 ls										
		24.00 Labor hours										
		2.00 Equipment hours										
	11091.000	*Grit Removal Equipment: VortexGrit Collecting Equipment*										
n	0148	Floor grating, aluminum, 2-1/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., over 300 S.F., field fabricated from panels	1,228.00	sf	2,448	85,776	-		198	-	72.004 /sf	88,421
	0001	Grit Washer - Classifier	1.00	EA	6,255	45,000	-			-	51,255.00 /EA	51,255
	0010	Cyclone Grit Separator, 22 MGD, 304 SS	1.00	EA	10,817	135,500	-			205	146,522.32 /EA	146,522

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	11091.000 Grit Removal Equipment: VortexGrit Collecting Equipment			*19,520*	*266,276*			*198*	*205*	*143,099.34 /ea*	*286,199*
	2.00 ea										
	231.30 Labor hours										
	9.824 Equipment hours										
11126.000	*Inclined Plate Clarifier*										
—	Plate Settlers	3.00	ea	230,954	715,050	-		-	-	315,334.683 /ea	946,004
—	Vacuum Sludge Collector	3.00	ea	13,522	126,000	-		-	-	46,507.223 /ea	139,522
	11126.000 Inclined Plate Clarifier			*244,476*	*841,050*					*1,085,525.72 /ls*	*1,085,526*
	1.00 ls										
	240.00 Labor hours										
11127.000	*High Rate Clarification System*										
0100	Paddle Flocculator	9.00	ea	48,627	300,150	-		2,684	-	39,051.184 /ea	351,461
	11127.000 High Rate Clarification System			*48,627*	*300,150*			*2,684*		*39,051.184/ea*	*351,461*
	9.00 ea										
	1,133.501 Labor hours										
	18.00 Equipment hours										
11301.000	*Membrane Filtration System*										
—	Membrane Filters - Pall - FBO	1.00	ls	480,000		-		-	-	479,999.67 /ls	480,000
	11301.000 Membrane Filtration System			*480,000*						*479,999.67 /ls*	*480,000*
	1.00 ls										
11373.000	*Mixers*										
0020	Vertical Mixers, 96,887 gpm, 10 HP, 316 SS	1.00	EA	3,606	32,400	-			370	36,375.550 /EA	36,376
	11373.000 Mixers			*3,606*	*32,400*				*370*	*36,375.550/ea*	*36,376*
	1.00 ea										
	64.00 Labor hours										
11385.000	*Solids Mixers*										
8999	Rapid Mixing System	3.00	EA	6,435	105,000	-		0	-	37,145.14 /EA	111,435
	11385.000 Solids Mixers			*6,435*	*105,000*			*0*		*37,145.14 /ea*	*111,435*
	3.00 ea										
	150.000 Labor hours										
	0.003 Equipment hours										
11980.000	*Compressed Air System*										
n 1750	Compressor accessory, dryer, air, refrigerated, 100 CFM, includes ambient air filters	3.00	ea	399	8,262	-		-	-	2,887.01 /ea	8,661
	11980.000 Compressed Air System			*399*	*8,262*					*2,887.01 /ea*	*8,661*
	3.00 ea										
	8.571 Labor hours										

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 11 EQUIPMENT			**828,805**	**1,660,138**	**19,055**		**2,882**	**1,090**		**2,511,969**
	1,979.37 Labor hours										
	67.83 Equipment hours										
DIVISION 13	**SPECIAL CONSTRUCTION**										
13200.000	*Storage Tanks*										
n 3260	Water heater storage tank, glass lined, porcelain enamel, 125 psi, 3440 gallon, 96" diameter, 157" L.O.A., ASME	1.00	ea	852	47,573	-		-	-	48,425.19 /ea	48,425
	13200.000 Storage Tanks			*852*	*47,573*					*48,425.19 /ea*	*48,425*
	1.00 ea										
	16.00 Labor hours										
13200.060	*Storage Tanks (Service Water System)*										
—	200 gallon air blatter, pressurized tank	1.00	ls	604	1,100					1,703.94 /ls	1,704
	13200.060 Storage Tanks (Service Water System)			*604*	*1,100*					*1,703.94 /ea*	*1,704*
	1.00 ea										
	10.00 Labor hours										
	10.00 Equipment hours										
	DIVISION 13 SPECIAL CONSTRUCTION			**1,456**	**48,673**	**0**		**0**	**0**		**50,129**
	26.00 Labor hours										
	10.00 Equipment hours										
DIVISION 15	**MECHANICAL**										
15061.000	*Pipe: Steel*										
0610	Pipe, steel, black, threaded, 2" diameter, schedule 40, Spec. A-53, Small Bore Allownce	2,000.00	lf	23,344	28,274	-		-	-	25.81 /lf	51,618
	15061.000 Pipe: Steel			*23,344*	*28,274*					*25.81 /lf*	*51,618*
	2,000.00 lf										
	500.00 Labor hours										
15061.050	*Pipe: Steel (Fabricated)*										
—	Fabricate Steel Piping System	1.00	ls	59,430	655,232			0		714,661.05 /ls	714,661
	15061.050 Pipe: Steel (Fabricated)			*59,430*	*655,232*					*714,661.05 /ls*	*714,661*
	1.00 ls										
	1,337.00 Labor hours										
	3.00 Equipment hours										
15064.000	*Pipe: Plastic*										
n 1910	Pipe, plastic, PVC, 2" diameter, schedule 40, includes couplings 10' OC, and hangers 3 per 10'	200.00	lf	2,532	788	-		-	-	16.60 /lf	3,320

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15064.000	*Pipe: Plastic*										
n	2170	Elbow, 90 Deg., plastic, PVC, socket joint, 2", schedule 80	20.00	ea	451	171	-		-	-	31.10 /ea	622
		15064.000 Pipe: Plastic			*2,984*	*958*					*19.71 /lf*	*3,942*
		200.00 lf										
		63.91 Labor hours										
	15101.000	*Gate Valves*										
n	529	Gate Valve Flange Res Wedge: 24" /Allownace for all Plant Valves	50.00	ea	12,970	669,369	-		12,763	-	13,902.06 /ea	695,103
		15101.000 Gate Valves			*12,970*	*669,369*			*12,763*		*13,902.06 /ea*	*695,103*
		50.00 ea										
		300.000 Labor hours										
		100.00 Equipment hours										
		DIVISION 15 MECHANICAL			**98,727**	**1,353,833**	**0**		**12,763**	**0**		**1,465,324**
		2,200.91 Labor hours										
		103.00 Equipment hours										
		5 PROCESS EQUIPMENT			***928,988***	***3,062,644***	***19,055***		***15,645***	***1,090***	***4,027,422.00 /LS***	***4,027,422***
		1.00 LS										
		4,206.274 Labor hours										
		180.83 Equipment hours										
		6 CHEMICAL EQUIPMENT										
	DIVISION 11	**EQUIPMENT**										
	11005.000	*Equipment: Basic Requirements*										
	9999	Vendor Test and Start Up	2.00	EA			3,811			-	1,905.50 /EA	3,811
		11005.000 Equipment: Basic Requirements					*3,811*				*3,811.00 /ls*	*3,811*
		1.00 ls										
	11926.000	*Chemical Feed: Liquid Systems*										
		Chemical Injectors	12.00	EA	677	6,000	-		-	-	556.41 /EA	6,677
	0010	Vertical Mixers, 46,602 gpm, 3 HP, 316 SS	6.00	EA	21,635	60,000	-		2,219		13,975.55 /EA	83,853
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-ACID	2.00	EA	451	6,000	-		122		3,286.13 /EA	6,572
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-CAUSTIC	1.00	EA	225	3,000	-		61		3,286.13 /EA	3,286
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Chlorine	5.00	EA	1,127	15,000	-		304		3,286.132 /EA	16,431

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	11926.000	*Chemical Feed: Liquid Systems*										
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Sodium Hydroxide	6.00	EA	1,352	18,000	-			365	3,286.13 /EA	19,717
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Sodium Bisulfite	4.00	EA	901	12,000	-			243	3,286.13 /EA	13,145
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Aluminium Chlorhydrate	2.00	EA	451	6,000	-			122	3,286.13 /EA	6,572
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Fluoride	4.00	EA	901	12,000	-			243	3,286.133 /EA	13,145
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Polymer	2.00	EA	451	6,000	-			122	3,286.13 /EA	6,572
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-Citric Acid	2.00	EA	451	6,000	-			122	3,286.13 /EA	6,572
n	0060	Simplex, close-coupled, motor driven, 141gph@50 psi, 3/4 hp, with accessories-SODIUM PERMANGANATE	2.00	EA	451	6,000	-			122	3,286.13 /EA	6,572
		11926.000 Chemical Feed: Liquid Systems			*29,072*	*156,000*				*4,042*	*189,114.10 /ls*	*189,114*
		1.00 ls										
		504.00 Labor hours										
		DIVISION 11 EQUIPMENT			**29,072**	**156,000**	**3,811**		**0**	**4,042**		**192,925**
		504.00 Labor hours										
DIVISION 13		**SPECIAL CONSTRUCTION**										
	13200.000	*Storage Tanks*										
	9005	Vapor Neutralization Tank	1.00	ea	2,384	5,500	-			-	7,884.00 /ea	7,884
		13200.000 Storage Tanks			*2,384*	*5,500*					*7,884.00 /ea*	*7,884*
		1.00 ea										
	13200.010	*Storage Tanks (Chlorine System)*										
n	2230	Chlorine System - 775 gallon day tank	1.00	ea	486	4,872	-		-	-	5,358.19 /ea	5,358
n	2260	Chlorine System - 6,700 gallon storage tank	1.00	ea	966	11,837	-		-	-	12,803.73 /ea	12,804
n	2284	Chlorine System - 16,000 gallon storage tank	2.00	ea	2,781	55,959	-		-	-	29,369.74 /ea	58,739
		13200.010 Storage Tanks (Chlorine System)			*4,233*	*72,669*					*19,225.35 /ea*	*76,901*
		4.00 ea										
		70.554 Labor hours										
	13200.020	*Storage Tanks (Aluminum Chlorohydrate System)*										
n	2230	Aluminum Chlorohydrate System - 775 gallon day tank	1.00	ea	486	4,872	-		-	-	5,358.20 /ea	5,358
n	2282	Aluminum Chlorohydrate System - 11,300 gallon tank	1.00	ea	1,271	25,588	-		-	-	26,859.42 /ea	26,859

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
		13200.020 Storage Tanks (Aluminum Chlorohydrate System)			*1,757*	*30,460*					*16,108.81 /ea*	*32,218*
		2.00 ea										
		29.563 Labor hours										
	13200.030	*Storage Tanks (Sodium Bisulfate System)*										
	9005	Sodium Bisulfate System, Bulk Storage Tank - 3,500 Gal	1.00	ea	2,384	7,700	-			-	10,084.00 /ea	10,084
		13200.030 Storage Tanks (Sodium Bisulfate System)			*2,384*	*7,700*					*10,084.00 /ea*	*10,084*
		1.00 ea										
	13200.040	*Storage Tanks (Fluoride System)*										
n	2230	Fluoride System - 775 gallon day tank	1.00	ea	486	4,872	-		-	-	5,358.19 /ea	5,358
n	2260	Fluoride System - 6,900 gallon storage tank	1.00	ea	966	11,924	-		-	-	12,890.19 /ea	12,890
		13200.040 Storage Tanks (Fluoride System)			*1,452*	*16,796*					*9,124.19 /ea*	*18,248*
		2.00 ea										
		24.511 Labor hours										
	13200.050	*Storage Tanks (Sodium Hydroxide System)*										
n	2230	Sodium Hydroxide System - 775 gallon day tank	1.00	ea	486	4,872	-		-	-	5,358.19 /ea	5,358
n	2280	Sodium Hydroxide System - 10,850 gallon tank	2.00	ea	2,416	31,088	-		-	-	16,751.97 /ea	33,504
		13200.050 Storage Tanks (Sodium Hydroxide System)			*2,901*	*35,961*					*12,954.04 /ea*	*38,862*
		3.00 ea										
		48.511 Labor hours										
		DIVISION 13 SPECIAL CONSTRUCTION			15,111	169,086	0		0	0		184,198
		173.14 Labor hours										
		6 CHEMICAL EQUIPMENT			***44,184***	***325,086***	***3,811***		***0***	***4,042***	***377,122.61 /LS***	***377,123***
		1.00 LS										
		677.14 Labor hours										
		7 OPERATIONS BUILDING										
		DIVISION 02 SITE CONSTRUCTION										
	02200.500	*Earthwork, Structural Excavation*										
n	0260	Excavating, bulk bank measure, 2 C.Y. capacity = 130 C.Y./hour, backhoe, hydraulic, crawler mounted, excluding truck loading	5,300.00	bcy	3,391	-	-		5,325	-	1.644 /bcy	8,715
		02200.500 Earthwork, Structural Excavation			*3,391*				*5,325*		*1.644/cy*	*8,715*
		5,300.00 cy										
		64.24 Labor hours										
		32.12 Equipment hours										

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

					Labor	Material	Subcontract		Equipment	Other	Total	
Item		Description	Takeoff Qty		Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	02200.600	*Earthwork, Structural Backfill, Native Material includes compaction*										
n	1600	Backfill, bulk, 6" to 12" lifts, dozer backfilling	2,300.00	ecy	1,864	-	-		4,694	-	2.851 /ecy	6,558
n	1700	Backfill, bulk, 6" to 12" lifts, dozer backfilling, compaction with sheepsfoot roller	2,300.00	ecy	1,988	-	-		5,175	-	3.12 /ecy	7,164
		02200.600 Earthwork, Structural Backfill, Native Material includes compaction			*3,853*				*9,870*		*5.97 /cy*	*13,722*
		2,300.00 cy										
		71.30 Labor hours										
		95.06 Equipment hours										
		DIVISION 02 SITE CONSTRUCTION			**7,243**	**0**	**0**		**15,194**	**0**		**22,438**
		135.54 Labor hours										
		127.18 Equipment hours										
DIVISION 03		**CONCRETE**										
	03002.100	*Concrete_Foundations*										
n	3061	C.I.P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	192.00	sfca	696	104	-		-	-	4.17 /sfca	800
n	0605	Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	1.35	ton	1,118	1,202	-		-	-	1,718.44 /ton	2,320
n	2005	Reinforcing steel, unload and sort, add to base_FOUNDATIONS	1.35	ton	44	-	-		11	-	40.68 /ton	55
n	2211	Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	1.35	ton	48	-	-		12	-	44.22 /ton	60
n	4652	Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	12.00	cy	156	-	-		57	-	17.77 /cy	213
n	0300	Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	12.00	cy	-	1,701	-		-	-	141.74 /cy	1,701
n	0105	Concrete finishing, floors, manual screed, bull float_FOUNDATIONS	144.00	sf	34	-	-		-	-	0.24 /sf	34
n	0305	Concrete surface treatment, curing, sprayed membrane compound_FOUNDATIONS	1.44	csf	9	12	-		-	-	14.31 /csf	21
n	1005	Fill, gravel fill, compacted, under floor slabs, alternate pricing method, 4" deep_FOUND	4.00	ecy	76	102	-		5	-	45.70 /ecy	183
n	1135	Hauling, excavated borrow material, loose cubic yards, 20 mile round trip, 0.4 loads/hour, 16.5 c.y. dump trailer, highway haulers, excludes loading	4.00	lcy	27	-	-		53	-	19.94 /lcy	80
		03002.100 Concrete_Foundations			*2,207*	*3,121*			*139*			*5,466*
		45.37 Labor hours										
		3.234 Equipment hours										
	03002.300	*Concrete_Walls Exterior*										
n	0500	C.I.P. concrete forms, wall, wood bulkhead with 2 piece keyway, 1 use, includes erecting, bracing, stripping and cleaning	995.00	lf	7,337	1,260	-		-	-	8.64 /lf	8,596

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.300	*Concrete_Walls Exterior*										
n	2550	C.I.P. concrete forms, wall, job built, plywood, 8 to 16' high, 4 use, includes erecting, bracing, stripping and cleaning	38,584.00	sfca	190,867	22,028	-		-	-	5.52 /sfca	212,895
n	5200	Chamfer strip, wood, 3/4" wide	1,953.00	lf	1,244	378	-		-	-	0.83 /lf	1,622
n	1400	Tie cones, plastic, for coil tie system, for CIP wall forms, 1/2" bolt diameter x 1" setback length, includes material only	87.00	c	-	10,263	-		-	-	117.962 /c	10,263
n	3010	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_WALLS	2,929.00	lf	6,753	20,958	-		-	-	9.461 /lf	27,711
n	0700	Reinforcing Steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	66.16	ton	42,001	58,902	-		-	-	1,525.21 /ton	100,903
n	2020	Reinforcing steel, unload and sort, add to base_WALLS	66.16	ton	2,145	-	-		546	-	40.682 /ton	2,691
n	2214	Reinforcing steel, crane cost for handling, average, add_WALLS	66.16	ton	2,332	-	-		594	-	44.22 /ton	2,925
n	4950	Structural concrete, placing, walls, pumped, 8" thick, includes strike off & consolidation, excludes material	407.00	cy	9,784	-	-		3,594	-	32.87 /cy	13,378
n	5100	Structural concrete, placing, walls, pumped, 12" thick, includes strike off & consolidation, excludes material	319.00	cy	6,971	-	-		2,561	-	29.882 /cy	9,532
n	5350	Structural concrete, placing, walls, pumped, 15" thick, includes strike off & consolidation, excludes material	30.00	cy	601	-	-		221	-	27.391 /cy	822
n	0520	Struct WALLS concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	756.00	cy	-	107,154	-		-	-	141.74 /cy	107,154
n	0210	Control joint, clean out control joint of debris_WALLS	995.00	lf	56	-	-		-	-	0.06 /lf	56
n	0366	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_WALLS	995.00	lf	1,242	219	-		-	-	1.47 /lf	1,461
n	0020	Concrete finishing, walls, includes breaking ties and patching voids	38,584.00	sf	24,067	1,613	-		-	-	0.67 /sf	25,680
n	0050	Concrete finishing, walls, burlap rub with grout, includes breaking ties and patching voids	19,292.00	sf	14,447	806	-		-	-	0.791 /sf	15,253
		03002.300 Concrete_Walls Exterior			*309,846*	*223,581*			*7,516*		*715.533/cy*	*540,943*
		756.00 cy 7,250.63 Labor hours 184.325 Equipment hours										
	03002.305	*Concrete_Walls Exterior_Radius*										
n	0500	C.I.P. concrete forms, wall, wood bulkhead with 2 piece keyway, 1 use, includes erecting, bracing, stripping and cleaning	92.00	lf	678	116	-		-	-	8.64 /lf	795
n	4150	C.I.P. concrete forms, wall, radial, smooth curved, job built plywood, to 8' high, 4 use, includes erecting, bracing, stripping and cleaning	3,640.00	sfca	21,231	2,110	-		-	-	6.412 /sfca	23,341
n	5200	Chamfer strip, wood, 3/4" wide	184.00	lf	117	36	-		-	-	0.83 /lf	153

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.305	*Concrete_Walls Exterior_Radius*										
n	1400	Tie cones, plastic, for coil tie system, for CIP wall forms, 1/2" bolt diameter x 1" setback length, includes material only	4.00	c	-	472	-		-	-	117.963 /c	472
n	3010	Waterstop, rubber, center bulb, 1/4" thick x 6" wide_WALLS	232.00	lf	535	1,660	-		-	-	9.461 /lf	2,195
n	0700	Reinforcing Steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	5.95	ton	3,777	5,298	-		-	-	1,525.21 /ton	9,075
n	2020	Reinforcing steel, unload and sort, add to base_WALLS	5.95	ton	193	-	-		49	-	40.684 /ton	242
n	2214	Reinforcing steel, crane cost for handling, average, add_WALLS	5.95	ton	210	-	-		53	-	44.22 /ton	263
n	5100	Structural concrete, placing, walls, pumped, 12" thick, includes strike off & consolidation, excludes material	68.00	cy	1,486	-	-		546	-	29.882 /cy	2,032
n	0520	Struct WALLS concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	68.00	cy	-	9,638	-		-	-	141.74 /cy	9,638
n	0210	Control joint, clean out control joint of debris_WALLS	92.00	lf	5	-	-		-	-	0.06 /lf	5
n	0366	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_WALLS	92.00	lf	115	20	-		-	-	1.47 /lf	135
n	0020	Concrete finishing, walls, includes breaking ties and patching voids	3,640.00	sf	2,270	152	-		-	-	0.67 /sf	2,423
n	0050	Concrete finishing, walls, burlap rub with grout, includes breaking ties and patching voids	1,820.00	sf	1,363	76	-		-	-	0.791 /sf	1,439
		03002.305 Concrete_Walls Exterior_Radius			*31,981*	*19,578*			*648*		*767.76 /cy*	*52,207*
		68.00 cy										
		752.91 Labor hours										
		15.83 Equipment hours										
	03002.500	*Concrete_Columns*										
n	6650	C.I.P. concrete forms, column, square, plywood, 24" x 24", 4 use, includes erecting, bracing, stripping and cleaning	544.00	sfca	2,901	389	-		-	-	6.05 /sfca	3,290
n	0202	Ties, for coil tie system, for CIP column forms, 1/2", 6000#, 36", includes material only	4.00	c	-	2,572	-		-	-	642.99 /c	2,572
n	0250	Reinforcing Steel, in place, columns, #8 to #18, A615, grade 60, incl labor for accessories, excl material for accessories	1.50	ton	1,242	1,406	-		-	-	1,765.28 /ton	2,648
n	2030	Reinforcing steel, unload and sort, add to base_COLUMNS	1.50	ton	49	-	-		12	-	40.69 /ton	61
n	2216	Reinforcing steel, crane cost for handling, average, add_COLUMNS	1.50	ton	53	-	-		13	-	44.213 /ton	66
n	0800	Structural concrete, placing, column, square or round, pumped, 24" thick, includes strike off & consolidation, excludes material	12.00	cy	314	-	-		115	-	35.73 /cy	429
n	0620	Struct COLUMNS concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	12.00	cy	-	1,701	-		-	-	141.74 /cy	1,701

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	03002.500	*Concrete_Columns*										
n	0022	Concrete finishing, columns, includes breaking ties and patching voids	544.00	sf	339	23	-		-	-	0.67 /sf	362
		03002.500 Concrete_Columns			*4,898*	*6,090*			*141*			*11,129*
		112.17 Labor hours										
		3.381 Equipment hours										
	03002.700	*Concrete_Slab on Grade*										
n	3050	C.I.P. concrete forms, slab on grade, edge, wood, 7" to 12" high, 4 use, includes erecting, bracing, stripping and cleaning	8,451.24	sfca	24,659	4,825	-		-	-	3.49 /sfca	29,483
n	9015	C.I.P. concrete forms, bulkhead for slab on grade w/ keyway, up to 12", exp metal, includes erecting, bracing, stripping and cleaning	1,892.94	sfca	3,022	825	-		-	-	2.032 /sfca	3,847
n	0600	Reinforcing Steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	110.26	ton	91,301	98,164	-		-	-	1,718.43 /ton	189,465
n	2050	Reinforcing steel, unload and sort, add to base_SLAB ON GRADE	110.26	ton	3,575	-	-		910	-	40.682 /ton	4,485
n	2220	Reinforcing steel, crane cost for handling, average, add_SLAB ON GRADE	110.26	ton	3,886	-	-		990	-	44.22 /ton	4,875
n	4650	Structural concrete, placing, slab on grade, pumped, over 6" thick, includes strike off & consolidation, excludes material	1,206.00	cy	15,671	-	-		5,757	-	17.77 /cy	21,428
n	0720	Struct SLAB ON GRADE concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered,excludes all additives	1,206.00	cy	-	170,936	-		-	-	141.74 /cy	170,936
n	0255	Concrete finishing, floors, manual screed, bull float, machine float & steel trowel (walk-behind)_SOG	38,356.40	sf	21,348	-	-		1,209	-	0.59 /sf	22,557
n	0122	Control joint, concrete floor slab, sawcut in green concrete, 1" depth_SOG	2,825.28	lf	952	233	-		252	-	0.51 /lf	1,437
n	0215	Control joint, clean out control joint of debris_SOG	2,825.28	lf	158	-	-		-	-	0.06 /lf	158
n	0367	Control joint, joint sealant, polyurethane, 1/4" x 1/4" (308 LF/Gal)_SOG	5,650.56	lf	7,051	1,243	-		-	-	1.47 /lf	8,295
n	0310	Concrete surface treatment, curing, sprayed membrane compound_SOG	383.564	csf	2,268	3,220	-		-	-	14.31 /csf	5,488
n	1200	Vapor Retarders, building paper, polyethylene vapor barrier, standard, .010" thick	383.564	sq	3,353	2,511	-		-	-	15.29 /sq	5,864
n	1010	Fill, gravel fill, compacted, under floor slabs, alternate pricing method, 4" deep_SOG	1,504.00	ecy	28,519	38,292	-		1,913	-	45.694 /ecy	68,723
n	1136	Hauling, excavated borrow material, loose cubic yards, 20 mile round trip, 0.4 loads/hour, 16.5 c.y. dump trailer, highway haulers, excludes loading	1,504.00	lcy	10,062	-	-		19,927	-	19.94 /lcy	29,989
		03002.700 Concrete_Slab on Grade			*215,825*	*320,249*			*30,957*		*470.18 /cy*	*567,031*
		1,206.00 cy										
		4,487.02 Labor hours										
		910.811 Equipment hours										

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Item		Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
		DIVISION 03 CONCRETE 12,648.09 Labor hours 1,117.581 Equipment hours			564,756	572,619	0		39,401	0		1,176,776
DIVISION 04		MASONRY										
	04220.008	*Concrete Masonry_8" Split Face*										
n	0090	Scaffolding, steel tubular, regular, labor only to erect & dismantle, building exterior, wall face, 6'-4" x 5' frames, 1 to 5 stories, excl. planks	22.00	csf	3,827	-	-		-	-	173.96 /csf	3,827
n	0906	Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excl. planks	22.00	csf	-	792	-		-	-	36.00 /csf	792
n	2850	Scaffolding, steel tubular, regular, accessory, plank, rent/mo, 2" x 10" x 16' long	150.00	ea	-	900	-		-	-	6.00 /ea	900
n	0020	Grout, bond beams and lintels, 8" deep, 8" thick, 0.20 C.F. per L.F., pumped, excludes blockwork	514.01	lf	508	709	-		54	-	2.473 /lf	1,271
n	0250	Grout, concrete masonry unit (CMU) cores, 8" thick, 0.258 C.F./S.F., pumped, excludes blockwork	2,056.00	sf	4,185	3,153	-		443	-	3.784 /sf	7,781
n	0020	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	1,698.482	lb	816	947	-		-	-	1.04 /lb	1,763
n	0060	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	2,547.724	lb	1,507	1,421	-		-	-	1.15 /lb	2,928
n	0130	Concrete block,bond beam,normal weight,2000 psi,8"x8"x16",includes mortar,excludes scaffolding,horizontal reinforcing,vertical reinforcing and grout	514.01	lf	1,601	1,812	-		-	-	6.641 /lf	3,413
n	6200	Concrete block, decorative, split face or scored split face, 2000 psi, 8" x 8" x 16", excludes scaffolding, grout and reinforcing	2,056.00	sf	12,061	10,815	-		-	-	11.13 /sf	22,876
n	6500	Concrete block, decorative, split face or scored split face, 8" thick, for special deeper colors, add	2,056.00	sf	-	1,972	-		-	-	0.96 /sf	1,972
		04220.008 Concrete Masonry_8" Split Face *2,056.00 sf* 533.371 Labor hours 27.114 Equipment hours			*24,506*	*22,521*			*496*		*23.114/sf*	*47,523*
	04220.009	*Concrete Masonry_8" Regular*										
n	0090	Scaffolding, steel tubular, regular, labor only to erect & dismantle, building exterior, wall face, 6'-4" x 5' frames, 1 to 5 stories, excl. planks	62.00	csf	10,785	-	-		-	-	173.96 /csf	10,785
n	0906	Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excl. planks	62.00	csf	-	2,232	-		-	-	36.00 /csf	2,232
n	2850	Scaffolding, steel tubular, regular, accessory, plank, rent/mo, 2" x 10" x 16' long	165.00	ea	-	990	-		-	-	6.00 /ea	990
n	0020	Grout, bond beams and lintels, 8" deep, 8" thick, 0.20 C.F. per L.F., pumped, excludes blockwork	385.92	lf	382	532	-		40	-	2.473 /lf	954

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	04220.009	*Concrete Masonry_8" Regular*										
n	0250	Grout, concrete masonry unit (CMU) cores, 8" thick, 0.258 C.F./S.F., pumped, excludes blockwork	6,146.00	sf	12,511	9,424	-		1,323	-	3.784 /sf	23,259
n	0020	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	1,275.23	lb	613	711	-		-	-	1.04 /lb	1,324
n	0060	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	7,616.151	lb	4,505	4,248	-		-	-	1.15 /lb	8,752
n	0130	Concrete block,bond beam,normal weight,2000 psi,8"x8"x16",includes mortar,excludes scaffolding,horizontal reinforcing,vertical reinforcing and grout	385.92	lf	1,202	1,361	-		-	-	6.641 /lf	2,563
n	0200	Cncr blck,extrr,toold jnts both sides,norml wt,2000 psi,8"8"16",incld mortr and hrznt joint rnfrc every other cours,excld scffl,grout and vrtcl rnfrcn	6,146.00	sf	30,045	31,809	-		-	-	10.064 /sf	61,854
		04220.009 Concrete Masonry_8" Regular			*60,043*	*51,307*			*1,363*		*18.34 /sf*	*112,713*
		6,146.00 sf 1,300.765 Labor hours 74.481 Equipment hours										
		DIVISION 04 MASONRY 1,834.14 Labor hours 101.594 Equipment hours			**84,549**	**73,828**	**0**		**1,860**	**0**		**160,236**
DIVISION 05		**METALS**										
	05120.000	*Structural Steel*										
n	1300	Structural steel project,industrial buildings,steel bearing,100-ton project,1 story,a992 steel,shop fabricated,incl shop primer,bolted connections	15.50	ton	6,186	34,209	-		2,326	-	2,756.17 /ton	42,721
		05120.000 Structural Steel			*6,186*	*34,209*			*2,326*		*42,720.61 /ls*	*42,721*
		1.00 ls 96.124 Labor hours 19.225 Equipment hours										
	05505.000	*Metal Fabrications*										
n	0050	Stair, shop fabricated, steel, 4'-0" W, incl pipe railing, stringers, grating treads w/ safety nosing, per riser	39.00	risr	2,591	15,691	-		209	-	474.15 /risr	18,492
n	0148	Floor grating, aluminum, 2-1/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., over 300 S.F., field fabricated from panels	5,839.00	sf	11,639	407,854	-		940	-	72.004 /sf	420,434
		05505.000 Metal Fabrications			*14,231*	*423,545*			*1,150*		*438,925.31 /ls*	*438,925*
		1.00 ls 228.45 Labor hours 57.112 Equipment hours										
	05522.000	*Aluminum Railings*										

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	05522.000	*Aluminum Railings*										
n	0210	Railing, pipe, aluminum, clear finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	130.00	lf	1,892	9,516	-		153	-	88.93 /lf	11,561
		05522.000 Aluminum Railings			*1,892*	*9,516*			*153*		*210.194/lf*	*11,561*
		55.00 lf										
		30.37 Labor hours										
		7.591 Equipment hours										
		DIVISION 05 METALS			**22,308**	**467,271**	**0**		**3,628**	**0**		**493,207**
		354.94 Labor hours										
		83.93 Equipment hours										
DIVISION 08		**DOORS & WINDOWS**										
	08110.030	*Metal Doors & Frames (3070)*										
n	1000	Frames, steel, knock down, hollow metal, single, 16 ga., up to 4-7/8" deep, 7'-0" h x 3'-0" w	39.00	ea	1,739	5,694	-		-	-	190.58 /ea	7,433
n	1120	Doors, commercial, steel, flush, full panel, hollow core, hollow metal, 18 ga., 3'-0" x 7'-0" x 1-3/4" thick	39.00	ea	1,637	16,453	-		-	-	463.824 /ea	18,089
n	3000	Door hardware, panic device, narrow stile, mortise bar, exit only	39.00	ea	3,050	21,035	-		-	-	617.55 /ea	24,084
n	0011	Thresholds, aluminum, 3' long door saddles	117.00	lf	762	457	-		-	-	10.42 /lf	1,219
n	1430	Door hardware, hinges, full mortise, high frequency, brass base, US10, 4-1/2" x 4-1/2"	58.50	pr	-	4,500	-		-	-	76.92 /pr	4,500
n	1200	Paints & Coatings, exterior, door & frame, one side, flush, 1 coat, 3' x 7'	39.00	ea	528	66	-		-	-	15.23 /ea	594
		08110.030 Metal Doors & Frames (3070)			*7,715*	*48,203*					*1,433.812/ea*	*55,919*
		39.00 ea										
		191.56 Labor hours										
	08110.060	*Metal Doors & Frames (6070)*										
n	3620	Frames, steel, knock down, hollow metal, 14 gauge, up to 5-3/4" D, 7'-0" H, 6'-0" W, double	9.00	ea	535	1,553	-		-	-	231.984 /ea	2,088
n	1120	Doors, commercial, steel, flush, full panel, hollow core, hollow metal, 18 ga., 3'-0" x 7'-0" x 1-3/4" thick	18.00	ea	755	7,593	-		-	-	463.824 /ea	8,349
n	3000	Door hardware, panic device, narrow stile, mortise bar, exit only	18.00	ea	1,408	9,708	-		-	-	617.55 /ea	11,116
n	0011	Thresholds, aluminum, 3' long door saddles	54.00	lf	352	211	-		-	-	10.42 /lf	563
n	1430	Door hardware, hinges, full mortise, high frequency, brass base, US10, 4-1/2" x 4-1/2"	27.00	pr	-	2,077	-		-	-	76.92 /pr	2,077
n	1200	Paints & Coatings, exterior, door & frame, one side, flush, 1 coat, 3' x 7'	18.00	ea	244	31	-		-	-	15.23 /ea	274
		08110.060 Metal Doors & Frames (6070)			*3,293*	*21,173*					*2,718.451/ea*	*24,466*
		9.00 ea										
		82.412 Labor hours										

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	08332.000	*Steel Rolling Overhead Doors*										
n	0050	Doors, rolling service, steel, manual, 20 gauge, 8' x 10' high, incl. hardware	1.00	ea	503	1,228	-		-	-	1,731.76 /ea	1,732
n	0100	Doors, rolling service, steel, manual, 20 gauge, 10' x 10' high, incl. hardware	2.00	ea	1,150	3,365	-		-	-	2,257.87 /ea	4,516
n	0300	Doors, rolling service, steel, manual, 20 gauge, 12' x 10' high, incl. hardware	1.00	ea	671	2,392	-		-	-	3,063.45 /ea	3,063
n	4500	Doors, rolling service, steel, manual, motor operators for, to 14' x 14' opening	4.00	ea	644	3,887	-		-	-	1,132.75 /ea	4,531
		08332.000 Steel Rolling Overhead Doors			*2,969*	*10,873*					*3,460.49 /ea*	*13,842*
		4.00 ea										
		58.990 Labor hours										
	08525.000	*Aluminum Windows*										
n	0500	Storefront Systems, aluminum frame, commercial grade, clear 3/8" plate glass, wall height to 12' high	202.40	sf	817	3,664	-		-	-	22.14 /sf	4,481
n	0500	Storefront Systems, aluminum frame, commercial grade, clear 3/8" plate glass, 3' x 7' door with hardware, 400 SF max wall, wall height to 12' high	48.00	sf	194	869	-		-	-	22.14 /sf	1,063
	0290	Windows, fiberglass single hung, 48" x 80", including grill, low E	6.00	ea	469	5,234	-		-	-	950.52 /ea	5,703
		08525.000 Aluminum Windows			*1,480*	*9,767*					*1,022.412/ea*	*11,247*
		11.00 ea										
		38.710 Labor hours										
		DIVISION 08 DOORS & WINDOWS			**15,457**	**90,016**	**0**		**0**	**0**		**105,473**
		371.672 Labor hours										
	DIVISION 09	**FINISHES**										
	09250.000	*Gypsum Board*										
n	4200	Partition wall, interior, standard, taped both sides,installed & incl. 25 ga, nlb metal studs, 3-5/8" wide, 24" o.c., 8' 12' high, 5/8" gypsum drywall	14,028.00	sf	23,871	11,475	-		-	-	2.52 /sf	35,346
		09250.000 Gypsum Board			*23,871*	*11,475*					*35,345.82 /ls*	*35,346*
		1.00 ls										
		623.404 Labor hours										
		DIVISION 09 FINISHES			**23,871**	**11,475**	**0**		**0**	**0**		**35,346**
		623.404 Labor hours										
	DIVISION 10	**SPECIALTIES**										
	10162.000	*Metal Toilets Partitions*										
n	1700	Toilet cubicles, floor mounted, painted metal	14.00	ea	1,515	8,142	-		-	-	689.793 /ea	9,657

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	10162.000	*Metal Toilets Partitions*										
n	6800	Urinal screen, wall hung, bracket supported, powder coated steel	2.00	ea	152	663	-		-	-	407.32 /ea	815
		10162.000 Metal Toilets Partitions			*1,667*	*8,805*					*10,471.73 /ls*	*10,472*
		1.00 ls										
		35.20 Labor hours										
	10800.000	*Toilet, Bath & Laundry Accessories*										
n	1100	Toilet Accessories, grab bars, straight, stainless steel, 36" long	3.00	ea	57	113	-		-	-	56.45 /ea	169
n	1105	Toilet accessories, grab bars, straight, stainless steel, 42" long	3.00	ea	57	122	-		-	-	59.71 /ea	179
		10800.000 Toilet, Bath & Laundry Accessories			*114*	*235*					*348.47 /ls*	*348*
		1.00 ls										
		2.40 Labor hours										
		DIVISION 10 SPECIALTIES			**1,781**	**9,040**	**0**		**0**	**0**		**10,820**
		37.60 Labor hours										
DIVISION 11		**EQUIPMENT**										
	11601.000	*Laboratory Equipment*										
—		Laboratory Equipment Allowance	1.00	ls			25,000				25,000.00 /ls	25,000
		11601.000 Laboratory Equipment					*25,000*					*25,000*
	11999.000	*Appliances*										
	6799	Refrigerator, energy star qualified, 21.7 CF, maximum	3.00	ea	568	4,239	-		-	-	1,602.533 /ea	4,808
	3100	Dishwasher, built-in, energy-star qualified, minimum	2.00	ea	461	739	-		-	-	599.93 /ea	1,200
		11999.000 Appliances			*1,029*	*4,978*					*6,007.46 /ls*	*6,007*
		1.00 ls										
		20.00 Labor hours										
		DIVISION 11 EQUIPMENT			**1,029**	**4,978**	**25,000**		**0**	**0**		**31,007**
		20.00 Labor hours										
DIVISION 12		**FURNISHINGS**										
	12346.100	*Kitchen Casework (Wood)*										
n	3600	Casework, kitchen base cabinets, metal, maximum	77.00	lf	2,754	17,681	-		-	-	265.39 /lf	20,435
n	0100	Solid Surface Countertops, acrylic polymer	77.00	lf	2,459	4,656	-		-	-	92.394 /lf	7,114
		12346.100 Kitchen Casework (Wood)			*5,212*	*22,337*					*27,549.38 /ls*	*27,549*
		1.00 ls										
		93.280 Labor hours										

Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 12 FURNISHINGS			**5,212**	**22,337**	**0**		**0**	**0**		**27,549**
	93.280 Labor hours										
DIVISION 13	**SPECIAL CONSTRUCTION**										
13121.000	*Metal Building Systems*										
n 0900	PEMB,clear span,30 psf roof and 20 psf wind load,150'w x 150' l x 15'h,incl SSMR,excl ftngs,slab,anchr bolts	43,965.00	sf	187,899	738,964	-		106,898	-	23.513 /sf	1,033,761
	13121.000 Metal Building Systems			*187,899*	*738,964*			*106,898*		*23.513/sf*	*1,033,761*
	43,965.00 sf										
	3,372.56 Labor hours										
	481.86 Equipment hours										
	DIVISION 13 SPECIAL CONSTRUCTION			**187,899**	**738,964**	**0**		**106,898**	**0**		**1,033,761**
	3,372.56 Labor hours										
	481.86 Equipment hours										
DIVISION 14	**CONVEYING SYSTEMS**										
14305.000	*Bridge Cranes*										
n 1560	Structural steel member, 100-ton project, 1 to 2 story building, W12x50, A992 steel, shop fabricated, incl shop primer, bolted connections	300.00	lf	1,423	18,208	-		710	-	67.804 /lf	20,341
0210	Crane Rail, box beam bridge, running track only, 104 lb per yard, 20' piece, excl. equipment	300.00	lf	3,242	7,011	-		274	-	35.091 /lf	10,527
0500	Overhead Bridge Cranes, under hung hoist, electric operating, 2 girder, 2 ton, 45' span	1.00	ea	3,936	50,546	-		509	-	54,990.65 /ea	54,991
	14305.000 Bridge Cranes			*8,601*	*75,765*			*1,494*		*85,859.29 /ea*	*85,859*
	1.00 ea										
	154.401 Labor hours										
	22.201 Equipment hours										
	DIVISION 14 CONVEYING SYSTEMS			**8,601**	**75,765**	**0**		**1,494**	**0**		**85,859**
	154.401 Labor hours										
	22.201 Equipment hours										
DIVISION 15	**MECHANICAL**										
15440.000	*Plumbing Fixtures & Equipment*										
0400	Water closet, tank type, vitreous china, wall hung, close coupled, two piece, includes seat, supply pipe with stop	6.00	ea	846	3,641	-		-	-	747.842 /ea	4,487
0960	Water closet, tank type, vitreous china, wall hung, rough-in, supply, waste, vent and carrier	6.00	ea	1,642	5,569	-		-	-	1,201.823 /ea	7,211
0680	Lavatory, vanity top, porcelain enamel on cast iron, white, oval, 20" x 17", includes trim	4.00	ea	467	738	-		-	-	301.34 /ea	1,205

	Item	Description	Takeoff Qty		Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	15440.000	*Plumbing Fixtures & Equipment*										
n	4240	Lavatory, wall hung, porcelain enamel on cast iron, white, single bowl, 22" x 19", includes trim	1.00	ea	93	617	-		-	-	710.48 /ea	710
n	3300	Sink, kitchen, counter top style, stainless steel, self rimming, double bowl, 43" x 22", includes faucet and drain	2.00	ea	311	2,142	-		-	-	1,226.63 /ea	2,453
n	3100	Urinal, wall hung, vitreous china, with hanger & self-closing valve, siphon jet type	2.00	ea	498	598	-		-	-	547.86 /ea	1,096
n	3300	Urinal, wall hung, rough-in, supply, waste and vent	2.00	ea	528	490	-		-	-	508.76 /ea	1,018
n	6650	Sink, service, floor, porcelain enamel on cast iron, corner, 28" x 28", includes faucet and drain	1.00	ea	170	709	-		-	-	878.67 /ea	879
n	6790	Sink, service, floor, rough-in, supply, waste and vent	1.00	ea	455	745	-		-	-	1,200.09 /ea	1,200
		15440.000 Plumbing Fixtures & Equipment			*5,010*	*15,249*					*1,266.191/ea*	*20,259*
		16.00 ea										
		107.311 Labor hours										
	15605.000	*HVAC: Equipment*										
	0025	HVAC System	50.00	ton	-	-	154,875		-	-	3,097.50 /ton	154,875
		15605.000 HVAC: Equipment					*154,875*				*154,875.00 /ls*	*154,875*
		1.00 ls										
		DIVISION 15 MECHANICAL			**5,010**	**15,249**	**154,875**		**0**	**0**		**175,134**
		107.311 Labor hours										
		7 OPERATIONS BUILDING			***927,715***	***2,081,541***	***179,875***		***168,475***	***0***	***76.37 /SF***	***3,357,607***
		43,965.00 SF										
		19,752.92 Labor hours										
		1,934.34 Equipment hours										
		8 ELECTRICAL										
	DIVISION 16	**ELECTRICAL**										
	16010.000	*Electrical: Basic Requirements*										
	1240	Variable frequency drives, custom-engineered, 460 volt, 150 motor size	5.00	ea	14,687	79,205	-		1,981	-	19,174.62 /ea	95,873
	0001	Electrical Work	1.00	ls	-	-	2,455,956		-	-	2,455,956.31 /ls	2,455,956
		16010.000 Electrical: Basic Requirements			*14,687*	*79,205*	*2,455,956*		*1,981*		*2,551,829.39 /ls*	*2,551,829*
		1.00 ls										
		285.714 Labor hours										
		57.143 Equipment hours										

AACE Classification Accuracy Range

Upper Range +30%%

Lower Range -15%%

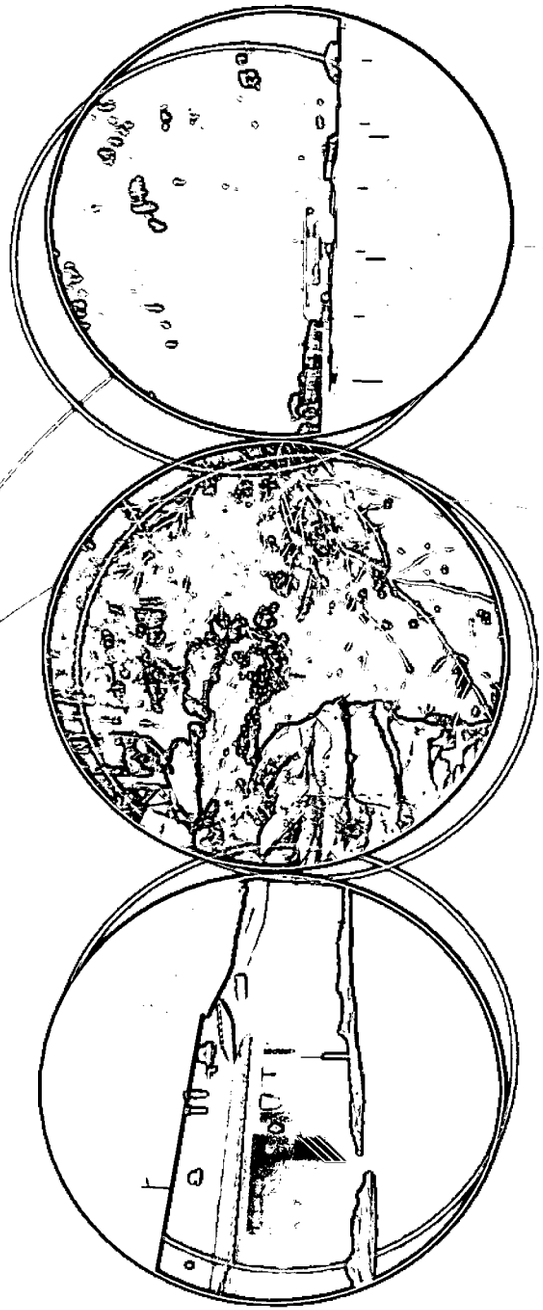
Item	Description	Takeoff Qty	Labor Amount	Material Amount	Subcontract Amount	Subcontract Name	Equipment Amount	Other Amount	Total Unit Cost	Total Amount
	DIVISION 16 ELECTRICAL		14,687	79,205	2,455,956		1,981	0		2,551,829
	285.714 Labor hours									
	57.143 Equipment hours									
	8 ELECTRICAL		***14,687***	***79,205***	***2,455,956***		***1,981***	***0***	***2,551,829.39 /LS***	***2,551,829***
	1.00 LS									
	285.714 Labor hours									
	57.143 Equipment hours									
	9 CONTROLS									
DIVISION 13	SPECIAL CONSTRUCTION									
13440.000	*Instrumentation for Process Control: Basic Requirements*									
0001	Instrumentation and Controls	1.00 ls	-	-	1,590,942		-	-	1,590,942.10 /ls	1,590,942
	13440.000 Instrumentation for Process Control: Basic Requirements				*1,590,942*				*1,590,942.10 /ls*	*1,590,942*
	1.00 ls									
	DIVISION 13 SPECIAL CONSTRUCTION		0	0	1,590,942		0	0		1,590,942
	9 CONTROLS		***0***	***0***	***1,590,942***		***0***	***0***	***1,590,942.10 /LS***	***1,590,942***
	1.00 LS									

AACE Classification Accuracy Range

Upper Range +30%% **Lower Range -15%%**

Estimate Totals

Description	Amount	Totals	Hours	Rate
Labor	3,890,257		65,666.343 hrs	
Material	9,084,020			
Subcontract	5,364,707			
Equipment	1,092,312			
Other	10,131			
Direct Cost - Subtotal		**19,441,427**		
Contractor's Fld Ovhd & Mob	1,360,900			7.000 %
Field Const Cost - Subtotal		**20,802,327**		
Contractor's Fee	2,080,233			10.000 %
Contractor's Bonds & Insurance	343,238			1.500 %
Undefined SOW-(Contingency)	4,645,160			20.000 %
Subtotal		**27,870,958**		
Escal Mid-Pnt Const (02-26-12)	733,006			2.630 %
Subtotal	**733,006**	**28,603,964**		
Sales Tax	286,040			1.000 %
Total OPCC Contractor Bid		**28,890,004**		
Owner Furnished PALL Equip	5,558,300			
Total OPCC Project Const Cost		**34,448,304**		
Engineering and Administration	6,425,800			
TOTAL PROJECT COST		**40,874,104**		



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix C. Environmental Checklist

Prepared by: James Nickelson

Reviewed by: Nathan Kutil

Date: August 31, 2010

UNIFORM ENVIRONMENTAL CHECKLIST

As the engineer that prepared the preliminary engineering report, I James Nickelson,

have reviewed the information presented in this checklist and believe that it accurately identifies the environmental resources in the area and the potential impacts that the project could have on those resources. In addition, the required state and federal agencies were provided with the required information about the project and requested to provide comments on the proposed public facility project. Their comments have been incorporated into and attached to the Preliminary Engineering Report.

Engineer's Signature: _____

Date: 8/31/10

Key Letter: N – No Impact/Not Applicable **B** – Potentially Beneficial **A** – Potentially Adverse
P – Approval/Permits Required **M** – Mitigation Required

PHYSICAL ENVIRONMENT	
Key N	1. **Soil Suitability, Topographic and/or Geologic Constraints (e.g., soil slump, steep slopes, subsidence, seismic activity)** *Comments and Source of Information*: Site is suitable. 2010 Geotechnical Investigation by SK Geotechnical
Key N	2. **Hazardous Facilities (e.g., power lines, EPA hazardous waste sites, acceptable distance from explosive and flammable hazards including chemical/petrochemical storage tanks, underground fuel storage tanks, and related facilities such as natural gas storage facilities & propane storage tanks)** *Comments and Source of Information*: No known hazardous facilities. 2005 Water Facility Plan
Key M	3. **Effects of Project on Surrounding Air Quality or Any Kind of Effects of Existing Air Quality on Project (e.g., dust, odors, emissions)** *Comments and Source of Information*: No long term impact on air quality with project. Short term air quality will be mitigated by utilizing dust control practices during construction. 2005 Water Facility Plan
Key P	4. **Groundwater Resources & Aquifers (e.g., quantity, quality, distribution, depth to groundwater, sole source aquifers)** *Comments and Source of Information*: Discharge permit will be required for septic/drainfield.
Key P	5. **Surface Water/Water Quality, Quantity & Distribution (e.g., streams, lakes, storm runoff, irrigation systems, canals)** *Comments and Source of Information*: Permits required for construction storm water and for surface water discharge of process water.

Key	
P	6. **Floodplains & Floodplain Management (Identify any floodplains within one mile of the boundary of the project.)** *Comments and Source of Information*: Permit required for Sourdough Intake construction. Water Treatment Plant not in a floodplain. FEMA maps.
P	7. **Wetlands Protection (Identify any wetlands within one mile of the boundary of the project.)** *Comments and Source of Information*: Wetland permitting required for Sourdough Intake construction. No jurisdictional wetlands within construction limits at Water Treatment Plant site. Morrison Maierle Wetland Delineation Report, July 2009.
N	8. **Agricultural Lands, Production, & Farmland Protection (e.g., grazing, forestry, cropland, prime or unique agricultural lands) (Identify any prime or important farm ground or forest lands within one mile of the boundary of the project.)** *Comments and Source of Information*: With the exception of non-irrigated grass hay land owned by the City of Bozeman, there will be no impacts on farm or forest lands.
B	9. **Vegetation & Wildlife Species & Habitats, Including Fish (e.g., terrestrial, avian and aquatic life and habitats)** *Comments and Source of Information*: Based on Township/Range search, no plant species of concern or potential concern are listed on Montana Natural Heritage Program site. The site lists 10 animal species of concern and 2 potential animal species of concern. Change in Sourdough Intake will reduce fish entrainment in water pipeline which will help the Cutthroat Trout which are listed as a species of concern. Montana Natural Heritage Program data
N	10. **Unique, Endangered, Fragile, or Limited Environmental Resources, Including Endangered Species (e.g., plants, fish or wildlife)** *Comments and Source of Information:* The Montana Fish, Wildlife and Parks department lists three listed endangered species including the Ute Ladies' Tresses, the Canada Lynx and the Grizzly Bear. The project is not anticipated to directly impact the habitat of any of these species. Montana Fish, Wildlife and Parks Department.
N	11. **Unique Natural Features (e.g., geologic features)** *Comments and Source of Information*: There are no unique natural features that would be impacted by project.
A	12. **Access to, and Quality of, Recreational & Wilderness Activities, Public Lands and Waterways (including Federally Designated Wild & Scenic Rivers), and Public Open Space** *Comments and Source of Information*: Short term impacts to recreational access to Sourdough Canyon will occur during the construction of the intake. Construction will be coordinated to minimize impacts.

HUMAN POPULATION	
Key P	1. **Visual Quality – Coherence, Diversity, Compatibility of Use and Scale, Aesthetics** *Comments and Source of Information*: Water Treatment Building is subject to provisions of the Hyalite Zoning District and will require a land use permit that addresses these items. Gallatin County Planning Documents
Key N	2. **Nuisances (e.g., glare, fumes)** *Comments and Source of Information*: Building materials will be selected to limit glare. Project is not anticipated to produce any fumes. Preliminary Design Report
Key N	3. **Noise – suitable separation between noise sensitive activities (such as residential areas) and major noise sources (aircraft, highways & railroads)** *Comments and Source of Information*: Project will generate minimal noise. Preliminary Design Report
Key N	4. **Historic Properties, Cultural, and Archaeological Resources** *Comments and Source of Information*: No known resources are in the project site limits. Area has either been previously disturbed through water plant construction or agricultural operations.
Key N	5. **Changes in Demographic (population) Characteristics (e.g., quantity, distribution, density)** *Comments and Source of Information*: This project will not directly change demographic characteristics. Providing an adequate supply of water to the City of Bozeman will allow for the continued growth of the City. 2005 Water Facility Plan
Key N	6. **Environmental Justice – (Does the project avoid placing lower income households in areas where environmental degradation has occurred, such as adjacent to brownfield sites?)** *Comments and Source of Information*: Project has no direct impact on lower income households.
Key N	7. **General Housing Conditions - Quality, Quantity, Affordability** *Comments and Source of Information*: Project has no direct impact on general housing conditions.
Key N	8. **Displacement or Relocation of Businesses or Residents** *Comments and Source of Information*: Project will not displace businesses or residents.

Key B	**9. Public Health and Safety** *Comments and Source of Information*: Project will provide water for both domestic use and fire protection. 2005 Water Facility Plan
Key N	**10.** Lead Based Paint and/or Asbestos *Comments and Source of Information*: There is no known lead based paint or asbestos at the water treatment plant site. City staff
B	**11. Local Employment & Income Patterns - Quantity and Distribution of Employment, Economic Impact** *Comments and Source of Information:* The supply of water to the community provides continued opportunity for economic development. City of Bozeman Planning Documents
Key B	**12. Local & State Tax Base & Revenues** *Comments and Source of Information*: The supply of water to the community provides continued opportunity for economic development which generates a larger tax base. City of Bozeman Planning Documents
Key B	**13. Educational Facilities - Schools, Colleges, Universities** *Comments and Source of Information*: The water treatment plant expansion will provide water for the anticipated expansion of the community's education facilities. 2005 Water Facility Plan
Key B	**14. Commercial and Industrial Facilities - Production & Activity, Growth or Decline** *Comments and Source of Information*: The water treatment plant expansion will provide water for the potential growth of commercial and industrial facilities. 2005 Water Facility Plan
Key B	**15. Health Care – Medical Services** *Comments and Source of Information*: The expansion of the water treatment facility will provide water to serve the health care industry. 2005 Water Facility Plan
Key N	**16. Social Services – Governmental Services (e.g., demand on)** *Comments and Source of Information*: No significant impact is anticipated.
Key N	**17. Social Structures & Mores (Standards of Social Conduct/Social Conventions)** *Comments and Source of Information*: No significant impact is anticipated.

Key N	**18. Land Use Compatibility (e.g., growth, land use change, development activity, adjacent land uses and potential conflicts)** *Comments and Source of Information*: The project will be constructed on the current water treatment plant property and is subject to zoning requirements. Gallatin County Planning Documents
Key A	**19. Energy Resources - Consumption and Conservation** *Comments and Source of Information*: Additional energy resources will be required to operate the new water treatment plant; however, the energy utility can provide the required resources. 2005 Water Facility Plan
Key A	**20. Solid Waste Management** *Comments and Source of Information*: The new water treatment plant will produce dewatered sludge which will likely be disposed of at the Gallatin County Landfill; however, the landfill is permitted for this use and has capacity to take the sludge. 2005 Water Facility Plan
Key P	**21. Wastewater Treatment - Sewage System** *Comments and Source of Information*: A permit will be required for a new septic/drainfield system at the water treatment plant site. 2005 Water Facility Plan
Key P	**22. Storm Water – Surface Drainage** *Comments and Source of Information*: A permit will be required for handling storm water during construction. Future storm water runoff will be limited to pre-development levels per the city of Bozeman Design Standards. City of Bozeman Design Standards
Key B/P	**23. Community Water Supply** *Comments and Source of Information*: The project will provide additional capacity to the City of Bozeman's water supply system and requires permitting through MDEQ. 2005 Water Facility Plan
Key N	**24. Public Safety – Police** *Comments and Source of Information*: No impact is anticipated.
Key B	**25. Fire Protection – Hazards** *Comments and Source of Information*: The project will provide additional capacity to the City of Bozeman's water supply system which will provide water for fire protection purposes. Fire protection requirements are being provided as required by the Sourdough Fire Department. 2005 Water Facility Plan and communication with Fire Department

Key N	**26. Emergency Medical Services** *Comments and Source of Information*: No impact is anticipated.
Key N	**27. Parks, Playgrounds, & Open Space** *Comments and Source of Information*: No impact is anticipated.
Key N	**28. Cultural Facilities, Cultural Uniqueness & Diversity** *Comments and Source of Information*: No impact is anticipated.
Key N	**29. Transportation Networks and Traffic Flow Conflicts (e.g., rail; auto including local traffic; airport runway clear zones - avoidance of incompatible land use in airport runway clear zones)** *Comments and Source of Information*: No impacts are anticipated.
Key P	**30. Consistency with Local Ordinances, Resolutions, or Plans (e.g., conformance with local comprehensive plans, zoning, or capital improvement plans)** *Comments and Source of Information*: A County land use permit will be required to assure compliance with zoning. The project is part of the City's capital improvement plan. Gallatin County Planning Documents, City of Bozeman CIP
Key N	**31. Is There a Regulatory Action on Private Property Rights as a Result of this Project? (consider options that reduce, minimize, or eliminate the regulation of private property rights.)** *Comments and Source of Information*: There is no regulatory action on private property rights as a result of this project.

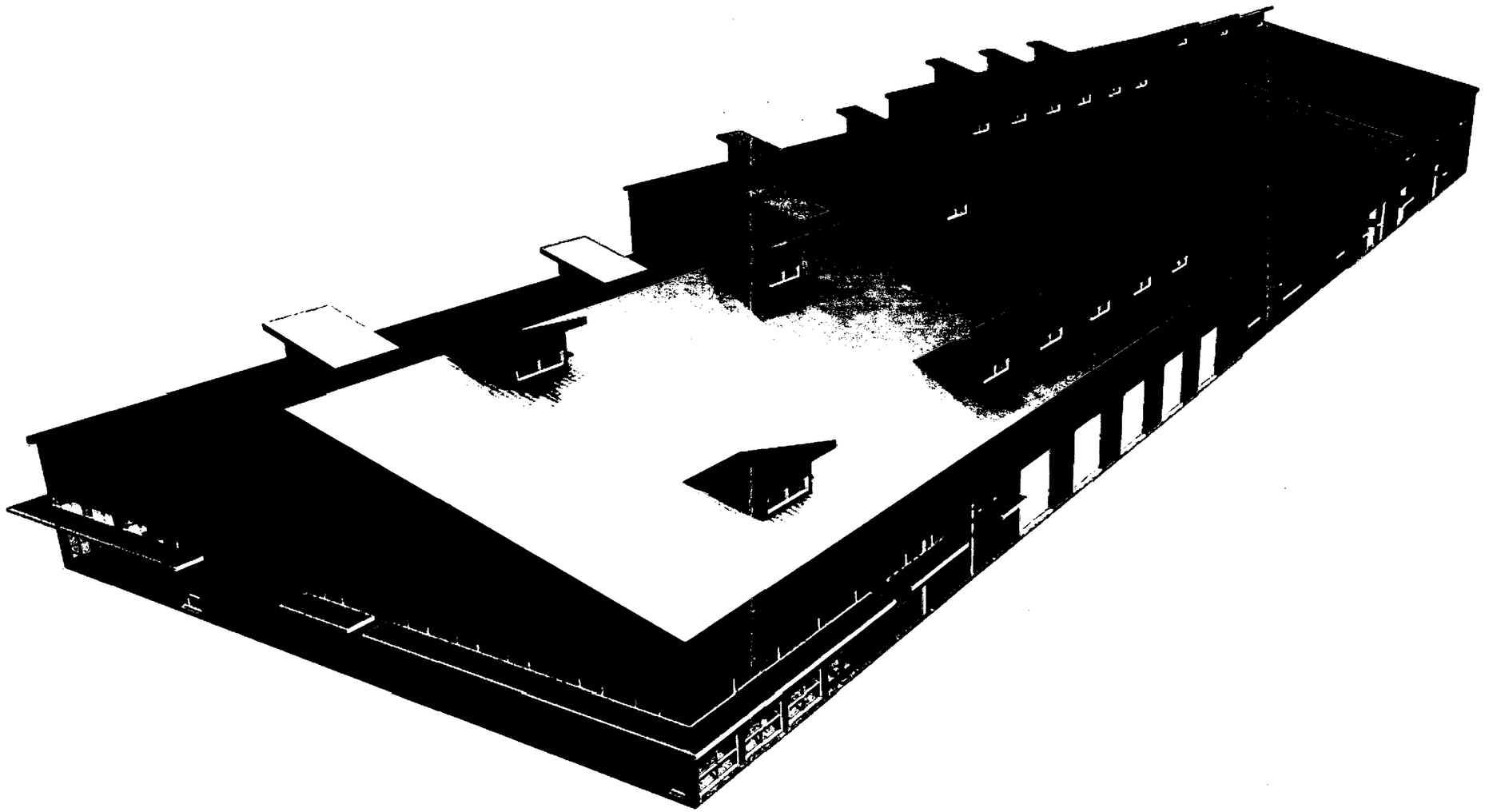
City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix D. Drawings

D-1 WTP Building Exterior Isometric View

D-2 WTP Building Exterior Isometric View

D-3 WTP Building Exterior Isometric View



MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

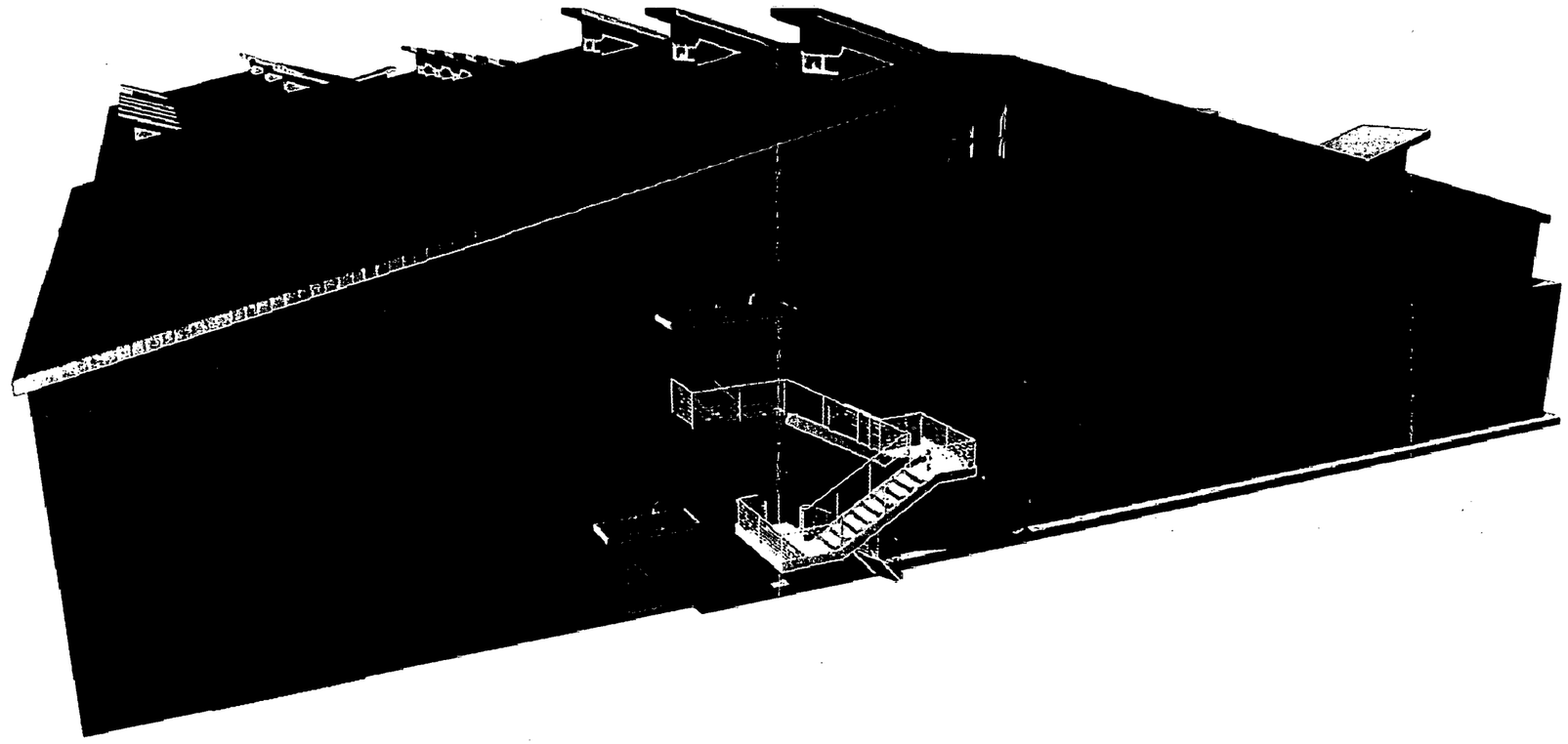
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PRELIMINARY WTP BUILDING ISOMETRIC VIEW

DATE
August, 2010

FIGURE
D–1



MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

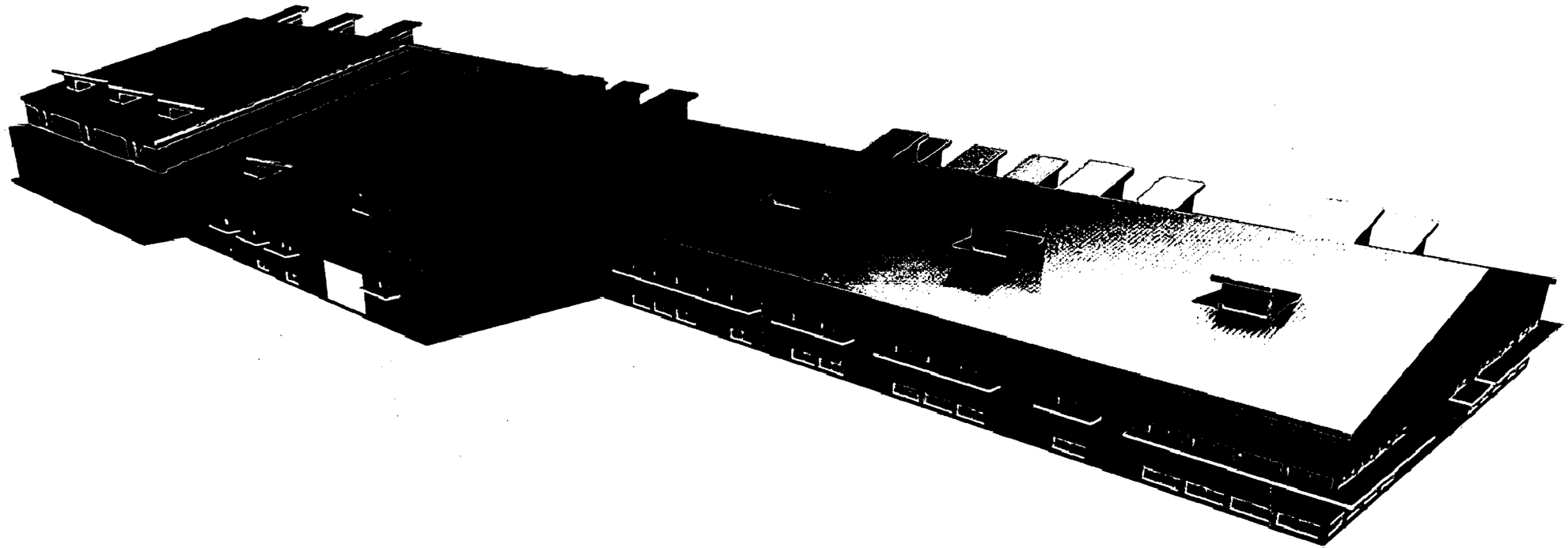
CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PRELIMINARY WTP BUILDING ISOMETRIC VIEW

DATE
August, 2010

FIGURE
D–2



MORRISON MAIERLE, INC.
An Employee-Owned Company

HDR
HDR Engineering, Inc.

CITY OF BOZEMAN - HYALITE / SOURDOUGH WATER TREATMENT PLANT REPLACEMENT

PRELIMINARY DESIGN

PRELIMINARY WTP BUILDING ISOMETRIC VIEW

DATE
August, 2010

FIGURE
D–3

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CITY OF BOZEMAN
HYALITE/SOURDOUGH WATER TREATMENT PLANT REPLACEMENT PROJECT
HDR PROJECT NO. 00...88114

DIVISION 0 – BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT

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00100 INSTRUCTIONS TO BIDDERS

00130 NOTICE OF AWARD

00140 NOTICE TO PROCEED

00200 SOIL INVESTIGATION DATA

00301 BID FORM

00410 BID BOND

00411 CONTRACTOR'S COMPLIANCE STATEMENT

00460 NONCOLLUSION AFFIDAVIT

00480 INFORMATION REQUIRED OF BIDDERS

00500 CONSTRUCTION AGREEMENT

00610 PERFORMANCE BOND

00620 PAYMENT BOND

00700 GENERAL CONDITIONS

00801 EXHIBIT B (PROJECT SIGN DETAILS)

00810 SUPPLEMENTARY GENERAL CONDITIONS TO THE GENERAL CONDITIONS

00811 FUNDING AGENCY SPECIAL PROVISIONS FOR MONTANA PUBLIC WORKS FACILITIES

00821 DUTIES, RESPONSIBILITIES AND LIMITATIONS OF THE RESIDENT PROJECT REPRESENTATIVE

00825 FEDERAL PREVAILING WAGE RATE DETERMINATION (DAVIS BACON RATES FOR PUBLIC WORKS CONTRACTS IN MONTANA)

00900 FUNDING AGENCY SPECIAL PROVISIONS FOR MONTANA PUBLIC WORKS FACILITIES

MISCELLANEOUS FORMS

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CHANGE PROPOSAL REQUEST
CHANGE ORDER
FIELD ORDER
WORK CHANGE DIRECTIVE
ORDER TO CONTRACTOR TO SUSPEND WORK
ORDER TO CONTRACTOR TO RESUME WORK
APPLICATION AND CERTIFICATION FOR PAYMENT
CERTIFICATE OF SUBSTANTIAL COMPLETION
CONTRACTORS CERTIFICATE AND RELEASE
DEACTIVATION REQUEST

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01060 SPECIAL CONDITIONS

01062 MAJOR EQUIPMENT SUPPLIERS

01150 MEASUREMENT AND PAYMENT

01340 SUBMITTALS
01370 SCHEDULE OF VALUES
01400 QUALITY CONTROL
01560 ENVIRONMENTAL PROTECTION AND SPECIAL CONTROLS
01600 PRODUCT DELIVERY, STORAGE, AND HANDLING
01640 PRODUCT SUBSTITUTIONS
01650 FACILITY START-UP
01700 CONTRACT CLOSEOUT
01710 CLEANING
01733 DISINFECTION OF FACILITIES
01750 TESTING CONCRETE STRUCTURES FOR WATERTIGHTNESS
01800 OPENINGS AND PENETRATIONS IN CONSTRUCTION

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02110 SITE CLEARING
02200 EARTHWORK
02221 TRENCHING, BACKFILLING, AND COMPACTING FOR UTILITIES
02222 HYPALAN LINER
02234 SUB BASE COURSE
02235 BASE COURSE
02260 TOPSOILING AND FINISHED GRADING
02270 SOIL EROSION AND SEDIMENT CONTROL
02423 STORM DRAINAGE SYSTEM
02441 IRRIGATION SYSTEM
02444 CHAIN LINK FENCE AND GATES
02510 ASPHALT CONCRETE PAVEMENT
02515 PRECAST CONCRETE MANHOLE STRUCTURES
02528 CONCRETE CURB AND GUTTER
02529 CONCRETE SIDEWALK AND STEPS
02660 WATER MAIN CONSTRUCTION
02930 SEEDING, SODDING AND LANDSCAPING

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03208 REINFORCEMENT
03308 CONCRETE, MATERIALS AND PROPORTIONING
03311 CONCRETE MIXING, PLACING, JOINTING, AND CURING
03348 CONCRETE FINISHING AND REPAIR OF SURFACE DEFECTS
03350 TESTING
03431 PRECAST AND PRESTRESSED CONCRETE

DIVISION 4 - MASONRY

04050 COLD AND HOT WEATHER MASONRY CONSTRUCTION

04110 CEMENT AND LIME MORTARS
04155 MASONRY ACCESSORIES
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07534 ADHERED ELASTOMERIC (EPDM) SHEET ROOFING
07550 ELASTOMERIC ROOF DECK COATING
07600 FLASHING AND SHEET METAL
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07813 SKYLIGHT
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08305 ACCESS DOORS
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08800 GLASS AND GLAZING

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09130 ACOUSTIC SUSPENSION SYSTEM
09250 GYPSUM BOARD
09310 CERAMIC TILE
09512 ACOUSTICAL MATERIALS
09660 VINYL COMPOSITION TILE FLOORING AND RESILIENT BASE
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10950 MISCELLANEOUS SPECIALTIES

DIVISION 11 – EQUIPMENT

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11060 PUMPING EQUIPMENT: BASIC REQUIREMENTS
11072 PUMPING EQUIPMENT: VERTICAL TURBINE LINESHAFT
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11126 INCLINED PLATE SETTLING EQUIPMENT
11127 FLOCCULATION EQUIPMENT
11303 GRINDER PUMP STATION
11313 PUMPING EQUIPMENT: CHEMICAL METERING PUMPS AND ACCESSORIES
11362 POLYMER BLENDING AND FEED SYSTEMS
11389 DISSOLVED AIR FLOATATION EQUIPMENT
11601 LABORATORY GLASSWARE, APPARATUS AND REFERENCES
11610 LABORATORY FUME HOODS
11651 SHOP AND STORAGE EQUIPMENT
11980 COMPRESSED AIR SYSTEM

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13180 POLYPROPYLENE BAFFLES
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13850 FIRE ALARM SYSTEM

DIVISION 14 - CONVEYING SYSTEMS

14301 HOISTS, TROLLEYS, AND MONORAILS

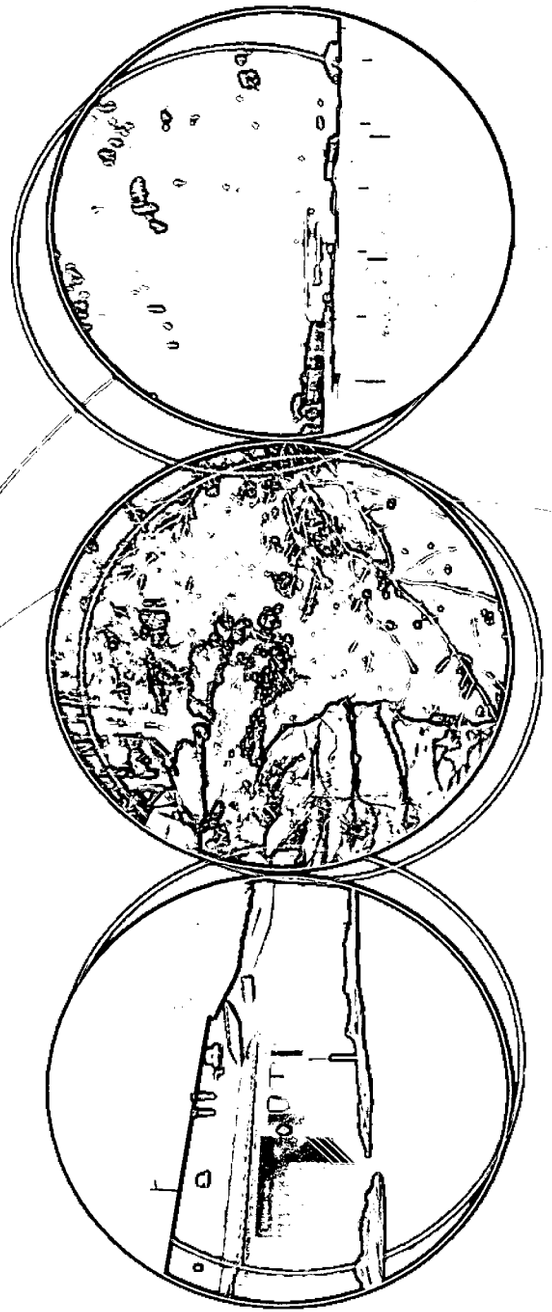
DIVISION 15 - MECHANICAL

15060 PIPE AND PIPE FITTINGS: BASIC REQUIREMENTS
15062 PIPE – DUCTILE
15063 PIPE – COPPER
15064 PIPE – PLASTIC
15066 PIPE – DOUBLE WALL CHEMICAL PIPE
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15090 PIPE, DUCT AND CONDUIT SUPPORT SYSTEMS
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15183 PIPE, DUCT AND EQUIPMENT INSULATION
15240 MECHANICAL SOUND AND VIBRATION CONTROL
15300 FIRE PROTECTION SYSTEMS
15440 PLUMBING FIXTURES AND EQUIPMENT
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16010 ELECTRICAL: BASIC REQUIREMENTS

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16080 ACCEPTANCE TESTING
16120 WIRE AND CABLE – 600 VOLT AND BELOW
16125 HEAT TRACING CABLE
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16135 ELECTRICAL: EXTERIOR UNDERGROUND
16140 WIRING DEVICES
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16442 MOTOR CONTROL EQUIPMENT
16445 AUTOMATIC THROWOVER SYSTEM
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16490 OVERCURRENT AND SHORT CIRCUIT PROTECTIVE DEVICES
16491 LOW VOLTAGE SURGE PROTECTION DEVICES (SPD)
16492 ELECTRICAL METERING DEVICES
16493 CONTROL EQUIPMENT ACCESSORIES
16500 INTERIOR AND EXTERIOR LIGHTING
16510 LOW VOLTAGE LIGHTING
16682 ACTIVE HARMONIC CONDITIONERS
16711 PASSIVE TELECOMMUNICATION SYSTEM



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix E. Piping Design Guide

Prepared by: Nathan Kutil

Reviewed by: Dan Harmon

Date: August 3, 2010

E.1. Purpose and Content

This design guide provides procedures and guidelines to be used in the development of the piping systems for the Bozeman Hyalite/Sourdough Water Treatment Plant (WTP) Replacement Project and includes discussion of piping service, layout, valves, meters, fittings, materials, sizing, and representation on drawings.

E.2. Codes and Standards

E.2.1. Civil

Applicable codes relative to civil work include the following:

- City of Bozeman Design Standards
- Hyalite Zoning District Regulations
- Montana Public Works Standard Specifications (MPWSS)
- City of Bozeman Modifications to MPWSS
- MDEQ Circular 1
- 2003 Uniform Fire Code

Review and approval is through the City of Bozeman Engineering Division, City of Bozeman Fire Department and the Montana Department of Environmental Quality.

E.2.2. Mechanical

- International Building Code, 2009
- International Mechanical Code, 2009
- Uniform Plumbing Code (UPC), 2009
- International Fire Code, 2006

- International Fuel Gas Code, 2006
- National Fire Protection Association (NFPA)
  - Installation of Sprinkler Systems NFPA 13
  - Installation of Air Conditioning and Ventilating Systems NFPA 90A
  - Installation of Warm Air Heating and Ventilating Systems NFPA 90B
  - Exhaust Systems for Air Conveying of Materials NFPA 91
- American Society for Testing and Materials (ASTM)
- Steel Structures Painting Council (SSPC)
- American National Standards Institute (ANSI)
- Sheet Metal and Air Conditional Contractors National Association (SMACNA)
- American Water Works Association (AWWA)
- International Energy Conservation Code, 2003
- Factory Mutual System (FM)
- Underwriters Laboratories, Inc. (UL)

E.3. Guidelines and Procedures

E.3.1. Yard Piping

Yard piping is all pipes, vaults and conduit buried outside of buildings and tunnels. Confined spaces shall be avoided. Table E-1 lists piping abbreviations and recommended materials specific to this project. Specific material and testing requirements will be listed in Specification Section 15060. All piping will be designed to withstand internal pressure and external loads. Large diameter piping may require special structural design consideration. Corrosion protection will be provided in accordance with recommendations contained in the geotechnical report. No extraordinary corrosion protection measures are required.

Table E-1. Piping Services

System	Service	Size and Material
ACH	Aluminum Chlorohydrate	<12 IN, SCH 80 PVC
AR	Air Release	<12 IN, SCH 80 PVC exposed, SCH 40 PVC buried
AS	Air Supply	3/8 to 1 IN, stainless steel; 1-4 IN, black steel
BLD	Building Drain	Exposed, 1/4-1-1/2 IN, galv steel; >1-1/2 IN, CI soil pipe or solid wall ABS. Buried to 5 ft of structure, concrete encased solid wall ABS
BO	Blowoff	All sizes; ductile Iron, cement lined
BR	Backwash Discharge	All sizes; HDPE
BS	Backwash Supply	All sizes; HDPE

System	Service	Size and Material
BWW	Backwash Waste	All sizes; HDPE
CA	Citric Acid	<12 IN, SCH 80 CPVC, secondary containment
CIP	Caustic Clean-in-Place	<12 IN, SCH 80 CPVC, secondary containment
CD	Chemical Drain	All sizes; HDPE or Polypropylene Acid Waste - fusion bonded
CI	Corrosion Inhibitor	<12 IN, SCH 80 CPVC exposed
CIPD	Clean-In-Place Drain	All sizes; HDPE or Polypropylene Acid Waste - fusion bonded
CIPR	Clean-In-Place Return	<12 IN, SCH 80 CPVC
CIPS	Clean-in-Place Supply	<12 IN, SCH 80 CPVC
CIPW	Clean-in-Place Waste	All sizes; HDPE or Polypropylene Acid Waste - fusion bonded
CLS	Sodium Hypochlorite/Chlorine Solution	All sizes; SCH 80 CPVC
D	Drain	<12 IN, SCH 80 PVC exposed, SCH 40 (concrete encased) PVC buried
DAFE	DAFT Effluent	All sizes; ductile Iron, cement lined
DAR	Dissolved Air Recycle	All sizes; ductile Iron, cement lined
DBD	Drying Bed Decant	All sizes; ductile Iron, cement lined
DCW	Domestic Cold Water	All sizes, cross-linked polyethylene, SDR 9, PEX
DHW	Domestic Hot Water	All sizes, cross-linked polyethylene, SDR 9, PEX
DW	Distilled Water	All sizes, SCH 80 PVC
E	Electrical Conduit	Exposed, except corrosive, C1D1; direct contact with earth or concrete, RGS; direct bury, PVC-RGS; concrete encased, PVC.
EF	Excess Feed	All sizes; Ductile iron, cement lined or HDPE
EFM	Enhanced Flux Maintenance Backwash	<12 IN, SCH 80 CPVC
EFMS	Enhanced Flux Maintenance Backwash Supply	<12 IN, SCH 80 CPVC
EFMW	Enhanced Flux Maintenance Waste	<12 IN, SCH 80 CPVC
EXH	Exhaust	Stainless Steel, 316L
FEX	Filtrate Exhaust	<12 IN, SCH 80 PVC exposed, SCH 40 PVC buried
FL	Fluoride	<12 IN, SCH 80 CPVC
FLT	Float	All sizes; ductile Iron, epoxy or glass lined
FLW	Flocculated Water	All sizes; HDPE

System	Service	Size and Material
FOR	Fuel Oil Return	All sizes, black steel, pickled
FOS	Fuel Oil Supply	All sizes, black steel, pickled
FPW	Fire Protection Water	All sizes, ductile iron
FRC	Ferric Chloride	<12 IN, SCH 80 CPVC, secondary containment
FT	Filtrate	All sizes; HDPE
FV	Filtrate Vent	All sizes; HDPE
FW	Finished Water	All sizes; HDPE
GRIT	Grit	All sizes; ductile Iron, glass lined
GRS	Grit Solution	All sizes; ductile Iron, glass lined
GTE	Gravity Thickener Effluent	All sizes; ductile Iron, cement lined
HCLS	Hypochlorite Solution	All sizes, SCH 80 CPVC
HOR	Hydraulic Oil Return	All sizes, black steel, pickled
HOS	Hydraulic Oil Supply	All sizes, black steel, pickled
HPA	High Pressure Air	All sizes, black steel
HPNPW	High Pressure NPW	1/2-4 IN, SCH 80 PVC; 6-24 IN, ductile iron
HS	Heating Supply	1/2-4 IN, PVC or polypropylene; 6-12 IN, ductile iron
HV	Hydrogen Vent	All sizes; SCH 80 PVC
HWR	Hot Water Return	All sizes, black steel (insulated)
HWS	Hot Water Supply	All sizes, black steel (insulated)
IAS	Instrument Air Supply	3/8 to 1 IN, stainless steel; 1-4 IN, black steel
IDO	Irrigation Ditch Overflow	All sizes, ductile iron, cement lined
IPW	Influent Pumped Waste	All sizes, ductile iron, cement lined
LPA	Low Pressure Air	3/8 to 1 IN, stainless steel; 1-4 IN, black steel
MA	Mixing Air	All sizes: Stainless steel, 304L
MIT	Instrument Integrity Air	3/8 to 1 IN, stainless steel
NCIP	Neutralized CIP Solution	<12 IN, SCH 80 CPVC
NG	Natural Gas	All sizes, black steel; buried, tape coated black steel
NPW	Non Potable Water	<12 IN, SCH 80, PVC or polypropylene
NT	Neutralization Tank	<12 IN, SCH 80 CPVC
NW	Neutralized Waste	<12 IN, SCH 80 CPVC
OF	Overflow	All sizes; Ductile iron or fabricated steel, cement lined
PA	Plant (Process) Air	3/8 to 1 IN, stainless steel; 1-4 IN, black steel
PAC	Powder Activated Carbon	<12 IN, SCH 80 PVC
PACL	Polyaluminum Chloride	<12 IN, SCH 80 PVC

System	Service	Size and Material
PC	Polyaluminum Chloride Solution	<12 IN, SCH 80 PVC
PUD	Perforated Underdrain	All sizes: HDPE, perforated
PD	Process Drain	All sizes; Ductile iron or fabricated steel, cement lined
POL	Polymer	<12 IN, SCH 80 PVC
PW	Potable water, buried	All sizes; Ductile iron or fabricated steel, cement lined
RD	Roof Drain	Cast Iron Soil Pipe or solid wall ABS
RFG	Refrigerant	Copper
RF	Reverse Filtration	All sizes; HDPE
RFD	Reverse Filtration Drain	All sizes; HDPE
RFS	Reverse Filtration Supply	All sizes; HDPE
RW	Raw Water	All sizes; Ductile iron or fabricated steel, cement lined
RWS	Raw Water Supply	All sizes; Ductile iron, cement lined or SCH 80 PVC
S	Sample	<12 IN, SCH 80 PVC exposed, SCH 40 PVC buried
SA	Soda Ash Solution	<12 IN, SCH 80 PVC exposed, SCH 40 PVC buried
SAN	Sanitary Waste	To 4 IN - Cast iron soil pipe or PVC; above 4 IN - RCP or solid wall PVC
SBS	Sodium Bisulfite	<12 IN, SCH 80 PVC
SBS	Sodium Bisulfate Solution	<12 IN, SCH 80 PVC
SBW	Strainer Backwash	All sizes; Ductile iron or fabricated steel, cement lined
SD	Storm Drain	RCP or HDPE, corrugated
SH	Sodium Hydroxide Solution	<12 IN, SCH 80 CPVC exposed, secondary containment
SPM	Sodium Permanganate	<12 IN, SCH 80 CPVC
SPR	Solids Plant Return	All sizes; Ductile iron, cement lined or SCH 80 PVC
SS	Settled Solids	All sizes; Ductile iron, cement lined
STS	Sodium Thiosulfate	<12 IN, SCH 80 PVC exposed, SCH 40 PVC buried
STW	Softened Water	All sizes, cross-linked polyethylene, SDR 9, PEX
SU	Sump Discharge	All sizes; HDPE or Polypropylene Acid Waste - fusion bonded
SVW	Service Water	<6 IN, SCH 80 PVC;6 IN and above, Ductile Iron, cement lined
SW	Settled Water	<12 IN, SCH 80 PVC
TW	Treated Water	All sizes; HDPE

System	Service	Size and Material
TPW	Tempered Potable Water	<3 IN; cross-linked polyethylene, SDR 9, PEX, >3 IN and above, Ductile Iron, cement lined
UD	Underdrain	All sizes, polyethylene or PVC
VA	Valve Air	3/8 to 1 IN, stainless steel; 1-4 IN, black steel
VAC	Vacuum	Copper
VF	Vent Feed	<12 IN, SCH 80 PVC
VT	Vent	<12 IN, SCH 80 PVC or solid wall ABS
WN	Filtered Waste	All sizes; HDPE
WW	Filtered Waste Wash Water	All sizes; HDPE

Water Piping

Water piping (potable and non-potable) will conform to the following general criteria:

- The water system should be designed as a loop to minimize dead ends, increase reliability, and reduce the size of piping. Isolation valves shall be provided at all tee fittings (one on each downstream pipe).
- A 10-FT horizontal separation should be maintained between potable water lines, and sewer or process lines. Where a 10-FT separation cannot be provided, special piping and encasement requirements may apply. Comply with state, local, and Agency requirements.
- A separate service water pump station will provide potable water from the treated water contact conduit to supply potable water needs of the facility and the operator's house.

Sanitary Sewers

There will not be accommodations for connecting to a municipal sanitary sewer in this area. The civil lead engineer will size and route sanitary lines to a new septic tank located on-site. The civil engineer will coordinate with the process and mechanical plumbing engineer regarding flow requirements and sewer locations at the building. Provisions such as tees with blind flanges will be included for future connections to municipal sanitary sewer should the utility ever arrive in the area.

Gravity Lines

The following guidelines will be used:

- Manholes or cleanouts will be provided at each change in grade and direction. Manholes will be spaced at a maximum of 400 FT.
- Capacity of gravity piping will be determined using Manning's Equation. The value of "n" in the Manning formula is assumed to be constant for pipes flowing partly full or completely full. An "n" value of 0.013 should be used as an average coefficient for all sizes and types of pipe material. This value is slightly conservative and compensates for

offset joints, poor alignment, grade settlement, and the effect of slime and precipitation buildup and sediment deposits in pipes.

- To ensure an adequate cleansing velocity, the minimum velocity should be 2.5 FT per second (fps) under all flow conditions. Flow will be kept below supercritical velocity. Hydraulic jumps will not be permitted. Maximum velocity will be below 8 fps.
- Under normal conditions, the minimum depth of the crown of pipe will be no less than 3 FT.

Pressure Lines

The Darcy-Weisbach equation will be used in the design of pressure sewer lines.

$H=f(L/D)(V^2/2g)$

f - Friction factor, a dimensionless number, is a function of pipe roughness and the Reynolds number.

H - Headloss, ft of liquid.

L - Length of pipe, FT.

D - Pipe diameter, FT.

V - Velocity, fps

Force main velocity should be in the range of 5 to 7 fps at design flow. The velocity at minimum flow will be at least 2.0 fps.

Force mains will be designed so that no point in the vertical alignment is located above the energy grade line. If high points in the alignment of force mains are unavoidable, gas relief and vacuum valves shall be installed.

Storm Sewers

The storm drain system is designed by the civil discipline. The design includes the necessary hydrologic analysis, hydraulic analysis, collection and conveyance systems and discharge. Storm water quality facilities are also designed by the civil discipline. Examples of these facilities are bio-swales, filterstrips and treatment ponds.

The design of the storm system will be based on the Stormwater Management Plan.

Process Piping

Process piping will be sized by the process leads. Routing will be part of the civil design. Coordination will take place regarding pipe location and elevation at the structures.

Piping should be laid out in corridors which provide space for future piping as well as access for possible pipe repairs without affecting adjacent pipes. Piping which conveys chemical solutions should not be positioned overhead if possible.

Pigging Stations

Pig launch and retrieval stations may be required on pressurized residuals lines. Insertion and retrieval facilities will be included in facility designs. Force main fittings and bends will be designed so as to not interfere with proposed "pigging" procedures. A valved water connection shall be provided both at "pig" launching and retrieval stations. High pressure

water will be provided at "pig" launching stations to force the "pig" into the force mains. Pigs range from soft flexible swab to harder rigid cleaners. The pipe is cleaned by the scraping or brushing action against the wall and the high velocity jet of water passing between the pig and pipe.

Valves

Table E-2 lists valve types for yard piping applications. Vaults will be provided for valve operation. No confined spaces will be included or developed for the project.

Table E-2. Valve Application

Service	Size	Type
Water	1 IN and smaller	125 LB bronze ball valve
	1 IN to 2-1/2 IN	125 LB bronze gate, screwed bonnet, non-rise stem, solid wedge disc; 150 LB bronze globe, union bonnet, renewable Teflon disc
	3 IN to 12 IN	Gate valves, double disc (AWWA C500); gate valves, resilient seated (AWWA C509); butterfly valves, rubber seated (AWWA C504)
	14 IN and larger	Gate Valves, double disc (AWWA C500); butterfly valve, rubber seated (AWWA C504)
Sludge	3 IN to 12 IN	Plug valves, eccentric, non-lubricated.
Wastewater	3 IN to 12 IN	Gate valves, rubber seated, OS&Y (AWWA C509)
Chemicals	4 IN and smaller	Ball valves, non-metallic; "Herky" diaphragm valves on chemical service. Diaphragm valves on all hazardous chemicals over ½ IN.
Low Pressure Air	2 IN smaller	150 LB bronze globe, union bonnet, renewable Teflon disc.
	3 IN and larger	Butterfly valve, rubber seated, (AWWA C504).
Air to 150 psi	2 IN and smaller	125 LB bronze ball valve
Natural gas, LP, fuel oil	2 IN and smaller	125 PSI steam, 400 PSI WOG, bronze ball, Teflon seat and seal, non-lubricated.

Demolition and Abandonment

Where interfering portions of existing piping are removed to make room for the proposed construction, the existing piping should be abandoned in such a manner as to maintain the integrity of the system left in place and allow the remaining portions to be put back into service. Abandoned unused piping should be minimized, removing as much existing pipe as possible. If left in place, ends of abandoned existing pipe shall be plugged and sealed. Filling of abandoned pipe with control density fill (CDF) is recommended.

Yard Piping on Drawings

Profiles shall be provided for all gravity lines which are 8 IN and larger. Profiles shall be provided for pressure piping in congested areas and all piping where crossing clearances or cross-country piping are involved.

All yard piping shall be identified with the size of pipe and intended use. Material reference should be included in the specifications, Section 15060. All piping shall have coordinates locating the pipe or be referenced to structures.

Profiles shall identify the class of the pipe (if class changes otherwise use specifications only) and special bedding required such as concrete encasement, casings for railroads, etc.

E.3.2. Plant Piping

Development of Piping Services

Table E-1 lists piping services, primary pipe materials, and service abbreviations. The abbreviations will be used consistently on the drawings and in the specifications to avoid ambiguity in the contract documents. The City's color coding system is included in Section 15060 or Section 01088.

Each piping service will be reviewed in terms of the chemical and physical properties of the material/fluid conveyed, joint options, suitable materials of construction including pipe material, linings, coatings, and gasket materials, and the anticipated system pressures. Each system will be engineered so that the system meets the needs of the application.

Configuration Considerations

Piping configuration is important so that the system is functional. Operability and ease of maintenance must also be taken into account in the layout of the piping system.

Pipe Routing, Operability, Maintenance, Safety, and Accessibility Considerations

- Each system will be routed as directly as possible without the use of unnecessary fittings and changes in elevation.
- Valves and other piping system components will be located in a manner consistent with the frequency of operation and the degree of effort required to operate or to repair the components.
- A minimum headroom clearance of 7-FT-6-IN will be maintained from the operating floor to the lowest component of the piping system.
- Piping will be located so it does not interfere with equipment operation or maintenance.
- Piping will be located so that it can be readily supported. When excessive ceiling heights or other interferences make the use of hangers impractical, pipe will be routed close to walls so that it can be supported from the walls.
- Piping to be supported by hangers will be grouped to allow multiple pipes to be supported from a single trapeze hanger system.

- Piping containing hazardous gases or chemicals will be located to minimize risk of injury should leakage or breakage occur. If needed, systems will be equipped with a secondary containment system to capture leakage and direct it to a drain.
- Piping with a potential formation of condensation will be sloped to drainage points and equipped with manual drain valves.
- Manual vents and drains will be provided at high and low points. Manual vents will be used to release air during pipeline filling. Drains will be used to remove liquids during line maintenance.
- Automatic vacuum or pressure relief valves will be included as necessary.
- No piping will be routed over electrical equipment.
- Adequate space around piping will be provided to allow installation and support of required insulation.
- Avoid confined spaces.

Special Piping Provisions

The physical characteristics of some materials conveyed in the piping systems will require special piping components to minimize maintenance and to facilitate operation and maintenance:

- Long radius elbows will be used on systems which are prone to plugging or excessive abrasion such as sludge slurry, and chemical slurries.
- Strainers will be utilized on chemical suction lines preceding feed or mixing equipment to protect downstream equipment from plugging.
- Clean-out wye fittings with blind flange connections will be provided to facilitate cleaning and flushing of lines where plugging may occur. Non-potable water connections at these locations to facilitate clean out will be evaluated.
- Water for chemical line flushing before maintenance activities will be provided, in most cases piped directly to the chemical lines with appropriate backflow prevention (backflow into the chemical tanks as well as plant water system), and valving for all hazardous chemicals (strong acids and bases).

Piping Considerations at Equipment

The interfacing of equipment and piping will require several special considerations to assure the integrity of the equipment as well as the piping systems:

- Piping will be oriented such that proper lay lengths are provided for instrumentation components such as flowmeters requiring straight runs upstream and downstream.
- Bypasses will be provided around equipment and instrumentation to allow those components to be isolated for repair or maintenance.
- Eccentric reducers will be provided and installed flat side up on pump suctions.
- Flange coupling adaptors (FCAs) will be used at equipment inlets and discharges (3 IN and larger) along with pipe spools of adequate length to allow easy removal of bolts and

disconnection of the equipment. For connections smaller than 3 IN, unions will be used to facilitate equipment removal.

Environmental/Area Routing Considerations

Several environmental/area routing issues will be considered in the selection and layout of the piping systems:

- Suitable materials for pipe and other piping system components will be selected for physical environment of the area through which the piping system will be routed. Piping systems routed through extremely corrosive areas will be either constructed of non-metallic materials or will receive coatings suitable for providing a standard service life under those conditions. Appropriate types of insulation will be used in wet areas.
- Materials for pipe and system components will be selected with consideration to the location of that system in terms of potential system damage due to personnel/equipment traffic. Non-metallic piping systems located within traffic areas will be suitably protected from physical damage by use of heavier gauge piping and/or bollards.
- Exterior piping systems will be protected from extremes of cold and heat. Exterior piping and systems conveying chemicals with relatively high freeze points may be insulated and/or heat traced. Temperature limitations of non-metallic piping systems will be considered in high temperature areas. Increased support requirements will be used with non-metallic pipe with high temperature exposures.

Pipe Support and Penetrations

The design of support, anchorage, and structural penetrations of piping plays a critical part in the operation of that piping system. The following guidelines will be used in the design and presentation of the piping support systems:

Pipe Supports

- Pipe support systems will be specifically designed and shown on the Contract Drawings for all piping systems above 12 IN diameter.
- Pipe supports will be specifically designed and shown on the contract drawings for piping systems carrying high temperature fluids or gases (above 250 DegF).
- Pipe supports will be specifically designed and shown on the contract drawings for piping systems with operating pressures greater than 150 psi.
- Pipe supports for systems not meeting the above criteria will be designed by the mechanical contractor using the specified materials of construction and requirements provided in Section 15090 of the Contract Specifications.
- All pipe support systems will be designed in accordance with Zone 3 seismic requirements.
- All pipe support systems will be designed to support the material being conveyed. The specific gravity of the material must be included in support design.
- Piping at equipment connections will be supported to avoid transfer of any pipe loading to the flanges of the equipment.

Pipe Penetrations

- Pipe penetrations will not be detailed on the Contract Drawings unless there are special requirements concerning structural anchorage or special treatment for sealing of penetrations between two adjacent areas. Special treatment may be required for areas with a hazardous classification or for fire containment. Other penetrations will be made using the specified materials and construction requirements provided in Section 01800 of the Contract Specifications.
- All piping penetrations using modular mechanical seals or wall castings that will exert forces on walls and other structural features will be reviewed by a structural engineer to assure the transmitted forces can be safely accommodated by the feature.
- Where wall castings are used, adequate spacing from the wall to the closest pipe flange will be maintained to assure easy removal and replacement of flange bolts.
- For piping systems conveying high temperature or high pressure fluids or gases, a computer stress analysis will be performed to calculate expansion, design each anchorage point, and select appropriate support components.

Valves and Valve Operators

Selection of Valves for Piping Service Applications

Table E-2 defines the valve types to be used in the piping systems for the project.

Valve Placement and Orientation

A number of valve configuration issues will be considered in the design of the piping systems:

- Adequate space will be provided to allow full operation of all valves without interference and for valve replacement.
- Valves will be installed with stems oriented to avoid personnel contact and dripping hazards.
- Valves in acid, caustic, and other chemical services will be located below eye level or equipped with splash shields.
- For systems having both a check and isolation valve on the equipment discharge, the check valve will be located upstream from the isolation valve.
- For sludge systems where solids are likely to settle, isolation valves will be located immediately adjacent to vertical tees so that vertical sections of piping can be isolated and settling in those sections minimized.
- Pressure relief valves will be located so as to avoid release into access areas.
- Isolation valves for building utilities will be located immediately inside the building penetration to provide total building isolation.
- Isolation valves will be provided for all pieces of equipment to isolate that equipment from the piping system.

- For valves used with mechanical couplings, the pipe connection will be a screwed or welded flange and the valve connection shall be an integral flange to prevent valve rotation.

Representation of Piping Systems on Contract Drawings

- All piping systems will be identified by both line size and a designated pipe service abbreviation. Pipes with scaled dimension larger than 1/8-IN will be shown with double lines. Regardless of scale, pipes scaling 1/8-IN or less in width will be single line. For example, on a 1/4 IN=1 FT – 0 IN drawing, all pipes 6 IN and smaller appear as single lines.
- Materials of construction for new piping will not be called out on the Contract Drawings but rather specified for each system in the Contract Specifications. The only exception to this is when the pipe system material changes from one type to another and locating that material change is most conveniently done on the drawings.
- Vertical positioning of piping will be dimensioned from the nearest floor below the piping to the centerline of pressure piping. For gravity piping, dimensioning will be from the nearest floor below the piping to the invert of the gravity pipe.
- Where large amounts of small diameter piping are used, piping will be routed only on plan views. Supplemental isometrics or schematic drawings will be provided showing system components including valves, strainers, instrumentation connections, etc.
- Valves located on piping 4 IN or greater in diameter will be represented graphically using ANSI symbols. Self-contained control valves and check valves will be shown per their ANSI symbols regardless of line size.
- Valve operators will not be shown on the drawings. Limits of operator travel, both vertical and horizontal, will be "boxed" out on the drawing where possible conflicts in construction could occur.
- See the Bozeman and HDR CADD Drafting Standards for a detailed discussion of piping representation on the Contract Drawings.

Design

Pipe Sizing Criteria

- Velocity
  - Sizing which produces excessive velocities in piping may produce noise, vibration, excessive erosion, or cavitation in piping systems. General guidelines for sizing piping based on velocities are listed below:
  - Water - 5-8 fps.
  - Wastewater - 2-8 fps at maximum discharge conditions.
  - Pump suction - 3-6 fps.
- Head Loss

- Head loss is a function of velocity and is integrally tied to the selection of pipe size and ultimately in the sizing of the pumping equipment. Type of pipe, pipe lining materials, age or physical condition of the pipe interior, viscosity of materials pumped, and the solids concentrations of the pumped material all impact system head loss and will be considered in head loss calculations. For sludge exceeding one to two percent solids, the Bingham Plastic model should be used for hydraulic calculations.

Physical Considerations

Depending on the material being conveyed, plugging may be an issue. In these systems, minimum pipe sizing to prevent plugging may be as important a factor as velocity in sizing piping. This is particularly true with sludge applications. As a general rule, a minimum pipe size of 4 IN will be used for sludge piping.

Manual Valve Sizing

Isolation valves will be sized to match the line size in which they are installed. For equipment isolation valves where reducers are used immediately preceding the equipment, the isolation valves will be installed before the reduction in size.

Control Valve Selection and Sizing

Control valves are classified by their flow characteristic or the relationship between the flow rate through the valve and the valve travel from zero to 100 percent open. However, selection of the type of control valve to be used in any particular system must also take into account the type of material being conveyed and the related pressure drop associated with the valve. Table E-3 defines the types of control valves to be used in general piping system categories. Actual sizing and pressure drop calculations will be done using C_V values from selected valve manufacturers along with selected control range (percent open) recommended for use with the specific valve types.

Table E-3. Control Valve Selection

Pipe Contents	Control Valve Type
Residuals	Plug Valves
Process Air	Butterfly Valves
Clean Water	Globe or Ball Valves
Slurries	Pinch or Full Body Diaphragms

Pressure Ratings

All system components will be selected to withstand system test pressures of at least 1.5 times the normal system operating pressure.

Calculations and Supporting Data

Calculations

Required Calculations

- Calculations will be provided for the following:
  - Pipe sizing calculations.
  - Thrust calculations for sizing thrust restraint and verifying structural components of building that will be accepting thrust loads.
  - Thermal expansion calculations for high temperature or pressure piping systems (where required).
  - Control valve sizing.
  - Calculations for the sizing and spacing of designed pipe support systems.
- Calculation Format
  - Calculations will be provided in compliance with the HDR Quality Assurance Procedures 3.4 and 3.5. A calculation cover sheet will be provided for each set of calculations. Hand calculations will be completed on HDR computation paper and be assigned a project-specific identification number. Assumptions used for calculations will be clearly stated. Printouts of computer calculations will be provided with input and output values clearly identified. Equations used in computer calculations will be clearly documented and attached to the computer output.

Supporting Data

Supporting data will be attached to the calculations to document compatibility of materials, physical sizing of piping components, and unique considerations for pipe or support design such as specific gravity of fluid.

Equipment Data Sheets

Equipment data sheets will be filled out for each automatically operated valve and each flow control valve. See Appendix A.

E.3.3. Fire Protection

Fire protection will be provided to the WTP site only, through a fire hydrant tap on the Hyalite raw water source only. The Bozeman Fire Department will not comment on fire water requirements and the Sourdough Fire District does not require a fire water source for the site.

E.3.4. Utility Contacts

Following is a list of contacts for utilities that may be located on the site:

- Water - City of Bozeman, John Alston, 406-582-3200
- Gas - Northwestern Energy, 888-467-2427
- Electric - Northwestern Energy, Mathew P. Micklewright, 406-582-4671 (office), 406-581-3694 (cell)
- Telephone - Qwest Communications, 800-573-1311

E.4. Design References

American Pipe Manual, American Cast Iron Pipe Company.

American Water Works Associated Manual M11.

Brater and King's Handbook of Hydraulics

Cameron Hydraulic Data, Ingersoll-Rand.

Concrete Pipe Design Manual published by the American Concrete Pipe Association.

Design of Municipal Wastewater Treatment Plants, Volumes 1 and 2.

Hydraulic Handbook, Colt Industries, Fairbanks Morse Pump Division.

Handbook of Ductile Iron Pipe and Cast Iron Pipe, Cast Iron Pipe Research Association.

"Moody" Curves, "Friction Factor for Pipe Flow," by L.F. Moody, Trans. ASME Vol. 66, 1944.

Piping Handbook, Sixth Edition, Mohinder L. Nayyar.

Steel Pipe Design and Installation Manual, American Water Works Association.

Wastewater Treatment Plant Design, WPCF Manual of Practice No. 8.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix F. Equipment Design Guide

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Reviewed by: Dan Harmon

Date: August 4, 2010

F.1. Purpose and Content

The purpose of this design guide is to provide procedures and direction to be used in the selection, design, sizing and configuration of major equipment for the Bozeman Hyalite/Sourdough WTP Replacement project.

F.2. Standard Definitions

Net Positive Suction Head - The NPSH is the total suction head in feet of liquid (at the pump centerline or impeller eye) less the absolute vapor pressure of the liquid being pumped. Net positive suction head available (NPSHA) must always be greater than net positive suction head required (NPSHR).

F.3. Codes and Standards

F.3.1. Mechanical

- City of Bozeman Uniform Development Code
- International Building Code, 2009**
- International Mechanical Code, 2009**
- Uniform Plumbing Code (UPC), 2009**
- Uniform Fire Code, 2003
- International Fuel Gas Code, 2009**
- National Fire Protection Association (NFPA)
  - Installation of Sprinkler Systems NFPA 13
  - Installation of Air Conditioning and Ventilating Systems NFPA 90A
  - Installation of Warm Air Heating and Ventilating Systems NFPA 90B

  - Exhaust Systems for Air Conveying of Materials NFPA 91
- American Society for Testing and Materials (ASTM)
- Steel Structures Painting Council (SSPC)
- American National Standards Institute (ANSI)
- Sheet Metal and Air Conditional Contractors National Association (SMACNA)
- American Water Works Association (AWWA)
- International Energy Conservation Code, 2009**
- Factory Mutual System (FM)
- Underwriters Laboratories, Inc. (UL)
- American Bearing Manufacturers Association (ABMA).
- Hydraulic Institute (HI).

** Adoption of this code is pending

F.3.2. Electrical

- National Electric Code (NEC), 2008**
- National Fire Protection Association (NFPA)
  - Fire Alarm Code NFPA 72
  - Emergency and Standby Power Systems NFPA 110
  - Stored Energy Emergency and Standby Power Systems NFPA 111
- Factory Mutual System (FM)
- ETL Testing Laboratories, Inc. (ETL)
- Underwriters Laboratories, Inc. (UL)

F.4. Guidelines and Procedures

F.4.1. Equipment Identification

All equipment will be identified by an equipment abbreviation and number and a tag number. The abbreviations will be used throughout the set of Contract Documents.

Equipment will be numbered according to the following format:

- XXX-AABB-NN

With the abbreviations defined as follows:

- XXX Equipment type defined in Table F-2.
- AA Process area defined in Table F-1.

- BB Equipment group.
- NN Letter suffix for more than one of the same device in the same area

Example: P-4301-2A represents the second (02) reverse filtration pump in the first equipment group of the reverse filtration storage and pumping area (43).

Table F-1. Process Area Numbers

General Area Number	Process Area	Description
100	Intake	
	10	Membrane Units (Filter Racks)
	11	Contact Conduit
	12	Clearwell
	15	Hyalite Intake
	16	Hyalite Raw Water and Flow Control
	17	Sourdough Intake
	18	Sourdough Raw Water and Flow Control
200	Preliminary Treatment	
	21	Grit Removal Units and Handling
	22	Rapid Mix Basins
	23	Flocculation Basins
	24	Sedimentation Basins
	25	Membrane Feed Wet Well
	26	Head Tower
300	Membrane Feed and Straining	
	30	Membrane feed and Strainer Manifolds
	31	Membrane Feed Pumps
	32	Strainers
400	Membrane Treatment	
	40	Membrane Treatment Manifolds
	43	Reverse Filtration Storage and Pumps
	44	Backwash Waste Equalization and Pumps
500	Clean-in-place (CIP) System	
	50	CIP Caustic
	51	CIP Acid
	52	CIP Circulation

General Area Number	Process Area	Description
	54	CIP Disinfection
	55	CIP Sodium Bisulfite
	56	Neutralization
600	Support Facilities	
	60	Membrane Air Supply
	61	Plant Air Supply
	62	Facility Potable Water
	63	Facility Fire
	64	Facility Security
	65	Facility Electrical
	66	Facility HVAC
	67	Facility Utilities
	68	Facility Heat Recovery and Transfer
	69	Softened Water
700	Disinfection and Treated Water	
	71	Polymer Bulk Storage
	72	Fluoride Bulk Storage
	73	Sodium Permanganate Bulk Storage
	74	PACl Bulk Storage
800	Residuals Handling	
	81	Pretreatment Solids Pumps Station
	82	Gravity Thickeners and Pumps
	83	Dissolved Air Flotation (DAF) Thickeners
	84	Drying Beds and Decant Pumps
	85	Residuals Lagoon and Decant Pumps
900	Administration, Laboratory and Maintenance	
	91	Administration and Controls
	92	Laboratory
	93	Maintenance

Table F-2. Equipment Abbreviations

Abbreviation	Description
A	Analytical Instrument
AC	Air Compressor
A/C	Air Conditioner(ing)
ACU	Air Conditioning Unit
ACCU	Air Cooled Condensing Unit
AE	Analytical Element
AEX	Heat Air Extractor
AF	Air Filter
AFC	Aftercooler
AHU	Air Handling Unit
AIT	Analytical Instrument Transmitter
ARV	Air Release/Vacuum Release Valve
ARD	Air Receiver Dryer
ATA	Air Tool Assembly
BC	Bridge Crane
BFP	Backflow Preventer
BFV	Butterfly Valve
BLR	Blower
BOV	Blow-off Valve
BT	Bulk Tote
BV	Ball Valve
BWW	Backwash Waste
CF	Cabinet Fan
CIP	Clean-in-Place
CIQ	Chemical Injection Quill
CV	Check Valve
CM	Chemical Mixer
DPV	Diaphragm Valve
DAFT	Dissolved Air Floatation (DAF) Thickener
DB	Drying Bed
DPI	Differential Pressure Indicator
DUM	Dumpster
DV	Diversion Valve

Abbreviation	Description
EF	Exhaust Fan
EG	Engine Generator
EMO	Electric Motor Operated Valve
ERV	Exhaust Roof Ventilator
EUH	Electrical Unit Heater
FCV	Flow Control Valve
FE	Flow Element/Meter
FL	Flocculation Basin/Mechanism
FV	Power Operated Flow Valve
GC	Grit Classifier
GD	Garage Door Opener
GLV	Globe Valve
GR	Grit Mechanism
GT	Gravity Thickener
GUH	Gas Unit Heater
GV	Gate Valve
HBC	Hoist - Bridge Crane Type
HEX	Heat Exchanger
HMI	Human Machine Interface
HMR	Hoist - Monorail Type
H	Heater
HV	Hand Valve
HWB	Hot Water Boiler
I/P	Current to Pneumatic Transmitter
KGV	Knife Gate Valve
LCP	Local Control Panel
LE	Level Element
LIT	Level Indicating Transmitter
LSHH	Level Switch High High
LSLL	Level Switch Low Low
LSH	Level Switch High
LSL	Level Switch Low
M	Mechanical Device
MCC	Motor Control Center

Abbreviation	Description
MF	Membrane Filtration Unit
MUU	Make Up Air Unit
MX	Mixer
NV	Needle Valve
ORP	ORP Meter
P	Pump
PART	Particle Counter
P/A	Pulse to Analog Converter
PC	Pneumatic Controller
PCB	Pneumatic Conveying Blower
PCV	Pressure Control Valve
PD	Pulsation Dampener
PHM	PH Meter
PI	Pressure Indicator
PLC	Programmable Logic Controller
PS	Plate Settler
PU	Pressurization Unit
PV	Plug Valve
RCVR	Receiver
SC	Sludge Collector
SDG	Slide Gate
SDT	Sedimentation Tank
SF	Supply Fan
STG	Stop Gate
S	Strainer
SUG	Sluice Gate
SWGR	Electrical Switchgear
T	Tank
TCV	Temperature Control Valve
TT	Temperature Transmitter
TST	Thermostat
TR	Train
TURB	Turbidimeter
TV	Telescoping Valves

Abbreviation	Description
V	Valve (actuated)
VFD	Variable Frequency Drive
WS	Water Softener
XFMR	Transformer
XT	Heat Reservoir System Expansion Tank
Y	Converter

F.4.2. General Configuration Considerations

A number of layout configuration issues will be considered in the location and orientation of equipment to provide functional systems that are easily operated and maintained.

- When locating equipment, consideration will be given to the frequency of operation and the degree of effort required to operate and maintain the equipment. Special provisions such as lifting hooks, monorails, cranes, oversized doors, removable transoms, and other such items will be considered to accommodate equipment removal and maintenance.
- Membrane skid spacing will allow for access with rolling platform ladders of suitable height for maintenance activities on valving at the top of the racks, and for module maintenance. This includes between the racks as well as both ends (+/- 72 IN)
- Equipment will not be located so as to provide a traffic hazard or interfere with area access or egress.
- Equipment layout will provide for a minimum clear area around the equipment pad of at least three feet.
- For flow meters and other equipment having integral indication, either fixed access will be provided to view the integral indication or remote indication will be provided apart from the equipment at a convenient, accessible location.
- For electrically operated valves, manual controls will be remotely located, if necessary, for easy operation.
- Redundant equipment will be provided so that reliability criteria set forth in MDEQ Circular-1 is met. Redundant units will either be installed or stored on site. Consideration will be given to operational alternatives to providing additional units for reliability.
- Consideration will be given to providing adequate horizontal and vertical spacing of equipment to allow removal of commonly replaced/serviced items. Examples include consideration for removal of flanged circulation heater coils and vertical can pumps.
- For equipment requiring hoists or other such provisions for maintenance, coordination will be required with the electrical, mechanical and structural disciplines so that lights, ductwork and structural members do not conflict with the conveying equipment.

- For tanks or other such equipment requiring top access, the use of integral ladders or other fixed access will be considered.
- For equipment located in close proximity to vehicular traffic, the equipment will be protected by bollards or similar protection.

F.4.3. Special Environmental Considerations

Special environmental considerations include noise, area classification and corrosion:

- Electrical equipment will be selected to meet the classification of the area in which it is located.
- Equipment located in extremely corrosive or wet areas will either be constructed of non-corrosive materials or will receive coatings suitable for providing a standard service life for that equipment.
- Areas in which operations/maintenance staff will work for extended periods of time will include special treatment including sound absorbing block wall construction or sound attenuation panels.
- Consideration will be given to heat generation associated with selected equipment. HVAC designers need to be informed of heating loads anticipated during worst case operating conditions. Equipment such as air compressors can produce an excessive auxiliary heat load.
- Areas of bulk chemical storage and chemical feed will be reviewed in terms of structure requirements, the need for sprinkler systems, containment and egress to comply with local building code requirements.
- Containment will be provided around equipment to control exposure of personnel to wet, slippery areas. Where chemicals such as polymer provide an extreme slipping hazard, grating or other non-slip surfaces will be provided. Containment will also be provided around equipment conveying materials that deteriorate or discolor concrete or other building materials. Draining of the containment area will be coordinated with the mechanical discipline.

F.4.4. Equipment Mounting

All mechanical equipment, tanks and control cabinets will be mounted on a nominal 4-inch high, reinforced concrete base, restrained to withstand all static, dynamic, hydraulic, wind and seismic loads. Equipment not requiring vibration isolation devices will be bolted to the foundation, anchored and restrained to withstand all static, dynamic, hydraulic, wind and seismic loads. To avoid transmission of noise, major equipment will be mounted on restrained vibration isolators or resilient pads as recommended by the equipment manufacturers. The structural discipline will perform an analysis on all major equipment foundations.

F.4.5. Vibration and Noise

Vibration must be limited since excessive vibration leads to bearing and equipment failure. Vibration analysis will be required for major rotating equipment.

Workers must be protected from exposure to excessive and prolonged noise. OSHA standards for noise exposure are shown in Table F-3.

Table F-3. Permissible Noise Exposures

Duration per day, hours	Sound level, dBA, slow response[1]
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

[1] From 29CFR 1910.95

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: (C1/T1+C2/T2)/(Cn/Tn) exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

F.4.6. Design Coordination

Equipment selection and specifications will be coordinated with other design team disciplines to assure correct structural, mechanical, electrical, and control interfaces.

An equipment data sheet (EDS) will be completed for each piece of equipment on the project. The data sheets will be kept on the project directory on ProjectWise for use by team members in integrating the equipment. The data sheets will be updated as required during the design. A summary equipment data sheet is provided in Appendix A of the Preliminary Design Report.

F.4.7. Representation of Equipment on Contract Drawings

Equipment pad centerline will be dimensioned in two directions and piping connections will be shown as appropriate to facilitate equipment installation.

No graphic representation of equipment such as pumps, strainers, etc. will be shown on the drawings. Equipment pads will be shown with representation of connecting ductwork or piping starting at the equipment connection. Arrows will be used to show the direction of flow into and out of the equipment.

F.4.8. Calculations and Supporting Data

Required Calculations

Calculations will be performed for each piece of equipment. For equipment operating over a range of loadings or conditions, calculations will be performed to confirm the performance range of the equipment.

Calculation Format

Calculations will be provided in compliance with the HDR Quality Assurance Procedures 3.4 and 3.5. A calculation cover sheet will be provided for each set of calculations. Hand calculations will be completed on HDR or MMI computation paper and be assigned a project-specific identification number. Assumptions used for calculations will be clearly stated. Printouts of computer calculations will be provided with input and output values clearly identified. Equations used in computer calculations will be clearly documented and attached to the computer output.

Supporting Data

Supporting data will be attached to the calculations to document operating characteristics, physical characteristics, and other considerations for design. Records of discussions with vendors and catalog information will be attached to the calculations.

F.4.9. Equipment Design

There are several types of large equipment associated with the project including pumps, membrane filtration equipment and vacuum assisted drying beds. The following section provides guidance in the selection and layout of the equipment systems.

Pumps

Table F-4 provides a guide for selection of equipment for pumping applications associated with the Bozeman Hyalite/Sourdough WTP Replacement project.

Table F-4. Pump Selection Guide

Pumping Application	Pump Type	Pump Drive	Estimated HP
Membrane Feed	Multi-Stage	VFD	150
Reverse Filtration	Multi-Stage	VFD	25
Clean In Place Circulation	Centrifugal	Constant Speed	15

Clean In Place Drain	Centrifugal	Constant Speed	15
Chemical Feed	Peristaltic	VFD	1/x
Chemical Transfer	Rotary Lobe	Constant Speed	5 to 10
Grit	Vortex (Torque Flow)	Constant Speed	25
Residuals and Wastewater Sumps	Submersible	Constant Speed	5 to 20
Gravity Thickener and DAF Residuals	Rotary Lobe	Constant Speed	15
Dissolved Air Recycle	Centrifugal	Constant Speed	15
Lagoon and Drying Beds Decant	Submersible	Constant Speed	5 to 10
Polymer Feed	Peristaltic or Progressive Cavity	VFD	1/x
Service Water	Turbine	Constant Speed	25

Pumps with capacity curves that continuously rise to shutoff will be selected to avoid unstable operating conditions. When VFDs are used, secondary run-out points on the pumps curves will be selected to assure that pump curves still cross the system head curve at reduced speeds.

Maximum pump speed will be limited to 1,750 RPM unless specific conditions require higher speeds. Generally, slower rotation prolongs equipment life.

Constant speed pump motors will be specified with a 1.15 service factor.

Variable speed driven pump motors will be specified with a 1.0 service factor.

Brake horsepower will not be greater than 85% of nameplate horsepower on VFD-driven pumps and 100% of constant speed pumps at any point on the pump curve.

Pump shaft sealing will be accomplished using mechanical seals. Clean, product water seal water will be provided to each seal at a pressure approximately 3-5 psi higher than the maximum pressure of the liquid being pumped.

NPSHR and NPSHA will be checked for each pump selected at the extremes of their possible operating conditions.

Chemical Pumps

The project will include chemical storage and feed systems for membrane cleaning, disinfection, and fluoridation. The following defines major design issues associated with this equipment:

- Concentration of active chemical.

- Standard delivery volumes.
- Amount of on-site storage required.
- Required dosage range.
- Usage rate which is a function of feed rate, period of application, dosage and dilution factor.

Materials of construction will be compatible with the chemical pumped. Storage and mix tanks will be either stainless steel or non-metallic. Non-metallic units will be constructed from resins compatible with the chemicals stored. Sizing of chemical tanks and pumps for each system depend on a number of factors:

For the sodium hypochlorite application, care will be taken to not oversize the suction line, to minimize the formation of chlorine gas which will cause air binding of the pumps.

Calibration chambers (2,000 ml) may be added to the suction manifold piping for each application to allow the operations staff to check calibration of metering. The top of the chambers will be enclosed and hard piped to drain.

Pumps will be selected with external backpressure and pressure relief valves.

All tanks will be equipped with overflow and drain connections. Closed top tanks will be appropriately vented.

Accurate level indication will be provided on chemical storage.

Membrane Filtration Equipment

Following are guidelines for the design of the membrane filtration equipment:

- Membrane equipment will be modular for ease of expansion.
- Each membrane skid will have local instrumentation and PLC-based controls.
- Reverse Flow, air scrub blowers, and clean-in-place systems will periodically support the membrane filters.
- Membrane filters will be monitored daily to detect damages for prompt repair.

Drying Beds

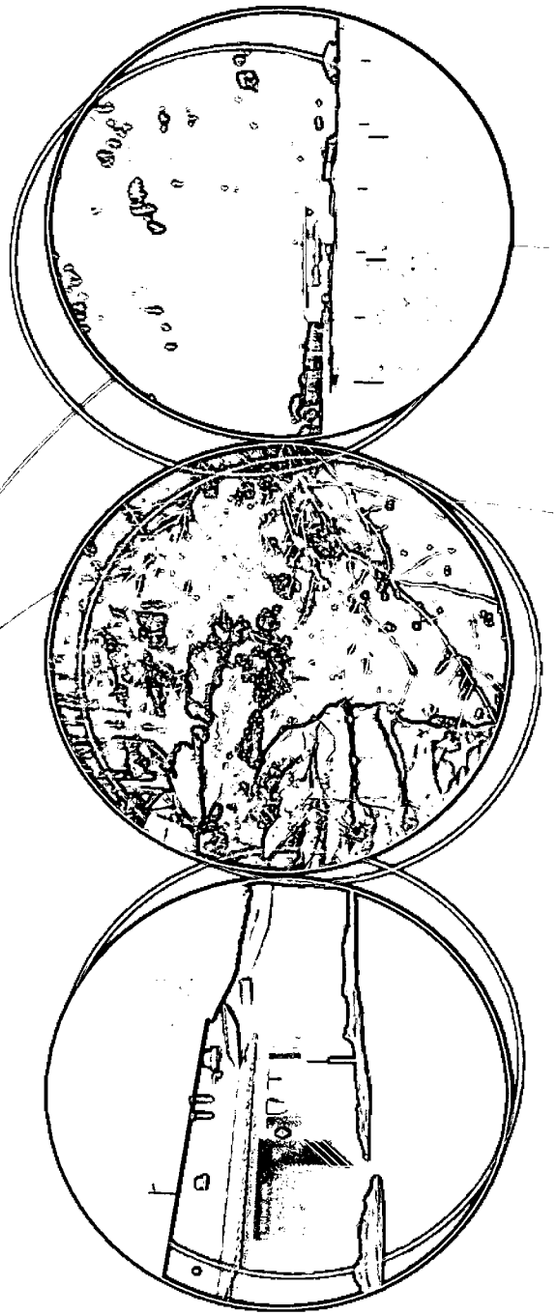
New drying beds will be installed to dewater the generated waste sludge. The following defines major equipment design issues associated with the vacuum drying beds. Drying Beds are discussed in further detail in Section 9 of the Preliminary Design Report.

F.5. Design References

The following design references may be consulted for additional information concerning design and specification of equipment:

- Hydraulic Institute Standards.
- Hydraulic Handbook, Colt Industries, Fairbanks Morse Pump Division.

- Cameron Hydraulic Data, Ingersoll-Rand.
- Centrifugal Compressor Engineering, Hoffman Air and Filtration Systems.



City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix G. Geotechnical Report & Groundwater Monitoring

Prepared by: Craig Habben

Reviewed by: Dan Harmon

Date: August 27, 2010

Geotechnical Summary

The existing Bozeman Water Treatment Plant is located south of the existing Bozeman City limits, adjacent to Sourdough Creek and downstream from the existing Sourdough intake structure. Two separate sites were studied for this project with two geotechnical reports being prepared for replacement of the existing Sourdough Water Treatment Plant and for improvements to the Sourdough Intake Structure. SK Geotechnical provided a summary Geotechnical Evaluation of the proposed Hyalite/Sourdough Treatment Plant site and the proposed Sourdough Intake Structure. GMT Consultants, Inc. prepared a location specific report for the Sourdough Intake Structure site. The following summarizes information included in the referenced Geotechnical Reports.

G.1.1. Site Exploration

An array of 6 boreholes was drilled by SK Geotechnical in November 2009 for the Water Treatment Plant and Sourdough Intake sites using a hollow stem auger. Similarly, an array of 18 boreholes was drilled by GMT Consultants Inc. in November 2003 along the Sourdough stream alignment from the existing water filtration plant site to the existing Sourdough Intake structure. Each of the boreholes was logged and detailed log reports are provided in the associated geotechnical reports. In summary, bore logs at the water treatment plant site found fill and soft wet clays from 11.5 to 16 feet in depth. Bore logs along the Sourdough stream bank and at the planned Intake Structure site showed 1.5 feet of fill over stiff clays underlain by silty gravels. Below the silty gravels sand, cobbles, and boulders was observed. The boulders can be expected to be 2 feet in diameter or larger. Groundwater was encountered at the existing Sourdough Intake Structure to an elevation of 9 feet below ground surface.

G.1.2. Water Treatment Plant (WTP) Site

The Water Treatment Plant Building floor plan is shown in figure 4-1 and is currently planned to be located as shown on Figure 13-1. The entire new WTP facility building encounters fill and/or wet clays to a depth of 10 to 16 feet below ground surface. A slab on grade type construction cannot be used on this material. There are two foundation/floor

options for subgrade preparation for the proposed WTP facility. The first is to drive down piles or drill piers. Both would support the building foundation and a structural floor. The second and recommended option is to sub-excavate the fill and wet clay materials to the native gravels and then provide a structural fill up to the foundations, footings and associated building floors.

On-site native gravels, likely excavated from the planned process water storage lagoon and drying beds, can be used to make up the structural fill. A footing allowable bearing pressure on the structural fill is anticipated to be 4000 psf. The building footprint will extend over the existing backwash surge basin and sub-excavation will result in removal of this basin and structural backfill. The geotechnical report cautions against undermining the existing plant during sub-excavation. This will not be an issue based on the distance of the new plant away from the existing plant and the elevation of the bottom of the existing clearwell below the existing plant.

G.1.3. Sourdough Intake Site

The Sourdough Intake site structure components include a Fine Screening Room adjacent to a Compressor Room. Subgrade preparation is recommended for Compressor Room similar to that recommended at the water treatment plant site. Sub-excavation to approximately 6 feet will be needed, with further excavation necessary for the footings serving the adjacent Fine Screening Room as these will extend down as far as the bottom of the existing vault.

Groundwater

No groundwater was encountered at any test holes and is not anticipated to be a problem. At the Sourdough Intake Structure site water was observed about 9 feet below the surface. This elevation is near the estimated depth of required excavation. Therefore, localized dewatering will likely be required for the Fine Screening Room footings.

Appendices

Appendix G-A

- Geotechnical Evaluation for the Hyalite/Sourdough Water Treatment Plant Replacement, SK Geotechnical – June 14, 2010

Appendix G-B

- Geotechnical Investigation for the Hyalite Water Project, GMT Consultants, Inc. – December 28, 2003

Appendix G-A

1. Geotechnical Report

These drawings, referred to as Geotechnical Evaluation (GE) sheets represent the geotechnical report for the project and were prepared by SK Geotechnical Corporation. The purpose of the geotechnical evaluation was to assist Morrison-Maierle, in designing foundations, and slabs, and in preparing plans and specifications for the project.

In the event the information in the GE sheets conflicts with the information in the plans and specifications, the plans and specifications govern.

2. Site Conditions

The project is located south of Bozeman, Montana, near the existing water treatment plant and Sourdough Creek intake structures. According to readily available geologic maps, the general geology of the area consists of alluvial fan deposits (Q_{af}) which consists of variable deposits of gravels, sand, silts, and clays deposited by water erosion from the abrupt slope change of the nearby mountain range. A detailed evaluation of the geologic history of the site was not performed.

The two sites are sloping down towards the north. Ground surface elevation variation between the borings at the water treatment site was 14 feet and 5 ft for the intake structure.

3. Project

The proposed water treatment plant (WTP) building will be a pre-engineered steel building with steel stud infill walls. The structure will be supported on a conventional frost depth footing with an earth supported floor. The roof framing will be supported on interior steel columns. The WTP has a plan area near 40,800 square feet. The WTP buildings east end will have a basement elevation to accommodate the water purification equipment.

The intake structure will also be constructed on conventional spread footings and earth supported floors. The structure will have a plan area of approximately 800 square feet. The existing grade at the intake structure will be raised to an elevation near 5310.5 on the west, south, and east sides. A 10-15% slope will be constructed on the north side of the proposed apron. The intake structure will have two rooms: a fine screening room with a below grade space and a compressor room.

A compressor line gallery will be installed through the existing dike to the new water infiltration gallery in Hyalite Creek. There will be 13 intake gallery pipelines, including six 12-inch diameter lines, placed in an open excavation through the existing dike. The remaining lines will be air lines.

A clear well was also to be constructed, consisting of a buried concrete tank extending 12 to 14 feet below the surface. However, we understand this tank may now not be built.

4. Field Exploration

Boring Locations. Boring locations were selected by Mr. Chad Binstock, a senior engineering assistant, and are shown on the Boring Location Sketch (Detail 18 and 19).

Boring Elevations. Ground surface elevations at the borings were provided by Morrison-Maierle Inc.

Boring Procedures. The borings were performed on the date indicated on the boring logs with a truck-mounted core and auger CME-75 or CME-75HT drill rig. Sampling and testing in the borings was performed in general accordance with the latest version of the following ASTM procedures.

D 1452 Soil Investigation and Sampling by Auger Borings
D 1586 Penetration Test and Split-Barrel Sampling of Soils
D 1587 Thin-walled Tube Sampling of Soils
D 2487 Classification of Soils for Engineering Purposes
D 2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)

5. Laboratory Procedures

Laboratory tests were performed on select samples to assist in characterizing the engineering properties of the soils. The laboratory tests were performed in general accordance with the latest version of the following ASTM procedures.

C 117	Materials finer than 75 micron (No. 200) sieve in mineral aggregate by washing
C 136	Sieve analysis of fine and coarse aggregates (based on the material sample in the ring-lined samples and bulk samples.)
C 422	Particle-size analysis of soils
D 1140	Amount of materials in soils finer than 75 micron (No. 200)
D 2216	Laboratory determination of water content of soil and rock
D 2435	One-dimensional consolidation properties of soils
D 4318	Liquid limit, plastic limit, and plasticity index of soils
D 4546	One-dimensional swell or settlement potential of cohesive soils

6. Legend

ASTM	American Society for Testing and Materials
MPWSS	Montana Public Works Standard Specification, Fifth Edition, 2003
OSHA	Occupational Safety and Health Administration
IBC	International Building Code
◒	Standard penetration test boring
psf	pounds per square foot
pci	pounds per square inch per inch of deflection
psf/ft	pounds per square foot per foot of depth
MDEQ	Montana Department of Environmental Quality
DIPRA	Ductile Iron Pipe Research Association

7. Geotechnical Summary and Conclusions

As shown in the boring logs, fill was encountered in five out of the six borings performed. The recommendations for the three structures are discussed in detail below. These recommendations are based on our current understanding of the project and preliminary design information provided.

Water Treatment Plant Building:
The water treatment plant (WTP) building encountered fill extending to depths ranging from 8.5 to 11 feet and were underlain by soft wet clays in two of the boring to depths ranging from 11.5 to 16 feet. It is our opinion that the WTP building cannot be supported on the existing fill and soft wet clays. Therefore, we recommend subexcavating all of the existing fill and soft clay down to native gravels and replacing it with compacted sandy gravel. The building can then be supported on conventional spread footings bearing on the compacted gravel fill. Another alternative would be support the structure on deep foundations such as driven closed end pipe pile or drilled piers with a grade beam and structural floor system. If you wish to evaluate this alternative, please contact us.

Assuming the subexcavate/replace method will be used, the existing fill and soft wet clay will need to be removed and replaced with structural fill. We believe the on-site native gravels can be used as structural fill after sizing the native gravels through a grizzly screen. We recommend all below grade places have a perimeter foundation drain. After the necessary earthwork has been performed, it is our opinion the WTP building footings can be designed for a net allowable bearing pressure up to 4,000 psf.

To perform the subexcavation and backfill method there is a potential for undermining of the existing water treatment plant building and adjacent structures. Therefore, we recommend the new building be set as far away from existing structures as possible to reduce shoring and underpinning requirements. Please refer to Detail 22 for general guidelines for shoring and underpinning.

Clear Well:
The clear well will be buried approximately 12 feet into the ground. At these depths, native alluvial gravels were encountered. It is our opinion, the native gravels will be suitable for direct foundation and slab support. We recommend the clear well footings be designed for a net allowable bearing pressure up to 4,000 PSF. In addition, we recommend a perimeter foundation drain also be installed.

Intake Structure:
The boring performed in the intake structure area encountered 1.5 feet of fill over rather stiff wet clays underlain by silty gravels. Below the silty gravels, poorly graded gravel with sand, cobbles, and boulders was observed to the termination depth of the boring. To reduce total and differential movement, particulary of the heavily loaded compressor floor, we recommend subexcavating all of the existing fill and clay soils on a 2V:1H oversize zone down to the native gravels and replacing them with compacted sandy gravel. The intake structure can be supported on conventional spread footings bearing on the compacted gravel fill. As recommended above we believe the on-site native gravels can be used as structural backfill after resizing. Footings can be designed for a net allowable bearing pressure up to 4,000 PSF.

Compressor Line:
An additional boring was performed at the compressor line crossing to assist in evaluating backfill requirements. We recommend matching backfill soils with similar existing soils, i.e. gravels should be used in the lower portion of the excavation where gravels are present and clays in the upper portion where clays are present. The backfill should be compacted to 98% of its standard maximum dry density as determined by ASTM D 698 (standard proctor). We anticipate that significant dewatering for the excavations will be required.

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Bozeman, Montana

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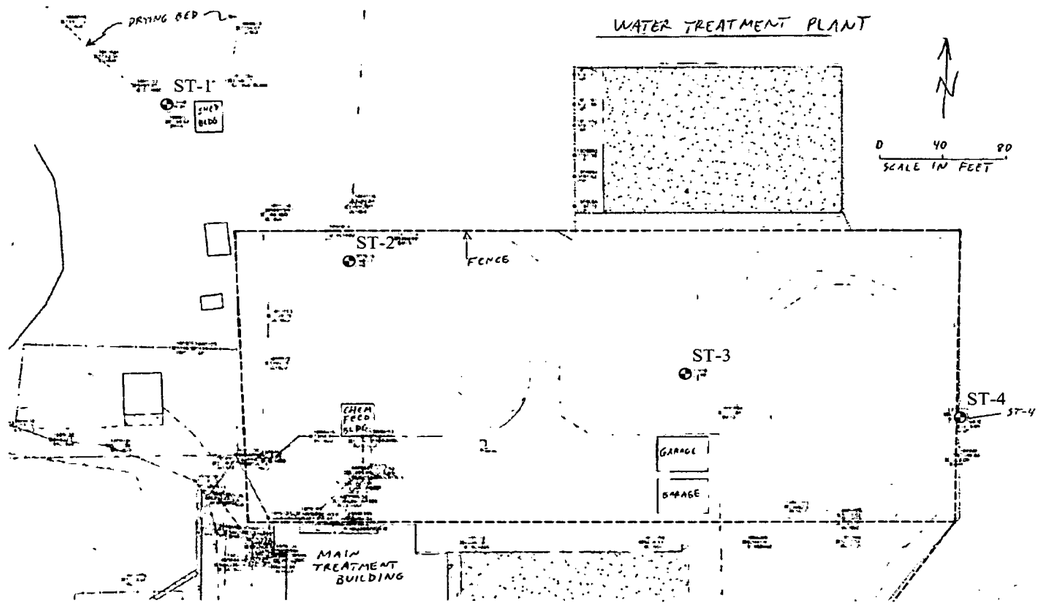
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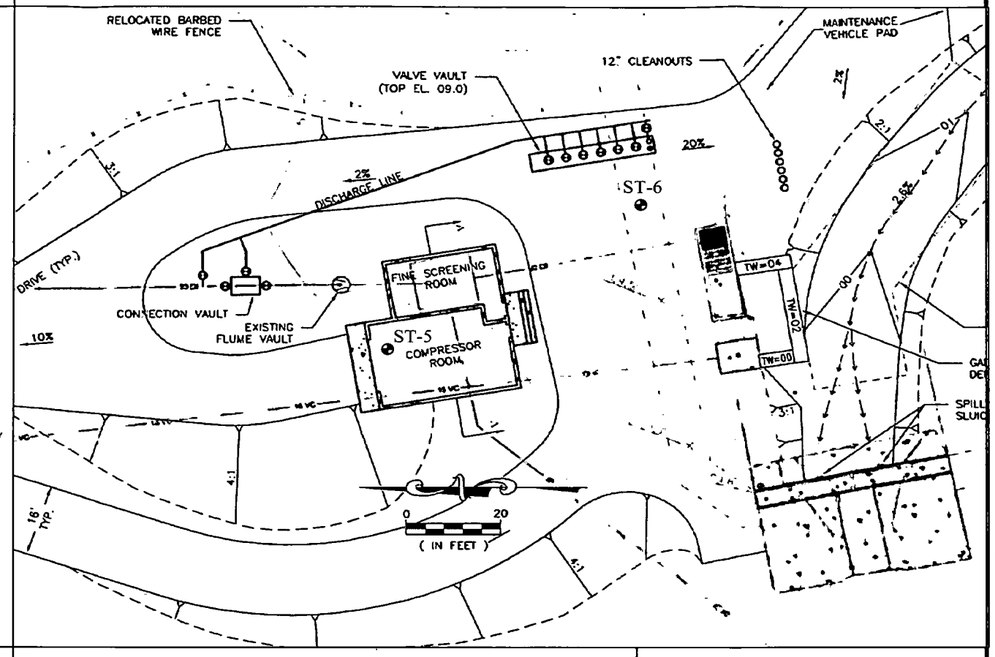
GEOTECHNICAL EVALUATION

GE-1

8. Boring Location Sketch - Water Treatment Building



9. Boring Location Sketch - Intake Structure



10. General Recommendations

Basis of Recommendations. The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the sketch's. Often, variations occur between these borings, the nature and extent of which do not become evident until additional exploration or construction is conducted. A reevaluation of the recommendations in this report should be made after performing on-site observations during construction to note the characteristics of any variations. The variations may result in additional foundation costs, and it is suggested a contingency be provided for this purpose. It is recommended SK Geotechnical be retained to perform the observation and testing program for the site preparation phase of this project. This will allow correlation of the soil conditions encountered during construction to the soil borings, and will provide continuity of professional responsibility.

Review of Design. This report is based on the design of the proposed structures as related to us for preparation of this report. It is recommended we be retained to review the geotechnical aspects of the designs and specifications. With the review, we will evaluate whether any changes in design have affected the validity of the recommendations, and whether our recommendations have been correctly interpreted and implemented in the design and specifications.

Groundwater Fluctuations. Water level observations were obtained in the borings at the times and under the conditions stated on the boring logs. These data were interpreted in the text of this report. The period of observation was relatively short, and fluctuation in the groundwater level may occur due to rainfall, flooding, irrigation, spring thaw, drainage, and other seasonal and annual factors not evident at the time the observations were made. Design drawings and specifications and construction planning should recognize the possibility of fluctuations.

Use of Report. This report is for the exclusive use of Morrison-Maierle, Inc., to design the proposed structures and prepare construction documents. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. The data, analyses and recommendations may not be appropriate for other structures or purposes. We recommend parties contemplating other structures or purposes contact us.

Level of Care. Services performed by SK Geotechnical Corporation personnel for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is made.

11. Summary of Classification Test Data

Boring	Depth (feet)	ASTM Symbol	Moisture Content (%)	LL	PL	PI	Percent Passing
ST-6	4-5.5	CL	19.0	38	26	12	70.2
ST-6	6.5-8	CL	24.1	36	24	12	29.6

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12. Spread Footing Foundations

Design Information, Anticipated Foundation Loads:
Perimeter and interior wall loads < 2 kips/lineal foot
Perimeter column loads < 35 kips
Interior column loads < 75 kips
Finished floor grade water treatment building, assumed: 5208 ±
intake structure compressor room: 5311.5
intake structure fine screening room: 5305.8
Distributed floor loads < 250 psf
Concentrated floor loads < 1,000 pounds

Building Pad Preparation: Remove all existing fill and clay from beneath building. Subexcavate native soft, wet, clay soil down to native gravels and replace as shown in Foundation and Slabs Details 20 and 21.

Bearing Depth (see structural drawings for specific elevations):
Perimeter footings 3 1/2 feet below exterior grade, minimum
Interior footings below floor slab
Exterior and unheated footings 5 feet below grade, minimum

Bearing Pressure: up to 4,000 psf after necessary earth work has been performed.

Settlement and Heave: up to 1 inch total and 1/2 inch differential

IBC 2006 Site Class: Stiff soil profile, Site Class D
Maximum 0.2 second spectral response acceleration, S_S : 75.1 % of gravity
Maximum 1.0 second spectral response acceleration, S_1 : 23.4% of gravity

Floor Slabs:
Subgrade: compacted sandy gravel
Subgrade Modulus: 200 pci

Utilities:
Environment: corrosive
Bedding and Backfill: follow MPWSS, Section 02200

Concrete: use cement meeting ASTM C150 Type II requirements

13. Anticipated Subexcavation Depths

Soil Boring	Ground Surface Elevation	Depth to Top of Native Gravel	Anticipated Bottom Elevation
ST-2	5199.8	10'	5189 1/2
ST-3	5205.5	16'	5189 1/2
ST-4	5209.0	11 1/2'	5197 1/2
ST-5	5305.3	6 1/2	5298 1/2

*Rounded to nearest 1/2 foot.

14. Backfill Compaction

Parameter/ Material	Structural Backfill below Foundations	Backfill below Slabs	Exterior Backfill in Landscape Areas	Compressor Line Crossing Backfill
Minimum compaction, standard Proctor	100%	95%	90%	98%
Moisture, percent of optimum	± 2%	± 2%	± 2%	± 2%

15. Backfill Material Requirements

Sieve Size	Percent Passing	
	Structural backfill- imported or on-site screened alluvial gravels	Non-Expansive Clay Backfill
4"	100	100
No. 4	35-65	30 - 100
No. 200	<8	30 minimum
Plasticity Index	nonplastic	< 20

Gravel Base - MPWSS, Section 02235
Gravel Subbase - MPWSS, Section 02234

16. Construction

OSHA Soil Type: All earthwork and construction should be performed in accordance with OSHA guidelines.
All Soils: Type C

Dewatering: Maybe required for intake gallery pipelines. Method of dewatering to be determined by contractor. Dewatering method should be designed to prevent the excessive loss of fines which would cause subsidence of adjacent structures.

Observations: Footing subgrades, recommend special inspection., slab subgrades, and removal of existing fill and/or soft, wet clays beneath building pad.

Concrete Testing: In accordance with project specifications; slump, air content, temperature, and compressive strength cylinders.

Compaction Testing: Fill and backfill beneath footings, slabs, and pavements, interior and exterior foundation wall backfill, and pavement subgrade and base/subbase courses.

Surface Water Drainage: Provide throughout construction to avoid saturation and ponding water on exposed subgrades, which can cause excessively soft areas (pumping and rutting) and construction delays.

Cold Weather Construction: No fill or backfill should be placed on frozen soils, no frozen soils should be used as fill or backfill, and remove all snow or ice from cut and fill areas prior to additional grading.

17. Site Utility Recommendations

Anticipated Subgrade: Rather soft to medium clays, existing fill, or gravel

Anticipated Backfill: On-site clays and screened gravels.

Corrosive Soils: Yes, clay soils are considered corrosive to metallic conduits and corrosive to ductile iron pipe.

Corrosion Protection: Recommended for metallic conduits, or use pipe materials that are corrosion resistant, such as polyvinylchloride (PVC) or polyethylene (PE) pipe.

Type 1 Bedding: Yes, in accordance with MPWSS Section 02221.

Type 2 Bedding: Not anticipated.

Trench Backfill: On-site clay soils that are excavated from the trench can be used as backfill above bedding. Gravels should be screened to less than 4-inch dimension.

18. Lateral Earth Pressure Parameters

Parameter/Material	Native or Screened Sandy Gravel	On-Site Clay Backfill
Moist Unit Weight, pcf	135	120
Internal Friction Angle, degrees	38	27
Active Equivalent Fluid Pressure, psf/ft	32	45
At-Rest Equivalent Fluid Pressure, psf/ft	52	64
Passive Equivalent Fluid Pressure, psf/ft	560	320
Coefficient of Friction	0.55	0.45

Note: values are not factored

19. Site Grading and Drainage

Construction Grading. Positive run-off of surface water must also be provided during construction, especially when clay subgrade soils are exposed. If water is allowed to pond on the exposed subgrade, the subgrade will become wet and soft, which is easily disturbed (become unstable) by heavy rubber-tired construction equipment.

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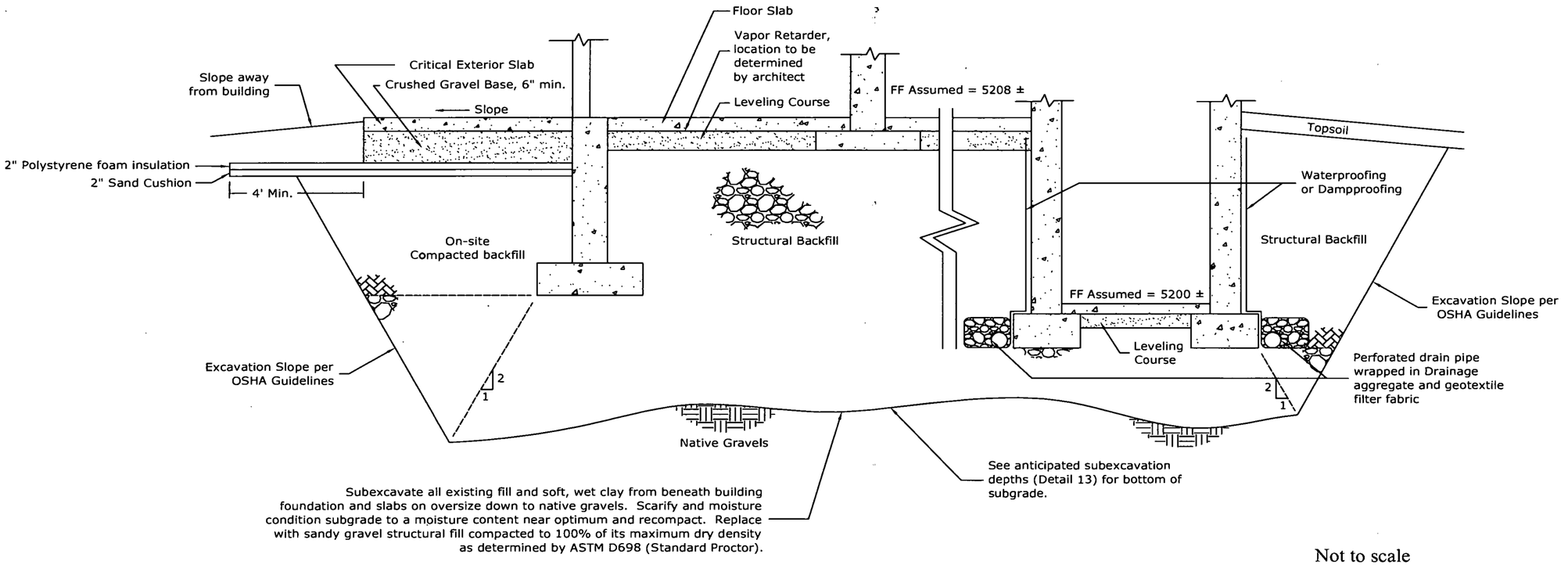
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20. Foundation and Slab Detail - Water Treatment Building



Subexcavate all existing fill and soft, wet clay from beneath building foundation and slabs on oversize down to native gravels. Scarify and moisture condition subgrade to a moisture content near optimum and recompact. Replace with sandy gravel structural fill compacted to 100% of its maximum dry density as determined by ASTM D698 (Standard Proctor).

Not to scale

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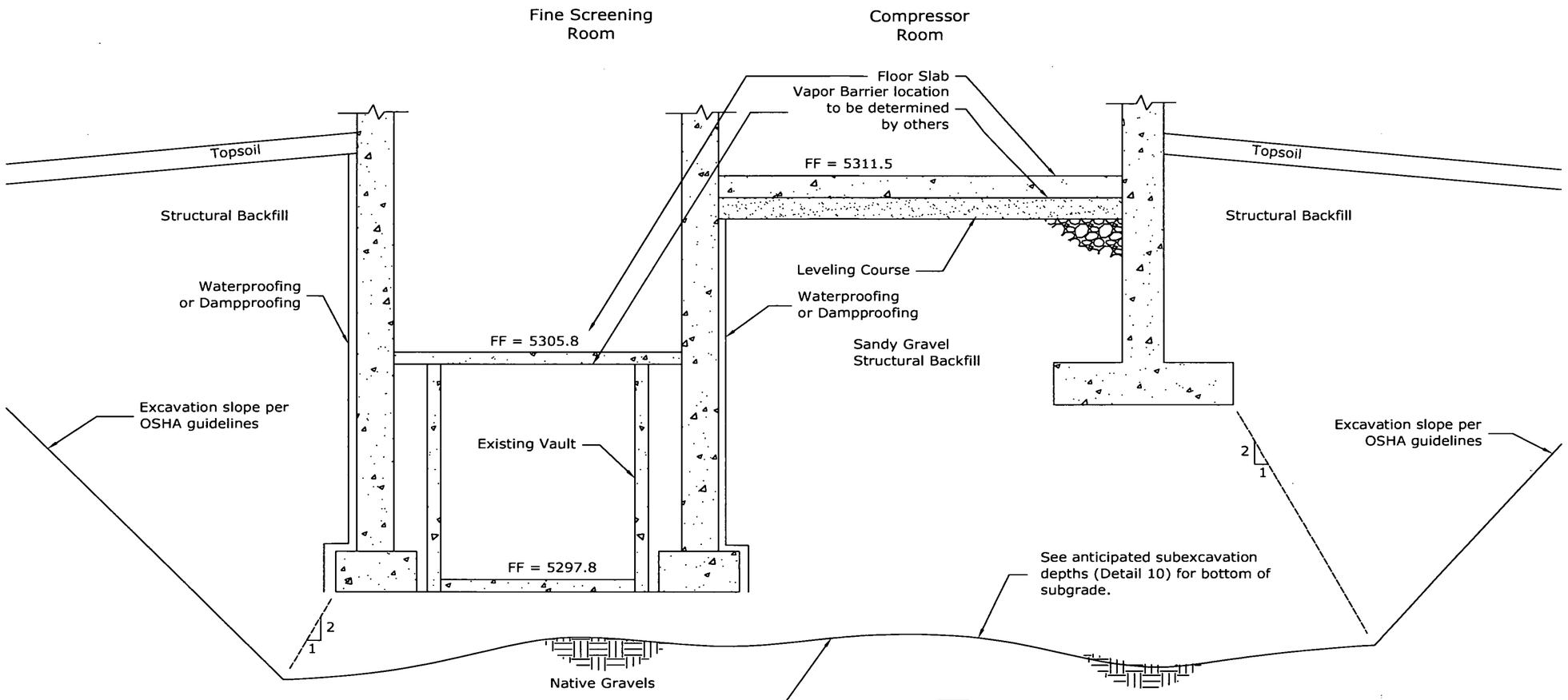
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21. Foundation and Slab Detail - Intake Structure



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22. Shoring and Underpinning

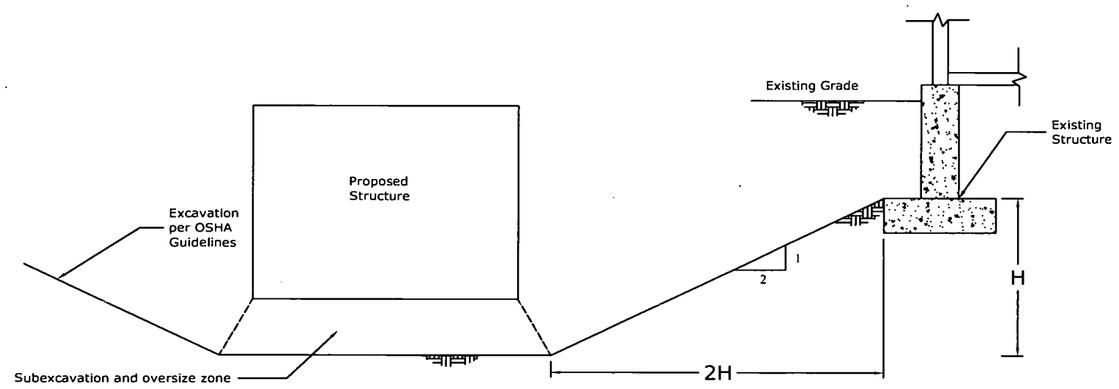


Figure 1. Suitable excavation adjacent to existing structure.

Notes: A suitable excavtion next to existing foundation should be sloped down at a slope of 2H:1V, or flatter, from the top outside edge of existing footing to the excavation bottom.

Not to scale

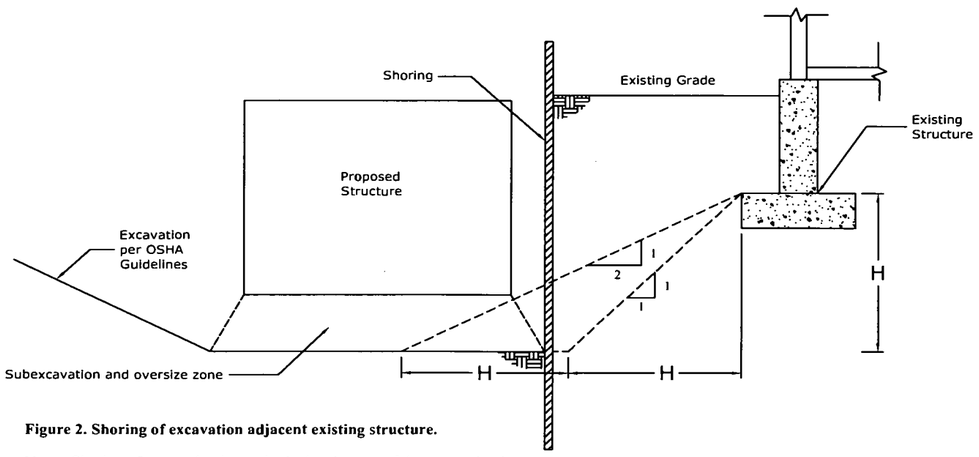


Figure 2. Shoring of excavation adjacent existing structure.

Notes: Shoring of excavation is required when bottom of the excavation is within the 2:1 slope from the top outside edge of existing footing. Underpinning also required if the excavation is within 1:1 slope, see figure 3.

Shoring to be designed by a qualified professional or structural engineer.

Type of shoring to be determined by contractor (see plans and specifications).

Not to scale

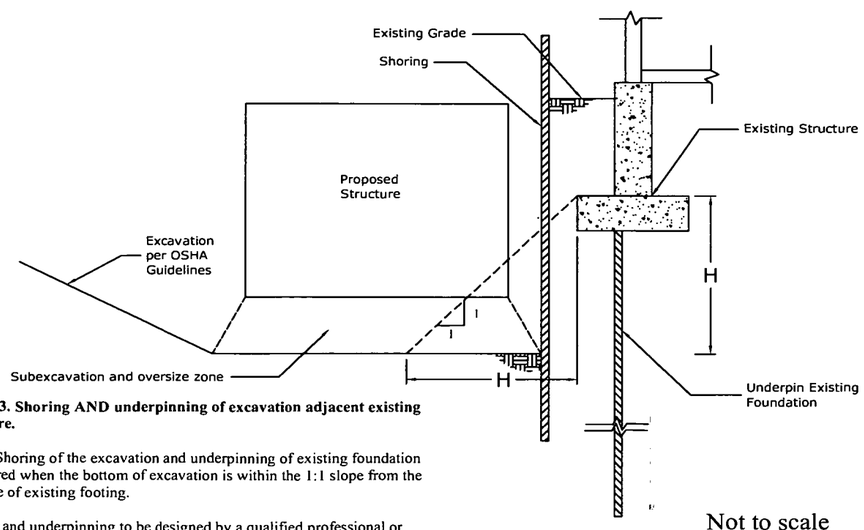


Figure 3. Shoring AND underpinning of excavation adjacent existing structure.

Notes: Shoring of the excavation and underpinning of existing foundation is required when the bottom of excavation is within the 1:1 slope from the top edge of existing footing.

Shoring and underpinning to be designed by a qualified professional or structural engineer.

Type of shoring and underpinning to be determined by contractor (see plans and specifications)

Not to scale

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Hyalite/Sourdough Water Treatment Plant Replacement
Bozeman, Montana

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Descriptive Terminology

Standard D 2487
Classification of Soils for Engineering Purposes
(Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines [C]	$C_U \geq 4$ and $1 \leq C_C \leq 3$ [E]	GW	Well graded gravel [F]
			$C_U < 4$ and/or $1 > C_C > 3$ [E]	GP	Poorly graded gravel [F]
		Gravels with Fines More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel [F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines [D]	$C_U \geq 6$ and $1 \leq C_C \leq 3$ [E]	SW	Well graded sand [I]
			$C_U < 6$ and/or $1 > C_C > 3$ [E]	SP	Poorly graded sand [I]
		Sands with Fines More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G,H,I]
			Fines classify as CL or CH	SC	Clayey sand [G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid Limit less than 50	Inorganic	PI > 7 and plots on or above "A" line [J]	CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K,L,M]
		Organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OL	Organic clay [K,L,M,N] / Organic silt [K,L,M,O]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay [K,L,M]
			PI plots below "A" line	MH	Elastic silt [K,L,M]
		Organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OH	Organic clay [K,L,M,P] / Organic silt [K,L,M,Q]
Highly Organic Soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

[A] Based on the material passing the 3" (75 mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay
[D] Sands with 5 to 12% fines require dual symbols.
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay
[E] $C_U = D_{60} / D_{10}$
$C_C = \frac{(D_{30})^2}{(D_{10} \times D_{60})}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200 predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

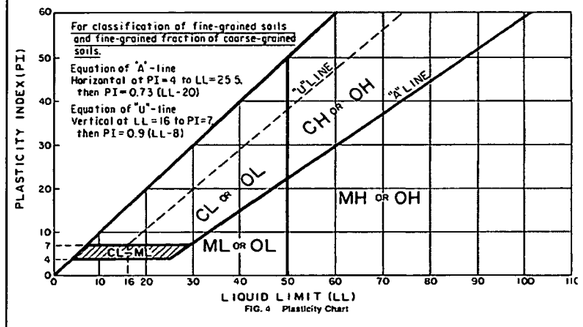


FIG. 4 Plasticity Chart

Particle Size Identification

Boulders	over 12"
Cobbles	3" to 12"
Gravel	
coarse	3/4" to 3"
fine	No. 4 to 3/4"
Sand	
coarse	No. 4 to No. 10
medium	No. 10 to No. 40
fine	No. 40 to No. 200
Silt	No. 200 to .005 mm
Clay	less than .005 mm

Relative Density of Cohesionless Soils

very loose	0 to 4 BPF
loose	5 to 10 BPF
medium dense	11 to 30 BPF
dense	31 to 50 BPF
very dense	over 50 BPF

Consistency of Cohesive Soils

very soft	0 to 1 BPF
soft	2 to 3 BPF
rather soft	4 to 5 BPF
medium	6 to 8 BPF
rather stiff	9 to 12 BPF
stiff	13 to 16 BPF
very stiff	17 to 30 BPF
hard	over 30 BPF

Moisture Content (MC) Description

rather dry	MC less than 5%, absence of moisture, dusty
moist	MC below optimum, but no visible water
wet	MC over optimum, visible free water, typically below water table
saturated	Clay soils were MC over

Laboratory Tests

DD	Dry density, pcf	OC	Organic content, %
WD	Wet density, pcf	P_{200}	% passing 200 sieve
LL	Liquid limit	PL	Plastic limit
PI	Plasticity index	MC	Natural moisture content, %
qu	Unconfined compressive strength, psf		
qp	Pocket penetrometer strength, tsf		

Drilling Notes

Standard penetration test borings were advanced by 3¼" or 4¼" ID hollow-stem augers, unless noted otherwise. Standard penetration test borings are designated by the prefix "ST" (split tube). Hand auger borings were advanced manually with a 2 to 3" diameter auger to the depths indicated. Hand auger borings are indicated by the prefix "HA."

Sampling. All samples were taken with the standard 2" OD split-tube sampler, except where noted. TW indicates thin-walled tube sample. CS indicates California tube sample.

BPF. Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler was set 6" into undisturbed soil below the hollow-stem auger. Driving resistances were then counted for second and third 6" increments and added to get BPF. Where they differed significantly, they were separated by backslash (/). In very dense/hard strata, the depth driven in 50 blows is indicated.

WH. WH indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

Note. All tests were run in general accordance with applicable ASTM standards.

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LOG OF BORING

PROJECT: 09-2615
GEOTECHNICAL EVALUATION
Hyalite/Sourdough Water Treatment Plant Replacement
Bozeman, Montana

BORING: **ST-1**
LOCATION: Clarifier, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/5/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5194.3	0.0	CL	4" topsoil over LEAN CLAY with SAND, low plasticity, brown, wet to moist, rather soft to medium. (Alluvium)	6		22.9	Elevation Reference: ground surface elevations provided by MMI.
				4		14.1	
5188.8	5.5		POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, rather dry, dense to very dense. (Alluvium)	7		10.9	
				31/50-3"		0.6	
				35/50-3"		2.1	
		GP		49-50-1"		3.4	
				49/50-3"		3.3	
				49		5.0	
				50-2"		2.5	
5167.3	27.0		END OF BORING - Auger Refusal Water not observed with 27' of hollow-stem auger in the ground. Water not observed to dry cave-in depth of 16' immediately after withdrawal of auger. Boring then backfilled.				

BORING DPF WL MC ARIAL 2615 GPJ LAGHRIN08.GDT 9/11/10

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PROJECT:
Hyalite/Sourdough Water Treatment Plant Replacement
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LOG OF BORING

PROJECT: 09-2615
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Hyalite/Sourdough Water Treatment
Plant Replacement
Bozeman, Montana

BORING: **ST-2**
LOCATION:
Water treatment plant building, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/5/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5199.8	0.0		FILL: 4" topsoil over Lean Clay with Sand, low plasticity, brown, moist to wet, rather stiff to stiff.	12		16.8	
				18		12.3	
5196.3	3.5		FILL: Sandy Lean Clay, low plasticity, rust, moist, medium.	TW			
				6		11.5	
5193.3	6.5		FILL: Lean Clay, low to medium plasticity, brown, wet, soft.	3		27.2	
5189.8	10.0	GP	POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, rather dry, very dense. (Alluvium)	11/29		15.7	
				44/50-4"		2.1	
				50-1" sst		0.4	
5182.8	17.0		END OF BORING - Auger Refusal Water not observed with 17' of hollow-stem auger in the ground. Water not observed to dry cave-in depth of 10.2' immediately after withdrawal of auger. Boring then backfilled.				

BORING BPF WL MC ARIAL 2615.GPJ LACNUN08.GDT 01/11/10

09-2615 ST-2 page 1 of 1

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Hyalite/Sourdough Water Treatment
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Bozeman, Montana

BORING: **ST-3**
LOCATION:
Water treatment plant building, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/5/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5205.5	0.0		FILL: Organic Clay, high plasticity, trace organics, black, wet, rather stiff.	10		19.1	
5204.0	1.5		FILL: Lean Clay, low to medium plasticity, brown, moist, medium to rather stiff.	11		12.6	
				6		13.6	
5199.0	6.5		FILL: Poorly Graded Gravel with Silt and Sand, fine- to coarse-grained, brown, moist, medium dense.	20		3.4	
				12		4.2	
5194.5	11.0	CL	LEAN CLAY with SAND, low plasticity, brown, wet, soft. (Alluvium)	3		20.8	
				2		25.3	
5189.5	16.0	GP	POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, rather dry, dense to very dense. (Alluvium)	40		3.0	
				55		1.7	
5175.6	29.9		END OF BORING*	50-4"		0	*Water not observed with 29' of hollow-stem auger in the ground. Water not observed to dry cave-in depth of 16' immediately after withdrawal of auger. Boring then backfilled.

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09-2615 ST-3 page 1 of 1

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Hyalite/Sourdough Water Treatment
Plant Replacement
Bozeman, Montana

BORING: **ST-4**
LOCATION: Water treatment plant building, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/5/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5209.0	0.0						
5208.2	0.8		FILL: Organic Clay, high plasticity, black, moist, rather stiff.	5/6		3.6	
			FILL: Lean Clay, low to medium plasticity, brown, moist to wet, medium to rather stiff.	6		11.3	
				13		17.4	
				8		21.5	
5200.5	8.5	CL	LEAN CLAY, medium plasticity, light olive brown, wet, soft. (Alluvium)	3		31.0	
5197.5	11.5	GP	POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, rather dry, dense to very dense. (Alluvium)	73		4.2	
				67		2.3	
				45		3.9	
5185.9	23.1		END OF BORING - Auger Refusal	50-1" set		0	

Water not observed with 23' of hollow-stem auger in the ground.

Water not observed to dry cave-in depth of 16' immediately after withdrawal of auger.

Boring then backfilled.

BORING BPF WL MC ARIAL 2615.GPJ LAGWIN00.GDT 8/11/10

09-2615 ST-4 page 1 of 1

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BORING: **ST-5**
LOCATION: Intake compressor building, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/6/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5305.3	0.0						
5303.8	1.5		FILL: : Silty Sand, fine- to medium-grained, trace Gravels, brown, moist, medium dense.	11		12.6	
		CL	LEAN CLAY, medium plasticity, trace Gravels, brown, wet, rather stiff. (Alluvium)	12		21.5	
				12			No recovery.
5298.8	6.5		SILTY GRAVEL, fine- to coarse-grained, brown, wet to waterbearing, loose to medium dense. (Alluvium)	35		12.6	
		GM		2/15	▽	19.3	An open triangle in the water level (WL) column indicates the depth at which groundwater was first observed while drilling.
5291.8	13.5			19		15.2	
		GP	POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, waterbearing, medium dense. (Alluvium)	28		15.8	
5289.8	15.5		END OF BORING				

Water down 9.1' with 14' of hollow-stem auger in the ground.

Water not observed to dry cave-in depth of 8' immediately after withdrawal of auger.

Boring then backfilled.

BORING BPF WL MC ARIAL 2615.GPJ LAGWIN00.GDT 8/11/10

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Plant Replacement
Bozeman, Montana

BORING: **ST-6**
LOCATION: Intake area, pipeline dam crossing, see attached sketch.

DRILLED BY: C. Binstock | METHOD: 3 1/4" HSA, Automatic | DATE: 11/6/09 | SCALE: 1" = 4'

Elev.	Depth	Symbol	Description of Materials	BPF	WL	MC (%)	Remarks
5309.5	0.0		FILL: Silty Gravel, fine- to coarse-grained, trace organics, brown, moist, dense to medium dense.	8/25		6.7	
				29		9.8	
5306.0	3.5		FILL: Sandy Lean Clay, low plasticity, dark brown, wet, rather stiff.	11		19.0	Split-spoon sample from 4' to 5½'. LL=38, PL=26, PI=12 $P_{\#200}$=70.2%
5303.0	6.5	CL	SANDY LEAN CLAY, low plasticity, dark gray, wet, very stiff. (Alluvium)	5/14		24.1	Split-spoon sample from 6½' to 8'. LL=36, PL=24, PI=12 $P_{\#200}$=49.6%
5301.0	8.5	GM	SILTY GRAVEL, fine- to coarse-grained, brown, wet to waterbearing, medium dense to very dense. (Alluvium)	60	▽	13.7	
				34		17.5	
				29		15.5	
5292.0	17.5	GP	POORLY GRADED GRAVEL with SAND, COBBLES, and BOULDERS, fine- to coarse-grained, gray, waterbearing, very dense. (Alluvium)	51		14.7	
5289.0	20.5		END OF BORING Water down 10.4' with 19' of hollow-stem auger in the ground. Water not observed to dry cave-in depth of 8.5' immediately after withdrawal of auger. Boring then backfilled.				

BORING BPF WL MC ARHL 2615.GPJ LAGWIN00.GDT 9/1/10

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GEOTECHNICAL EVALUATION
GE-10
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Appendix G-B

GEOTECHNICAL INVESTIGATION
HYALITE WATER PROJECT
BOZEMAN, MONTANA

December 28, 2003

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Project No. 031018-0073

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Geotechnical Investigation
Proposed Improvements
Hyalite Water Project
Bozeman, Montana

1.0 INTRODUCTION

1.1 General

Our investigation of the subsurface soil conditions at the Hyalite Creek water intake structure, along the alignment of the proposed water line, and at the proposed Water Treatment Plant structure was authorized by Mr. James Nickelson, P.E. with Morrison-Maierle, Inc. in general accordance with the scope of services in our proposal. The purpose of this investigation has been to establish the engineering parameters of the surface and subsurface soils that may affect the design and construction criteria of the proposed structures and water line.

The proposed intake structure is located at the existing intake structure on Hyalite Creek. The proposed water line begins at the Hyalite intake structure and runs in northeasterly and easterly direction to the Water Treatment Plant at Bozeman Creek. The proposed treatment plant structure is located at the southwest corner of the existing treatment plant. All facilities are located as shown on Plate 1 in the Appendix to this report

1.2 Scope of Investigation

The following tasks were performed in connection with the preparation of this report.

1. Auger borings were conducted in order to:
   a. Establish subsurface soil strata present along the project alignment.
   b. Obtain samples of subsurface materials for laboratory analysis.
   c. Investigate the in-situ conditions of the soils along the project alignment.
   d. Investigate the subsurface water conditions along the project alignment.

2. The Hyalite intake reservoir was mapped in order to:
   a. Determine the topography of the surface of the silt sediments in the reservoir.
   b. Determine the topography of the surface of the sand and gravel underlying the silt in the reservoir.

3. Subsurface soils from the site were analyzed in the testing laboratory using:
   a. Visual examination.
   b. Sieve Analysis tests.
   c. Atterberg Limits tests.
   d. Moisture Content tests.
   e. Soil PH tests.

f. Soil Chloride tests.
g. Soil Sulfate tests.
h. Soil Resistivity tests.

4. The information obtained from the subsurface exploration and laboratory investigation was used in geotechnical engineering studies to determine the soil parameters that will affect the design and construction of the proposed structures and water line.

2.0 SUBSURFACE INVESTIGATION

2.1 General

Subsurface materials along the length of the project were investigated by performing fourteen (14) auger borings to depths of 1 foot to 15 feet below the existing surface. One (1) boring was performed at each structure and twelve (12) borings were performed along the proposed water line alignment. Representative samples of the sub-surface materials were obtained by the use of a 2-inch outside diameter split-barrel sampler and by grab sampling. The split-barrel samples were removed from the sampler in the field and placed in individually numbered plastic bags, which were sealed to minimize moisture changes. Bulk samples were collected from the drill cuttings and placed in sealed plastic bags. All samples were classified in the field in accordance with American Society of Testing and Materials (ASTM) D-2488, "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" and transported to our testing laboratory for further testing and study.

2.2 Boring Locations and Elevations

The borings locations were selected and marked by representatives of Morrison-Maierle, Inc. No surface elevations were established.

2.3 Standard Penetration Testing

The in-situ conditions of the subsurface soils along the project alignment were investigated by the use of Standard Penetration Tests in accordance with ASTM D-1586, "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils." The Standard Penetration Test (SPT) determines the resistance of materials to penetration by a 2-inch O.D. split-barrel sampler driven by a 140-pound "Safe-T" Hammer, dropping repetitively through a 30-inch drop. Either the number of blows of the hammer required to drive the split-barrel sampler 12 inches (after seating the sampler 6 inches), or the additional inches of penetration by the sampler due to 50 blows of the hammer, whichever comes first, is recorded on the field log.

Results of the Standard Penetration Tests are shown on the left-hand side of the Soil Boring Logs in the appendix to this report. The relationship between the number of blows in the SPT and the consistency of cohesive soils is illustrated in Table A.

TABLE A
Summary of SPT Blow Count and Consistency

Blow Count	Consistency
Less than 2	Very Soft
2 - 4	Soft
4 - 8	Medium
8 - 15	Stiff
15 – 30	Very Stiff
Over 30	Hard

The relationship between the number of blows in the SPT and the density of non-cohesive soils is illustrated in Table B.

TABLE B
Summary of SPT low Count and Relative Density

Blow Count	Relative Density
0 – 5	Very Loose
6 – 10	Loose
11 – 30	Medium Dense
31 – 50	Dense
50 +	Very Dense

2.4 Subsurface Soils

Due to the distances between borings, the soil profile in each boring only reflects the general soil profile in the vicinity of the boring. The boring logs in the appendix to this report should be reviewed to obtain a sense of the general soil profile and soil characteristics at specific locations along the water line alignment. In general, based on the borings and on soils observed on the surface, we would anticipate a considerable number of cobbles and boulders in the excavations from the intake structure to the vicinity of boring B-6. From B-6 to the treatment plant, we did not encounter boulders in the borings or observe them on the surface.

2.5 Groundwater Observations

No groundwater was encountered in any of the borings. However the borings were conducted during the time of seasonally low groundwater and the number of borings limited identification of groundwater to only those locations where the borings were conducted. Groundwater will have to be considered when constructing the intake structure due to the adjacent reservoir and stream. It is possible that groundwater would be encountered at some locations along the proposed water line during construction.

3.0 INTAKE RESERVOIR MAPPING.

3.0 General

The surfaces of the silt sediments and the underlying sandy gravel in the intake reservoir were mapped utilizing the following method. Using the southerly face of the existing

intake structure and dam as a base line we obtained cross-sections of the reservoir. We established an elevation of the pond water surface by measuring down from the known elevation of the top of the concrete wall at the southwest corner of the intake structure. We then measured to the surface of the silt from the surface of the pond to obtain the elevation of the silt. To obtain the elevations of the sandy gravel, we pushed a ½ inch diameter copper rod through the silt to the gravel surface and then measured the length of the rod to the water surface. The resulting topography is shown on the maps in the appendix to this report.

4.0 LABORATORY INVESTIGATIONS

4.1 General

All samples of subsurface materials from the borings were examined and classified in our testing laboratory. Classification tests were conducted to assist in the classifications and to determine design characteristics of the subsurface soils. Laboratory classifications of the subsurface materials refer to the "Unified Soil Classification System" as explained in the "Key to Classifications Used on Soil Boring Logs" in the appendix to this report.

Additionally, we ran a battery of tests to determine the corrosive characteristics of the soils along the project route. Some of the tests were performed in our testing laboratory and some of them were performed in a subcontracting testing laboratory.

4.2 Classification Tests

In our testing laboratory, Sieve Analyses Tests, Atterberg Limits Tests, Moisture Content Tests, were performed on selected samples. The purpose of these classification tests is to aid in the proper classification of the soils, to establish grain size characteristics and to determine natural moisture conditions. Classifying the soil assists in determining the performance characteristics of the soils under structurally loaded conditions. The results of our laboratory tests are summarized on the "Summary of Classification Tests" in the Appendix to this report.

4.3 Corrosion Tests

PH Tests, Cloride Tests, Sulfide Tests, and Resistivity Tests were run in our testing laboratory or in the testing laboratory of Energy Labs in Billings, Montana to determine the corrosive characteristics of the soil along the water line alignment. The results of the testing are summarized in the "Summary of Corrosion Tests" in the Appendix to this report.

5.0 INTAKE DESIGN & CONSTRUCTION RECOMMENDATIONS

5.1 General

It is our understanding that the plan for the intake structure is to construct a concrete structure, approximately 26 feet by 35 feet in the location of the existing intake structure. The foundation elements will consist of a variety of spread footings at variable elevations

and a mat foundation at a depth of approximately 10 feet below the existing ground surface. The structure will be constructed in and adjacent to the existing reservoir and it will be necessary to construct a system to isolate and de-water any excavations for construction of the structure.

5.2 Foundation Systems

Although we were not able to drill directly in the area of the proposed structure, we were able to drill boring B-1 a short distance downstream from the structure and to observe the surface soils at various locations in the vicinity of the structure. Based on the soils we encountered in boring B-1 and the soils that are evident in the stream bank and road bank adjacent to the site, we feel that the soils at the foundation depth beneath the proposed structure will be sand and gravel with cobbles and boulders. Some of the boulders could be 2 feet in diameter or larger.

To provide a uniform base for the deeper foundation elements, we recommend that the excavations extend to 1-foot beneath the bottom of the foundation elements. Below the bottom of foundation elevation, only sand, gravel, cobbles and small boulders should be excavated. If large boulders are encountered that will be below the bottom of the foundation elements, they should be left undisturbed and the soil around them excavated to the 1-foot below bottom of foundation depth. Care should be taken to ensure that movement of large boulders does not disturb soil beneath the anticipated bottom of excavation. After all of the smaller and loose material is excavated to the 1-foot below the bottom of foundation depth, the resultant subgrade should then be compacted sufficiently to ensure that there are no loose or soft areas in the subgrade. If any areas contain unsuitable material that cannot be compacted, the unsuitable material should be excavated until suitable material is encountered. The area under the foundation elements should then be filled back to bottom of footing grades with lean concrete. The foundation element can then be constructed directly on the lean concrete.

The area beneath the shallow footings will likely have been excavated during construction of the deeper foundations. To provide a suitable base beneath these footings we recommend that the area beneath the footings be filled to bottom of footing grade with material meeting the specification of section 8, item 1. Excavated on site soils will likely meet this specification provided all boulders and cobbles larger than 4" are removed. The material should be placed in 8" maximum compacted lifts and should be compacted to 98 percent of AASHTO T-99 proctor density at optimum moisture content.

Using the above methods, the foundation elements may rely on a safe unit allowable load, not to exceed 4,000 pounds per square foot (psf). This includes a factor of safety of 3.0 against bearing capacity failure and assumes a maximum settlement of ½ inch or less.

5.3 Groundwater

Due to the proximity of the structure to the existing reservoir, we anticipate that groundwater will be present in the soil at an elevation as high as the top of the reservoir water surface. As previously stated, it will be necessary to provide a system to isolate

and de-water any excavations for construction of the structure. Additionally, any groundwater will effect lateral earth pressures on foundation walls.

5.4 Lateral Earth Pressures

The proposed foundation walls placed below the ground surface will experience a lateral earth pressure from the surrounding soil. The magnitude of this pressure varies depending on the soil type and depth, the groundwater surface elevation, and structural restraint conditions. Structures which are restrained at the top such that minor lateral movements are possible, develop the "at rest" earth pressure condition, whereas structures which can deflect (such as a cantilever wall) develop the "active" earth pressure condition.

Assuming sandy, gravelly soils will be placed along the sides of the subsurface walls, we recommend using the following parameters for estimating lateral forces.

1. Active Condition (wall free to move away from backfill): 35 pounds per square foot /per foot of depth (psf/ft) above the water table.
2. Active Condition (wall free to move away from backfill): 80 psf/ft below the water table.
3. At Rest Condition (wall restrained): 55 psf/ft above the water table.
4. At Rest Condition (wall restrained): 90 psf/ft below the water table.
5. Passive Earth Pressure: 440 psf/ft above water table.
6. Passive Earth Pressure: 285 psf/ft below water table.
7. Coefficient of sliding friction: 0.50.

The preceding values do not include factors of safety. Appropriate factors of safety should be included when designing subsurface walls to resist lateral earth forces.

6.0 WATER LINE DESIGN & CONSTRUCTION RECOMMENDATIONS

6.1 General

It is our understanding that a new water line will be constructed from the Hyalite intake to the Bozeman Water Treatment Plant. The water line is intended to be a 24-inch or larger ductile iron pipe, which will likely have a polyethylene encasement.

6.2 Trench Fill Material

The soil borings and the surface soils from the Hyalite intake structure to boring B-6 indicate that considerable number of cobbles and boulders coiuld be encountered in the trench excavations in this portion of the project. All boulders lager than 12 inches should be separated from the excavated soils and should not be used in the backfill.

Once the excavations are completed, the bottom of the excavation should be compacted to 95 percent of AASHTO T-99 proctor density at optimum moisture content. The new water line should then be placed and bedded in compacted bedding material meeting the specification of section 8, item 3. The bedding should be placed and compacted in

maximum 8" lifts to 95 percent of AASHTO T-99 proctor density at optimum moisture content. Once the bedding is placed and compacted, the excavated material should be placed and compacted in maximum 8" lifts to 95 percent of AASHTO T-99 proctor density at optimum moisture content to the top of the excavation.

In all agricultural and landscaped areas, the surface topsoil should be stockpiled separate from the underlying materials and replaced at the top of the back-filled trenches. At road crossings the pavement section should be replaced with material of a type and thickness similar to the existing material. All fill at road crossings should be placed and compacted in maximum 8" lifts to 95 percent of AASHTO T-99 proctor density at optimum moisture content

6.3 Corrosion Potential

To determine the corrosion potential of the soils along the water line, we ran a battery of tests on grab samples from a number of the borings. The results of the tests are shown in the "Summary of Corrosion Tests" in the appendix to this report.

7.0 TREATMENT STRUCTURE DESIGN & CONSTRUCTION RECOMMENDATIONS

7.1 General

It is our understanding that the plan at the treatment plant is to construct a 30-foot by 40-foot single story building adjacent to the existing treatment plant to house control systems. The building is planned to utilize standard spread footings and a concrete slab-on-grade floor. No loading information was provided at the time of our investigation, but we assume that the building will be a lightly loaded structure. If unusually heavy loads are anticipated, we should be notified. It may be necessary for us to perform additional analysis and to make modifications to the recommendations in this report.

7.2 Foundation System

The topsoil and near surface miscellaneous fill are unsuitable for structural support and should be excavated and removed from beneath the footings. The underlying silty clay provides weak support characteristics especially when subjected to excess moisture. Underlying the silty clay is generally medium dense to very dense gravelly sand. To minimize the risk of differential settlement of the footing elements, we recommend removing all soils from beneath the footing elements of the proposed structure, to the depth of the gravelly sand at approximately 6.5 feet. Once the unsuitable soils are excavated from beneath the footings, the resulting subgrade at the bottom of the trenches should be re-compacted to 98 percent of AASHTO T-99 Proctor density near optimum moisture content. Any areas that have been over-excavated to remove unsuitable soils should then be filled back to bottom of footing grade in maximum 8-inch lifts utilizing select gravel fill material as specified in section 8, item 1. The fill should extend outside of the outer edge of the footings, 0.5 foot horizontally for each vertical foot of fill and should be compacted to 98 percent of AASHTO T-99 Proctor density near optimum moisture content. The bottom of the exterior footings should be at a minimum depth of

3.5 feet below finished grade on re-compacted native gravelly soils or compacted gravelly fill soils for frost protection.

Using the above methods, the foundation elements may rely on a safe unit allowable load, not to exceed 4,000 pounds per square foot (psf). This includes a factor of safety of 3.0 against bearing capacity failure and assumes a maximum settlement of ½ inch or less.

7.3 Floor Slab on Grade

To provide a uniform supporting soil for the concrete floor slab on grade, we recommend the following. First remove all topsoil and miscellaneous fill from the building footprint. After the topsoil and fill is removed, excavate to a minimum depth of 18 inches beneath the bottom of the proposed floor slab. Once the excavation is complete, the resulting silty clay should then be re-compacted to 95 percent of AASHTO T-99 Proctor at near optimum moisture content. Fill meeting the specification of section 8, item 1 should then be placed in maximum 8-inch lifts to an elevation of a minimum of 4 inches beneath the proposed floor slab. A minimum of 4 inches of crushed base course meeting the specification of Section 8, Item 2 should then be placed on top of the select gravel fill to the bottom of slab elevation. All materials should be compacted to 95 percent of AASHTO T-99 Proctor at near optimum moisture content.

Assuming the above methods are utilized, concrete floor slabs may be designed using a unit allowable load not to exceed 2,000 pounds per square foot (psf).

7.4 Seismic Considerations

This site is within seismic zone 2b. The structural engineer should use a seismic zone factor Z of 0.2 along with a soil profile type S_d for design considerations.

7.5 Site Grading, Drainage, and Fill Work

A site drainage plan should be designed to provide for positive drainage of storm water and snowmelt away from the proposed structure. Moisture should not be allowed to accumulate or be discharged into the soils surrounding the structure. Landscaped areas should have a down slope of at least 5 percent for the first 10 feet and then at 2 percent away from the strcture. Roof drains, down spouts with extensions, and paved areas should be designed to provide positive drainage away from the buildings. Landscaping should be planned to minimize soil moisture increases due to sprinklers or other irrigation systems.

All fill adjacent to foundation walls should be compacted to 95 percent AASHTO T-99 proctor density at near optimum moisture content. If fill is not adequately compacted, exterior foundation wall backfill will likely consolidate and water may pond and soak into the soil, possibly causing settlement.

8.0 SPECIFICATION RECOMMENDATIONS

The following items should be incorporated into any project plans and specifications:

1. Select Fill Material - 4-inch Minus Montana Public Works Standard Specification (MPWSS) Uncrushed Sub-Base or approved equivalent.

2. Base Course - 1½-inch Minus MPWSS Crushed Base Course or approved equivalent.

3. Pipe Bedding Material – MPWSS Type 1 Pipe Bedding or approved equivalent.

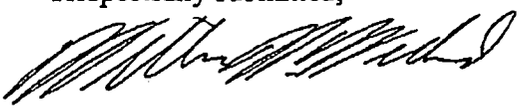
4. Testing - Density tests of all fill material should be conducted with a frequency that will assure that the methods of compaction being utilized are achieving the desired degree of compaction.

9.0 GENERAL RECOMMENDATIONS

The analysis and recommendations submitted in this report are based on the data obtained from the soil borings conducted at the locations indicated on the boring logs in the Appendix to this report. Variations can occur between the specific sites tested and other locations on the project, the nature and extent of which may not become evident until additional exploration is conducted or construction commences. A re-evaluation of the recommendations presented in this report should be made after performing on-site observations during construction to note the characteristics of any variations. The variations may result in additional costs, and we suggest that a contingency be provided for this purpose.

We appreciate the opportunity to present this report to you. If you have any questions regarding the information herein, please contact us at (406) 721-2182 at your convenience.

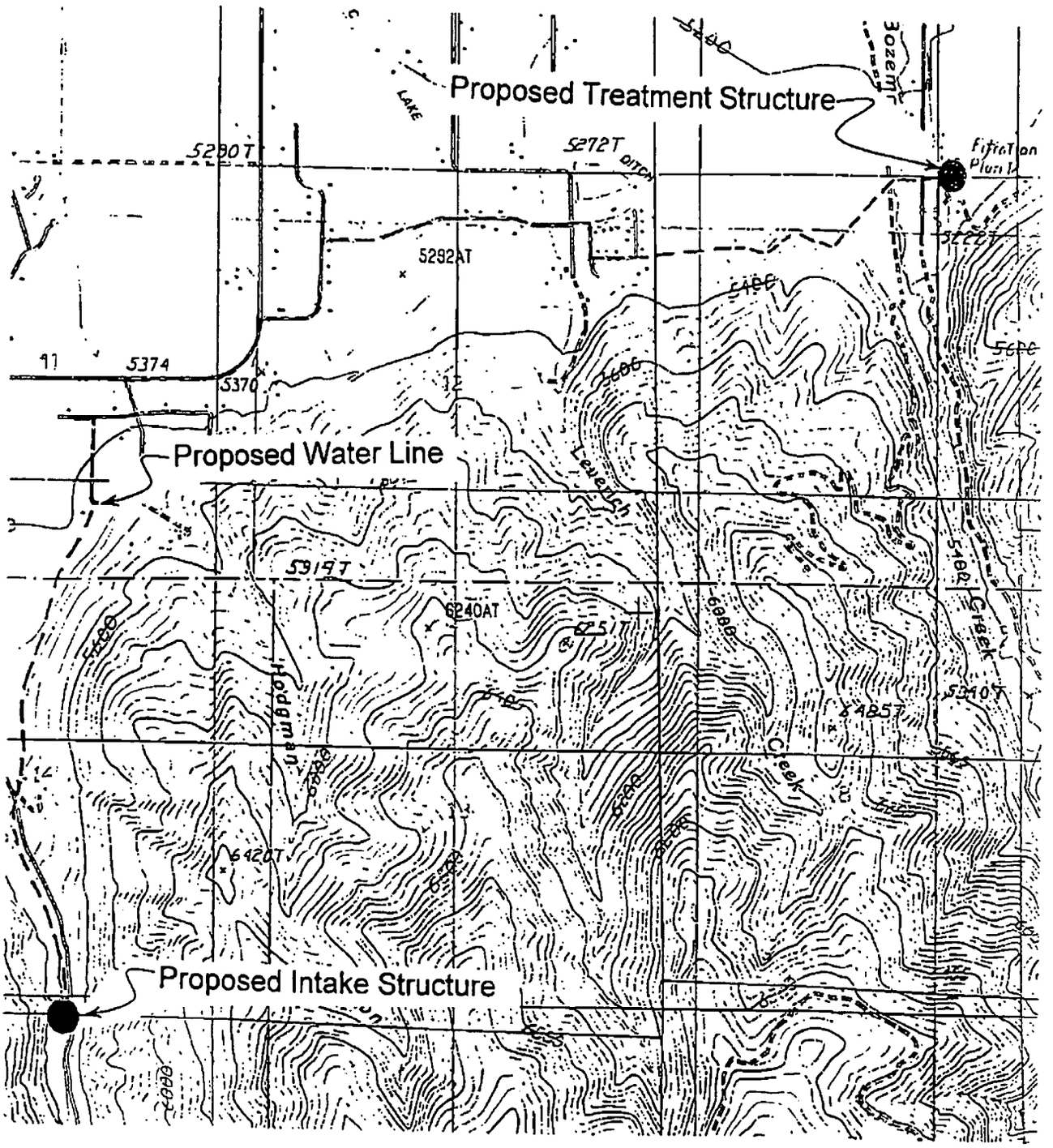
Respectfully submitted,





William W. Weikel, P.E.

Senior Geotechnical Engineer

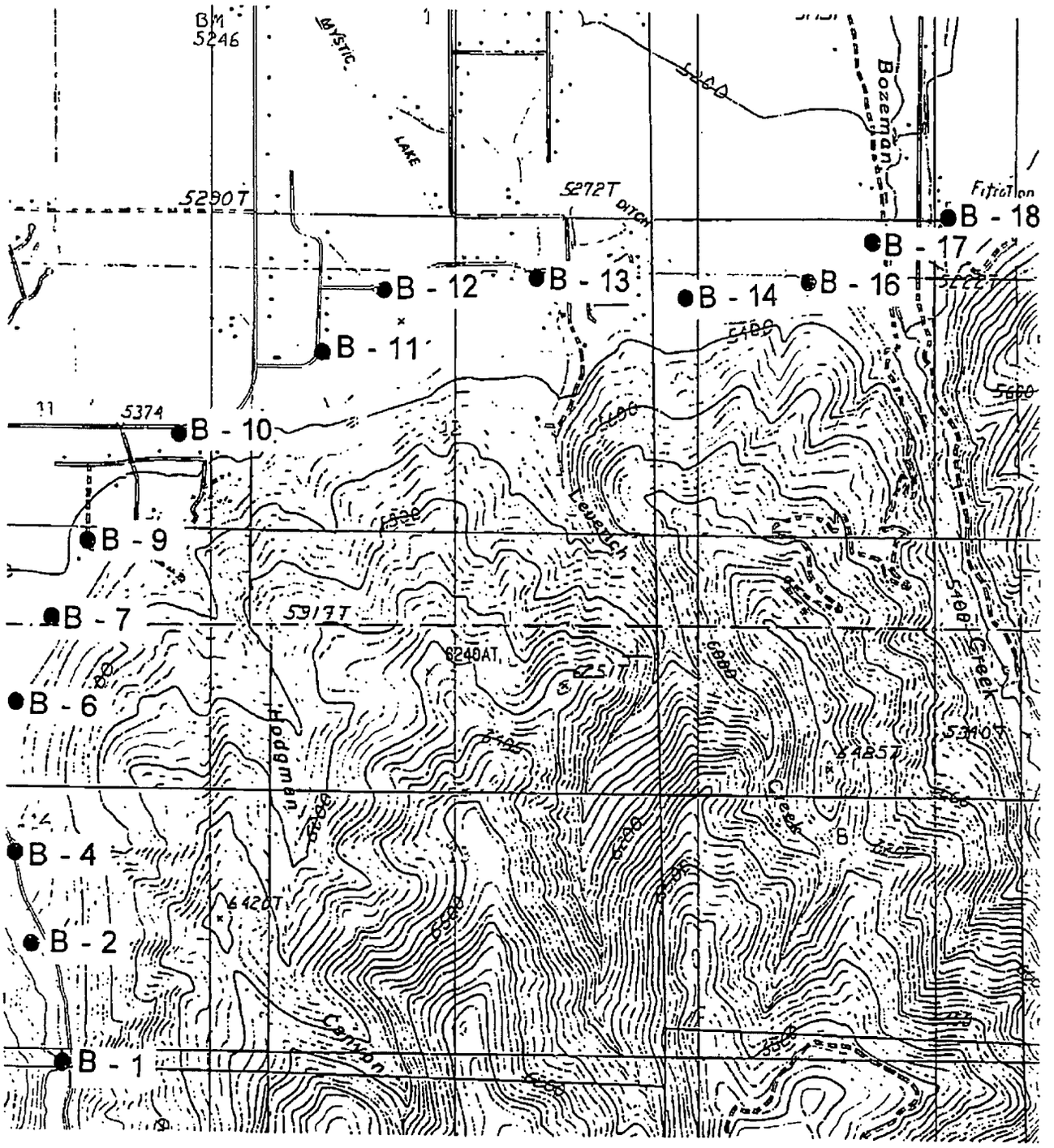


0 2000 4000

Scale: 1" = 2000'

N

PLATE 1
Project Location
Hyalite Water Project
Bozeman, Montana



0 2000 4000

Scale: 1" = 2000'

N

Plate 2
Boring Locations
Hyalite Water Project
Bozeman, Montana

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/3/03

Boring #: B-1 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				SP			0.0'-7.0'	GRAVELLY SAND (FILL); with cobbles
1								and boulders, moist, medium dense to
								dense, brown.
2								
	X	18						
3	X	11	10%					
	X	7						
4								
	X	4						
5	X	7	20%					
	X	6						
6								
7								
				SP			7.0'-9.5'	GRAVELLY SAND; with cobbles and
8								boulders, moist to wet, medium dense to
								dense, light brown.
9								
	0"	50	0%				9.5'	AUGER REFUSAL
10								End of boring = 9.5 feet
								No groundwater encountered
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
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ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/3/03

Boring #: B-2 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL(ML)		IOIIOIIOI	0.0'-1.0'	ORGANIC SILT; sandy, slightly moist,
1						IOIIOIIOI		loose, brown
				SP			1.0'-4.5'	GRAVELLY SAND; with cobbles and
2								boulders, moist to wet, very dense, brown.
	X	43						
3	X	47	50%					
	X	42						
4								
5	1.0"	50	0%				4.5'	AUGER REFUSAL
								End of boring = 4.5 feet
6								No groundwater encountered
7								Note: moved 3 feet and encountered
								auger refusal at same depth
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/3/03

Boring #: B-4 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL(ML)			0.0'-1.5'	ORGANIC SILT; sandy, slightly moist,
1								loose, brown
2				SP			1.5'-5.5'	GRAVELLY SAND; with cobbles and
	X	15						boulders, slightly moist to moist, very
3	X	25	50%					dense, light brown
	1.0"	50						
4								
5								
	X	21	40%					
6	3.0"	50					5.5'	AUGER REFUSAL
								End of boring = 5.5 feet
7								No groundwater encountered
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

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Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-6 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL(ML)		IOIIOIIOI	0.0'-1.0'	ORGANIC SILT; sandy, slightly moist,
1						IOIIOIIOI		loose, brown
							1.0'	AUGER REFUSAL
2								
								Note: Auger refusal at same depth at
3								3 locations in 10 foot diameter area.
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
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ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-7 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL(ML)			0.0'-3.0'	**ORGANIC SILT**; sandy, slightly moist,
1								loose, brown
2								
	X	8						
	X	8	50%					
3	X	6		SM-SC			3.0'-8.0'	**SILTY CLAYEY SAND**; moist, medium
4								dense, brown.
	X	6						
5	X	9	60%					
	X	7						
6								
7								
8				SM-SC			8.0'-11.5'	**SILTY CLAYEY SAND**; very moist,
9								medium dense, brown.
10	X	5						
	X	5	60%					
11	X	6						
12				SP			11.5'-13.5'	**GRAVELLY SAND**; coarse, very moist,
	X	18						dense, brown.
13	X	11	10%					
	X	24						
14								End of boring = 13.5 feet
								No groundwater encountered
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Welkel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-9 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				SP			0.0'-2.5'	GRAVELLY SAND; with silt, slightly moist, medium dense, brown.
1								
2								
	X	19						
3	X	20	60%	SP			2.5'-12.5'	GRAVELLY SAND; slightly moist, medium dense, light brown.
	X	19						
4								
5	X	14						
	X	16	60%					
6	X	15						
7								
8								
9								
10	X	21						
	X	22	50%					
11	X	18						
12								
13				SM-SC		////////	12.5'-15.0'	SILTY CLAYEY SAND; moist, medium dense, brown.
						////////		
14	X	6				////////		
	X	5	60%			////////		
15	X	16				////////		
								End of boring = 15.0 feet
16								No groundwater encountered
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-10 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				SP			0.0'-2.5'	GRAVELLY SAND; with silt, slightly moist, medium dense, brown.
1								
2								
	X	21						
3	X	20	40%	SP			2.5'-12.5'	GRAVELLY SAND; slightly moist, medium dense, light brown.
	X	19						
4								
5	X	5						
	X	6	50%					
6	X	7						
7								
8								
9								
10	X	9						
	X	17	20%					
11	X	25						
12								
13				SM-SC			12.5'-15.0'	SILTY CLAYEY SAND; moist, medium dense, brown.
14	X	47	60%					
	X	48						
15								End of boring = 14.5 feet
								No groundwater encountered
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-11 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				SP			0.0'-2.5'	**GRAVELLY SAND**; with silt, slightly moist, medium dense, brown.
1								
2	X	18						
3	X	14	60%	SP			2.5'-12.5'	**GRAVELLY SAND**; slightly moist, medium dense, light brown.
	X	6						
4								
5	X	5						
	X	5	60%					
6	X	5						
7								
8				SP			8.0'-10.0'	**GRAVELLY SAND**; slightly moist, dense, brown.
9								
10	X	24						
	X	23	50%					
11	X	9						
12								
13				SM-SC			12.5'-15.0'	**SILTY CLAYEY SAND**; moist, medium dense, brown.
14	X	5						
	X	6	50%					
15	X	6						
								End of boring = 15.0 feet
16								**No groundwater encountered**
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/4/03

Boring #: B-12 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				SM			0.0'-2.0'	**SILTY SAND**; slightly moist, stiff, tan
1								
		15						
2	X	17	60%	SP			2.0'-7.5'	**GRAVELLY SAND**; slightly moist, medium
3	X	8						dense, light brown.
4								
	X	7						
5	X	5	60%					
6	X	13						
7								
8							7.5'	**AUGER REFUSAL**
								End of boring = 7.5 feet
9								**No groundwater encountered**
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Welkel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/4/03

Boring #: B-13 Boring Location: See Plate 1

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
1				SP			0.0'-2.0'	GRAVELLY SAND; (fill) slightly moist, dense, light orangish brown.
2	X	12		SM			2.0'-5.0'	SILTY SAND; moist, stiff, tan.
3	X	12	0%					
	X	13						
4								
	X	9						
5	X	11	50%					
	X	22		SP			5.0'-14.5'	GRAVELLY SAND; slightly moist, very dense, light orangish brown.
6								
7								
8								
9								
	X	26						
10	X	57	70%					
	X	40						
11								
12								
13								
14	X	44	60%					
	X	51						
15								End of boring = 14.5 feet No groundwater encountered
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/4/03

Boring #: B-14 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
1				SP			0.0'-2.0'	GRAVELLY SAND; (fill) slightly moist, dense, light orangish brown.
2	X	12		SM			2.0'-5.0'	SILTY SAND; moist, stiff, tan.
3	X	12	0%					
	X	13						
4								
	X	9						
5	X	11	50%					
	X	22		SP			5.0'-14.5'	GRAVELLY SAND; slightly moist, very dense, light orangish brown.
6								
7								
8								
9								
	X	26						
10	X	57	70%					
	X	40						
11								
12								
13								
14	X	44	60%					
	X	51						
15								End of boring = 14.5 feet
								No groundwater encountered
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/4/03

Boring #: B-16 Boring Location: See Plate 1

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL (ML)			0.0'-1.0'	ORGANIC SILT; (topsoil), slightly moist,
1								stiff, dark brown.
				CL-ML			1.0'-12.0'	SILTY CLAY: with sand, gravel, and
2								cobbles, slightly moist, very stiff to hard,
	X	22						tan.
3	X	32	60%					
	X	17						
4								
5	X	11						
	X	25	60%					
6	X	20						
7								
8								
9								
10	X	42						
	X	30	50%					
11	X	28						
12								
				SP			12.0'-15.0'	GRAVELLY SAND; with cobbles, slightly
13								moist, medium dense, light brown.
14	X	19						
	X	19	60%					
15	X	16						
								End of boring = 15.0 feet
16								No groundwater encountered
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Welkel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/4/13

Boring #: B-17 Boring Location: See Plate 2

DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
				OL (ML)			0.0'-1.0'	ORGANIC SILT; (topsoil), slightly moist,
1								stiff, dark brown.
				CL-ML			1.0'-6.5'	SILTY CLAY: with fine sand, moist, stiff,
2	X	10						tan to brown.
	X	12	20%					
3	X	13						
4								
5	X	5						
	X	6	50%					
6	X	9						
7				SP			6.5'-7.5'	GRAVELLY SAND; with cobbles, slightly
	X	35	60%					moist, medium dense, light brown.
8	1"	50					7.5'	AUGER REFUSAL
								End of boring = 7.5 feet
9								No groundwater encountered
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

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SOIL BORING LOG

CLIENT: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, MT 59771

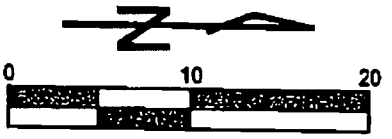
PROJECT NAME: Hyalite Water Project
PROJECT LOCATION: Bozeman, Montana
PROJECT NUMBER: 031018-0073
PROJECT MANAGER: William W. Weikel, P.E.
DRILL TYPE: CME 55 Auger
SAMPLE METHOD: Split Barrel Sampler
DRILLER: WW
DATE: 11/5/03

Boring #: B-18 Boring Location: See Plate 1

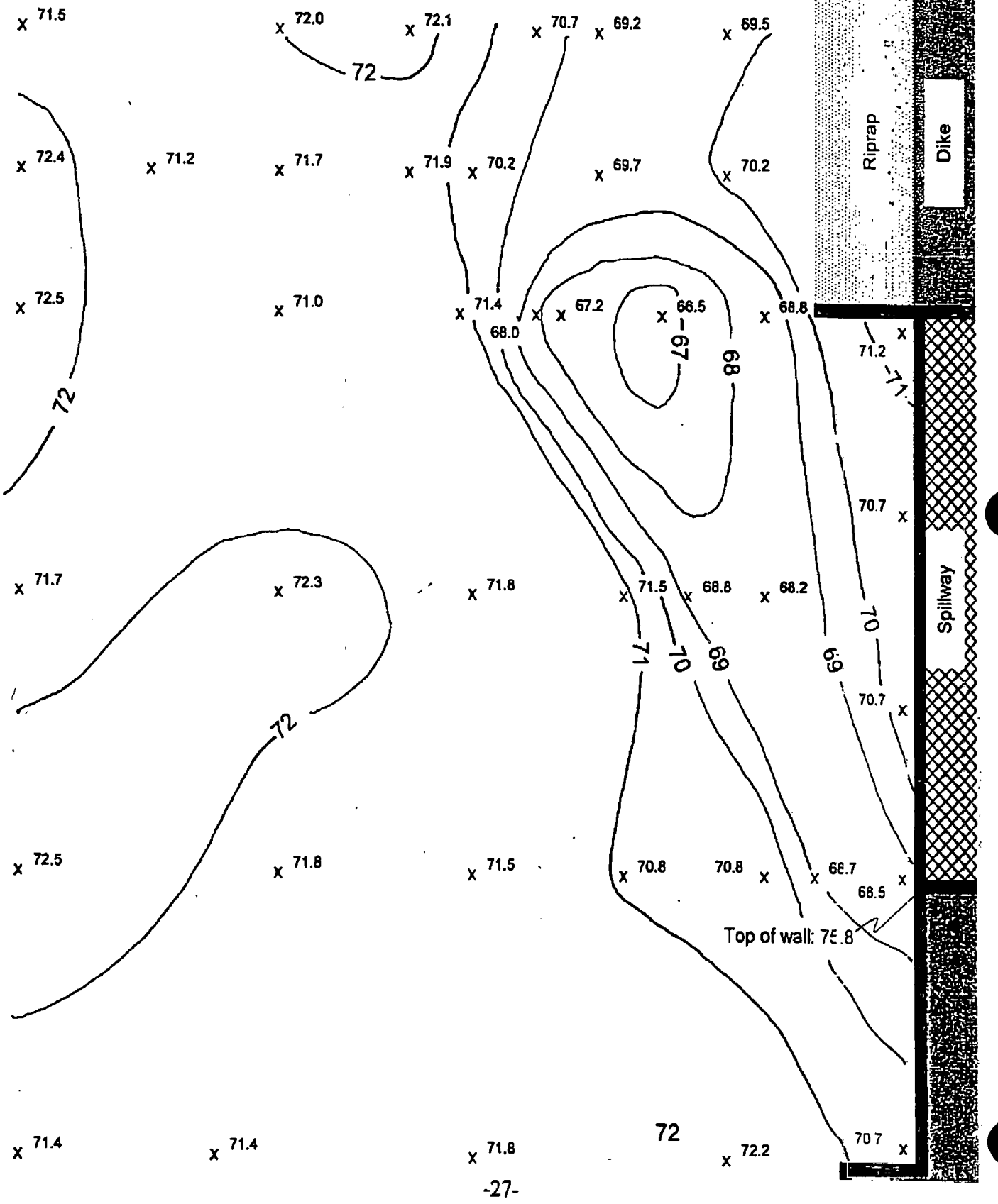
DEPTH (FEET)	SAMPLE	SPT COUNT	SAMPLE RECOVERY	UNIFIED SOIL CLASS SYMBOL	MOISTURE & WATER DEPTH	GRAPHIC SOIL PROFILE	SOIL STRATA DEPTH	SOIL STRATA DESCRIPTION
1				OL (ML)			0.0-1.0'	ORGANIC SILT; (topsoil fill), slightly moist, medium dense, brown.
2				SP			1.0'-2.5'	GRAVELLY SAND; (fill), slightly moist, medium dense, light brown.
3	X	7	20%	CL-ML			2.5'-6.5'	SILTY CLAY; with fine sand, moist, stiff, tan to brown.
4	X	6						
5	X	4						
6	X	5	60%					
7	X	5						
8	X	4						
9				SP			6.5'-9.0'	GRAVELLY SAND; slightly moist, medium dense, brown.
10	X	7	10%					
11	X	6						
12	X	9						
13				SP			9.0'-15.0'	GRAVELLY SAND; slightly moist, dense, brown.
14	X	23	50%					
15	X	28						
16	X	34						
17	5.0"	50	50%					End of boring = 15.0 feet
18								No groundwater encountered
19								
20								
21								

Highlight Creek Intake Reservoir

Silt Surface Topography

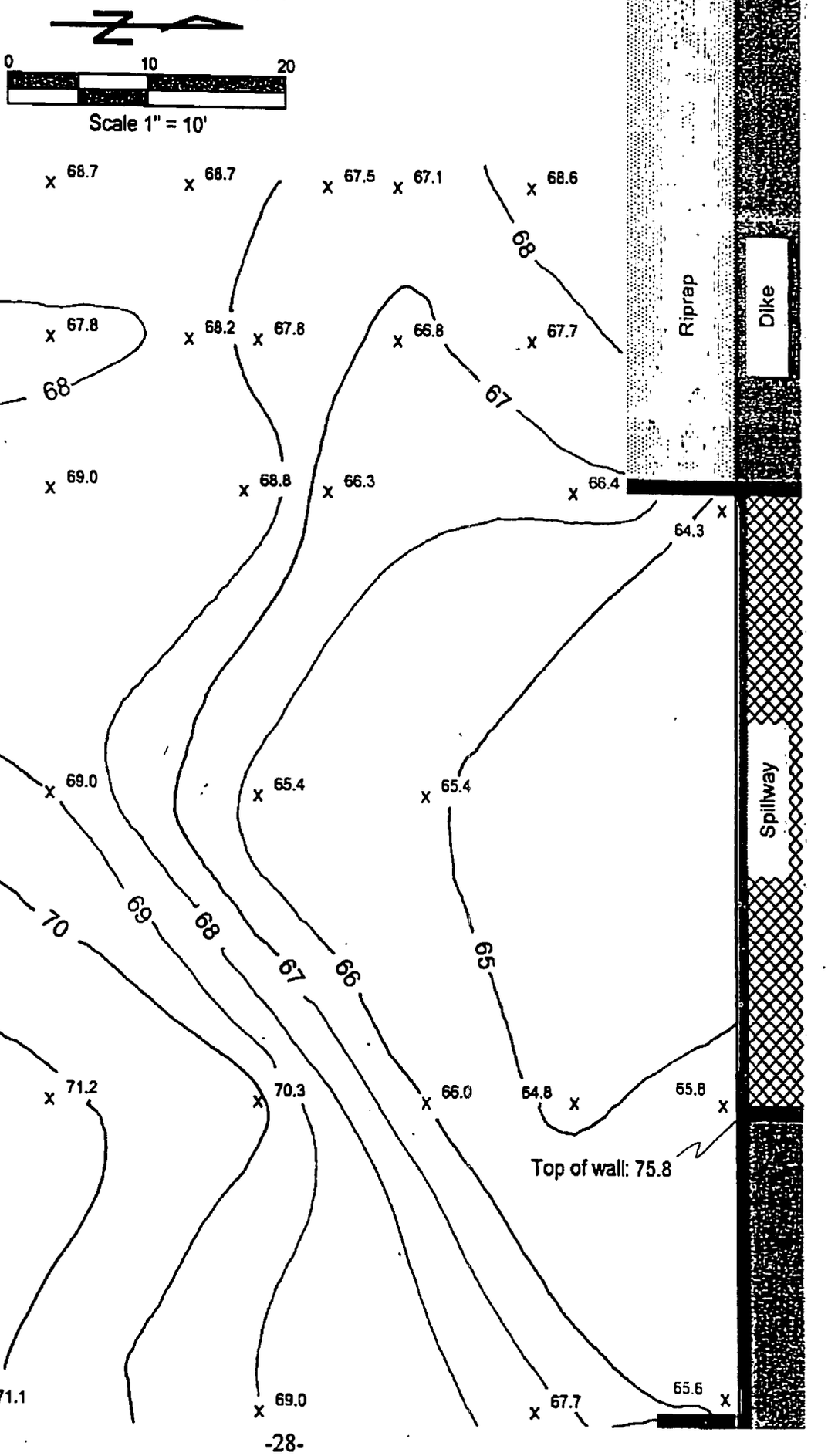


Scale 1" = 10'



Highlight Creek Intake Reservoir

Gravel Surface Topography



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SUMMARY OF CLASSIFICATION TESTS

CLIENT: Mr. James Nickelson, PE
Morrison Maierle, Inc.
ADDRESS: 901 Technology Blvd.
Bozeman, Montana 59771

PROJECT NAME: **Hyalite Water Project**
Geotechnical Investigation
PROJECT LOCATION: **Bozeman, Montana**
PROJECT NUMBER: 031018-0073
LAB NUMBER: 03-8578
PROJECT MANAGER William W. Weikel, P.E.
DATE: 12/29/03

HOLE #	DEPTH (feet)			M/C (%)	ATTERBERG		% PASSING SIEVE				SOIL CLASS	SOIL DESCRIPTION
					LL	PI	#4	#10	#40	#200		
B-7	4.5	to	6.0	-	31	13	100	97	78	54.7	CL	Sandy, Lean CLAY
B-14	4.5	to	6.0	-	33	13	99	97	83	63.0	CL	Sandy, Lean CLAY
B-17	4.5	to	6.0	-	38	19	94	94	92	75.6	CL	Lean CLAY with Sand

Reviewed By: William W. Weikel, P.E.

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Phone: (406)-721-2182 Fax: (406)-543-4220

SUMMARY OF CORROSION TESTS

Project Name: **Hyalite Water Project**
Bozeman, Montana
Geotechnical Investigation

Client: Mr. James Nickelson, P.E.
Morrison-Maierle, Inc.
Address: 901 Technology Blve.
Bozeman, MT 59971

Project Number: 031018-0073
Lab Number: 03-8578
Project Manager: William W. Weikel, P.E.
Date: 12/23/03

BORING NUMBER	PH (s.u.)	CLORIDE CONTENT (ppm)	SULFIDE CONTENT (ppm)	REDOX POTENTIAL*	SOIL TYPE DESCRIPTION	RESISTIVITY (ohm-cm)	NATURAL MOISTURE (%)
B-2	7.6	3	nd	minimal	Gravelly sand	15,000	no test
B-4	7.4	1	nd	minimal	Gravelly sand	2,600	3
B-7	6.5	2	nd	minimal	Silty clayey sand	3,900	14
B-9	7.3	3	nd	minimal	Gravelly sand with silt	11,000	2
B-10	7.3	2	nd	minimal	Gravelly sand with silt	10,000	5
B-11	6.6	3	nd	minimal	Gravelly sand with silt	5,000	11
B-12	7.0	2	nd	minimal	Gravelly sand with silt	3,700	7
B-13	6.6	3	nd	minimal	Gravelly sand with silt	8,300	3
B-14	6.4	2	nd	minimal	Gravelly sand with silt	2,600	12
B-16	6.3	2	nd	minimal	Silty clay with sand	2,600	5
B-17	6.5	3	nd	minimal	Silty clay with sand	1,900	11
B-18	7.1	4	nd	minimal	Silty clay with sand	no test	no test

*No test was performed due to inavaliability of field testing apparatus.
nd = Not detected at the reporting limit.

Reviewed by: William W. Weikel, PE

GMT CONSULTANTS, INC.
GEOTECHNICAL ENGINEERING
CONSTRUCTION MATERIALS TESTING

KEY TO CLASSIFICATIONS USED ON SOIL BORING LOGS

Standard D 2487 - 98
Classification of Soils for Engineering Purposes
(Unified Soil Classification System)

DRILLING NOTES

DRILLING – Standard penetration test borings were advanced by 3¼" or 4¼" I.D. hollow-stem augers unless noted otherwise. Jetting water was used to cleanout auger prior to sampling only where indicated on logs. Standard penetration test borings are designated by the prefix "B" (Boring).

SAMPLING – All samples are taken with the standard 2" O.D. split tube sampler, except where noted. TW indicates thin-walled (undisturbed) tube sample.

BPF – Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler is set 6" into undisturbed soil below hollow-stem auger. Driving resistances are then counted for second and third 6" increments and added to get BPF.

WH – WH indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WR – WR indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

NOTE – All tests run in accordance with applicable ASTM standards.

PARTICLE SIZE IDENTIFICATION

Boulders	10"	+	
Cobbles	3"	to	10"
Gravel			
Coarse	¾"	to	3"
Fine	No. 4	to	¾"
Sand			
Coarse	No. 10	to	No. 4
Medium	No. 40	to	No. 10
Fine	No. 200	to	No. 40
Silt	.005 mm	to	No. 200
Clay		-	.005 mm

RELATIVE DENSITY OF COHESIONLESS SOILS

very loose	0	to	5	BPF
loose	6	to	10	BPF
medium dense	11	to	30	BPF
dense	31	to	50	BPF
very dense	51	+		BPF

RELATIVE CONSISTENCY OF COHESIVE SOILS

very soft	0	to	1	BPF
soft	2	to	4	BPF
medium stiff	5	to	8	BPF
stiff	9	to	15	BPF
very stiff	16	to	30	BPF
hard	31	+		BPF

LABORATORY TEST DESIGNATIONS

MC = Natural Moisture Content, %
LL = Liquid Limit, %
PL = Plastic Limit, %
PI = Plasticity Index, %
P200 = % passing 200 sieve
OC = Organic Content, %
S = Percent of Saturation, %
SG = Specific Gravity
C = Cohesion, psf
Ø = Angle of Internal Friction
qu = Unconfined Compressive Strength, psf
qp = Pocket Penetrometer Strength, tsf

GMT CONSULTANTS, INC.
GEOTECHNICAL ENGINEERING
CONSTRUCTION MATERIALS TESTING

KEY TO CLASSIFICATIONS USED ON SOIL BORING LOGS

Standard D 2487 - 98

Classification of Soils for Engineering Purposes (Unified Soil Classification System)

CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS [a]				SOIL CLASSIFICATION	
				GROUP SYMBOL	GROUP NAME [b]
COARSE-GRAINED SOILS more than 50% retained on No. 200 Sieve	GRAVELS More than 50% of the coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines [c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [e]	GW	Well - graded gravel [f]
			$C_u < 4$ and/or $1 > C_c > 3$ [e]	GP	Poorly graded gravel [f]
		GRAVELS WITH FINES More than 12% fines [c]	Fines classify as ML or MH	GM	Silty gravel [f,g,h]
			Fines classify as CL or CH	GC	Clayey gravel [f,g,h]
	SANDS 50% or more of the coarse fraction passing No. 4 sieve	CLEAN SANDS Less than 5% fines [d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [e]	SW	Well graded sand [i]
			$C_u < 6$ and/or $1 > C_c > 3$ [e]	SP	Poorly graded sand [i]
		SANDS WITH FINES More than 12% fines [d]	Fines classify as ML or MH	SM	Silty sand [g,h,i]
			Fines classify as CL or CH	SC	Clayey sand [g,h,i]
FINE-GRAINED SOILS 50% or more passing the No. 200 Sieve	SILTS & CLAYS Liquid limit less than 50%	Inorganic	PI > 7 and plots on or above "A" line [j]	CL	Lean clay [k,l,m]
			PI < 4 or plots below "A" line [j]	ML	Silt [k,l,m]
		Organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OL	Organic clay [k,l,m,n] / Organic silt [k,l,m,o]
	SILTS & CLAYS Liquid limit 50% or greater	Inorganic	PI plots on or above "A" line	CH	Fat clay [k,l,m]
			PI plots below "A" line	MH	Elastic silt [k,l,m]
		Organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OH	Organic clay [k,l,m,p] / Organic silt [k,l,m,q]
HIGHLY ORGANIC SOILS		Primarily organic matter, dark in color with organic odor		PT	Peat

[a] Based on the material passing the 3-in (75 - mm) sieve

[b] If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name

[c] Gravels with 5% to 12% fines require dual symbols
- GW-GM well graded gravel with silt
- GW-GC well graded gravel with clay
- GP-GM poorly graded gravel with silt
- GP-GC poorly graded gravel with clay

[d] Sands with 5% to 12 % fines require dual symbols
- SW-SM well graded sand with silt
- SW-SC well graded sand with clay
- SP-SM poorly graded sand with silt
- SP-SC poorly graded sand with clay

[e] $C_U = D_{60} / D_{10}$ $\quad C_C = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[f] If soil contains ≥ 15% sand, add "with sand" to group name.

[g] If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.

[h] If fines are organic, add "with organic fines" to group name.

[i] If soil contains ≥ 15% gravel, add "with gravel" to group name

[j] If Atterberg limits plot in hatched area, soil is a CL-ML (silty clay).

[k] If soil contains 15% to 29% plus No. 200, add "with sand or with gravel" whichever is predominant.

[l] If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.

[m] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

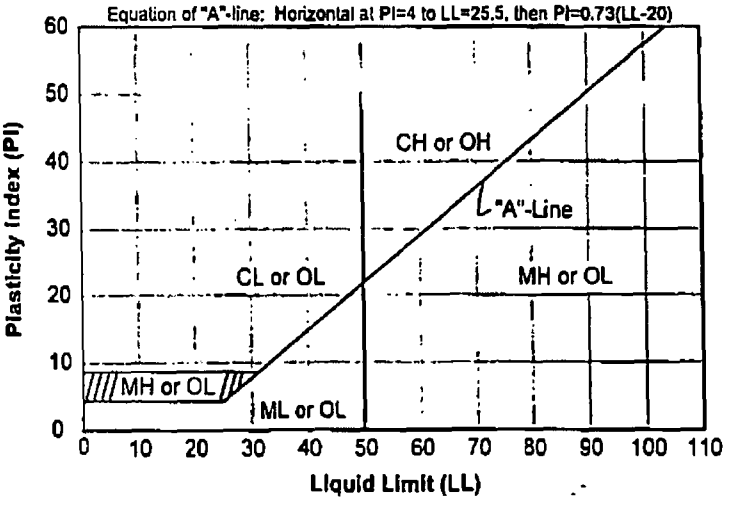
[n] PI ≥ 4 and plots on or above "A" line.

[o] PI < 4 or plots below "A" line.

[p] PI plots on or above "A" line.

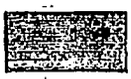
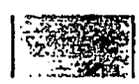
[q] PI plots below "A" line.

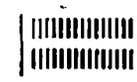
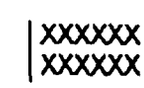
For classification of Fine-Grained Soils and Fine-Grained Fraction of Coarse-Grained Soils



GMT CONSULTANTS, INC.
GEOTECHNICAL ENGINEERING
CONSTRUCTION MATERIALS TESTING

GRAPHIC CLASSIFICATION KEY

SOIL TYPE DESCRIPTION	GRAPHIC	SYMBOL
Well graded gravel		GW
Poorly graded gravel		GP
Well graded gravel w/ silt		GW-GM
Well graded gravel with clay		GW-GC
Poorly graded gravel with silt		GP-GM
Poorly graded gravel with clay		GP-GC
Silty gravel		GM
Clayey gravel		GC
Silty clayey gravel		GM-GC
Well graded sand		SW
Poorly graded sand		SP
Well graded sand with silt		SW-SM
Well graded sand with clay		SW-SC
Poorly graded sand with silt		SP-SM
Poorly graded sand with clay		SP-SC

SOIL TYPE DESCRIPTION	GRAPHIC	SYMBOL
Silty sand		SM
Clayey sand		SC
Silty clayey sand		SM-SC
Lean clay		CL
Silt		ML
Silty clay		CL-ML
Organic lean clay		OL (CL)
Organic silt		OL (ML)
Fat clay		CH
Elastic Silt		MH
Organic fat clay		OH (CH)
Organic elastic silt		OH (MH)
Peat		PT
Plant mix		
Rock		

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix H. Disposal Options for Existing and New Sludge Monitoring

Prepared by: Rika Lashley

Reviewed by: James Nickelson

Date: November 3, 2010

H.1. Introduction

The Bozeman Water Treatment Plant (WTP) is in the process of being upgraded, including a change in process chemicals used for coagulation and handling of sludge produced by this process. Stored sludge from the existing process, as well as future sludge generated in the upgraded facility will require disposal offsite.

The current process uses ferric chloride as coagulant. Sludge is stored in backwash basins for about one year. In the fall, it is pumped to a drying bed where it is allowed to dry until it can be loaded out and stored onsite in piles. In addition, the WTP has a sludge pond that is used as a backwash surge basin and contains sludge and water. Total existing sludge quantities are estimated at 500 cubic yards of dry sludge and 450,000 gallons of wet or liquid sludge. This existing sludge will need to be removed from the site before major construction activities for the facility improvements can begin.

The new coagulation process will use polyaluminum chloride (PACl), Aluminum Chlorohydrate (ACH), or Ferric Chloride, as coagulant. Resultant sludge will be stored and dried in drying beds that allow the sludge to drain and water to evaporate. The dry sludge will require annual disposal offsite.

This technical memorandum examines sludge disposal methods practiced in Montana and explores disposal options for the Bozeman WTP.

H.2. Disposal of Water Treatment Sludge in Montana

The Montana Department of Environmental Quality (MDEQ), Solid Waste Management oversees disposal of sludge generated by water treatment. Dry sludge containing ferric chloride or aluminum are defined as "Industrial Solid Waste" according to ARM 17.50 Subchapter 502. Industrial solid wastes are Group II wastes which need be disposed of in a Class II solid waste landfill. However, MDEQ Solid Waste Management is currently working on a document that will give guidance for disposal requirements and options of sludge produced by water treatment.

Preliminary information conveyed by MDEQ includes the following:

The generator of the water treatment sludge waste or their consultant must submit to the Solid Waste Program a detailed letter requesting approval to dewater, landfill, or land apply the sludge waste. In addition, submittal of the following will be required:

"1. Material analyses to demonstrate the material is not hazardous. Depending on the end use/disposal of the sludge analyses vary as follows:

   a. Dewatering – If sludge waste is to be removed and stock piled for dewatering prior to final disposal, analyses must be conducted according to No. 2 below – at least for total metals, pH, and nitrates. Ensure all of the requirements for the Water Protection Bureau are met, including all necessary permits.
   b. Landfill Disposal – If the sludge has been tested prior to dewatering as described above, test results can be used to determine whether the dewatered water treatment sludge waste can be used as daily cover or disposed of at a licensed landfill as industrial waste. For existing stockpiled sludge, at a minimum the above described testing must be performed.
   c. Land Application – The application must not cause a violation of surface water or groundwater standards or impact groundwater or surface water resources, and that land application will not create a public nuisance, eg, blowing dust, etc. Is enough acreage available to support the addition of this material? What benefit does land application provide, soil tilth, nutrients, etc?

2. Analyses - Each sample will be a composite of one subsample of every 500 cubic yards of water treatment sludge waste. Information about these analyses is included at the end of this memorandum. At a minimum, the following analyses should be performed:

Parameter	Landfill Daily Cover	Land Application
a. Total Metals	X	
b. SPLP – metals		X
c. pH	X	X
d. Fluoride		X
e. Nitrates, Phosphates, Sulfates	Nitrates	X
f. Cations and Anions, CEC Balance		X
g. Sodium Absorption Ratio (SAR)		X
h. Nutrients		X

At this time there are no specific limits for maximum concentrations for the parameters covered in the above analyses, however, test results can be used to show that the sludge is not hazardous, i.e. does not contain toxic metals or other hazardous substances, and to determine impacts on land application. If metals are found in sludge that is to be land-applied, the 40CFR503 regulations may be used as guidance for ceiling concentrations.

During dewatering and storage of sludge it is important to note that neither water nor sludge may enter state waters directly. If wet sludge is to be stored at a site to drain and dry,

containment must be provided that prevents drain water from leaving the site and entering state water. Percolation into the ground is allowed, as long as there is no shallow ground water under direct influence of or connection to surface water. Ground water may be considered shallow if there are less than 4 feet of separation between the ground surface or bottom of percolation pond and the top of the ground water table at any time during the year.

For more detailed information about MDEQ requirements and the finished WTP sludge disposal document contact Renai Hill (MDEQ - Solid Waste Management), 406-444-1434 or email Renhill@mt.gov."

H.2.1. Land Application

If the abovementioned tests show that a sludge is non-toxic and otherwise essentially inert, it may be land-applied. However, sludge salt content, CEC balance, and pH will need to be considered with the receiving soil's characteristics in mind. Water treatment sludge does not contain significant amounts of nutrients and does not have the fertilizing properties of wastewater treatment or septic sludge. However, depending upon in situ soil conditions, the water treatment sludge may have beneficial effects with respect to pH or other parameters. For example, if sludge pH is much lower than the in situ soil, application of the sludge may have a positive impact on soil pH.

WTP sludge may be spread on top of the soil. Unlike for biosolids, there is no requirement to incorporate the sludge into the soil, however, if sludge is applied in a liquid form, incorporation may be desirable to allow for blending of sludge and soil and to avoid liquid runoff into ditches and streams. Equipment used for injecting biosolids sludge into soil may be used for injecting liquid WTP sludge. However, to avoid contamination with undisinfected biosolids, the equipment must be thoroughly cleaned before use for WTP sludge. If the WTP sludge is applied to the same field as the biosolids sludge with the same restrictions and setbacks, contamination with biosolids is not a concern.

H.2.2. Disposal Landfill

There are very few water plants in Montana that generate large quantities of sludge and routinely dispose of sludge. One example is the Great Falls water treatment plant. The City of Great Falls, Montana water treatment plant produces alum sludge, which is dewatered onsite in percolation ponds. Once the sludge has dried sufficiently to be handled by a loader, it is hauled to the High Plains Landfill north of Great Falls. This landfill accepts the sludge for $12 to $14 per ton and uses it as daily cover. They require that the sludge pass the paint filter test but do not ask for any further testing. Testing, fees, and other sludge acceptance requirements will vary from landfill to landfill. The cost of disposing of sludge at a land fill that does not use soil for daily cover would generally be greater than what is charged by this facility.

H.3. Disposal Alternatives for the Bozeman WTP Sludge

As discussed above, the three main disposal methods for WTP sludge are land application, landfilling, and disposal to the wastewater treatment plant.

The latter option is not attractive due to the physical separation of the WTP and the WWTP. Hauling costs of liquid sludge would be high and installation of a pump station and pipeline

not feasible when compared to other available options. However, this option may be considered for extraordinary circumstances for the upgraded WTP. Coordination with Wastewater Treatment Plant staff would be necessary to determine if this is a disposal option for the Bozeman WTP sludge. The existing sludge currently stored on the WTP site will likely require a different disposal method.

Landfilling dry sludge may be considered if the distance to the landfill is not excessive and landfill fees are reasonable. Logan Landfill, east of Three Forks, MT, accepts solid waste for Gallatin County. The driving distance from the water treatment plant to the landfill is over 35 miles which would result in significant hauling costs. As some of the existing sludge is still liquid, it would need to be dewatered and pass the paint filter test before the landfill would accept it. Dewatering may be accomplished by storing the sludge in percolation ponds or drying beds. The dewatered sludge may be stored temporarily onsite to further dry it and reduce water content before hauling. MDEQ will need to be informed of any temporary storage plans and will need to give permission to store the sludge If dewatering by evaporation is not an option due to time constraints, mechanical dewatering would add additional cost to the sludge disposal. Furthermore, at this time Logan Landfill will only accept WTP sludge as special waste to be buried for a fee of $55 to $60 per ton. Negotiations with Landfill management may be possible in light of the new MDEQ guidance on WTP sludge disposal and allow for use of the sludge as daily cover. Hauling distance, dewatering costs and landfill fees result in a high cost for this alternative.

Land application may be the most cost effective disposal method for the Bozeman WTP sludge. Ideally, landowners near the WTP would be approached to avoid excessive hauling times and costs. If suitable land for land application cannot be located in the immediate vicinity of the WTP, an option may be "Home on the Range," a farm run by Dan Bates in Amsterdam, MT. Mr. Bates accepts septic sludge, grease trap waste, and occasionally wastewater treatment sludge and may be willing to accept the water treatment sludge. He does have some testing requirements, including pH and nutrients, some of which may be satisfied with the MDEQ-required testing. He will need to evaluate compatibility of the sludge with his soils. Hauling distance to Amsterdam is approximately 25 miles. Dan Bates may be contacted at 406-282-7378 for more information.

H.4. Sludge Handling Recommendations for Construction Project

The construction of a new water plant will require that the Contractor handle and dispose of both dry and liquid sludge. Based on the preliminary information provided by MDEQ, and the initial indications that the sludge will be of high enough quality to land apply, we recommend the following steps be taken. The responsible party is listed behind each item:

- Sample and test dry sludge per DEQ recommendation.-City of Bozeman
- Sample and test liquid sludge in backwash surge basin per DEQ recommendation. City of Bozeman
- Require Contractor to use dry sludge to build berms or waste on site-HDR/MMI: Construction Documents
- Require Contractor to dispose of sludge stored in existing drying bed and sludge in backwash surge basin. Allow Contractor the option to utilize the existing drying bed for dewatering or to bring in a dewatering press. Allow Contractor to dispose of dried sludge on site-HDR/MMI: Construction Documents

- After new plant is put on line, require Contractor to pump backwash basins to new drying beds for future disposal by the City. HDR/MMI: Construction Documents, City of Bozeman.

HDR/MMI will continue to check with MDEQ on the status of their guidance document. In order to assure that the sludge can be disposed of onsite, it would be best to sample by the first of the year in order to get results back to include in the Construction Documents. Ideally MDEQ will have the sampling and analyses requirements clearly defined by that time.

Additional Information for Sludge Analyses

Total Metals: These metals are also covered under the 40CFR503 regulations for disposal of biosolids and include arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. For disposal of alum sludge, aluminum should be included in the test.

SPLP (Synthetic Precipitation Leaching Procedure): This analysis provides a representation of leachability for situations outside normal landfill disposal situations where leachate - of which acetic acid is a major component - is in continual contact with wastes. The SPLP analysis utilizes a solution of nitric and sulfuric acids and water, and simulates leaching in the natural environment by acid rain. The analysis for SPLP is conducted using EPA SW-846, Method 1312. Metals included in the analysis are those listed under total metals above.

Cations and Anions, CEC Balance: This analysis would include major cations and anions along with a calculation of the cation exchange capacity (CEC) of the sludge material. Specifically, for cations, at least Ca, Mg, Na, K; and for anions, Cl, OH, CO_3, HCO_3. Generally, a high CEC is indicative of fertile soils, while a low CEC indicates that the soil lacks micronutrients required for plant growth. This is a typical soil fertility test performed by most labs.

SAR: The Sodium Absorption Ratio (SAR) is in indicator of sodium in the soil. Plants are detrimentally affected, both physically and chemically, by excess salts in some soils and by high levels of exchangeable sodium in others. Soils with an accumulation of exchangeable sodium are often characterized by poor tilth and low permeability making them unfavorable for plant growth. Sodium adsorption ratio, along with pH, characterize salt-affected soils.

For all other testing parameters, please consult with MDEQ for required test methods, if any.

City of Bozeman Hyalite/Sourdough Water Treatment Plant Replacement Project

Appendix I. Sustainability and Climate Action Plan Technical Memorandum

Prepared by: Nathan Kutil

Reviewed by: James Nickelson

Date: October 15, 2010

I.1. Introduction

Energy conservation is an important concern to the City of Bozeman. It is therefore necessary to design for energy conservation during the planning, layout and orientation of the facility and when selecting building service systems.

I.2. Sustainable Site

This project will protect or restore habitat through the use of native grasses in lieu of elaborate landscaping. Native grasses will be seeded throughout the disturbed project site and harvested for hay by local ranchers.

Existing native trees, shrubs, brush, and other vegetation will be preserved for wildlife security and visual screening of the facility.

Temporary erosion and sedimentation measures will be installed during construction. Minimum measures will include: Silt fences around the construction site and construction staging area to prevent off-site sediment migration; gravel construction entrances to prevent the tracking of sediment or other materials from the site; watering for dust control as needed; regular monitoring, inspection, and maintenance of erosion and sediment measures; temporary soil stabilization cover for bare soil surfaces.

I.3. Water Efficiency

The new facility will have many water efficiency components incorporated into the design. Due to the modest landscaping proposed there will be no need for an elaborate irrigation system. Collecting downspout rainwater off the roof and treating it in the process will also be evaluated during the facility design.

Additionally, there are provisions built into the water treatment process for capturing water which would normally be wasted from the treatment process. This includes decanting wasted

water from the dissolved air floatation treatment, gravity thickener, and lagoons and returning this decant water to the head of the treatment plant for processing.

I.4. Energy and Atmosphere

As part of the ongoing preliminary design, the use of excess available raw water pressure for generation of electricity (hydropower) that can be consumed by the water plant is being evaluated for economic feasibility.

In general, lighting will be designed for energy conservation and will meet the Illuminating Engineering Society's (IES) recommended practices. Where feasible, T5 style fluorescent lamp fixtures will be used to maximize energy conservation. Motion sensors will be located throughout the facility to turn lights off when a space is unoccupied.

Additional energy conservation measures will include the use of premium efficiency motors on all equipment purchased and installed at the facility and energy recovery from the 150 HP membrane feed pumping equipment. Motor control centers (MCC) will use LED lighting for energy conservation where feasible.

I.5. Materials and Resources

Although it is not specified, it is anticipated that concrete, masonry, steel and possibly some other products will be manufactured regionally.

Following demolition of the existing water treatment plant many of the components will be recycled including the existing aluminum tanks. Additionally, the building superstructure may be recycled by relocating the building frame to the Bozeman WRF. There may be a use for this structure at the WRF and relocation will be considered further during final design.

I.6. Indoor Environmental Quality

This will be a non-smoking building and the use of low VOC adhesive materials will be specified.

There will be level measuring instruments and alarms for monitoring the level in the chemical storage tank. In the unlikely event of a major spill/leak, the chemical room will include secondary containment. Fresh air is provided for the chemical room - air is not recirculated.

The use ground source heating and cooling using raw water for heat exchange for key building heating and cooling units will be considered as part of the HVAC design. These types of systems have become more common recently and the cost of equipment required for such systems has come down in recent years.

Heat recovery on exhaust fans in the facility and in the laboratory will be used to capture and reuse heat within the water treatment plant.

I.7. Climate Action Plan Considerations

The Bozeman Municipal Climate Action Plan (CAP) includes two recommendations specifically related to the Sourdough Treatment Plant. These include the installation of an electricity producing turbine and addressing LEED Building Standards for the expansion of the water plant.

The economic viability analysis of installing a turbine at the Sourdough Water Plant is included in the pre-design effort for the project. This analysis will provide the City with the needed information to determine if the installation of a turbine is cost effective at this time or if the financial combined with the carbon footprint reduction makes the project a priority for the City.

The CAP addresses LEED Building Standards relative to the expansion of the water plant as follows: "....from a carbon footprint standpoint the Task Force recommends that energy-associated LEED (or similar) principles be followed, not that LEED certification be sought." The Request for Proposal for the project included that "..... the design shall incorporate LEEDS construction techniques, with the possibility of pursuing certification. The Professional Services Agreement for the design of the project includes a design memorandum related to the Administration/Laboratory/Maintenance Building that addresses LEED Certification Considerations and Recommendations. As directed by City Staff the recommendations will be centered around those items that make financial sense to the project.

I.8. LEED Considerations

LEED accredited professionals have been selected as part of the facility design team and their input for innovation and design process will be valued for overall sustainability considerations. A U.S. Green Building Council (USGBC) checklist (attached) will be completed for this project at the completion of design to provide a measurement of how the building would rank within the LEED certification program.

LEED for New Construction v2.2
Registered Project Checklist

Project Name:
Project Address:

Yes	?	No			
			Sustainable Sites		14 Points
Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel-Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development,** Protect or Restore Habitat	1
			Credit 5.2	**Site Development,** Maximize Open Space	1
			Credit 6.1	**Stormwater Design,** Quantity Control	1
			Credit 6.2	**Stormwater Design,** Quality Control	1
			Credit 7.1	**Heat Island Effect,** Non-Roof	1
			Credit 7.2	**Heat Island Effect,** Roof	1
			Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
			Water Efficiency		5 Points
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

		Energy & Atmosphere		17 Points
Y		Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y		Prereq 2	**Minimum Energy Performance**	Required
Y		Prereq 3	**Fundamental Refrigerant Management**	Required

*Note for EAc1: All LEED for New Construction projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.

	Credit 1	**Optimize Energy Performance**	1 to 10
		10.5% New Buildings or 3.5% Existing Building Renovations	1
		14% New Buildings or 7% Existing Building Renovations	2
		17.5% New Buildings or 10.5% Existing Building Renovations	3
		21% New Buildings or 14% Existing Building Renovations	4
		24.5% New Buildings or 17.5% Existing Building Renovations	5
		28% New Buildings or 21% Existing Building Renovations	6
		31.5% New Buildings or 24.5% Existing Building Renovations	7
		35% New Buildings or 28% Existing Building Renovations	8
		38.5% New Buildings or 31.5% Existing Building Renovations	9
		42% New Buildings or 35% Existing Building Renovations	10
	Credit 2	**On-Site Renewable Energy**	1 to 3
		2.5% Renewable Energy	1
		7.5% Renewable Energy	2
		12.5% Renewable Energy	3
	Credit 3	**Enhanced Commissioning**	1
	Credit 4	**Enhanced Refrigerant Management**	1
	Credit 5	**Measurement & Verification**	1
	Credit 6	**Green Power**	1

continued...

Yes	?	No			
			Materials & Resources		13 Points
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3.1	**Materials Reuse**, 5%	1
			Credit 3.2	**Materials Reuse**,10%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Regio	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Regio	1
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1

Yes	?	No			
			Indoor Environmental Quality		15 Points
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Lighting	1
			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
			Credit 7.1	**Thermal Comfort**, Design	1
			Credit 7.2	**Thermal Comfort**, Verification	1
			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Yes	?	No			
			Innovation & Design Process		5 Points
			Credit 1.1	**Innovation in Design**: Provide Specific Title	1
			Credit 1.2	**Innovation in Design**: Provide Specific Title	1
			Credit 1.3	**Innovation in Design**: Provide Specific Title	1
			Credit 1.4	**Innovation in Design**: Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

Yes	?	No		
			Project Totals (pre-certification estimates)	69 Points

Certified: 26-32 points, **Silver:** 33-38 points, **Gold:** 39-51 points, **Platinum:** 52-69 pc

Form No 76-O R2/80

C3.0459

41H

STATEMENT OF CLAIM FOR EXISTING WATER RIGHTS

OTHER USES

For the Water Courts of the State of Montana

RECEIVED
SEP 9 1981
MONTANA D.N.R.C.
BOZEMAN FIELD OFFICE

GA-U
40-015-01-13
-40-

1. **Owner of Water Right** BOZEMAN CREEK & RESERVOIR CO. / Last / First / Middle Initial

Co-Owner or Other Interest Owner / Last / First / Middle Initial

Address 8323 NASH RD.

City BOZEMAN State MONT. Zip Code 59715

Home Phone No. Business Phone No.

2. **Person completing form** MOORE / Last KATHRYN / First A. / Middle Initial

Address 8323 NASH RD.

City BOZEMAN State MONT. Zip Code 59715

Home Phone No. Business Phone No.

3. **Use:** (Check Only One)

FR ☐ Fish Raceways	GE ☐ Geothermal	MN ☐ Mining
FW ☐ Fish & Wildlife	NV ☐ Navigation	PG ☐ Power Generation
CM ☐ Commercial	FP ☐ Fire Protection	RC ☐ Recreation
IN ☐ Industrial	AS ☐ Agricultural Spraying	OT ☐ Other
MC ☒ Municipal	OF ☐ Oil Well Flooding	Explain

4. **Source of Water:** (Check Only One) DNRC

- ☐ Spring Name
- ☐ Well Name
- ☐ Stream Name Tributary of
- ☐ Lake Name Stream
  Tributary of
- ☒ Reservoir Name MYSTIC LAKE Stream (BOZ. CREEK) AKA or SOURDOUGH CR
  Tributary of E. GALLATIN. RV.

5. **Point of Diversion:** County GALLATIN

SE ¼ SE ¼ SE ¼, Section 25, T 3 N/S, R 6 E/W

Lot , Block , Subdivision

6. **Means of Diversion:**

- ☐ Well
- ☐ Pump Capacity gpm
- ☒ Headgate with ditch or pipeline
- ☐ Instream use
- ☐ Other Explain

7. **Means of Conveyance:**

- ☒ Ditch
- ☒ Pipeline
- ☐ Instream
- ☒ Other: BOZEMAN CR. or SOURDOUGH CR.

DNRC

8. **Place of Use:** County GALLATIN

☐ Instream ☒ City or Town ☐ Other: Explain CITY of BOZEMAN.

___ Lot, ___ Block, ___ ¼ ___ ¼ ___ ¼, Section 1, T 2 N/S R 5 E/W

___ Lot, ___ Block, ___ ¼ ___ ¼ ___ ¼, Section ___, T 2 N/S R 6 E/W

___ Lot, ___ Block, ___ ¼ ___ ¼ ___ ¼, Section ___, T ___ N/S, R ___ E/W

___ Lot, ___ Block, ___ ¼ ___ ¼ ___ ¼, Section ___, T ___ N/S, R ___ E/W

___ Lot, ___ Block, ___ ¼ ___ ¼ ___ ¼, Section ___, T ___ N/S, R ___ E/W

Subdivision ___

9. **Flow rate claimed:** 1000

☐ cubic feet per second
☐ gallons per minute
☒ miner's inches

10. **Volume claimed:** 6000 acre-feet per year

11. **Period(s) of use:** JAN. 1 (Month / Day) to DEC. 31 (Month / Day)

12. **Check one:**

☐ Decreed Water Right
☒ Filed Appropriation Right
☐ Use Water Right

Priority date or date of first use: Hour 1 / Month 9 / Day 12 / Year 1901

13. **Attach** copies of the Decree, Record of Filing or Proof of Use Right. Exhibit A.

14. **Attach** copies of aerial photographs, U.S. Geological Survey maps or such other documents necessary to show point of diversion, place of use, place of storage, and conveyance facilities. Exhibit B & C. D & E.

15. **Notarized Statement signed by claimant.**

STATE OF MONTANA)
:ss.
County of GALLATIN)

I, Kathryn A. Moore, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim of existing water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are true and correct.

Kathryn A. Moore

Subscribed and sworn before me, this 10 day of September 19 81.

Shelly Driskell
Notary Public for the State of Montana

Residing at Bozeman

My Commission expires 1-15-84

City of Bozeman

030459

Form No. 76-A-3

ADDENDUM TO STATEMENT OF CLAIM FOR EXISTING WATER RIGHTS

For the Water Courts of the State of Montana

ADDITIONAL PLACE OF USE SHEET

Use this sheet if you have more places of use than can be listed on the claim form or if places of use are in different counties. Use the spaces on the claim form first.

County Gallatin Subdivision _____

04	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	12	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	11	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	E2	¼, Section	10	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	14	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	13	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	NE	¼, Section	24	T 2 N/S	R 5 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	6	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	7	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	W2	¼, Section	5	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	8	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	W2	¼, Section	17	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	18	T 2 N/S	R 6 E/W
04	___	Acres, Lot	___	Block	___	___	¼	___	¼	W2	¼, Section	19	T 2 N/S	R 6 E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W
	___	Acres, Lot	___	Block	___	___	¼	___	¼	___	¼, Section	___	T ___ N/S	R ___ E/W

Use additional sheets if necessary

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BOZEMAN CREEK RESERVOIR COMPANY
September
1981

Bozeman Creek Reservoir Company was first incorporated on March 11, 1901 to appropriate and use for irrigation, waters from Mystic Lake and Bozeman Creek (Sourdough Creek). On September 13, 1901, the company filed on 3,000 miners inches of flood water from Bozeman Creek and Mystic Lake. These waters were run down the natural channel of Bozeman Creek (Sourdough Creek) to points where ditches diverted and conveyed the water to farms and other places of intended use, by a water commissioner. This company continued operations under the provisions set forth in the Articles of Incorporation until its term of existence expired on March 11, 1921.

On June 27, 1922, a new corporation of the same name was formed to succeed the original company. All property, rights, titles and interests were acquired by the new corporation. The company has operated continuously since that time. The total amount of stock subscribed to is 20 shares, the city of Bozeman owning 6 shares and the rest owned by local individuals.

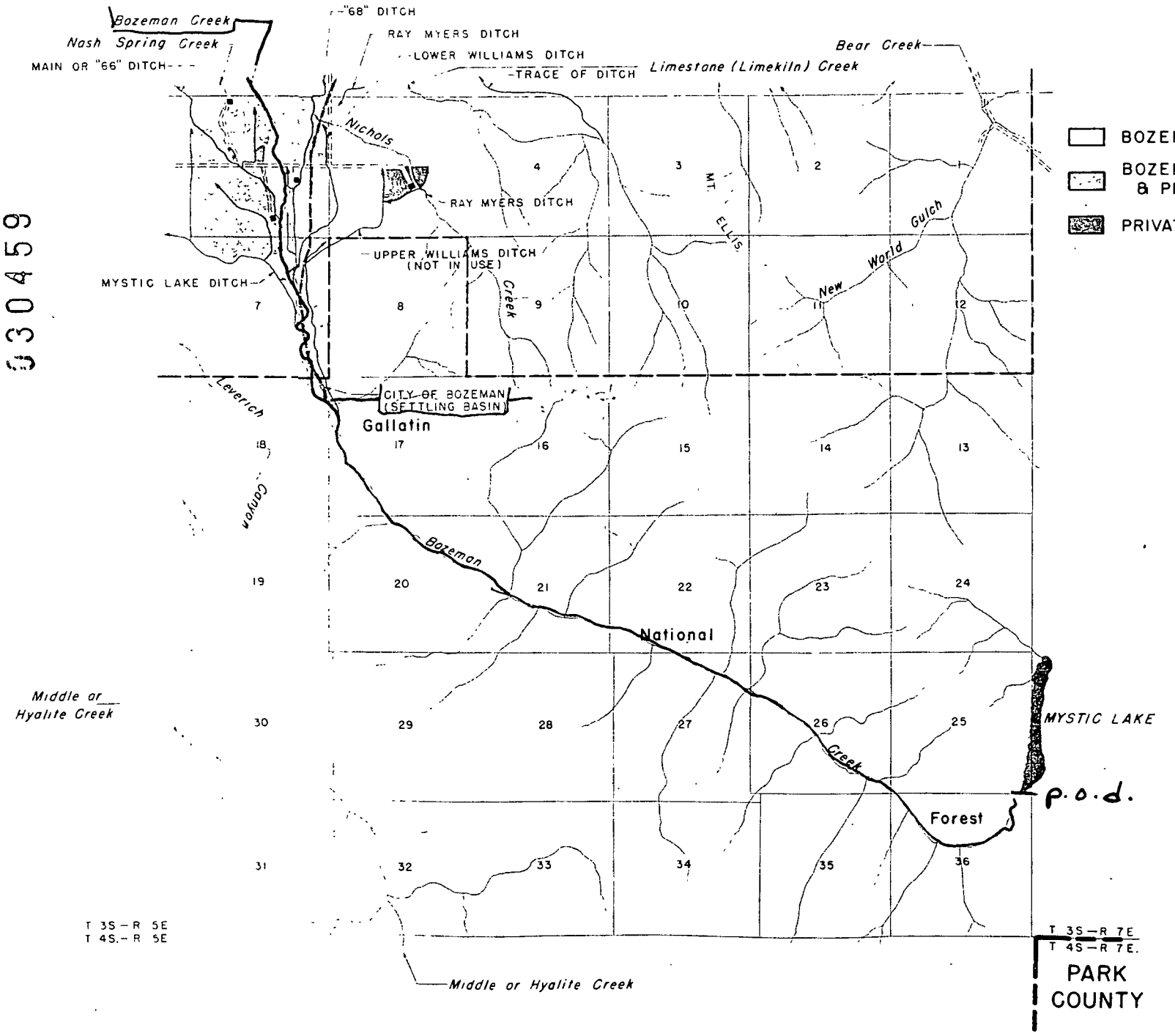
One share of stock entitles each stockholder to the use of 100 miners inches of water a day for a total of 14 days during the irrigation season, or 50 miners inches a day for a total of 28 days.

Shares of stock in the Bozeman Creek Reservoir Company may be sold to any person at any time and water represented by each share does not have to be used on any specific parcel of land.

Present share holders are:

City of Bozeman
Harry Corning
G. B. Properties
Hoffman Brothers
Kathryn A. Moore
Roger Hougen
Kenneth Kraft
J. F. Nash
Gene Cook
Mary REilly

330459



Ex E

T 3S-R 6E

The channel of said Bozeman Creek being capable of carrying said quantity of water. 3:-It has caused a survey of Mystic Lake and that portion of Bozeman Creek constituting the outlet of Mystic Lake to be made by a competent Engineer and Surveyor and a plat and field notes of such survey to be made and delivered to the officers of said corporation and has secured plans, specifications and estimates for the construction of said dam and has definitely selected the place for the location and construction of said dam and has made some excavations of earth and ~~earthing~~ and clearing of timber preliminary to the immediate and actual construction of said dam and preliminary to the ultimate completion and operation of said reservoir for the purposes herein stated. 4:-That the main purpose for which said waters are so appropriated are as follows: (1) To be used upon the lands of the stock holders of said corporation for irrigation, culinary, domestic, power, and other useful and beneficial purposes to the extent required by them respectively and in proportion to their respective shares and interest in said corporation; and if there is any surplus of water remaining after supplying the requirements of all of said stock holders then the surplus shall be subject to sale, rental and disposal to any person, Company or Corporation desiring to purchase

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the United States to the Interior Department through the proper officers for the right and privilege of locating, constructing, maintaining and operating said reservoir on the public domain and Forest reservation known as the Bull Forest Reserve upon which said Mystic Lakes is situate, and upon which said waters are to be conveyed as set forth in this notice of water right.

12:- That it also claims the right to keep in repair and to enlarge said dam and all necessary appurtenances, equipments and waterways, levees, conduits and flumes at any time and the right to dispose of said right and property in part or in whole at any time. Claiming the same, all and singular under any and all laws, National and State, and rulings and decisions thereunder in the matter of water rights and specifically under Sections 1880 to 1902 inclusive, Civil Code of Montana, and acts amendatory thereof.

In Witness Whereof the said corporation has caused its corporate name to be set to its President and its corporate

whole or at any time. Claiming the same, all and singular under any and all laws, National and State, and rulings and decisions thereunder in the matter of water rights and specifically under Sections 1880 to 1902 inclusive, Civil Code of Montana, and acts amendatory thereof.

In Witness Whereof the said Corporation has caused its corporate name to be set by its President and its corporate seal to be affixed by its Secretary duly authorized in this behalf this 13th day of September, 1921.

(Corporate Seal)

Bozeman Creek Reservoir Company.
By T. F. Stevenson, President.
Attest: F. H. Bull Secretary.

State of Montana }
County of Gallatin } ss.

T. F. Stevenson and F. H. Bull, being duly sworn each for himself says; That said Stevenson is the President of the Bozeman Creek Reservoir Company whose corporate name is signed to the foregoing instrument, and F. H. Bull is the Secretary thereof; that both of said affiants are of lawful age and make this affidavit for and on behalf of said Corporation under authority of the Board of Directors of said Corporation; that they have heard read the foregoing [illegible] and that the

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T. F. Stevenson, President ✓

Attest: F. A. Bull Secretary. ✓

State of Montana } ss.
County of Gallatin }

T. F. Stevenson and F. A. Bull, being duly sworn, each for himself says: That said Stevenson is the President of the Bozeman Creek Reservoir Company whose corporate name is signed to the foregoing instrument, and F. A. Bull is the Secretary thereof; that both of said affiants are of lawful age and make this affidavit for and on behalf of said corporation under authority of the Board of Directors of said Corporation; that they have heard read the foregoing instrument and know they contents thereof and that the matters therein stated are true.

T. F. Stevenson ✓

F. A. Bull. ✓

Subscribed and sworn to before me this 13th day of Sept. 1901

Chas. S. Hartman

Notary Public in and for the
County of Gallatin, Montana

Filed for record Sept. 20th. 1901, at 4:30 o'clock P.M.

E. V. Blankenship Recorder

130459

Exhibit A.

Notice of Water Right.

EXAMINED.

Certified to be a true and correct photocopy of the Gallatin County Records in Book 3 WATER RIGHTS, Page 55 this May 12, 1981
LUCILLE A. BRIDGES
Clerk & Recorder
By: Barbara E. Clawson
Deputy

State of Montana }
County of Gallatin } ss.

To all Whom these Presents may Concern:

Be it Known, That the undersigned, Bozeman Creek Reservoir Company, a corporation organized and existing under the Laws of the State of Montana, by T. A. Stevenson, its President, and F. O. Bull, its Secretary, duly authorized in that behalf by resolution of the Board of Directors duly made and entered upon the minutes of said corporation, does hereby publish and declare as a legal notice to all the world that it has a legal right to the use, possession and control of and claims by prior appropriation in the manner hereinafter designated Three thousand (3000) inches statutory measurement continuous flow of the waters of Mystic Lake and Bozeman Creek, and their tributaries, inlets and outlets situate in said County of Gallatin and State of Montana, for the main purpose of irrigation and for other useful and beneficial purposes, which said water was appropriated on the 12th day of Sept. 1901

POOR COPY

30459 30459

S.E.¼ Sec. 1, T. 3, S. R. 5. E. in Gallatin County mont.
Mrs. N. A. Haberton: Description of land as follows:
N.E.¼ Sec. 1, T. 3. S. R. 5, E. in Gallatin County Mont.
J. A. Bull: Description of land as follows:
N.E.¼ Sec. 31, T. 2, S. R. 6, E. & N.W.¼ of Sec. 32, T. 2, S. R. 6. E. Gallatin
County mont. B. F. Bisel: Description of land as follows:
S.W.¼ Sec. 31 T. 2 S. R. 6, E. & S.E.¼ Sec. 36 T. 2. S. R. 5, E. in Gallatin
County mont. Sanford Ruffner:- Description of land
as follows:- South half & N.E.¼ Sec. 19 T. 2 S. R. 6 E. & South
half of N.W.¼ Sec. 19, T. 2 S. R. 6 E. in Gallatin County mont.

6 th:- That the above named Stock holders are all citizens of the United States, or have declared their intention to become such, and over the age of twenty one years. 7th:- and it is the further purpose to use said waters for the irrigation of other lands which may be owned or hereafter acquired by any of the stock holders, or any other persons legally authorized, who may purchase of said Corporation shares of stock therein, or who may contract for the use of said water pursuant to law and the rules and regulations of said Corporation.

8th That the corporate name of said appropriator is:- Bozeman

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[illegible] name for any beneficial use or purpose. (b)
Said waters may also be used for the purposes of mining
Milling, irrigation of lands, culinary and domestic purposes
and for all other lawful, useful and beneficial purposes.
5:- The names of the present stock-holders of said corporation,
together with a description of the lands situate in said County
of Gallatin, Montana, upon which said waters are to be used
pursuant to this notice of water right and to the terms of the
Articles of Incorporation of said Bozeman Creek Reservoir
Company are; E. D. Jefferson, Description of land as follows;
S.E.¼ Sec. 30 T. 2 S. R. 6 E. S.W.¼ Sec. 29, T. 2, S, R, 6, E. S.E.¼ Sec. 29
T. 2, S, R, 6, E. in Gallatin County Montana,
N. T. Coleman- Description of land as follows;
N.E.¼ Sec. 6 T. 3 S. R. 6 E. in Gallatin County Montana.
O. L. Nash, Description of Land, N½ Sec. 6 T. 3 S. R. 6 E.
in Gallatin County Montana.
O. F. Stevenson Description of land as follows;
N½ Sec. 1 T. 3 S. R. 5 E. in Gallatin County Montana.
R. M. Stevenson: Description of land as follows:
S.W.¼ Sec. 36 T. 2 S. R. 5 E. in Gallatin County Mont.
William Roth: Description of land as follows:

POOR COPY

POOR COPY

30459

quantities of water as may be added by said Bozeman Creek Reservoir Company to the natural and ordinary quantity of water contained in said Lake and Creek by means of the construction of a Reservoir or Reservoirs at such point or points at or near said Mystic Lake as may be determined competent and adequate for the conservation of the waters of said Lake and its various inlets and outlets and tributaries, including the waters of said Bozeman Creek, it being the purpose and intention of said Bozeman Creek Reservoir Company to so appropriate, store and conserve the waters of said Mystic Lake, said Bozeman Creek, and their tributaries, by the construction of a dam about thirty feet (30) high and about 150 ft to 400 feet in length along the top thereof to be built of earth, stone and other suitable material across the said Bozeman Creek at a point at or near where said Bozeman Creek flows from and forms the outlet of said Mystic Lake. The waters so dammed, reservoired, appropriated and owned to be run thence down and through the natural channel of said Bozeman Creek to such points along said creek as ditches now existing or hereafter to be constructed may divert and convey said waters to the farms or other places of use herein intended and contemplated.

appropriated on the 12th day of Sept. 1901
2nd That the waters to appropriated and acquired consist: (a)
Of all the surplus waters of said Mystic Lake and said Bozeman
Creek not owned by prior appropriators. (b) Of such additional
quantities of water as may be added by said Bozeman Creek
Reservoir Company to the natural and ordinary quantity of
water contained in said Lake and Creek by means of the construct-
ion of a Reservoir or Reservoirs at such point or points at or
near said Mystic Lake as may be determined competent and
adequate for the conservation of the waters of said Lake and
its various inlets and outlets and tributaries, including the
waters of said Bozeman Creek, it being the purpose and intention
of said Bozeman Creek Reservoir Company to so appropriate,

POOR COPY
30459

STATEMENT OF CLAIM CHECKLIST

FORM TYPE: I S D (O)

OK	NOT OK		
✓		Received	30456
✓		Basin	
✓		County	
✓		Division	
✓		Transmittal	
✓		Fee	

FORM ITEMS

	OK	NOT OK	
1	✓		
2	✓		
3	✓		
4	✓		
5	✓		
6	✓		
7	✓		
8	✓		
9	✓		
10	✓		
11	✓		
12	✓		
13	✓		
14	✓		
15	✓		
16	✓		

Checked by R. Taylor 9-10-81
(Date)

DEFICIENT:

___Phoned _____ (Number) / _____ (Date)

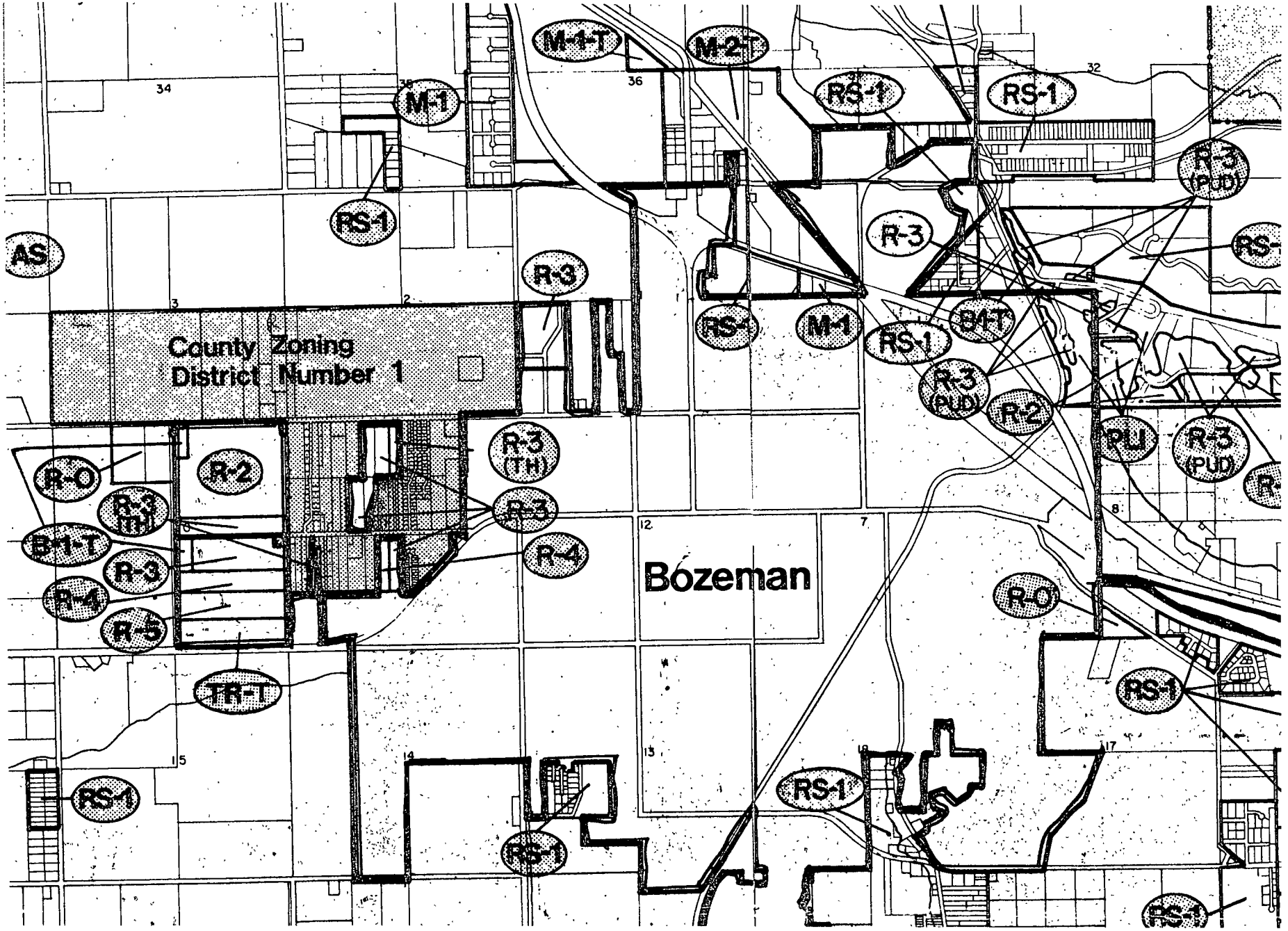
___Sent Letter _____ (To) / _____ (Date)

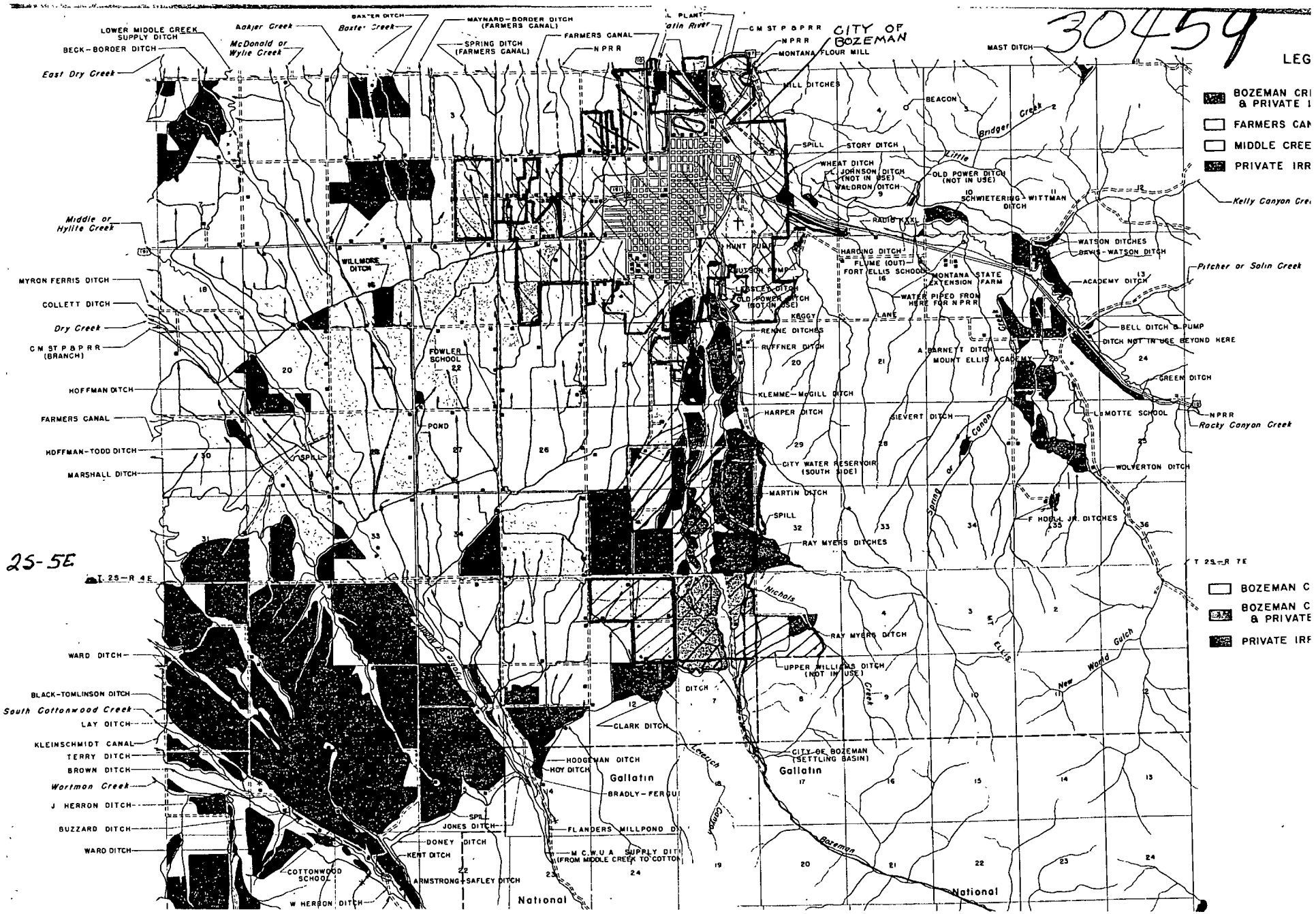
Correction Deadline: _____ (Date)

___Form Corrected _____ (Date)

___Incomplete Form & Correspondence Sent To Helena

☐ See notes on reverse side


M-1-T
M-2-T
M-1
RS-1
RS-1
R-3 (PUD)
AS
RS-1
R-3
RS-1
M-1
B1-T
RS-1
R-3 (PUD)
R-2
PU
R-3 (PUD)
County Zoning District Number 1
R-3 (TH)
R-O
R-2
R-3 (TH)
R-3
B-1-T
R-3
R-4
R-4
R-5
Bozeman
R-O
TR-T
RS-1
RS-1
RS-1
RS-1


30459
CITY OF BOZEMAN
LOWER MIDDLE CREEK SUPPLY DITCH
BECK-BORDER DITCH
East Dry Creek
Middle or Hylite Creek
MYRON FERRIS DITCH
COLLETT DITCH
Dry Creek
C M ST P & P R R (BRANCH)
HOFFMAN DITCH
FARMERS CANAL
HOFFMAN-TODD DITCH
MARSHALL DITCH
WARD DITCH
BLACK-TOMLINSON DITCH
South Cottonwood Creek
LAY DITCH
KLEINSCHMIDT CANAL
TERRY DITCH
BROWN DITCH
Wortman Creek
J HERRON DITCH
BUZZARD DITCH
WARD DITCH
W HERRON DITCH
COTTONWOOD SCHOOL
ARMSTRONG-SAFLEY DITCH
DONEY DITCH
KENT DITCH
JONES DITCH
SPILL
Aakjer Creek
McDonald or Wylie Creek
Baxter Creek
BAXTER DITCH
MAYNARD-BORDER DITCH (FARMERS CANAL)
SPRING DITCH (FARMERS CANAL)
FARMERS CANAL
N P R R
Gallatin River
C M ST P & P R R
N P R R
MONTANA FLOUR MILL
MAST DITCH
MILL DITCHES
BEACON
Bridger Creek
SPILL
STORY DITCH
WHEAT DITCH
C. JOHNSON DITCH (NOT IN USE)
WALDRON DITCH
OLD POWER DITCH (NOT IN USE)
SCHWIETERING - WITTMAN DITCH
Little
Kelly Canyon Creek
RADIO TOWER
WATSON DITCHES
DAVIS-WATSON DITCH
Pitcher or Solin Creek
HARDING DITCH
FLUME (OUT)
FORT ELLIS SCHOOL
MONTANA STATE EXTENSION FARM
ACADEMY DITCH
WATER PIPED FROM HERE FOR N P R R
HUNT PUMP
HUTSON PUMP
OSLEY DITCH
OLD POWER DITCH (NOT IN USE)
KRGGT
LANE
BELL DITCH & PUMP
DITCH NOT IN USE BEYOND HERE
RENNE DITCHES
RUFFNER DITCH
A. BARNETT DITCH
MOUNT ELLIS ACADEMY
GREEN DITCH
KLEMME-McGILL DITCH
HARPER DITCH
SIEVERT DITCH
LaMOTTE SCHOOL
N P R R
Rocky Canyon Creek
Canon
Spring or
CITY WATER RESERVOIR (SOUTH SIDE)
WOLVERTON DITCH
MARTIN DITCH
SPILL
F HODLL JR. DITCHES
RAY MYERS DITCHES
FOWLER SCHOOL
POND
WILLMORE DITCH
WILLSON DITCH
25-5E
T. 2S-R 4E
T 2S-R 5E
Nichols
RAY MYERS DITCH
UPPER WILLIAMS DITCH (NOT IN USE)
Gulch
New World
Creek
Ellis
DITCH
CLARK DITCH
HODGEMAN DITCH
HOY DITCH
BRADLY-FERGU
Gallatin
CITY OF BOZEMAN (SETTLING BASIN)
Gallatin
Lewis
Clark
FLANDERS MILLPOND DI
M C W U A SUPPLY DITCH (FROM MIDDLE CREEK TO COTTON
Bozeman
National
National
BOZEMAN CR
& PRIVATE I
FARMERS CAN
MIDDLE CREE
PRIVATE IRR
BOZEMAN C
BOZEMAN C
& PRIVATE
PRIVATE IRR

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION 09/13/83

ABSTRACT OF CLAIM FOR EXISTING WATER RIGHTS

CLAIM ID 41H -W-030459-00 PRIORITY DATE: 00:00 09/12/1901 TYPE OF RIGHT: FILED CLAIM RECEIVED: 09/09/81 FEE PAID: $40

TYPE CODE: S MAX RATE: 25.00 C (1,000.00 MI) MAX VOLUME: 6,000.00 AF/YEAR MAX ACRES: 0.00

OWNERS: (M) C BOZEMAN CREEK & RESERVOIR CO
8323 NASH RD
BOZEMAN MT 59715

				LOT	BLK	QTR SEC	SEC	TWP	RGE	CO	
SOURCES:	DV 01	SOURDOUGH CREEK				SESESE	25	03S	06E	GA	MEANS DIVRS-HG
	RS 01	RESERVOIR				SESESE	25	03S	06E	GA	SRF ACRES __.___.__ OFFSTREAM? No
USE:	MC 01	0.00 ACRES PERIOD OF USE 199999999997									

		ACRES	VER. ACRES	WRS 19__	19__	LOT	BLK	QTR SEC	SEC	TWP	RGE	CO	REMARKS
PARCELS:	* 001	0.00							01	02S	05E	GA	
	002	0.00							12	02S	05E	GA	
	003	0.00							11	02S	05E	GA	
	004	0.00						E2	10	02S	05E	GA	
	005	0.00							14	02S	05E	GA	
	006	0.00							13	02S	05E	GA	
	007	0.00						NE	24	02S	05E	GA	
	008	0.00							06	02S	06E	GA	
	009	0.00							07	02S	06E	GA	
	010	0.00						W2	05	02S	06E	GA	
	011	0.00							08	02S	06E	GA	
	012	0.00						W2	17	02S	06E	GA	
	013	0.00							18	02S	06E	GA	
	014	0.00						W2	19	02S	06E	GA	
	TOTAL	0.00											

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

09/13/83

ABSTRACT OF CLAIM FOR EXISTING WATER RIGHTS

CLAIM ID 41H -W-030459-00 (CONTINUED)

GENERAL REMARKS:

TWO PARCELS ADDED BECAUSE THEY WERE OBVIOUSLY MISSED BY CLAIMANT.
(THESE PARCELS ARE SEEN ON BOTH OF CLAIMANTS ATTACHED MAPS.)

INVESTIGATED BY Rusty Taylor DATE 3/1/1984

REVIEWED BY _____ DATE __/__/____

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION 09/13/83

ABSTRACT OF CLAIM FOR EXISTING WATER RIGHTS

CLAIM ID 41H -W-030459-00 (CONTINUED)

ADDENDUMS: /YES _NO (_DVRS _RSRV /POU /RMRK _OWNR) COMMENTS _____

SUPPLEMENTAL RIGHTS: IF REF. RIGHT, MAX COMBINED VOLUME FOR ALL RIGHTS _,___,___.__ AF MAX COMBINED ACRES FOR ALL RIGHTS __,___.__

IF SUPPLEMENTAL RIGHT, PURPOSE ID __ __ AND CLAIM ID ____ _ _____ __ OF REF. RIGHT

********** FIELD VERIFICATION FORM **********

COMPARISON STATISTICS: VOLUME BASED ON FLOW RATE AND PERIOD OF USE 18,251.200 AF/YR - OVER CLAIMED VOLUME

BASIN OK: /YES _NO COMMENTS _____

SOURCE NAME OK: _YES /NO (FROM: _USGS TOPO MAP_____, _WR SURVEY) COMMENTS _____

TYPE CD (S/G) OK: _YES _NO COMMENTS _____

POD OK: DV 01 _YES _NO /APPEARS CORRECT _UNVERIFIED (FROM: _CLMNTS MAP _GRID ON FLNG) COMMENTS _____

RS 01 _YES _NO /APPEARS CORRECT _UNVERIFIED (FROM: _CLMNTS MAP _GRID ON FLNG) COMMENTS _____

MEANS DIVRS OK: _YES _NO _APPEARS CORRECT /UNVERIFIED COMMENTS _____

PROOF OF USE: CLAIMED FLOW RATE OK: /YES _NO _NONE GIVEN COMMENTS _____

CLAIMED PRTY DATE OK: /YES _NO COMMENTS _____

FLOW RATE OK: /YES _NO COMMENTS _____

VOLUME OK: /YES _NO COMMENTS _____

PRIORITY DATE OK: /YES _NO (_APPLIED LAST MONTH OF YR _APPLIED LAST DAY OF MONTH) COMMENTS _____

PERIOD OF USE OK: /YES _NO COMMENTS _____

AIR PHOTO VERIFICATION OF DEVELOPMENT: PHOTO _____ PHOTO DATE Claimant's MAPS USED

PHOTO _____ PHOTO DATE _____

PHOTO _____ PHOTO DATE _____

TELEPHONE CONTACT: _YES /NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

LETTER CONTACT: _YES /NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

OWNERSHIP: _YES /NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

INTERVIEW: _YES /NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

FIELD INVESTIGATION: _YES /NO APPROVED BY __ DATE CHECKED __/__/____ BY __ COMMENTS _____

WATER RIGHT NUMBER 41H -W-030459-00

IMPORTANT NOTICE

AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY ORDER OF THE MONTANA WATER COURT AFTER ISSUANCE OF THE PREVIOUS DECREE.

OWNERS: BOZEMAN CREEK & RESERVOIR CO
8323 NASH RD
BOZEMAN MT 59715

PURPOSE (USE): MUNICIPAL

SOURCE: SOURDOUGH CREEK
SOURCE TYPE: SURFACE WATER

FILMED

PRIORITY DATE: SEPTEMBER 12, 1901
TYPE OF HISTORICAL RIGHT: FILED

FLOW RATE: 25.00 CFS

FLOW RATE FOR THIS RIGHT IS LIMITED TO THE HISTORIC CAPACITY OF THE DIVERSION STRUCTURE AND CONVEYANCE SYSTEM.

VOLUME: 6,000.00 AF

PERIOD OF USE: JANUARY 01 TO DECEMBER 31

POINT OF DIVERSION AND MEANS OF DIVERSION:

	LOT	BLK	QTR SEC	SEC	TWP	RGE	COUNTY	MEANS
01			SESESE	25	03S	06E	GALLATIN	HEADGATE

RESERVOIR:

		QTR SEC	SEC	TWP	RGE	COUNTY
01	ONSTREAM	SESESE	25	03S	06E	GALLATIN

RESERVOIR/LAKE NAME: MYSTIC LAKE

* PLACE OF USE FOR MUNICIPAL:

	ACRES	LOT	BLK	QTR SEC	SEC	TWP	RGE	COUNTY
001				SE	36	01S	05E	GALLATIN
002					31	01S	06E	GALLATIN
003				SW	32	01S	06E	GALLATIN
004					01	02S	05E	GALLATIN
005				SE	02	02S	05E	GALLATIN
006				NE	02	02S	05E	GALLATIN
007				E2	10	02S	05E	GALLATIN
008					11	02S	05E	GALLATIN
009					12	02S	05E	GALLATIN
010					13	02S	05E	GALLATIN
011				SW	14	02S	05E	GALLATIN
012				N2	14	02S	05E	GALLATIN
013					24	02S	05E	GALLATIN
014				S2	04	02S	06E	GALLATIN
015					05	02S	06E	GALLATIN
016					06	02S	06E	GALLATIN

WATER RIGHT NUMBER 41H -W-030459-00 (CONTINUED)

PLACE OF USE CONTINUED:

017		07	02S	06E	GALLATIN
018	SE	08	02S	06E	GALLATIN
019	W2	08	02S	06E	GALLATIN
020	SW	09	02S	06E	GALLATIN
021	N2	16	02S	06E	GALLATIN
022	W2	17	02S	06E	GALLATIN
023		18	02S	06E	GALLATIN
024	W2	19	02S	06E	GALLATIN

Case 41H-159

TEMPORARY PRELIMINARY DECREE
GALLATIN RIVER BASIN
BASIN 41H
ABSTRACT OF WATER RIGHT

WATER RIGHT NUMBER 41H -W-030459-00

OWNERS: BOZEMAN CREEK & RESERVOIR CO
8323 NASH RD
BOZEMAN MT 59715

PRIORITY DATE: SEPT 12, 1901

FLOW RATE: 25.00 CFS

FLOW RATE FOR THIS RIGHT IS LIMITED TO THE HISTORIC CAPACITY OF THE DIVERSION STRUCTURE AND CONVEYANCE SYSTEM.

VOLUME: 6,000.00 ACRE FEET PER YEAR

SOURCE: SOURDOUGH CREEK

PURPOSE (USE): MUNICIPAL

PERIOD OF USE: JAN 1 TO DEC 31

POINTS OF DIVERSION AND MEANS OF DIVERSION:

LOT	BLK	QTR SEC	SEC	TWP	RGE	COUNTY	
		SESESE	25	03S	06E	GALLATIN	HEADGATE
RESERVOIR AT		SESESE	25	03S	06E	NAME: MYSTIC LAKE	

PLACE OF USE FOR MUNICIPAL

	ACRES	QTR SEC	SEC	TWP	RGE	COUNTY
001		SE	36	01S	05E	GALLATIN
002			31	01S	06E	GALLATIN
003		SW	32	01S	06E	GALLATIN
004			01	02S	05E	GALLATIN
005		SE	02	02S	05E	GALLATIN
006		NE	02	02S	05E	GALLATIN
007		E2	10	02S	05E	GALLATIN
008			11	02S	05E	GALLATIN
009			12	02S	05E	GALLATIN
010			13	02S	05E	GALLATIN
011		SW	14	02S	05E	GALLATIN
012		N2	14	02S	05E	GALLATIN
013			24	02S	05E	GALLATIN
014		S2	04	02S	06E	GALLATIN
015			05	02S	06E	GALLATIN
016			06	02S	06E	GALLATIN
017			07	02S	06E	GALLATIN
018		SE	08	02S	06E	GALLATIN
019		W2	08	02S	06E	GALLATIN
020		SW	09	02S	06E	GALLATIN
021		N2	16	02S	06E	GALLATIN
022		W2	17	02S	06E	GALLATIN
023			18	02S	06E	GALLATIN
024		W2	19	02S	06E	GALLATIN

Montana Water Court
PO Box 879
Bozeman, MT 59771-0879
1-800-624-3270 (In-state only)
(406) 586-4364

FILED
JUN 24 1997
Montana Water Court

IN THE WATER COURT OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN (41H)
* * * * * * * * * * * * * * * * * * * *

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA	**CASE NO. 41H-159** 41H-W-030459-00

CLAIMANT: Bozeman Creek and Reservoir Company

OBJECTOR: City of Bozeman, Helena A. Nash

ORDER ADOPTING MASTER'S REPORT

Pursuant to Montana Code Annotated, §85-2-233(4), the above entitled case was assigned to Water Master Patti L. Rowland. On February 26, 1997 the Water Master issued a report containing Findings of Fact and Conclusions of Law. Copies of the report were served upon the parties. Over ten (10) days have elapsed since service, and no objections to the Findings and Conclusions have been filed by any party.

The Court has reviewed carefully the Water Master's Findings and Conclusions. Pursuant to Rule 53(e), Montana Rules of Civil Procedure, the Court adopts the Master's Report and

ORDERS that changes recommended in the Master's Conclusions of Law be made to the abstract of claim(s) listed above as they appear in the Temporary Preliminary Decree of the Gallatin River Basin (41H).

DATED this 24 day of June, 1997.

C. Bruce Loble

C. Bruce Loble
Chief Water Judge

CERTIFICATE OF SERVICE

I, Jackie Billings, Deputy Clerk of Court of the Montana Water Court, hereby certify that a true and correct copy of the above ORDER ADOPTING MASTER'S REPORT was duly served upon the persons listed below by depositing the same, postage prepaid, in the United States mail.

Bozeman Creek and Reservoir Co
8323 Nash Road
Bozeman MT 59715

City of Bozeman
%Phillip J. Forbes
PO Box 640
Bozeman MT 59771-0640

Cindy Younkin, Attorney
PO Box 1288
Bozeman MT 59771-1288

Helen A Nash
%Sarah Zimmer, Attorney
PO Box 1330
Bozeman MT 59771-1330

DATED this 24 day of June, 1997.

Jackie Billings
Jackie Billings
Deputy Clerk

030459

IN THE WATER COURT OF THE STATE OF MONTANA

* * * * * * * * * * * * * * * * * * * *

NOTICE OF FILING OF MASTER'S REPORT

FILED
FEB 26 1997
Montana Water Court

TO: ALL PARTIES

RE: 41H-159

This is to provide you with Notice that the Water Master has filed a Master's Report (Findings of Fact and Conclusions of Law) with the Clerk of the Water Court for the water right(s) listed above. A copy of the Master's Report is enclosed with this Notice.

Please review this Master's Report carefully. If there are any corrections or changes that need to be made, you have 10 days from service of this Notice to file a written objection. You must mail a copy of your written objection to all the other parties who have been involved in this proceeding and file a certificate of such mailing with the Water Court. (This procedure is required by Rule 1.II. Water Right Claims Examination Rules and by Rules 5 and 53 of the Montana Rules of Civil Procedure.)

DATED this 26th day of February, 1997.

LORI M. BURNHAM
Clerk of Court
Montana Water Court
P. O. Box 879
Bozeman, MT 59771-0879
(406) 586-4364
1-800-624-3270 (in Montana)

Montana Water Court
PO Box 879
Bozeman, MT 59771-0879
1-800-624-3270 (In-state only)
(406) 586-4364

IN THE WATER COURT OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN (41H)
* * * * * * * * * * * * * * * * * * * *

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA	**CASE NO. 41H-159** 41H-W-030459-00

FILED
FEB 26 1997
Montana Water Court

CLAIMANT: Bozeman Creek and Reservoir Company

OBJECTOR: City of Bozeman, Helena A. Nash

MASTER'S REPORT

FINDINGS OF FACT

1. Water right claim 41H-W-030459-00 was filed by Bozeman Creek & Reservoir Co. for municipal use.

2. On June 24, 1986, the City of Bozeman filed an objection to water right claim 41H-W-030459-00 on the issue of place of use.

3. On April 30, 1992, Helen A. Nash filed an objection (late) to water right claim 41H-W-030459-00 on the issue of period of use.

4. On July 11, 1996, a Withdrawal of Objection was filed by attorney Sarah Zimmer, on behalf of Helen Nash.

5. On July 22, 1996, Phillip J. Forbes, Director of Public Service for the City of Bozeman, filed an Affidavit with the Water Court stating that the historical place of use for water right claim 41H-W-030459-00 is as follows:

PLACE OF USE FOR MUNICIPAL

ACRES	QTR SEC	SEC	TWP	RGE	COUNTY
001	SE	36	01S	05E	GALLATIN
002		31	01S	06E	GALLATIN
003	SW	32	01S	06E	GALLATIN
004		01	02S	05E	GALLATIN
005	SE	02	02S	05E	GALLATIN
006	NE	02	02S	05E	GALLATIN
007	E2	10	02S	05E	GALLATIN
008		11	02S	05E	GALLATIN
009		12	02S	05E	GALLATIN
010		13	02S	05E	GALLATIN
011	SW	14	02S	05E	GALLATIN
012	N2	14	02S	05E	GALLATIN
013		24	02S	05E	GALLATIN
014	S2	04	02S	06E	GALLATIN
015		05	02S	06E	GALLATIN
016		06	02S	06E	GALLATIN
017		07	02S	06E	GALLATIN
018	SE	08	02S	06E	GALLATIN
019	W2	08	02S	06E	GALLATIN
020	SW	09	02S	06E	GALLATIN
021	N2	16	02S	06E	GALLATIN
022	W2	17	02S	06E	GALLATIN
023		18	02S	06E	GALLATIN
024	W2	19	02S	06E	GALLATIN

CONCLUSIONS OF LAW

I.

The Montana Water Court has jurisdiction to review all objections to temporary preliminary decrees pursuant to Mont. Code Ann. §85-2-233.

II.

Upon review of the Affidavit and Withdrawal, it appears that they are proper and are accepted by the Court.

III.

The changes to place of use for water right claim 41H-W-030459-00 shall appear in the Preliminary Decree for the

Gallatin River Basin (41H) as stated in the Findings of Fact.

DATED this 26th day of February, 1997.

Patti L. Rowland
Water Master

CERTIFICATE OF SERVICE

I, Jackie Billings, Deputy Clerk of Court of the Montana Water Court, hereby certify that a true and correct copy of the above MASTER'S REPORT was duly served upon the persons listed below by depositing the same, postage prepaid, in the United States mail.

Bozeman Creek and Reservoir Co
8323 Nash Road
Bozeman MT 59715

City of Bozeman
%Phillip J. Forbes
PO Box 640
Bozeman MT 59771-0640

Cindy Younkin, Attorney
PO Box 1288
Bozeman MT 59771-1288

Helen A Nash
%Sarah Zimmer, Attorney
PO Box 1330
Bozeman MT 59771-1330

DATED this 26 day of February, 1997.

Jackie Billings
Deputy Clerk

FILED

JUL 22 1996

Montana Water Court

IN THE WATER COURTS OF THE STATE OF MONTANA

UPPER MISSOURI DIVISION - GALLATIN RIVER BASIN (41H)

* * * * * * * * * * * * * * * *

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA, INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA.	Claim Nos. 41H-W-099632 41H-W-099633 41H-W-119500 41H-W-140873 through 41H-W-140883 41H-W-030459

* * * * * * * * * * * * * * *

FILED

MAR 22 1995

Montana Water Court

STATE OF MONTANA)
: ss.
COUNTY OF GALLATIN)

AFFIDAVIT

Phillip J. Forbes, being first duly sworn, deposes and says:

1. I am currently the Director of Public Service for the City of Bozeman. I have reviewed the City's records which indicate the above-captioned claims were historically used as follows.

2. The historically utilized volumes for certain claims are as follows:

(a)	41H-W-140873	109.5 acre feet per year as claimed
(b)	41H-W-140875	912.5 acre feet per year as claimed
	41H-W-140876	912.5 acre feet per year as claimed
	41H-W-140874	912.5 acre feet per year as claimed
	41H-W-140878	912.5 acre feet per year as claimed
(c)	41H-W-119500	2,905 acre feet per year
(d)	41H-W-140882	2,740.2 acre feet per year as claimed

COPY
original filed in
Case 41H-165

(e) 41H-W-140883 1,606 acre feet per year as claimed

These volumes should be shown accordingly in the final decree for these claims.

3. The correct, historical place of use for municipal purposes for Claims 41H-W-119500 and 41H-W-140873 through 41H-W-140883 and 41H-W-030459 is as follows:

T1S, R5E	
Section 36	SE¼
T1S, R6E	
Section 31	All
Section 32	SW¼
T2S, R5E	
Section 1	All
Section 2	NE¼, SE¼
Section 10	E½
Section 11	All
Section 12	All
Section 13	All
Section 14	N½, SW¼
Section 24	All
T2S, R6E	
Section 4	S½
Section 5	All
Section 6	All
Section 7	All
Section 8	W½, SE¼
Section 9	SW¼
Section 16	N½
Section 17	W½
Section 18	All
Section 19	W½

This place of use should be shown accordingly in the final decree for these claims.

4. The period of use for 41H-W-119500 is January 1 through December 31, and for 41H-W-099633, it is April 1 through October 15.

5. The correct priority dates for certain claims is as follows:

41H-W-140873	7/31/1866
41H-W-140877	12/31/1877
41H-W-140879	12/31/1877
41H-W-140880	7/31/1866
41H-W-099632	9/30/1865
41H-W-099633	4/26/1892

6. As to 41H-W-140882, the correct flow rate is 150 3/20" or 3.75 cfs.

7. As to 41H-W-099632, a point of diversion in the NW¼SW¼SE¼, Section 7, Township 2 South, Range 6 East, should be added. The purpose of this claim is for irrigation, flood control and recreation.

8. The City of Bozeman hereby withdraws its objection to those claims captioned above contingent upon the corrections to those claims as set forth above.

FURTHER Affiant sayeth not.

Phillip J. Forbes

PHILLIP J. FORBES
Director of Public Service
City of Bozeman

STATE OF MONTANA)
: ss.
COUNTY OF GALLATIN)

On this 20th day of March, 1995, before me, the undersigned officer, personally appeared PHILLIP J. FORBES, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year in this instrument first above written.

Notary Public for the State of Montana
Residing at: Bozeman
My Commission Expires: 6-15-95

(SEAL)

IN THE WATER COURT OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN (41H)
* *

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA

FILED

JUL 11 1996

Montana Water Court

WITHDRAWAL OF OBJECTION

I, 41H-W-030459, withdraw the Notice of Objection to Claim Number ↓ upon entry of a decree with the following corrections _____.

It is no longer necessary to have a hearing before the Water Court regarding the above objection.

DATED this 11th day of July, 1996.

Dana Brennan
for Helen Nash

IN THE WATER COURTS OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN
BASIN 41H
* *

FILED
APR 3 0 1992
Montana Water Court

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA, INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA.

NOTICE OF OBJECTION
BASIN 41H
Case No. 41H-_____

Bozeman Creek a/k/a Sourdough Creek

1. Claim # 41-H-W-140877; 41-H-W-140879; 41-H-W-030459
   Bozeman Creek a/k/a Sourdough Creek
2. Source _____; County Gallatin
3. Type of Claim: ___ Irr ___ Dom ___ Stock _X_ Other Use
4. Name of Party to whom the water right was issued:
   City of Bozeman
5. Objector's name, address and phone number:
   NASH HELEN A.
   Last Name First Name Middle Initial
   P.O. Box 1330
   Street Address or Post Office Box
   Bozeman, MT 59771-1330
   City State Zip Code
   (406) 586-0246
   Area Code Phone Number
6. Name of objecting party's attorney and address, if any:
   ZIMMER SARAH NASH
   Last Name First Name Middle Initial
   P.O. Box 1330
   Street Address or Post Office Box
   Bozeman, MT 59771-1330
   City State Zip Code
   (406) 586-0246
   Area Code Phone Number
7. Basis of Objection:

___ Ownership	___ Place of Use	___ Point of Diversion
___ Priority Date	___ Acres Irrigated	___ Means of Diversion
___ Purpose of Right	___ Source	_X_ Period of Use
___ Volume	___ Flow Rate	___ Other

8. Signature of Objector: Sarah Zimmer for Helen Nash
9. Attach on separate sheet of paper an explanation of the reason for your objection. Historical use was not for year round use.
10. Send completed objection form to: Montana Water Courts
    P.O. Box 879
    Bozeman, MT 59715

IN THE WATER COURTS OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN (41H)
* *

IN THE MATTER OF THE ADJUDICATION OF)
THE EXISTING RIGHTS TO THE USE OF ALL)
THE WATER, BOTH SURFACE AND UNDERGROUND,)
WITHIN THE GALLATIN RIVER DRAINAGE AREA)
INCLUDING ALL TRIBUTARIES OF THE)
GALLATIN RIVER IN GALLATIN, PARK AND)
MADISON COUNTIES, MONTANA.)
)

NOTICE OF THE FILING OF AN OBJECTION

TO: Bozeman Creek & Reservoir Co.

RE: Water Right # 030459

FROM: Montana State Water Courts

This is to provide you with notice that the above water right issued in your name in the Basin 41H Temporary Preliminary decree has been objected to by City of Bozeman

The objector states that there is a problem with place of use.

A preliminary status conference will be held on this matter at a future date to be set by the Court. You will be notified of the date and time of the status conference.

A hearing on this objection is possible.

DATED this 6th day of August, 1987.

Kathleen Cullen
Water Master
Montana Water Court
P. O. Box 879
Bozeman, MT 59715

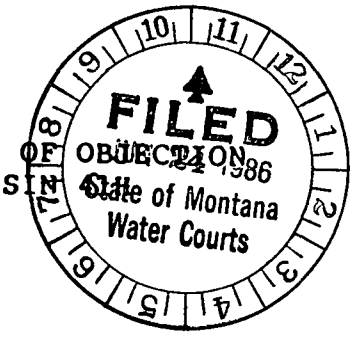
Wynne O'Brien
Water Master
Montana Water Court
P. O. Box 879
Bozeman, MT 59715

IN THE WATER COURTS OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN
BASIN 41H

* *

IN THE MATTER OF THE ADJUDICATION OF THE EXISTING RIGHTS TO THE USE OF ALL THE WATER, BOTH SURFACE AND UNDERGROUND, WITHIN THE GALLATIN RIVER DRAINAGE AREA, INCLUDING ALL TRIBUTARIES OF THE GALLATIN RIVER IN GALLATIN, PARK AND MADISON COUNTIES, MONTANA.

NOTICE OF OBJECTION
BASIN 41H



1. Claim # 30459

2. Source Sourdough Creek ; County Gallatin

3. Type of Claim: ___ Irr ___ Dom ___ Stock X Other Use

4. Name of Party to whom the water right was issued:
Bozeman Creek and Reservoir Company

5. Objector's name, address and phone number:

City of Bozeman		
Last Name	First Name	Middle Initial
P. O. Box 640		
Street Address or Post Office Box		
Bozeman	MT	59771-0640
City	State	Zip Code
406	586-3321	
Area Code	Phone Number	

6. Name of objecting party's attorney and address, if any:

Moon	David	C.
Last Name	First Name	Middle Initial
P. O. Box 1288		
Street Address or Post Office Box		
Bozeman	MT	59771-1288
City	State	Zip Code
406	587-5511	
Area Code	Phone Number	

7. Basis of Objection:

___ Ownership	X Place of Use	___ Point of Diversion
___ Priority Date	___ Acres Irrigated	___ Means of Diversion
___ Purpose of Right	___ Source	___ Period of Use
___ Volume	___ Flow Rate	___ Other

8. Signature of Objector: David C. Moon

9. Attach on separate sheet of paper an explanation of the reason for your objection.

10. Send completed objection form to: Montana Water Courts
P.O. Box 879
Bozeman, MT 59715

ATTACHMENT TO NOTICE OF OBJECTION
(Claim #30459)

Objection is made to correct the place of use of the water right. The place of use for municipal purposes is as follows:

	Portions of:
T1S, R5E	
Section 36	SE¼
T1S, R6E	
Section 31	SE¼, SW¼
Section 32	SW¼
T2S, R5E	
Section 1	NE¼, S½
Section 2	NE¼, SE¼
Section 10	E½
Section 11	All quarters
Section 12	All quarters
Section 13	All quarters
Section 14	N½, SW¼
Section 24	All quarters
T2S, R6E	
Section 4	S½
Section 5	All quarters
Section 6	All quarters
Section 7	All quarters
Section 8	W½, SE¼
Section 9	SW¼
Section 16	N½
Section 17	W½
Section 18	All quarters
Section 19	W½

Form 76 C 1
New 4-82

WATER RIGHT DATA BASE CODING FORM
REMARK RECORD

REMARK RECORD:	ACTION	GEN CODE	GEN	BASIN	ID CODE	ID NUMBER	EXT ID
	06	A	Y	01	41H	W	03d459	00

ID TEXT RNO1MYSTIC LAKE

TEXT

TEXT

ID TEXT FRO1F/low rate for this right is limited to the historic

TEXT capacity of the diversion structure and conveyance

TEXT system.

ID TEXT

TEXT

TEXT

ID TEXT

TEXT

TEXT

WATER COURTS
Supplemental Document
Claim # 30459

MONTANA WATER COURT

STATE OF MONTANA

(406) 586-4364
1-800-624-3270 (In-State only)
FAX: (406) 522-4131

PO BOX 1389
Bozeman, MT 59771-1389

FILED
JAN 23 2006
Montana Water Court

MEMORANDUM TO FILE

DATE: January 23, 2006

TO: **Claim Files 41H-W-140877-00, 41H-W-140879-00 and 41H-W-030459-00**

FROM: Patty Gunderson, Deputy Clerk Patty Gunderson

RE: Desposition of John T. Nash (June 24, 1992)
Deposition of Donald A. Nash (October 26, 1992)

The original Depositions of John T. Nash and Donald A. Nash are in claim file 41H-140877-00.

BOZEMAN CREEK RESERVOIR COMPANY

The Bozeman Reservoir Company was first incorporated on March 11, 1901, for a period of 20 years. Purposes of this corporation were to appropriate and use for irrigation, waters from Mystic Lake and Bozeman Creek. On September 13, 1901, the company filed on 3,000 miners inches of flood water from Bozeman Creek and Mystic Lake. A dam was then built of rock, stone, and other suitable materials across Bozeman Creek at the point where the creek flows from and forms the outlet of Mystic Lake. These flood waters so dammed, reservoired, and appropriated were run down the natural channel of Bozeman Creek to points where ditches diverted and conveyed the water to farms and other places of intended use. This company continued operations under the provisions set forth in the Articles of Incorporation until its term of existence expired on March 11, 1921.

On June 27, 1922, a new corporation of the same name was formed to succeed the defunct "Bozeman Reservoir Company." All property, rights, titles and interests owned by the former "Bozeman Reservoir Company" were acquired by the new corporation. Most important of the changes in the provisions of the new corporation were: "That the water appropriated may be used upon the lands of the stockholders in the corporation for irrigation, culinary, domestic, power, and other useful and beneficial purposes to the extent required by them; and in proportion to their respective shares and interest in the company; and for a water supply for the City of Bozeman, Montana, and the inhabitants thereof, in proportion as the shares and interests of the City of Bozeman appears or shall appear in said Company."

The Bozeman Reservoir Company is incorporated for a period of forty (40) years. Stock issued by the company amounts to 60 shares having a par value of $500 each. The total amount of stock actually subscribed to is 20 shares. The stock in the corporation is assessable.

A regular assessment of $25.00 per share of stock is made each year. Operation and maintenance charges have averaged about $20.00 per share for the last several years. One share of stock entitles each stockholder to the use of 100 miner's inches of water a day for a total of 14 days during the irrigation season or 50 miner's inches a day for a total of 28 days.

Largest stockholder in the corporation at the present time is the City of Bozeman, whose 6 shares are used to supply water for domestic use in the city of Bozeman. The other 14 shares (of 20 subscribed to) are owned by nine farmers in the company, being divided as follows: six having 1 share; one owning 2 shares; and the other two having 3 shares each. The water represented by the latter shares is used for irrigation on farm lands south of Bozeman. This water is diverted from Bozeman Creek and carried in the following irrigation ditches: Mystic Lake, "68", "66", and the Lower Williams.

In 1952, 437 acres of land were irrigated or supplied supplemental water from the Bozeman Reservoir Company.

(See map in Part II, Pages 38, and 42).

DRY CREEK IRRIGATION COMPANY

Prior to the organization of the Dry Creek Irrigation Company several land owners located in the Lower Dry Creek Valley, between Reynolds Creek and the East Gallatin, had

Form 76-C-2
New 4-82

WATER RIGHT DATA BASE CODING FORM
PARCEL RECORD

	ACTION	GEN CODE	GEN	BASIN	ID CODE	ID NUMBER	EXT ID
PARCEL RECORD:	A	Y	01	41H	W	030459	00

PURP ID	PRCL ID	ACRES	LOT	BLOCK	QUARTER SECTION (Q4 Q3 Q2 Q1)	CNTY	TWP	RGE	SEC
MC	0101 5				SESW	6A	015	06E	31
MC	0101 6				SESE	6A	015	05E	36

WATER COURTS
Supplemental Document
Claim # 30459

Fofm No. 76-I R2/80

530460

41 H

STATEMENT OF CLAIM FOR EXISTING WATER RIGHTS

IRRIGATION

For the Water Courts of the State of Montana

RECEIVED
SEP 9 1981
MONTANA D.N.R.C.
BOZEMAN FIELD OFFICE

GA-U

10-015-01-12
40

1. **Owner of Water Right** BOZEMAN CREEK RESERVOIR COMPANY / / (Last / First / Middle Initial)

Co-Owner or Other Interest Owner / / (Last / First / Middle Initial)

Address 8323 Nash Rd.

City Bozeman State Montana Zip Code 59715

Home Phone No. 586- 6446 Business Phone No.

2. **Person completing form** Moore / Kathryn / A. (Last / First / Middle Initial)

Address 8323 Nash Rd.

City Bozeman State Montana Zip Code 59715

Home Phone No. 586-6446 Business Phone No.

3. DNRC **Name of ditch, creek or river** Bozeman Creek or Sourdough Creek

Use: ☒ Irrigation

4. DNRC **Method of Irrigation Use:** E ☒ Sprinkler ☐ Furrow ☒ Flood

5. DNRC **Source of Water:** (Check Only One)

- ☐ Spring Name
- ☐ Well Name
- ☐ Stream Name Tributary of
- ☐ Lake Name Stream
  Tributary of
- ☒ Reservoir Name Mystic Lake Sec 30 T 3S R 1E Stream (AKA Bozeman Creek) or Sourdough Creek
  Tributary of East Gallatin

6. DNRC **Point of Diversion:** County Gallatin

SE ¼ SE ¼ SE ¼, Section 25, T 3 N S R 6 E W

Lot , Block , Subdivision

7. **Means of Diversion:**

- ☐ Pump Capacity gpm
- ☒ Headgate and ditch or pipe
- ☐ Flood and dike

8. **Means of Conveyance:**

- ☒ Ditch
- ☐ Pipeline
- ☒ Other: Explain Bozeman Creek (or Sourdough Creek)

See attached copy. p. 2

9. **Place of use and acres irrigated.** County Gallatin

422	acres,		Lot,		Block,		¼		¼		¼,	Section 31,	T 3 (N/S) R 6 (E/W)
310	acres,		Lot,		Block,		¼		¼	S2	¼,	Section 30,	T 2 (N/S) R 6 (E/W)
41	acres,		Lot,		Block,		¼	SE	¼	NE	¼,	Section 30,	T 2 (N/S) R 6 (E/W)
129	acres,		Lot,		Block,		¼		¼	SE	¼,	Section 1,	T 3 (N/S) R 5 (E/W)
293	acres,		Lot,		Block,		¼		¼	N2	¼,	Section 1,	T 3 (N/S) R 5 (E/W)

2518 **Total acres.** Subdivision _____

10. **Flow rate claimed:** 2000
- ☐ cubic feet per second
- ☐ gallons per minute
- XX ☒ miner's inches

11. **Volume claimed:** 13,000 acre-feet per year

12. **Period(s) of use:** April / 1 (Month / Day) to Oct. / 31 (Month / Day)

13. **Check one:**
- ☐ Decreed Water Right
- ☒ Filed Appropriation Right
- ☐ Use Water Right

Priority date or date of first use: 4:30pm (Hour) 9 (Month) / 12 (Day) / 1901 (Year)

14. **Attach** copies of the Decree, Record of Filing or Proof of Use Right. See Exh "A"

15. **Attach** copies of aerial photographs, U.S. Geological Survey maps or such other documents necessary to show point of diversion, place of use, place of storage, and conveyance facilities. See Exhibits "B" + "C" "D"

16. **Notarized Statement signed by claimant.**

STATE OF MONTANA)
:ss.
County of GALLATIN)

I, Kathryn A. Moore, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim of existing water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are true and correct.

X Kathryn A. Moore

Subscribed and sworn before me, this 10 day of September 1981.

Shelly Driskell
Notary Public for the State of Montana

Residing at Bozeman

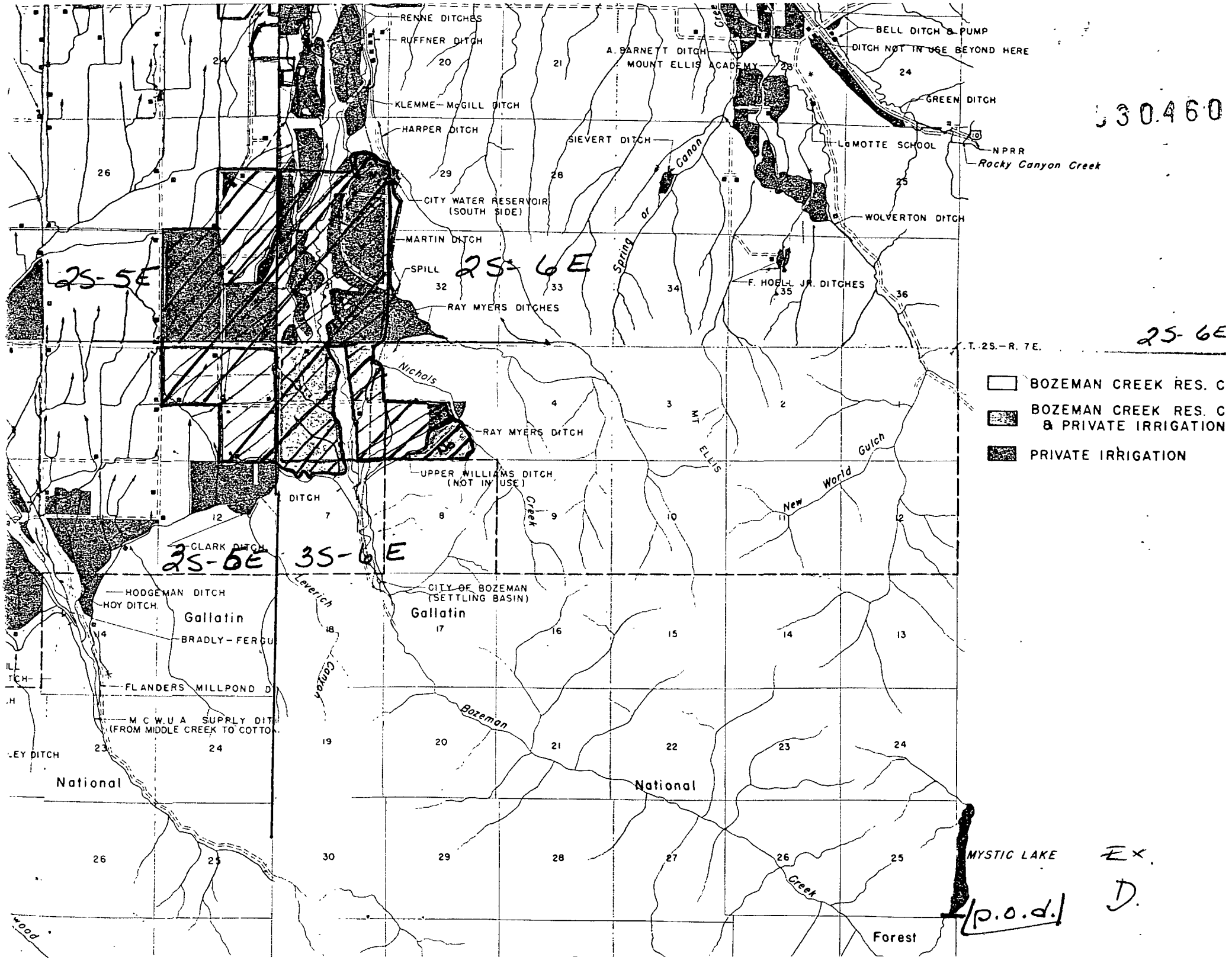
My Commission expires 1-15-1984

Addition C P.O.U. ADDENDUM

030480

ADDENDUM TO STATEMENT OF CLAIM
FOR EXISTING WATER RIGHTS

469 acres					Section 6	T 3 S, R 6 E
113 acres			SW ¼		Section 5	T 3 S, R 6 E
15 acres		NW ¼	SE ¼		Section 5	T 3 S, R 6 E
31 acres		N ½	N ½	NW¼	Section 7	T 3 S, R 6 E
34 acres		NW ¼	NW¼	NE¼	Section 7	T 3 S, R 6 E
541 acres					Section 36	T 2 S, R 5 E
120 acres				SE¼	Section 25	T 2 S, R 5 E



30.460

Ex. D.

p.o.d.

030480

BOZEMAN CREEK RESERVOIR COMPANY
September
1981

Bozeman Creek Reservoir Company was first incorporated on March 11, 1901 to appropriate and use for irrigation, waters from Mystic Lake and Bozeman Creek (Sourdough Creek). On September 13, 1901, the company filed on 3,000 miners inches of flood water from Bozeman Creek and Mystic Lake. These waters were run down the natural channel of Bozeman Creek (Sourdough Creek) to points where ditches diverted and conveyed the water to farms and other places of intended use, by a water commissioner. This company continued operations under the provisions set forth in the Articles of Incorporation until its term of existence expired on March 11, 1921.

On June 27, 1922, a new corporation of the same name was formed to succeed the original company. All property, rights, titles and interests were acquired by the new corporation. The company has operated continuously since that time. The total amount of stock subscribed to is 20 shares, the city of Bozeman owning 6 shares and the rest owned by local individuals.

One share of stock entitles each stockholder to the use of 100 miners inches of water a day for a total of 14 days during the irrigation season, or 50 miners inches a day for a total of 28 days.

Shares of stock in the Bozeman Creek Reservoir Company may be sold to any person at any time and water represented by each share does not have to be used on any specific parcel of land.

Present share holders are:

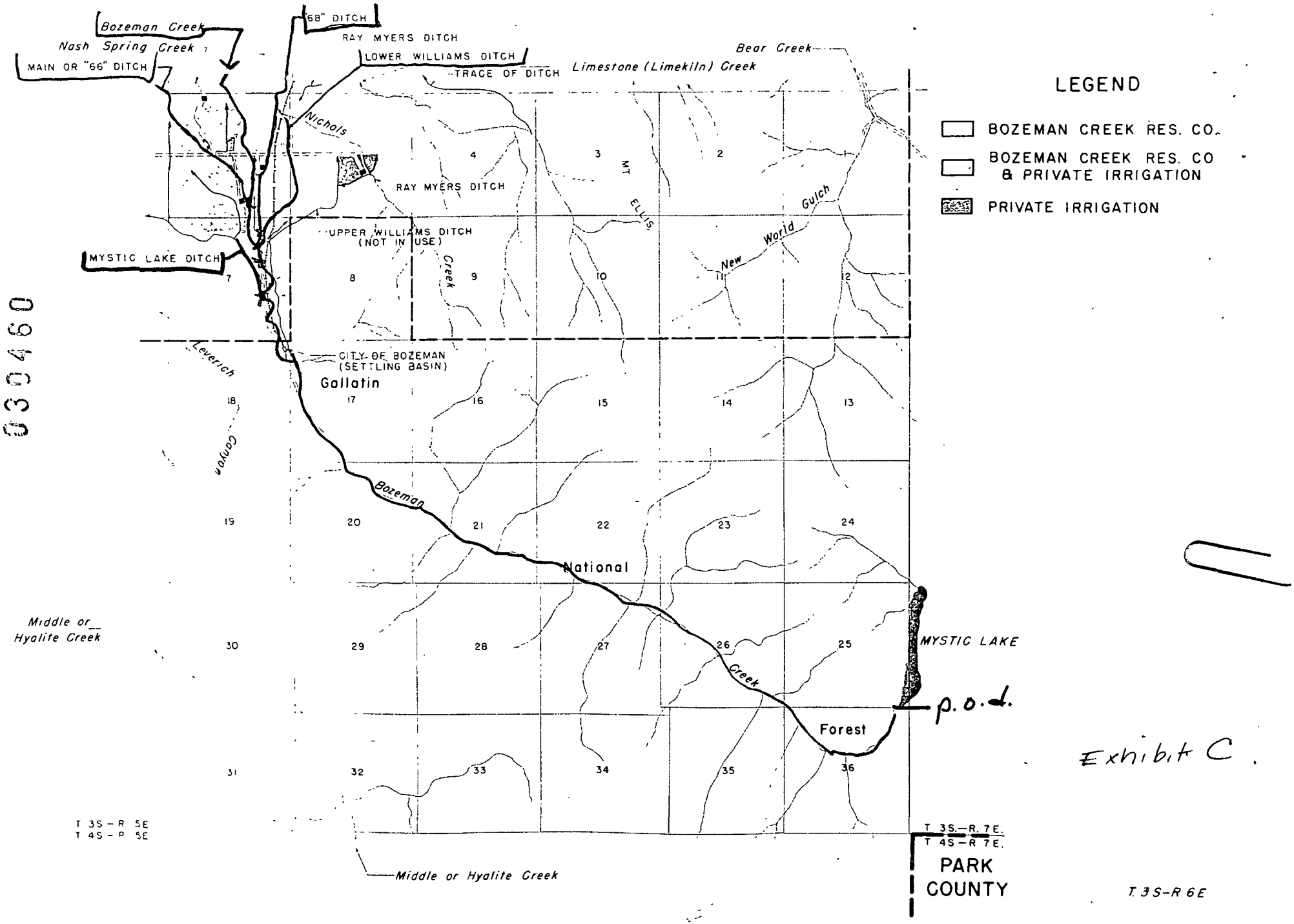
City of Bozeman
Harry Corning
G. B. Properties
Hoffman Brothers
Kathryn A. Moore
Roger Hougen
Kenneth Kraft
J. F. Nash
Gene Cook
Mary REilly

Ex. D

630460

(1981) DITCHES USED BY BOZEMAN CREEK & RESERVOIR COMPANY

1. Bozeman or Sourdough Creek
2. Main or "66" Ditch
3. Mystic Lake Ditch
4. "68" Ditch
5. Lower Williams Ditch
6. Upper Williams Ditch (Not in Use Now)



330460

Exhibit C.

Exhibit A.

Notice of Water Right.

EXAMINED

Certified to be a true and correct photocopy of the Gallatin County Records in Book 3 WATER RIGHTS, Page 35 this May 12, 1981
LUCILLE A. BRIDGES
Clerk & Recorder
By Barbara E. Clawson
Deputy

POOR COPY

State of Montana }
County of Gallatin } ss.

To all Whom These Presents may Concern:

Be it Known, That the undersigned, Bozeman Creek Reservoir Company, a corporation organized and existing under the laws of the State of Montana by J. F. Stevenson, its President, and F. M. Bell, its Secretary, duly authorized in that behalf by resolution of the Board of Directors duly made and entered upon the minutes of said corporation, does hereby publish and declare as a legal notice to all the world that it has a legal right to the use, possession and control of and claims by prior appropriation in the manner hereinafter designated Three thousand (3000) inches statutory measurement continuous flow of the waters of Mystic Lake and Bozeman Creek, and their tributaries, inlets and outlets situate in said County of Gallatin and State of Montana, for the main purpose of irrigation and for other useful and beneficial purposes, which said water was appropriated on the 12th day of Sept. 1901

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appropriated on the 12th day of Sept. 1901

2.- That the waters to appropriated and acquired consist: (a) Of all the surplus waters of said Mystic Lake and said Bozeman Creek not owned by prior appropriators. (b) Of such additional quantities of water as may be added by said Bozeman Creek Reservoir Company to the natural and ordinary quantity of water contained in said Lake and Creek by means of the construction of a Reservoir or Reservoirs at such point or points at or near said Mystic Lake as may be determined competent and adequate for the conservation of the waters of said Lake and its various inlets and outlets and tributaries, including the waters of said Bozeman Creek, it being the purpose and intention of said Bozeman Creek Reservoir Company to so appropriate,

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quantities of water as may be added by said Bozeman Creek Reservoir Company to the natural and ordinary quantity of water contained in said Lake and Creek by means of the construction of a Reservoir or Reservoirs at such point or points at or near said Mystic Lake as may be determined competent and adequate for the conservation of the waters of said Lake and its various inlets and outlets and tributaries, including the waters of said Bozeman Creek, it being the purpose and intention of said Bozeman Creek Reservoir Company to so appropriate, store and conserve the waters of said Mystic Lake, said Bozeman Creek, and their tributaries, by the construction of a dam about thirty feet (30) high and about 150 ft to 400 feet in length along the top thereof to be built of earth, stone and other suitable material across the said Bozeman Creek at a point at or near where said Bozeman Creek flows from and forms the outlet of said Mystic Lake. The waters so dammed, reservoired, appropriated and owned to be run thence down and through the natural channel of said Bozeman Creek to such points along said creek as ditches now existing or hereafter to be constructed may divert and convey said waters to the farms or other places of use herein intended and contemplated.

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#4

Use same for any beneficial use or purpose. § (6)
Said waters may also be used for the purposes of mining
Milling, irrigation of lands, culinary and domestic purposes
and for all other lawful, useful and beneficial purposes.
5:- The names of the present stock-holders of said corporation,
together with a description of the lands situate in said County
of Gallatin, Montana, upon which said waters are to be used
pursuant to this notice of water right and to the terms of the
Articles of Incorporation of said Bozeman Creek Reservoir
Company are; E.D. Johnson, Description of land as follows;
S.E.¼ Sec. 30 T. 2 S. R. 6 E. S.W.¼ Sec. 29, T. 2, S, R, 6, E. S.E.¼ Sec. 29
T. 2, S, R, 6, E. in Gallatin County Montana,
N.J. Coleman. Description of land as follows;
N.E.¼ Sec. 6 T. 3. S, R, 6, E. in Gallatin County Montana.
C.L. Rich. Description of land; N.W.¼ Sec. 6 T. 3, S. R. 6, E.
in Gallatin County Montana.
P.F. Stevenson Description of land as follows; -
N.W.¼ Sec. 1 T. 3. S, R. 5. E. in Gallatin County Montana.
J.M. Stevenson; Description of land as follows:
S.W.¼ Sec. 36. T. 2. S. R. 5. E. in Gallatin County Monta-
William Roth; Description of land as follows;

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POOR COPY

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S.E.¼ Sec. 1, T. 3, S. R. 5, E. in Gallatin County Mont.
Mrs. M. H. Woolverton: Description of land as follows:
N.E.¼ Sec. 1, T. 3 S. R. 5, E. in Gallatin County Mont.
J. H. Bull: Description of land as follows:
N E ¼ Sec. 31, T. 2, S. R. 6, E. & N.W¼ of Sec. 32, T. 2. S. R. 6. E. Gallatin County Mont. U. F. Weiss: Description of land as follows:
S.W.¼ Sec. 31 T. 2. S. R. 6, E. & S.E.¼ Sec. 36 T. 2. S. R. 5, E. in Gallatin County Montana. - Sanford Ruffner:- Description of land as follows:- South half of N.E.¼ Sec. 19 T. 2 S. R. 6 E. & South half of N.W.¼ Sec. 14, T. 2 S. R. 6 E. in Gallatin County Montana.
6. :- That the above named Stock-holders are all citizens of the United States (or have declared their intention to become such) and over the age of twenty-one years. 7:- and it is the further purpose to use said waters for the irrigation of other lands which may be owned or hereafter acquired by any of the stock holders, or any other persons legally authorized, who may purchase of said Corporation shares of stock therein, or who may contract for the use of said waters pursuant to law and the rules and regulations of said Corporation.

6

8. That the corporate name of said aggregator is:- Bozeman

The channel of said Bozeman Creek being capable of carrying said quantity of water. 3.- It has caused a survey of Mystic Lake and that portion of Bozeman Creek constituting the outlet of Mystic Lake to be made by a competent Engineer and Surveyor and a plat and field notes of such survey to be made and delivered to the officers of said corporation and has secured plans, specifications and estimates for the construction of said dam and has definitely selected the place for the location and construction of said dam and has made some excavations of earth and cutting and clearing of timber preliminary to the immediate and actual construction of said dam and preliminary to the ultimate completion and operation of said reservoir for the purposes herein stated. 4.- That the main purpose for which said water is so appropriated is as above stated to be used into the lands of the stock holders of said corporation for irrigation, culinary, domestic, power, and other useful and beneficial purposes to the extent required by them respectively and in proportion to their respective shares and interest in said corporation; and if there is any surplus of water remaining after supplying the requirements of all of said stock holders then the same shall be subject to sale, rental and disposal to any person, Company or Corporation desiring to purchase

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Creek Reservoir Company; that it claims said reservoir or reservoirs and all ditches, canals, pipes, flumes, tunnels, aqueducts or conduits, (including the natural channel of Bozeman Creek) which are now or may hereafter be constructed, and the right of way therefor for the purpose of flowing and conducting said waters so appropriated to and upon any lands for the purposes of irrigation as aforesaid, and to any other point or points where said water may be taken for any useful or beneficial purpose.

9:- Said water is also appropriated for the purposes of selling, leasing and delivering the same to any City, town, village or Municipality in said County of Gallatin, Montana, or to the inhabitants thereof, to be by them used for any lawful, useful or beneficial purpose. 10:- It is further declared to be one of the purposes of said corporation in appropriating and conserving said water to develop, improve, use, lease, sell, convey or otherwise dispose of water powers and the sites thereof and lands necessary and useful therefor, or for the industries and habitations arising or growing up or to arise or grow up in connection with or about the same.

11:- To properly and legally secure the right of way for the construction of said dam and the establishment of said reservoir, ditches, flumes and other water ways, it is the intention of said Corporation to make application under the laws of

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the United States to the Interior Department through the proper officers for the right and privilege of locating, constructing, maintaining and operating said reservoir on the public domain and Forest reservation known as the Gallatin Forest Reserve upon which said Mystic Lake is situate and all which said waters are to be conveyed as set forth in this notice of water right.

12. That it also claims the right to keep in repair and to enlarge said dam and all necessary appurtenances, equipments and water ways, levees, conduits and flumes at any time and the right to dispose of said right and property in part or in whole at any time. Claiming the same, all and singular under any and all laws, National and State, and rulings and decisions thereunder in the matter of water rights and specifically under Sections 1880 to 1902 inclusive, Civil Code of Montana, and acts amendatory thereof.

In Witness Whereof the said corporation has caused its corporate name to be set by its President and its Corporate

whole at any time. Claiming the same, all and singular under any and all laws, National and State, and rulings and decisions thereunder in the matter of water rights and specifically under Sections 1880 to 1902 inclusive, Civil Code of Montana, and acts amendatory thereof.

In Witness Whereof the said Corporation has caused its corporate name to be set by its President and its corporate seal to be affixed by its Secretary duly authorized in this behalf this 13th day of September, 1901.

Bozeman Creek Reservoir Company ✓

By T. F. Stevenson, President ✓

attest: F. M. Bull Secretary. ✓

corporate seal

State of Montana } ss.
County of Gallatin }

T. F. Stevenson and F. M. Bull, being duly sworn each for himself says: That said Stevenson is the President of the Bozeman Creek Reservoir Company whose corporate name is signed to the foregoing instrument, and F. M. Bull is the Secretary thereof; that both of said affiants are of lawful age and make this affidavit for and on behalf of said Corporation under authority of the Board of Directors of said Corporation; that they have heard read the foregoing [illegible] and that the

POOR COPY
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Attest: F. H. Bull Secretary.

State of Montana } ss.
County of Gallatin }

T. F. Stevenson and F. H. Bull, being duly sworn, each for himself says: That said Stevenson is the President of the Bozeman Creek Reservoir Company whose corporate name is signed to the foregoing instrument, and F. H. Bull is the Secretary thereof; that both of said affiants are of lawful age and make this affidavit for and on behalf of said corporation under authority of the Board of Directors of said corporation; that they have heard read the foregoing instrument and know the contents thereof and that the matters therein stated are true.

T. F. Stevenson.

F. H. Bull.

Subscribed and sworn to before me this 13th day of Sept. 1901.

Chas. S. Hartman
Notary Public in and for the
County of Gallatin, Montana

Filed for record Sept. 20th 1901, at 4 o'clock P.M.

E. J. Blankenship Recorder

RECORDED

3

TO SEE THE LARGE MAP ATTACHED TO THIS FILE, PLEASE PULL THE ORIGINAL FILE.

STATEMENT OF CLAIM CHECKLIST

FORM TYPE: I S D O

OK	NOT OK		
		Received	
		Basin	
		County	
		Division	
		Transmittal	
		Fee	

FORM ITEMS

	OK	NOT OK	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Checked by R. Taylor 9-10-81
Date

DEFICIENT:

____Phoned _____ / _____
Number Date

____Sent Letter _____ / _____
To Date

Correction Deadline: _____
Date

____Form Corrected _____
Date

____Incomplete Form & Correspondence Sent To Helena

☐ See notes on reverse side

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION 09/13/83

ABSTRACT OF CLAIM FOR EXISTING WATER RIGHTS

CLAIM ID 41H -W-030460-00 PRIORITY DATE: ~~16:30~~ 09/12/1901 TYPE OF RIGHT: FILED CLAIM RECEIVED: 09/09/81 FEE PAID: $40

TYPE CODE: S MAX RATE: 50.00 C (2,000.00 MI) MAX VOLUME: 13,000.00 AF/YEAR MAX ACRES: 2,518.00

OWNERS: (M) C BOZEMAN CREEK & RESERVOIR CO
8323 NASH RD
BOZEMAN MT 59715

			LOT	BLK	QTR SEC	SEC	TWP	RGE	CO	
SOURCES:	DV 01	SOURDOUGH CREEK			SESESE	25	03S	06E	GA	MEANS DIVRS-HG
	RS 01	RESERVOIR			SESESE	25	03S	06E	GA	SRF ACRES __,___.__ OFFSTREAM? No

USE: IR 01 2,518.00 ACRES PERIOD OF USE 000199999700 TYPE IRR E CLIMATIC AREA 4

		ACRES	VER. ACRES	WRS 19__	19__	LOT	BLK	QTR SEC	SEC	TWP	RGE	CO	REMARKS
PARCELS:	001	422.00	422						31	~~03S~~ 2S	06E	GA	
	002	310.00	310					S2	30	02S	06E	GA	
	003	41.00	41					SENE	30	02S	06E	GA	
	004	129.00	129					SE	01	03S	05E	GA	
	005	293.00	293					N2	01	03S	05E	GA	
	006	469.00	469						06	03S	06E	GA	
	007	113.00	113					SW	05	03S	06E	GA	
	008	15.00	25					NWSE	05	03S	06E	GA	
	009	31.00	31					N2N2NW	07	03S	06E	GA	
	010	34.00	34					~~NWNW~~ W2NE	07	03S	06E	GA	
	011	541.00	541						36	02S	05E	GA	
	012	120.00	120					SE	25	02S	05E	GA	
	TOTAL	2,518.00	2528										

ADDENDUMS: /YES _NO (_DVRS _RSRV _POU /RMRK _OWNR) COMMENTS _____

SUPPLEMENTAL RIGHTS: IF REF. RIGHT, MAX COMBINED VOLUME FOR ALL RIGHTS _,___,___.__ AF MAX COMBINED ACRES FOR ALL RIGHTS __,___.__

IF SUPPLEMENTAL RIGHT, PURPOSE ID __ __ AND CLAIM ID ____ _ _____ __ OF REF. RIGHT

********** FIELD VERIFICATION FORM **********

CLAIM ID 41H -W-030460-00 (CONTINUED)

COMPARISON STATISTICS: FLOW RATE 50.00 C (8.912 GPM/AC)
VOLUME 13,000.00 (5.163 AF/AC)
VOLUME BASED ON FLOW RATE AND PERIOD OF USE 21,342.933 AF/YR - OVER CLAIMED VOLUME

BASIN OK: ✓YES _NO COMMENTS _____

CLIMATIC AREA OK: _YES ✓NO COMMENTS _____

SOURCE NAME OK: ✓YES _NO (FROM: _USGS TOPO MAP_____, _WR SURVEY) COMMENTS _____

TYPE CD (S/G) OK: ✓YES _NO COMMENTS _____

POD OK: DV 01 _YES _NO ✓APPEARS CORRECT _UNVERIFIED (FROM: _CLMNTS MAP _AERIAL PHOTO) COMMENTS _____

RS 01 _YES _NO ✓APPEARS CORRECT _UNVERIFIED (FROM: _CLMNTS MAP _AERIAL PHOTO) COMMENTS _____

MEANS DIVRS OK: _YES _NO _APPEARS CORRECT ✓UNVERIFIED COMMENTS _____

POU OK: ACTUAL RANGE 2,341.7 - 2,694.3

PROOF OF USE: CLAIMED FLOW RATE OK: ✓YES _NO _NONE GIVEN COMMENTS _____

CLAIMED PRTY DATE OK: ✓YES _NO COMMENTS Except for time

FLOW RATE OK: ✓YES _NO _APPLY STANDARD COMMENTS _____

VOLUME OK: _YES _NO ✓APPLY STANDARD COMMENTS _____

PRIORITY DATE OK: ✓YES _NO (_APPLIED LAST MONTH OF YR _APPLIED LAST DAY OF MONTH) COMMENTS Time is from filing date not claimed priority date.

PERIOD OF USE OK: _YES _NO _APPLY STANDARD COMMENTS _____

AIR PHOTO VERIFICATION OF DEVELOPMENT: PHOTO _____ PHOTO DATE Claimants AERIALS USED & ATTACHED WRS MAP.
PHOTO _____ PHOTO DATE _____
PHOTO _____ PHOTO DATE _____

TELEPHONE CONTACT: _YES ✓NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

LETTER CONTACT: _YES ✓NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

OWNERSHIP: _YES ✓NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

INTERVIEW: _YES ✓NO DATE COMPLETED __/__/____ BY __ COMMENTS _____

FIELD INVESTIGATION: _YES ✓NO APPROVED BY __ DATE CHECKED __/__/____ BY __ COMMENTS _____

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION 09/13/83

ABSTRACT OF CLAIM FOR EXISTING WATER RIGHTS

CLAIM ID 41H -W-030460-00 (CONTINUED)

GENERAL REMARKS:

INVESTIGATED BY Rusty Taylor DATE 3/1/1984

REVIEWED BY _____ DATE __/__/____

Form 76-C-1
Nov 4 82

WATER RIGHT DATA BASE CODING FORM
REMARK RECORD

REMARK RECORD:		ACTION	GEN CODE	GEN	BASIN	ID CODE	ID NUMBER	EXT ID
	06	A	V	01	41/41	W	0130460	00

ID TEXT RM01 My static LAKE

TEXT

TEXT

ID TEXT FR01 Flow rate for this right is limited to the historic

TEXT capacity of the diversion structure and conveyance

TEXT system.

ID TEXT

TEXT

TEXT

ID TEXT

TEXT

TEXT

WATER COURTS
Supplemental Document
Claim #

BOZEMAN CREEK RESERVOIR COMPANY

The Bozeman Reservoir Company was first incorporated on March 11, 1901, for a period of 20 years. Purposes of this corporation were to appropriate and use for irrigation, waters from Mystic Lake and Bozeman Creek. On September 13, 1901, the company filed on 3,000 miners inches of flood water from Bozeman Creek and Mystic Lake. A dam was then built of rock, stone, and other suitable materials across Bozeman Creek at the point where the creek flows from and forms the outlet of Mystic Lake. These flood waters so dammed, reservoired, and appropriated were run down the natural channel of Bozeman Creek to points where ditches diverted and conveyed the water to farms and other places of intended use. This company continued operations under the provisions set forth in the Articles of Incorporation until its term of existence expired on March 11, 1921.

On June 27, 1922, a new corporation of the same name was formed to succeed the defunct "Bozeman Reservoir Company." All property, rights, titles and interests owned by the former "Bozeman Reservoir Company" were acquired by the new corporation. Most important of the changes in the provisions of the new corporation were: "That the water appropriated may be used upon the lands of the stockholders in the corporation for irrigation, culinary, domestic, power, and other useful and beneficial purposes to the extent required by them; and in proportion to their respective shares and interest in the company; and for a water supply for the City of Bozeman, Montana, and the inhabitants thereof, in proportion as the shares and interests of the City of Bozeman appears or shall appear in said Company."

The Bozeman Reservoir Company is incorporated for a period of forty (40) years. Stock issued by the company amounts to 60 shares having a par value of $500 each. The total amount of stock actually subscribed to is 20 shares. The stock in the corporation is assessable.

A regular assessment of $25.00 per share of stock is made each year. Operation and maintenance charges have averaged about $20.00 per share for the last several years. One share of stock entitles each stockholder to the use of 100 miner's inches of water a day for a total of 14 days during the irrigation season or 50 miner's inches a day for a total of 28 days.

Largest stockholder in the corporation at the present time is the City of Bozeman, whose 6 shares are used to supply water for domestic use in the city of Bozeman. The other 14 shares (of 20 subscribed to) are owned by nine farmers in the company, being divided as follows: six having 1 share; one owning 2 shares; and the other two having 3 shares each. The water represented by the latter shares is used for irrigation on farm lands south of Bozeman. This water is diverted from Bozeman Creek and carried in the following irrigation ditches: Mystic Lake, "68", "66", and the Lower Williams.

In 1952, 437 acres of land were irrigated or supplied supplemental water from the Bozeman Reservoir Company.

WATER COURTS
Supplemental Document
Claim #

(See map in Part II, Pages 38, and 42).

DRY CREEK IRRIGATION COMPANY

Prior to the organization of the Dry Creek Irrigation Company several land owners located in the Lower Dry Creek Valley, between Reynolds Creek and the East Gallatin, had

MONTANA WATER COURTS

STATE OF MONTANA

WATER JUDGES:

Upper Missouri River Basin
Chief Judge W W Lessley
PO Box 879
Bozeman, MT 59715

Lower Missouri River Basin
Judge Bernard W Thomas
PO Box 938
Chinook, MT 59523

Clark Fork River Basin
Judge Robert M Holter
Lincoln County Courthouse
Libby, MT 59923

Yellowstone River Basin
Judge Roy C Rodeghiero
PO Box 448
Roundup, MT 59072

M E M O R A N D U M

TO: Rusty Taylor, Bozeman DNRC Water Rights Field Office

FROM: Bob Arrington

DATE: August 3, 1984

RE: Bozeman Creek and Reservoir Co. Claims

Please verify these claims in accord with the Irrigation District policy. More specific guidelines are indicated in items 1 through 2. If you have any problems or questions, please call.

W030460 and W030459

1. Verification looks great. POU parcel records will be retained.

2. Add FR01 remark to each with file as discussed in the Irrigation District policy to relate W030460 and W030459.

Approved by Tim Sullivan
Tim Sullivan, Water Master

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