# Anaconda-Deer Lodge County

# Preliminary Engineering Report
# Master Plan Update

# August 2012

***Prepared for:***

*Anaconda-Deer Lodge County*
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# I. Groundwater Restoration Plan

As established under the Natural Resource Damage Program's *2011 Long Range Guidance Plan and 2012 Upper Clark Fork River Basin Interim Restoration Process Plan*, ADLC is required to develop and submit a Groundwater Restoration Plan for approval, prior to receiving its proposed Groundwater Allocation funds (estimated at $9.4 million) for additional water system improvements. This chapter constitutes ADLC's Groundwater Restoration Plan, based on the Water Master Plan Update appearing in the subsequent chapters of this document. The water system capital improvements plan described in Chapter III contains $14,579,783 in overall system improvements, of which the Groundwater Restoration Plan proposes approximately $9.7 million as the highest priorities based on engineering analysis. The following discussion details the prioritized Groundwater Restoration Plan improvements in the context of the six requirements and related legal/policy criteria as contained in the *2012 UCFRB Interim Restoration Process Plan*. Given that the proposed Groundwater Restoration Plan projects are a subset of the overall Master Plan Update recommended improvements, the City-County is proposing these projects as a "single phase" of improvements. The projects are structured to span several years and construction seasons, but ADLC is not intending this Groundwater Restoration Plan as a partial "first phase" proposal.

## A. Description

Figure 1 shows the general location of the proposed projects (in Sections 2, 3 and 4, T4N, R11W), along with the overall layout of Anaconda's water supply, storage, and transmission system. The project objectives are the replacement or installation of the water main segments identified as the "Phase I through Phase IV" improvements in this PER Master Plan Update with modern, pipe and accessories as well as a Voluntary Metering Program and installation of backup power at the well field. The proposed projects include 41,195-lf of main line renewals and installations sized 6" to 20" as well as installing backup power at the well field and developing a funded voluntary metering program. The projects prioritized from the Water Master Plan Update for inclusion in Anaconda's Groundwater Restoration Plan are as follows. Detailed cost estimates are included in Appendix E.

- Phase I – This project phase includes those water mains described in the 2009 Modeling Study Update[1] as Phase III. They are further described as the remaining cross streets throughout town. The majority of cross streets will be replaced with 6-inch water main. This phase contains combinations of six, four, and two-inch water lines, totaling approximately 11,600-lf.

- Phase II – This project phase includes the following: 1) replacement of the 20-inch water supply line from the pump station, across Tamarack St. and to the valve house on Washoe St, 2) replacement of the 16-inch and 12-inch supply line from the valve house over to Poplar and Sycamore Streets. A total of approximately 8,300-lf of large diameter mains are included in this phase.

[1] (DOWL HKM, 2009)

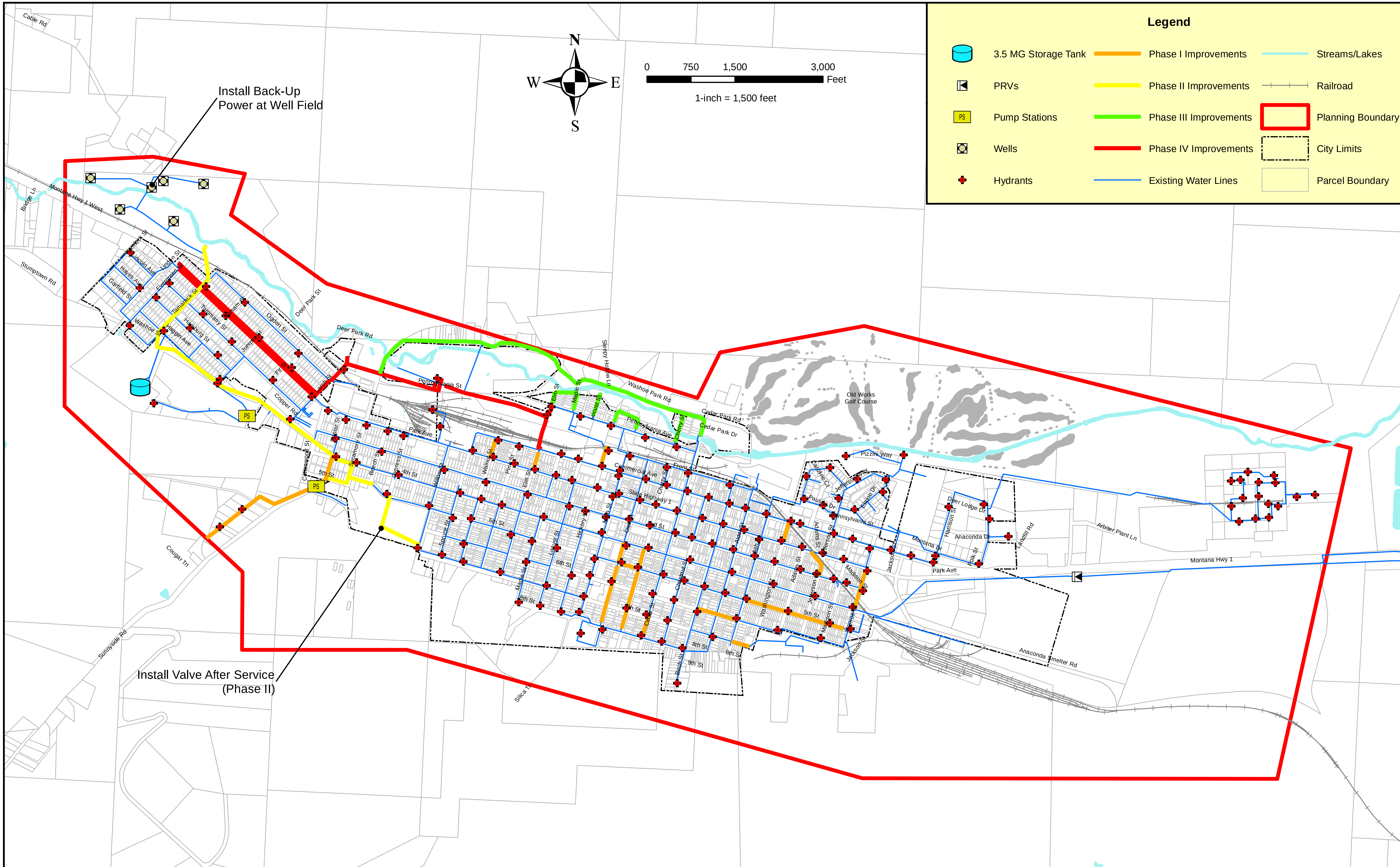
- Phase III - On the north side of the railroad tracks near Cable Road and from Sycamore Street to Cedar Street the area experiences low pressures during peak demands as a result of the dead end mains. Fire flows are limited in this area. A new 8-inch main is proposed for looping between Sycamore and Cedar to alleviate the pressure and flow problems in this area. The total length of the new main would be approximately 7,400-lf while 1,650-lf would be replaced.

- Phase IV – Park St. west of Larch St. contains 8-inch and 6-inch trunk water mains installed in the 1950s. This section of Park St. has been identified by the MT Department of Transportation for possible future reconstruction. Prior to this road reconstruction, these water mains should be replaced. On Pennsylvania Avenue between Larch St and Elm St. a 6-inch section of the original system which services the Washoe Park Area will be replaced as well as the line on Larch St. that connects this main to the proposed replacements on Park St. A total of approximately 12,250-lf of mains are included in this phase.

- Anaconda has already implemented a voluntary metering program. If a homeowner requests to have a meter installed, ADLC purchases the meter and installs it for free. The homeowner is responsible for additional plumbing necessary to install the meter as well as a $49.16 inspection fee. In general the homeowner ends up paying between $80 and $140 while ADLC pays $220 and donates the labor. Due to the cost of the program to the homeowner, many would-be volunteers are discouraged from participating. To increase the success of the voluntary metering program, this Master Plan Update proposes to implement a *fully funded* voluntary metering program. It is proposed that $200,000 of Groundwater Allocation funds be used per year for the next 5 years. Table 12 includes 2,642 meters at a total cost of $3,709,983. An interior installation of a water meter generally costs $600 while an exterior meter pit installation generally costs $1,500. At these costs, approximately 150 - 200 meters could be installed each year under this voluntary program.

- The wells do not currently have any provision for backup power; therefore, the water supply could be compromised during an extended power outage. Though the water storage tank has ample emergency storage, this stored water would only last for a short time depending upon the system demand. The most cost effective way to provide sufficient redundancy would be to purchase a portable generator with adequate capacity to operate at least two of the different wells, one at a time. This would require installation of a transfer switch and appropriate connection equipment to allow the generator to be connected to the well.

As has been done on past projects, service connections would be renewed between the main and the property line as part of waterline construction, correcting another proven source of leakage. Improvements will be designed and constructed to conform to Circular DEQ-1 and other applicable regulatory and construction standards.




# Preliminary Engineering Report Master Plan Update
Groundwater Restoration Plan Projects

DOWL HKM

**Figure 1**

## B. Benefits

The primary driver for the project is to reduce still unacceptably high water distribution system leakage. A steady improvement in leakage rates can be directly attributed to the main replacements over the past eight construction seasons (2003 through 2010). While water transmission/distribution piping leakage losses were 2.18 mgd before the start of NRD-funded main replacements in 2002, approximately 460,000 gpd of leakage still remains as of January 2012. Remaining leakage equates to 42 percent of Anaconda's year round water production. If the same leakage loss recovery rate continues, the remaining pipe replacements could bring system-wide leakage at least down to 20 percent, thereby saving a minimum of 68,000 gpd in current leakage under the assumption of system wide metering.

Anaconda's system leakage is a direct result of both age and inferior pipe materials used in initial construction. Thin-walled galvanized steel (Kalimane) pipe installed circa 1900 was corrosion and perforation prone. Leakage and system deterioration was not addressed diligently over the past century, partly because of revolving utility ownership – i.e., Anaconda Company, ARCO, and Butte Water Company, a Washington Corporation subsidiary – and also due to substandard maintenance and undercapitalization by some past owners. Numerous service connections have also been found to leak during the course of past main replacements.

Saving at least an additional 20 percent of Anaconda's current water consumption by conservation resulting from system-wide metering equates to 143 million gallons per year less production. At an estimated production/delivery cost of $0.87 per thousand gallons (based on FYE11 Water Enterprise Fund revenue of $620,800; and 0.71 billion gallons water produced FY2011), this is a $124,500/yr in direct cost savings (quantified benefits).

Equally important, meter-induced conservation of an estimated 20 percent forestalls the difficulties involved with expanding Anaconda's water supply, and contributes a significant offset for water resources lost (or otherwise unavailable) due to contamination. In addition to water savings, the project will conserve other resources including pumping and chlorine costs.

Options for expanding groundwater supply are limited by aquifer contamination, and surface water supplies are hydraulically limited and would require costly treatment. Conservation of Anaconda's finite usable water resources is of paramount importance, making it critical to curtail leakage and to extend the utility of the limited available water supply for both current residents and future growth.

## C. Costs

Appendix E provides an itemization of the estimated total Groundwater Restoration Plan project(s) cost of $9,759,274 for the improvements identified in Section A, above. This cost is greater than the estimated $9.4 million of Groundwater Allocation currently proposed for Anaconda. However, it is anticipated that at the time this cost is incurred, the 1992 revenue bonds will be re-paid and additional local cash will be available to fill the gap. A detailed project cost estimate appears in

Appendix E. Construction and engineering costs are based on the per lineal foot costs developed by evaluating past projects. The costs provided below are budget estimates only. Actual project costs will be based on competitive public bids received for the construction work, as well as the engineering design and inspection contract task order once negotiated.

**Table 1 - Groundwater Restoration Plan Costs**

| Description | | Construction Cost | Engineering Cost | Total Cost |
|---|---|---|---|---|
| Distribution System | Phase I | $ 2,048,090 | $ 307,214 | $ 2,355,304 |
| | Phase II | $ 1,711,765 | $ 256,765 | $ 1,968,530 |
| | Phase III | $ 1,590,864 | $ 238,630 | $ 1,829,494 |
| | Phase IV | $ 2,196,476 | $ 329,471 | $ 2,525,947 |
| Voluntary Metering | | $ 1,000,000 | $ - | $ 1,000,000 |
| Backup Power | | $ 80,000 | $ - | $ 80,000 |
| **Totals** | | **$ 8,627,195** | **$ 1,132,079** | **$ 9,759,274** |

As shown in Table 1, $1,132,079 of contracted services will be required for the proposed project to out-source engineering and construction, and assistance with grant administration and Superfund-related issues. Additionally the City-County has incurred NRD-reimbursable costs for preparation of this Water Master Plan Update including the Groundwater Restoration Plan. Anticipated contracted services for engineering and construction are broken out as Professional Services and Construction Services and are further described as follows:

### 1. Professional Services

| | |
|---|---|
| Engineering Consultant | 2012 Water Master Plan Update, including NRD Groundwater Restoration Plan. |
| | Geotechnical investigation, field surveying, preparation of draft engineering design plans and specifications, and final construction cost estimate. |
| | Finalization of plans and specifications, and preparation of bid package. |
| | Assistance with solicitation of agency approval of bid documents, bid advertisement, opening, and construction contract award. |
| | Construction field inspection. |
| | Construction contract administration, shop drawing review, pay estimate review, as-built drawings, construction contract close-out, and MDEQ certification of completion. |

| | |
|---|---|
| Funding Administration Consultant | Assistance with development and representation of 2012 Groundwater Restoration Plan to the NRDP.<br><br>NRDP funding administration, including project budget tracking, in-kind local match cost accounting, preparing reimbursement requests, NRDP Progress Reports, and Final Project Reports. |
| Superfund Technical Assistance Contractor | (standing contracted services to ADLC for Superfund-related coordination, including DPS implementation and SOP oversight, and access by construction Contractor to Waste Repository for disposal of RCRA waste materials) |

DOWL HKM as the project Engineer has already been selected under a quality-based selection process meeting MCA 18-8-201 to -212. ADLC conducted the professional services procurement process for water system engineering in 2008, and selected DOWL HKM for a multi-year "indefinite quantities contract." Design and inspection services for the Groundwater Restoration Plan Projects will be contracted as new "task orders" under the base agreement from that selection.

Kuipers & Associates will address Development Permit System, Community Soils, Waste Repository, and related Superfund issues on the project through its standing contract with ADLC as Superfund Technical Assistance Contractor for the community. Beard Environmental & Technical Assistance (BETA), retained under an MDOC-recognized "long term partnership" for small purchase contracts for professional grant-writing services, will assist the City-County with funding administration.

### 2. Construction Services

As described in Chapter III, the projects included in Anaconda's Groundwater Restoration Plan will span multiple years and construction seasons. They will also likely be bid as annual projects, and likely involve separate construction contractors each year. Project Construction costs for the improvements, including mobilization, site work, demolition and disposal, new piping and appurtenances, earthwork, and paving, are estimated to total $8,627,195 as shown in Table 1 and detailed in Appendix E. Construction unit prices have been developed by DOWL HKM, based on similar work in Anaconda and statewide.

| | |
|---|---|
| Construction Contractor | Construction of Anaconda Cross Streets (Updated PER Phase II) water main replacements. |

Competitive bidding for construction Contractor services will be duly advertised, and conducted according to MCA 7-5-2301.

Construction Contingency, at approximately 10 percent of the construction cost, is estimated at $862,719. A contingency of 10 percent is being used partly due to the inflation uncertainties in the construction market, and to address any unanticipated consultant contract amendments or construction contract Change Orders. Engineering services for design and construction-phase services on the projects is estimated 15%, which includes NRD funding administration is estimated at $7,500 per year (100 hr/yr) over the span of the Groundwater Restoration Plan projects.

Contractor performance on the project will be assured by his/her Performance Bond and Labor and Materials Payment Bond, each required in the amount of 100 percent of the construction contract amount. The construction Contractor will also be required to carry insurance coverage meeting statutory and NRD Program requirements.

## D. Implementation Schedule

The following implementation Schedule is proposed for the improvements:

**Table 2- Implementation Time Line**

| | Design Completion | Bid Opening | Construction Startup | Construction Completion |
|---|---|---|---|---|
| Phase I | March 2013 | April 2013 | June 2013 | October 2013 |
| Phase II | March 2014 | April 2014 | June 2014 | October 2014 |
| Phase III | March 2015 | April 2015 | June 2015 | October 2015 |
| Phase IV | March 2016 | April 2016 | June 2016 | October 2016 |
| Voluntary Metering | N/A | N/A | January 2013 | December 2018 |
| Backup Power | March 2013 | April 2013 | June 2013 | October 2013 |

Project implementation requires engineering design and construction of each phase of the proposed improvements. Final engineering designs for the waterline replacement as well as waterline and meter installation projects will consist of preparing plans and specifications and producing a bid package, along with bid-phase services and construction inspection. The engineering and construction sequence for water meter installations differs from usual utility projects in that most work will occur on private property, on the water customer's own service line or interior plumbing. Engineering design focuses on developing an exact inventory of meter types and installation requirements, and preparing standard installation drawings, detailed equipment specifications, and biddable contracts. Utility construction characteristic of underground pipeline replacement will be required as well as plumbing installation of meter equipment. Engineering and construction activities are of the type traditionally required for municipal utility projects.

The exact approach will be decided during design for each project phase, but has been assumed according to the project tasks and schedule described below. If any substantive changes in the scope of this Groundwater Restoration Plan are proposed, they will be reviewed and concurred by the

NRDP per section 3.3 of its Process Plan before proceeding. Implementation of each phase of the proposed project will proceed according to this chronology, with the phases and tasks noted.

1. Engineering services through a specific “task order(s)” for these projects are anticipated to be contracted in Fall of each project year. Final design will involve field surveying, geotechnical investigations, preparation of draft plans and specifications, final cost estimating, and finalization of bid documents. Design completion will target bidding in early each spring.

2. Prior to advertisement of each project for construction bidding, final plans and specifications for the water main replacement will be furnished to ADLC and the MDEQ for review. Note that metering projects will not require MDEQ review. Any agency-required modifications to the documents will be incorporated prior to bidding. Final plans will also be furnished to the NRD Program to verify conformance of the design with the project scope as contained in this application.

3. Following a publicly advertised bid solicitation in accordance with state law, a Contractor will be selected and contracted for the construction work. For the voluntary metering project, a contractor may be pre-selected using the same solicitation procedures to complete meter installation on an as-needed basis. Construction for each water line project is anticipated to span approximately six months, and completed within one calendar year. As noted, the multiple projects prioritized for inclusion the ADLC’s Groundwater Restoration Plan will span multiple years. During construction of each one, inspection and contract administration services will be provided by the Engineer. Contractor bonds will guarantee performance; insurance meeting NRD Program and statutory requirements will also be required.

4. Construction will be preceded by a Preconstruction Conference, review of submittals and shop drawings, field location of existing utilities, materials testing, and approval of the construction Contractor’s proposed construction schedule.

5. Construction will be authorized by a Notice to Proceed issued by ADLC.

6. Field inspection and construction contract administration for the projects will be primarily the responsibility of the engineering consultant, with collaboration by the City-County Planning Office and personnel from ADLC’s Water, Streets and Roads, Street Lighting, and Fire Departments. Kuipers and Associates, as ADLC’s Superfund Technical Assistance Contractor, will provide field inspection and coordination during construction relative to the Development Permit System Street Opening Permit and Waste Repository access. Since local match is not anticipated to be required for the City-County’s NRDP Groundwater Allocation funds, staff in-kind match will not be recorded as it has been on past “grant cycle” projects.

7. As they are installed, new water mains will be disinfected, tested, and commissioned.

8. Upon receipt of the Contractor's lien releases and contract close-out documentation for each project and with the concurrence of the Engineer, ADLC will accept the completed water main projects and issue final payment to the Contractor.

9. Project close-out tasks following construction will include preparation of "as-built" drawings by the Engineer, and ADLC's submission of final documentation to the NRD Program. The Engineer will issue the legally required "Certification of Completion in Accordance with Approved Plans and Specifications" to the MDEQ, following construction.

10. A one-year construction warranty will be provided by the construction Contractor with the backing of his/her performance bond, to assure repair of any defects in workmanship or materials occurring after construction of each project. A one-year warranty inspection will be conducted each year, involving the Engineer, the Contractor, and ADLC.

## E. Monitoring

The waterline projects will afford the opportunity for limited post-project monitoring. Quantitative monitoring will target measuring (or estimating) water leakage reductions from the proposed main replacements, which conceivably could be up to 3.3 million gallons per month if system leakage is reduced to 20%, which should be observable. This could be done in one of two ways:

- Comparison of well field (total) flow meter readings for corresponding months before and after construction of the project may indicate some quantified reduction in leakage. Comparison of winter demand when irrigation is not occurring is the most valid. Post-project January well field flowmeter readings could be compared to data from before each project to discern any drop in water demand due to leakage correction. Alternatively another formal Leakage Re-evaluation, repeating the methodology of the PER, could be performed.

- The former informal assessment is proposed. At ADLC's discretion, a more rigorous analysis through another formal Leakage Re-evaluation could be conducted, although the cost for this level of evaluation has not been included in the budget for the Groundwater Restoration Plan projects.

- With full metering in place, the sum of all metered water sales per month should be compared to well field production. Since well field flow measurements also include leakage, estimated at 0.45 mgd in January 2012, such a comparison will give a direct measure of "unaccounted for water," specifically remaining system leakage. This information will be directly useful in quantifying the benefits of ongoing water main replacements, and should be re-calculated on a regular basis after meters are installed.

Qualitative monitoring would be limited to comparison of leak incidences along the project corridors for several years following project completion. Future leaks along the corridors would be expected to be nil, given the new pipe installation. Any leaks detected within the first year due to defects in construction would be repaired under the Contractor's warranty.

## F. NRD Evaluation Criteria

Each of legal criteria identified in section 6 of the NRD Process Plan[1], will be discussed separately below.

### 1. Technical Feasibility

ADLC has successfully demonstrated its ability to successfully execute similar projects with measurable beneficial results in terms of water leakage abated over the course of eight past (plus one current) NRD-funded waterline replacements. Alternatives have been evaluated to formulate the most feasible and beneficial water line replacements – including system modeling in the 2009 PER Modeling Amendment and further alternatives analysis/prioritization in this Water Master Plan Update. Conventional methods for underground utility design and construction and similar project management protocols will be used for the Groundwater Restoration Plan projects. A state-licensed Professional Engineer will be in "responsible charge" of design and bid documents, as required by state law. RCRA-related project elements and conformance to Anaconda's Development Permit System will be overseen by ADLC's Superfund Technical Assistance Contractor. Construction Contractors will be selected to build the projects through publicly advertised, competitive bid processes.

Contractors will use conventional construction methods for installation of the waterlines, including trench excavation in accordance with OSHA norms, and pipeline assembly and testing per MDEQ and AWWA standards for design, materials, and construction. New mains will be six- and twenty-inch ductile iron pipe, subject to final engineering design.

Conventional plumber services will be used for meter installation, including both interior plumbing and "in yard" buried meter pit setting and connection. Licensed plumbers will be used, as required by state law. The services of a Professional Engineering firm will be used for design, bid-phase assistance, construction inspection, and contract administration. RCRA-related project elements and conformance to Anaconda's Development Permit System will be overseen by ADLC's Superfund Technical Advisor, already retained for such issues community-wide.

Given the replacement nature of the water main construction projects, Contractors will be required to maintain water service to ADLC customers during construction. All existing service connections between the tap at the main and the user's curb stop at the property line will be

[1] (State of Montana Natural Resource Damage Program, 2012)

replaced. This practice has proven on past projects to remove another significant source of leakage. At the same time, any existing "combined" service lines serving more than one user can be reconstructed to provide individual connections, which enhances operations and accountability.

Equally important will be maintenance of fire protection, and coordination with the ADLC Fire Department to assure that hydrants remain serviceable, or if not, that their temporarily inoperable status is known to fire fighters. Simultaneous involvement of the ADLC Streets and Roads Department will also assure that residential, business, and emergency vehicle access is suitably maintained throughout construction.

Project uncertainties are minimal. No innovative approaches are involved, and all aspects of the work will utilize similar methods proven to be successful on multiple recent projects.

## 2. Relationship of Expected Costs to Expected Benefits

The estimated direct cost of the proposed improvements is $9,759,274, including a 10% construction cost contingency. No quantifiable indirect costs are attributable to the project. The proposed project will provide direct benefits to individuals living and working in Anaconda-Deer Lodge County, an area in the midst of the largest Superfund site in the United States. The direct benefits of this proposed project will conserve and enhance the City-County's limited water resources as a "replacement" for the impaired groundwater in the area. The replacements will not only conserve water lost to leakage along the old lines, but also conserve energy in that water pumped into the system will drop commensurately. Additional water supply will not have to be developed prematurely. Up-sizing over 6,000 feet of these existing mains that are currently two-inch size to six-inch will also enhance water delivery and fire protection for residents.

These benefits result primarily from the availability of up to 259,000 gpd of additional water available that was previously lost to leakage. This loss could realistically make 94 million gallons per year of previously wasted water supply available to the Anaconda community. Augmenting the 403 already metered water users in Anaconda, system-wide metering is estimated to save at least 20 percent of Anaconda's current water supply by financially motivating consumers to conserve. This equates to 392,000 gpd in savings. Correcting this loss represents a potential annual direct benefit of up to $23,000 in water production costs alone.

## 3. Cost Effectiveness

Cost effectiveness of the proposed projects in the long term is being promoted in several ways:

- The proposed projects have been established as the most cost effective by a detailed alternatives analysis which is further described in section 10 below.
- Replacement of old leaking water mains continues to be proven by engineering analysis to be the most cost-effective, immediate solution to extend Anaconda's limited water supply.

Repeated “post-project’ leakage evaluations coupled with system modeling and other alternative analyses demonstrate that it is the most cost-effective option. Continuing incremental or voluntary metering of the community is proposed as a conjunctive option, offering obvious collateral benefits and cost efficiencies in water delivery and consumption.

- The design of the projects will emphasize value engineering in construction requirements, and be subject to the Engineer’s internal quality assurance/quality control program.

- The design life for the new water mains of 100 years promotes long-term cost efficiency.

- The design life of new water meters is 20-plus years with proper maintenance, promoting long-term cost efficiency of the project. Installation plumbing and meter pits are estimated to last 50 years, even if meters themselves are replaced in the interim. Meter replacement responsibility at the end of their useful life can be assigned to either the landowner or the City-County, and will be addressed in forthcoming water ordinance revisions.

- Maintenance of the new water mains is assured through the ADLC Water Department’s history of successful O&M of the Anaconda municipal public water system since 1992. The Department’s regular regimen includes main flushing and valve exercising, daily chlorine residual testing, equipment preventative maintenance, and as needed, pipe repairs.

- The Department’s fulltime staff includes two Class II Distribution (and Class III Treatment) Operators licensed by MDEQ for these functions for the public water system, plus one assistant and two billing clerks. (A letter verifying the City-County’s commitment to water system maintenance can be furnished upon request.)

- Maintenance of the new meters is assured through the ADLC Water Department’s history of successful operation and maintenance of the public water system and current O&M of 403 meters already in place. The Department’s regular meter O&M regimen includes regular monitoring through self-diagnostics associated with the “radio read” system and associated water billing software, and checking meters in response to abnormalities or customer service calls.

- Spring letting targets the most competitive bidding timeframe as Contractors pursue work for the coming construction season, and bid competition minimizes costs.

### 4. Results of Response Actions

The Superfund process has identified large areas of contaminated soil and water that directly affect the Anaconda-Deer Lodge community. Volumes of groundwater contaminated beyond Primary and Secondary Drinking Water Standards for various metals are projected to be excessive. The prognosis is that many acre-feet of groundwater in the area cannot be remediated. While various response actions are both contemplated and being implemented for the Butte-Anaconda Superfund site, these actions will not restore the groundwater resources lost to Anaconda for municipal water supply. In the absence of an effectual restoration response for this extensive groundwater contamination, ADLC is left with “replacement” – i.e., maximizing use of its existing water resources, conserving them and extending their availability wherever possible. The proposed Groundwater Restoration Plan projects are consistent with that goal.

The Groundwater Restoration Plan projects will proceed independently of ongoing or planned CERCLA response actions relative to the Butte-Anaconda Superfund sites. The project will not interfere with or affect other remediation or response actions. As part of its institutional controls relative to Superfund, the City-County has a Development Permit System (DPS) to assure safe management of hazardous materials disturbed by construction. Accordingly the Contractor will be required to obtain a DPS Street Opening Permit that will include requirements for handling and disposition of any mining waste or hazardous materials encountered, and any soil materials excavated and not replaced in situ. The ARCO Waste Repository is available for waste materials requiring such disposal.

## 5. Environmental Impacts

This section itemizes the anticipated effects to the physical and human environment during and after construction of the proposed projects. References consulted to assess potential environmental impacts and suitable mitigation if required include the Montana Natural Resource Information System database (www.nris.state.mt.us), the National Historic Register (www.nr.nps.gov), Federal Emergency Management Agency (FEMA) floodplain maps, and construction experience by Anaconda-Deer Lodge County with similar water main renewals within its urban areas over the past nine years.

Impacts to the physical environment resulting from the proposed project include both short term transient impacts associated with the construction, and long term environmental benefits resulting from completion. Work will be confined to previously excavated corridors, where existing water mains and in some cases sewer lines presently are laid.

No construction in or adjacent to waterways is involved for the main replacement work or meter installation. Many of the waterline corridors are classified by FEMA as “Zone B” floodplain, meaning the areas lie between the limits of the 100-year and 500-year flood events, or could be subject to less than one foot of inundation during the 100-year event. The proposed project involves only underground construction, upon completion of which, the ground surface will be restored to pre-project elevations and conditions. Hence no permanent impacts to floodplains will result. Local floodplain permitting should not be required, given that no above ground structures are being constructed. Caution will need to be exercised during construction along the corridors to minimize exposure of the work site to flooding in the event of a significant storm event.

No identified wetlands or watercourses will be traversed or disturbed by the project. Likewise no Threatened or Endangered Species will be impacted, given that project disturbance will be confined to developed urban corridors with no wildlife or riparian habitats.

30 historic properties and districts currently listed in the National Register for Anaconda. With water main work confined to street right-of-ways, no impacts will jeopardize these historic areas, and enhanced fire protection is a significant positive benefit for the properties involved.

No archeological sites of significance are known to exist along the project corridors. The corridors are urban and have been disturbed previously on several occasions for road improvements and excavation of underground utilities. Should any potentially significant archeological findings be encountered during the course of project construction, work will be halted to allow assessment of such findings by qualified personnel, with full involvement of the State Historic Preservation Office.

Limited aesthetic and visual impacts typical of an underground utility work site will occur during each approximately six-month construction period. These adverse impacts will be transient in nature, limited to the duration of construction, and will not require mitigation other than maintenance of a clean orderly work site and adherence to the construction contract schedule. Following construction, the project corridors will be fully restored to the pre-project condition, including re-paving, re-installation of curbs and sidewalks, and seeding and mulching on unpaved disturbed areas.

Construction impacts to soil and surface water resources will be mitigated by use of erosion control measures (strategic soil stockpiling and silt fencing) around excavated areas to prevent sediment transport. Such construction measures will concentrate on prevention of siltation in the existing municipal storm drainage system which ultimately drains to Warm Springs Creek. The construction Contractor will likely be required to obtain a construction site storm water management permit from MDEQ, since the area of disturbance within the project corridors may exceed the one-acre exemption. Asphalt paving and curb and gutter on most portions of the corridors will also help reduce erosion potential.

Potential transient impacts to human health and safety during construction will be effectively mitigated by proper fencing and signage at the work site to prohibit access and protect the public against hazards. Blasting is not anticipated to be necessary for trench excavation. Business and residential access during construction can be maintained from adjacent streets and alleyways while work progresses along the corridors.

Transient air quality and noise impacts due to operation of construction machinery will be attenuated by haul road watering and proper operation and maintenance of equipment. State of Montana air quality standards for fugitive dust emissions govern such releases, and will be enforced. Noise impacts may cause localized disturbance, but can be minimized by limiting equipment operation to traditional work hours.

Construction work will be executed in full compliance with OSHA standards, including designation of the job sites as "hard hat areas," and trench excavation and other work place safety conforming to applicable requirements. A jobsite safety plan will be solicited from the construction Contractor to assure adequate barriers and protection for the public are provided, both during and after work hours. Contractor personnel will have OSHA 40-hour HAZWOPER training, given the potential for encountering hazardous materials. The Contractor will be assigned contractual responsibility for all job site safety and regulatory compliance.

Protection of public (sanitary) health during construction, specifically isolation and replacement of existing water mains and services, will be provided by adherence to MDEQ Circular DEQ1 and Montana Public Works Standard Specifications requirements for thorough disinfection and bacteriological testing of new water mains. Such testing will likewise apply to temporary piping provided to maintain water service to residents during construction. Adherence to these standards and requirements will be legally required in the construction contract.

### 6. Recovery Period and Potential for Natural Recovery

Because of cost and "technical infeasibility" limitations, EPA opted to cap large areas of mining wastes in the Anaconda area and allow groundwater contamination to remain without direct remedial action. While surface reclamation should reduce infiltration through the waste material, over 40 square miles of contamination continues to impact groundwater resources. Natural recovery of contaminated water resources has been discounted, due partly to the magnitude of the problem[1]. This results in an irreversible loss for Anaconda, and limits availability of potable water resources to meet the existing and future needs of its residents.

Prospects for natural recovery of contaminated groundwater resources are improbable, as addressed above. The prospects and time frame for natural recovery are not affected by this project. In lieu, the project promotes efficient utilization of Anaconda's remaining usable groundwater, providing "resource replacement" as an alternative to natural recovery.

### 7. Applicable Policies, Rules and Laws

Anaconda-Deer Lodge County has the legal authority to enter into a binding contract with the State of Montana to authorize funding for the proposed project. ADLC will comply with all applicable state and federal laws and regulations in the completion of this project.

[1] (Woessner, 1995)

MDEQ jurisdiction over public water systems will require approval of design plans and specifications by that agency for all main replacements and central water system improvements (meter installations are exempt). A Professional Engineer licensed by the State of Montana must be in "responsible charge" of preparation of central system improvements design. Following completion of construction, the Engineer must also file with MDEQ a "Certification of Completion in Accordance with Approved Plans and Specifications."

ADLC owns all right-of-way needed for main replacement projects, specifically dedicated public street right-of-way along the project corridor. Railroad or state/federal highway crossings will be permitted as required by the appropriate agencies.

Water main Contractors will likely be required to obtain a construction site storm water management permits from MDEQ, since areas of disturbance within the project corridors will likely exceed the one-acre exemption. Responsibility for obtaining and complying with this permit will be assigned to the Contractor in the bid documents.

Other than concurrence by the NRD Program that the Engineer's completed design plans conform to the project scope under this Groundwater Restoration Plan, no other permitting or approvals are anticipated to be required for the project. ADLC will enter into a grant contract with the NRD Program if/as required for its Groundwater Allocation funds, and abide by the conditions therein.

The City-County will not only comply with the MDEQ approval process, but will also utilize the Montana Public Works Standard Specifications for Construction in the implementation of the proposed projects. This includes compliance with approved construction practices, safety measures, and environmental requirements (including dust, runoff, and noise abatement) during construction.

No other ramifications of the proposed project to laws, rules, policies, or Consent Decree requirements are anticipated.

## 8. Resources of Special Interest to The Tribes And DOI

The proposed water main projects are confined to urban residential and commercial corridors previously disturbed by construction activities. No Tribal lands, nor any wildlife, wetland, or riparian habitats are present. Therefore, it is anticipated that this project will have no adverse impacts on resources related to Tribal Nations, or the Department of Interior - U.S. Fish and Wildlife Service. ADLC acknowledges that appropriate actions and consultation with Tribes and/or the Department of Interior will be required if any unanticipated Resources of Special Interest relative to these entities are encountered in the course of executing the project.

## 9. Normal Government Functions

Even though assessment of normal government functions has already been evaluated for Groundwater Restoration Plans developed per Section 3 of the Process Plan, it is included here for clarity. Operation and capitalization of municipal water systems is a local government responsibility, traditionally funded through user rate revenues as an "enterprise fund." ADLC currently operates its Water Department and water utility infrastructure on a $1.0 million annual budget (FYE11, excluding that year's NRD grant assistance and debt service). This budget, funded by rate revenues, provides for repayment of 1992 revenue bonds, operator salaries, materials and repairs, and was intended to afford a modest reserve account contribution. Current water user charges surpass MDOC Target Rate (water only). While ADLC is able to meet current system operating expenses within its water utility budget, further major capital improvements projects remain financially unattainable without UCFRB Restoration Fund assistance. ADLC's water infrastructure and related financial needs go beyond "normal government function" for several reasons:

- ADLC inherited a vastly substandard public water system from the Anaconda Company's successors in 1991, with capitalization needs of over $25 million.

- Overall capitalization needs at the time ADLC assumed ownership equated to over $9,000 per user connection in the system. This was due primarily to the lack of investment by past owners of the water utility, a circumstance well beyond the City-County's control. Such a contribution far outstrips normal capital commitments that are typical for water users in most other Montana communities. It is an even worse burden for a community whose federally defined "Low and Moderate Income" households have increased significantly between 1990 and 2000.

- The Superfund status of the Anaconda area makes infrastructure improvements more difficult. EPA and ARCO policies and covenants add to construction complexities and cost, including special provisions for disposal of waste materials and surface restoration.

- In the absence of widespread groundwater contamination, ADLC could have less expensive options for expanding its water supply – specifically supplemental wells if available may be developable at less cost than virtually system-wide main replacement. Anaconda faces very non-typical constraints, between lack of available water supply and severely deteriorated mains.

## 10. Analysis of Alternatives

To validate the selection of the recommended option of distribution main replacement and installation as well as system wide metering, other alternatives were considered. The 2004 PER[1] screened seven alternatives to address ADLC's water system deficiencies (PER Chapter 4, pp. 49-51), including the following:

[1] (HKM Engineering, Inc., 2004)

- Construction of Additional Wells in Same General Location
- Construction of Additional Wells in Alternative Locations
- Development of Surface Water Source – Hearst Lake/Fifer Gulch
- Connection to Other Community Water Systems
- Recovery of Capacity through Water Main Replacements
- Initiation of Comprehensive Metering Plan
- No Action

Of these, additional wells in alternative locations, connection to other community systems, and no action were screened out as infeasible. The PER evaluated and ranked the remaining four alternatives. Ranking was based on multiple criteria, and resulted in the following "scores" (PER Table 5-2, p. 71):

- Alternative I – Rehabilitate Distribution System +3
- Alternative II – Install Water Meters +2
- Alternative III – Additional Wells at Existing Field 0
- Alternative IV – Hearst Lake/Fifer Gulch Surface Water Source -6

The PER endorsed a dual recommendation of proceeding with distribution main rehabilitation (primary), while proceeding with system-wide metering (secondary). The PER further recommended, "…completing the water main replacement program until the recoverable benefits replacements is exhausted, and instituting a responsible water metering plan and rate structure." The PER finally concluded that distribution system replacement is the recommended immediate alternative, both in terms of enhancing water supply (by reducing leakage) and cost-effectiveness, followed by comprehensive metering. Based on those two alternatives, the PER outlined a seven-year main replacement program, extendable to nine years with optional system-wide metering. After five years of main renewals since publication of the PER, a 2009 Modeling Study Amendment[1] re-evaluated the remaining replacement priorities (NRD grant #600214). This PER Master Plan Update, re-assess the system and identifies all the remaining water system work to be done in Anaconda.

[1] (DOWL HKM, 2009)

## II. Update on Existing System Inventory

The Anaconda water system was constructed by the Anaconda Company beginning before the turn of the 20th century. Anaconda-Deer Lodge County (ADLC) eventually inherited and assumed ownership of the water system in the early 1990's. Since this time, ADLC has undertaken an aggressive water system infrastructure upgrade including multiple water main replacement projects.

A Municipal Water System Preliminary Engineering Report (PER) was prepared for ADLC in 2004. This planning document/facility plan evaluated the Anaconda water system and determined that the system experiences an extremely high percentage of unaccountable water system loss. This conclusion led to the recommendation that ADLC continue with replacement of old distribution mains that date back to the early 1900's in order to reduce leakage as well as increase the capacity of the water system. A prioritization of specific water main replacements was provided in the PER.

### A. Population Projections

The population of Anaconda and the surrounding area consists primarily of remnants of the booming mining operations that existed prior to the 1980's when the operations finally ceased. Currently, no major industry exists to draw new workforce to the area or to retain the younger generations as they reach working age. Therefore, the general population migration trend is away from Anaconda. Growth and development in the Anaconda area is dampened by environmental degradation present in the area from years of mining and smelting activities.

Regional population numbers published by the Montana Department of Commerce (MDOC) in 2010, Appendix A, shows that Deer Lodge County experienced a population change of -1.3% between 2000 and 2010. Census 2010 data indicates that Deer Lodge County had a population of 9,298 residents. Extrapolating the MDOC 2000-2010 rate of change to 2030 would put Deer Lodge County's population at 9,058 residents in the year 2030. 2000 U.S. Census block population for The City of Anaconda was 5,792 persons. While no data for the city of Anaconda was published after 2000, the -1.3% can be applied to this number to project Anaconda's population for the period of the study.

**Table 3 - Anaconda U.S. Census Population Trend Data**

| | 2000 Census Population[1] | 2010 Population | 2020 Projected[2] | 2030 Projected[2] | 2000-2030 % Change |
|---|---|---|---|---|---|
| **ADLC** | 9,417 | 9,298 [1] | 9,177 | 9,058 | -1.3% |
| **Anaconda** | 5,792 [3] | 5,717 [2] | 5,642 | 5,569 | -1.3% |

Notes/Assumptions:

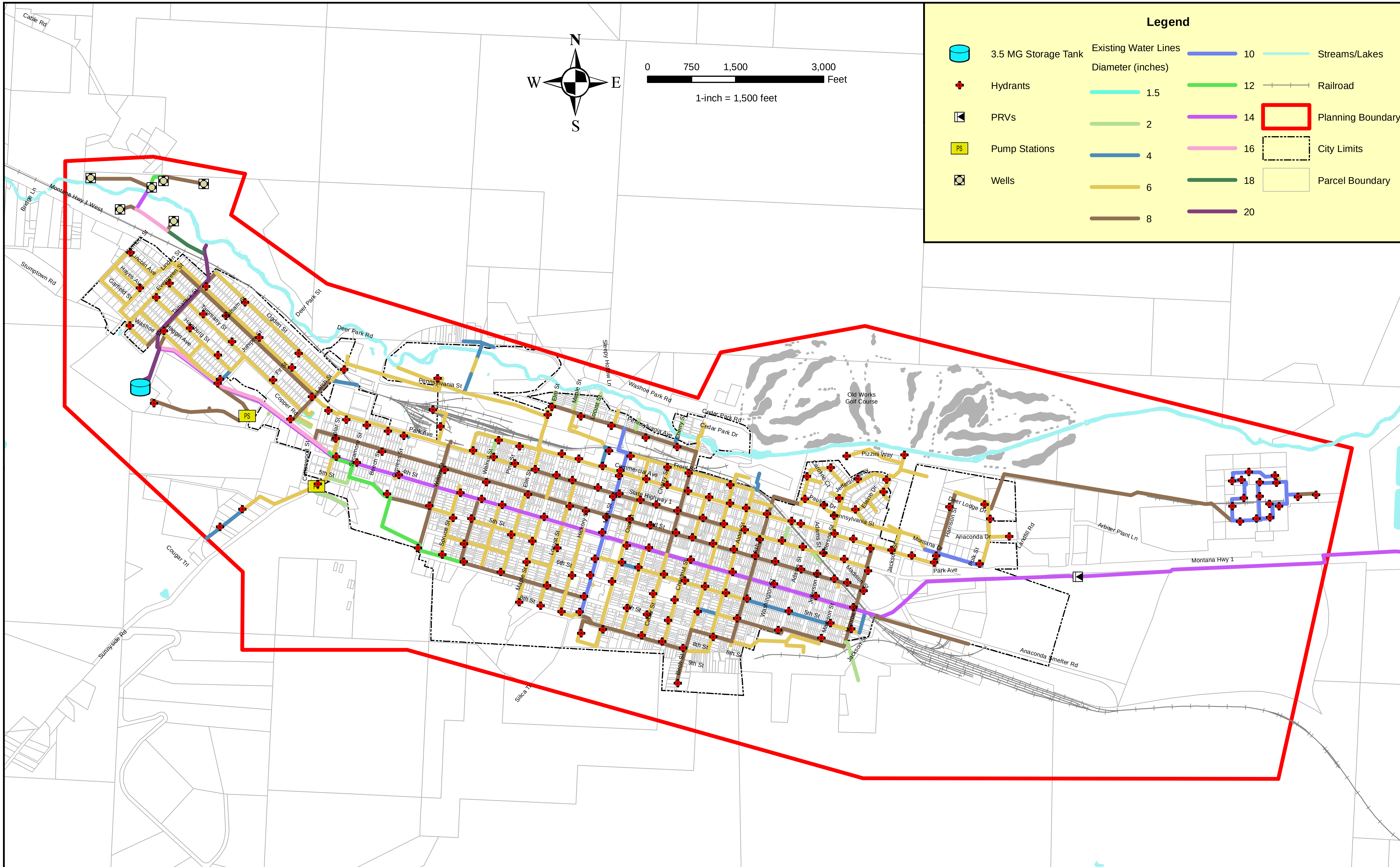
1. 2000 Population numbers based on official 2000 and 2010 U.S. Census numbers.
2. Population numbers based on U.S Census projections.
3. Anaconda population numbers based on 2000 U.S. Census numbers.

## B. Water System Layout

The existing water system layout is shown in Figure 2. The system consists of water mains from 6-inch to 20-inch in diameter, a single 3.5 million gallon water storage tank, six supply wells and associated appurtenances. Approximately 403[1] out 3,043 total connections have meters. Beginning on the west edge of town the system continues to the east with a 12 and 14-inch main to the Warm Springs State Hospital.

Since inheriting the system in 1992 ADLC has upgraded the supply wells, installed new chlorination facilities, constructed a new storage tank and proceeded with multiple water main replacements. As shown on Figure 6. The majority of the existing water system has been replaced starting in 1993 and continuing to the present. Despite these improvements, water mains and appurtenances nearing 100 years in age still exist in the system.

[1] (DOWL HKM, 2010)




DOWL HKM

# Preliminary Engineering Report Master Plan Update

## Existing Water System - Pipe Diameter

**Figure 2**

## C. Water "System Demands" and "System Losses"

### 1. Historic Water Use Patterns

Figure 3 and Figure 4 illustrate the historical water use patterns for the Anaconda water system over at least the last six (6) years. Figure 3 represents the peak daily "water use" for each month of the respective years. Figure 4 represents the average daily demand on the system for each year of record. Average daily demand is calculated by taking the total water used in the system and dividing it by the number of days in the year. These trends represent the volume of water measured leaving the 3.5 million gallon storage tank.

**Figure 3 – ADLC Water Demand Summer and Winter**

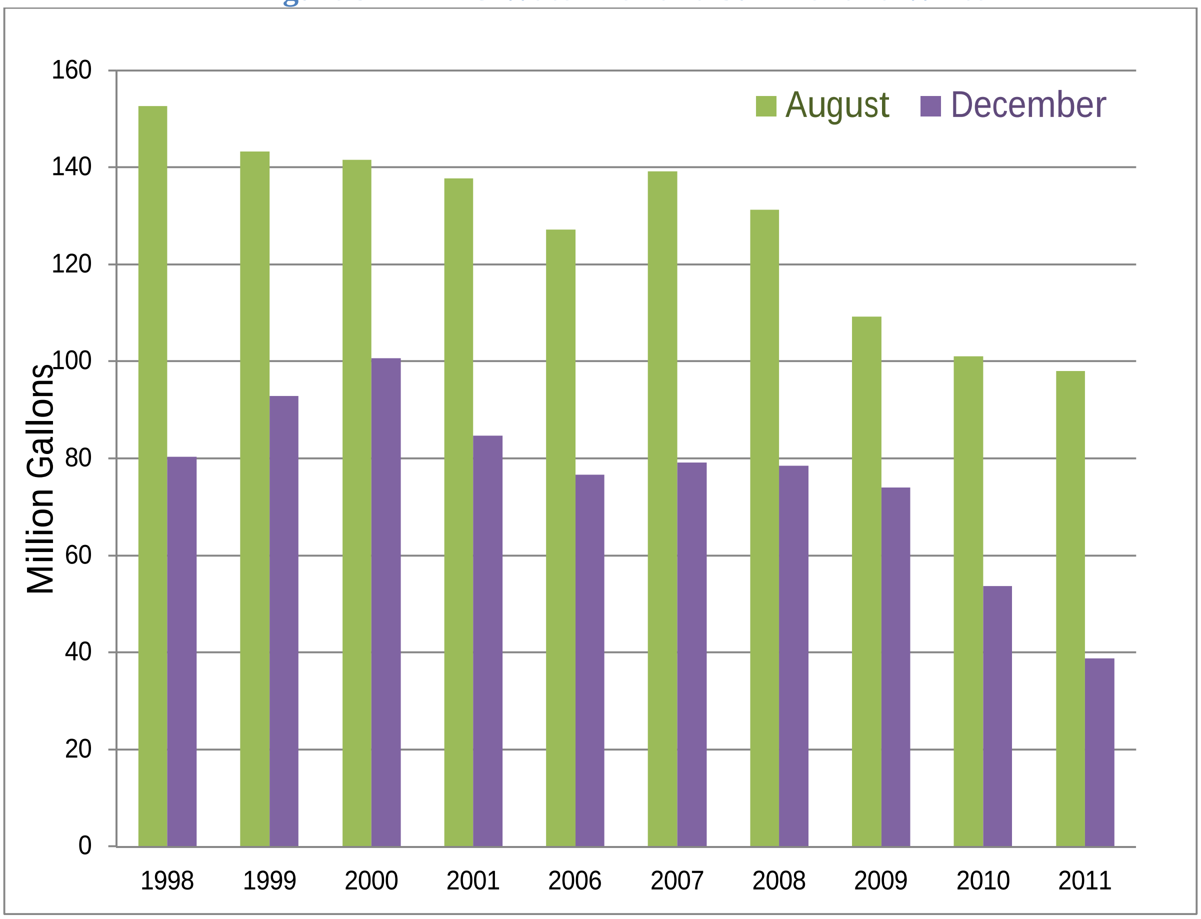
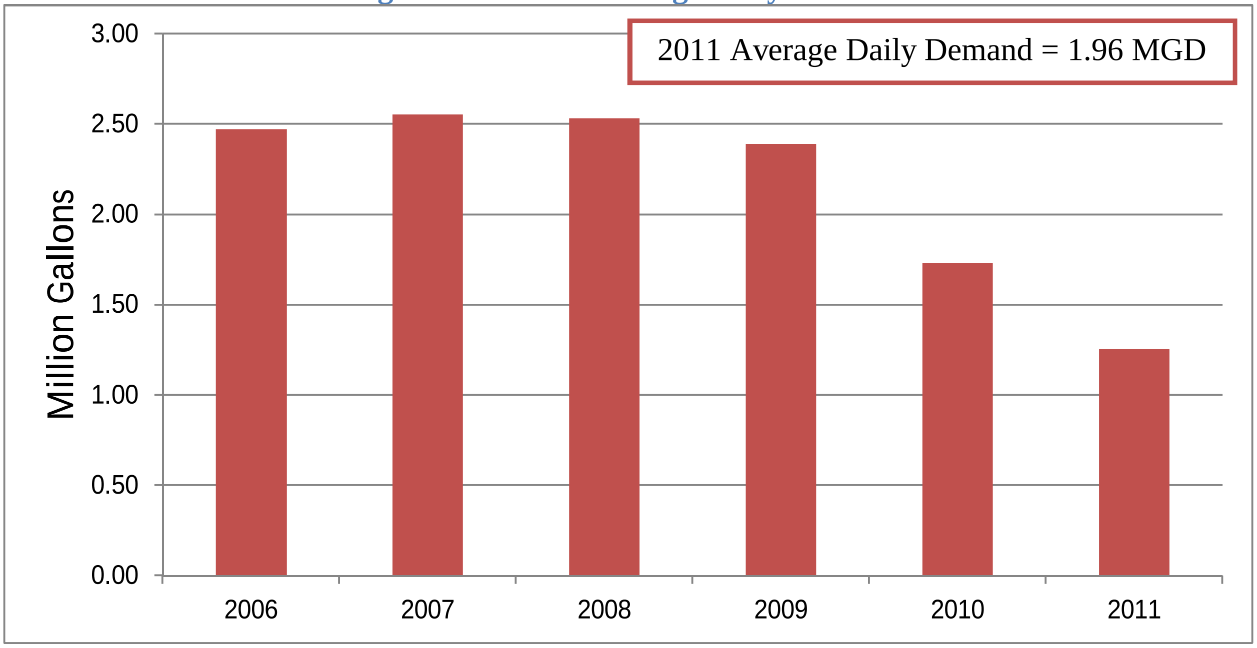



Figure 3 and Figure 4 both show a downward trend in water usage in Anaconda. This downward trend is largely attributable to the waterline replacement work that has been done in Anaconda over the years which has drastically reduced system leakage.

Figure 4 - ADLC Average Daily Demand




Using this average daily demand and the census data from Table 3, the per capita water use can be calculated. Anaconda's population in 2010 according to the census data was 5,717. The 2011 Average Daily Demand was 1.96 MGD. Figure 5 below shows Anaconda's per Capita Demand as calculated by dividing the average daily demand for each year by the population.

Figure 5 - ADLC Per Capita Water Use

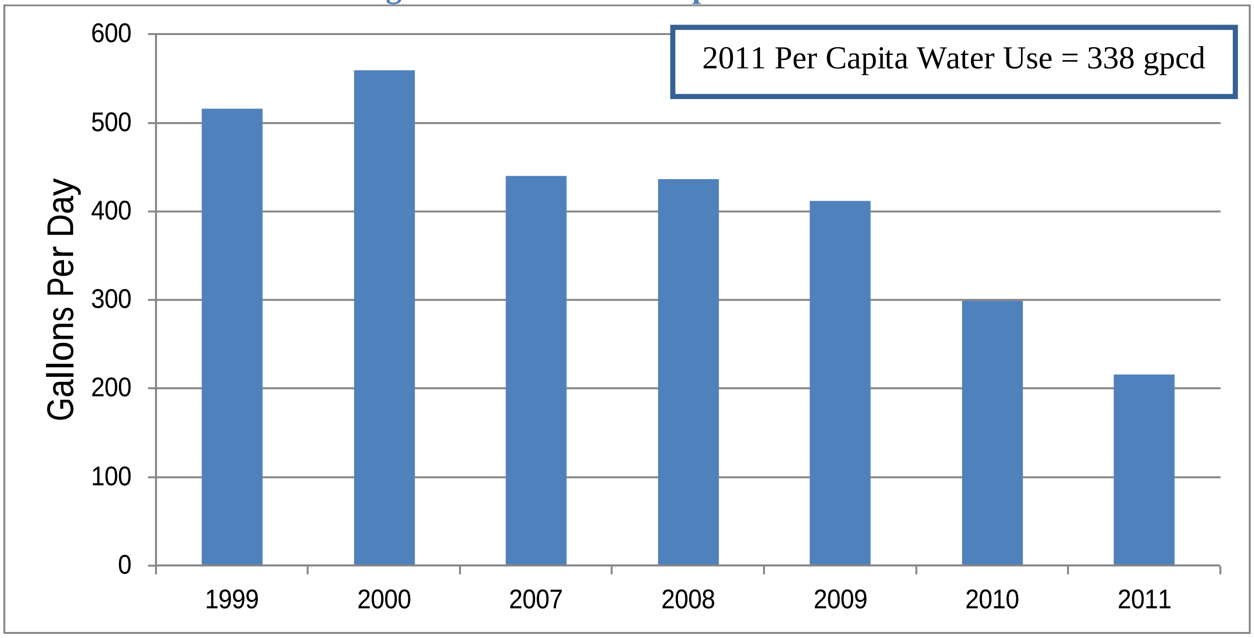


Table 1 in the 2009 Modeling Amendment to the PER[1] identifies 13 large water user accounts which collectively use 65,468 gallons of water per day. The total volume of this use compared to the number of users indicated that this may be skewing the per capita water use to be incorrectly high. This was evaluated by subtracting the water use from the average daily demand and then dividing the population minus these 13 high users. The result is a per capita demand of 332 gpcd which is not significantly different than that calculated above.

## 2. Current Water System Use

Currently a 14,000-ft water main extension is currently being constructed to serve the Mill Creek Industrial Complex which is at the intersection of the Mill Creek Highway with the Butte, Anaconda, and Pacific Railroad. According to the design report prepared for this waterline extension, the Industrial Complex is expected to add an additional 6,000 gpd of demand to the system. Because this water line is nearing completion, its demand can be included in the current system demands for this report. Therefore, the current Average Daily Demand as measured from the water tank discharge meter can be calculated as shown in Table 4.

**Table 4 - Current Total Water System Demand**

| | Persons | Per Capita (gpd) | Demand (gpd) |
|---|---|---|---|
| Anaconda 2011 Average Daily Demand[2] | | | 1,960,000 |
| Mill Creek Waterline[3] | | | 6,000 |
| **Total Current Average Daily Demand (gpd)** | | | **1,966,000** |

## 3. Estimation of Water System Loss

The values in Table 4 show only the overall system use and not the actual water system customer demand. The overall system use includes the water system losses from leakage, main flushing, etc. Therefore, an alternative methodology is required to determine the actual system demands and water system losses.

### *a) Water Waste*

Through discussion with water system personnel sources of considerable water waste have been identified. Because the system assesses a flat rate for water use there is no incentive to repair or replace leaking and continuous flow plumbing fixtures. In schools and multiple businesses throughout the community bathroom toilets and urinals run water continuously throughout the day. Further, residents with water service to unheated structures (i.e. garages) on their property are known to run water continuously during the winter to prevent the water lines from freezing and rupturing. Other sources of water waste include appliances such as

[1] (DOWL HKM, 2009)
[2] From Figure 4.
[3] (DOWL HKM, 2012)

swamp coolers and others throughout the community using water as the coolant and discharging a continuous stream of water to the wastewater collection system. In any case, there is no cost to the water customer for wasting this water. The extent of this type of water use is not known. Rough estimates include accounting for 100 such bathroom fixtures running at 3.0 gpm continuously. This would equate to 432,000 gallons per day. The validity of this number is limited, as no attempt at accounting for this type of water waste has been made to date. This estimate is provided solely to illustrate the possible impact of such water use. Further, this type of water use should show up in the base wastewater treatment facility influent flow data. Under this premise and the following discussion on quantifying the unaccountable water loss, this water would not be included in the estimation of system losses.

### *b) Service Line Leakage*

Replacement of the remaining old water mains in the system is expected to eliminate a considerable amount of leakage but not all of it. The other source of water loss is in the service lines between the main and the curb stop and between the curb stop and the house.

The most accurate way to quantify the amount of water used by the water system is through the use of individual meters on every point of use. The annual cumulative total of the values obtained from the meter readings provides a very representative value for the quantity of water actually used by the water system customers or the "system demand". In an ideal system even the water flushed from hydrants or used for other maintenance purposes is metered. Based upon total system metered demand the system water loss can be easily and accurately determined by subtracting the total metered volume from the volume of water delivered from the supply. The difference in these volumes is representative of water lost due to water system leakage, broken meters, unmetered connections, potentially illegal connections, etc. This difference is referred to as the water system "unaccounted water use" or "water system loss". A utility with a reasonably tight distribution system can expect the water system losses to be 10% or less[1]. For older systems with old, metallic pipe, lead joints, galvanized steel service lines, etc., the water system losses can exceed 30% of the total overall water production. Historical losses in the Anaconda water system exceed this 30% as best can be determined without individual water meters (see Table 5 below). Reducing this to 20% would be a significant achievement though this would still equate to 392,000 gpd of lost water.

For systems without a comprehensive metering program the actual beneficial water system use is very difficult to determine. The Anaconda water system has very few meters on individual connections. Therefore, the actual system water use can only be approximated through other points of measurement. One such methodology as described in the 2004 PER[2] is to consider the

[1] (Walski, 1984)
[2] (HKM Engineering, Inc., 2004)

total wastewater volume delivered to the wastewater treatment facility during the winter months when water usage is at the minimum and the majority of the water used by the customers returns to the sanitary sewer collection system and the wastewater treatment facility. The winter months also typically represent a period of lower groundwater levels and, therefore, lower potential for infiltration of groundwater into the sewer collection system.

Table 5 is an updated system leakage calculation based on January 2012 data from both the water system and the wastewater treatment plant. When calculating water system losses using total wastewater volume, it is important to account for users of the water system who's effluent doesn't make it to the wastewater treatment plant. One such user in Anaconda is the Warm Springs Hospital which is at the north end of Highway 48 and is not connected to Anaconda's wastewater system. Warm Springs Hospital is also metered and is generally the highest metered water use customer on the water system.

The Estimated Unaccountable Water System Losses can be calculated as shown in Table 5.

**Table 5- 2012 Water System Use and Losses (January 2012)**

| | |
|---|---|
| Average Daily Demand[1] | 1,280,323 gpd |
| Daily Flow to Warm Springs Hospital[2] | (15,300 gpd) |
| *Average Daily Volume Returned to WWTP* | *1,265,023 gpd* |
| WWTP Recorded Flows[3] | 815,255 gpd |
| Estimated Infiltration[4] | (160,000 gpd) |
| *"Domestic" Water Delivered To WWTP* | *655,255 gpd* |
| *Actual Water System "Demand"*[5] | *728,061 gpd* |
| *Estimated Unaccountable Water System Losses* | *536,962 gpd* |
| *Water System Loss* | *= 42% of Production* |

To perform this calculation, the flows attributable to the Warm Springs Hospital were first subtracted from the Average Daily Demand in order to calculate an Average Daily Water Volume that should be returned to the WWTP, 1,265,023 gpd. Then the flows recorded at the WWTP, 815,255 gpd, were adjusted to account for groundwater infiltration (160,000 gpd[4]) into the waste water system, resulting in a total flow to the WWTP of 655,255 gpd which can be attributed to municipal "domestic" water. Assuming that 90% of the domestic water that is produced makes it into the wastewater system, an actual water system demand of 728,061 gpd can be calculated. Note that the calculation is performed with data from the month of January

[1] From January 2012 Water Department Records, Appendix B
[2] Based on 2010 Water Department Records
[3] From January 2012 Wastewater Department Records
[4] Unchanged from 2004 PER, (HKM Engineering, Inc., 2004)
[5] Assuming 90% of Water Returns to WWTP

when it can be assumed that no irrigation water is being pulled from the system. The result represents the amount of water that is used by customers in Anaconda. If this result is subtracted from the Average Daily Volume which can be expected to be Returned to the WWTP, 1,265,023 minus 728,061, the result is the Estimated Unaccountable Water System Loss, 536,962 gpd (42% of production). This unaccountable loss can attributed to system leakage.

## 4. Proposed System Demands

Chapter 2 of the 2004 PER[1] identified several areas within the planning area boundary as potential areas of development that could result in additional demand on the water system. To date, the Smelter City Estates and several lots inside the East Arbiter Complex have been developed. Also, a preliminary engineering report has been put together that defines the future water needs of the East Anaconda Yards which is commercial area east of town. Finally, a 6-inch water line has been extended out to the Mill Creek Industrial Park. Note that this new main line is not metered but new customers will are required to install a meter before connecting to the Anaconda Water System. Including the probable future demands included in the 2004 PER[1] and amended above, the projected total water system is calculated in Table 6.

**Table 6- Projected Total Water System Demand**

| | Persons | Per Capita (gpd) | Demand (gpd) |
|---|---|---|---|
| Current Average Daily Demand[2] | | | 1,966,000 |
| 80 Acre Developments<br>20 acre RV Park<br>30 acre single-family residences<br>30 acres higher-density condos | <br>8 units/ac<br>4 units/ac<br>8 units/ac | <br>50<br>300<br>300 | 116,000 |
| East Arbiter | 5 lots * 10 emp./lot | 300 | 2,500 |
| East Anaconda Yards[3] | | | 600,000 |
| Old Works – Hotel Complex | 63 | 50 | 3,150 |
| **Total Projected Average Daily Demand (gpd)** | | | **2,687,650** |

## 5. Peak Day and Peak Hour

From water production records, the maximum day demand for 2011 occurred on July 2nd. The water production on this day was approximately 4,769,000 gpd. The peak day typically occurs during the summer when irrigation is taking place. Assuming the leakage demand remains constant throughout the year, the peaking factor between the peak day and average day demands becomes 2.97 which is calculated as (4,769,000-536,962) / (1,960,000-536,962). Peaking factors from average day to maximum day tend to range from 1.2 to 3.0[4]. The peak day factor for the Anaconda system is within typical ranges.

[1] (HKM Engineering, Inc., 2004)
[2] From Figure 4.
[3] (DOWL HKM, 2011)
[4] (Haestad, 2001)

While the peak day scenario reflects the average rate of usage on the maximum usage day, the peak hour represents the rate of usage during the maximum hour of usage. The peak hour factor was determined from an hourly flow chart recorder obtained from the water department. The peak hour for 2011 was recorded on July 6th. Based on the flow chart, the peak hour usage was approximately 5,000 gpm (7,200,000 gpd). The hourly flow chart can be found within Appendix B. Again, assuming that leakage is nearly constant, the peaking factor between the peak hour and average day becomes 4.68 which is calculated as (7,200,000-536,962) / (1,960,000-536,962). Peaking factors from average day to peak hour are typically between 3.0 and 6.0[1].

The authors acknowledge the actual leakage rate is not constant and may change based on system demand and corresponding pressure. However, efforts are made in calculation of the peaking factors and use of these factors in hydraulic modeling to not peak the estimated leakage component and hold leakage relatively constant for projection of the growth in demand to service future development. The same unaccountable water loss component would not apply to new construction.

## D. Water Supply

### 1. Watershed Protection

The primary issues associated with protection of the aquifer quality include area septic systems, nearby agricultural practices, roadways and a railroad line. Continued development to the west of the well field presents a potential threat to the water quality if no central sewer system is provided to service an increased population density in this area. Currently, all sewer service in the West Valley is provided through individual septic tanks and drainfields. The closest of which is over 100 feet away from the nearest well. In recent years concerns have been raised regarding protection of the aquifer from these individual septic systems. The direction of groundwater flow is from west-northwest to east-southeast, essentially away from these developments west toward the well field. To date, nitrate analyses from the wells have not indicated there is contamination resulting from these septic systems. However, increasing the withdrawal of water from the aquifer near the existing well field could have the effect of pulling pollution toward the well field. Increased development and use of individual septic systems could also increase the background nitrate concentration and increase the levels in the aquifer. ADLC has been in the process of evaluating the feasibility of connecting the residents of the West Valley to the community wastewater collection system to protect their existing drinking water aquifer.

### 2. Well Pumps

The six (6) supply wells provide a total pumping capacity of approximately 4,600 gpm (6.624 MGD). The depth of the wells averages approximately 50 feet. The wells are in good condition and require minimal maintenance. The groundwater supply has not been re-evaluated since the

[1] (Haestad, 2001)

wells were installed. However, it continues to serve the 6 wells with no issues and would appear to be of excellent quality and abundance. Reliability of the well capacities does not appear to be a problem. No other pumps are required in the system to provide adequate system pressures. One subdivision connected to the system near the water storage tank maintains its own fire protection pumping system but this is not maintained by the City. It is important to note that the City currently has permanent seasonal watering restriction imposed on the water system users. These restrictions limit the allowable irrigation hours per day. Even with such restrictions the peak day water usage of 3,311 gpm is roughly equal to the peak well capacity with the largest pump out of service, 3,243 gpm (4.67 MGD)[1]. ***Without such restrictions the water use could be in excess of the production capacity of the wells.***

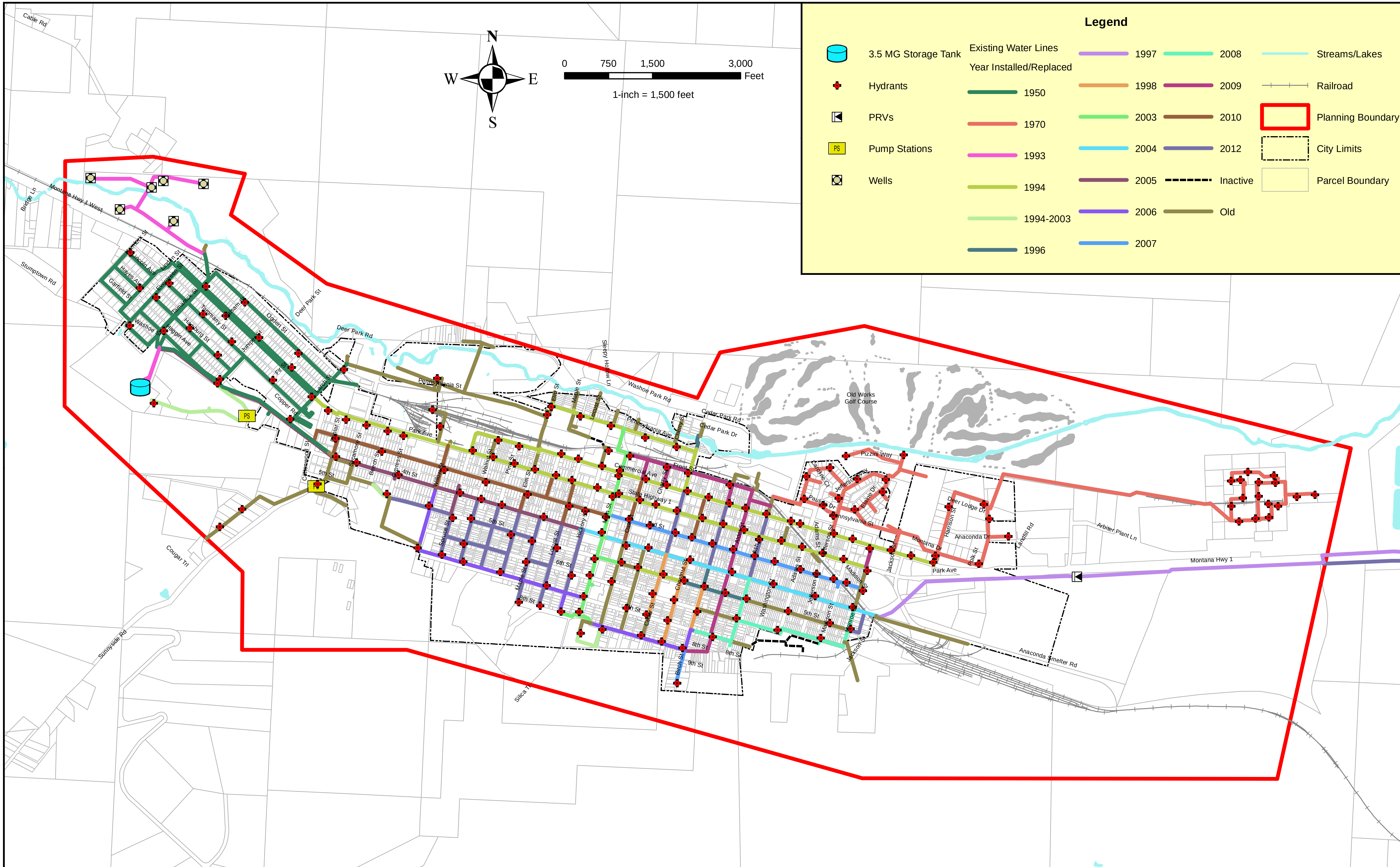
### 3. Treatment/Chlorination Facilities

Along with the wells developed in 1993, new chlorination facilities were constructed. Following connection of all of the well discharge lines into a common pipe the main discharge pipeline passes through the chlorination building where chlorine is added through gas chlorination equipment and the flows are recorded. The chlorination facility incorporates chlorine-scrubbing equipment to neutralize the chlorine gas in the event of a major leak. To eliminate the safety concerns over use of chlorine gas, some municipalities have replaced gas chlorination with either liquid sodium hypochlorite systems or on-site hypochlorite generation. Such transitions are made at the discretion of the community. No immediate need to make this change is present in Anaconda though the chlorination facility is relatively close to existing development that could be affected in the event of a significant chlorine gas leak. No other treatment is required for this water supply at this time.

### 4. Water Storage Facility

The water storage facility is of adequate size and elevation to provide sufficient water storage for operational storage, equalization storage and fire protection. The 3.5 million gallon pre-stressed concrete tank is less than 20 years old, and is in good condition. The only recommendation is to periodically inspect the facility and have the storage tank professionally cleaned at a frequency of 3 – 5 years depending upon the rate of sediment accumulation in the tank. Ideally a second storage tank would be available to allow the existing tank to be taken out of service. With a system of this size and the relative cost of a second storage tank, it is difficult to justify the expense of constructing additional water storage facilities. Further, the technology is available to clean the tank while it is in operation.

[1] (HKM Engineering, Inc., 2004)

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**Preliminary Engineering Report Master Plan Update**
Existing Water System - Year Installed or Replaced

**Figure 6**

## 5. Distribution System

When the municipal water system was finally inherited by ADLC, the system was in a state of considerable disrepair. However, in the years since the 2004 PER was completed, Anaconda Deer Lodge County in partnership with the Natural Resource Damage Program (NRDP) has undertaken an aggressive waterline replacement program. An inventory of the water distribution system piping is provided in Figure 6 above. This figure graphically identifies the relative age of the various sections of the distribution system.

### *a) Existing Condition*

When it was originally constructed by the Anaconda Company in the late 1800's and early 1900's, the distribution system included kalimane steel, a thin-walled, galvanized steel with a bitumastic coating on the outside and jointed with lead soldered joints. A majority of this pipe has been replaced however several sections of the original system remain as shown on Figure 3. In the 2004 PER, it was estimated that transmission/distribution system lost approximately 2.18 MGD to unaccountable water loss. Through the watermain replacement projects and associated service replacements, a significant portion of this water has been recovered. As calculated in Table 5 on page 30, the current estimate of water system losses is down to approximately 0.5 MGD or 42% of Anaconda's average daily production, after replacing approximately 52,700 feet of old leaking mains. This water is still suspected to be lost through direct leakage from the remaining kalimine water mains.

### *b) Capacity & Fire Protection – Model Update*

In 2009, DOWL HKM published and update to the 2004 PER which included an updated water model of Anaconda's water system[1]. In order to analyze the effects of the recent water line replacements, this model has been updated to include those waterlines the demand and leakage estimates calculated in Table 5 and Table 4 above and the peaking factors calculated on page 31.

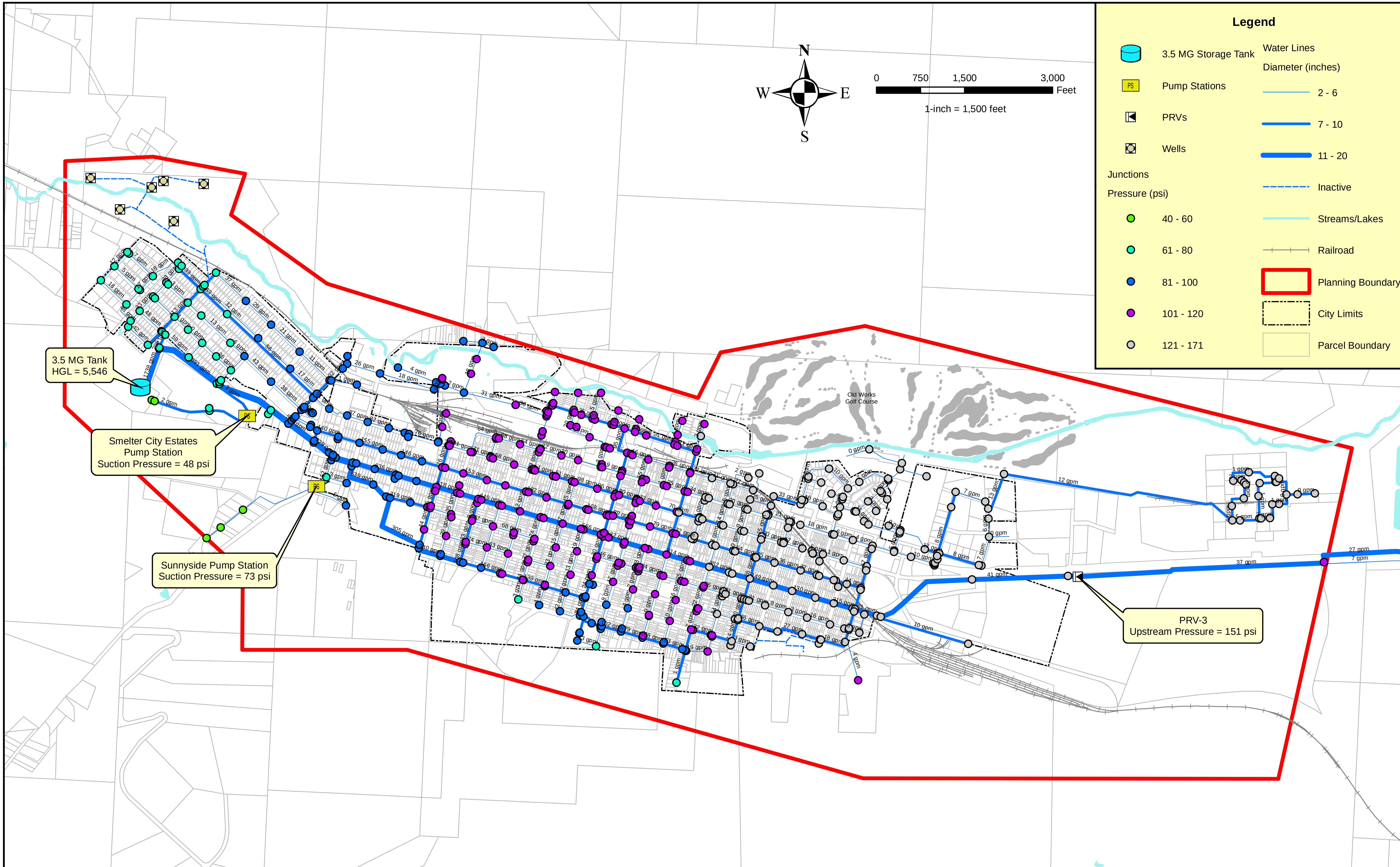
#### *(1) Hydraulic Analysis*

Four existing system demand scenarios were established in the model. These are average day, peak day, peak hour, and fire flow. Fire flow is calculated during a peak day demand scenario. Available fire flow is calculated at each hydrant while keeping the hydrant being flowed as well as the overall system pressure at 20 psi or greater. The system was analyzed at the current demands as calculated in Table 4 on page 28 as well as the projected demands as calculated in Table 6 on page 31.

#### *(2) Current Demand Modeling Results*

Figure 7 through Figure 11 show the results of the system modeling with the system in its current condition and using the current demands.

[1] (DOWL HKM, 2009)

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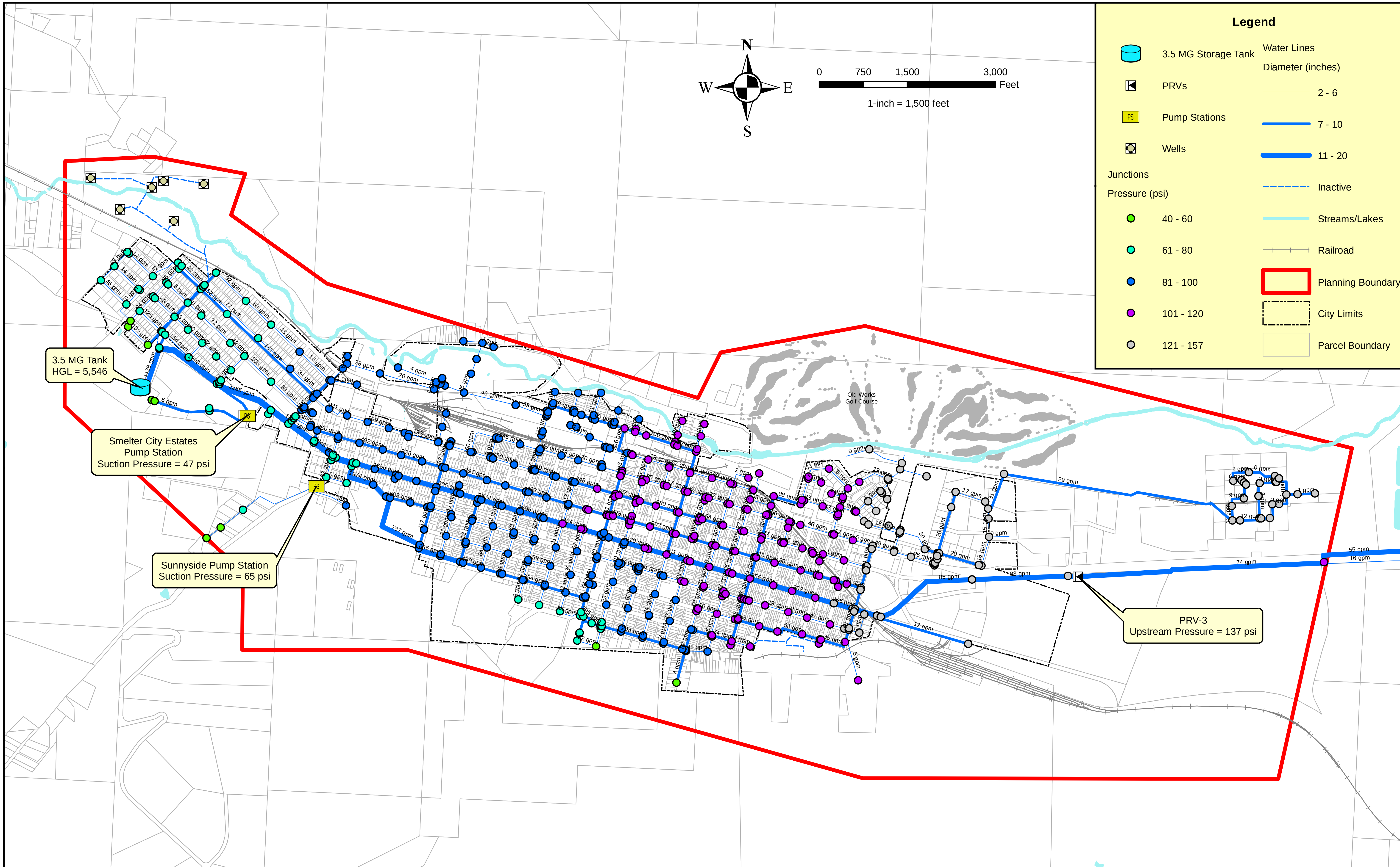
**Preliminary Engineering Report Master Plan Update**

Model Results - Existing System Average Day

**Figure 7**

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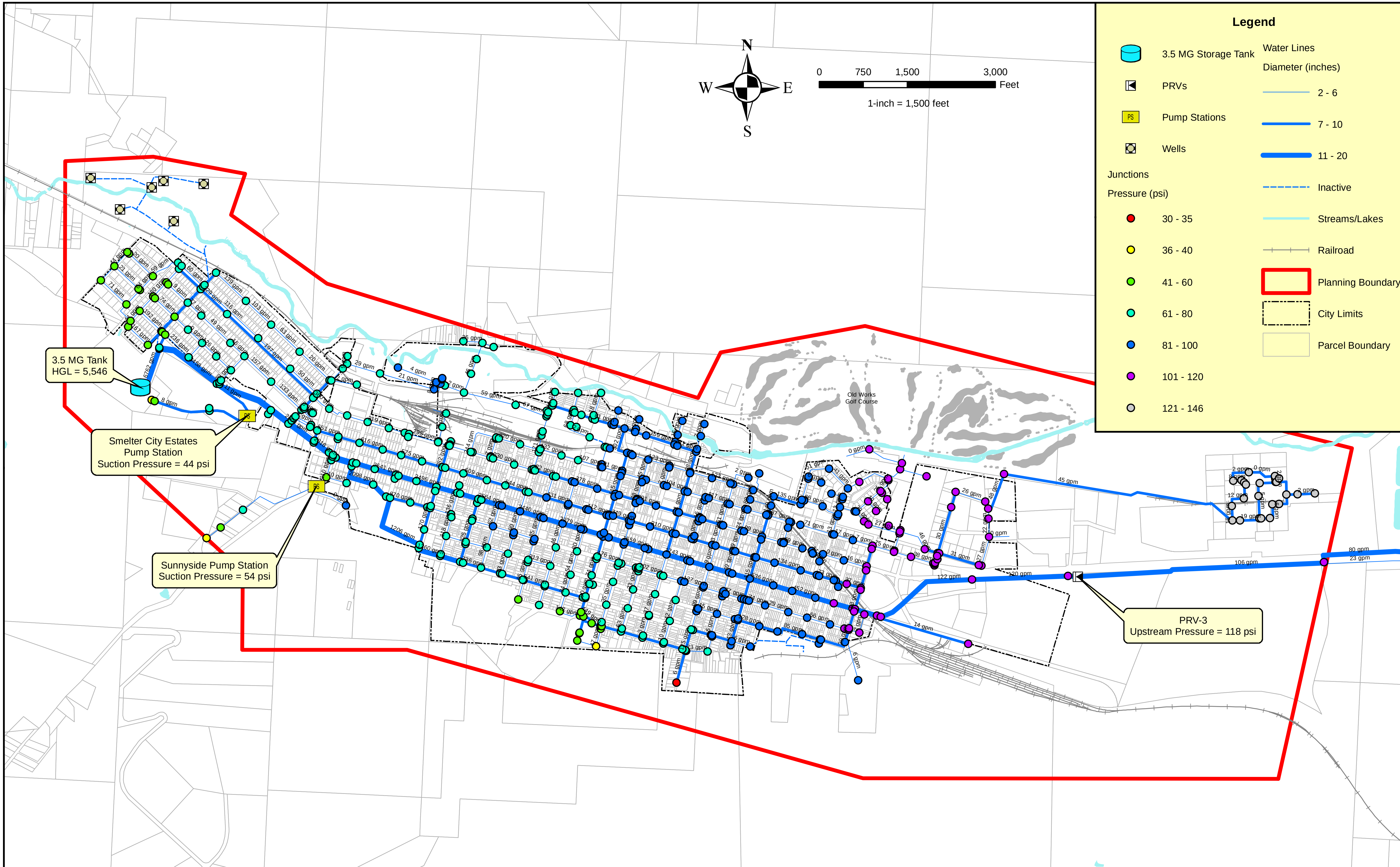
# Preliminary Engineering Report Master Plan Update

Model Results - Existing System Peak Day

**Figure 8**

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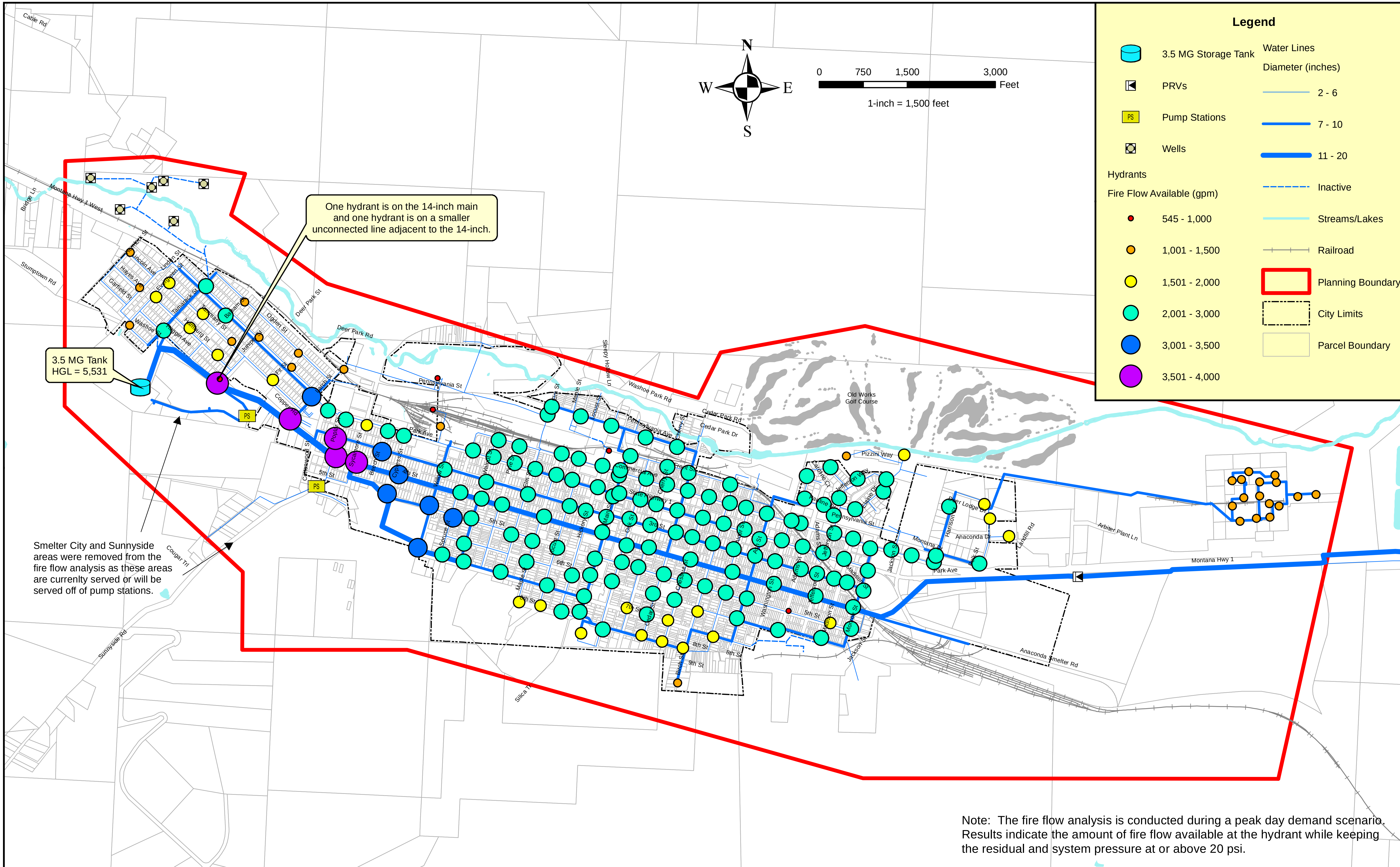
**Preliminary Engineering Report Master Plan Update**

Model Results - Existing System Peak Hour

**Figure 9**




Note: The fire flow analysis is conducted during a peak day demand scenario. Results indicate the amount of fire flow available at the hydrant while keeping the residual and system pressure at or above 20 psi.

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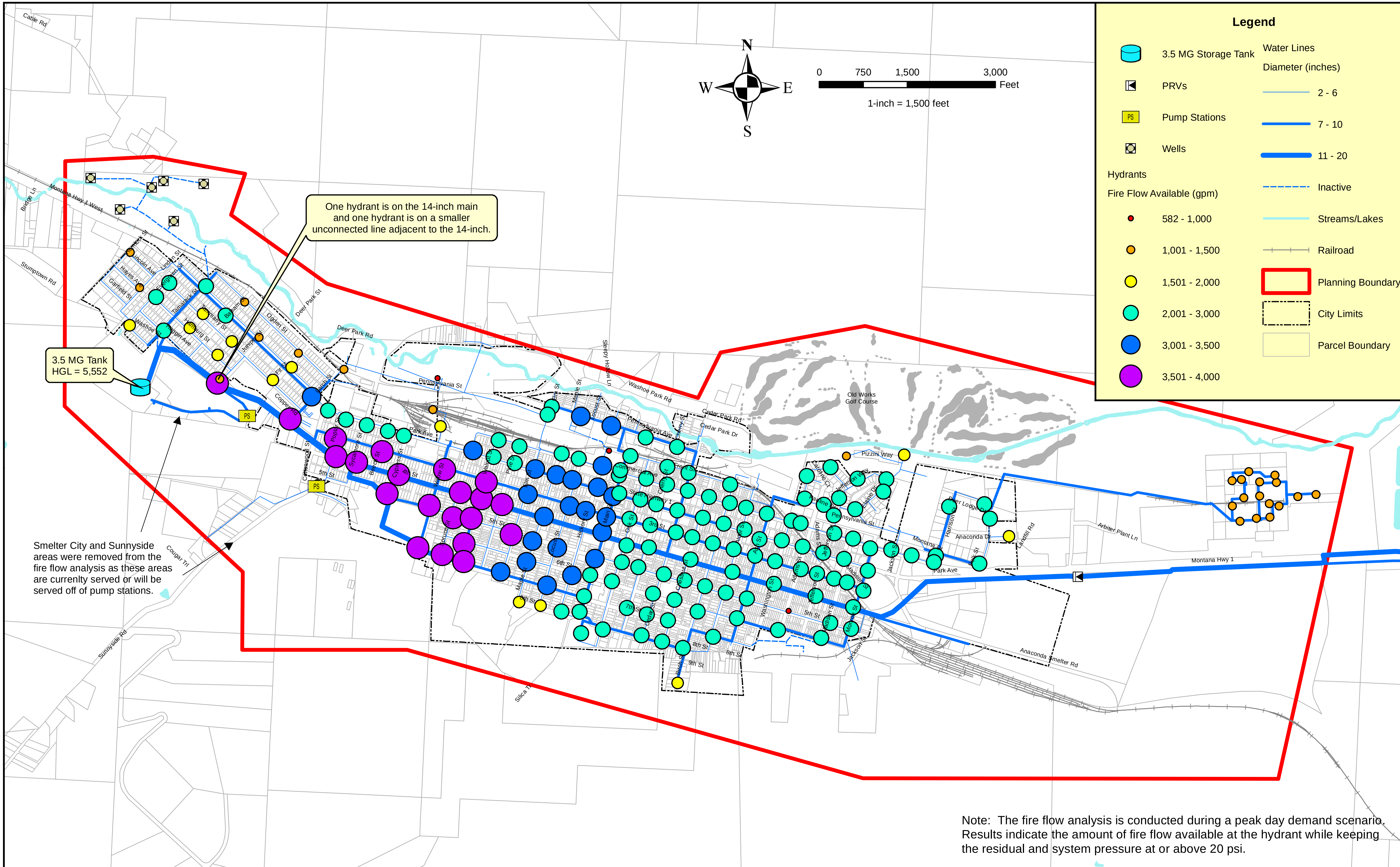
Model Results - Existing System Fire Flow - Min. Tank Level

**Figure 10**

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Model Results - Existing System Fire Flow - Tank Full

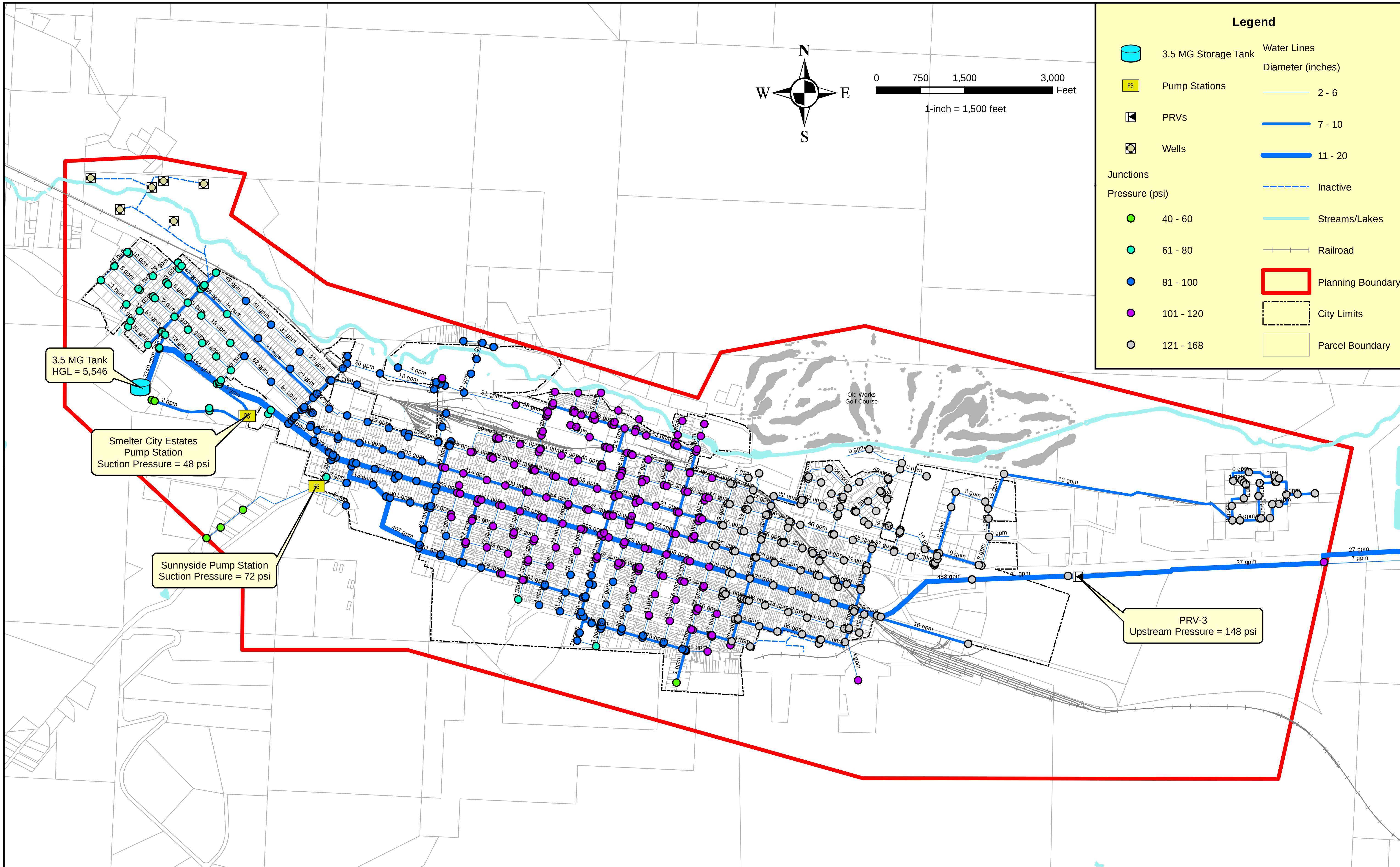
**Figure 11**

Results from the current demand average day modeling scenario show that pressures range from about 40 psi on Sunnyside to more than 120 psi at the east end of town. Pressures are reduced slightly as the demand scenario increases. Normal water system operating pressures are within the 40 to 90 psi range. Based on the model results, the majority of the Anaconda water system falls within this range and in most cases is well above this range. Except for a few limited areas, the entire system maintains pressures in excess of the minimum required pressure of 35 psi during the peak hourly demand.

Results from the fire flow scenario indicates that the majority of the residential areas of the distribution system can supply in excess of 1,500 gpm, and only a few very limited areas exhibit flows less than 1,000 gpm under worst case minimum tank levels. With respect to the downtown commercial areas and the high school, however, the estimated available fire flows of between 2,000 gpm and 3,500 gpm are lower than a target value of approximately 3,500 gpm.

### c) *Model Results – Projected Demand*

Figure 12 through Figure 16 show the results of the system modeling with the system in its current condition and using the projected demands.

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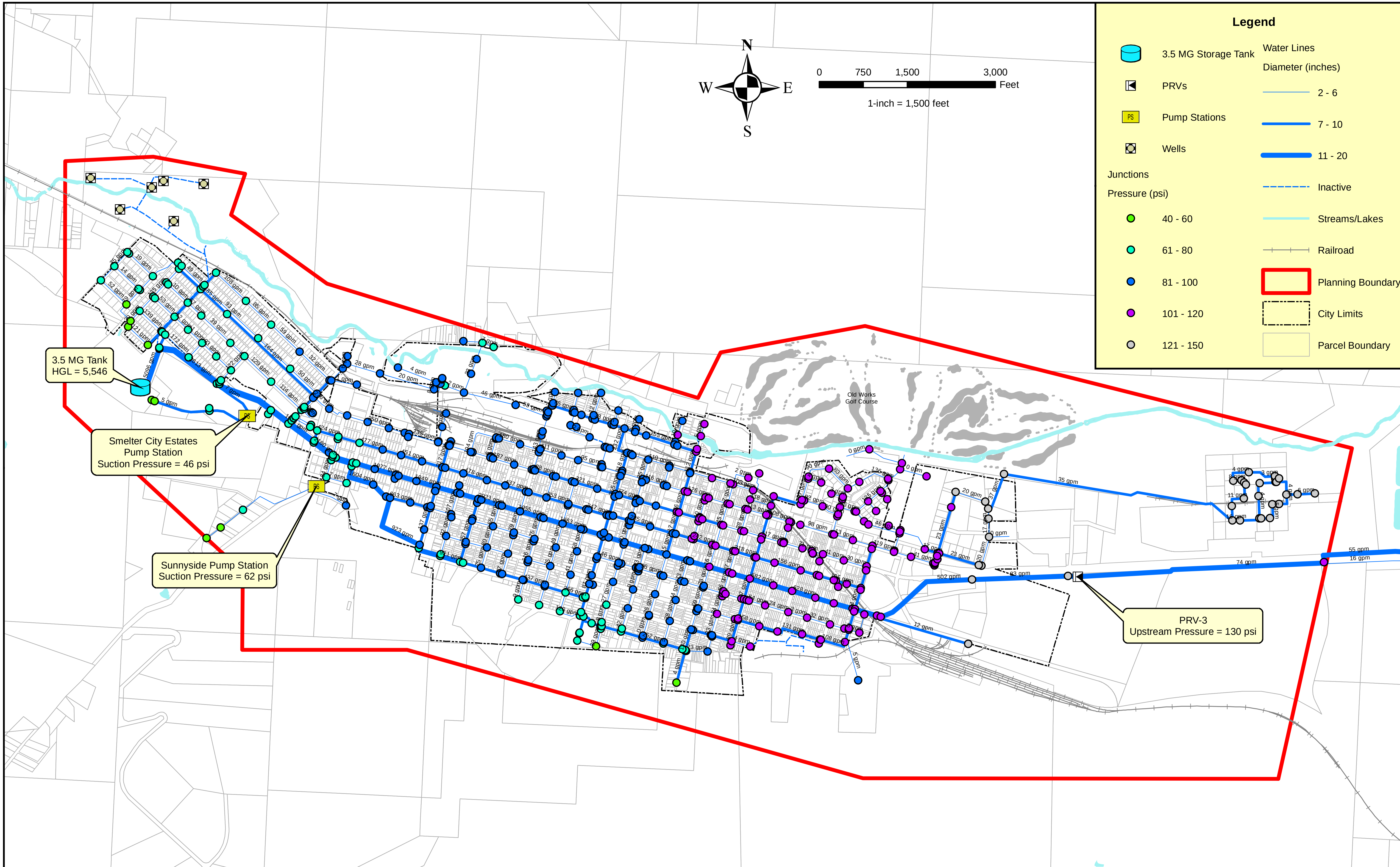
**Preliminary Engineering Report Master Plan Update**
Model Results - Existing System Average Day (Projected Demand)

**Figure 12**

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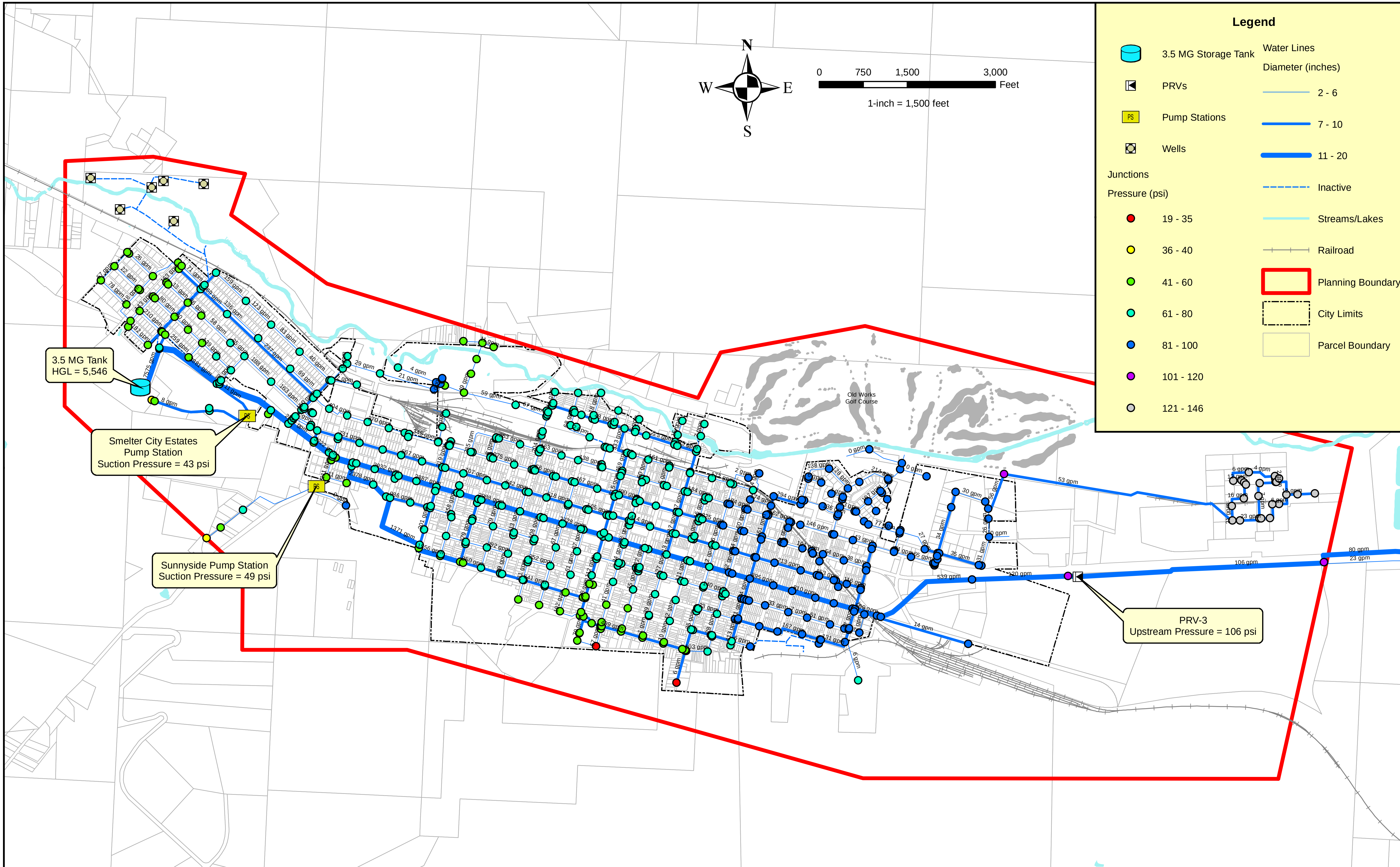
**Preliminary Engineering Report Master Plan Update**
Model Results - Existing System Peak Day (Projected Demand)

**Figure 13**

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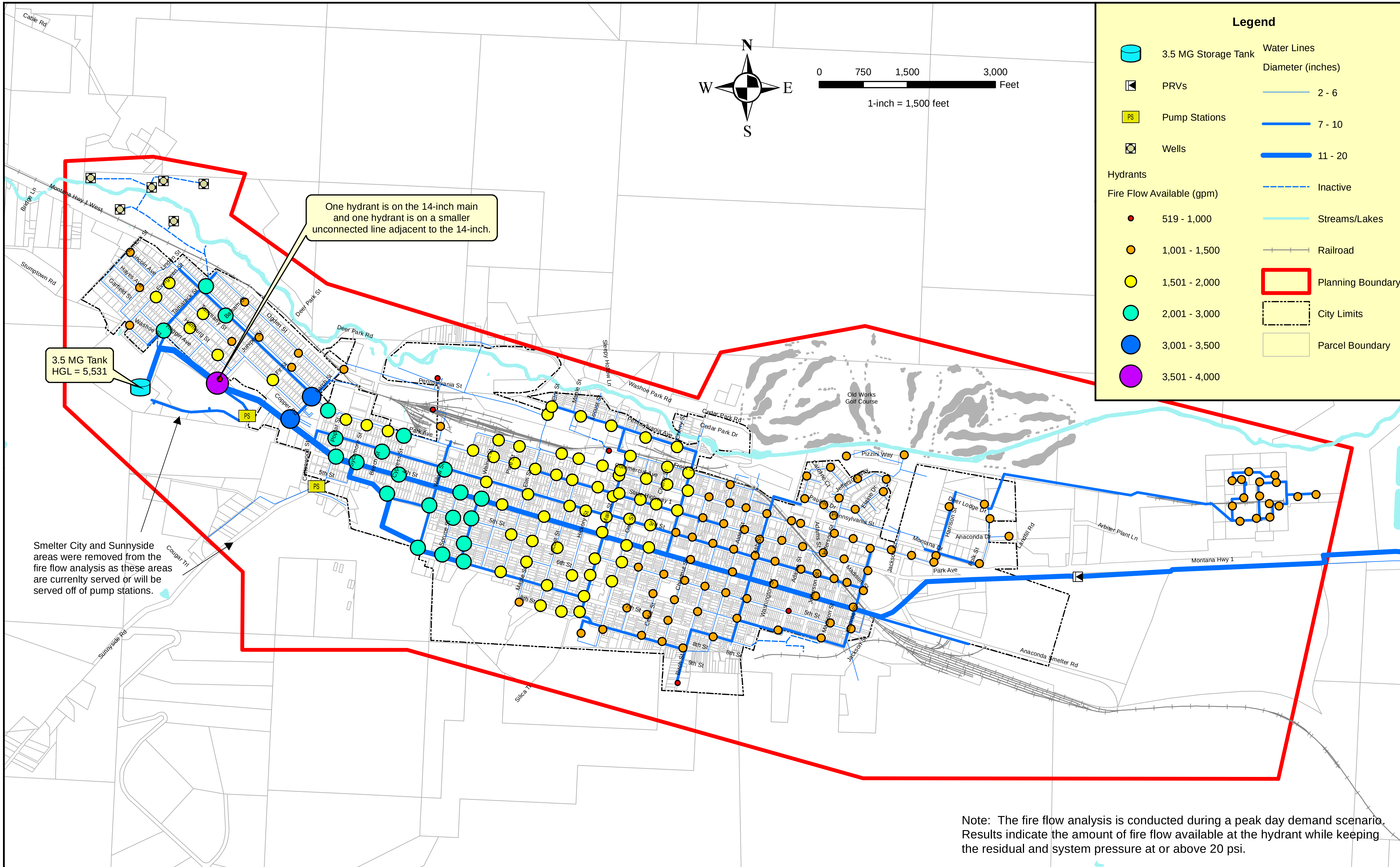
# Preliminary Engineering Report Master Plan Update

Model Results - Existing System Peak Hour (Projected Demand)

Figure 14

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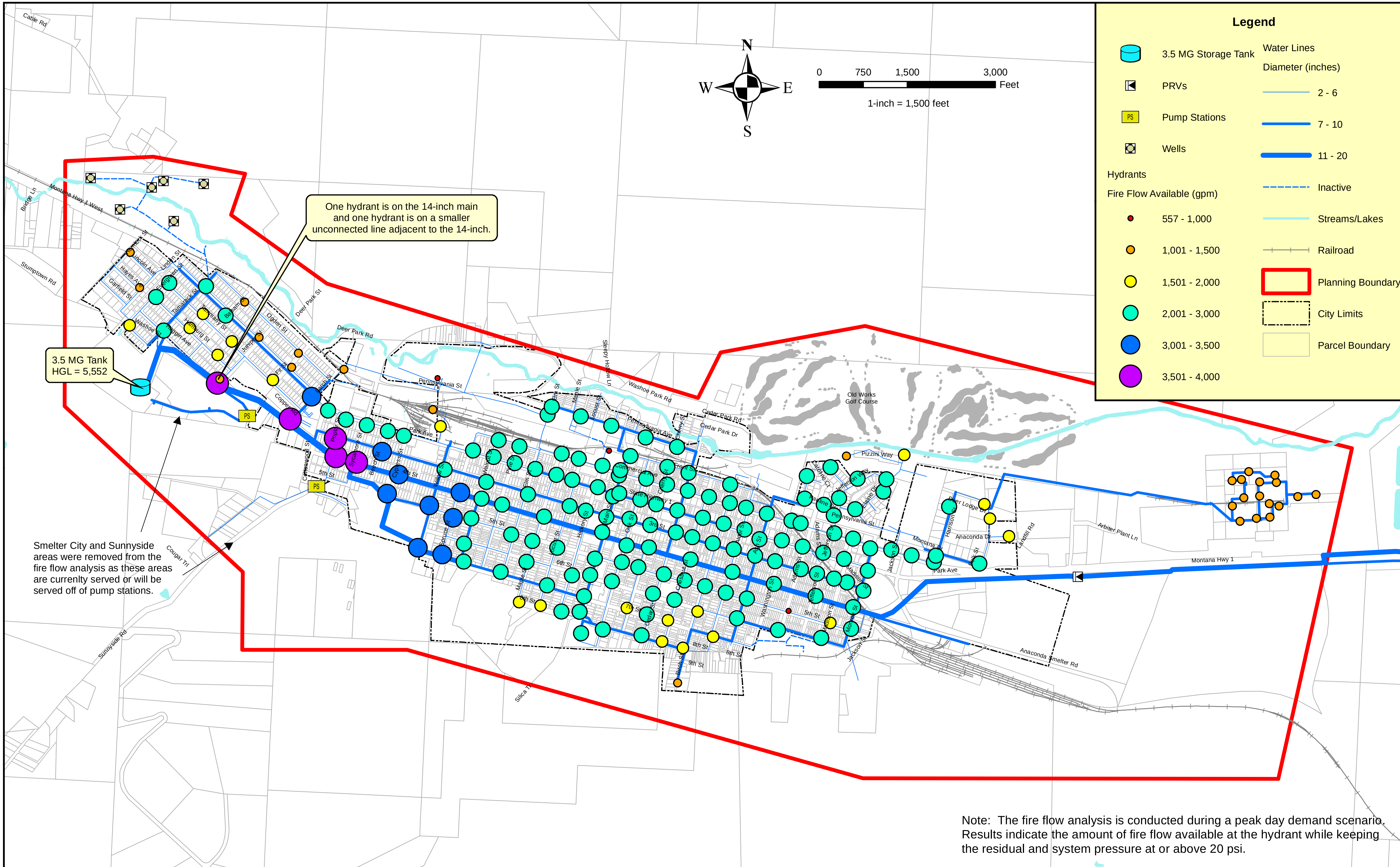
**Preliminary Engineering Report Master Plan Update**

Model Results - Existing System Fire Flow - Min. Tank Level (Projected Demand)

**Figure 15**

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**Preliminary Engineering Report Master Plan Update**

Model Results - Existing System Fire Flow - Tank Full (Projected Demand)

**Figure 16**

Results from the projected demand average day modeling scenario show that pressures range from about 40 psi on Sunnyside to more than 120 psi at the east end of town. Pressures are reduced slightly as the demand scenario increases. Normal water system operating pressures are within the 40 to 90 psi range. Based on the model results, the majority of the Anaconda water system falls within this range and in most cases is well above this range. Except for a few limited areas, the entire system maintains pressures in excess of the minimum required pressure of 35 psi during the peak hourly demand. Several notable exceptions to this are the south end of Birch St. and the south end of Oak St. In both locations the pressures drop to between 23 and 35 psi.

Results from the fire flow scenario indicate that the majority of the residential areas of the distribution system can supply in excess of 1,500 gpm at tank full. However, the east end of town falls under 1,500 gpm at minimum tank levels. Two hydrants, one at south end of Birch St. and another on 5th and Adams are under 1000 gpm even at tank full. With respect to the downtown commercial areas and the high school, the estimated available fire flows of between 1,500 gpm and 2,000 gpm at minimum tank level and 2,000 to 3,00 at tank full are lower than a target value of approximately 3,500 gpm.

The proposed water distribution system improvements are intended not only to continue reduction of the excessive water leakage but also to enhance the available fire flows to the commercial downtown area.

## 6. Water Meters

In 2010, DOWL HKM completed a Metering Implementation Plan for ADLC[1]. At the time of that study 403 out of the 3,043 water system users have metered connections. The Implementation plan recommended that ADLC implement the installation of water meters in order to:

- operate the water system as a business and charge customers in proportion to the quantity of product and service provided;
- provide a rate structure based on cost of service;
- remove inequity in billing;
- promote water conservation;
- improve eligibility for available grant funding;
- minimize the potential for legal challenges of the water system rates and charges.

The Metering Implementation Plan was used as the basis for 2010 grant applications to the DNRC/RRGL Program and NRD Program for $3.7 million in grant funding to implement system-wide metering in 2011. The $3.6 million NRD grant portion was denied, so the project

[1] (DOWL HKM, 2010)

has yet to move forward. In preparation, ADLC also commissioned a new cost-of-service-based, metered water rate analysis[1] which was completed in 2010.

Initiation of a comprehensive metering program would have an immediate effect on the overall system water use. Those buildings with continuously running fixtures would then be accountable for the expense of this wasted water. Replacement of such fixtures alone could substantially decrease the water system demand. Further, the lawn sprinkling practices would change considerably with less water wasted on over watering of lawns and inadvertent watering of sidewalks and streets.

The use of meters typically has a substantial effect on the water use on a water system. With no incentive to limit and/or wisely use the municipal water supply customers tend to use considerably more water. As shown on Figure 5 the average water use per capita is approximately 338 gallons per day. This volume of water is approximately 2.2 times the national average which is 90-150 gpdpc.

## 7. Operational & Management Practices

The greatest operational challenge is management of the limited supply during irrigation months. During the peak summer months the community is placed on watering restrictions to avoid exceeding the production capacity of the wells. This is the only water conservation measure in effect for the water system. Even with the watering restrictions, water consumption during the summer months is extremely high and a considerable amount of water is wasted, at no additional cost to the users. The available supply is managed as responsibly as possible considering the lack of water meters and individual accountability for conservation of the water supply.

From a water quality standpoint, the system does not have problems maintaining chlorine residual at the extreme ends of the system. The system is periodically flushed at dead ends and low demand areas. Other water quality sampling and testing procedures are in line with state requirements.

## 8. Financial Status of System

The annual projected operating budget for the Anaconda water system was approximately $3,084,591 in year 2011. Appendix C includes ADLC 2011 budget and expense reports. As shown on the budget reports, the four largest expenses included in this budget were waterline replacement project construction costs at $2,070,500, annual debt service on the 1993 Water System Improvements Project of approximately $393,000, water system personnel costs at approximately $346,291 and electricity costs at approximately $115,000. Revenue from water sales for the year 2011 was approximately $1,212,469 during the relatively wet year. In

[1] (DOWL HKM, 2010)

addition, $1,337,291 in grant funding was received from the Natural Resources Damage Program.

The debt service on the revenue bonds will be cancelled (fully paid) in June of year 2013. The current water system user charges include the necessary collections to account for this debt retirement. Once this debt is fully paid the portion of the rates and charges currently allocated to this debt retirement could be directed toward future capital improvements. Approximately $397,000 is held in reserve for this bond. The system is financially sound and is able to set aside adequate funds for emergency repair and replacement as well as funds for major capital improvements.

In order for ADLC to qualify for the grant programs available through the Treasure State Endowment Program, the Community Development Block Grant Program, Rural Development, etc., the combined water and sewer rate must be above the target rate as established by the Montana Department of Commerce. The combined water and sewer rate is not only the basis for important ranking criteria in the competition for such grants, but also is a determining factor in the amount of grant funds for which the community is eligible. The DOC does not recommend grant funding for projects that would result in user charges below the target rate. These programs also typically require water metering as a condition of funding.

The Montana Department of Commerce utilizes census data and survey information from selected water and wastewater systems to determine the median household income and the respective "target rate" for communities in Montana every ten (10) years. Table 7 shows the current target rates for Anaconda Deer Lodge County as obtained from the Department of Commerce website[1], see – Water Use Data.

**Table 7 - Target Water and Sewer Rates**

| | |
|---|---|
| Water & Waste Water | $50.42 |
| Water Only | $30.69 |
| WasteWater Only | $19.73 |
| Solid Waste Only | $6.58 |

Based upon the total revenue generated during the year 2011 from the water system and the estimated total household count from – Water Use Data, the average monthly water rate can be calculated. However, first the Water System Connections must be broken down into Equivalent Dwelling Units (EDU's) as outlined in the Uniform Application for Montana Facility Projects[2].

[1] http://www.comdev.mt.gov/tsep/target.aspx
[2] (W2ASACT, 2011)

According to the Water System Rate Study[1] published by DOWL HKM in 2010, the Anaconda Water System is composed of 2,708 active user accounts. Of these, 361 are commercial accounts and 2,347 are residential accounts. The rate study further characterizes the commercial accounts into anticipated meter sizes. Because the system is not fully metered, the current distribution of meter sizes was extrapolated and expanded on based on other systems of this size in order to project a meter size distribution of the overall system. Table 8 was taken from the rate study and shows the anticipated commercial meter distribution in Anaconda.

**Table 8 - Commercial Meter Distribution**

| **Commercial** | **Current** | **Current % of Total** | **Projected % Of Total** | **Proj. Comm. Meter Size Distribution** |
|---|---|---|---|---|
| 5/8" | 54 | 65% | 90% | 325 |
| 1" | 8 | 10% | 5% | 18 |
| 1-1/2 Inch | 6 | 7% | 2% | 7 |
| 2" | 12 | 14% | 2% | 7 |
| 3" | 3 | 4% | 1% | 4 |
| | 83 | | 100% | 361 |

Section E, Subsection 1 of the Uniform Application, indicates that "service connections to single-family residences are generally counted as a one EDU" and commercial service connections should be assigned EDU's according to Table 9.

**Table 9- Uniform Application EDU Allocation**

| **Service connection inside diameter (inches)** | **EDU's** | **Service connection inside diameter (inches)** | **EDU's** |
|---|---|---|---|
| ¾" or smaller | 1 | 4" | 28.57 |
| 1" | 1.79 | 5" | 44.64 |
| 1-1/2" | 4 | 6" | 64.29 |
| 2" | 7.14 | 7" | 87.11 |
| 2-1/2" | 11.16 | 8" | 113.78 |
| 3" | 16 | 9" | 144 |

Combining Table 8 and Table 9, the total number of EDU's that can be attributed to commercial water services in Anaconda can be calculated as shown in Table 10.

[1] (DOWL HKM, 2010)

**Table 10 - Water System Commercial EDU's**

| Service Size | # of Connections | EDU Equivalent | Total EDU's |
|---|---|---|---|
| 5/8" | 325 | 1 | 325 |
| 1" | 18 | 1.79 | 32 |
| 1-1/2 Inch | 7 | 4 | 28 |
| 2" | 7 | 7.14 | 50 |
| 3" | 4 | 16 | 64 |
| **Total EDU's** | | | **499** |

Adding the commercial EDU's calculated in above 2,347 residential services results in the total water system EDU's being 2,846. It should be noted that this accounts only for services that are active and attributing to the revenue collected by the water department.

The year 2011 revenue collected on the water system assessment was $1,212,499, see Appendix C. Therefore the average monthly water rate can be calculated as follows:

Total Year 2011 Water System Revenue[1]: $1,212,469 /2,846 EDU's
Average Monthly Water Cost Per Household : $35.50/mo

For the 2010 fiscal year (July 09 – June 10), the city had 3,453 residential sewer hook-ups and 114 commercial sewer hookups on the tax rolls. These sewer users are charged a sewer fee of $21.00 per year per unit. Residential users are charged a flat rate of 3 units for a total charge of $63.00/year ($5.25/month). Commercial users also pay a flat rate based on the number of units per commercial entity. The average number of units per commercial enterprise in 2010 was approximately 12 (1,359 units billed ÷ 114 costumers = 12 units/customer). A total number of equivalent residential sewer users, or in other words, wastewater equivalent dwelling units (EDU's), can be calculated as follows:

3,453 residential customers + (1,359 commercial units ÷ 3 units/residential costumer)
≈ 3,906 Wastewater EDU's

The year 2011 revenue collected on the wastewater system assessment was $262,589, see Appendix C. Therefore the average monthly wastewater rate can be calculated as follows:

Average Monthly Wastewater Cost Per Household : $5.60/mo
Total Year 2011 Wastewater Billing : $262,589 /3,906 EDU's

[1]Appendix C

Therefore, the total water and wastewater combined average monthly cost as compared to the respective target rate is as follows:

| | |
|---|---|
| Combined Target Rate : | $50.42/mo |
| Average Monthly Water Cost per EDU : | ($35.50/mo) |
| Average Monthly WW Cost per EDU : | ($5.60/mo) |
| | |
| Difference From Target Rate : | $9.32/mo (less than target rate) |

In summary, the system generates adequate revenue to operate and maintain the system. The lower (combined water and sewer) rates, however, place the community at a severe disadvantage in pursuing financial assistance for capital improvement projects.

## E. Regulatory Update

### 1. Groundwater Supply

The combined capacity of the six (6) wells is 4,600 gpm (6.624 MGD) while the water rights allows for 5,500 gallons per minute (7.2 MGD) and 6,934 acre-feet per year. According to Circular DEQ 1, Part 3.2.1.1, "*The total developed groundwater source capacity must equal or exceed the design maximum day demand and equal or exceed the design average day demand with the largest producing well out of service.*" The current peak daily demand is 4.8 MGD. With a maximum pumping capacity of 6.624 MGD the supply currently meets the above requirement for peak day supply. Also, with an average day demand of approximately 2.8 MGD and a well pumping capacity of approximately 4.67 MGD (3,243 gpm) with the largest well out of service, the system does meet the average day demand as required in the above regulation.

It should be noted that if the current peaking factor of 2.87 is applied to the future projected average daily demand as show in Table 4, the projected peak day demand would be 7.7 MGD. This is in excess of not only the peak production rate of the current wells but also the maximum water right. However, at Anaconda's current growth rate of -1.3% it is not anticipated that the developments shown in Table 4 will become all become a reality in the near future. Furthermore it is unlikely that the full amount of open space as proposed in the East Yards PER[1] will be installed and irrigated from a cost and maintenance perspective. Therefore it is expected that the current water supply will continue to be adequate.

[1] (DOWL HKM, 2011)

# III. Capital Improvements Plan

## A. Identify Improvement Priorities

### 1. Distribution System

As indicated in Table 5 on page 30, the water system losses are still high for any water system. Until the unaccountable water system losses and reduced within a reasonable range (for this system) of between 20% and 30%, ADLC should continue to pursue replacement of the old water mains in town. Because every drop of water delivered to the water system is pumped from the aquifer, the City incurs a substantial financial loss associated with the water system unaccountable losses. The power required to pump the water system loss volume of 536,962 gallons per day to the storage tank equates to approximately 42% of ADLC's annual utility budget or approximately $48,300.

ADLC has made significant progress in replacing major sections of the oldest part of the distribution system as well as critical links within the system with water main replacement projects since 1994 however some large sections in leak prone areas remain. In addition to the mains suspect in contributing substantially to the overall water loss are mains that represent critical links in the distribution system and several areas in need of additional mains to provide a looped system for better service and redundancy to these areas. Figure 17 details the water system improvements that remain to be completed in Anaconda. As shown on the figure, the proposed water main replacement projects are phased over a period of five to six (5-6) years. The size of the respective capital improvement project is based on the average size of previous year's projects from a cost perspective.

Water system improvements area prioritized first based on leakage history, transmission or system backbones second, and cross streets last. Additional input was also received from the water department on problem areas throughout the system. Six distinct system improvement phases were developed as part of this study along with cost estimates for each. The phasing plan consists of six phases of with between 6,000 and 12,000 feet of waterline each. Note that at no more than 12,000 feet of waterline per phase, it is expected that each phase would be constructed in one year's time. The phases are described as follows:

- Phase I – This project phase includes those water mains described in the 2009 Modeling Study Update[1] as Phase III. They are further described as the remaining cross streets throughout town. The majority of cross streets will be replaced with 6-inch water main. This phase contains combinations of six, four, and two-inch water lines, totaling approximately 11,600-lf.

[1] (DOWL HKM, 2009)

- Phase II – This project phase includes the following: 1) replacement of the 20-inch water supply line from the pump station, across Tamarack St. and to the valve house on Washoe St, 2) replacement of the 16-inch and 12-inch supply line from the valve house over to Poplar and Sycamore Streets. A total of approximately 8,300-lf of large diameter mains are included in this phase.

- Phase III - On the north side of the railroad tracks near Cable Road and from Sycamore Street to Cedar Street the area experiences low pressures during peak demands as a result of the dead end mains. Fire flows are limited in this area. A new 8-inch main is proposed for looping between Sycamore and Cedar to alleviate the pressure and flow problems in this area. The total length of the new main would be approximately 7,400-lf while 1,650-lf would be replaced.

- Phase IV – Park St. west of Larch St. contains 8-inch and 6-inch trunk water mains installed in the 1950s. This section of Park St. has been identified by the MT Department of Transportation for possible future reconstruction. Prior to this road reconstruction, these water mains should be replaced. On Pennsylvania Avenue between Larch St and Elm St. a 6-inch section of the original system which services the Washoe Park Area will be replaced as well as the line on Larch St. that connects this main to the proposed replacements on Park St. A total of approximately 12,250-lf of mains are included in this phase.

- Anaconda has already implemented a voluntary metering program. If a homeowner requests to have a meter installed, ADLC purchases the meter and installs it for free. The homeowner is responsible for additional plumbing necessary to install the meter as well as a $49.16 inspection fee. In general the homeowner ends up paying between $80 and $140 while ADLC pays $220 and donates the labor. Due to the cost of the program to the homeowner, many would-be volunteers are discouraged from participating. To increase the success of the voluntary metering program, this Master Plan Update proposes to implement a *fully funded* voluntary metering program. It is proposed that $200,000 of Groundwater Allocation funds be used per year for the next 5 years. Table 12 includes 2,642 meters at a total cost of $3,709,983. An interior installation of a water meter generally costs $600 while an exterior meter pit installation generally costs $1,500. At these costs, approximately 150 - 200 meters could be installed each year under this voluntary program. It should be noted that the success of this voluntary metering program could result in reduced revenue for the water department because the metered rate is lower than the flat rate. If this reduced revenue becomes a problem, ADLC could implement a new rate schedule as proposed in the 2010 Rate Study[1].

---

[1] (DOWL HKM, 2010)

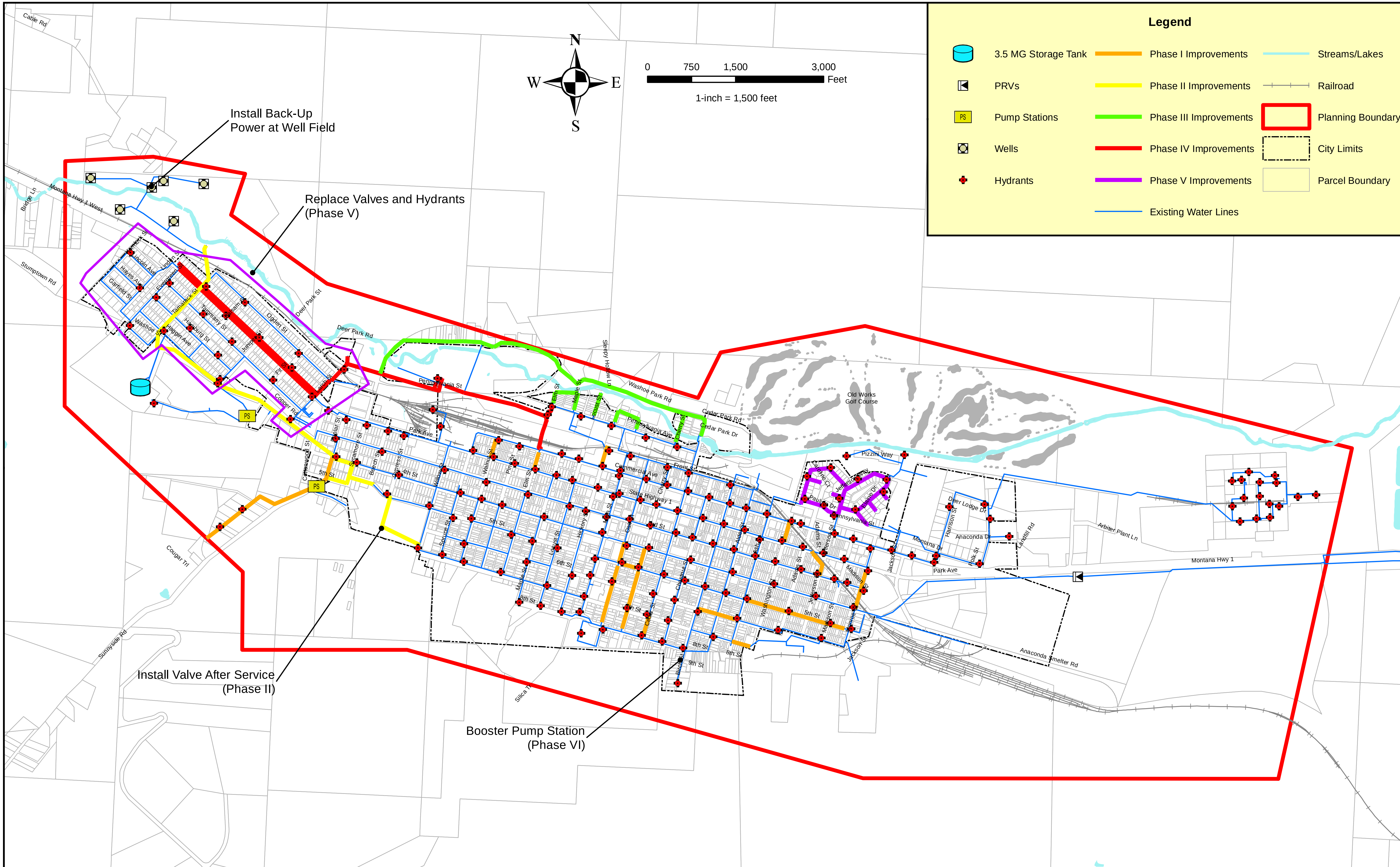
- Phase VI – The modeling results shown in Figure 20, indicate that if all the proposed development shown in Table 6 on page 31 becomes a reality, the very southern portion of Birch St. will experience low pressure and fire flow problems. To solve this problem, a booster pump station could be installed on Birch St. and 8$^{th}$ St. However, while this situation is a possibility according to the projected demands whether or not it actually occurs depends largely on the growth patterns in Anaconda. For this reason, the Booster Station is included in this Master Plan Update as its own phase which can be implemented at any time if it becomes necessary.

Table 11 below, shows the overall cost estimate of the phase improvements described above. Detailed cost information is included in Appendix E.

**Table 11- Distribution System Cost Summary**

| | Length (feet) Replacement Water Line Size | | | | | Total Repl. Length | Hydrants | Valves | Pump Station | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| | 20" | 16" | 12" | 8" | 6" | | | | | |
| Phase I | | | | 1,150 | 10,415 | 11,565 | | | | $1,861,900 |
| Phase II | 1,930 | 3,450 | 2,250 | 720 | | 8,350 | | | | $1,556,150 |
| Phase III | | | | | 9,039 | 9,039 | | | | $1,446,240 |
| Phase IV | | | | 3,581 | 8,660 | 12,241 | | | | $1,996,796 |
| Phase V | | | | | 5,865 | 5,865 | 21 | 25 | | $1,168,400 |
| Phase VI | | | | | | | | | 1 | $500,000 |
| Subtotal | 1,930 | 3,450 | 2,250 | 5,451 | 33,979 | 47,060 | 21 | 25 | 1 | $8,529,486 |
| 10% Contingency | | | | | | | | | | $852,949 |
| 15% Engineering Design and Oversight | | | | | | | | | | $1,407,365 |
| **Overall Total** | | | | | | | | | | **$10,789,800** |

The water model updated as discussed in Chapter II, Section D can be used to demonstrate the system benefits of water line replacements. The proposed improvements are easily modeled through the scenario management tool in WaterCAD. New child scenarios are created from the existing fire flow and peak hour scenarios. Within the new scenarios, new pipelines characteristics are defined to represent the replacement projects (new pipe size, material (ductile iron), roughness (C= 130), etc.). The leakage demand is also removed from the corresponding nodes. Model results show that fire flow capability and pressure will improve not only on their placed lines but throughout the entire system. Furthermore, the leakage from the corresponding water mains is expected to be greatly reduced or eliminated all the way through the new service line curb stops for all of the areas included in the water main replacement phases.




Preliminary Engineering Report Master Plan Update

Proposed Improvements

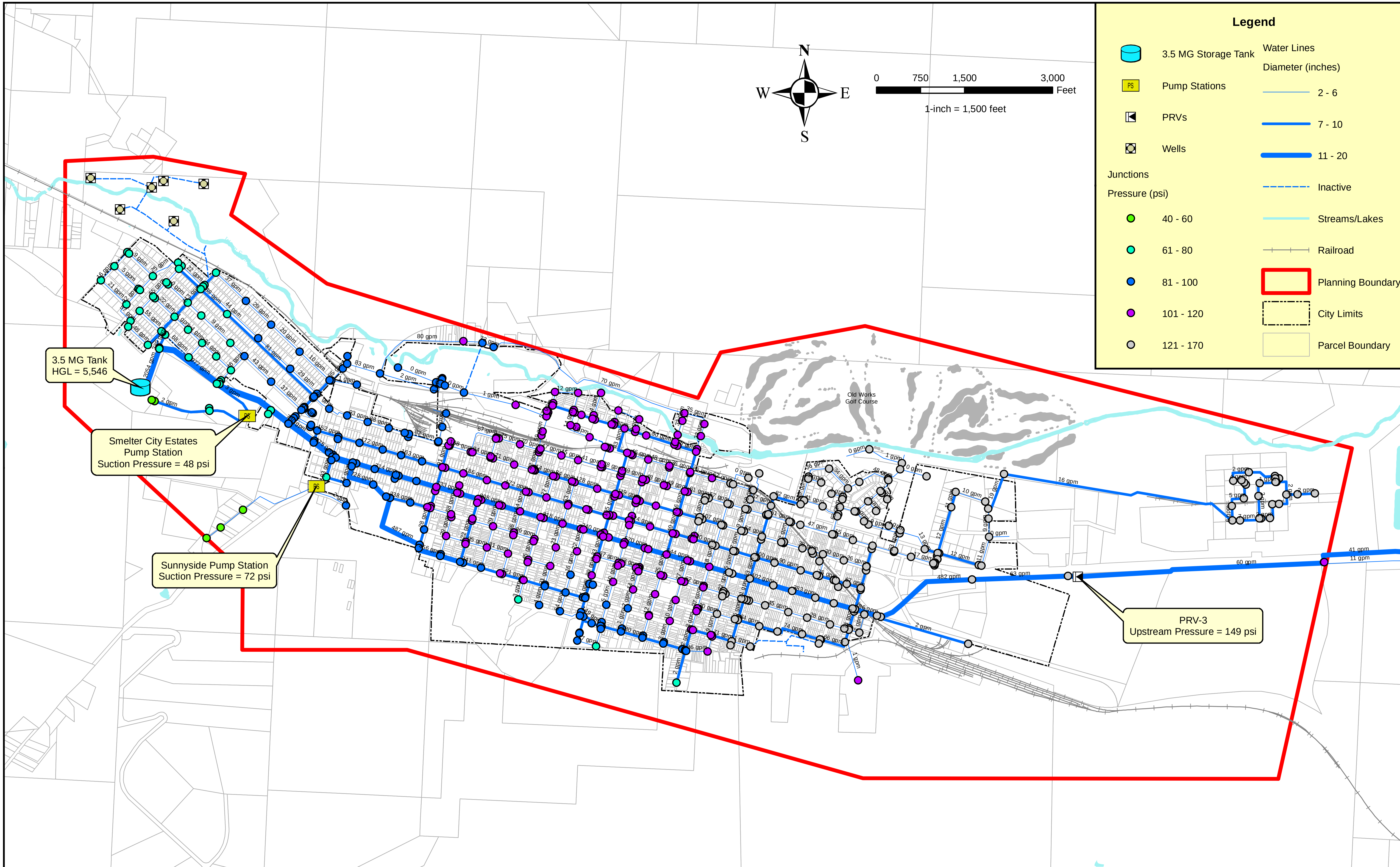
Figure 17

### *a) Benefits of Proposed Distribution Improvements*

In order to evaluate the benefits of the proposed improvements, the water system model, which was updated in Chapter II, Section D.5.b) above, was further updated to include all the proposed distribution system upgrades shown on Figure 17. It should be noted that the booster pump station discussed for the end of Birch St. is not included in this model run in order to demonstrate its need even in the fully replaced system at projected demands. The proposed model scenario included the projected average day demands of 2,687,650 as calculated in Table 6 on page 31 and leakage was assumed to be 10% of this increased average day demand, 268,765 gpd, due to the fact that the system is now completely updated and the mains contributing the added demand should be new and not contributing any leakage to the system overall. This is roughly half of the current leakage calculated in Table 5. The same four scenarios discussed in Chapter II, average day, peak day, peak hour, and fire flow were analyzed in this new proposed condition model. Figure 18 through Figure 22 show the results of the proposed system modeling.

Results from the proposed system, projected demand demand average day modeling scenario show that pressures range from about 40 psi on Sunnyside to more than 120 psi at the east end of town. Pressures are reduced slightly as the demand scenario increases. Normal water system operating pressures are within the 40 to 90 psi range. Based on the model results, the majority of the Anaconda water system falls within this range and in most cases is well above this range. Except for the south ends of Birch and Oak, the entire system maintains pressures in excess of the minimum required pressure of 35 psi during the peak hourly demand. These results indicate that if the full amount of projected demand does become a reality, a booster station at the south end of Birch St. will eventually be needed.

Results from the fire flow scenario indicates that the majority of the residential areas of the distribution system can supply in excess of 1,500 gpm, and only a few very limited areas exhibit flows less than 1,000 gpm under worst case minimum tank levels. With respect to the downtown commercial areas and the high school, however, the estimated available fire flows of between 2,000 and 3,500 gpm are still lower than a target value of approximately 3,500 gpm.

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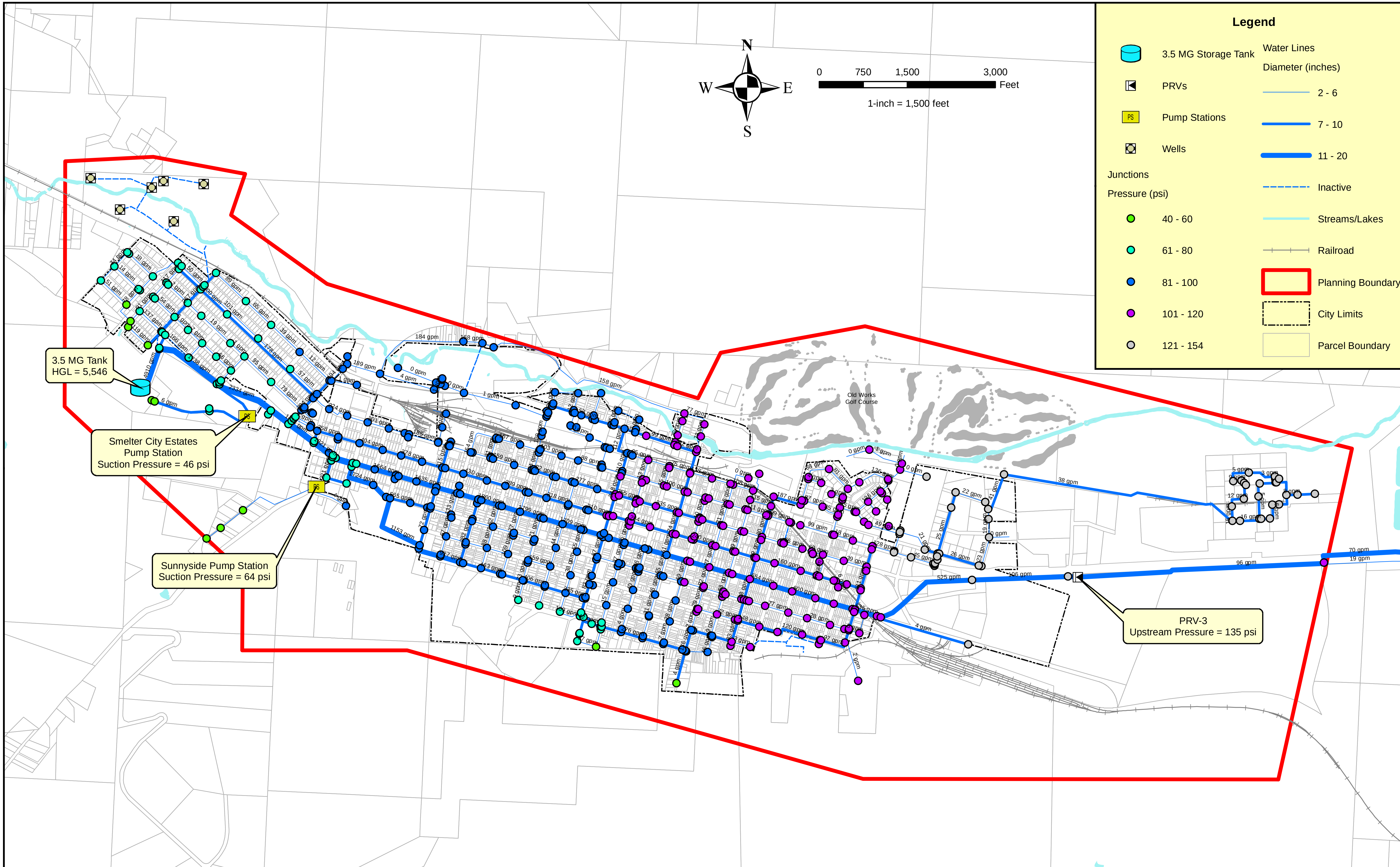
Model Results - Proposed System Average Day (Projected Demand)

**Figure 18**

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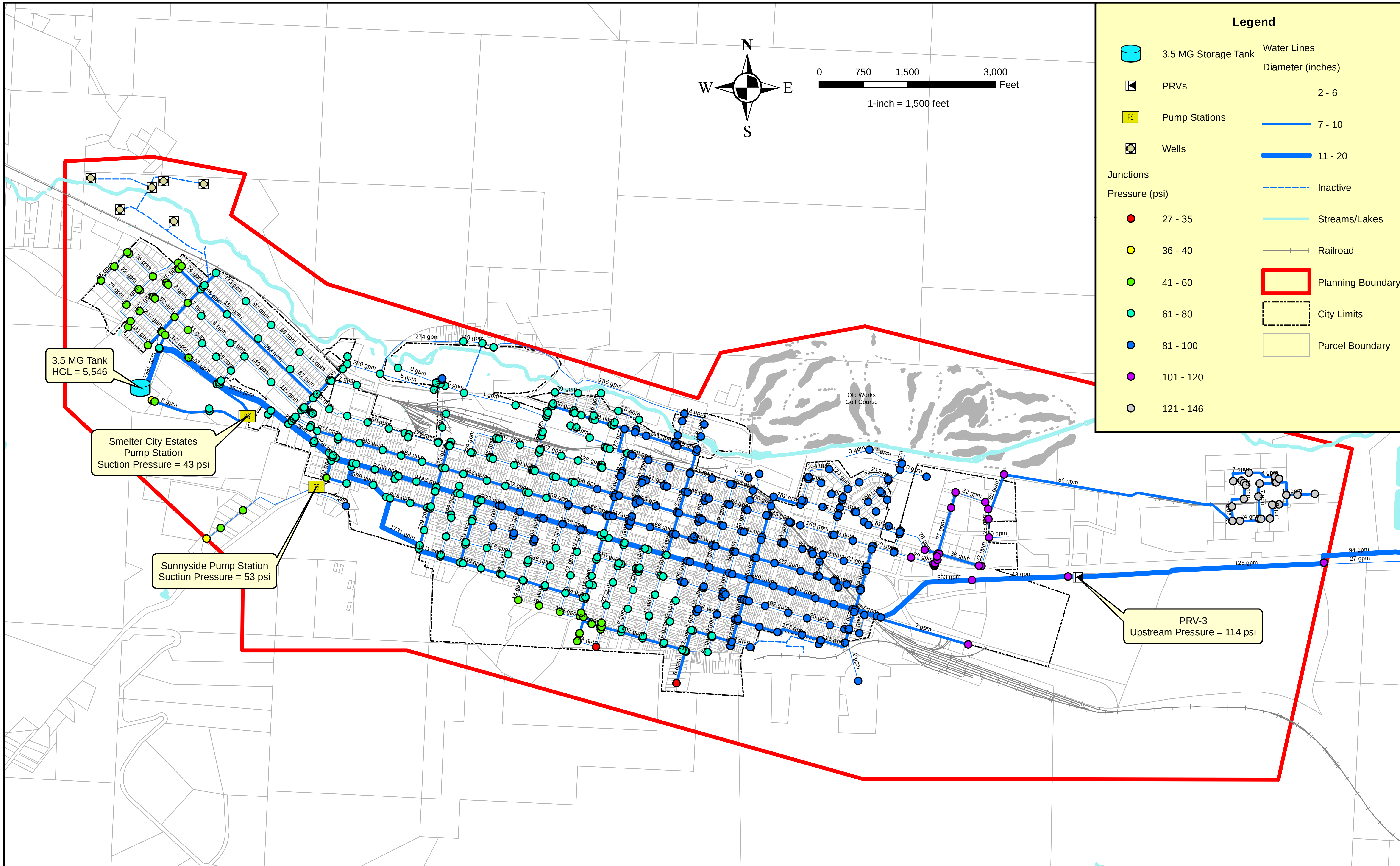
**Preliminary Engineering Report Master Plan Update**
Model Results - Proposed System Peak Day (Projected Demand)

**Figure 19**

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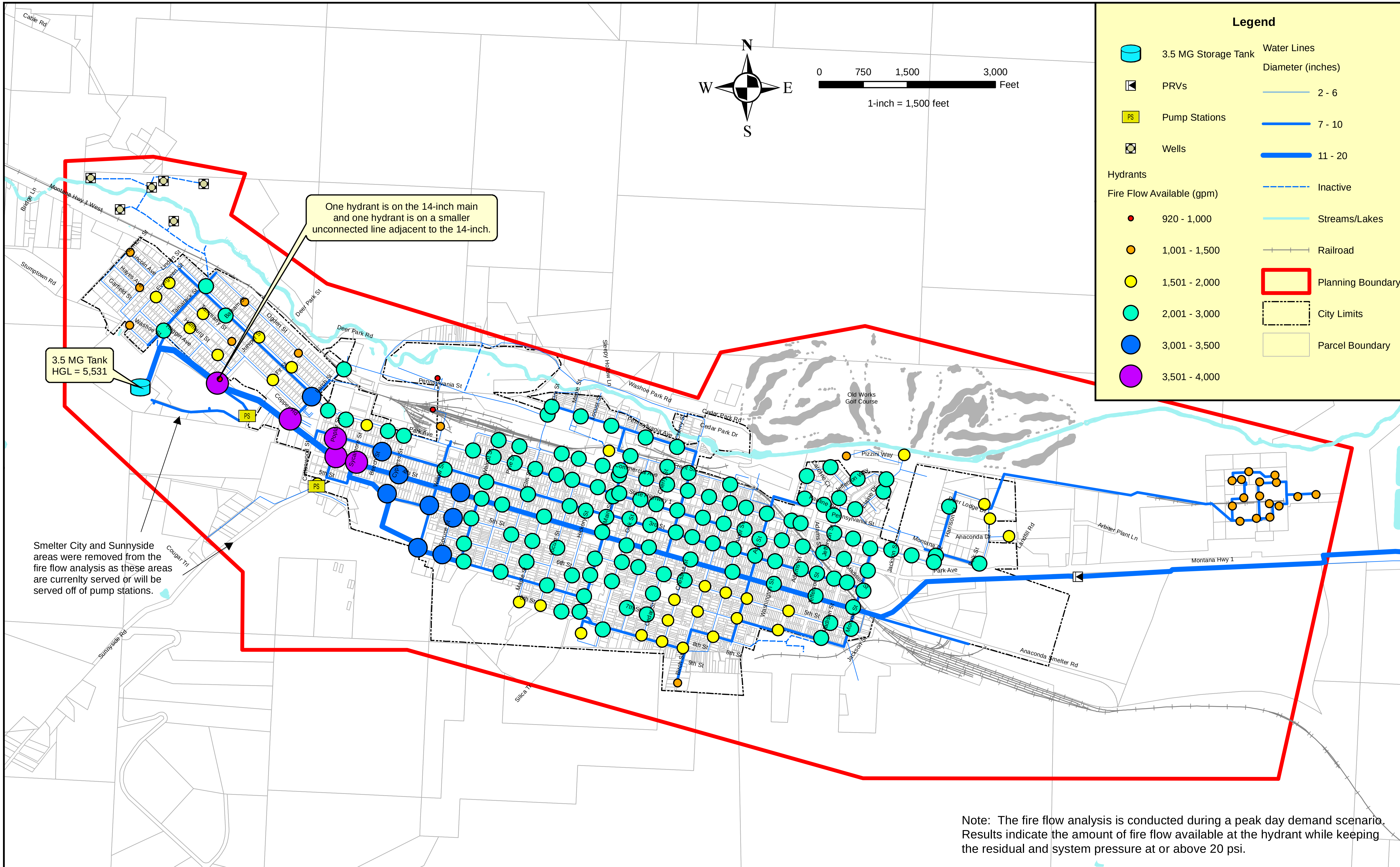
**Preliminary Engineering Report Master Plan Update**

Model Results - Proposed System Peak Hour (Projected Demand)

**Figure 20**

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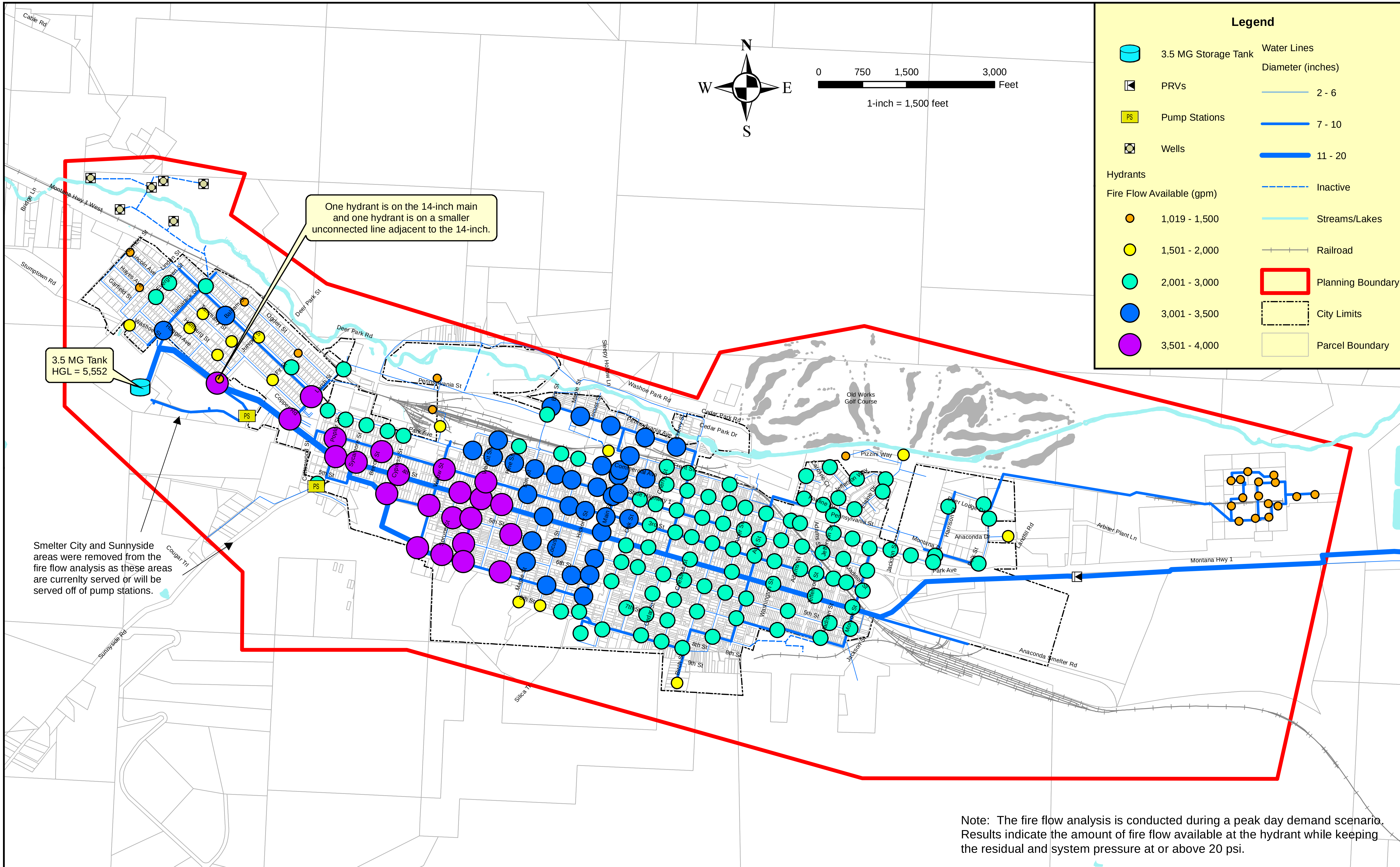
# Preliminary Engineering Report Master Plan Update

Model Results - Proposed System Fire Flow - Min. Tank Level (Projected Demand)

**Figure 21**

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**Preliminary Engineering Report Master Plan Update**

Model Results - Proposed System Fire Flow - Tank Full (Projected Demand)

**Figure 22**

### 2. System Wide Metering.

One remaining system improvement that can be made to in order to reduce the overall system demand and promote equality in use and billing is the installation of comprehensive metering to reduce overall system demands. Figure 23 and Figure 24, as extracted from the 2010 Metering Implementation Plan[1], show the metered and un-metered services in Anaconda. Comprehensive metering would include installing a meter on all water services in the system. Table 12 was extracted from the Metering Implementation plan and identifies the cost of comprehensive metering.

**Table 12 - Comprehensive Metering Cost Estimate**

| Item # | Description | Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|---|
| 101 | Mobilization/Demob. | 1 | LS | $133,309 | $133,309 |
| 102 | Taxes, Bonds, Insurance | 1 | LS | $133,309 | $133,309 |
| 103 | In-House 5/8" Meter | 1386 | EA | $550 | $762,300 |
| 104 | 5/8" Residential Meter Pit | 978 | EA | $1,600 | $1,564,800 |
| 105 | Residential Surface Restoration | 734 | EA | $250 | $183,375 |
| 106 | 5/8" Commercial Meter | 250 | EA | $550 | $137,500 |
| 107 | 1" or Larger Commercial Meter | 28 | EA | $650 | $18,200 |
| | | | | Subtotal | $2,932,793 |
| | | | | 10% Contingency | $293,279 |
| | | | | Engineering (15%) | $483,911 |
| | | | | **Total Estimated Construction Cost** | **$3,709,983** |

The costs outlined above, include installation of meters on every service in one large project. The metering equipment includes standard domestic water meters with radio read transmitters. The existing meters are manufactured by Neptune. Therefore, equipment cost estimates are representative of this manufacturer. It is assumed that a certain percentage of the meter installations would require exterior meter pits. Further, some commercial connections and connections to schools, car washes, etc. would require a meter larger than the standard 5/8" meter. Therefore, a percentage of the overall meters required are estimated to be larger meters with higher equipment and installation costs.

[1] (DOWL HKM, 2010)


FIGURE 1

DOWL HKM

15M4.25107.01

MARCH 2010

ADLC METERING IMPLEMENTATION PLAN

EXISTING METERED SERVICES

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DOWL HKM

**Preliminary Engineering Report Master Plan Update**

**Figure 23**


FIGURE 2

DOWL HKM

MARCH 2010

15M4.25107.01

ADLC METERING IMPLEMENTATION PLAN

EXISTING METERED SERVICES

DOWL HKM

**Preliminary Engineering Report Master Plan Update**

**Figure 24**

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The Metering Implementation Plan was used as the basis for 2010 grant applications to the DNRC/RRGL Program and NRD Program for $3.7 million in grant funding to implement system-wide metering in 2011. The $3.6 million NRD grant portion was denied, so the project has yet to move forward.

However, Anaconda is still committed to the water conservation and equality in billing benefits of system wide metering. To this end, Anaconda has already implemented a voluntary metering program. If a homeowner requests to have a meter installed, ADLC purchases the meter and installs it for free. The homeowner is responsible for additional plumbing necessary to install the meter as well as a $49.16 inspection fee. In general the homeowner ends up paying between $80 and $140 while ADLC pays $220 and donates the labor. Due to the overall cost of this program to ADLC it is not widely advertised to the customers. Furthermore, due to the cost of the program to the homeowner, many would-be volunteers are discouraged from participating.

To increase the success of the voluntary metering program, this Master Plan Update proposes to implement a *fully funded* voluntary metering program. It is proposed that $200,000 of grant funding be requested for the next 5 years. Table 12 includes 2,642 meters at a total cost of $3,709,983. An interior installation of a water meter generally costs $600 while an exterior meter pit installation generally costs $1,500. At these costs, approximately 150 - 200 meters could be installed each year under this voluntary program. Assuming that this goal is achieved, at the end of the 5 year period, approximately 1,800 meters would remain to be installed with an approximate remaining cost of $2,709,983. At the end of 5 years ADLC will need to re-asses the success of the voluntary program and determine how to proceed with the remaining meters whether it be with continued voluntary metering or a comprehensive metering project. For the purposes of this report, the lump sum remainder will be included as a single line item (phase) such that its cost is addressed.

### 3. Backup Power for Water Supply Wells

The wells do not currently have any provision for backup power therefore the water supply would be compromised during an extended power outage. Though the water storage tank has ample emergency storage, this stored water would only last for a short time depending upon the system demand. The City should pursue installation of a generator on at least one of the wells to provide the ability to meet the minimum system demands in the event of an emergency.

The most cost effective way to provide sufficient redundancy would be to purchase a portable generator with adequate capacity to operate at least two of the different wells, one at a time. This would require installation of a transfer switch and appropriate connection equipment to allow the generator to be connected to the well. The generator would only operate one well at a time because of the proximity of the various well sites. However, for additional redundancy at least two of the wells should have the transfer switch mechanism and capability to operate from the generator. With this approach one of the two wells capable of operating on the generator could be out of service for maintenance and the City would still have the ability to produce water through connection of the generator to the other well equipped with the necessary transfer switch. The estimated cost of providing backup power to the wells as described is as follows in Table 13.

**Table 13 - Estimated Costs of Backup Power Supply for Wells**

| Item | Estimated Costs |
|---|---|
| Provide Portable Generator (Trailer-mounted, weather enclosure) | $40,000 |
| Provide Mechanical Transfer Switch On Two Wells | $20,000 |
| Modify Electrical Service To Accommodate Transfer Switch | $20,000 |
| **Total Estimated Cost** | **$80,000** |

## B. Summary of Identified Improvement Costs

Table 14 below summarizes the overall cost of the system improvements identified in this Chapter. Note that contingency, engineering, and oversight has been included in each of the distribution system phases as shown in Appendix E so the numbers presented in this table will vary from the phase numbers presented in Table 12.

**Table 14 - Overall Improvement Cost Summary**

| Description | | Cost |
|---|---|---|
| Distribution System | Phase I | $ 2,355,303 |
| | Phase II | $ 1,968,529 |
| | Phase III | $ 1,829,493 |
| | Phase IV | $ 2,525,947 |
| | Phase V | $ 1,478,026 |
| | Phase VI | $ 632,500 |
| Voluntary Metering | | $ 1,000,000 |
| Remaining Metering | | $ 2,709,983 |
| Backup Power | | $ 80,000 |
| **Total** | | **$ 14,579,783** |

# IV. Implementation / Funding

## A. Rate Structure

As described under "Financial Status" above, the current combined water and sewer rate is low relative to the target rate, as assigned by the Department of Commerce. Thus, the opportunity for financial assistance from the state of Montana TSEP and CDBG grant programs is very limited until the combined water and sewer rate actually exceeds the target rate. The absence of system-wide metering is also another deterrent for funding from these programs, plus USDA Rural Development (grant/loan). Therefore, for the scope of this report, no TSEP, RD, or CDBG grant funds are included in the example funding scenarios.

## B. Grant Applications

The widespread groundwater contamination resulting from decades of mining operations has placed ADLC in a position of eligibility for Natural Resource Development (NRD) funds for work associated with conservation and/or utilization of the limited supplies of water available to the community. As a result of the widespread groundwater contamination, the available alternatives for development of additional supply are severely limited. Therefore, efforts to conserve and efficiently utilize the current available supply are of great importance.

## V. Works Cited


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Appendix A - Montana Department of Commerce Census Data

Appendix B – Water Use Data

Appendix C - ADLC 2011 Budget / Expense Reports

Appendix D – Department of Commerce Published Target Rate Information

Appendix E- Detailed Distribution System Improvements Cost Estimate

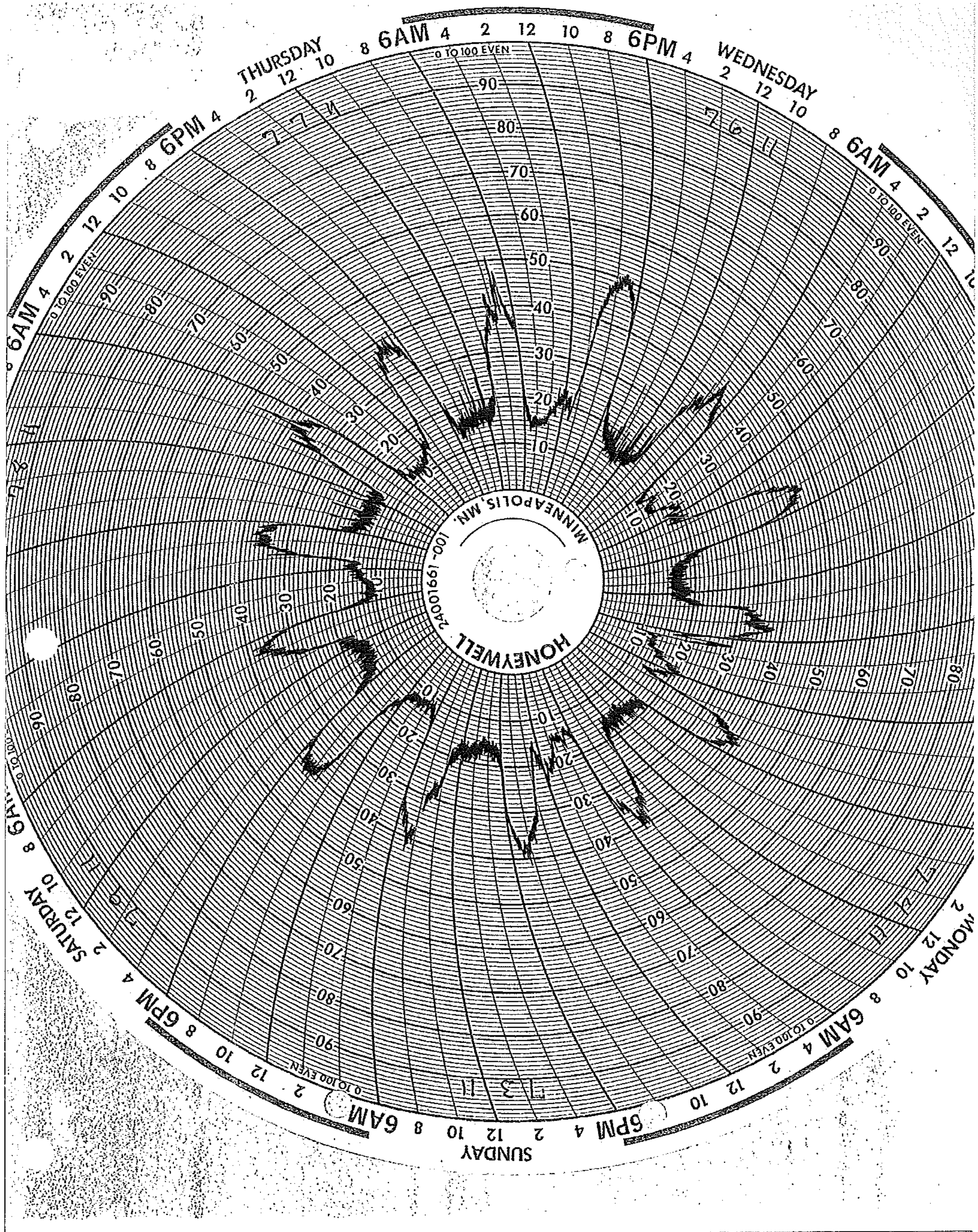
# Appendix A

# CENSUS 2010 - STATE and COUNTY POPULATION SUMMARY

| NAME | Geography Type | County | Census 2010 Total Population | 2010 Rank | Census 2000 Total Population | # Change 2010 to 2000 | % Change 2010 to 2000 | 2000 Rank | Census 1990 Total Population |
|---|---|---|---|---|---|---|---|---|---|
| Montana | State | All | 989,415 | -- | 902,195 | 87,220 | 9.7% | -- | 799,065 |
| | | | | | | | | | |
| Beaverhead County, Montana | County | Beaverhead County, Montana | 9,246 | 23 | 9,202 | 44 | 0.5% | 24 | 8,424 |
| Big Horn County, Montana | County | Big Horn County, Montana | 12,865 | 14 | 12,671 | 194 | 1.5% | 14 | 11,337 |
| Blaine County, Montana | County | Blaine County, Montana | 6,491 | 30 | 7,009 | -518 | -7.4% | 29 | 6,728 |
| Broadwater County, Montana | County | Broadwater County, Montana | 5,612 | 34 | 4,385 | 1,227 | 28.0% | 37 | 3,318 |
| Carbon County, Montana | County | Carbon County, Montana | 10,078 | 20 | 9,552 | 526 | 5.5% | 21 | 8,080 |
| Carter County, Montana | County | Carter County, Montana | 1,160 | 52 | 1,360 | -200 | -14.7% | 50 | 1,503 |
| Cascade County, Montana | County | Cascade County, Montana | 81,327 | 5 | 80,357 | 970 | 1.2% | 3 | 77,691 |
| Chouteau County, Montana | County | Chouteau County, Montana | 5,813 | 33 | 5,970 | -157 | -2.6% | 33 | 5,452 |
| Custer County, Montana | County | Custer County, Montana | 11,699 | 15 | 11,696 | 3 | 0.0% | 16 | 11,697 |
| Daniels County, Montana | County | Daniels County, Montana | 1,751 | 47 | 2,017 | -266 | -13.2% | 46 | 2,266 |
| Dawson County, Montana | County | Dawson County, Montana | 8,966 | 26 | 9,059 | -93 | -1.0% | 25 | 9,505 |
| Deer Lodge County, Montana | County | Deer Lodge County, Montana | 9,298 | 22 | 9,417 | -119 | -1.3% | 22 | 10,356 |
| Fallon County, Montana | County | Fallon County, Montana | 2,890 | 42 | 2,837 | 53 | 1.9% | 41 | 3,103 |
| Fergus County, Montana | County | Fergus County, Montana | 11,586 | 16 | 11,893 | -307 | -2.6% | 15 | 12,083 |
| Flathead County, Montana | County | Flathead County, Montana | 90,928 | 3 | 74,471 | 16,457 | 22.1% | 4 | 59,218 |
| Gallatin County, Montana | County | Gallatin County, Montana | 89,513 | 4 | 67,831 | 21,682 | 32.0% | 5 | 50,463 |
| Garfield County, Montana | County | Garfield County, Montana | 1,206 | 50 | 1,279 | -73 | -5.7% | 51 | 1,589 |
| Glacier County, Montana | County | Glacier County, Montana | 13,399 | 13 | 13,247 | 152 | 1.1% | 13 | 12,121 |
| Golden Valley County, Montana | County | Golden Valley County, Montana | 884 | 54 | 1,042 | -158 | -15.2% | 54 | 912 |
| Granite County, Montana | County | Granite County, Montana | 3,079 | 41 | 2,830 | 249 | 8.8% | 42 | 2,548 |
| Hill County, Montana | County | Hill County, Montana | 16,096 | 11 | 16,673 | -577 | -3.5% | 11 | 17,654 |
| Jefferson County, Montana | County | Jefferson County, Montana | 11,406 | 18 | 10,049 | 1,357 | 13.5% | 19 | 7,939 |
| Judith Basin County, Montana | County | Judith Basin County, Montana | 2,072 | 45 | 2,329 | -257 | -11.0% | 43 | 2,282 |
| Lake County, Montana | County | Lake County, Montana | 28,746 | 9 | 26,507 | 2,239 | 8.4% | 9 | 21,041 |
| Lewis and Clark County, Montana | County | Lewis and Clark County, Montana | 63,395 | 6 | 55,716 | 7,679 | 13.8% | 6 | 47,495 |
| Liberty County, Montana | County | Liberty County, Montana | 2,339 | 43 | 2,158 | 181 | 8.4% | 45 | 2,295 |
| Lincoln County, Montana | County | Lincoln County, Montana | 19,687 | 10 | 18,837 | 850 | 4.5% | 10 | 17,481 |
| Madison County, Montana | County | Madison County, Montana | 7,691 | 27 | 6,851 | 840 | 12.3% | 30 | 5,989 |
| McCone County, Montana | County | McCone County, Montana | 1,734 | 49 | 1,977 | -243 | -12.3% | 47 | 2,276 |
| Meagher County, Montana | County | Meagher County, Montana | 1,891 | 46 | 1,932 | -41 | -2.1% | 48 | 1,819 |
| Mineral County, Montana | County | Mineral County, Montana | 4,223 | 38 | 3,884 | 339 | 8.7% | 39 | 3,315 |
| Missoula County, Montana | County | Missoula County, Montana | 109,299 | 2 | 95,802 | 13,497 | 14.1% | 2 | 78,687 |
| Musselshell County, Montana | County | Musselshell County, Montana | 4,538 | 36 | 4,497 | 41 | 0.9% | 36 | 4,106 |
| Park County, Montana | County | Park County, Montana | 15,636 | 12 | 15,694 | -58 | -0.4% | 12 | 14,484 |
| Petroleum County, Montana | County | Petroleum County, Montana | 494 | 56 | 493 | 1 | 0.2% | 56 | 519 |
| Phillips County, Montana | County | Phillips County, Montana | 4,253 | 37 | 4,601 | -348 | -7.6% | 35 | 5,163 |
| Pondera County, Montana | County | Pondera County, Montana | 6,153 | 31 | 6,424 | -271 | -4.2% | 32 | 6,433 |
| Powder River County, Montana | County | Powder River County, Montana | 1,743 | 48 | 1,858 | -115 | -6.2% | 49 | 2,090 |
| Powell County, Montana | County | Powell County, Montana | 7,027 | 29 | 7,180 | -153 | -2.1% | 28 | 6,620 |
| Prairie County, Montana | County | Prairie County, Montana | 1,179 | 51 | 1,199 | -20 | -1.7% | 52 | 1,383 |
| Ravalli County, Montana | County | Ravalli County, Montana | 40,212 | 7 | 36,070 | 4,142 | 11.5% | 7 | 25,010 |
| Richland County, Montana | County | Richland County, Montana | 9,746 | 21 | 9,667 | 79 | 0.8% | 20 | 10,716 |
| Roosevelt County, Montana | County | Roosevelt County, Montana | 10,425 | 19 | 10,620 | -195 | -1.8% | 17 | 10,999 |
| Rosebud County, Montana | County | Rosebud County, Montana | 9,233 | 24 | 9,383 | -150 | -1.6% | 23 | 10,505 |
| Sanders County, Montana | County | Sanders County, Montana | 11,413 | 17 | 10,227 | 1,186 | 11.6% | 18 | 8,669 |
| Sheridan County, Montana | County | Sheridan County, Montana | 3,384 | 40 | 4,105 | -721 | -17.6% | 38 | 4,732 |
| Silver Bow County, Montana | County | Silver Bow County, Montana | 34,200 | 8 | 34,606 | -406 | -1.2% | 8 | 33,941 |
| Stillwater County, Montana | County | Stillwater County, Montana | 9,117 | 25 | 8,195 | 922 | 11.3% | 26 | 6,536 |
| Sweet Grass County, Montana | County | Sweet Grass County, Montana | 3,651 | 39 | 3,609 | 42 | 1.2% | 40 | 3,154 |
| Teton County, Montana | County | Teton County, Montana | 6,073 | 32 | 6,445 | -372 | -5.8% | 31 | 6,271 |
| Toole County, Montana | County | Toole County, Montana | 5,324 | 35 | 5,267 | 57 | 1.1% | 34 | 5,046 |
| Treasure County, Montana | County | Treasure County, Montana | 718 | 55 | 861 | -143 | -16.6% | 55 | 874 |
| Valley County, Montana | County | Valley County, Montana | 7,369 | 28 | 7,675 | -306 | -4.0% | 27 | 8,239 |
| Wheatland County, Montana | County | Wheatland County, Montana | 2,168 | 44 | 2,259 | -91 | -4.0% | 44 | 2,246 |
| Wibaux County, Montana | County | Wibaux County, Montana | 1,017 | 53 | 1,068 | -51 | -4.8% | 53 | 1,191 |
| Yellowstone County, Montana | County | Yellowstone County | 147,972 | 1 | 129,352 | 18,620 | 14.4% | 1 | 113,419 |

Source: U.S. Census Bureau, Census 2010 PL 94-171, March 2011; Census 2000 Summary File 1, 2001
Prepared by the Census and Economic Information Center, Montana Department of Commerce

# Appendix B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MONDAY
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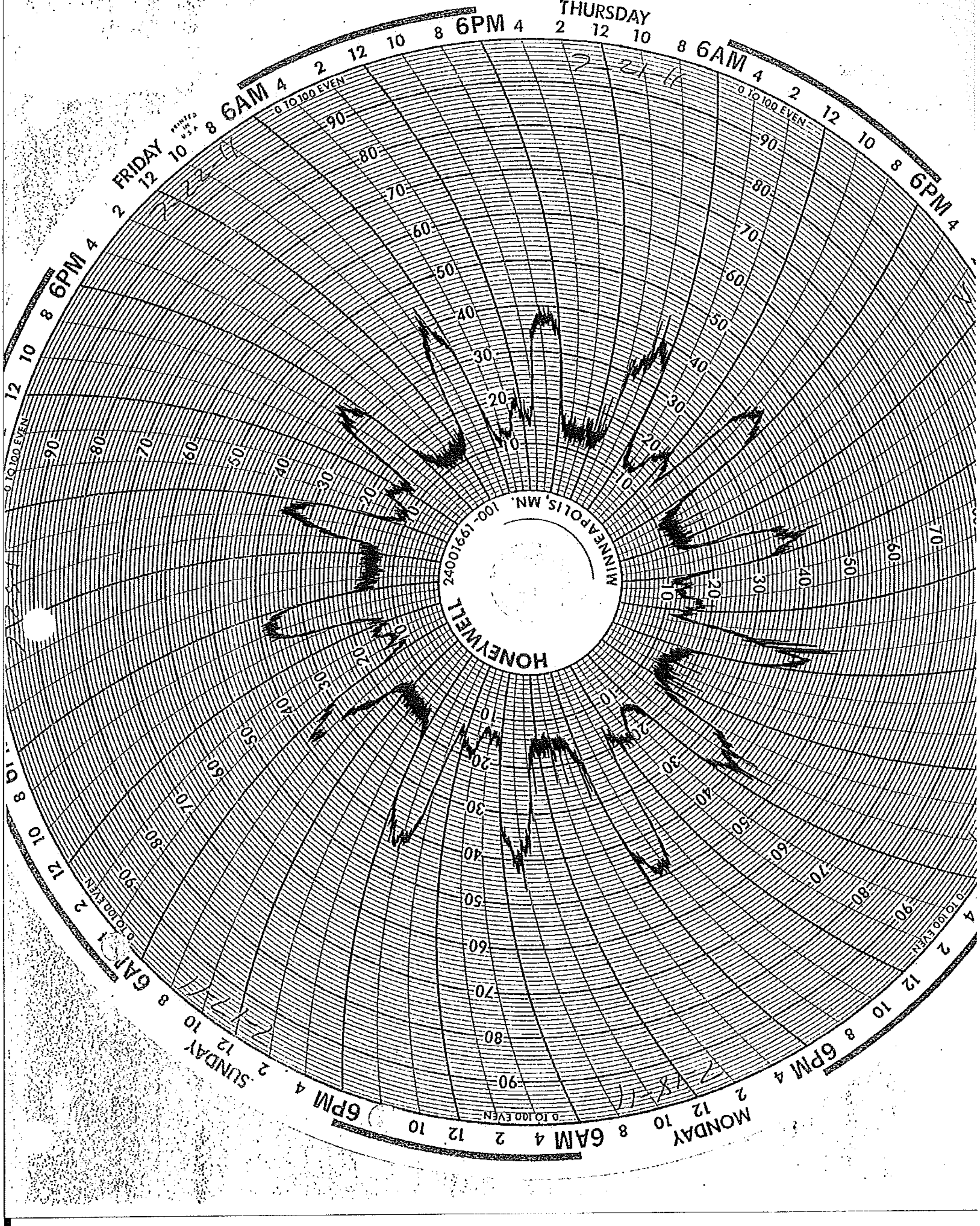
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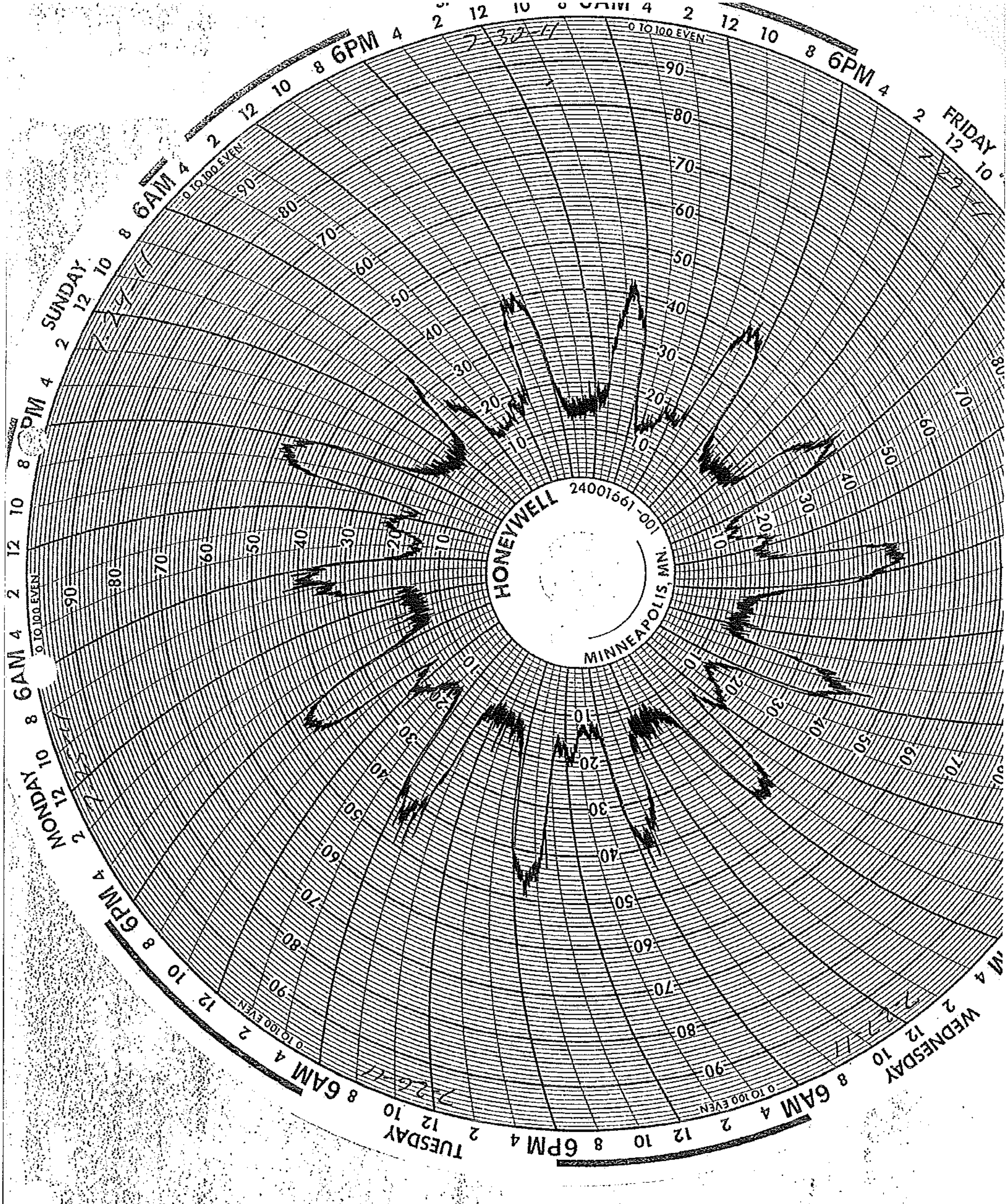
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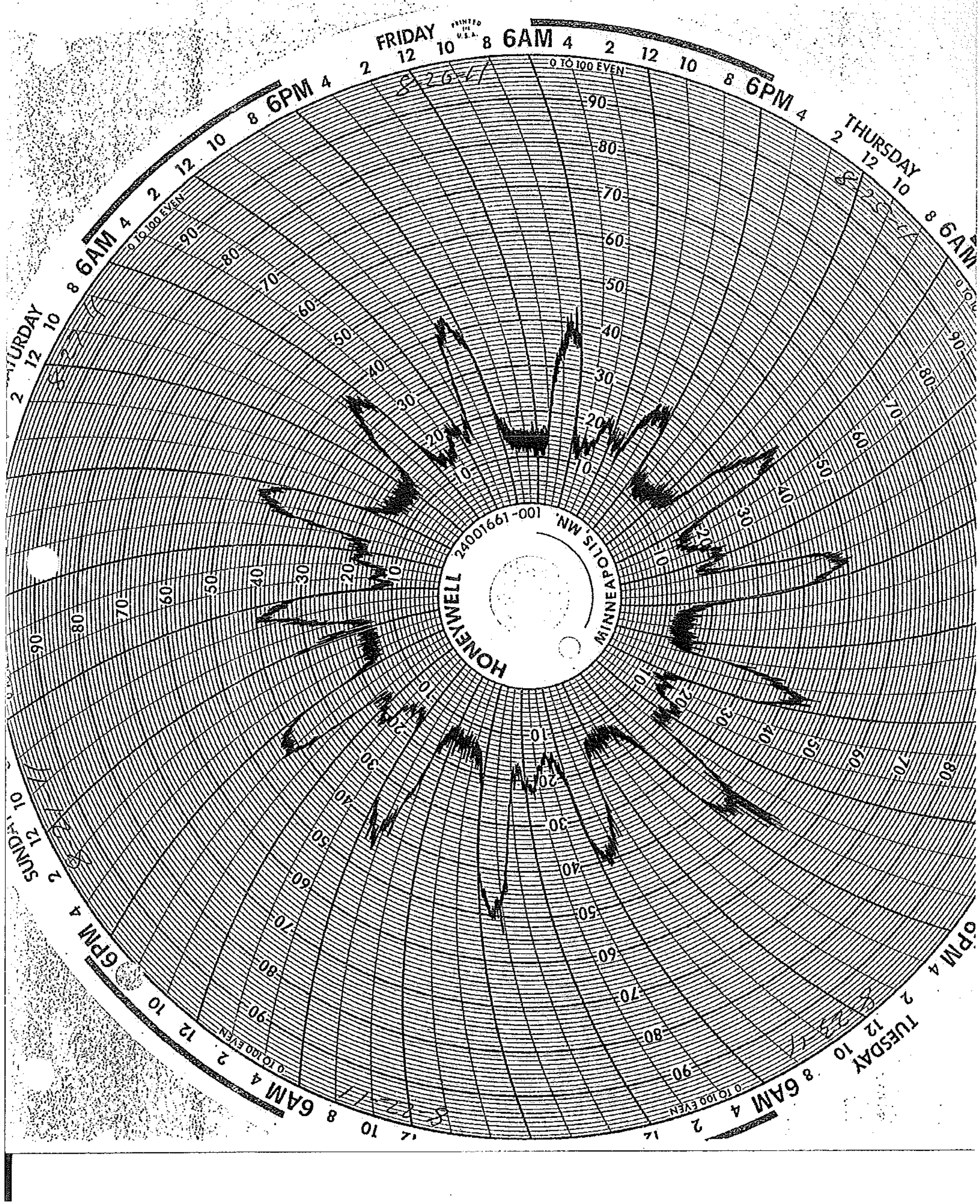
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8-26-11

JUNE
2012

| | TIME | CONTROL BLDG. | METER DPS | TANK LEVEL | GAL. PUMPED | GAL. USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 696297 | 845410 | 19.76 | 2.41 | 2.12 |
| 2 | 8:00 | 699151 | 847703 | 20.11 | 2.86 | 2.29 |
| 3 | 8:00 | 701896 | 849876 | 21.29 | 2.74 | 2.17 |
| 4 | 8:00 | 704656 | 852249 | 22.00 | 2.76 | 2.37 |
| 5 | 8:00 | 707414 | 854826 | 20.58 | 2.75 | 2.57 |
| 6 | 8:00 | 710181 | 857026 | 22.94 | 2.76 | 2.25 |
| 7 | 8:00 | 712686 | 859336 | 19.88 | 2.50 | 2.26 |
| 8 | 8:00 | 715470 | 861732 | 20.70 | 2.79 | 2.40 |
| 9 | 8:00 | 718232 | 863965 | 23.05 | 2.76 | 2.23 |
| 10 | 8:00 | 720404 | 866016 | 19.29 | 2.17 | 2.05 |
| 11 | 8:00 | 723161 | 868248 | 19.29 | 2.75 | 2.23 |
| 12 | 8:00 | 726064 | 870617 | 19.05 | 2.90 | 2.36 |
| 13 | 8:00 | 729143 | 873092 | 19.52 | 3.07 | 2.47 |
| 14 | 8:00 | 731913 | 875400 | 21.17 | 2.77 | 2.30 |
| 15 | 8:00 | 735007 | 878164 | 20.46 | 3.09 | 2.76 |
| 16 | 8:00 | 738121 | 880720 | 20.35 | 3.12 | 2.56 |
| 17 | 8:00 | 741415 | 883434 | 20.23 | 3.29 | 2.71 |
| 18 | 8:00 | 744646 | 886229 | 19.17 | 3.23 | 2.79 |
| 19 | 8:00 | 747729 | 888759 | 19.17 | 3.08 | 2.53 |
| 20 | 8:00 | 750894 | 891363 | 19.17 | 3.16 | 2.60 |
| 21 | 8:00 | 754289 | 894381 | 19.29 | 3.39 | 3.02 |
| 22 | 8:00 | 757911 | 897636 | 19.17 | 3.62 | 3.25 |
| 23 | 8:00 | 761411 | 900752 | 19.29 | 3.50 | 3.12 |
| 24 | 8:00 | 765048 | 904039 | 19.05 | 3.63 | 3.28 |
| 25 | 8:00 | 769393 | 907987 | 18.94 | 4.34 | 3.94 |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |

May 2012

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 615807 | 778555 | 20.58 | 1.98 | 1.54 |
| 2 | 8:00 | 617779 | 780097 | 20.46 | 1.97 | 1.56 |
| 3 | 8:00 | 619741 | 781631 | 20.34 | 1.96 | 1.53 |
| 4 | 8:00 | 621668 | 783152 | 20.11 | 1.92 | 1.52 |
| 5 | 8:00 | 623524 | 784573 | 20.00 | 1.86 | 1.42 |
| 6 | 8:00 | 625440 | 786034 | 20.23 | 1.91 | 1.46 |
| 7 | 8:00 | 627471 | 787606 | 20.46 | 2.03 | 1.57 |
| 8 | 8:00 | 629625 | 789292 | 20.82 | 2.15 | 1.68 |
| 9 | 8:00 | 632250 | 791343 | 22.00 | 2.62 | 2.05 |
| 10 | 8:00 | 634648 | 793494 | 19.76 | 2.39 | 2.15 |
| 11 | 8:00 | 637169 | 795340 | 22.59 | 2.52 | 1.84 |
| 12 | 8:00 | 639550 | 797297 | 23.29 | 2.39 | 1.95 |
| 13 | 8:00 | 642003 | 799544 | 19.88 | 2.45 | 2.24 |
| 14 | 8:00 | 645289 | 802310 | 21.29 | 3.28 | 2.76 |
| 15 | 8:00 | 648579 | 805168 | 20.11 | 3.29 | 2.85 |
| 16 | 8:00 | 652143 | 808072 | 19.06 | 3.56 | 2.90 |
| 17 | 8:00 | 655454 | 810996 | 19.29 | 3.31 | 2.92 |
| 18 | 8:00 | 658468 | 813517 | 19.05 | 3.01 | 2.52 |
| 19 | 8:00 | 661556 | 816011 | 19.41 | 3.09 | 2.50 |
| 20 | 8:00 | 664568 | 818483 | 19.29 | 3.01 | 2.47 |
| 21 | 8:00 | 667941 | 821469 | 19.29 | 3.37 | 2.98 |
| 22 | 8:00 | 671315 | 824199 | 19.99 | 3.37 | 2.73 |
| 23 | 8:00 | 674079 | 826508 | 21.64 | 2.76 | 2.30 |
| 24 | 8:00 | 676563 | 828807 | 19.88 | 2.48 | 2.29 |
| 25 | 8:00 | 679348 | 831122 | 21.64 | 2.78 | 2.21 |
| 26 | 8:00 | 681493 | 833032 | 19.64 | 2.15 | 1.91 |
| 27 | 8:00 | 683801 | 834859 | 21.05 | 2.31 | 1.82 |
| 28 | 8:00 | 686324 | 836766 | 23.06 | 2.52 | 1.90 |
| 29 | 8:00 | 688520 | 838778 | 20.00 | 2.19 | 2.01 |
| 30 | 8:00 | 691267 | 841015 | 22.23 | 2.74 | 2.23 |
| 31 | 8:00 | 693883 | 843298 | 20.23 | 2.61 | 2.28 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1. | 8:00 | 560476 | 736372 | 20.23 | 1.09 | 1.24 |
| Apr 2012 | 2. | 8:00 | 562233 | 737718 | 20.00 | 1.75 | 1.34 |
| | 3. | 8:00 | 564001 | 739048 | 20.11 | 1.76 | 1.33 |
| | 4. | 8:00 | 565736 | 740349 | 20.11 | 1.73 | 1.30 |
| | 5. | 8:00 | 567476 | 741650 | 20.23 | 1.74 | 1.30 |
| | 6. | 8:00 | 569207 | 742940 | 20.23 | 1.73 | 1.29 |
| | 7. | 8:00 | 570924 | 744224 | 20.55 | 1.72 | 1.28 |
| | 8. | 8:00 | 572622 | 745512 | 20.11 | 1.69 | 1.28 |
| | 9. | 8:00 | 574341 | 746802 | 20.00 | 1.71 | 1.29 |
| | 10. | 8:00 | 576106 | 748113 | 20.11 | 1.76 | 1.31 |
| | 11. | 8:00 | 577851 | 749412 | 20.23 | 1.74 | 1.29 |
| | 12. | 8:00 | 579600 | 750711 | 20.35 | 1.74 | 1.29 |
| | 13. | 8:00 | 581346 | 752010 | 20.46 | 1.74 | 1.30 |
| | 14. | 8:00 | 583055 | 753295 | 20.35 | 1.71 | 1.28 |
| | 15. | 8:00 | 584770 | 754598 | 20.11 | 1.71 | 1.30 |
| | 16. | 8:00 | 586562 | 755944 | 20.23 | 1.79 | 1.34 |
| | 17. | 8:00 | 588330 | 757260 | 20.23 | 1.76 | 1.31 |
| | 18. | 8:00 | 590077 | 758573 | 20.23 | 1.74 | 1.31 |
| | 19. | 8:00 | 591842 | 759893 | 20.35 | 1.76 | 1.32 |
| | 20. | 8:00 | 593622 | 761233 | 20.35 | 1.78 | 1.34 |
| | 21. | 8:00 | 595418 | 762604 | 20.35 | 1.79 | 1.37 |
| | 22. | 8:00 | 597494 | 764165 | 20.70 | 2.07 | 1.56 |
| | 23. | 8:00 | 599683 | 765882 | 20.70 | 2.18 | 1.71 |
| | 24. | 8:00 | 601772 | 767526 | 20.70 | 2.09 | 1.84 |
| | 25. | 8:00 | 603814 | 769156 | 20.23 | 2.04 | 1.63 |
| | 26. | 8:00 | 606410 | 770957 | 23.88 | 2.59 | 1.80 |
| | 27. | 8:00 | 608150 | 772516 | 21.41 | 1.74 | 1.55 |
| | 28. | 8:00 | 609966 | 773969 | 20.70 | 1.81 | 1.45 |
| | 29. | 8:00 | 611787 | 775417 | 20.11 | 1.82 | 1.44 |
| | 30. | 8:00 | 613824 | 776985 | 20.46 | 2.03 | 1.56 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 8:00 | 507774 | 696516 | 20.58 | 1.71 | 1.27 |
| MAR | 2 | 8:00 | 509514 | 697804 | 20.82 | 1.74 | 1.28 |
| 2012 | 3 | 8:00 | 511144 | 699037 | 20.58 | 1.63 | 1.23 |
| | 4 | 8:00 | 512923 | 700304 | 20.46 | 1.77 | 1.26 |
| | 5 | 8:00 | 514700 | 701628 | 20.11 | 1.77 | 1.32 |
| | 6 | 8:00 | 516455 | 702926 | 20.23 | 1.75 | 1.29 |
| | 7 | 8:00 | 518181 | 704229 | 20.23 | 1.73 | 1.30 |
| | 8 | 8:00 | 519894 | 705530 | 20.11 | 1.71 | 1.30 |
| | 9 | 8:00 | 521617 | 706807 | 20.23 | 1.72 | 1.27 |
| | 10 | 8:00 | 523289 | 708054 | 20.11 | 1.67 | 1.25 |
| | 11 | 8:00 DST | 525217 | 709278 | 20.82 | 1.72 | 1.22 |
| | 12 | 8:00 | 526675 | 710597 | 20.11 | 1.65 | 1.31 |
| | 13 | 8:00 | 528409 | 711889 | 20.35 | 1.73 | 1.29 |
| | 14 | 8:00 | 530104 | 713176 | 20.35 | 1.69 | 1.28 |
| | 15 | 8:00 | 531791 | 714450 | 20.35 | 1.68 | 1.27 |
| | 16 | 8:00 | 533492 | 715722 | 20.58 | 1.70 | 1.27 |
| | 17 | 8:00 | 535203 | 716997 | 20.70 | 1.71 | 1.27 |
| | 18 | 8:00 | 536957 | 718266 | 21.52 | 1.75 | 1.26 |
| | 19 | 8:00 | 538639 | 719556 | 21.76 | 1.68 | 1.29 |
| | 20 | 8:00 | 540303 | 720846 | 21.52 | 1.67 | 1.29 |
| | 21 | 8:00 | 541977 | 722138 | 21.29 | 1.67 | 1.29 |
| | 22 | 8:00 | 543660 | 723435 | 21.05 | 1.68 | 1.29 |
| | 23 | 8:00 | 545323 | 724723 | 20.70 | 1.66 | 1.28 |
| | 24 | 8:00 | 547026 | 725983 | 20.93 | 1.70 | 1.26 |
| | 25 | 8:00 | 548797 | 727278 | 21.64 | 1.77 | 1.29 |
| | 26 | 8:00 | 550602 | 728610 | 22.23 | 1.80 | 1.33 |
| | 27 | 8:00 | 552290 | 729915 | 21.88 | 1.58 | 1.30 |
| | 28 | 8:00 | 553984 | 731218 | 21.64 | 1.69 | 1.30 |
| | 29 | 8:00 | 555661 | 732516 | 21.29 | 1.68 | 1.30 |
| | 30 | 8:00 | 557319 | 733820 | 21.17 | 1.65 | 1.31 |
| | 31 | 8:00 | 558380 | 735124 | 15.05 | 1.07 | 1.30 |

FEB 2012

| | TIME | CONTROL BLD | METER DISCHARGE | TANK LEVEL | GAL PUMPED | GAL USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 458113 | 659340 | 20.11 | 1.70 | 1.28 |
| 2 | 8:00 | 459874 | 660638 | 20.35 | 1.76 | 1.29 |
| 3 | 8:00 | 461594 | 661925 | 20.46 | 1.72 | 1.28 |
| 4 | 8:00 | 463262 | 663177 | 20.46 | 1.67 | 1.25 |
| 5 | 8:00 | 464926 | 664445 | 20.11 | 1.66 | 1.26 |
| 6 | 8:00 | 466674 | 665745 | 20.11 | 1.74 | 1.30 |
| 7 | 8:00 | 468402 | 667033 | 20.35 | 1.72 | 1.28 |
| 8 | 8:00 | 470120 | 668327 | 20.35 | 1.71 | 1.29 |
| 9 | 8:00 | 471850 | 669623 | 20.46 | 1.73 | 1.29 |
| 10 | 8:00 | 473583 | 670907 | 20.46 | 1.73 | 1.28 |
| 11 | 8:00 | 475245 | 672152 | 20.46 | 1.66 | 1.25 |
| 12 | 8:00 | 476913 | 673415 | 20.23 | 1.66 | 1.26 |
| 13 | 8:00 | 478672 | 674733 | 20.35 | 1.75 | 1.31 |
| 14 | 8:00 | 480390 | 676006 | 20.46 | 1.72 | 1.27 |
| 15 | 8:00 | 482117 | 677290 | 20.58 | 1.72 | 1.28 |
| 16 | 8:00 | 483827 | 678524 | 20.58 | 1.71 | 1.23 |
| 17 | 8:00 | 485541 | 679854 | 20.58 | 1.71 | 1.33 |
| 18 | 8:00 | 487217 | 681103 | 20.58 | 1.67 | 1.25 |
| 19 | 8:00 | 488896 | 682373 | 20.35 | 1.67 | 1.27 |
| 20 | 8:00 | 490659 | 683703 | 20.46 | 1.76 | 1.33 |
| 21 | 8:00 | 492368 | 685000 | 20.23 | 1.70 | 1.29 |
| 22 | 8:00 | 494118 | 686290 | 20.46 | 1.75 | 1.29 |
| 23 | 8:00 | 495840 | 687585 | 20.58 | 1.73 | 1.29 |
| 24 | 8:00 | 497547 | 688861 | 20.58 | 1.70 | 1.28 |
| 25 | 8:00 | 499190 | 690099 | 20.35 | 1.65 | 1.23 |
| 26 | 8:00 | 500902 | 691386 | 20.34 | 1.71 | 1.28 |
| 27 | 8:00 | 502665 | 692710 | 20.46 | 1.76 | 1.32 |
| 28 | 8:00 | 504374 | 693984 | 20.46 | 1.71 | 1.27 |
| 29 | 8:00 | 506061 | 695244 | 20.46 | 1.68 | 1.26 |

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|---|---|---|---|---|---|---|
| 2. | 8:00 | 407722 | 620888 | 20.82 | 1.53 | 1.23 |
| JAN 2012 3. | 8:00 | 409706 | 622180 | 23.46 | 1.98 | 1.29 |
| 4. | 8:00 | 411322 | 623424 | 23.17 | 1.61 | 1.24 |
| 5. | 8:00 | 412913 | 624669 | 22.46 | 1.59 | 1.24 |
| 6. | 8:00 | 414500 | 625949 | 21.64 | 1.68 | 1.28 |
| 7. | 8:00 | 416090 | 627188 | 21.29 | 1.59 | 1.24 |
| 8. | 8:00 | 417786 | 628467 | 21.64 | 1.69 | 1.27 |
| 9. | 8:00 | 419506 | 629789 | 21.76 | 1.72 | 1.32 |
| 10. | 8:00 | 421133 | 631068 | 21.29 | 1.62 | 1.27 |
| 11. | 8:00 | 422737 | 632353 | 20.70 | 1.60 | 1.29 |
| 12. | 8:00 | 424353 | 633669 | 20.11 | 1.62 | 1.31 |
| 13. | 8:00 | 426024 | 634986 | 20.00 | 1.67 | 1.32 |
| 14. | 8:00 | 427664 | 636209 | 20.23 | 1.64 | 1.22 |
| 15. | 8:00 | 429362 | 637446 | 20.94 | 1.69 | 1.23 |
| 16. | 8:00 | 431067 | 638754 | 21.06 | 1.70 | 1.30 |
| 17. | 8:00 | 432772 | 640076 | 21.06 | 1.70 | 1.32 |
| 18. | 8:00 | 434406 | 641374 | 20.46 | 1.63 | 1.30 |
| 19. | 8:00 | 436056 | 642640 | 20.23 | 1.65 | 1.26 |
| 20. | 8:00 | 437728 | 643917 | 20.00 | 1.67 | 1.27 |
| 21. | 8:00 | 439400 | 645168 | 20.11 | 1.68 | 1.27 |
| 22. | 8:00 | 441142 | 646442 | 20.82 | 1.74 | 1.27 |
| 23. | 8:00 | 442861 | 647796 | 20.46 | 1.71 | 1.35 |
| 24. | 8:00 | 444551 | 649098 | 20.35 | 1.69 | 1.30 |
| 25. | 8:00 | 446235 | 650378 | 20.23 | 1.68 | 1.28 |
| 26. | 8:00 | 447931 | 651657 | 20.23 | 1.70 | 1.28 |
| 27. | 8:00 | 449616 | 652941 | 20.23 | 1.68 | 1.29 |
| 28. | 8:00 | 451247 | 654185 | 20.00 | 1.63 | 1.24 |
| 29. | 8:00 | 452958 | 655431 | 20.70 | 1.71 | 1.24 |
| 30. | 8:00 | 454757 | 656760 | 20.82 | 1.79 | 1.32 |
| 31. | 8:00 | 456409 | 658051 | 20.23 | 1.65 | 1.29 |

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|---|---|---|---|---|---|---|---|
| DEC 2011 | 1 | 8:00 | 354695 | 580799 | 20.11 | 1.67 | 1.25 |
| | 2 | 8:00 | 356350 | 582045 | 20.11 | 1.66 | 1.25 |
| | 3 | 8:00 | 358023 | 583274 | 20.46 | 1.67 | 1.23 |
| | 4 | 8:00 | 359730 | 584516 | 21.17 | 1.70 | 1.24 |
| | 5 | 8:00 | 361438 | 585815 | 21.40 | 1.70 | 1.29 |
| | 6 | 8:00 | 363120 | 587113 | 21.29 | 1.68 | 1.29 |
| | 7 | 8:00 | 364798 | 588408 | 21.17 | 1.67 | 1.29 |
| | 8 | 8:00 | 366419 | 589680 | 20.70 | 1.62 | 1.28 |
| | 9 | 8:00 | 368070 | 590951 | 20.46 | 1.66 | 1.27 |
| | 10 | 8:00 | 369727 | 592185 | 20.70 | 1.65 | 1.23 |
| | 11 | 8:00 | 371448 | 593427 | 21.41 | 1.73 | 1.24 |
| | 12 | 8:00 | 373201 | 594756 | 21.64 | 1.75 | 1.32 |
| | 13 | 8:00 | 374828 | 596030 | 21.17 | 1.62 | 1.27 |
| | 14 | 8:00 | 376455 | 597294 | 20.82 | 1.62 | 1.26 |
| | 15 | 8:00 | 378085 | 598542 | 20.58 | 1.63 | 1.24 |
| | 16 | 8:00 | 379726 | 599795 | 20.35 | 1.64 | 1.25 |
| | 17 | 8:00 | 381380 | 601003 | 20.70 | 1.66 | 1.21 |
| | 18 | 8:00 | 383068 | 602225 | 21.30 | 1.68 | 1.22 |
| | 19 | 8:00 | 384800 | 603526 | 21.64 | 1.73 | 1.30 |
| | 20 | 8:00 | 386397 | 604748 | 21.29 | 1.59 | 1.22 |
| | 21 | 8:00 | 388010 | 605995 | 20.94 | 1.61 | 1.24 |
| | 22 | 8:00 | 389633 | 607221 | 20.94 | 1.62 | 1.22 |
| | 23 | 8:00 | 391302 | 608478 | 21.05 | 1.66 | 1.25 |
| | 24 | 8:00 | 392972 | 609708 | 21.29 | 1.67 | 1.23 |
| | 25 | 8:00 | 394695 | 610954 | 22.00 | 1.72 | 1.24 |
| | 26 | 8:00 | 396250 | 612173 | 21.76 | 1.56 | 1.22 |
| | 27 | 8:00 | 397865 | 613456 | 20.94 | 1.61 | 1.28 |
| | 28 | 8:00 | 399487 | 614704 | 20.46 | 1.62 | 1.24 |
| | 29 | 8:00 | 401136 | 615949 | 20.23 | 1.65 | 1.24 |
| | 30 | 8:00 | 402787 | 617175 | 20.23 | 1.65 | 1.23 |
| | 31 | 8:00 | 404451 | 618403 | 20.35 | 1.67 | 1.23 |

| NOV 2011 | TIME | CONTROL BUILDING | METER DISCHARGE | TANK LEVEL | GAL. PUMPED | GAL. USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 304612 | 543580 | 20.11 | 1.66 | 1.25 |
| 2 | 8:00 | 306305 | 544851 | 20.23 | 1.69 | 1.27 |
| 3 | 8:00 | 307975 | 546108 | 20.00 | 1.67 | 1.25 |
| 4 | 8:00 | 309647 | 547351 | 20.00 | 1.67 | 1.25 |
| 5 | 8:00 | 311355 | 548604 | 20.23 | 1.71 | 1.25 |
| 6 | 8:00 STANDARD TIME | 313078 | 549891 | 20.23 | 1.72 | 1.28 |
| 7 | 8:00 | 314816 | 551212 | 20.11 | 1.73 | 1.32 |
| 8 | 8:00 | 316467 | 552440 | 20.11 | 1.65 | 1.22 |
| 9 | 8:00 | 318101 | 553651 | 20.11 | 1.63 | 1.21 |
| 10 | 8:00 | 319734 | 554854 | 20.23 | 1.63 | 1.20 |
| 11 | 8:00 | 321330 | 556039 | 20.06 | 1.60 | 1.18 |
| 12 | 8:00 | 322946 | 557206 | 20.23 | 1.61 | 1.17 |
| 13 | 8:00 | 324573 | 558385 | 20.35 | 1.63 | 1.18 |
| 14 | 8:00 | 326225 | 559617 | 20.24 | 1.65 | 1.22 |
| 15 | 8:00 | 327849 | 560838 | 20.11 | 1.62 | 1.22 |
| 16 | 8:00 | 329495 | 562075 | 20.00 | 1.64 | 1.23 |
| 17 | 8:00 | 331131 | 563291 | 19.99 | 1.63 | 1.21 |
| 18 | 8:00 | 332828 | 564552 | 20.11 | 1.69 | 1.26 |
| 19 | 8:00 | 334442 | 565759 | 20.11 | 1.62 | 1.20 |
| 20 | 8:00 | 336115 | 566986 | 20.35 | 1.67 | 1.22 |
| 21 | 8:00 | 337829 | 568274 | 20.11 | 1.71 | 1.28 |
| 22 | 8:00 | 339481 | 569500 | 20.11 | 1.65 | 1.22 |
| 23 | 8:00 | 341161 | 570739 | 20.11 | 1.68 | 1.23 |
| 24 | 8:00 | 342835 | 571960 | 20.23 | 1.67 | 1.22 |
| 25 | 8:00 | 344564 | 573231 | 20.35 | 1.72 | 1.27 |
| 26 | 8:00 | 346236 | 574473 | 20.34 | 1.67 | 1.24 |
| 27 | 8:00 | 347941 | 575738 | 20.46 | 1.70 | 1.26 |
| 28 | 8:00 | 349736 | 577025 | 20.70 | 1.79 | 1.28 |
| 29 | 8:00 | 351380 | 578297 | 20.23 | 1.64 | 1.27 |
| 30 | 8:00 | 353034 | 579547 | 20.00 | 1.65 | 1.25 |

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|---|---|---|---|---|---|---|
| Oct 2011 1. | 8:00 | 248763 | 501076 | 21.17 | 2.44 | 1.85 |
| 2. | 8:00 | 250989 | 502924 | 20.35 | 2.22 | 1.84 |
| 3. | 8:00 | 253380 | 504821 | 20.70 | 2.39 | 1.89 |
| 4. | 8:00 | 255600 | 506616 | 20.46 | 2.22 | 1.79 |
| 5. | 8:00 | 257619 | 508229 | 20.11 | 2.01 | 1.61 |
| 6. | 8:00 | 259511 | 509690 | 20.11 | 1.90 | 1.47 |
| 7. | 8:00 | 261383 | 511120 | 20.23 | 1.87 | 1.43 |
| 8. | 8:00 | 263179 | 512499 | 20.11 | 1.79 | 1.33 |
| 9. | 8:00 | 264965 | 513857 | 20.11 | 1.78 | 1.35 |
| 10. | 8:00 | 266812 | 515273 | 20.11 | 1.84 | 1.41 |
| 11. | 8:00 | 268617 | 516632 | 20.23 | 1.80 | 1.35 |
| 12. | 8:00 | 270401 | 517981 | 20.23 | 1.78 | 1.34 |
| 13. | 8:00 | 272131 | 519291 | 20.23 | 1.73 | 1.21 |
| 14. | 8:00 | 273868 | 520604 | 20.23 | 1.73 | 1.31 |
| 15. | 8:00 | 275570 | 521866 | 20.35 | 1.71 | 1.26 |
| 16. | 8:00 | 277219 | 523128 | 19.99 | 1.64 | 1.26 |
| 17. | 8:00 | 278996 | 524469 | 20.11 | 1.77 | 1.34 |
| 18. | 8:00 | 280740 | 525771 | 20.23 | 1.74 | 1.30 |
| 19. | 8:00 | 282471 | 527068 | 20.35 | 1.73 | 1.29 |
| 20. | 8:00 | 284191 | 528342 | 20.46 | 1.72 | 1.28 |
| 21. | 8:00 | 285873 | 529603 | 20.35 | 1.68 | 1.26 |
| 22. | 8:00 | 287542 | 530858 | 20.11 | 1.66 | 1.25 |
| 23. | 8:00 | 289266 | 532119 | 19.99 | 1.72 | 1.26 |
| 24. | 8:00 | 291014 | 533419 | 20.11 | 1.74 | 1.30 |
| 25. | 8:00 | 292721 | 534706 | 20.11 | 1.70 | 1.28 |
| 26. | 8:00 | 294411 | 535971 | 20.11 | 1.69 | 1.26 |
| 27. | 8:00 | 296122 | 537254 | 19.99 | 1.71 | 1.28 |
| 28. | 8:00 | 297844 | 538534 | 20.11 | 1.72 | 1.28 |
| 29. | 8:00 | 299493 | 539749 | 20.11 | 1.65 | 1.21 |
| 30. | 8:00 | 301201 | 541002 | 20.46 | 1.70 | 1.25 |
| 31. | 8:00 | 302949 | 542321 | 20.35 | 1.74 | 1.31 |

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|---|---|---|---|---|---|---|
| SEPT 2011 1 | 8:00 | 157008 | 427083 | 19.29 | 2.53 | 2.38 |
| 2 | 8:00 | 160233 | 429642 | 19.17 | 3.23 | 2.56 |
| 3 | 8:00 | 163638 | 432259 | 19.88 | 3.40 | 2.61 |
| 4 | 8:00 | 166410 | 434827 | 19.06 | 2.77 | 2.56 |
| 5 | 8:00 | 170339 | 437780 | 20.82 | 3.92 | 2.95 |
| 6 | 8:00 | 174055 | 440891 | 19.17 | 3.71 | 3.11 |
| 7 | 8:00 | 178029 | 444014 | 19.88 | 3.97 | 3.12 |
| 8 | 8:00 | 181740 | 447031 | 19.05 | 3.71 | 3.01 |
| 9 | 8:00 | 185229 | 449800 | 19.17 | 3.48 | 2.77 |
| 10 | 8:00 | 188648 | 452488 | 19.17 | 3.42 | 2.68 |
| 11 | 8:00 | 192172 | 455291 | 19.29 | 3.52 | 2.80 |
| 12 | 8:00 | 196154 | 458178 | 22.23 | 3.98 | 3.88 |
| 13 | 8:00 | 199526 | 461053 | 19.76 | 3.37 | 2.87 |
| 14 | 8:00 | 203018 | 463823 | 19.64 | 3.49 | 2.77 |
| 15 | 8:00 | 206151 | 466477 | 20.11 | 3.43 | 2.65 |
| 16 | 8:00 | 209323 | 468859 | 20.23 | 2.87 | 2.38 |
| 17 | 8:00 | 211688 | 470936 | 19.88 | 2.36 | 2.07 |
| 18 | 8:00 | 214428 | 473046 | 21.64 | 2.74 | 2.11 |
| 19 | 8:00 | 216812 | 475289 | 19.76 | 2.38 | 2.24 |
| 20 | 8:00 | 219558 | 477432 | 21.29 | 2.74 | 2.15 |
| 21 | 8:00 | 221879 | 479567 | 19.64 | 2.32 | 2.13 |
| 22 | 8:00 | 224705 | 481788 | 21.05 | 2.82 | 2.22 |
| 23 | 8:00 | 227474 | 484098 | 22.59 | 2.77 | 2.31 |
| 24 | 8:00 | 229802 | 486281 | 19.17 | 2.33 | 2.19 |
| 25 | 8:00 | 232710 | 488515 | 19.41 | 2.90 | 2.23 |
| 26 | 8:00 | 235702 | 490885 | 19.17 | 2.99 | 2.37 |
| 27 | 8:00 | 238523 | 493070 | 19.05 | 2.82 | 2.18 |
| 28 | 8:00 | 241370 | 495261 | 19.17 | 2.84 | 2.19 |
| 29 | 8:00 | 244008 | 497272 | 19.52 | 2.53 | 2.01 |
| 30 | 8:00 | 246327 | 499222 | 20.00 | 2.32 | 1.95 |

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|---|---|---|---|---|---|---|
| Aug 2011 1 | 8:00 | 035429 | 329041 | 19.29 | 3.22 | 2.59 |
| 2 | 8:00 | 039296 | 331869 | 21.88 | 3.86 | 2.82 |
| 3 | 8:00 | 042929 | 334999 | 19.41 | 3.63 | 3.13 |
| 4 | 8:00 | 046820 | 338126 | 19.41 | 3.89 | 3.12 |
| 5 | 8:00 | 050524 | 341000 | 20.58 | 3.70 | 2.87 |
| 6 | 8:00 | 053816 | 343638 | 20.11 | 3.29 | 2.63 |
| 7 | 8:00 | 057034 | 346225 | 19.76 | 3.21 | 2.58 |
| 8 | 8:00 | 061161 | 349382 | 21.56 | 4.12 | 3.15 |
| 9 | 8:00 | 064963 | 352637 | 19.17 | 3.80 | 3.25 |
| 10 | 8:00 | 069091 | 355995 | 18.94 | 4.12 | 3.37 |
| 11 | 8:00 | 073028 | 359125 | 19.41 | 3.93 | 3.13 |
| 12 | 8:00 | 076648 | 362619 | 13.05 | 3.62 | 3.49 |
| 13 | 8:00 | 081060 | 365600 | 19.41 | 4.42 | 2.99 |
| 14 | | | | 14.05 | 4.15 | 3.33 |
| 15 | 8:00 | 089362 | 372260 | 19.06 | 4.15 | 3.33 |
| 16 | 8:00 | 093368 | 375494 | 19.06 | 4.00 | 3.23 |
| 17 | 8:00 | 097514 | 378828 | 19.05 | 4.14 | 3.33 |
| 18 | 8:00 | 101721 | 382217 | 18.94 | 4.20 | 3.38 |
| 19 | 8:00 | 105431 | 385591 | 14.23 | 3.71 | 3.37 |
| 20 | 8:00 | 109403 | 388729 | 16.94 | 3.97 | 3.13 |
| 21 | 8:00 | 113742 | 391893 | 20.46 | 4.33 | 3.16 |
| 22 | 8:00 | 117969 | 395464 | 18.82 | 4.22 | 3.57 |
| 23 | 8:00 | 122414 | 399072 | 18.96 | 4.44 | 3.60 |
| 24 | 8:00 | 126728 | 402563 | 18.82 | 4.31 | 3.49 |
| 25 | 8:00 | 131290 | 406211 | 18.94 | 4.57 | 3.64 |
| 26 | 8:00 | 135396 | 409333 | 20.58 | 4.10 | 3.12 |
| 27 | 8:00 | 139519 | 412538 | 21.52 | 4.12 | 3.20 |
| 28 | 8:00 | 143307 | 415831 | 19.05 | 3.78 | 3.29 |
| 29 | 8:00 | 147357 | 419213 | 19.17 | 4.06 | 3.38 |
| 30 | 8:00 | 150927 | 422075 | 19.64 | 3.57 | 2.86 |
| 31 | 8:00 | 154472 | 424707 | 21.16 | 3.54 | 2.63 |

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|---|---|---|---|---|---|---|---|
| July 2011 | 1 | 8:00 | 911255 | 228856 | 20.10 | 3.42 | [illegible] |
| | 2 | 8:00 | 914850 | 231805 | 19.76 | 3.60 | 2.95 |
| | 3 | 8:00 | 918880 | 236574 | 19.60 | 4.03 | 3.28 |
| | 4 | 8:00 | 922910 | 238379 | 19.05 | 4.03 | 3.29 |
| | 5 | 8:00 | 927113 | 241776 | 19.29 | 4.20 | 3.40 |
| | 6 | 8:00 | 931451 | 245343 | 18.94 | 4.33 | 3.56 |
| | 7 | 8:00 | 936138 | 249182 | 18.82 | 4.68 | 3.83 |
| | 8 | 8:00 | 940284 | 252510 | 19.05 | 4.14 | 3.32 |
| | 9 | 8:00 | 944101 | 255591 | 19.29 | 3.81 | 3.08 |
| | 10 | 8:00 | 948107 | 258831 | 19.17 | 4.00 | 3.24 |
| | 11 | 8:00 | 952332 | 262254 | 19.05 | 4.22 | 3.42 |
| | 12 | 8:00 | 956404 | 265548 | 19.05 | 4.07 | 3.29 |
| | 13 | 8:00 | 960354 | 268708 | 19.41 | 3.95 | 3.16 |
| | 14 | 8:00 | 963789 | 271426 | 20.00 | 3.43 | 2.71 |
| | 15 | 8:00 | 966989 | 273911 | 20.46 | 3.20 | 2.48 |
| | 16 | 8:00 | 970423 | 276657 | 20.23 | 3.44 | 2.64 |
| | 17 | 8:00 | 973620 | 279164 | 20.23 | 3.19 | 2.50 |
| | 18 | 8:00 | 977725 | 282542 | 17.99 | 4.10 | 3.37 |
| | 19 | 8:00 | 982501 | 286169 | 18.94 | 4.77 | 3.62 |
| | 20 | 8:00 | 987023 | 289514 | 20.00 | 4.52 | 3.34 |
| | 21 | 8:00 | 990468 | 292802 | 18.94 | 3.44 | 3.28 |
| | 22 | 8:00 | 994477 | 296055 | 19.06 | 4.01 | 3.25 |
| | 23 | 8:00 | 998217 | 298981 | 20.00 | 3.73 | 2.93 |
| | 24 | 8:00 | 001968 | 302052 | 19.29 | 3.75 | 3.07 |
| | 25 | 8:00 | 006513 | 305742 | 19.06 | 4.54 | 3.69 |
| | 26 | 8:00 | 010976 | 309393 | 18.70 | 4.46 | 3.65 |
| | 27 | 8:00 | 015312 | 312869 | 19.05 | 4.34 | 3.47 |
| | 28 | 8:00 | 019508 | 316268 | 18.94 | 4.19 | 3.40 |
| | 29 | 8:00 | 023971 | 319853 | 19.05 | 4.46 | 3.58 |
| | 30 | 8:00 | 028292 | 323346 | 18.94 | 4.32 | 3.49 |
| | 31 | 8:00 | 032203 | 326442 | 19.52 | 3.91 | 3.09 |

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|---|---|---|---|---|---|---|
| JUNE 2011 1 | 8:00 | 835230 | 163446 | 20.33 | 1.97 | 1.67 |
| 2 | 8:00 | 837210 | 165216 | 20.11 | 1.98 | 1.77 |
| 3 | 8:00 | 839171 | 167102 | 20.23 | 1.96 | 1.88 |
| 4 | 8:00 | 841144 | 169205 | 20.23 | 1.97 | 2.10 |
| 5 | 8:00 | 843321 | 171704 | 20.82 | 2.17 | 2.49 |
| 6 | 8:00 | 846012 | 174724 | 23.29 | 2.69 | 3.02 |
| 7 | 8:00 | 848104 | 177351 | 20.11 | 2.09 | 2.62 |
| 8 | 8:00 | 850268 | 179491 | 21.17 | 2.16 | 2.14 |
| 9 | 8:00 | 852188 | 181512 | 20.58 | 1.92 | 2.02 |
| 10 | 8:00 | 854141 | 183599 | 20.11 | 1.96 | 2.08 |
| 11 | 8:00 | 856157 | 185458 | 20.11 | 2.01 | 1.86 |
| 12 | 8:00 | 858180 | 187181 | 20.70 | 2.02 | 1.72 |
| 13 | 8:00 | 860307 | 188705 | 21.76 | 2.12 | 1.52 |
| 14 | 8:00 | 862540 | 190212 | 23.76 | 2.23 | 1.50 |
| 15 | 8:00 | 864392 | 191905 | 20.58 | 1.85 | 1.69 |
| 16 | 8:00 | 866933 | 193700 | 22.94 | 2.54 | 1.80 |
| 17 | 8:00 | 869024 | 195392 | 21.40 | 2.09 | 1.69 |
| 18 | 8:00 | 871090 | 197032 | 20.11 | 2.07 | 1.64 |
| 19 | 8:00 | 873473 | 198737 | 21.99 | 2.38 | 1.70 |
| 20 | 8:00 | 875946 | 200676 | 22.59 | 2.47 | 1.93 |
| 21 | 8:00 | 878378 | 202752 | 19.64 | 2.47 | 2.08 |
| 22 | 8:00 | 881138 | 205105 | 19.88 | 2.76 | 2.35 |
| 23 | 8:00 | 883935 | 207581 | 19.29 | 2.80 | 2.47 |
| 24 | 8:00 | 887084 | 209964 | 19.06 | 3.14 | 2.38 |
| 25 | 8:00 | 890091 | 212186 | 19.17 | 3.00 | 2.22 |
| 26 | 8:00 | 893255 | 214658 | 19.29 | 3.16 | 2.47 |
| 27 | 8:00 | 897299 | 217640 | 22.11 | 4.04 | 2.98 |
| 28 | 8:00 | 900896 | 220722 | 19.64 | 3.59 | 3.08 |
| 29 | 8:00 | 904522 | 223498 | 21.05 | 3.62 | 2.77 |
| 30 | 8:00 | 907834 | 226207 | 20.11 | 3.31 | 2.70 |
| [illegible] | 8:00 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

| MAY 2011 | Time | Cont. Bldg. | Meter Dischg. | TANK Level | Gal. Pumped | GAL. Used |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 771578 | 115992 | 21.76 | 2.06 | 4.23? |
| 2 | 8:00 | 773726 | 118113 | 22.46 | 2.14 | 2.12 |
| 3 | 8:00 | 775911 | 120123 | 23.29 | 2.18 | 2.01 |
| 4 | 8:00 | 777832 | 121610 | 22.11 | 1.92 | 1.48 |
| 5 | 8:00 | 779698 | 123637 | 20.00 | 1.86 | 2.02 |
| 6 | 8:00 | 781915 | 125758 | 20.70 | 2.22 | 2.12 |
| 7 | 8:00 | 784059 | 127635 | 21.40 | 2.14 | 1.88 |
| 8 | 8:00 | 786210 | 129375 | 22.00 | 2.15 | 1.74 |
| 9 | 8:00 | 788404 | 130785 | 22.46 | 2.19 | 1.41 |
| 10 | 8:00 | 790573 | 131641 | 23.17 | 2.16 | 1.85 |
| 11 | 8:00 | 792552 | 133059 | 22.35 | 1.97 | 1.41 |
| 12 | 8:00 | 794414 | 134613 | 21.05 | 1.86 | 1.55 |
| 13 | 8:00 | 796340 | 136412 | 20.23 | 1.93 | 1.80 |
| 14 | 8:00 | 798479 | 138247 | 21.64 | 2.17 | 1.83 |
| 15 | 8:00 | 800570 | 139695 | 23.18 | 2.09 | 1.44 |
| 16 | 8:00 | 802386 | 141124 | 20.94 | 1.81 | 1.42 |
| 17 | 8:00 | 804459 | 142578 | 20.11 | 2.07 | 1.45 |
| 18 | 8:00 | 806670 | 143942 | 20.46 | 2.21 | 1.36 |
| 19 | 8:00 | 808837 | 145206 | 20.35 | 2.16 | 1.36 |
| 20 | 8:00 | 811071 | 147021 | 20.35 | 2.24 | 1.82 |
| 21 | 8:00 | 813023 | 148303 | 20.00 | 1.95 | 1.28 |
| 22 | 8:00 | 815196 | 149826 | 20.71 | 2.17 | 1.52 |
| 23 | 8:00 | 817353 | 151392 | 20.58 | 2.16 | 1.56 |
| 24 | 8:00 | 819493 | 152891 | 20.70 | 2.14 | 1.49 |
| 25 | 8:00 | 821437 | 154300 | 20.00 | 1.94 | 1.40 |
| 26 | 8:00 | 823400 | 155611 | 20.11 | 1.96 | 1.31 |
| 27 | 8:00 | 825390 | 156703 | 20.11 | 1.99 | 1.09 |
| 28 | 8:00 | 827369 | 157745 | 20.23 | 1.97 | 1.04 |
| 29 | 8:00 | 829329 | 158817 | 20.13 | 1.96 | 1.07 |
| 30 | 8:00 | 831282 | 160191 | 20.23 | | 1.37 |
| 31 | 8:00 | 833251 | 161771 | 20.11 | 1.96 | 1.58 |

SYNCHRONIZING CHARTS

| APR 2011 | TIME | CONTROL [illegible] | METER DISCHG. | TANK LEVEL | GAL. PUMPED | GAL. USED |
|---|---|---|---|---|---|---|
| Apr 2011 1 | 8:00 | 710045 | 053614 | 20.11 | 2.07 | 1.69 |
| 2 | 8:00 | 712083 | 055264 | 20.46 | 2.04 | 1.65 |
| 3 | 8:00 | 714130 | 056934 | 20.82 | 2.04 | 1.67 |
| 4 | 8:00 | 716207 | 058658 | 20.94 | 2.17 | 1.72 |
| 5 | 8:00 | 718241 | 060345 | 20.93 | 2.03 | 1.68 |
| 6 | 8:00 | 720292 | 062035 | 21.17 | 2.05 | 1.69 |
| 7 | 8:00 | 722372 | 063743 | 21.40 | 2.08 | 1.70 |
| 8 | 8:00 | 724520 | 065474 | 22.11 | 2.14 | 1.73 |
| 9 | 8:00 | 726672 | 067151 | 23.41 | 2.15 | 1.68 |
| 10 | 8:00 | 728572 | 068837 | 22.23 | 1.90 | 1.68 |
| 11 | 8:00 | 730448 | 070572 | 20.23 | 1.87 | 1.73 |
| 12 | 8:00 | 732594 | 072315 | 20.70 | 2.14 | 1.74 |
| 13 | 8:00 | 734716 | 074025 | 21.29 | 2.12 | 1.71 |
| 14 | 8:00 | 736808 | 075730 | 21.64 | 2.09 | 1.70 |
| 15 | 8:00 | 738849 | 077401 | 21.88 | 2.04 | 1.67 |
| 16 | 8:00 | 741005 | 079101 | 22.82 | 2.16 | 1.70 |
| 17 | 8:00 | 743113 | 080806 | 23.53 | 2.10 | 1.70 |
| 18 | 8:00 | 744974 | 082853 | 21.17 | 1.86 | 2.04 |
| 19 | 8:00 | 746818 | 085228 | 19.41 | 1.84 | 2.37 |
| 20 | 8:00 | 748887 | 087253 | 19.52 | 2.06 | 2.02 |
| 21 | 8:00 | 750940 | 088939 | 19.76 | 2.05 | 1.68 |
| 22 | 8:00 | 753000 | 090635 | 20.11 | 2.06 | 1.70 |
| 23 | 8:00 | 755075 | 092397 | 20.46 | 2.07 | 1.76 |
| 24 | 8:00 | 757120 | 094973 | 20.35 | 2.04 | 2.57 |
| 25 | 8:00 | 759214 | 097149 | 20.58 | 2.09 | 2.17 |
| 26 | 8:00 | 761294 | 099655 | 20.46 | 2.08 | 2.50 |
| 27 | 8:00 | 763333 | 102356 | 20.46 | 2.03 | 2.70 |
| 28 | 8:00 | 765424 | 105030 | 20.58 | 2.09 | 2.67 |
| 29 | 8:00 | 767451 | 108235 | 20.70 | 1.93 | 3.20 |
| 30 | 8:00 | 769509 | 111759 | 21.29 | 2.05 | 3.52 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MAR2011 1 | 8:00 | 647333 | 001229 | 20.11 | 1.86 | 1.71 |
| 2 | 8:00 | 649247 | 002924 | 20.35 | 1.91 | 1.79 |
| 3 | 8:00 | 651120 | 004596 | 20.46 | 1.86 | 1.67 |
| 4 | 8:00 | 653032 | 006315 | 20.46 | 1.91 | 1.72 |
| 5 | 8:00 | 654910 | 008006 | 20.46 | 1.88 | 1.68 |
| 6 | 8:00 | 656785 | 009703 | 20.35 | 1.87 | 1.69 |
| 7 | 8:00 | 658709 | 011450 | 20.23 | 1.92 | 1.74 |
| 8 | 8:00 | 660847 | 013178 | 21.41 | 2.16 | 1.72 |
| 9 | 8:00 | 662664 | 014878 | 20.70 | 1.81 | 1.70 |
| 10 | 8:00 | 664485 | 016558 | 20.35 | 1.82 | 1.68 |
| 11 | 8:00 | 666328 | 018249 | 20.23 | 1.84 | 1.69 |
| 12 | 8:00 | 668180 | 019941 | 20.11 | 1.86 | 1.70 |
| 13 | 8:00 | [illegible] | [illegible] | [illegible] | 2.02 | 1.65 |
| 14 | 8:00 | 672231 | 023299 | 20.94 | 2.03 | 1.70 |
| 15 | 8:00 | 674341 | 025000 | 21.64 | 2.11 | 1.70 |
| 16 | 8:00 | 676752 | 026629 | 23.88 | 2.41 | 1.67 |
| 17 | 8:00 | 678557 | 028388 | 19.05 | 1.80 | 1.70 |
| 18 | 8:00 | 680608 | 030054 | 19.52 | 2.05 | 1.67 |
| 19 | 8:00 | 682872 | 031699 | 21.05 | 2.27 | 1.64 |
| 20 | 8:00 | 685241 | 033382 | 23.29 | 2.36 | 1.68 |
| 21 | 8:00 | 687254 | 035095 | 20.46 | 2.01 | 1.71 |
| 22 | 8:00 | 689555 | 036769 | 21.64 | 2.30 | 1.67 |
| 23 | 8:00 | 691896 | 038461 | 21.99 | 2.34 | 1.69 |
| 24 | 8:00 | 693715 | 040123 | 19.17 | 1.81 | 1.66 |
| 25 | 8:00 | 695787 | 041808 | 19.52 | 2.07 | 1.68 |
| 26 | 8:00 | 697817 | 043496 | 19.64 | 2.03 | 1.69 |
| 27 | 8:00 | 699843 | 045170 | 19.76 | 2.02 | 1.67 |
| 28 | 8:00 | 701954 | 046911 | 19.88 | 2.11 | 1.74 |
| 29 | 8:00 | 703993 | 048595 | 20.00 | 2.03 | 1.68 |
| 30 | 8:00 | 706019 | 050264 | 20.23 | 2.02 | 1.67 |
| 31 | 8:00 | 707973 | 051925 | 19.76 | 1.95 | 1.66 |

| Feb, 2011 | Time | Cont. Bldg. | Motor Bldg. | Tank Level | Gals pumped | Gals used |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 595293 | 954068 | 21.64 | 2.26 | 2.06 |
| 2 | 8:00 | 597179 | 955882 | 20.46 | 1.88 | 1.81 |
| 3 | 8:00 | 598975 | 957548 | 20.11 | 1.79 | 1.66 |
| 4 | 8:00 | 600830 | 959204 | 20.35 | 1.86 | 1.66 |
| 5 | 8:00 | 602630 | 960804 | 20.48 | 1.80 | 1.60 |
| 6 | 8:00 | 604536 | 962555 | 20.46 | 1.90 | 1.75 |
| 7 | 8:00 | 606439 | 964275 | 20.46 | 1.90 | 1.72 |
| 8 | 8:00 | 608306 | 965974 | 20.58 | 1.86 | 1.69 |
| 9 | 8:00 | 610078 | 967640 | 20.11 | 1.77 | 1.66 |
| 10 | 8:00 | 611961 | 969325 | 20.23 | 1.81 | 1.68 |
| 11 | 8:00 | 613805 | 970976 | 20.35 | 1.84 | 1.65 |
| 12 | 8:00 | 615649 | 972566 | 20.58 | 1.84 | 1.59 |
| 13 | 8:00 | 617479 | 974216 | 20.46 | 1.83 | 1.65 |
| 14 | 8:00 | 619367 | 975917 | 20.46 | 1.88 | 1.70 |
| 15 | 8:00 | 621207 | 977563 | 20.47 | 1.84 | 1.64 |
| 16 | 8:00 | 623052 | 979216 | 20.46 | 1.84 | 1.65 |
| 17 | 8:00 | 624865 | 980859 | 20.46 | 1.81 | 1.64 |
| 18 | 8:00 | 626713 | 982523 | 20.46 | 1.85 | 1.67 |
| 19 | 8:00 | 628561 | 984176 | 20.58 | 1.85 | 1.65 |
| 20 | 8:00 | 630414 | 985867 | 20.46 | 1.85 | 1.69 |
| 21 | 8:00 | 632298 | 987595 | 20.35 | 1.88 | 1.72 |
| 22 | 8:00 | 634201 | 989321 | 20.35 | 1.90 | 1.72 |
| 23 | 8:00 | 636082 | 991010 | 20.46 | 1.88 | 1.68 |
| 24 | 8:00 | 637922 | 992686 | 20.46 | 1.84 | 1.67 |
| 25 | 8:00 | 639811 | 994396 | 20.70 | 1.89 | 1.71 |
| 26 | 8:00 | 641680 | 996095 | 20.70 | 1.87 | 1.70 |
| 27 | 8:00 | 643418 | 997774 | 19.52 | 1.73 | 1.67 |
| 28 | 8:00 | 645466 | 999516 | 20.46 | 2.04 | 1.74 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ~~Jan~~ 1 | | | | | | |
| JAN 2011 2 | 8:00 | 540710 | 904422 | 0.01 | 4.38 | 3.31 |
| 3 | 8:00 | 542920 | 906160 | 0.01 | 2.21 | 1.73 |
| 4 | 8:00 | 545268 | 907822 | 0.01 | 2.34 | 1.66 |
| 5 | 8:00 | 547220 | 909453 | 0.01 | 1.96 | 1.63 |
| 6 | 8:00 | 549212 | 911051 | 0.01 | 1.99 | 1.59 |
| 7 | 8:00 | 551065 | 912651 | 0.01 | 1.85 | 1.60 |
| 8 | 8:00 | 553155 | 914244 | 0.01 | 2.09 | 1.59 |
| 9 | 8:00 | 554805 | 916903 | 0.01 | 1.65 | 1.66 |
| 10 | 8:00 | 556455 | 917563 | 0.01 | 1.650 | 1.662 |
| 11 | 8:00 | 558783 | 919253 | 0.01 | 2.32 | 1.69 |
| 12 | 8:00 | 560696 | 920900 | 0.01 | 2.91 | 1.64 |
| 13 | 8:00 | 562721 | 922538 | 0.01 | 2.02 | 1.63 |
| 14 | 8:00 | 564693 | 924145 | 0.01 | 1.97 | 1.60 |
| 15 | 8:00 | 565807 | 925720 | 22.38 | 1.94 | 1.58 |
| 16 | 8:00 | 567627 | 927390 | 21.45 | 1.82 | 1.67 |
| 17 | 8:00 | 569441 | 929064 | 20.82 | 1.82 | 1.67 |
| 18 | 8:00 | 571353 | 930746 | 21.52 | 1.91 | 1.68 |
| 19 | 8:00 | [illegible] | [illegible] | [illegible] | 3.88 | [illegible] |
| 20 | 8:00 AM | 574838 | 934083 | 20.46 | 3.48 | 3.34 |
| 21 | 8:00 | 576996 | 935730 | 20.00 | 1.65 | 1.64 |
| 22 | 8:00 | 578357 | 937320 | 20.11 | 1.36 | 1.59 |
| 23 | 8:00 | 580191 | 938929 | 20.94 | 1.83 | 1.60 |
| 24 | 8:00 | 581745 | 940626 | 24.00 | 1.56 | 1.69 |
| 25 | 8:00 | 583341 | 942262 | 22.35 | 1.59 | 1.63 |
| 26 | 8:00 | 584972 | 943872 | 20.70 | 1.63 | 1.61 |
| 27 | 8:00 | 586695 | 945485 | 19.99 | 1.72 | 1.61 |
| 28 | 8:00 | 588153 | 947118 | 22.23 | 1.46 | 1.63 |
| 29 | 8:00 | 589538 | 948680 | 22.23 | 1.38 | 1.57 |
| 30 | 8:00 | 591160 | 950284 | 20.82 | 1.62 | 1.60 |
| 31 | 8:00 | 593028 | 951999 | 20.82 | 1.86 | 1.71 |

| Dec. 2010 | Time | Control Bldg | Meter Dischg. | Tank Level | Gal. pumped | Gal. Used |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 474359 | 850664 | 21.29 | 1.94 | 1.78 |
| 2 | 8:00 | 476308 | 852437 | 21.03 | 1.94 | 1.77 |
| 3 | 8:00 | 478221 | 854228 | 20.76 | 1.91 | 1.79 |
| 4 | 8:00 | 480139 | 855894 | 20.94 | 1.91 | 1.67 |
| 5 | 8:00 | 482055 | 857595 | 21.29 | 1.91 | 1.70 |
| 6 | 8:00 | 483929 | 859312 | 20.94 | 1.87 | 1.71 |
| 7 | 8:00 | 485755 | 860983 | 20.58 | 1.82 | 1.67 |
| 8 | 8:00 | 487716 | 862663 | 21.17 | 1.96 | 1.68 |
| 9 | 8:00 | 489502 | 864312 | 20.70 | 1.79 | 1.65 |
| 10 | 8:00 | 491348 | 865950 | 20.82 | 1.84 | 1.64 |
| 11 | 8:00 | 493119 | 867569 | 20.82 | 1.77 | 1.61 |
| 12 | 8:00 | 494804 | 869235 | (18.5) 0.00 | 1.68 | 1.66 |
| 13 | 8:00 | 497511 | 870890 | 23.53 | 2.70 | 1.65 |
| 14 | 8:00 | 499754 | 872536 | (24.00) 0.01 | 2.24 | 1.64 |
| 15 | 8:00 | 501978 | 874200 | (21.5) 0.01 | 2.22 | 1.67 |
| 16 | 8:00 | 503652 | 875912 | 0.01 | 1.67 | 1.71 |
| 17 | 8:00 | 505891 | 877600 | 0.01 | 2.24 | 1.69 |
| 18 | 8:00 | 507537 | 879251 | .01 | 1.64 | 1.65 |
| 19 | 8:00 | 509640 | 880928 | (23.00) .01 | 1.10 | 1.77 |
| 20 | 8:00 | 511402 | 882638 | .001 | 1.86 | 1.71 |
| 21 | 8:00 | 513563 | 884341 | (20.00) 0.01 | 1.86 | 1.71 |
| 22 | 8:00 | 515963 | 886017 | 0.01 | 2.40 | 1.67 |
| 23 | 8:00 | 518277 | 887677 | 0.01 | 2.31 | 1.66 |
| 24 | 8:00 | 520296 | 889363 | 0.01 | 2.01 | 1.68 |
| 25 | 8:00 | 522696 | 891052 | 0.01 | 2.40 | 1.69 |
| 26 | 8:00 | 524724 | 892741 | 0.01 | 2.02 | 1.68 |
| 27 | 8:00 | 526964 | 894493 | 0.01 | 2.24 | 1.75 |
| 28 | 8:00 | 528997 | 896194 | 0.01 | 2.03 | 1.70 |
| 29 | 8:00 | 532287 | 897820 | 0.01 | 3.21 | 1.63 |
| 30 | 8:00 | 534217 | 899452 | 0.01 | 1.93 | 1.63 |
| 31 | 8:00 | 536317 | 901107 | 0.01 | 2.10 | 1.55 |

| NOV. 2010 | TIME | CONTROL BLD | METER DISCH | TANK LEVEL | GAL PUMPED | GAL USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 417063 | 801137 | 20.94 | 1.85 | 1.65 |
| 2 | 8:00 | 418841 | 802723 | 20.82 | 1.77 | 1.58 |
| 3 | 8:00 | 420601 | 804341 | 20.46 | 1.76 | 1.61 |
| 4 | 8:00 | 422444 | 805944 | 20.58 | 1.84 | 1.60 |
| 5 | 8:00 | 424284 | 807556 | 20.94 | 1.84 | 1.61 |
| 6 | 8:00 | 426074 | 809161 | 20.70 | 1.79 | 1.61 |
| 7 | 8:00 STANDARD TIME | 427909 | 810804 | 20.35 | 1.83 | 1.64 |
| 8 | 8:00 | 429752 | 812436 | 20.58 | 1.84 | 1.63 |
| 9 | 8:00 | 431538 | 814032 | 20.70 | 1.78 | 1.59 |
| 10 | 8:00 | 433277 | 815612 | 20.46 | 1.74 | 1.58 |
| 11 | 8:00 | 435148 | 817204 | 20.11 | 1.87 | 1.59 |
| 12 | 8:00 | 437055 | 818787 | 20.11 | 1.91 | 1.58 |
| 13 | 8:00 | 438952 | 820357 | 20.11 | 1.90 | 1.57 |
| 14 | 8:00 | 440842 | 821935 | 20.11 | 1.89 | 1.57 |
| 15 | 8:00 | 442797 | 823567 | 20.23 | 1.95 | 1.63 |
| 16 | 8:00 | 444719 | 825145 | 20.11 | 1.92 | 1.57 |
| 17 | 8:00 | 446689 | 826749 | 20.46 | 1.97 | 1.60 |
| 18 | 8:00 | 448605 | 828315 | 20.58 | 1.91 | 1.56 |
| 19 | 8:00 | 450442 | 829882 | 20.46 | 1.84 | 1.57 |
| 20 | 8:00 | 452300 | 831434 | 20.34 | 1.86 | 1.55 |
| 21 | 8:00 | 454222 | 833059 | 20.35 | 1.92 | 1.62 |
| 22 | 8:00 | 456203 | 834734 | 20.45 | 1.98 | 1.67 |
| 23 | 8:00 | 458173 | 836414 | 20.25 | 1.97 | 1.68 |
| 24 | 8:00 | 460127 | 838057 | 2046 | 1.95 | 1.64 |
| 25 | 8:00 | 462261 | 839804 | 21.05 | 2.14 | 1.75 |
| 26 | 8:00 | 464368 | 841477 | 22.00 | 2.10 | 1.67 |
| 27 | 8:00 | 466293 | 843291 | 21.29 | 1.93 | 1.82 |
| 28 | 8:00 | 468155 | 845126 | 20.23 | 1.86 | 1.83 |
| 29 | 8:00 | 470363 | 847065 | 21.29 | 2.20 | 1.83 |
| 30 | 8:00 | 472411 | 848881 | 21.29 | 2.04 | 1.81 |

| OCT 2010 | TIME | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] USED |
|---|---|---|---|---|---|---|
| 1. | 8:00 | 358025 | 748443 | 20.34 | 2.63 | 2.17 |
| 2. | 8:00 | 360372 | 750690 | 20.11 | 2.75 | 2.25 |
| 3. | 8:00 | 362837 | 752781 | 21.17 | 2.46 | 2.09 |
| 4. | 8:00 | 365133 | 754908 | 20.11 | 2.29 | 2.12 |
| 5. | 8:00 | 367345 | 756805 | 21.06 | 2.21 | 1.89 |
| 6. | 8:00 | 369287 | 758605 | 20.23 | 1.84 | 1.80 |
| 7. | 8:00 | 371297 | 760387 | 20.35 | 2.01 | 1.78 |
| 8. | 8:00 | 373215 | 762123 | 20.11 | 1.92 | 1.74 |
| 9. | 8:00 | 375139 | 763829 | 20.23 | 1.94 | 1.70 |
| 10. | 8:00 | 377048 | 765492 | 20.35 | 1.91 | 1.66 |
| 11. | 8:00 | 379027 | 767249 | 20.46 | 1.97 | 1.75 |
| 12. | 8:00 | 380870 | 768905 | 20.35 | 1.84 | 1.75 |
| 13. | 8:00 | 382756 | 770592 | 20.46 | 1.88 | 1.68 |
| 14. | 8:00 | 384627 | 772244 | 20.58 | 1.87 | 1.65 |
| 15. | 8:00 | 386561 | 773906 | 21.05 | 1.94 | 1.66 |
| 16. | 8:00 | 388358 | 775535 | 20.70 | 1.79 | 1.63 |
| 17. | 8:00 | 390249 | 777166 | 21.29 | 1.89 | 1.63 |
| 18. | 8:00 | 392120 | 778845 | 21.29 | 1.87 | 1.67 |
| 19. | 8:00 | 393893 | 780456 | 20.82 | 1.77 | 1.61 |
| 20. | 8:00 | 395656 | 782074 | 20.23 | 1.76 | 1.61 |
| 21. | 8:00 | 397510 | 783662 | 20.94 | 1.86 | 1.59 |
| 22. | 8:00 | 399317 | 785273 | 21.05 | 1.80 | 1.61 |
| 23. | 8:00 | 401127 | 786838 | 21.17 | 1.81 | 1.56 |
| 24. | 8:00 | 402803 | 788384 | 20.70 | 1.67 | 1.54 |
| 25. | 8:00 | 404566 | 790015 | 20.35 | 1.76 | 1.63 |
| 26. | 8:00 | 406324 | 791591 | 20.34 | 1.76 | 1.58 |
| 27. | 8:00 | 408064 | 793175 | 20.23 | 1.74 | 1.58 |
| 28. | 8:00 | 409931 | 794777 | 20.11 | 1.86 | 1.60 |
| 29. | 8:00 | 411596 | 796343 | 20.11 | 1.66 | 1.57 |
| 30. | 8:00 | 413377 | 797892 | 20.58 | 1.78 | 1.55 |
| 31. | 8:00 | 415209 | 799485 | 20.94 | 1.73 | 1.59 |

| SEP 2010 | TIME | CONT. BUILDG. | METER DISCHG | TANK LEVEL | GALS PUMPED | GALS USED |
|---|---|---|---|---|---|---|
| 1. | 8:00 | 280036 | 677275 | 21.88 | 2.76 | 2.49 |
| 2. | 8:00 | 282802 | 680000 | 21.64 | 2.77 | 2.73 |
| 3. | 8:00 | 285561 | 682805 | 20.23 | 2.76 | 2.80 |
| 4. | 8:00 | 288850 | 685759 | 20.23 | 3.29 | 2.95 |
| 5. | 8:00 | 291910 | 688508 | 20.70 | 3.06 | 2.74 |
| 6. | 8:00 | 294661 | 691307 | 19.05 | 2.75 | 2.79 |
| 7. | 8:00 | 298669 | 694278 | 23.17 | 4.00 | 2.97 |
| 8. | 8:00 | 301224 | 697046 | 19.41 | 2.55 | 2.76 |
| 9. | 8:00 | 304353 | 699675 | 19.52 | 3.12 | 2.62 |
| 10. | 8:00 | 307134 | 702077 | 22.82 | 2.78 | 2.40 |
| 11. | 8:00 | 309475 | 704482 | 19.64 | 2.34 | 2.41 |
| 12. | 8:00 | 312231 | 706841 | 22.94 | 2.75 | 2.35 |
| 13. | 8:00 | 314985 | 709483 | 23.17 | 2.75 | 2.64 |
| 14. | 8:00 | 317275 | 711915 | 19.41 | 2.29 | 2.43 |
| 15. | 8:00 | 319964 | 714171 | 19.99 | 2.68 | 2.25 |
| 16. | 8:00 | 322302 | 716379 | 20.00 | 2.34 | 2.20 |
| 17. | 8:00 | 325079 | 718614 | 22.94 | 2.77 | 2.24 |
| 18. | 8:00 | 327193 | 720795 | 19.88 | 2.12 | 2.18 |
| 19. | 8:00 | 329447 | 722865 | 20.58 | 2.25 | 2.07 |
| 20. | 8:00 | 331828 | 725038 | 20.23 | 2.38 | 2.17 |
| 21. | 8:00 | 334724 | 727315 | 23.29 | 2.89 | 2.27 |
| 22. | 8:00 | 336688 | 729348 | 20.35 | 1.96 | 2.03 |
| 23. | 8:00 | 338954 | 731403 | 21.05 | 2.27 | 2.06 |
| 24. | 8:00 | 341067 | 733402 | 20.23 | 2.11 | 2.00 |
| 25. | 8:00 | 343376 | 735391 | 20.82 | 2.31 | 1.99 |
| 26. | 8:00 | 345704 | 737457 | 21.05 | 2.32 | 2.06 |
| 27. | 8:00 | 348197 | 739676 | 21.05 | 2.49 | 2.21 |
| 28. | 8:00 | 350699 | 741898 | 21.17 | 2.50 | 2.22 |
| 29. | 8:00 | 353379 | 744101 | 23.41 | 2.68 | 2.12 |
| 30. | 8:00 | 355391 | 746272 | 19.40 | 2.02 | 2.16 |

| AUG 2010 | TIME | CONT. BW/DG | METER DISCH(-) | TANK LEVEL | GALS PUMPED | GAL USED |
|---|---|---|---|---|---|---|
| 1. | 8:00 | 160716 | 576150 | 19.05 | 2.90 | 2.85 |
| 2. | 8:00 | 165046 | 579868 | 18.70 | 4.33 | 3.71 |
| 3. | 8:00 | 169541 | 583710 | 18.70 | 4.49 | 3.84 |
| 4. | 8:00 | 173910 | 587447 | 18.94 | 4.36 | 3.73 |
| 5. | 8:00 | 178824 | 591104 | 18.70 | 4.91 | 3.66 |
| 6. | 8:00 | 182966 | 594331 | 19.76 | 4.14 | 3.23 |
| 7. | 8:00 | 187039 | 597319 | 22.59 | 4.07 | 2.98 |
| 8. | 8:00 | 190492 | 600481 | 20.23 | 3.45 | 3.16 |
| 9. | 8:00 | 194121 | 603663 | 19.05 | 3.62 | 3.18 |
| 10. | 8:00 | 198186 | 606866 | 21.17 | 4.06 | 3.20 |
| 11. | 8:00 | 201202 | 609821 | 19.17 | 3.01 | 2.95 |
| 12. | 8:00 | 205208 | 612904 | 22.11 | 4.00 | 3.08 |
| 13. | 8:00 | 208681 | 615962 | 20.82 | 3.47 | 3.05 |
| 14. | 8:00 | 211604 | 618751 | 19.64 | 2.92 | 2.79 |
| 15. | 8:00 | 214870 | 621545 | 19.06 | 3.26 | 2.79 |
| 16. | 8:00 | 218908 | 624857 | 20.00 | 4.03 | 3.31 |
| 17. | 8:00 | 222956 | 628388 | 19.05 | 4.05 | 3.53 |
| 18. | 8:00 | 227226 | 631985 | 19.05 | 4.27 | 3.59 |
| 19. | 8:00 | 231321 | 635440 | 19.29 | 4.10 | 3.46 |
| 20. | 8:00 | 235414 | 638954 | 18.94 | 4.09 | 3.51 |
| 21. | 8:00 | 239659 | 642520 | 19.29 | 4.24 | 3.57 |
| 22. | 8:00 | 243800 | 645992 | 19.52 | 4.14 | 3.47 |
| 23. | 8:00 | 247801 | 649380 | 20.23 | 4.00 | 3.38 |
| 24. | 8:00 | 251326 | 652464 | 19.17 | 3.52 | 3.08 |
| 25. | 8:00 | 255189 | 655732 | 19.29 | 3.86 | 3.26 |
| 26. | 8:00 | 259443 | 659356 | 19.06 | 3.25 | 3.82 |
| 27. | 8:00 | 263525 | 662839 | 19.06 | 4.08 | 3.48 |
| 28. | 8:00 | 267696 | 666201 | 20.58 | 4.17 | 3.37 |
| 29. | 8:00 | 270813 | 669150 | 19.17 | 3.11 | 2.94 |
| 30. | 8:00 | 274765 | 672144 | 22.71 | 3.95 | 2.99 |
| 31. | 8:00 | 277279 | 674784 | 20.00 | 2.51 | 2.64 |

| JULY 2010 | TIME | CONT. BULDG | METER DISCHG. | TANK LEVEL | GAL. PUMPED | GAL. USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 032641 | 466607 | 19.28 | 3.52 | 3.06 |
| 2 | 8:00 | 036820 | 469954 | 21.52 | 4.18 | 3.35 |
| 3 | 8:00 | 039867 | 472901 | 19.64 | 3.04 | 2.95 |
| 4 | 8:00 | 043092 | 475681 | 19.06 | 3.22 | 2.78 |
| 5 | 8:00 | 046510 | 478592 | 19.17 | 3.42 | 2.91 |
| 6 | 8:00 | 050450 | 481819 | 20.58 | 3.94 | 3.22 |
| 7 | 8:00 | 053962 | 484933 | 19.29 | 3.51 | 3.11 |
| 8 | 8:00 | 058018 | 488418 | 19.06 | 4.05 | 3.48 |
| 9 | 8:00 | 062098 | 490910 | 19.09 | 4.08 | 3.50 |
| 10 | 8:00 | 066900 | 494645 | 19.05 | 4.91 | 3.73 |
| 11 | 8:00 | 070161 | 498683 | 19.29 | 3.26 | 4.03 |
| 12 | 8:00 | 074291 | 502237 | 18.82 | 4.13 | 3.55 |
| 13 | 8:00 | 078818 | 506083 | 19.06 | 4.52 | 3.84 |
| 14 | 8:00 | 082848 | 509534 | 18.94 | 4.03 | 3.45 |
| 15 | 8:00 | 087415 | 513406 | 18.70 | 4.56 | 3.87 |
| 16 | 8:00 | 092012 | 517305 | 18.58 | 4.60 | 3.90 |
| 17 | 8:00 | 096545 | 521144 | 18.94 | 4.53 | 3.84 |
| 18 | 8:00 | 100845 | 524822 | 18.82 | 4.30 | 3.67 |
| 19 | 8:00 | 105649 | 528936 | 18.70 | 4.80 | 4.11 |
| 20 | 8:00 | 110490 | 533056 | 18.58 | 4.84 | 4.12 |
| 21 | 8:00 | 115269 | 537121 | 18.58 | 4.77 | 4.07 |
| 22 | 8:00 | 119514 | 540632 | 19.52 | 4.24 | 3.51 |
| 23 | 8:00 | 123524 | 544133 | 18.94 | 4.01 | 3.50 |
| 24 | 8:00 | 127765 | 547755 | 19.05 | 4.24 | 3.62 |
| 25 | 8:00 | 131980 | 551367 | 19.05 | 4.21 | 3.61 |
| 26 | 8:00 | 136775 | 555518 | 18.46 | 4.79 | 4.15 |
| 27 | 8:00 | 141354 | 559424 | 18.82 | 4.57 | 3.90 |
| 28 | 8:00 | 145251 | 562638 | 20.00 | 3.89 | 3.21 |
| 29 | 8:00 | 149210 | 566123 | 19.06 | 3.96 | 3.49 |
| 30 | 8:00 | 153565 | 569872 | 18.82 | 4.35 | 3.75 |
| 31 | 8:00 | 157811 | 573291 | 21.06 | 4.25 | 3.42 |

| June 2010 | Time | Cont. Bldg | Meter Dischg. | Tank Level | Gal. pumped | Gal. used |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 949911 | 390028 | 20.23 | 2.19 | 2.30 |
| 2 | 8:00 | 952273 | 392325 | 20.11 | 2.36 | 2.29 |
| 3 | 8:00 | 954972 | 394681 | 21.41 | 2.69 | 2.35 |
| 4 | 8:00 | 957661 | 397018 | 22.71 | 2.78 | 2.33 |
| 5 | 8:00 | 960184 | 399316 | 23.29 | 2.52 | 2.29 |
| 6 | 8:00 | 962404 | 401566 | 20.46 | 2.22 | 2.25 |
| 7 | 8:00 | 965157 | 404050 | 22.59 | 2.75 | 2.48 |
| 8 | 8:00 | 967616 | 406500 | 19.88 | 2.45 | 2.45 |
| 9 | 8:00 | 970392 | 408997 | 22.11 | 2.77 | 2.49 |
| 10 | 8:00 | 973052 | 411480 | 22.00 | 2.66 | 2.48 |
| 11 | 8:00 | 975588 | 413787 | 22.70 | 2.53 | 2.30 |
| 12 | 8:00 | 977839 | 416074 | 19.88 | 2.25 | 2.29 |
| 13 | 8:00 | 980215 | 418360 | 20.00 | 2.38 | 2.29 |
| 14 | 8:00 | 983186 | 421148 | 19.05 | 2.97 | 2.88 |
| 15 | 8:00 | 986497 | 423898 | 19.76 | 3.31 | 2.75 |
| 16 | 8:00 | 989249 | 426250 | 23.17 | 2.75 | 2.36 |
| 17 | 8:00 | 991510 | 428572 | 20.23 | 2.27 | 2.32 |
| 18 | 8:00 | 993891 | 430862 | 20.23 | 2.38 | 2.29 |
| 19 | 8:00 | 996628 | 433167 | 22.35 | 2.73 | 2.30 |
| 20 | 8:00 | 998860 | 435424 | 19.88 | 2.24 | 2.26 |
| 21 | 8:00 | 001614 | 437865 | 22.46 | 2.75 | 2.44 |
| 22 | 8:00 | 004097 | 440351 | 19.76 | 2.48 | 2.48 |
| 23 | 8:00 | 006861 | 442931 | 21.17 | 2.76 | 2.58 |
| 24 | 8:00 | 009626 | 445726 | 20.23 | 2.76 | 2.79 |
| 25 | 8:00 | 012382 | 448444 | 20.00 | 2.76 | 2.72 |
| 26 | 8:00 | 015153 | 451062 | 20.82 | 2.77 | 2.62 |
| 27 | 8:00 | 017914 | 453781 | 20.70 | 2.76 | 2.61 |
| 28 | 8:00 | 021453 | 457012 | 20.11 | 3.53 | 3.23 |
| 29 | 8:00 | 025603 | 460382 | 21.64 | 3.15 | [illegible] |
| 30 | 8:00 | 029128 | 463548 | 20.11 | | 3.12 |

| MAY 2010 | TIME | CONTROL BLD | METER DISCHG. | TANK LVL | GAL. Pumped | GAL USE |
|---|---|---|---|---|---|---|
| 1. | 800 | 875036 | 320882 | 23.76 | 2.25 | 1.94 |
| 2. | 8:00 | 877233 | 322861 | 23.88 | 2.19 | 1.97 |
| 3. | 800 | 879464 | 324905 | 23.18 | 2.23 | 2.04 |
| 4. | 800 | 881480 | 326869 | 22.11 | 2.01 | 1.96 |
| 5. | 8:00 | 883489 | 328850 | 20.35 | 2.00 | 1.99 |
| 6. | 8:00 | 885993 | 330840 | 23.88 | 2.50 | 1.99 |
| 7. | 8:00 | 887734 | 332803 | 20.58 | 1.74 | 1.96 |
| 8. | 8:00 | 889938 | 334744 | 21.06 | 2.20 | 1.94 |
| 9. | 8:00 | 892276 | 336703 | 22.59 | 2.33 | 1.95 |
| 10. | 8:00 | 894677 | 338751 | 23.64 | 2.40 | 2.04 |
| 11. | 8:00 | 896806 | 340829 | 22.11 | 2.12 | 2.07 |
| 12. | 8:00 | 898862 | 342887 | 20.00 | 2.05 | 2.05 |
| 13. | 8:00 | 901316 | 344929 | 22.59 | 2.45 | 2.04 |
| 14. | 8:00 | 903349 | 347054 | 20.00 | 2.03 | 2.12 |
| 15. | 8:00 | 906156 | 349240 | 23.88 | 2.81 | 2.19 |
| 16. | 8:00 | 908360 | 351513 | 20.58 | 2.20 | 2.27 |
| 17. | 8:00 | 911475 | 354242 | 21.40 | 3.11 | 2.72 |
| 18. | 8:00 | 914419 | 357070 | 19.67 | 3.04 | 2.82 |
| 19. | 8:00 | 917425 | 359664 | 19.52 | 2.90 | 2.59 |
| 20. | 8:00 | 920201 | 362381 | 19.52 | 2.77 | 2.71 |
| 21. | 8:00 | 922964 | 364726 | 22.94 | 2.76 | 2.34 |
| 22. | 8:00 | 925349 | 367140 | 20.23 | 2.38 | 2.42 |
| 23. | 8:00 | 927604 | 369334 | 20.35 | 2.25 | 2.19 |
| 24. | 8:00 | 930299 | 371751 | 20.58 | 2.69 | 2.41 |
| 25. | 8:00 | 932696 | 374079 | 20.35 | 2.39 | 2.32 |
| 26. | 8:00 | 935373 | 376329 | 21.99 | 2.67 | 2.30 |
| 27. | 8:00 | 938163 | 378790 | 23.29 | 2.79 | 2.42 |
| 28. | 8:00 | 940549 | 381064 | 23.17 | 2.38 | 2.27 |
| 29. | 8:00 | 942752 | 383244 | 21.29 | 2.20 | 2.18 |
| 30. | 8:00 | 945136 | 385358 | 21.88 | 2.38 | 2.31 |
| 31. | 8:00 | 947721 | 387720 | 23.41 | 2.58 | 2.36 |
| [illegible] | 8:00 | [illegible] | [illegible] | [illegible] | | |

| APR. 2010 | TIME | CONTROL USED | METER DISCHG. | TANK LVL | GAL. PUMPED | GAL USED |
|---|---|---|---|---|---|---|
| Apr 2010 1 | 8:00 | 808645 | 260437 | 23.41 | 2.22 | 1.94 |
| 2 | 8:00 | 810629 | 262374 | 21.88 | 1.98 | 1.93 |
| 3 | 8:00 | 812696 | 264327 | 21.17 | 2.07 | 1.95 |
| 4 | 8:00 | 814710 | 266314 | 20.58 | 2.01 | 1.98 |
| 5 | 8:00 | 817064 | 268275 | 22.23 | 2.35 | 1.96 |
| 6 | 8:00 | 819437 | 270284 | 23.65 | 2.37 | 2.00 |
| 7 | 8:00 | 821509 | 272297 | 21.99 | 2.07 | 2.01 |
| 8 | 8:00 | 823518 | 274267 | 20.23 | 2.00 | 1.97 |
| 9 | 8:00 | 825814 | 276250 | 20.11 | 2.29 | 1.98 |
| 10 | 8:00 | 827736 | 278214 | 20.23 | 1.92 | 1.96 |
| 11 | 8:00 | 830134 | 280148 | 22.00 | 2.39 | 1.93 |
| 12 | 8:00 | 832178 | 282171 | 20.58 | 2.04 | 2.02 |
| 13 | 8:00 | 834659 | 284153 | 23.06 | 2.48 | 1.98 |
| 14 | 8:00 | 836866 | 286117 | 23.30 | 2.20 | 1.96 |
| 15 | 8:00 | 838844 | 288093 | 21.29 | 1.97 | 1.97 |
| 16 | 8:00 | 841270 | 290067 | 23.64 | 2.45 | 1.97 |
| 17 | 8:00 | 843066 | 292027 | 20.82 | 1.79 | 1.96 |
| 18 | 8:00 | 845406 | 294030 | 21.88 | 1.34 | 2.00 |
| 19 | 8:00 | 847902 | 296107 | 23.29 | 2.49 | 2.07 |
| 20 | 8:00 | 849923 | 298215 | 20.23 | 2.02 | 2.10 |
| 21 | 8:00 | 852125 | 300322 | 20.23 | 2.20 | 2.11 |
| 22 | 8:00 | 854357 | 302477 | 20.35 | 2.23 | 2.15 |
| 23 | 8:00 | 856814 | 304534 | 21.88 | 2.46 | 2.06 |
| 24 | 8:00 | 859119 | 306541 | 22.59 | 2.30 | 2.01 |
| 25 | 8:00 | 861601 | 308637 | 23.88 | 2.48 | 2.09 |
| 26 | 8:00 | 863835 | 310701 | 23.18 | 2.23 | 2.06 |
| 27 | 8:00 | 865898 | 312780 | 20.70 | 2.06 | 2.07 |
| 28 | 8:00 | 868287 | 314813 | 22.82 | 2.39 | 2.03 |
| 29 | 8:00 | 870134 | 316804 | 20.11 | 1.84 | 1.99 |
| 30 | 8:00 | 872783 | 318948 | 22.82 | 2.65 | 2.14 |

| MAR 2010 | TIME | CONTROL BLD. | METER DISCHG. | TANK LEVEL | GAL PUMPED | GAL USED |
|---|---|---|---|---|---|---|
| 1. | 8:00 | 740108 | 198331 | 20.00 | 2.02 | 2.11 |
| 2. | 8:00 | 742335 | 200335 | 20.94 | 2.22 | 2.00 |
| 3. | 8:00 | 744687 | 202356 | 22.23 | 2.35 | 2.02 |
| 4. | 8:00 | 746902 | 204346 | 21.41 | 2.21 | 1.99 |
| 5. | 8:00 | 748957 | 206334 | 21.05 | 2.05 | 1.98 |
| 6. | 8:00 | 751201 | 208306 | 21.76 | 2.25 | 1.97 |
| 7. | 8:00 | 753652 | 210289 | 23.65 | 2.45 | 1.98 |
| 8. | 8:00 | 755745 | 212298 | 22.46 | 2.09 | 2.00 |
| 9. | 8:00 | 757736 | 214330 | 20.11 | 1.99 | 2.13 |
| 10. | 8:00 | 759978 | 216292 | 21.65 | 2.24 | 2.16 |
| 11. | 8:00 | 762099 | 218284 | 21.41 | 2.12 | 1.99 |
| 12. | 8:00 | 764558 | 220249 | 23.76 | 2.46 | 1.96 |
| 13. | 8:00 | 766671 | 222217 | 23.06 | 2.12 | 1.97 |
| 14. | 8:00 DSL | 768544 | 224125 | 20.70 | 1.87 | 1.80 |
| 15. | 8:00 | 770761 | 226178 | 21.17 | 2.21 | 2.05 |
| 16. | 8:00 | 773067 | 228215 | 21.88 | 2.30 | 2.04 |
| 17. | 8:00 | 775494 | 230237 | 23.29 | 2.43 | 2.02 |
| 18. | 8:00 | 777515 | 232261 | 21.17 | 2.02 | 2.03 |
| 19. | 8:00 | 779996 | 234280 | 23.05 | 2.48 | 2.01 |
| 20. | 8:00 | 781729 | 236299 | 20.23 | 1.73 | 2.01 |
| 21. | 8:00 | 784385 | 238308 | 23.88 | 2.65 | 2.00 |
| 22. | 8:00 | 786576 | 240347 | 23.29 | 2.19 | 2.03 |
| 23. | 8:00 | 788562 | 242358 | 20.94 | 1.98 | 2.01 |
| 24. | 8:00 | 790982 | 244359 | 23.17 | 2.42 | 2.00 |
| 25. | 8:00 | 792782 | 246343 | 19.99 | 1.80 | 1.98 |
| 26. | 8:00 | 795217 | 248330 | 22.46 | 2.43 | 1.88 |
| 27. | 8:00 | 797526 | 250307 | 23.41 | 2.31 | 1.97 |
| 28. | 8:00 | 799612 | 252373 | 21.29 | 2.08 | 2.06 |
| 29. | 8:00 | 802014 | 254452 | 22.71 | 2.40 | 2.07 |
| 30. | 8:00 | 803974 | 256510 | 20.70 | 1.96 | 2.06 |
| 31. | 8:00 | 806420 | 258490 | 23.06 | 2.44 | 1.98 |

| FEB 2010 | TIME | CONTROL BLD. | METER DISCHG. | TANK LEVEL | GAL PUMPED | GAL. USED |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 676299 | 139478 | 22.59 | 2.65 | 2.25 |
| 2 | 8:00 | 678531 | 141680 | 20.82 | 2.24 | 2.21 |
| 3 | 8:00 | 680724 | 143884 | 20.23 | 2.09 | 2.12 |
| 4 | 8:00 | 683452 | 146082 | 22.82 | 2.72 | 2.19 |
| 5 | 8:00 | 685584 | 148276 | 20.11 | 2.13 | 2.19 |
| 6 | 8:00 | 687869 | 150469 | 20.46 | 2.38 | 2.17 |
| 7 | 8:00 | 690580 | 152645 | 22.94 | 2.71 | 2.17 |
| 8 | 8:00 | 692884 | 154894 | 21.52 | 2.30 | 2.24 |
| 9 | 8:00 | 694949 | 157043 | 20.11 | 2.06 | 2.15 |
| 10 | 8:00 | 697664 | 159160 | 23.40 | 2.71 | 2.11 |
| 11 | 8:00 | 699752 | 161259 | 21.17 | 2.09 | 2.09 |
| 12 | 8:00 | 702246 | 163303 | 23.52 | 2.49 | 2.15 |
| 13 | 8:00 | 703983 | 165303 | 20.23 | 1.74 | 2.00 |
| 14 | 8:00 | 706683 | 167372 | 23.88 | 2.70 | 2.06 |
| 15 | 8:00 | 708842 | 169430 | 22.70 | 2.15 | 2.05 |
| 16 | 8:00 | 710851 | 171502 | 19.99 | 2.00 | 2.07 |
| 17 | 8:00 | 713124 | 173543 | 21.17 | 2.27 | 2.04 |
| 18 | 8:00 | 715565 | 175596 | 23.17 | 2.44 | 2.05 |
| 19 | 8:00 | 717908 | 177705 | 22.94 | 2.34 | 2.11 |
| 20 | 8:00 | 719925 | 179730 | 20.82 | 2.02 | 2.03 |
| 21 | 8:00 | 722290 | 181807 | 22.34 | 2.36 | 2.07 |
| 22 | 8:00 | 724427 | 183936 | 21.17 | 2.13 | 2.12 |
| 23 | 8:00 | 726949 | 185993 | 23.29 | 2.52 | 2.05 |
| 24 | 8:00 | 729000 | 188040 | 21.05 | 2.05 | 2.04 |
| 25 | 8:00 | 731478 | 190085 | 23.64 | 2.47 | 2.04 |
| 26 | 8:00 | 733277 | 192163 | 20.11 | 1.80 | 2.08 |
| 27 | 8:00 | 735924 | 194166 | 23.88 | 2.65 | 2.00 |
| 28 | 8:00 | 738086 | 196220 | 22.94 | 2.16 | 2.06 |

| JAN. 2010 | Time | Cont. Bldg. | Mntr. Bldg. | Tank Level | Gal. pumped | Gal. used |
|---|---|---|---|---|---|---|
| 1 | 8:00 | 599397 | 067696 | 23.29 | 2.56 | 2.31 |
| 2 | 8:00 | 601835 | 069996 | 23.76 | 2.44 | 2.30 |
| 3 | 8:00 | 602060 | 072326 | 22.96 | 2.50 | 2.30 |
| 4 | 8:00 | 606486 | 074683 | 20.23 | ? 4.42 | 2.35 |
| 5 | 8:00 | 609301 | 077004 | 22.46 | 2.82 | 2.32 |
| 6 | 8:00 | 611902 | 079373 | 23.08 | 2.60 | 2.36 |
| 7 | 8:00 | 614359 | 081819 | 22.11 | 2.45 | 2.44 |
| 8 | 8:00 | 616685 | 084223 | 20.58 | 2.32 | 2.40 |
| 9 | 8:00 | 619448 | 0865568 | 22.46 | 2.76 | 2.33 |
| 10 | 8:00 | 621845 | 088957 | 21.52 | 2.39 | 2.38 |
| 11 | 8:00 | 624565 | 091372 | 22.23 | 2.72 | 2.41 |
| 12 | 8:00 | 626909 | 093711 | 20.82 | 2.34 | 2.33 |
| 13 | 8:00 | 629661 | 096075 | 22.35 | 2.75 | 2.36 |
| 14 | 8:00 | 632148 | 098350 | 22.35 | 2.48 | 2.28 |
| 15 | 8:00 | 634674 | 100680 | 22.94 | 2.42 | 2.33 |
| 16 | 8:00 | 637012 | 102955 | 21.52 | 2.33 | 2.27 |
| 17 | 8:00 | 639610 | 105266 | 23.64 | 2.59 | 2.31 |
| 18 | 8:00 | 641830 | 107631 | 20.00 | 2.22 | 2.37 |
| 19 | 8:00 | 644556 | 109941 | 23.41 | 2.72 | 2.31 |
| 20 | 8:00 | 646763 | 112251 | 19.99 | 2.20 | 2.31 |
| 21 | 8:00 | 649528 | 114576 | 23.64 | 2.76 | 2.32 |
| 22 | 8:00 | 651850 | 116962 | 20.58 | 2.32 | 2.39 |
| 23 | 8:00 | 654200 | 119241 | 20.93 | 2.35 | 2.28 |
| 24 | 8.00 | 656952 | 121575 | 22.35 | 2.75 | 2.33 |
| 25 | 8:00 | 659278 | 123946 | 20.71 | 2.32 | 2.37 |
| 26 | 8:00 | 662044 | 126312 | 22.11 | 2.76 | 2.36 |
| 27 | 8:00 | 664428 | 128526 | 23.00 | 2.38 | 2.21 |
| 28 | 8:00 | 666519 | 130682 | 20.82 | 2.09 | 2.16 |
| 29 | 8:00 | 669176 | 132876 | 22.71 | 2.66 | 2.19 |
| 30 | 8:00 | 671291 | 135040 | 2023 | 2.12 | 2.17 |
| 31 | 8:00 | 673643 | 137223 | 21.17 | 2.35 | 2.18 |

# Appendix C

5210 WATER UTILITIES FUND
939 ANACONDA MUNICIPAL WATER

| Org Account Object | Expended Current Month | Expended YTD | Encumbered YTD | Committed YTD | Current Appropriation | Available Appropriation | % Committed |
|---|---|---|---|---|---|---|---|
| 430000 PUBLIC WORKS | | | | | | | |
| 430501 | | | | | | | |
| WATER UTILITIES | | | | | | | |
| 110 FULL-TIME WAGES | 17,644.21 | 201,876.44 | 0.00 | 201,876.44 | 216,893.00 | 15,016.56 | 93 % |
| 115 PART-TIME WAGES | 0.00 | 3,168.77 | 0.00 | 3,168.77 | 20,000.00 | 16,831.23 | 16 % |
| 120 OVER-TIME WAGES | 694.03 | 9,880.43 | 0.00 | 9,880.43 | 15,000.00 | 5,119.57 | 66 % |
| 140 EMPLOYER BENEFITS | 7,943.68 | 93,423.78 | 0.00 | 93,423.78 | 94,398.00 | 974.22 | 99 % |
| 210 OFFICE SUPPLIES | 799.99 | 2,892.68 | 0.00 | 2,892.68 | 3,500.00 | 607.32 | 83 % |
| 220 OPERATING SUPPLIES | 1,123.46 | 12,986.25 | 0.00 | 12,986.25 | 15,000.00 | 2,013.75 | 87 % |
| 230 REPAIR/MAINT SUPPLIES | 1,921.52 | 13,408.82 | 0.00 | 13,408.82 | 26,077.00 | 12,668.18 | 51 % |
| 231 GAS/OIL | 450.84 | 4,194.97 | 0.00 | 4,194.97 | 4,700.00 | 505.03 | 89 % |
| 311 POSTAGE | 627.30 | 7,775.37 | 0.00 | 7,775.37 | 9,500.00 | 1,724.63 | 82 % |
| 316 RADIO MAINTENANCE | 0.00 | 85.00 | 0.00 | 85.00 | 500.00 | 415.00 | 17 % |
| 330 SUBSCRIPTION,DUES,ADVERT | 0.00 | 40.00 | 0.00 | 40.00 | 1,000.00 | 960.00 | 4 % |
| 340 UTILITIES | 7,640.70 | 92,018.42 | 0.00 | 92,018.42 | 115,000.00 | 22,981.58 | 80 % |
| 345 TELEPHONE | 265.94 | 3,332.09 | 0.00 | 3,332.09 | 4,500.00 | 1,167.91 | 74 % |
| 346 PUBLIC WATER SUPPLY FEE | 0.00 | 5,588.00 | 0.00 | 5,588.00 | 6,000.00 | 412.00 | 93 % |
| 350 PROFESSIONAL SERVICES | 392.10 | 23,493.99 | 0.00 | 23,493.99 | 27,500.00 | 4,006.01 | 85 % |
| 355 DATA PROCESSING SERVICES | 0.00 | 2,773.00 | 0.00 | 2,773.00 | 4,000.00 | 1,227.00 | 69 % |
| 360 REPAIRS/MAINTENANCE | 0.00 | 1,049.25 | 0.00 | 1,049.25 | 12,500.00 | 11,450.75 | 8 % |
| 367 WEED CONTROL | 0.00 | 0.00 | 0.00 | 0.00 | 5,000.00 | 5,000.00 | 0 % |
| 370 TRAVEL, MEETS | 0.00 | 238.08 | 0.00 | 238.08 | 1,500.00 | 1,261.92 | 16 % |
| 380 WORKSHOP & EDUCATION | 0.00 | 150.00 | 0.00 | 150.00 | 500.00 | 350.00 | 30 % |
| 389 RESERV DEPOSIT REFUNDS | 0.00 | 0.00 | 0.00 | 0.00 | 600.00 | 600.00 | 0 % |
| 390 PURCHASED SERVICES | 150.00 | 6,749.14 | 0.00 | 6,749.14 | 8,800.00 | 2,050.86 | 77 % |
| 398 CONTRACTED SERVICES | 0.00 | 0.00 | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 0 % |
| 540 TAXES | 0.00 | 2,742.84 | 0.00 | 2,742.84 | 4,000.00 | 1,257.16 | 69 % |
| 815 CUSTOMER ADJUSTMENTS | 0.00 | 103.71 | 0.00 | 103.71 | 1,000.00 | 896.29 | 10 % |
| 940 MACHINERY & EQUIPMENT | 0.00 | 21,322.98 | 0.00 | 21,322.98 | 21,323.00 | 0.02 | 100 % |
| 952 CONSTRUCTION/WATER | 10,301.00 | 1,414,430.42 | 0.00 | 1,414,430.42 | 2,070,500.00 | 656,069.58 | 68 % |
| **Account Total:** | **49,954.77** | **1,923,724.43** | **0.00** | **1,923,724.43** | **2,691,291.00** | **767,566.57** | **71 %** |
| **Account Group Total:** | **49,954.77** | **1,923,724.43** | **0.00** | **1,923,724.43** | **2,691,291.00** | **767,566.57** | **71 %** |
| 490000 DEBT SERVICE | | | | | | | |
| 490201 | | | | | | | |
| REVENUE BONDS DNRC | | | | | | | |
| 610 PRINCIPAL | 0.00 | 330,000.00 | 0.00 | 330,000.00 | 330,000.00 | 0.00 | 100 % |
| 620 INTEREST | 0.00 | 63,000.00 | 0.00 | 63,000.00 | 63,000.00 | 0.00 | 100 % |
| 630 PAYING AGENT FEES | 300.00 | 300.00 | 0.00 | 300.00 | 300.00 | 0.00 | 100 % |
| **Account Total:** | **300.00** | **393,300.00** | **0.00** | **393,300.00** | **393,300.00** | **0.00** | **100 %** |
| **Account Group Total:** | **300.00** | **393,300.00** | **0.00** | **393,300.00** | **393,300.00** | **0.00** | **100 %** |
| **Organization Total:** | **50,254.77** | **2,317,024.43** | **0.00** | **2,317,024.43** | **3,084,591.00** | **767,566.57** | **75 %** |

5210 WATER UTILITIES FUND
957 COMP. LIABILITY INSURANCE

| Org Account Object | Expended Current Month | Expended YTD | Encumbered YTD | Committed YTD | Current Appropriation | Available Appropriation | % Committed |
|---|---|---|---|---|---|---|---|
| 510000 MISCELLANEOUS | | | | | | | |
| 510330 | | | | | | | |
| COMP. LIABILITY INSURANCE | | | | | | | |
| 510 INSURANCE | 0.00 | 43,181.63 | 0.00 | 43,181.63 | 43,182.00 | 0.37 | 100 % |
| **Account Total:** | **0.00** | **43,181.63** | **0.00** | **43,181.63** | **43,182.00** | **0.37** | **100 %** |
| **Account Group Total:** | **0.00** | **43,181.63** | **0.00** | **43,181.63** | **43,182.00** | **0.37** | **100 %** |
| **Organization Total:** | **0.00** | **43,181.63** | **0.00** | **43,181.63** | **43,182.00** | **0.37** | **100 %** |
| **Fund Total:** | **50,254.77** | **2,360,206.06** | **0.00** | **2,360,206.06** | **3,127,773.00** | **767,566.94** | **75 %** |
| **Grand Total:** | **50,254.77** | **2,360,206.06** | **0.00** | **2,360,206.06** | **3,127,773.00** | **767,566.94** | **75 %** |

5210 WATER UTILITIES FUND

| Account | Received Current Month | Received YTD | Estimated Revenue | Revenue To Be Received | % Received |
|---|---|---|---|---|---|
| 330000 INTERGOVERNMENTAL REVENUE | | | | | |
| 334013 NRD WEST FOURTH STREET | -517,183.44 | 0.00 | 0.00 | 0.00 | ** % |
| 334014 NRD EAST THIRD ST 2007-2008 | -820,108.40 | 0.00 | 12,708.00 | 12,708.00 | 0 % |
| 334015 NRD WEST THIRD | 1,337,291.84 | 1,337,291.84 | 1,988,478.00 | 651,186.16 | 67 % |
| 334019 NRD CROSS STREETS | 0.00 | 0.00 | 80,644.00 | 80,644.00 | 0 % |
| **Account Group Total:** | **0.00** | **1,337,291.84** | **2,081,830.00** | **744,538.16** | **64 %** |
| 340000 FEES & CHARGES | | | | | |
| 343021 WATER METERS | 49,489.09 | 209,116.86 | 150,000.00 | -59,116.86 | 139 % |
| 343022 WATER FLAT RATE | 207,016.14 | 826,259.66 | 830,000.00 | 3,740.34 | 100 % |
| 343028 WATER SPRINKLING FEES | 76,715.35 | 151,101.32 | 150,000.00 | -1,101.32 | 101 % |
| **Account Group Total:** | **333,220.58** | **1,186,477.84** | **1,130,000.00** | **-56,477.84** | **105 %** |
| 360000 MISCELLANEOUS REVENUES | | | | | |
| 360101 MISC REVENUES | 1,311.43 | 15,602.93 | 14,000.00 | -1,602.93 | 111 % |
| **Account Group Total:** | **1,311.43** | **15,602.93** | **14,000.00** | **-1,602.93** | **111 %** |
| 370000 INVESTMENT EARNINGS | | | | | |
| 371010 INVESTMENT EARNINGS | 77.95 | 10,388.49 | 2,000.00 | -8,388.49 | 519 % |
| **Account Group Total:** | **77.95** | **10,388.49** | **2,000.00** | **-8,388.49** | **519 %** |
| **Fund Total:** | **334,609.96** | **2,549,761.10** | **3,227,830.00** | **678,068.90** | **79 %** |
| **Grand Total:** | **334,609.96** | **2,549,761.10** | **3,227,830.00** | **678,068.90** | **79 %** |

For the Accounting Periods: 7/11 - 6/12

Accounts 101000-101000, Tax Receipt Journal, AND Fund=5310

| Fund/Account/ Doc/Line # | | Description | Vendor/Receipt From | Acct. Period | Debit | Credit |
|---|---|---|---|---|---|---|
| 5310 WASTEWATER/SEWER FUND | | | | | | |
| 101000 CASH | | | | | | |
| TR | 721 264 | TR for 2011 Juy taxes. | | 7/11 | 3,457.30 | |
| TR | 723 214 | Receipt voucher for 08/11 | | 8/11 | 2,189.19 | |
| TR | 724 229 | Receipt voucher for September 2011. | | 9/11 | 13,668.52 | |
| TR | 725 245 | Receipt | | 10/11 | 1,576.03 | |
| TR | 727 61 | Payment Cancellation for parcels 90 | | 11/11 | | 31.50 |
| TR | 729 57 | Cancellation voucher for parcel 750 | | 11/11 | | 31.50 |
| TR | 731 243 | Receipt vocher 11/11. | | 11/11 | 105,329.92 | |
| TR | 751 340 | Receipt voucher for 12/11. | | 12/11 | 22,276.44 | |
| TR | 752 255 | Receipt vocher for 01/12. | | 1/12 | 5,133.10 | |
| TR | 754 207 | Receipt voucher for 02/12 | | 2/12 | 6,063.84 | |
| TR | 755 239 | Receipt voucher 03/12 | | 3/12 | 4,275.62 | |
| TR | 756 260 | Receipt voucher for 03/12 | | 4/12 | 5,150.88 | |
| TR | 760 293 | Receipt | | 5/12 | 72,665.37 | |
| TR | 759 70 | Payment Cancellation for parcel 128 | | 6/12 | | 32.17 |
| TR | 773 272 | Receipt voucher for 06/12. | | 6/12 | 16,600.18 | |
| TR | 774 31 | Tax Refunds parcel 187500. The pos | | 6/12 | | 0.75 |
| TR | 775 225 | Receipt June 16-30, 2012 | | 6/12 | 4,202.99 | |
| | | **Account Total:** | | | **262,589.38** | **95.92** |
| | | **Fund Total:** | | | **262,589.38** | **95.92** |
| | | **Grand Total:** | | | **262,589.38** | **95.92** |

# *Appendix D*

mt.gov
Montana's Official State Website

Search for census data, used by the **Treasure State Endowment Program** and the **Community Development Block Grant Program**. Target rates are calculated for the community or county.

Select the City/Designated location Anaconda-Deer Lodge or select the County Choose County

| | |
|---|---|
| **City** | Anaconda-Deer Lodge |
| **County** | Deer Lodge |
| **Total Population** | 9,417 |
| **Total Households** | 3,995 |
| **Median Household Income** | $26,305 |
| **Low & Moderate Income Percent** | 44.3 |
| **Percent Poverty** | 15.8 |

| Target Rates | |
|---|---|
| Water & Waste Water | $50.42 |
| Water Only | $30.69 |
| WasteWater Only | $19.73 |
| Solid Waste Only | $6.58 |

Amounts are computed using the 2000 census and target percentages based on a target rate survey completed in 2003. The target percentages are:

- 2.3% combined (water and wastewater)
- 1.4% for water alone
- 0.9% for wastewater alone
- 0.3% for solid waste

To see a map of the City/Town/CDP you are interested in, go to the U.S. Census Bureau (http://ftp2.census.gov/geo/maps/blk2000/st30_Montana/Place/) web site which includes an Index of all Places in Montana. Maps are in PDF format.

Instructions on how to view and print Census Bureau PDF maps. (http://www.census.gov/geo/www/tiger/rd_2ktiger/pl_maps/pdfprint.html)
For more information about Census 2000 maps, please contact the Census and Economic Information Center, at (406) 841-2743 or email ceic@mt.gov (mailto:ceic@mt.gov) .

**Contacts:**

| | |
|---|---|
| Treasure State Endowment Program (TSEP) | 406 841-2770 |
| Community Development Block Grant Program (CDBG) | 406 841-2770 |
| Census & Economic Information Center | 406 841-2740 |
| Community Development Block Grant - (Business Resources) | 406 841-2734 |

**Definitions page for LMI web site**

**Census Designated Place (CDP):** Census designated places (CDPs) have been created for each decennial census as the statistical counterparts of incorporated places. CDPs are delineated to provide census data for concentrations of population, housing, and commercial structures that are identifiable by name but are not within an incorporated place. CDP boundaries usually are defined in cooperation with state, local, and tribal officials. These boundaries, which usually coincide with visible features or the boundary of an adjacent incorporated place or other legal entity boundary, have no legal status, nor do these places have officials elected to serve traditional municipal functions.

**Household:** A household includes all the people who occupy a housing unit as their usual place of residence.

**Income of households:** This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not.

**Individuals for whom poverty status is determined:** Poverty status was determined for all people except institutionalized people, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old.

**Low and Moderate Income Percent:** Low and Moderate Income Percent is calculated by U.S. Housing and Urban Development (HUD) using data from the U.S. Census Bureau's Decennial Census, specifically for the Community Development Block Grant Program (CDBG). LMI families are defined as those families whose income does not exceed 80% of the county median income for the previous year or 80% of the median income of the entire non-metropolitan area of the State of Montana, whichever is higher.

**Median income:** The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median.

**Population:** All people (male and female, child and adult) living in a given geographic area.

**Notes:** Total Population and Total Households are from Summary File (SF) 1, 100% data. Poverty Rates and Median Household Income are from Summary File (SF) 3, Sample data. Low and Moderate Income Percentage was developed by HUD using Census 2000 data.

**Sources:** U.S. Census Bureau, Census 2000, Decennial Census of Population and Housing, Summary File (SF) 1 and Summary File (SF) 3 and U.S. Department of Housing and Urban Development (HUD), Community Planning and Development

# Appendix E

# Appendix E - Detailed Distribution System Improvements Cost Estimate

| Phase | Street | From | To | Length (feet) | | | | | | | | | | | | Total | Hydrants | Valves | Pump Station | Water Metering | Estimated Unit Price | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing Water Line Size | | | | | | | Replacement Water Line Size | | | | | Repl. | | | | | | |
| | | | | 20" | 16" | 12" | 8" | 6" | 4" | 2" | 20" | 16" | 12" | 8" | 6" | Length | | | | | | |
| Phase I | Poplar | Fourth | Fifth | | | | | 390 | | | | | | 390 | | 390 | | | | | $ 170 | $ 66,300 |
| | Alley by Sunnyside | Cougar Trail | End | | | | | 270 | 590 | | | | | | 860 | 860 | | | | | $ 160 | $ 137,600 |
| | Oak | Fourth | Eighth | | | | | 1,430 | | | | | | | 1,430 | 1,430 | | | | | $ 160 | $ 228,800 |
| | Fifth | Oak | Cherry | | | | | | 250 | | | | | | 250 | 250 | | | | | $ 160 | $ 40,000 |
| | Cherry | Fourth | Eighth | | | | | 1,480 | | | | | | | 1,480 | 1,480 | | | | | $ 160 | $ 236,800 |
| | Cedar | Seventh | Eighth | | | | | 390 | | | | | | | 390 | 390 | | | | | $ 160 | $ 62,400 |
| | Sixth | Birch | Ash | | | | | 280 | 420 | | | | | | 700 | 700 | | | | | $ 160 | $ 112,000 |
| | Seventh | Ash | Washington | | | | | 330 | | | | | | | 330 | 330 | | | | | $ 160 | $ 52,800 |
| | Fifth | Ash | Monroe | | | | | 330 | 1,530 | | | | | | 1,860 | 1,860 | | | | | $ 160 | $ 297,600 |
| | Washingoon | Park | Commercial | | | | | | | 250 | | | | | 250 | 250 | | | | | $ 160 | $ 40,000 |
| | South of Park | Adams | Jefferson | | | | | | | 220 | | | | | 220 | 220 | | | | | $ 160 | $ 35,200 |
| | Monroe | Fourth | Park | | | | 760 | | | | | | | 760 | | 760 | | | | | $ 170 | $ 129,200 |
| | Jefferson | Third | Railroad | | | | | | | | | | | | 280 | 280 | | | | | $ 160 | $ 44,800 |
| | Walnut | Park | Commercial | | | | | | | 315 | | | | | 315 | 315 | | | | | $ 160 | $ 50,400 |
| | Elm | Park | Commercial | | | | | 300 | | | | | | | 300 | 300 | | | | | $ 160 | $ 48,000 |
| | Hickory | Commercial | Front | | | | | | 300 | | | | | | 300 | 300 | | | | | $ 160 | $ 48,000 |
| | Sunnyside | Fifth | Cougar Trail | | | | | 1,100 | | | | | | | 1,100 | 1,100 | | | | | $ 160 | $ 176,000 |
| | Cougar Trail | Sunnyside | Alley | | | | | 350 | | | | | | | 350 | 350 | | | | | $ 160 | $ 56,000 |
| Subtotal | | | | | | | 760 | 6,650 | 3,090 | 785 | | | | 1,150 | 10,415 | 11,565 | | | | | | $ 1,861,900 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 186,190.00 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 307,213.50 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 2,355,303.50 |
| | | | | | | | | | | | | | | | | | | | | | | |
| Phase II | Tamarack | Chlorination Bldg | Valve House | 1,930 | | | | | | | 1,930 | | | | | 1,930 | | | | | $ 190 | $ 366,700 |
| | Supply | Valve House | Poplar | | 3,450 | | | | | | | 3,450 | | | | 3,450 | | | | | $ 185 | $ 638,250 |
| | Fourth | Poplar | Sycamore | | | 490 | | | | | | | 490 | | | 490 | | | | | $ 190 | $ 93,100 |
| | Sycamore | Fourth | Fifth | | | 230 | | | | 360 | | | 230 | 360 | | 590 | | | | | $ 180 | $ 106,200 |
| | Fifth | Sycamore | Beech | | | 430 | | | | | | | 430 | | | 430 | | | | | $ 190 | $ 81,700 |
| | Cypress | Fifth | Stadium | | | 1,100 | | | | | | | 1,100 | | | 1,100 | | | | | $ 190 | $ 209,000 |
| | Fifth | Sycamore | Poplar | | | | | | | 360 | | | | 360 | | 360 | | | | | $ 170 | $ 61,200 |
| Subtotal | | | | 1,930 | 3,450 | 2,250 | | | | 720 | 1,930 | 3,450 | 2,250 | 720 | | 8,350 | | | | | | $ 1,556,150 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 155,615.00 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 256,764.75 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 1,968,529.75 |

# Appendix E - Detailed Distribution System Improvements Cost Estimate

| Phase | Street | From | To | Length (feet) | | | | | | | | | | | | Total | Hydrants | Valves | Pump Station | Water Metering | Estimated Unit Price | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing Water Line Size | | | | | | | Replacement Water Line Size | | | | | Repl. | | | | | | |
| | | | | 20" | 16" | 12" | 8" | 6" | 4" | 2" | 20" | 16" | 12" | 8" | 6" | Length | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Phase III | Maple | Pennsylvania | Warm Springs Creek | | | | | | | 280 | | | | | 280 | 280 | | | | | $ 160 | $ 44,800 |
| | Locust | Pennsylvania | Warm Springs Creek | | | | | | | 400 | | | | | 400 | 400 | | | | | $ 160 | $ 64,000 |
| | Hickory | Pennsylvania | Warm Springs Creek | | | | | 210 | | | | | | | 210 | 210 | | | | | $ 160 | $ 33,600 |
| | Main | Pennsylvania | Warm Springs Creek | | | | | | | 175 | | | | | 175 | 175 | | | | | $ 160 | $ 28,000 |
| | Cherry | Pennsylvania | Warm Springs Creek | | | | | | | 380 | | | | | 380 | 380 | | | | | $ 160 | $ 60,800 |
| | Elm | Pennsylvania | Warm Springs Creek | | | | | | | 200 | | | | | 200 | 200 | | | | | $ 160 | $ 32,000 |
| | Warm Springs Creek | Elm | Maple | | | | | | | | | | | | 430 | 430 | | | | | $ 160 | $ 68,800 |
| | Warm Springs Creek | Hickory | Main | | | | | | | | | | | | 390 | 390 | | | | | $ 160 | $ 62,400 |
| | Washoe Park Road | Pennsylvania | Maple | | | | | | | | | | | | 3,400 | 3,400 | | | | | $ 160 | $ 544,000 |
| | Copper Sands | Maple | Cedar | | | | | | | | | | | | 2,480 | 2,480 | | | | | $ 160 | $ 396,800 |
| | Washoe Park Road - North of Baseball Fields | | | | | | | | 534 | | | | | | 534 | 534 | | | | | $ 160 | $ 85,440 |
| | Cherry | Connect to Copper Sands | | | | | | | | | | | | | 160 | 160 | | | | | $ 160 | $ 25,600 |
| Subtotal | | | | | | | | 210 | 534 | 1,435 | | | | | 9,039 | 9,039 | | | | | | $ 1,446,240 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 144,624.00 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 238,629.60 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 1,829,493.60 |
| | | | | | | | | | | | | | | | | | | | | | | |
| Phase IV | Park Avenue | Linden St. | Larch St. | | | | 3,292 | 3,630 | | | | | | 3,292 | 3,630 | 6,922 | | | | | $ 165 | $ 1,142,130 |
| | Larch St. | Park Ave. | Pennsylvania Ave. | | | | 289 | 421 | | | | | | 289 | 421 | 710 | | | | | $ 165 | $ 117,130 |
| | Pennsylvania Ave. | Larch St. | Palmeto | | | | | 3,780 | | | | | | | 3,780 | 3,780 | | | | | $ 160 | $ 604,736 |
| | Elm | Commercial | Pennsylvania | | | | | 830 | | | | | | | 830 | 830 | | | | | $ 160 | $ 132,800 |
| Subtotal | | | | | | | 3,581 | 8,660 | | | | | | 3,581 | 8,660 | 12,241 | | | | | | $ 1,996,796 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 199,679.62 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 329,471.37 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 2,525,947.19 |
| | | | | | | | | | | | | | | | | | | | | | | |
| Phase V | Western Addition | | | | | | | | | | | | | | | | 21 | 25 | | | $ 5,000 | $ 230,000 |
| | Pauline Drive | | | | | | | 2,100 | | | | | | | 2,100 | 2,100 | | | | | $ 160 | $ 336,000 |
| | Jefferson Way | | | | | | | 1,310 | | | | | | | 1,310 | 1,310 | | | | | $ 160 | $ 209,600 |
| | Elaine Drive | | | | | | | 800 | | | | | | | 800 | 800 | | | | | $ 160 | $ 128,000 |
| | Diane Drive | | | | | | | 180 | | | | | | | 180 | 180 | | | | | $ 160 | $ 28,800 |
| | Heather Drive | | | | | | | 830 | | | | | | | 830 | 830 | | | | | $ 160 | $ 132,800 |
| | Caroline Court | | | | | | | 230 | | | | | | | 230 | 230 | | | | | $ 160 | $ 36,800 |
| | Christine Court | | | | | | | 200 | | | | | | | 200 | 200 | | | | | $ 160 | $ 32,000 |
| | Sharon Court | | | | | | | 215 | | | | | | | 215 | 215 | | | | | $ 160 | $ 34,400 |
| Subtotal | | | | | | | | 5,865 | | | | | | | 5,865 | 5,865 | 21 | 25 | | | | $ 1,168,400 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 116,840.00 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 192,786.00 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 1,478,026.00 |

# Appendix E - Detailed Distribution System Improvements Cost Estimate

| Phase | Street | From | To | Length (feet) | | | | | | | | | | | | Total | Hydrants | Valves | Pump Station | Water Metering | Estimated Unit Price | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing Water Line Size | | | | | | | Replacement Water Line Size | | | | | Repl. | | | | | | |
| | | | | 20" | 16" | 12" | 8" | 6" | 4" | 2" | 20" | 16" | 12" | 8" | 6" | Length | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Phase VI | Birch St. South End | | | | | | | | | | | | | | | | | | 1 | | $ 500,000 | $ 500,000 |
| Subtotal | | | | | | | | | | | | | | | | | | | 1 | | | $ 500,000 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 50,000.00 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 82,500.00 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 632,500.00 |
| | | | | | | | | | | | | | | | | | | | | | | |
| Overall Subtotal | | | | 1,930 | 3,450 | 2,250 | 4,341 | 21,385 | 3,624 | 2,940 | 1,930 | 3,450 | 2,250 | 5,451 | 33,979 | 47,060 | 21 | 25 | 1 | 0 | | $ 8,529,486.20 |
| 10% Contingency | | | | | | | | | | | | | | | | | | | | | | $ 852,948.62 |
| 15% Engineering Design and Oversight | | | | | | | | | | | | | | | | | | | | | | $ 1,407,365.22 |
| Overall Total | | | | | | | | | | | | | | | | | | | | | | $ 10,789,800.04 |