CITY OF SCOTTSBLUFF
Scottsbluff City Hall Council Chambers
2525 Circle Drive, Scottsbluff, NE 69361
CITY COUNCIL AGENDA

Regular Meeting
August 5, 2019
6:00 PM

1. Roll Call
2. Pledge of Allegiance.
3. **For public information, a copy of the Nebraska Open Meetings Act is available for review.**
4. Notice of changes in the agenda by the city clerk (Additions may not be made to this agenda less than 24 hours before the beginning of the meeting unless added under Item 5 of this agenda.)
5. Citizens with business not scheduled on the agenda (As required by state law, no matter may be considered under this item unless council determines that the matter requires emergency action.)
6. Closed Session
   a) Council reserves the right to enter into closed session if deemed necessary if the item is on the agenda as per Section 84-1410 of the Nebraska Revised Statutes.
   b) Council to acknowledge receipt of the draft report from M.C. Schaff & Associates on the Platte Alliance Water Supply Level II Study.
7. Consent Calendar: (Items in the consent calendar are proposed for adoption by one action for all items unless any member of the council requests that an item be considered separately.)
   a) Approve the minutes of the July 29, 2019 Regular Meeting.
   b) Council to acknowledge receipt of the draft report from M.C. Schaff & Associates on the Platte Alliance Water Supply Level II Study.
8. Claims
   a) Council to consider and take action on claims of the City.
9. Scottsbluff Youth Council
   a) (informational only):
10. Resolution & Ordinances:
    a) Council to consider an Ordinance updating Cable Television Systems including Franchise Procedures and guidelines for Rights-of-Way.
    b) Council to discuss and consider action on a Resolution extending the date for written notice of termination in participation in the League Association of Risk Management (LARM) and consider the contribution credits for multi-year

commitments.

11. Reports from Staff, Boards & Commissions:

    a) Council to discuss and consider action on a press release to be sent out in conjunction with the cities of Scottsbluff and Gering to identify new candidate locations for the future construction of a regional landfill to serve Western Nebraska.

    b) Council discussion and instruction to staff regarding outlying items of the 2019/2020 FY Budget.

12. Public Comments: The purpose of this agenda item is to allow for public comment of items for potential discussion at a future Council Meeting. Comments brought to the Council are for information only. The Council will not take any action on the item except for referring it to staff to address or placement on a future Council Agenda. This comment period will be limited to three (3) minutes per person

13. Council reports (informational only): This item is intended for Council Members to update and inform other Council Members of meetings attended since the last City Council meeting.

14. Adjournment.

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Closed1

Council reserves the right to enter into closed session if deemed necessary if the item is on the agenda as per Section 84-1410 of the Nebraska Revised Statutes.

Staff Contact:

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Closed2

Council to acknowledge receipt of the draft report from M.C. Schaff & Associates on the Platte Alliance Water Supply Level II Study.

Staff Contact: City Council

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Consent1

Approve the minutes of the July 29, 2019 Regular Meeting.

Staff Contact: City Council

Regular Meeting
July 29, 2019

The Scottsbluff City Council met in a regular meeting on July 29, 2019 at 6:00 p.m. in the Council Chambers of City Hall, 2525 Circle Drive, Scottsbluff. A notice of the meeting had been published on July 26, 2019, in the Star Herald, a newspaper published and of general circulation in the City. The notice stated the date, hour and place of the meeting, that the meeting would be open to the public, that anyone with a disability desiring reasonable accommodations to attend the Council meeting should contact the City Clerk's Office, and that an agenda of the meeting kept continuously current was available for public inspection at the office of the City Clerk in City Hall; provided, the City Council could modify the agenda at the meeting if it determined that an emergency so required. A similar notice, together with a copy of the agenda, also had been emailed to each council member, made available to radio stations KNEB, KMOR, KOAQ, and television stations KSTF and NBC Nebraska, and the Star Herald. The notice was also available on the city's website on July 26, 2019.

Mayor Gonzales presided and City Clerk Wright recorded the proceedings. The meeting was called to order and the Pledge of Allegiance was recited. Mayor Gonzales welcomed everyone in attendance and encouraged all citizens to participate in the council meeting asking those wishing to speak to come to the microphone and state their name and who they are representing for the record. Mayor Gonzales informed those in attendance that a copy of the Nebraska open meetings act is posted in the back of the room on the west wall for the public's review. The following Council Members were present: Raymond Gonzales, Scott Shaver, Jeanne McKerrigan, Nathan Green, and Terry Schaub. Also present were City Manager Johnson and City Attorney Kent Hadenfeldt. Absent: None.

Mayor Gonzales asked if there were any changes to the agenda. Council Member Shaver asked that consent item 7c, approving the absence of Mayor Gonzales from the July 1 and July 15, 2019 Regular Meetings, be removed from the consent calendar to be discussed.

Mayor Gonzales asked if any citizens with business not scheduled on the agenda wished to include an item providing the City Council determines the item requires emergency action. There were none.

Moved by Council Member Shaver, seconded by Council Member Schaub that,

a) "The minutes of the July 15, 2019 Regular Meeting be approved,"
b) "The minutes of the July 17, 2019 Special Meeting be approved,"
d) "A receipt be acknowledged and no action be taken on a liability claim from Don Detweiller. The claim will be withdrawn and forwarded to the City's insurance carrier," "YEAS," McKerrigan, Shaver, Green, Schuab, and Gonzales. "NAYS," None. Absent: None.

Council Member Shaver started discussion on item 7c, approving the absence of Mayor Gonzales from the July 1 and July 15, 2019 Regular Meetings, asking why Council absences need approval. Legal Counsel Hadenfeldt answered there is a State Statute that says any member elected to the body who misses five consecutive regular meetings creates a vacancy unless the absences are excused by the Council. Council Member Shaver commented he thought the only way a member could be removed was because of a recall election. Mr. Hadenfeldt stated this statute identifies vacancy and stated a vacancy occurs when an elected official misses five consecutive regular meetings. Council Member Shaver requested a copy of the statute.

Moved by Council Member Schaub, seconded by Council Member McKerrigan that, "the absence of Mayor Gonzales from the July 1 and July 15, 2019 Regular Council Meetings be excused," "YEAS," Green, Schaub, Shaver, Gonzales, and McKerrigan. "NAYS," None. Absent: None.

Ms. Megan Koppenhafer from Panhandle Area Development District approached Council regarding using CDBG lead testing dollars in the Owner Occupied Rehabilitation Grant as match for a county-wide

lead abatement grant through PADD and Panhandle Public Health District (PPHD). Ms. Koppenhafer explained the Lead Hazard Reduction Grant would provide $1,000,000.00 in funds to abate lead in the homes of families with children under the age of six years. The grant would require a 10% match in which they propose matching with the lead testing dollars available with the Owner Occupied Rehabilitation grant that the City Council has already approved to apply for. Ms. Koppenhafer, added with the City's match, they will still be $40,000.00 away from the required match amount, but it will provide much support. Council Member Shaver questioned if the money could be used if there was not a child in the house under six to qualify. Ms. Koppenhafer answered she understood any lead testing funds could be used as a match as long as lead work was being done with the Owner Occupied Rehabilitation grant. It would not change how the money is being spent, they are just asking for approval from the City of Scottsbluff to use their CDBG dollars as a match. Council Member Shaver asked what would happen if all of the million dollars was not used. Ms. Koppenhafer stated they have four years to use the funding and what is left over is recaptured by HUD, stating the City would still need to commit to the full match even if all of the funding is not used. Mayor Gonzales made the motion, seconded by Council Member Schaub, "to allow PADD to use the Scottsbluff Rehabilitation grant as part of a match for the Lead Hazard Reduction Grant," "YEAS," Shaver, Gonzales, Schaub, McKerrigan, and Green. "NAYS," None. Absent: None.

Regarding the outstanding projects considered by the City, Mr. Mark Bohl, Public Works Director approached Council. Items addressed were:

- Progress of the regional landfill to date. Mr. Bohl explained they have taken the Bald Peak location off the table after looking at topography. They are looking at a 45 mile radius, including Sioux and Banner counties to find a suitable location. They will be sending out a joint press release, to be approved by Council, asking landowners if they have a parcel without wells or irrigation to be considered.
- Pathway update – Mr. Bohl summarized the North section has been eliminated; the sheets concerning that section have been taken out and put in order for bidding purposes. The right of way sections are almost complete and we are on schedule for an August letting. Council Member Shaver asked about the stakes and why they look like they are in the middle of the ditch. Mr. Bohl stated, currently that is where they are placed now, it is a rough staking, but they will be moved to the top part, utilizing fill dirt to bring the sides up.
- 42nd Street – Mr. Bohl stated the project is done; they are putting arrows in the turn lanes and seeding back to the sidewalk.
- 23 Club – Mr. Johnson explained there is a meeting with Baker & Associates on July 30, 2019. There has been one bidder; Baker & Associates is meeting with the bidder to modify, due the funding not being available based on the initial bid to move forward. Tentative timeline is to have on the City Council agenda August 5th.
- Solar Project – Mr. Johnson stated they started flagging for utilities last week.
- Aulick Truck Shop, Reichert Truck Stop & Scooters – Mr. Johnson informed Council all are Tax Increment Financing projects that are finalized, with the exception of Scooters.
- 18th Street Plaza – Mr. Johnson explained this project needs a funding source to complete, which includes hardscaping, public bathrooms, and shaded structures. Council Member Shaver commented he thought 18th Street was finished. He wants to see what is left and the cost.
- RFQ School Safety Zones – Mr. Bohl stated August 6th is the date for the requests to be in. Once in, a scope will be developed, which will include the fee. The 20 mph speed limit will be addressed and how to enforce it.
- Hilltop Estates – Mr. Bohl explained this project is complete. There are paved streets, a lift station and retention pond. All improvements are in, but have not been accepted, due to walkthroughs needing to be completed.

- Western States Bank – Mr. Bohl stated the City has met with the entity and has discussed utilities and bringing the project to code. Also addressed was entrance and exit out of the area.

Mr. Johnson informed Council that if they need more information regarding projects to please contact him; he sends weekly emails and if there is a better mode of communication he needs to know. He informed Council all of the outstanding projects of the City are included in the annual budget. Council Member Shaver commented it is handy to have a list to see what is happening with projects the City has ongoing and is spending money on.

Mr. Johnson explained to Council in order to pay for projects, we need to find a way to fund them with our current revenue streams. This is the reason for the agenda item proposing a five percent occupation tax on fireworks at the point of sale. Currently there are six to seven stands in the City that are in operation for the 4th of July and New Year's. During discussion, Council Member McKerrigan agreed the fireworks occupation tax is a good idea that hits every group. Council Member Green commented he likes the idea of the tax and having a list of outstanding projects to refer to because he is concerned we may start new projects before finishing others. Council Member Shaver agreed with Council Member Green, commenting he wants to know what needs to be finished with the 18th Street Plaza. He thinks we have spent way too much on that project already, but a bathroom is needed. He thinks the fireworks occupation tax is a good idea to look into, he is not ready to move forward at this time, but feels it is something that we need to get more information on. Mayor Gonzales made the motion, seconded by Council Member McKerrigan "to direct City Manager Johnson to research getting information on fireworks and fireworks related occupation taxes to bring back at a future meeting," "YEAS," Schaub, McKerrigan, Gonzales, Green, and Shaver. "NAYS," None. Absent: None.

Regarding the hotel occupation tax, Mr. Johnson explained the current tax is 4%, bringing in approximately $250,000.00 in revenue each year. He asked Council if it was something they would like to consider and what they would suggest increasing it to. Mr. Johnson reminded Council the amount is capped at $700,000.00 before it needs to go to a vote of the people. Council Member Schaub commented this particular tax does not just affect the people here. It brings in revenue from people who travel to this area and does not feel it would hurt the hotels in Scottsbluff. Mayor Gonzales, Council Member McKerrigan and Council Member Schaub added they support increasing the tax, but feel it needs to be earmarked for a specific project and not the general fund. Council Member Schaub specifically mentioned recreation projects. Council Member Shaver disagreed. He feels it should go to the general fund because we subsidize so much out of that particular fund, stating we can put the tax in the general fund to help fund other things. His biggest concern is the storm sewer problem the City faces; he does not think we need to earmark the money for special projects like recreation. Council Member Schaub made the motion, seconded by Mayor Gonzales, "to direct staff to come back, based upon the passage of the increase of the occupation tax from 4% to 8%, with specific guidelines as to how the increase will be used to fund recreational projects," "YEAS," Gonzales, Green, McKerrigan, and Schaub. "NAYS," Shaver. Absent: None.

Concerning amending the permit application procedures for Community Festival/Business Promotional Permits with street closures, Mr. Johnson reminded Council this was brought up at a previous meeting. He asked if we need to include language in the permit process to have the applicant contact businesses and have them sign off on the street closure. Council Member Shaver commented the issue is being consistent with everyone to do the same thing; he would like clarification on what we are doing. Mayor Gonzales asked how the permit process works currently. Mr. Johnson stated with a neighborhood block party the property owners need to get signatures from their neighbors to approve closing the street; however with a Community Festival Permit we do not require signatures in the event of a street closure, but we have for events in the past.

Ms. Angela Kembel with the Downtown Scottsbluff Business Association approached Council and

explained if it is a Downtown Business Association event, they have a business owner email list and they do inform the merchants of the activity downtown by that medium. She asked if a business owner is asking to close the street for an event they are putting on, that they themselves contact the business owners to close the street. After discussion, Council agreed to keep the permit application process as it is.

Mr. Johnson explained the agreement with Kirk Bernhardt as the Flag Football Coordinator. The league runs from September through November and the agreement is for $1,000.00; participants and referees must be 18 or older before the league starts. Staff is recommending approval of the agreement. Council Member Shaver made the motion, seconded by Council Member Schaub, "to approve the agreement with Kirk Bernhardt as the Flag Football Coordinator and authorize the Mayor to execute the agreement," "YEAS," McKerrigan, Shaver, Green, Schaub, and Gonzales. "NAYS," None. Absent: None.

Under public comments, Mr. Mike Begley approached Council concerning the storm drain on his street. He stated the storm drain on Avenue F to the north of 27th is not to capacity. His request is to have something done to the storm drain, due to the annual flooding that happens in May and June.

Under Council reports, Mayor Gonzales attended a PADD meeting a couple weeks ago and they approved their budget; activity is picking up.

Council Member Schaub made the motion, seconded by Council Member Green, "to adjourn the meeting at 7:24 p.m.," "YEAS," Green, Schaub, Shaver, Gonzales, and McKerrigan. "NAYS," None. Absent: None.

_____
Mayor

Attest:

_____
City Clerk
"SEAL"

City of Scottsbluff, Nebraska

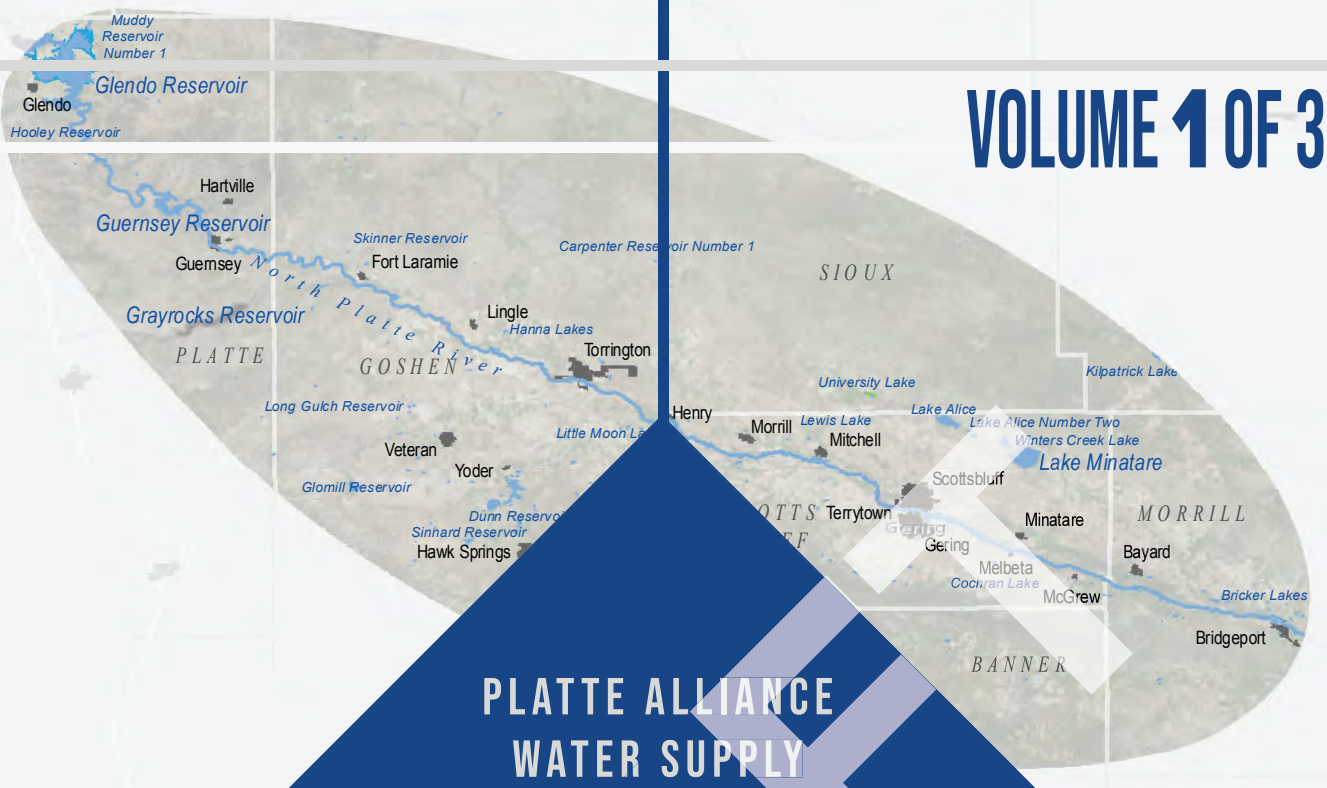
Monday, August 5, 2019

Regular Meeting

Item Consent2

Council to acknowledge receipt of the draft report from M.C. Schaff & Associates on the Platte Alliance Water Supply Level II Study.

Staff Contact: City Council



VOLUME 1 OF 3

PLATTE ALLIANCE WATER SUPPLY

LEVEL II STUDY

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JULY 31, 2019

Working together for affordable high quality water

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PAWS

PLATTE ALLIANCE WATER SUPPLY



SIMMONS OLSEN LAW FIRM

GOSHEN COUNTY -WY- GOVERNMENT

Wyoming Water Development Office

CITY OF SCOTTSBLUFF

WENCK

JORGENSEN

PGE (e) MCS FAMILY OF COMPANIES

Engineering Firm | Environmental Consulting Group

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A REGION WIDE MUNICIPAL RURAL WATER SUPPLY PROJECT

Prepared for:

Goshen County, Wyoming in conjunction with the City of Scottsbluff, Nebraska, and Wyoming Water Development Commission; *and all of the rural water users in Wyoming and Nebraska within the project area*.

Funding provided by:

Wyoming Water Development Commission (WWDC) and the City of Scottsbluff, Nebraska



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PAWS

PLATTE ALLIANCE WATER SUPPLY

PROJECT INTRODUCTION

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INTRODUCTION

The Platte Alliance Water Supply (PAWS) Project is an interstate study encompassing a stretch of the North Platte River Valley and environs from Glendo Reservoir in Wyoming to Bridgeport, Nebraska. The area and concept on the Wyoming side has been generally discussed previously in the 2003 Level I, Platte-Goshen Regional Master Plan[1], a reconnaissance level study that produced potential alternatives for a regional public drinking water supply system from Guernsey/Hartville, WY down the North Platte River valley to Torrington, and including SE Goshen County communities of Veteran, Yoder, Huntley and Hawk Springs, and the 2006 WWDC Platte River Basin Plan (Wyoming)[2]. The full project area was the primary topic of the 2013 USDI-Bureau of Reclamation Platte Alliance Water Supply (PAWS) Appraisal Investigation[3], with a study area consisting of two eastern Wyoming counties, two western Nebraska counties and a planning horizon set to the year 2070, and the follow-up 2014 USDI - Bureau of Reclamation Platte Alliance Water Supply Appraisal Report[4].

Each **Chapter** in this Report follows in detail the corresponding Task number set forth in the Consultant Agreement. Initial screen in each Chapter is *Scope of Agreement* followed by **Chapter** narrative. All references to **APPENDICES** are included in **VOLUMES 2 AND 3OF 3**.

The Project Team has concluded the work required for the DRAFT Report. Any topics not fully addressed are contemplated to be addressed in subsequent work required to advance the project to the design phase. Specific items not addressed which require additional attention include, but are not necessarily limited to:

- Water Right Application for Wyoming Communities
- Completion of Over-Arching PAWS Contractual Arrangement between WPAWS and NPAWS
- Negotiation of, and Contract for, Nebraska water between NPAWS and a holder of storage water in Glendo Reservoir
- Application to Funding/Potential Funding Agencies

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[1] http://library.wrds.uwyo.edu/wwdcrept/Platte/Platte_Goshen Regional_Master_Plan_ Level_I-Final_Report-2004.html

[2] http://waterplan.state.wy.us/plan/platte/2006/finalrept/finalrept.html (WWDC Platte River Basin Plan Update >> available mid-2016)

[3] the USDI-BuRec (Great Plains Region-Billings MT) awarded one hundred eighty thousand dollars ($180,000) to the applicants (Goshen County WY, Scotts Bluff County NE, City of Torrington WY, and the City of Scotts Bluff NE) to develop an Appraisal Investigation "limited to that necessary to support and identify at least one viable alternative to address the water quality problems in the study area that would warrant further refinement in a more detailed feasibility study". The investigation produced two action alternatives for an interstate system that met the funding institution's viability criteria of completeness, effectiveness, efficiency, and acceptability.

[4] Documents BuRec "findings pertaining to a completed" 2013 PAWS Appraisal Investigation, i.e., whether the alternatives are appropriate to advance to further analysis via a feasibility study. The Report found that viable alternatives in the

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PAWS

PLATTE ALLIANCE WATER SUPPLY

1 PROJECT MEETINGS, STAKEHOLDER/ BENEFICIARY IDENTIFICATION, OUTREACH

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a. A scoping meeting shall be held early in the project schedule, in the project area, to familiarize the Sponsor and potential public water supply beneficiaries with the scope of the project, as well as obtain input from affected parties (stakeholders). The Consultant may be required to publish notice of the meeting as necessary. The Consultant will prepare a presentation including maps and other visual aids as necessary to explain the project. The Consultant shall budget for quarterly project update/status meetings thereafter to alternate between chosen Wyoming and Nebraska locations.

The Consultant shall notify the Office project manager in advance of any meetings with the project sponsor, and shall coordinate all meetings with the Office project manager.

One of the early coordination meetings held to determine the population projections and planning boundaries based on a service area composed of those communities and rural areas that are more evidently stressed by poor source supplies and may be feasibly treated in the advancement of the study. The planning boundaries will also be based on discussions as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both.

b. The Consultant shall identify stakeholders who have interest and/or are potentially affected by the project. Primary entities will be the breadth of water-users in the project area, followed by other individuals/entities with direct or indirect entitlement or authority, those economically influenced by the project, agencies providing assistance/funding, and the general public. Stakeholders shall be classified or categorized for representation, further communication, and information dissemination. Contact information shall be acquired from identified and interested stakeholders for the purposes of keeping the parties informed as the project advances.

The Consultant shall then identify and profile all potential drinking water users whom may benefit from a regional supply system. Those would include, but not necessarily be limited to, municipalities, water districts, rural sub-divisions, home-owners associations, non-transient non-community facilities, transient non-community facilities, and individual rural domestic service connections. Local land-use plans shall be also consulted in determining future regional expansion consideration.

c. In an effort to maintain public interest and involvement during the course of the study, the Consultant shall develop a project information/status outreach program. This effort may be accomplished via mainstream media outlets, social media formats, etc. Outreach may assume the form of formal or informal presentations to local governing body meetings, social gatherings, service club luncheons, or public events. The Consultant shall also seek out local or regional economic development or other support organizations for advice, consultation, and information sharing.

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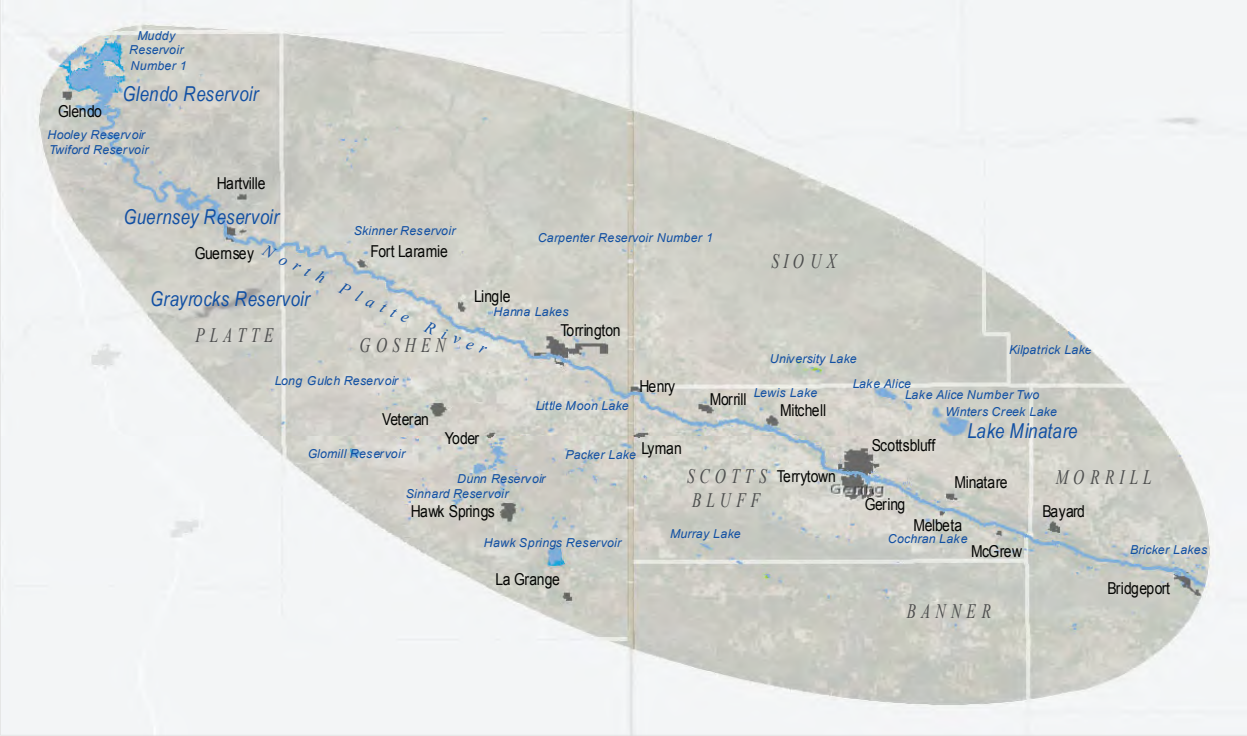

Investigation met BuRec requirements to qualify for further analysis.

CHAPTER 1 PROJECT MEETINGS, STAKEHOLDER/ BENEFICIARY IDENTIFICATION, OUTREACH

For this Level II Study, an initial project scoping meeting was held with the funding agencies, followed by an initial Study meeting with the formed Advisory Group. The Advisory group, comprised of individuals with specific relevant experience with study issues anG key study subconsultant individuals, provided significant project study insights. Advisory Group contact information, as well as meeting times, dates and agendas, and notes are provided in **APPENDIX A1-1**.

An initial public meeting was held at the Gering Civic Center. Attendance at the initial public meeting is provided in **APPENDIX A1-2**. To provide an additional public outreach venue, a web site (www.plattealliancewatersupply.com) was created and updated throughout the study.

Additionally, numerous discussions, public presentations, and meetings were conducted during the course of this study. A listing of many of these meetings and contacts is provided in **APPENDIX A1-3**.

Additional meetings and contact information is provided THE MIDWEST ASSISTANCE PROGRAM (MAP) Provides information and assistance to rural communities. MAP Area Representative Jerry Popp, was contacted. The PAWS Level II study was discussed and Jerry attended several comunity meetings to provide additional insights. This MAP source magazine is included in **APPENDIX A1-4**

Durring the course of this Level II Study, some misinformation reguarding the previous appraisal investigation was distrubuted. In response to some of this misinformation, comments were provided. These comments are included in **APPENDIX A1-6**.

As the appraisal investigation garnered region wide interest, the project team was requested to present the project and status at the National American Waterworks Anual Conference in Philadelphia, Pensylvania. The presentation abstract and presentation slides are provided in **APPENDIX A1-7**. Presentation slides from the project sponsor and funding agency updates of November 16, 2017 are provided in **APPENDIX A1-8**. A Paws Project timeline with National Safe Drinking Act Information is provbided in **APPENDIX A1-9**.

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CHAPTER 1 APPENDICES:

APPENDIX A1-1 Advisory Group

APPENDIX A1-2 Initial Public Meeting

APPENDIX A1-3 Discussions, Presentations, Meetings, Contacts

APPENDIX A1-4 Midwest Assistance Program Source Magazine, Spring 2019

APPENDIX A1-5 Municipal Contacts

APPENDIX A1-6 Comments | Criticism Response

APPENDIX A1-7 AWWA Abstract #49135 & Presentation

APPENDIX A1-8 Sponsor / Funding Agency Update Presentation 11-16-2017

APPENDIX A1-9 PAWS Timeline with Water Quality and National Safe Drinking Water Act



Public meeting



PAWS project updates are available via the PAWS website.



Public meeting



A public meeting was held at the Civic Center in Gering, NE on April 19, 2018.



Public meeting



Timelines have been updated and distributed as the Level II Study has progressed.

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PLATTE ALLIANCE WATER SUPPLY

RESEARCH AND REVIEW OF EXISTING INFORMATION

2

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The Consultant will gather and review the existing information and assistance related to drinking water use in the project area. This includes information and assistance available through the Wyoming Water Development Office, University of Wyoming Water Resources Data System, Wyoming State Engineer's Office, Wyoming Department of Environmental Quality - Water Quality Division, Nebraska Department of Natural Resources, Nebraska Department of Environmental Quality - Water Quality Division, North Platte (NE) Natural Resource District, U.S. Environmental Protection Agency - Region VII and Region VIII, USDI Bureau of Reclamation, USDI U.S. Geological Survey, Goshen County WY, Platte County WY, Scottsbluff County NE, Morrill County NE, Wyoming Association of Rural Water Systems, Nebraska Rural Water Association, Midwest Assistance Program, WY/NE County Conservation Districts, and any other sources as appropriate.

Previous reports on the regional water system concept and/or individual public water supply master plans/studies shall be included in the existing information reviewed. Improvements recommended in these reports should be documented. In addition, the status of those recommended improvements (i.e., ignored, completed, in progress, or pending) should be identified.

The Consultant shall review and list all local area plans, zoning ordinances, annexation policies and other regulations that may affect this project.

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Laramie River downstream from Grayrocks Reservoir, WY

CHAPTER 2 RESEARCH AND REVIEW OF EXISTING INFORMATION

The Project Team first reviewed the Appraisal Investigation contents as a comprehensive documentation of water conditions in the Study area. The Team next contacted each of the communities in the Study area in an effort to obtain updated supply and use information for each.

As presented in the Appraisal Investigation, options for water supply identified alternatives were:

1. Obtain water supply from Grayrocks Reservoir
2. Obtain water supply from a newly constructed reservoir in the vicinity of Guernsey, Wyoming

The results of further evaluations completed during this Study resulted in identification of the preferred alternative—to obtain water supply from Glendo Reservoir. Reference is made to **Chapter 6 - PAWS Regional System Water Supply** for a detailed description of the PAWS regional system water supply.

Below are brief summaries of the additional studies conducted in the project area since 2011. The actual study report documents should be examined if additional information and study specifics are required.

Guernsey Master Plan Level I Study – *Wyoming Water Development Commission and Town of Guernsey, August, 2013.*[1]

> "One purpose of the current work was to update the Guernsey Water Supply Master Plan Level I study prepared by TST and submitted to WWDO in November 1995." The Town currently has six permitted wells; three for the Town's municipal water supply, two production wells for the irrigation of the golf course and water supply for the RV Park, and two wells (one of which appears to be permitted) at the Town Cemetery. The study makes several recommendations including addressing the disinfection of the water supply, replacement of Well No. 2, installing meters on the Athletic Field and Cemetery services, installation of production meters on wells, storage tank rehabilitation, SCADA upgrades, putting Cemetery well on line or irrigation, backup power at booster station, grounding grid at booster station, internal improvements to the distribution system, radon treatment, iron/manganese removal, and installation of backflow devices. Well No. 2 has since been replaced and the Town is in the process of drilling a new PWS well at the Golf Course.

Platte River Recovery Implementation Program Attachment 5 Section 10 — *Federal Depletions Plan for the Platte River Recovery Implementation Plan, December 7, 2005.*[2]

> The purpose of the Federal Depletions Plan is to describe the approach for offsetting or preventing the impacts of new water related activities on the occurrence of targeted flows and on the effectiveness of the Program in reducing shortages to target flows for certain new water related activities, which are a federal agency responsibility to offset.

Town of Guernsey Groundwater Exploration Grant – *Wyoming Water Development Commission and Town of Guernsey, September, 2015.*[3]

> "This report provides a summary of the Guernsey Well 2 Replacement project." A replacement well for Well 2 was drilled approximately 750 feet southeast of the original "Old Well 2" site. The water rights were petitioned and granted to be transferred from the Old Well 2 site to the New Well 2 site. The drilling of the pilot hole began on December 18, 2014 and the production well was test pumped on March 6, 2015 with pump testing continuing through March 12, 2015. Water quality testing took place March 10 and 11; April 27; May 12; and June 3, 2015. The water quality testing indicated the water is of generally good quality. Gross alpha radiation is present, but under the MCL; radon is present in the water; the water is relatively hard; the pH is slightly high; iron bacteria is present in the water; and there may be total coliform present in the water.

Yoder Groundwater Level II Study – *Wyoming Water Development Commission and Town of Yoder, October,* 2011.[4]

> "The study objective is to locate, design, construct, and test a new well with the production capacity of at least 25 gpm and water quality that satisfies EPA primary drinking water standards. A secondary study objective is to present water treatment options in the event that water quality does not comply with EPA primary drinking water standards." This report recommends the Town purchase the Production Well #5 (Fox

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Hills Aquifer test well) from WWDC and utilize it as the Town's primary production well, with a VFD that allows for the adjustment of the pumping rate in response to the Town's demands. Production Well #5 should be designed for up to 60 gpm production.

Hawk Springs Level II Master Plan Study – *Wyoming Water Development Commission and the Horse Creek Conservation District, October, 2013.*[5]

The purpose of the study was "To perform a Level II study for the Horse Creek Conservation District (HCCD), updating the district's previous water system master plan and preparing an operations study for the Hawk Springs Reservoir." The study recommends the improvements to existing infrastructure including the repair or replacement of 116 various canal structures in order of priority; the restoration of storage capacity due to sediment accumulation; and operational improvements to correct inefficiencies in the HCCD.

Middle North Platte-Glendo Watershed Study Level I Watershed Management Plan – *Wyoming Water Development Commission, November, 2016.*[6]

"The purpose of this Level I study was to combine available information with study-generated inventory data to develop a watershed management and rehabilitation plan that outlines proposed water development opportunities in accordance with WWDC objectives." The conclusions of this study show proposed improvements for 15 irrigation systems, the development of 19 proposed livestock/wildlife water projects, rehabilitation of the East Side No. 3 Reservoir and construction of the J A Moran Ditch Regulation Reservoir, additional investigation into several identified channel stability issues, and weed and pest control measures.

Available Groundwater Determination – *WWDC Platte River Basin Water Plan Update – Wyoming Water Development Commission, December, 2013.*[7]

The purpose of this study was to evaluate the groundwater in the Platte River Basin in Wyoming. The production, availability of development, and water quality were a number of characteristics that were evaluated and compiled in this study.

Preliminary Engineering Report-City of Terrytown – *Nebraska Department of Health and Human Services and the City of Terrytown, August, 2014*.

"The scope of this report is to explore the options for a new water source and needed internal improvements for the City of Terrytown's water system." This report evaluated several alternatives for the City of Terrytown's potable water supply due to Arsenic contaminant Level Violation Notifications on the City's existing water well system. The City had one well that met all potable water quality standards, but was determined to not be a long-term solution for the City. The report determined that the most feasible alternative was to regionalize and connect to the City of Gering's distribution system. The City of Gering would then be a wholesaler to the City of Terrytown. In addition, individual water meters would be installed on existing services along with various water main replacement.

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Municipal Golf Course, Torrington, WY

There are several planning studies within the Project Area that are currently ongoing that may be of interest to this project and should be reviewed at their completion. These studies include the City of Torrington 2019 Level I Master Plan, Town of Guernsey 2019 Ground Water Grant-Golf Course PWS Well, and Horse Creek Watershed Study.

References are provided in **APPENDIX A2-1**; and refer to the online locations listed below to locate copies of the listed project reports.

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[1] http://library.wrds.uwyo.edu/wwdcrept/Guernsey/Guernsey_Master_Plan_Level_I-Final_Project_Report-2013.html

[2] https://www.fws.gov/platteriver/Documents/Fed%20Depletion%20Plan.pdf

[3] http://library.wrds.uwyo.edu/wwdcrept/Guernsey/Town_of_Guernsey-Groundwater_Exploration_Grant-Final_Project_Report-2015.html

[4] http://library.wrds.uwyo.edu/wwdcrept/Yoder/Yoder-Groundwater_Level_II_Study-Final_Report-2011.html

[5] http://library.wrds.uwyo.edu/wwdcrept/Hawk_Springs/Hawk_Springs_Master_Plan_Level_II-Final-2013.html

[6] http://library.wrds.uwyo.edu/wwdcrept/North_Platte/Middle_North_Platte_Glendo-Watershed_Management_Plan-Final_Report-2016.html

[7] http://waterplan.state.wy.us/plan/platte/2013/gw-finalrept/gw_toc.html

CHAPTER 2 APPENDICES:

APPENDIX A2-1 References

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PLATTE ALLIANCE WATER SUPPLY

3

INVENTORY AND EVALUATE EXISTING WATER SYSTEMS

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The Consultant shall complete the following tasks.

a. Inventory and evaluate the existing infrastructure to determine its ability to meet current water demands and ability to convert to regional supply demands developed in Task 5.

b. Where applicable, assess the capacity of existing water treatment plants, wells, transmission pipelines, storage tanks, pump stations, PRV stations, flow monitoring stations, and other major components of the water supply system. Identify "bottlenecks" and make recommendations for improvements needed to address these limitations.

i. Identify those components that presently require repair or replacement and have recently been repaired or replaced.

ii. Identify those components that will require repair or replacement within the next twenty (20) years and provide a schedule for the needed improvements.

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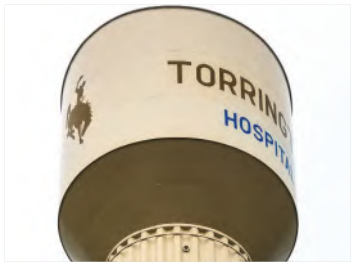
















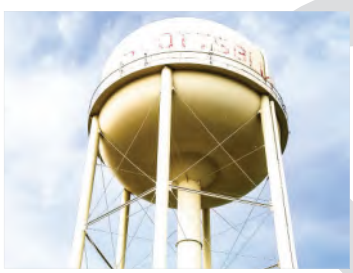




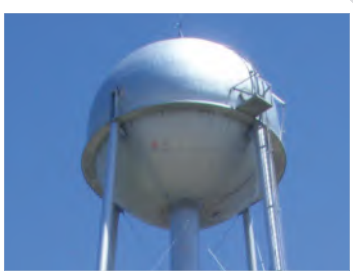






CHAPTER 3 INVENTORY AND EVALUATE EXISTING WATER SYSTEMS

Existing Infrastructure and Water Demands — Inventory

The Project Team performed a cursory review of existing infrastructure only to the extent of determining the potential for connection to and use of a regional supply source. Each of the participating municipalities has a current single supply source that will afford ample opportunity for connection to the regional system.

Early on in the project, Questionnaires were provided to each community in the project area. The returned Questionnaires are included in **APPENDIX A3-1**. ***Table 3.1*** shows the results of the Questionnaires and additional resources, including the State of Wyoming Public Water System Survey Report in **APPENDIX A3-2**.

Table 3.1

Community	Current Storage (gallons)	Current Water Source/Treatment	Services	Proposed PAWS Supply Location	Average Day Storage
Guernsey	750,000	3 wells	632	Water Tower (assumed)	323,000
Fort Laramie	150,000	2 wells	159	Water Tower (assumed)	65,000
Torrington	3,030,000	4 wells and RO[1] Plant	2,437	Water Treatment Plant	1,831,000
Morrill	300,000	WNJWB[2] - 3 wells	478	WNJWB[2] or Water Tower	259,000
Mitchell	200,000	4 wells (1 is for emergency)	680	Water Tower	479,000
Scottsbluff	2,550,000	12 wells	6,200	One on each zone	4,357,000
Terrytown	70,000	City of Gering	536	Five Rocks Road at Gering Connection	443,000
Minatare	250,000	City of Scottsbluff	342	Hwy 26 at transmission main from Scottsbluff	230,000
Bayard	150,000	3 wells and Ion Ex Plant	537	Water Treatment Plant	340,000
Bridgeport	350,000	4 wells and Ion Ex Plant	744	Water Treatment Plant	435,000

[1] - Reverse Osmosis

[2] - Western Nebraska Joint Water Board

[3] - Ion Exchange



Municipal Water Tanks, Torrington, WY



Municipal Water Treatment Plant, Bridgeport, NE

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Irrigation diversion structure on North Platte River, Torrington, WY

Each participating community's water supply is detailed in **Chapter 4 - Water Source Data Collection**. The Team did not complete further evaluation of individual communities' distribution supply systems as they are not part and parcel of this Regional Study. Discussion with each participating community in this vein was limited to the potential to tie improvement funding in a larger package at the same time as project funding is identified.

The intent is that a regional PAWS system provides a potable water supply, "wholesaler", to each member, and through their municipal distribution system, each member will provide the water to individual taps.

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CHAPTER 3 APPENDICES:

APPENDIX A3-1 Completed Community Questionnaires

APPENDIX A3-2 Study of Wyoming 2018 Public Water System Survey Report

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PLATTE ALLIANCE WATER SUPPLY

WATER SOURCE DATA COLLECTION

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The Consultant shall gather and analyze data for all water supply sources for the public water supply system(s) in the study area, including but not limited to: water right permits/ priority/status, capacity, pumping rates, well depth, casing diameter, pump capacity, hydro-stratigraphic completion interval, and spring information as well as surface water diversions, diversion rate, and water treatment plant capacities, as applicable. The Consultant shall determine if the water supply sources are limiting the ability to meet present and future water demands and, if so, identify reasons (e.g., water quality, interference-regional drawdown, imminent mechanical/construction failure, operation costs, etc.). In addition, the Consultant shall determine the fate and potential conversion (e.g. to raw water use) of source supplies that may become idle as a result of introducing a regional supply source.

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Glendo Reservoir, Glendo, WY

CHAPTER 4 WATER SOURCE DATA COLLECTION

Current Water Supply Sources in Study Area

APPENDIES A4-1 and **A4-2** include current water supplies for the Wyoming and Nebraska communities, respectively, within the project area. All communities currently have groundwater sources for their water supply. We understand there have been some changes in terms of replacement wells since 2006, and that the water rights and priorities have been transferred to these respective replacement wells. For Nebraska, there are not specific water rights tied to the individual wells. However, these wells can be used for offset of impacts caused by a change in water source from groundwater to surface water.

Water Supply Sources in Study Area

The Project Team analyzed data for water supply sources in the Study area by sample testing in Glendo Reservoir and at several downstream locations. In 2017 and 2018, water quality tests were taken at various locations that were determined as potential water supplies in the Appraisal Investigation. The approved Sample and Analysis Plan and Sample Location Map are included in **APPENDIX A4-3**. Also included in **APPENDIX A4-3** are protocols for collecting water grab samples in rivers, streams and fresh water wetlands. Initially, Grayrocks Reservoir, Guernsey Reservoir, and the North Platte River near the confluence with the Laramie River were the three sites identified in the Appraisal Investigation as possible water sources. Shortly after the first round of sampling; Glendo Reservoir was identified as a very viable alternative.

Therefore, Glendo Reservoir and the Reach between Glendo and Guernsey Reservoirs were added to the sampling plan. Finally, in April of 2018 it was becoming increasingly apparent that Grayrocks Reservoir was not going to be a feasible alternative for a water source, and with the Department's approval, it was removed from the sampling plan. **APPENDIX A4-4** includes water quality testing results.

During the Appraisal Investigation, groundwater quality data was compiled for arsenic, uranium, and nitrates in an effort to identify areas of low water quality. These maps are included as **APPENDICES A4-6**, **A4-7**, **A4-8** and **A4-9**.

Specific water right application for Wyoming water source and contract negotiation for Nebraska water source may begin now that the Governance bodies for the two State partners have been created. The Nebraska Department of Natural Resources completed an analysis on the effects on the North Platte River baseflow from the reduction of municipal pumping. This will be vital in the continued negotiation for the Nebraska water source. The Memorandum from the Nebraska Department of Natural Resources is included in **APPENDIX A4-5**.

Ability to Meet Present and Future Water Demands

Information regarding the Modified Decree in 2001 and the settlement of the Nebraska V. Wyoming lawsuit can be found at http://waterplan.state.wy.us/plan/platte/2006/techmemos/TechMemo_2-1-2_FINAL.html. This doccument provides historic water rights issue resolutions. Limitations to future water supply in the Study area is driven by the necessity for constituent treatment in each community, several of which already have issues and others that have neighboring wells with limit issues. *Figure 4.1,* below, identifies rural communities and rural area water supplies that have exceeded primary maximum contamination levels (PMCLs) and secondary maximum contaminant levels (SMCLs) for constituents as identified in the Safe Drinking Water Act.

Figure 4.1

Community	Contaminants							
	PMCLs						SMCLs	
	Radon	Arsenic	Uranium	Nitrates	Lead	Copper	Iron	Manganese
Hartville			X	X				
Guernsey	X						X	X
Lingle				X				
Torrington				X				
Goshen County, WY*		X	X	X				
Yoder		X	X					
Henry					X	X		
Lyman		X	X					
Morrill			X	X				
Minatare			X					
Gering			X					
Bayard				X				
Bridgeport			X					
Morrill County, NE*				X				
* Indicates the unincorporated areas within the county								

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Guernsey Reservoir, Guernsey, WY

Recommended upstream source, Glendo Reservoir, is essentially free of major constituent issues, and as shown by test results, will require only conventional treatment at a significantly lesser cost than the potentially required treatment for existing contaminants downstream (in either groundwater or surface water).

While not yet a specific concern in the Study area, chloride reduction has a significant potential for required treatment in the relatively near future. Wisconsin and Minnesota are two states that are currently becoming increasingly aware of chloride contamination in their surface waters. The City of Madison, Wisconsin completed a Chloride Compliance Study[1] on one of their Wastewater Treatment Plants. The study can be found at https://www.madsewer.org/Programs-Initiatives/Chloride-Reduction. The findings in this chloride compliance study concluded their discharge limit would most likely be set at 395 mg/l. This discharge limit would be extremely difficult to meet in most of the participating communities' wastewater treatment facilities without some sort of chloride treatment. The concern for this project would be for the communities with an ion exchange treatment plant that discharges a chloride latent wastewater stream during regeneration.



North Platte River, Guernsey, WY

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North Platte River, Fort Laramie, WY



Grayrocks Reservoir, WY



Whalen Diversion Dam, WY



North Platte River, Stateline Island, Wyoming-Nebraska state line

[1] AECOM, 2015, Chloride compliance Study Nine Springs Wastewater Treatment Plant Final Report, Consultant prepared the report for Madison Metropolitan Sewerage District, Madison, Wisconsin.

The fate of the current supply streams for each community is unclear given the potential for non-potable use in each community in addition to the potential use for existing sources to be blended with the regional source to meet each community's demands.

CHAPTER 4 APPENDICES:

APPENDIX A4-1 Wyoming Communities' Current Water Supplies, Water Rights, Water Use

APPENDIX A4-2 Nebraska Communities' Current Water Supplies, Water Rights, Water Use

APPENDIX A4-3 Water Sampling Plan

APPENDIX A4-4 Water Quality Testing Results

APPENDIX A4-5 Municipal well pumping reductions effect on baseflow for PAWS, NE DNR, July 19, 2019

APPENDIX A4-6 Water Quality—uranium map

APPENDIX A4-7 Water Quality—nitrates map

APPENDIX A4-8 Water Quality—arsenic map

APPENDIX A4-9 Water Quality—arsenic, nitrates, uranium map

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PLATTE ALLIANCE WATER SUPPLY

POPULATION GROWTH, WATER DEMAND PROJECTIONS

5



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The Consultant shall develop growth projections for the regional water service area. Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) and the Nebraska Department of Economic Development (NEDED) will be used as the basis of the projections. (See http://eadiv.state.wy.us and http://www.neded.org/business/data-a-research) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I/NEDED, and projections from other sources including, but not limited to those that may be available through municipal and county planning agencies. The Consultant shall provide graphic representations of each alternate population projection.

Regional water demand projections will be developed based on historical water use records. Alternate demand projections will be developed that consider wholesale provision of potable water to metered junction locations, commingling with existing supplies, and assurance that PAWS-supplied water will not be used for irrigation (>1 acre use, i.e., golf courses, cemeteries, athletic fields, parks, etc.). The Consultant may offer suggestions relating to existing rate structures and metering procedures.

One of the early coordination meetings described in Task 1 will be held to determine the population projections and planning boundaries based on a service area composed of those communities and rural areas that are more evidently stressed by poor source supplies and may be feasibly treated in the advancement of the study. The planning boundaries will also be based on discussions as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both.

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North Platte River, irrigation diversion, Torrington, WY

CHAPTER 5 POPULATION GROWTH, WATER DEMAND PROJECTIONS

The Project Team reviewed the growth projections presented in the Appraisal Investigation and made minor amendments to those as water supply requirements for the Study area were developed. Since the 2010 Census, general growth in the Wyoming portion of the Study area has been 2.6%, compared to 1.0% projected in the Appraisal Investigation. In the same time period, general growth in the Nebraska portion of the Study area has been -1.6%, compared to 1.0% in the Appraisal Investigation. An estimated population growth of 1.0% is reasonable, primarily due to the economic development potential a sustainable water supply can bring to an area.

Table 5.1, on the following page, shows the growth in the project area and participating communities. The Wyoming Data was obtained from the Wyoming Department Administration & Information – Economic Analysis Division (EAD/DA&I).

The Nebraska Data was obtained from the Nebraska Department of Economic Development (DED). Numerous community comprehensive plans from the project area were reviewed and the population estimates were very optimistic compared to past trends. Due to this extreme optimism, the project team determined these population estimates are not applicable to this project. **APPENDIX A5-1** shows more detailed population estimates from each state agency.

Table 5.1

WY Community/County	2010	2018	Difference	Growth
Goshen County	**13,249**	**13,376**	**127**	**1.0%**
Fort Laramie	230	232	2	0.9%
Torrington	6,501	6,701	200	3.1%
Platte County	**8,667**	**8,566**	**-101**	**-1.2%**
Guernsey	1,147	1,148	1	0.1%
Wyoming Towns	**7,878**	**8,081**	**203**	**2.6%**

NE Community/County	2010	2016*	Difference	Growth
Scottsbluff County	**36,429**	**35,627**	**-802**	**-2.2%**
Morrill	921	915	-6	-0.7%
Mitchell	1,702	1,669	-33	-1.9%
Scottsbluff	15,039	14,883	-156	-1.0%
Terrytown	1,198	1,177	-21	-1.8%
Minatare	816	802	-14	-1.7%
Morrill County	**5,084**	**4,886**	**-198**	**-3.9%**
Bayard	1,209	1,134	-75	-6.2%
Bridgeport	1,545	1,497	-48	-3.1%
Nebraska Towns	**22,430**	**22,077**	**-353**	**-1.6%**

*2020 for Counties

Project Area Growth	**30,308**	**30,158**	**-150**	**-0.5%**

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As referenced in **Chapter 3 - Inventory and Evaluate Existing Water Systems**, individual contacts with each community resulted in the Questionnaires providing general information as regards to current supply requirements, from which future supply requirements were developed.

APPENDIX A5-2 includes the population projections and water supply demands developed for the participating communities. The Water Supply Demand spreadsheet shows 2017 demands were taken from the questionnaires and numerous conversations with the communities with regards to their current demands and pumping records. These demands were used to compare the future projected gallons per capita per day (gpcpd) demands for potable water only.

The water demand projections were developed based upon a 1.0% growth demand and average of 155 gpcpd. Current per capita demand in the project area ranges between 250 and 400 gpcpd. The 155 gpcpd estimate is based upon potable water use.



Scottsbluff, NE

CHAPTER 5 APPENDICES:

APPENDIX A5-1 Wyoming Population Estimates (Wyoming EAD/DA&I) & Nebraska Population Estimates (Nebraska DED)

APPENDIX A5-2 Population Projections & Water Supply Demand in the Study Area

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PLATTE ALLIANCE WATER SUPPLY

PAWS REGIONAL SYSTEM WATER SUPPLY

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In order to alleviate the aggravating conditions of existing water supplies identified in Task 4 and to identify a feasible and reliable long-range alternative supply, the Consultant shall propose and rank sites for optimal supply acquisition. The following criteria shall be used to characterize each site for consideration:

- *Legal location, latitude-longitude, elevation, and cursory surveys as necessary*
- *Surface ownership*
- *Intake means (e.g., diversion gallery, gravity feed, siphon, pump-lift, penstock, etc.)*
- *Facility plant-size requirements with respect to site restraints.*
- *Water quality potential - The Consultant shall review existing water quality reports, or perform water quality testing if no reports are available, to determine how each water supply source complies with EPA- governed Safe Drinking Water Act (SOWA) standards and treatment rules. Source water quality will determine treatment method(s) to be instituted in conceptual design and cost estimating.*
- *Water rights and interstate compact issues - The Consultant will review the status of the available natural flow, potential water transfers, earmarked municipal pools, and other supply opportunities in order to produce a tabular inventory of these classifications, and provide a navigation of the institutional pathway(s) to secure supply opportunities for the project. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under key permits will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any water supply contracts available for perpetual use and/or temporary supplementary needs and discuss their purpose and importance to a conceptual regional supply portfolio. The binding interstate compact agreement imposed on the North Platte River shall be explored by the Consultant to determine any and all implications on the intention to build the project.* ***It is key to the project that a firm and reliable appropriation, including redundant supply assurances if necessary, is accomplished prior to final design of the project and an ultimate adjudication may be secured upon beneficial use by regional users.***
- *Distance to/from key regional system components and impedances (e.g., storage, transmission, distribution, easement acquisition, river/stream/railroad/ highway crossings, etc.)*
- *Operational requirements - power supply, skilled personnel, transportation, security, etc.*
- *Ability to obtain Permits to Construct - State of Wyoming and State of Nebraska*
- *Hydropower potential*
- *Federal nexus (i.e., permits, NEPA, compliance, reporting, etc., not related to federal-backed financing)*
- *Deleterious impacts and mitigation*

The Consultant shall score and rank the sites based on the above criteria.

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Glendo Reservior, WY

CHAPTER 6 PAWS REGIONAL SYSTEM WATER SUPPLY

Proposed sites for optimal supply acquisition

The Project Team identified separate primary supplies for each State's participants, specifically to maintain conformity with the Platte River Compact. The Team determined that the best water source for Nebraska is contracted water from the United States Department of the Interior - Bureau of Reclamation (BUREC) through storage in Glendo Reservoir. Contact was initiated with both the BUREC and an irrigation district holding supply water with the concept that given some sort of equitable compensation or proof of minimal or no damage, the district may provide a portion of their held Glendo storage water that would be requested by PAWS, and could then be contracted to PAWS.

The Team also determined that the best water source for Wyoming is two separate sources, one for Winter and a second for Summer needs. Summer needs would best be filled through surface water rights which when not fulfilled by River capacity would result in an allocation from the Wyoming Municipal Account held in Pathfinder Reservoir. Water from Pathfinder would simply be routed to Glendo and joined with Nebraska water and piped to the treatment plant. When appropriation is available in the River for the Summer need, a transfer in point of diversion for the water, from the righted location downstream to Glendo Reservoir, would again be piped to the treatment plant with the Nebraska water. Research documented that Winter needs could clearly be met by in-



Guernsey Power Plant along North Platte River, Guernsey, WY

stream flows existing downstream of Guernsey Reservoir, said flows maintained to the State line in every year since 1996. **APPENDIX A6-1** includes the North Platte River Gaging Station Records and **APPENDIX A6-2** includes a map of the winter time flows at various gaging stations. While this water would satisfy the Wyoming portion project needs, use of the flow is again at least partly problematic regardless of the clear availability of flow. First logistic issue is getting that water back upstream to a logical plant location to take advantage of topography and lessen, if not eliminate, supply pumping needs to pressurize the supply pipeline. Best use of topography and reduction, if not elimination, of supply pumping requirements is tantamount to long-term feasible operational cost of the supply. Next issue with the in-stream flow supply is actual diversion of river water in Winter conditions. Low flow and freezing conditions will not easily be overcome, and research by the Project Team failed to provide an adequate model where winter diversion is successful. As a result, the Project Team recommendation is to use the Wyoming Account water for summer flow and in-stream righted flow near the State line for winter flow, with points of diversion for both sources designated in Glendo Reservoir. The Project Team had a preliminary meeting with the State Engineer and Regional Board of Control representatives discussing this issue and were met with (again, preliminary) positive reception to the concept.

Additionally, as the concept is to provide a future better supply with less required treatment than the majority of the groundwater in the Valley, a potential major issue related to treatment of both water supply and sanitary sewer discharge is that of chlorides. Without a regional system supply, downstream treatment may require at least ion exchange which presents a significant increase in chloride discharge that would not be necessary with upstream treatment, thereby reducing the chloride potential overall. Water softening conditioning in the regional plant could be considered to reduce any need for softening downstream.

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Now that WPAWS is formed, water right application could be made to further the selected Wyoming sources.

With NPAWS formed, and the groundwater well/return flow modeling complete, further progress can be made toward securing Nebraska water.

CHAPTER 6 APPENDICES:

APPENDIX A6-1 North Platte River Gaging Station Records

APPENDIX A6-2 Gaging Stations — Winter Flow Quality, Map

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Scottsbluff Wastewater Treatment Plant along North Platte River, NE

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PAWS

PLATTE ALLIANCE WATER SUPPLY

CREATION OF A GEOGRAPHIC INFORMATION SYSTEM

7

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The Consultant shall complete the following tasks for the GIS.

a. DATA PLAN. The Consultant will create a GIS using certain specified data collected during this study. A plan will be developed for the GIS system which will include but may not be limited to data collection methods, features mapped, attributes collected, projections, documentation, and software version. No work shall proceed until this plan is approved in writing by the Office Project Manager.

b. FEATURE MAPPING. As a minimum, this data will include location of system components, information related to those components, digital photographs, and other pertinent information. Where applicable, the Consultant shall collect geographic data for major water system facilities, including wells, springs, diversions structures, water treatment plants, storage tanks, pump stations, PRV stations, transmission line locations and other major system components including those that are pertinent for building the hydraulic model. Mapped features will be attributed accordingly, and labeled with appropriate nomenclature. Digital photos collected in the field will be hyperlinked to the mapped features. The Consultant shall use the most recent/or accurate USGS topographic maps, DOQQs and/or aerial photos for data creation or backgrounds as discussed with the Office Project Manager in the data plan. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps in the final project report.

c. FORMATS and STANDARDS. The Consultant will provide GIS vector data in an ESRI geodatabase, or as shapefiles. GIS data shall be saved in the Decimal Degree Coordinate system with a NAD83 datum, stored in feet, for all mapped features. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Collection of geographic information should be accomplished utilizing a portable GPS unit capable of containing a "data dictionary," with post processing to sub-meter accuracy. Attributes collected in support of the project shall be described in the metadata.

d. PROJECT AREA. Included in the GIS deliverables shall be a single shapefile with the project area boundaries. Metadata, projection, datum, and general attribute data related to the project area boundaries should be included as ancillary files.

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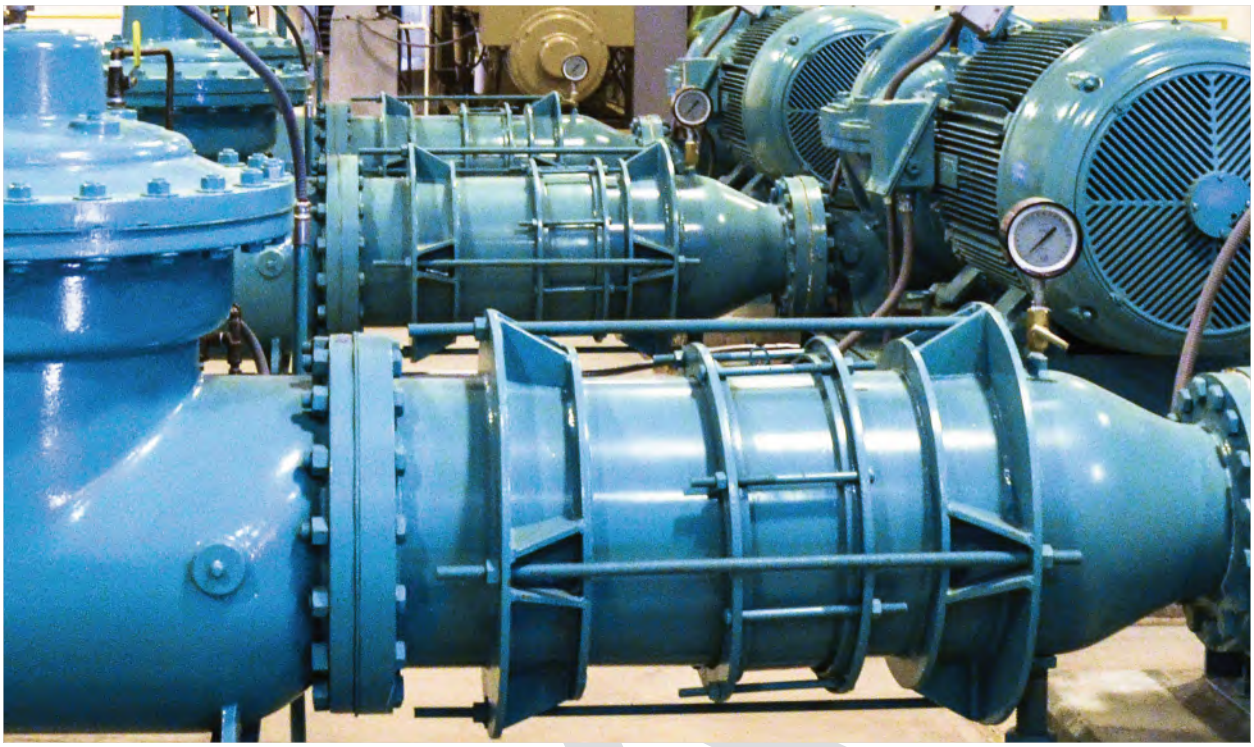
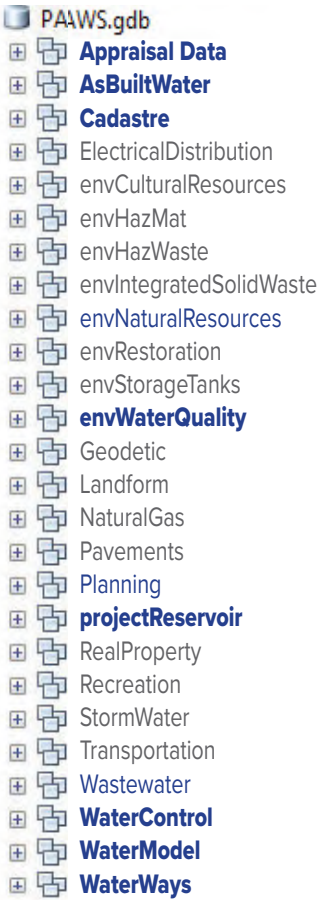


CHAPTER 7 CREATION OF A GEOGRAPHIC INFORMATION SYSTEM

The GIS Development Plan approved by the Wyoming Water Development Office (WWDO) at the onset of this study is included as **APPENDIX A7-1**. This plan and subsequent ESRI file geodatabase (Decimal Degrees, NAD83, feet) establishes the framework and guidelines for thorough dataset development as PAWS continues through design, construction, and system maintenance. **APPENDIX A7-2** portrays the data categories and classifications which aided in GIS database design and development.

Spatial datasets included in the PAWS geodatabase are from varied sources; i.e. county parcels and road centerlines are sourced from Platte, Goshen, Scotts Bluff, Sioux, Banner, and Morrill Counties; and as water system features are included from the Western Nebraska regional water system and PAWS study area participating communities. As such, features and appurtenant attributes of many included datasets are maintained by various local governments and are continually



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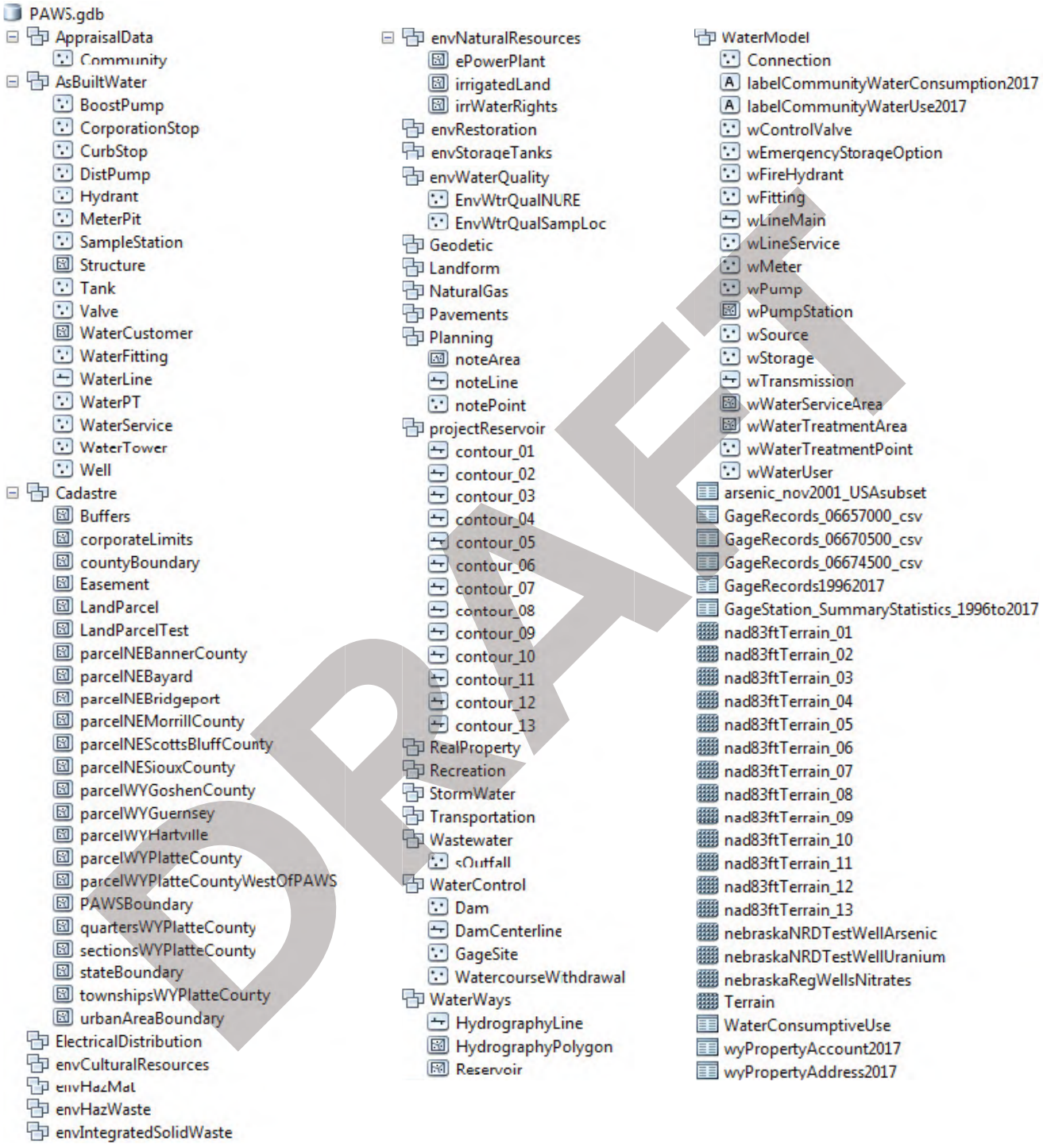
PAWS.gdb
AppraisalData
Community
AsBuiltWater
BoostPump
CorporationStop
CurbStop
DistPump
Hydrant
MeterPit
SampleStation
Structure
Tank
Valve
WaterCustomer
WaterFitting
WaterLine
WaterPT
WaterService
WaterTower
Well
Cadastre
Buffers
corporateLimits
countyBoundary
Easement
LandParcel
LandParcelTest
parcelNEBannerCounty
parcelNEBayard
parcelNEBridgeport
parcelNEMorrillCounty
parcelNEScottsBluffCounty
parcelNESiouxCounty
parcelWYGoshenCounty
parcelWYGuernsey
parcelWYHartville
parcelWYPlatteCounty
parcelWYPlatteCountyWestOfPAWS
PAWSBoundary
quartersWYPlatteCounty
sectionsWYPlatteCounty
stateBoundary
townshipsWYPlatteCourty
urbanAreaBoundary
ElectricalDistribution
envCulturalResources
envHazMat
envHazWaste
envIntegratedSolidWaste
envNaturalResources
ePowerPlant
irrigatedLand
irrWaterRights
envRestoration
envStorageTanks
envWaterQuality
EnvWtrQualNURE
EnvWtrQualSampLoc
Geodetic
Landform
NaturalGas
Pavements
Planning
noteArea
noteLine
notePoint
projectReservoir
contour_01
contour_02
contour_03
contour_04
contour_05
contour_06
contour_07
contour_08
contour_09
contour_10
contour_11
contour_12
contour_13
RealProperty
Recreation
StormWater
Transportation
Wastewater
sOutfall
WaterControl
Dam
DamCenterline
GageSite
WatercourseWthdrawal
WaterWays
HydrographyLine
HydrographyPolygon
Reservoir
WaterModel
Connection
labelCommunityWaterConsumption2017
labelCommunityWaterUse2017
wControlValve
wEmergencyStorageOption
wFireHydrant
wFitting
wLineMain
wLineService
wMeter
wPump
wPumpStation
wSource
wStorage
wTransmission
wWaterServiceArea
wWaterTreatmentArea
wWaterTreatmentPoint
wWaterUser
arsenic_nov2001_USAsubset
GageRecords_06657000_csv
GageRecords_06670500_csv
GageRecords_06674500_csv
GageRecords19962017
GageStation_SummaryStatistics_1996to2017
nad83ftTerrain_01
nad83ftTerrain_02
nad83ftTerrain_03
nad83ftTerrain_04
nad83ftTerrain_05
nad83ftTerrain_06
nad83ftTerrain_07
nad83ftTerrain_08
nad83ftTerrain_09
nad83ftTerrain_10
nad83ftTerrain_11
nad83ftTerrain_12
nad83ftTerrain_13
nebraskaNRDTestWellArsenic
nebraskaNRDTestWellUranium
nebraskaRegWellsNitrates
Terrain
WaterConsumptiveUse
wyPropertyAccount2017
wyPropertyAddress2017

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changing, replacement data layers will need to be obtained to update and replace many data layers, features, and attributes as PAWS proceeds through design and construction.

All map datasets obtained or created as part of the PAWS Level II Study are included in the GIS geodatabase and/or accompanying files library, complete with metadata. Additional raster and vector online GIS servers are referenced and utilized where possible to access the most currently available datasets.

The PAWS file geodatabase (GDB) is organized into 26 feature datasets (shown at right), many of which are simply placeholders for future data. Ten of these datasets contain feature class layers with defined attributes, while the remaining 16 datasets are placeholders for future data development during design and construction phases. A combined total of 53 active feature classes contain features with attributes. Surfaces and tables are also included within the PAWS spatial database as shown on the previous page.

The GDB point, line, and area feature layers are logically grouped in the feature datasets. See **APPENDIX A7-3** for a detailed schematic providing descriptions, and notable attributes of all defined feature layers as well as thumbnails for layers with populated features.

APPENDIX A7-4 lists the communities and counties from whom we requested datasets.

CHAPTER 7 APPENDICES:

APPENDIX A7-1 GIS Development Plan

APPENDIX A7-2 Datasets and Maps Overview

APPENDIX A7-3 PAWS Geodatabase Catalog

APPENDIX A7-4 Data Requests

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PLATTE ALLIANCE WATER SUPPLY

HYDRAULIC MODEL

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The Consultant shall construct a new hydraulic model and utilize existing hydraulic models, if available, of the regional water supply system as feasibly envisioned, utilizing one of the following software platforms or an Office approved equal:

- *Innovyze/MWH Soft: InfoWater (ArcGIS based); H20Map Water (stand alone); or H20Net (AutoCAD based)*
- *Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)*

The Consultant shall schematically model the proposed system(s). The model shall be properly calibrated to available data sets or known system behavior. The Consultant shall evaluate the adequacy of the water transmission and distribution systems to meet current and future pressure and flow requirements based on maximum day demands. The Consultant shall consider only treated drinking water in the evaluation. The model shall be detailed enough to satisfy the needs of the project and shall be constructed to serve as a baseline to aid in the operation and maintenance of the system. In addition, the model should be constructed to allow for future updates.

The Consultant shall coordinate with the Office project manager in the completion of this task and in terms of the extent of the model and acquisition of model input, including but not limited to the following:

- *Nodal Elevations*
- *Demands*
- *Diurnal Curve(s)*
- *Pump Curves*
- *Valve Settings*
- *Pipe Diameters and Material*
- *Tank Geometry*

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CHAPTER 8 HYDRAULIC MODEL

Hydraulic Analysis

A hydraulic model was developed based on the information in the Appraisal Investigation. The analysis was summarized in the Technical Memo dated July 12, 2017, which is included in **APPENDIX A8-1**. Bentley Systems water distribution modeling and analysis software, WaterCAD, was used to generate the hydraulic model for the proposed PAWS transmission line. WaterCAD is widely used as a decision support tool in the design and management of water systems infrastructure. The steady state hydraulic distribution model presented here was created using Bentley WaterCAD V8i.

To construct a model of the proposed water transmission pipeline and evaluate its hydraulic properties; existing AutoCAD Civil 3D plan and profile drawings developed durring the appraisal investigation were used. The drawings contained the proposed alignment and elevation profile of the pipeline with locations for initiation, service-points (for each community, county, or group of communities), PRV locations, and termination. The model alignment and profile (physical location and elevation) data for the model was derived from these drawings. The pipe materials and sizes were indicated in the Appraisal Investigation and were utilized in the model. The demands for the hydraulic model were obtained in the Appraisal Investigation. Pressure requirements at the demand points were obtained from the previous work.

The model results indicated that the system had inadequate capacity to meet pressure demand criteria. The pipe sizes were adjusted to meet the criteria.

Subsequent to this modeling effort, the hydraulic criteria were revised for the following results:

- Surge analysis performed utilizing the hydraulic model output resulted in unsatisfactory performance under power failure. The surge analysis is included in **APPENDIX A8-2** as a Technical Memo dated August 7, 2017. Based on the results, the proposed water treatment plant (WTP) was relocated at a higher elevation. The relocation eliminated the need for pumping and the severe serge issues.
- The demands on the system were revised to reflect the updated information from the users, as show on the attached table. The information substantially reduced the demands and several communities dropped out.

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Table 8.1

WaterCAD model junction demand inputs for each analysis

Junction	Community	Demand Condition/Period			
		Peak 2070 (MGD)	Average 2070 (MGD)	Peak 2020 (MGD)	Average 2020 (MGD)
J-1	Guernsey	0.65	0.32	0.39	0.20
J-2	Platte Co.	0.56	0.28	0.34	0.17
J-3	Ft. Laramie	0.13	0.07	0.08	0.04
J-4	None				
J-5	Torrington Hawk Springs	3.70	1.85	2.23	1.11
J-6	Goshen Co.	3.04	1.52	1.85	0.92
J-7	Morrill	0.52	0.26	0.32	0.16
J-8	Mitchell	0.96	0.48	0.58	0.29
J-9	Scottsbluff Minatare Terrytown	10.06	5.03	6.12	3.06
J-10	None				
J-11	Minatare gets their water from Scottsbluff, but decided not to participate so they will continue to get their water from Scottsbluff and I added them to the J-9				
J-12	None				
J-13	Scottsbluff Co.	2.03	1.01	1.23	0.62
J-14	Bayard	0.68	0.34	0.41	0.21
J-15	Bridgeport	0.87	0.44	0.53	0.26
	SUM	**23.20**	**11.60**	**14.08**	**7.04**

- The pipe materials and sizes were changed to allow competitive bidding of different pipe materials. Different pipe materials and pressure ranges do not have equal inside diameters, roughness's, and available sizes. The analysis was limited to common pipe sizes of 42, 36, 30, 24, 18, and 12-inch nominal diameters.
- Pressure requirements were established as a minimum pressure of 65 psi at the user outlets and a minimum pressure of 35 psi at any point on the pipeline.
- The location of the proposed WTP requires a separate pipeline to Guernsey.

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The revised treated water plan and profile sheets are included in **Chapter 11** in **APPENDIX A11-3**. The sheets include the pipe sizes, pipe capacities, outlet locations and capacities, pressure reducing stations, and hydraulic grade lines. The analysis resulted in the following pipe sizes:

- WTP to Guernsey – 12-inch pipe
- WTP to Torrington – 42-inch pipe
- Torrington to Scottsbluff – 36-inch pipe
- Scottsbluff to Scottsbluff County – 24-inch pipe
- Scottsbluff County to Bayard – 18-inch pipe
- Bayard to Bridgeport – 12-inch pipe.

Pressure reducing stations are proposed at Torrington, Scottsbluff, and Bayard. **APPENDIX A8-2** and **APPENDIX A8-3** include the revised Transient Results and Hydraulic Model.

CHAPTER 8 APPENDICES:

APPENDIX A8-1	Preliminary Hydraulic Model	7/24/2017
APPENDIX A8-2	Hydraulic Model Transient Results	8/7/2017 Rev 7/29/2019
APPENDIX A8-3	Revised Hydraulic Model	7/29/2019

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PAWS

PLATTE ALLIANCE WATER SUPPLY

EVALUATION OF REGIONAL SYSTEM GOVERNANCE AND OPERATIONS

9

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The Consultant shall develop recommendations for administration of an interstate regional supply system/utility. This shall be accomplished by reviewing existing laws for configuring a joint arrangement to oversee operations, maintenance, and revenue generation. Gaps in existing authority or protections, that may present a barrier or liability to formation of the interstate regional system in local ordinances or state and federal jurisdictions, shall be addressed with recommendations for resolution. Similar interstate and regional ventures as may exist elsewhere in the U.S. shall be identified and consulted regarding legal formation, bylaws, operating criteria, rate structures, etc.

The Consultant shall evaluate the management and operation of the public water supply systems in the study area to determine what procedural changes would be beneficial if regional supply is instituted. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task, along with observations and discussions with system operators.

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Bureau of Reclamation Power Plant below Buffalo Bill Dam on Shoshone River, Cody, WY

CHAPTER 9 EVALUATION OF REGIONAL SYSTEM GOVERNANCE AND OPERATIONS

Members of the Project Team met with local governments in both Wyoming and Nebraska from the onset of the Study, first to inform, next to discern their interest, and finally to recruit their participation in Governance for the Project. Legal staff on the Project Team reviewed Wyoming and Nebraska law and determined that, in essence, the Governance should take the form of multi-layered, interlocal and joint powers associations, composed of member municipalities or rural domestic-water districts in Nebraska and Wyoming (reference **APPENDIX A9-1,** Governance Memorandum, Simons Olsen Law Firm, P.C. dated 01/30/17). The membership of each group is one member per participating community.

Intitially, each community in the Project Area were asked to provide a Resolution in support of the completion of the PAWS Level II Study concept and initial support for the formation of such a Regional Water System. The adopted Resolutions are included in **APPENDICES A9-2** through **A9-10.**

Subsequentially, compliant with Nebraska State Statues a Nebraska Platte Alliance Water Supply Interlocal Committee (NPAWS) Agreement was adopted by the participating communities. The adopted NPAWS Interlocal Committee Agreement is provided in **APPENDIX A9-11.**

Also, compliant with Wyoming State Statues a Wyoiming Platte Alliance Water Supply Joint Powers Board (WPAWS) Agreement was adopted by the participating communities. The adopted WPAWS Joint Powers Board Agreements are provided in **APPENDIX A9-12** through **APPENDIX A9-15.**

An overarching Platte Alliance Water Supply Board (PAWS), made up of WPAWS and NPAWS members, will be the management and water treatment group, of which all members are to be municipalities or rural domestic-water districts that purchase water from PAWS. PAWS will own and operate the water treatment facility and will sell water to the members according to the rates that would cover the costs of treating and providing water. PAWS will not own the pipelines, but will have agreements to lease the pipelines from WPAWS and NPAWS. PAWS will monitor the water appropriations and will supply water in accordance with those appropriations. PAWS will supply water at the entry-point of each municipalities' or rural domestic-water districts' system.

NPAWS, consisting of Bayard, Bridgeport, Mitchell, Morrill, Terrytown and Scottsbluff, was officially formed at an initial meeting on 02 February 2019, in Scottsbluff. Minatare is not specifically part of NPAWS but effectively participates since they obtain their water from Scottsbluff. WPAWS, consisting of Fort Laramie, Guernsey, and Torrington, was officially formated at an initial meeting on 19 June 2019, in Torrington. In addition, rural water district, Stonecreek Homeowner's Association, has adopted the WPAWS Joint Powers Board Agreement. However, at this time the participation of the rural water districts has not been fully established.

Participating communitties meetings' attendance lists and meeting notes are provided in **APPENDIX A9-16.** This apprenix also includes the meeting notes of the creation of the NPAWS Interlocal Committee.

APPENDIX A9-17 includes the Town of Lingle Council Meeting Minutes from 08 May 2019 stating the Coucil declined to participate at this time.

APPENDIX A9-18 provides correspondence that the City of Gering declines to participate in any capacity regarding the PAWS Level II Study at this time.

As of this writing, the official formation of the overarching PAWS board has not taken place.

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Platte Alliance Water Supply (PAWS)

MANAGEMENT AND WATER TREATMENT GROUP

All members must be municipalities or rural domestic-water districts that purchase water from PAWS.

Wyoming
Platte Alliance Water Supply
Joint Powers Board

WPAWS

OWNS AND LEASES
WYOMING WATER TRANSMISSION
PIPELINES TO **PAWS**

MEMBERS

FORT LARAMIE
GUERNSEY
TORRINGTON

Nebraska
Platte Alliance Water Supply
Interlocal Committee

NPAWS

OWNS AND LEASES
NEBRASKA WATER TRANSMISSION
PIPELINES TO **PAWS**

MEMBERS

BAYARD
BRIDGEPORT
MITCHELL
MORRILL
TERRYTOWN
SCOTTSBLUFF

- Owns and operates water treatment facility
- Sells water to PAWS Members according to the rates that would cover the costs of treating and providing water
- Does not own the pipelines
- Has long term agreements to lease the pipelines from WPAWS and NPAWS
- Monitors the water appropriations
- Supplies water in accordance with those appropriations



Fort Laramie, WY

CHAPTER 9 APPENDICES:

APPENDIX A9-1 Governance Memorandum; Simmons Olsen Law Firm, P.C.; 01/30/17
APPENDIX A9-2 Resolution No. 17-06-03; City of Scottsbluff
APPENDIX A9-3 Resolution No. 2017-12; City of Torrington; 10/17/2017
APPENDIX A9-4 Resolution No. 2018-11; City of Mitchell; 02/06/2018
APPENDIX A9-5 Resolution No. 2108-02; City of Bridgeport; 02/08/2018
APPENDIX A9-6 Resolution No. 2/21/18; Village of Lyman
APPENDIX A9-7 Resolution No. 2018-012; Town of Guernsey; 06/05/2018
APPENDIX A9-8 Resolution No. 18-4; City of Terrytown; 07/05/2018
APPENDIX A9-9 Resolution No. 18-12; Village of Morrill; 08/07/2018
APPENDIX A9-10 Resolution # 916; City of Bayard; 08/14/2018
APPENDIX A9-11 Nebraska Platte Alliance Water Supply Interlocal Agreement; 02/07/2019
APPENDIX A9-12 WPAWS JPAgt_Guernsey.2019 0417
APPENDIX A9-13 WPAWS JPAgt_Torrington.2019 0107
APPENDIX A9-14 WPAWS JPAgt_Fort Laramie.2019 0725
APPENDIX A9-15 Agreement Stonecreek Homeowner's Association; 05/15/2019
APPENDIX A9-16 PAWS Governance Meetings Attendance Lists and Meeting Notes
APPENDIX A9-17 PAWS_Minutes-Reject-Lingle.2019 0514
APPENDIX A9-18 PAWS Gering correspondence.2019 0516

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PAWS

PLATTE ALLIANCE WATER SUPPLY

DISCRETIONARY TASK

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The Consultant will place fifteen thousand dollars ($15,000) of the proposed project budget in this discretionary task. The task is to allow changes in the scope as the project develops or as new issues are discovered. The Consultant and Office project manager will agree on any work to be accomplished under this task and the cost of the work. ***No work will be initiated or funds spent for this task without direct written instructions from the Office project manager.***

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CHAPTER 10 DISCRETIONARY TASK

Efforts to communicate, inform, and educate potential stakeholders to promote a clear understanding of the alternatives and advantages/disadvantages of each of the alternatives identified required a significant effort. During the course of the study, a majority of the community Mayors and council members changed, as well as several members of key agencies; thus expanding outreach efforts and schedules. To ensure adequate time and efforts were provided for the stakeholders, time extensions and fee additions were required. Additional time and fee impacted several tasks. Fee adjustments were addressed through adjustments to impacted tasks.

Additional PAWS Level II Study Draft Report packages are provided to the following entities: Goshen County, the Level II Study Advisory Group, City of Bayard, Village of Morrill, City of Mitchell, City of Terrytown, City of Bridgeport, Town of Fort Laramie, City of Torrington, Town of Guernsey, Stonecreek Homeowner's Association, Nebraska DNR, North Platte NRD, Wyoming State Engineer's Office, United States Rural Development, United States Bureau of Reclamation, Nebraska Irrigation District, Nebraska State Legislative Officials, and Wyoming State Legislative Officials.

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PAWS

PLATTE ALLIANCE WATER SUPPLY

11

IDENTIFICATION OF ALTERNATIVES, SELECTION OF PREFERRED ALTERNATIVES AND CONCEPTUAL DESIGNS

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The Consultant shall identify and evaluate reasonable alternatives for supply, transmission, treatment, and distribution components, and incorporation of existing system infrastructure. The impact of the various alternatives on operation and management shall be considered. The Consultant shall prepare conceptual designs and alignments for preferred water supply components selected herein as instructed by the WWDO project manager. This may include treatment facilities, pumping facilities, pipelines, singular/manifold connections, meter vaults, pressure valves, power transmission facilities, storage facilities, etc., and any other appurtenances necessary to make the system function in the manner intended. The Consultant shall include maps, drawings, and other items to clearly present their proposed conceptual designs.

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CHAPTER 11 IDENTIFICATION OF ALTERNATIVES, SELECTION OF PREFERRED ALTERNATIVES AND CONCEPTUAL DESIGNS

The preferred Regional PAWS alternative identifies a water supply from Glendo Reservoir; piping the raw water supply downstream to a water treatment plant located in the vicinity of Guernsey, Wyoming; and piping the treated water downstream to Bridgeport, Nebraska.

The preferred Regional PAWS concept water supply is discussed in **Chapter 6 – PAWS Regional System Water Supply**; the water treatment aspects are discussed in **Chapter 4 – Water Source Data Collection** and includes the water sampling plan and water quality test results; and the treated water pipeline is addressed in **Chapter 8 – Hydraulic Model**.

Additional information on the investigations of alternative reservoir locations and associated pipelines are included in **APPENDIX A11-1** PAWS Raw Water Supply – Reservoirs and Pipeline; and **APPENDIX A11-2** PAWS Raw Water Supply – Draft Alignments A-B-C. Preliminary plan and profile of the treated water pipeline is shown in **APPENDIX A11-3** Treated Water Pipeline–Draft Plan and Profile.

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Benefits of the preferred alternative include;

- This concept requires no “new”, and no modifications to the existing Nebraska and Wyoming water compact allocations.
- This concept utilizes supply water from existing storage accounts in Glendo Reservoir.
- This supply water does not contain the constituents found in downstream groundwater supplies, and will only require conventional treatment processes.
- This concept requires no pumping of the treated water, and little, if any pumping of the raw water.
- This concept provides significant opportunities to effectively/economically address potential future EPA water quality requirements, including chloride reduction.

Items to be further evaluated in subsequent preliminary design, and which can offer additional reduced project costs include:

- Initial hydraulic analysis indicates to alleviate all treated water pipeline pumping, the later treatment plant location should be at an elevation of 4520.
- The source will require modifications to tap into the existing BUREAU outlet works facilities at Glendo Reservoir. If an alignment can more closely follow the existing railroad facilities, all pumping of the raw water supply pipeline can also be eliminated.
- Hydro-electric power generation at the three identified pressure reducing stations along the treated water pipeline will reduce cost.

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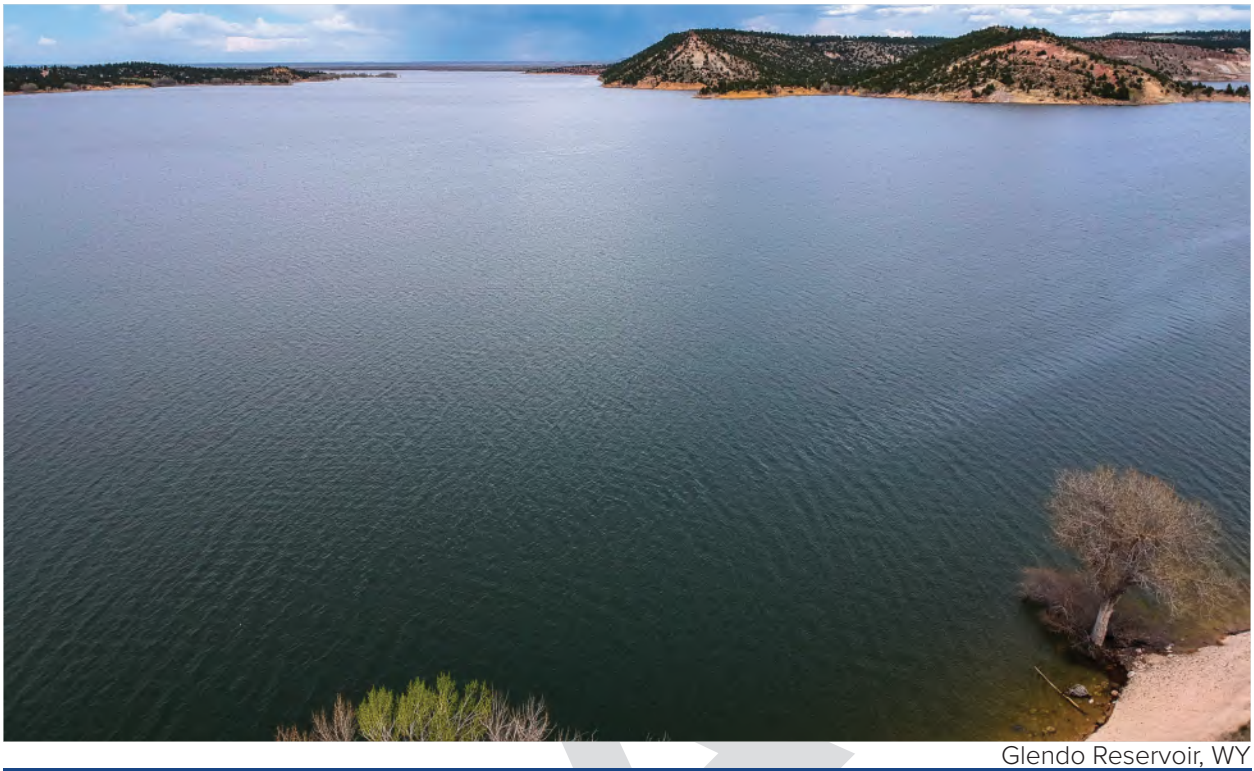

Glendo Reservoir, WY

TASK 11 APPENDICES:

APPENDIX A11-1 PAWS Raw Water Supply - Reservoirs and Pipeline

APPENDIX A11-2 PAWS Raw Water Supply - Draft Alignments A-B-C

APPENDIX A11-3 Treated Water Pipeline - Drat Plan and Profile

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PLATTE ALLIANCE WATER SUPPLY

COST ESTIMATES

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The Consultant shall prepare conceptual level cost estimates in tabular form for each of the system improvement options. The table will be broken down into both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Section C of this Scope of Services. Cost estimates should consider operation and maintenance costs, administrative costs, debt retirement, repair and maintenance account funding, and cost(s) for water. These cost estimates should be itemized so the sponsor and the Commission can understand each cost component comprising the total cost estimate. The cost estimates will be inflated assuming construction of first priority infrastructure improvements will begin 3 years after the date of completion of this report and the remaining improvements will be completed in accordance with an appropriately developed schedule (Task 13). The construction cost estimates will include costs of design, permitting, land acquisition, construction engineering, construction, and construction contingencies.

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CHAPTER 12 COST ESTIMATES

Cost Estimate

Pre-Construction Costs	
Preparation of Final Designs and Specifications (10%)	$19,410,562.50
Permitting and Mitigation (2%)	$3,882,112.50
Legal Fees (2%)	$3,882,112.50
Acquisition of Access and Rights of Way (1%)	$1,941,056.25
Pre-Construction Costs (Subtotal #1)	**$29,115,843.75**

Cost of Project Components

Item	***Quantity***		***Unit Price***			***Extension***
Mobilization	1	LS	$9,243,125.00	/	LS	$9,243,125.00
42-inch Treated Water Pipeline	171,000	LF	$330.00	/	LF	$56,430,000.00
36-inch Treated Water Pipeline	160,100	LF	$270.00	/	LF	$43,227,000.00
24-inch Treated Water Pipeline	83,200	LF	$140.00	/	LF	$11,648,000.00
18-inch Treated Water Pipeline	40,600	LF	$105.00	/	LF	$4,263,000.00
12-inch Treated Water Pipeline	91,100	LF	$95.00	/	LF	$8,654,500.00
42-inch Raw Water Pipeline	127,000	LF	$330.00	/	LF	$41,910,000.00
Raw Water Pump Station	1	LS	$1,000,000.00	/	LS	$1,000,000.00
Pressure Reducing Station	3	Each	$250,000.00	/	Each	$750,000.00
Municipal (Users) Water Taps	12	Each	$40,000.00	/	Each	$480,000.00
16 MGD Treatment Plant	1	LS	$16,000,000.00	/	LS	$16,000,000.00
Glendo Outlet Works Modifications	1	LS	$500,000.00	/	LS	$500,000.00
					Total Component Cost (Subtotal #2)	$194,105,625.00
					Construction Engineering Cost (Subtotal #2 x 10%)	$19,410,562.50
					Components and Engineering Costs (Subtotal #3)	$213,516,187.50
					Contingency (Subtotal #3 x 15%)	$32,027,428.13
					Construction Cost Total (Subtotal #4)	**$245,543,615.63**
					Total Project Cost (Subtotal #1 + Subtotal #4)	**$274,659,459.38**

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Cost Estimate Item Descriptions

1. Mobilization – 5% of construction cost

2. Pipeline Costs – Linear Foot (LF) This item includes the typical pipeline trench of 6-inches of imported pipe bedding material, 1-foot minimum trench width both sides of pipe, minimum 5-foot pipe bury to the top of the pipe; and a trench wall excavation above the bottom 3 foot of trench 2H:1V minimum, with a greater (flatter) trench slope along 10% of the alignment due to soil conditions. Compaction shall be 80% over pasture terrain and 95% beneath roads and streets and other identified critical settlement areas. This LF unit price also includes the cost

of the metallic pipe, corrosion protection, excavation, bedding, backfill, pipe fittings, pressure relief valves (at high points approximately every ¼ mile), flushing hydrants (approximately every 2 miles), river/stream and irrigation ditch crossings (assume every 2 miles), pavement replacement, landscape restoration, and dewatering where required.

3. Raw Water Pump Station – Lump Sum (LS) This item includes construction of a raw water pump station to boost the water from the Glendo Reservoir outlet works to the WTP. Items included in this lump sum amount include: pumps, a pump station building, including mechanical and electrical, and associated piping; land acquisition (estimated 1/2 acre); and site access road (approximately 1 mile).

4. Pressure Reducing Station – Each (EA) Three pressure reducing stations are identified along the proposed transmission pipeline alignment. Each pressure reducing stations costs assume the building, access roads and adjacent site work, all electrical and mechanical facilities to the building, pressure reducing valves and bypass piping, as needed. The cost of each of the three pressure reducing stations will be reduced, to some degree, as the pipe sizes and corresponding fittings and valves are smaller. However, this estimate uses one cost for each of the three pressure reducing stations.

5. Municipal (Users) Water Tap – Each (EA) This item includes the building housing the main transmission line with control valves access roads and adjacent site work, all electrical and mechanical facilities to the building, pressure reducing valves and bypass piping, as needed. The cost of each of the municipal water tap facilities will vary, to some degree, as the pipe sizes and corresponding fittings and valves will vary due to the transmission pipe size, and the size of the municipal tap pipe. However, this estimate uses one cost for each of the municipal water tap locations.

6. 16 Million Gallons per Day (MGD) Water Treatment Plant – Lump Sum (LS) This Lump Sum includes: land acquisition, access roads and site work, concrete masonry building including all electrical and mechanical facilities for a conventional coagulation and disinfection water treatment plant with possible iron adjustment, including the building, inlet piping and outlet piping. It is assumed this facility will be constructed with the ability to expand to 24 MGD in capacity, if needed.

7. Glendo Outlet Works Modifications – Lump Sum (LS) This lump sum item includes the design (via USBR), and construction of the modifications required to connect to the 42-inch raw water pipeline from the existing Glendo Outlet Works.

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PLATTE ALLIANCE WATER SUPPLY

PRIORITIZATION OF RECOMMENDATIONS

13

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The Consultant shall develop two matrices of recommendations generated during the study. One matrix will address non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The second matrix will address needed infrastructure improvements.

The Consultant, in coordination with the Sponsor and the Office project manager, will prioritize the recommendations in both matrices. In addition, a schedule will be developed identifying a phased approach for the implementation of the recommendations in accordance with their priority.

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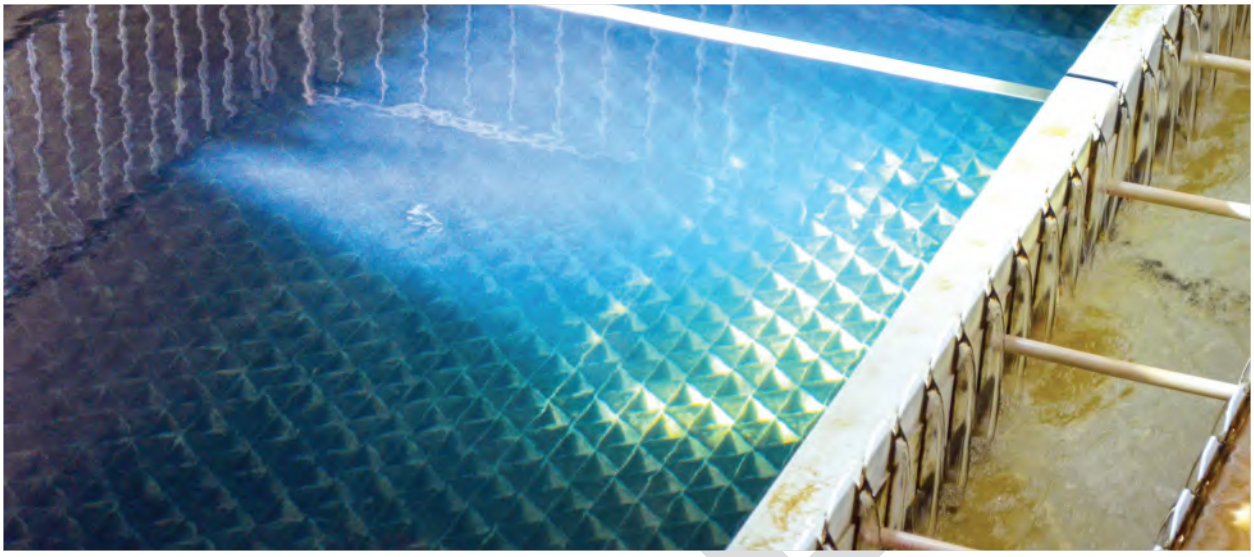

CHAPTER 13 PRIORITIZATION OF RECOMMENDATIONS

The PAWS system is intended to acquire, treat, and transmit potable water to its users. As such, PAWS is a wholesale potable water provider; delivering water to a tap for each member. A meter at each of these taps will record volume, and each customer will receive a monthly invoice for the volume acquired. The intake at Glendo Reservoir, the raw water supply pipeline, the water treatment plant, and the treated water pipeline facilities must ALL be constructed and operational to provide this water. During completion of project construction, startup coordination with each community will be addressed with the construction contract and included with substantial and final construction completion.

Project construction cost estimates can vary and will continually be updated during preliminary and final design; and will again be reviewed/adjusted based on construction bid prices. Funding must be secured and will be based upon cost estimates. In addition to construction costs, project cost estimates include operation and maintenance costs. As the project must be completed in its entirety to serve the intended function, therefore at this time a matrix of these non-structural elements has little value.

Each community will continue to review/update their distribution systems. These infrastructure modifications are not included in the PAWS project cost estimates; and therefore, no matrix is provided for these/if any, infrastructure improvements.

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PLATTE ALLIANCE WATER SUPPLY

REGIONAL WATER SYSTEM ECONOMICS & FINANCING

14

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The Consultant shall work with beneficiaries to acquire all necessary financial data required for this task to determine the current individual system budgeting and anticipated future regional water system revenues and expenditures. To initiate this task, the Consultant shall determine if beneficiaries have water utility enterprises in which existing water revenues allow the water system to be financially self-supporting or if beneficiaries must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for a water system to be self-supporting, revenues should be sufficient to accomplish the following:

- *Retire existing water related debt (principal and interest).*
- *Pay the costs for employees.*
- *Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.*
- *Pay for administrative and overhead expenses.*
- *Provide an emergency fund that annually accrues at least an amount equal to 1.5% - 2.5% of the operating expenses.*
- *Provide a fund that accrues sufficient funds to pay for major repairs and replacement that will be required during the next twenty (20) years.*
- *Pay other costs as may be identified by the Consultant.*

The Consultant shall first use the above criteria to make recommendations on the beneficiaries' current water revenue structures (rates, tap fees, and other) that would convert to and support a regional water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for a future regional water system that would result in the system becoming and staying financially self-supporting.

Next, the Consultant shall prepare four (4) funding scenarios for consideration by the Sponsor that offer adjustments in revenues necessary to accommodate the prioritized recommendations and schedules developed in Task 13 and the cost estimates developed in Task 12. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These scenarios shall be presented in the draft and final report in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following four (4) scenarios:

1. *There will be no state or federal funding assistance.*

2. *Funding for WWDC eligible components will be in the form of a 67% grant and 33% loan, but funding for WWDC non-eligible components will only be in the form of loans from other programs.*

3. *To replace the loan available through the Water Development Program for both WWDC eligible and non-eligible improvements, two other loan sources shall be examined: 1)*

There will be federal loans from Wyoming/Nebraska Drinking Water State Revolving Fund Program (DWSRF); and, 2) There will be federal loans from USDA Rural Development. Both of these federal based loan sources shall be considered, analyzed, and presented independently. The Consultant shall contact these agencies early in the project should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency. The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically needed for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RD in terms of available loan packages and ER/EA requirements. DWSRF and RD guidance and contact information is as follows:

For DWSRF:

Forms and Guidance:

Wyoming:

http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/formsguidance/

Contact: Kevin Frank, SRF Project Engineer, DEQ Casper Field Office, 152 N. Durbin Street, Suite 100, Casper, WY 82601. 307-473-3471. Email kevin.frank@wvo.gov

Nebraska:

http://deq.ne.gov/NDEQProg.nsf/OnWeb/DWSRLF

Contact the Nebraska Department of Health and Human Services - Department of Public Health DWSRF program staff at 402-471-1006. Staff can help guide you through the planning process, and identify alternative financing sources.

For USDA RD:

Forms and Guidance: http://www.rd.usda.gov/programs-services/all programs/water-environmental-programs

Contact:

Wyoming: Lorraine Werner, Community Programs Director, Casper State Office, NAGS President, 100 East B Street, Room 1005, Casper, WY 82601. Tel 307-233-6710

Nebraska: Denise Brosius-Meeks, Community Programs Director, Nebraska State Office, Suite 308 Federal Building, 100 Centennial Mall North, Lincoln, NE 68508. Tel 402-437-5559

4. There will be grants from the DWSRF, RD, and other sources to replace part of the loan available through the Water Development Program for WWDC eligible improvements and/or all or a portion of the non-eligible improvements. The Consultant shall research and fully consider all eligibility requirements, application nuances, and all logistical and timing challenges that may occur, report the amount of grant funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant for the project(s) in question.

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming Department of Environmental Quality (DEQ). Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets

Shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/capacity development/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

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CHAPTER 14 REGIONAL WATER SYSTEM ECONOMICS & FINANCING

14. ECONOMIC ANALYSIS AND PROJECT FINANCING

This project presents some challenges as the development of the system crosses not only State lines but it is also located in different regions of the Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE). Although this issue may bring additional review, we feel it also brings opportunity for agencies to work together and maximize the financing opportunities available in all regions. This section presents a recommended financial plan that is designed to allow PAWS to construct the recommended water system improvements. The financial plan assumes that the terms and availability of the outside funding will be as described in the following sections. These assumptions are based on discussions and previous dealings with funding agencies including the EPA through the Water Infrastructure Finance and Innovation Act (WIFIA), USDA Rural Development, the U.S. Department of Housing and Urban Development (CDBG), State Revolving Funds (SRF) for both Nebraska and Wyoming, Nebraska Water Sustainability Fund (NWSF) and the Wyoming Water Development Commission (WWDC).

14.1 Existing Water Utility Enterprises

Nine communities and the Wyoming rural water districts have agreed to continue the evaluation of the PAWS regional system. Each of these communities run and manage their own water utility enterprise. Each of these systems vary significantly in their complexity not only due to their population size but water source.

Of the nine communities, three of them currently have drinking water treatment plants: Torrington, Bayard and Bridgeport. Three separate communities have joined together to comprise the Western Nebraska Joint Water Board water system: Morrill, Lyman and Henry. In addition, Minatare has constructed a water transmission main to Scottsbluff where they currently get their drinking water.

All of the participating communities and rural water districts continue to struggle with finding and developing a reliable water source and have continued the search for additional well sites. Finding good quality water is becoming more difficult and expensive.

With the nuances that come with each community and their selected alternatives, water rates vary significantly across the PAWS region. The majority of the systems carry some type of debt service due to the evolving water quality mandates and the implementation of treatment plants, regionalization or age of distribution systems.

Following discussions and evaluations of each participating community, it has been determined that all have a financially sound and fiscally responsible water utility.

14.2 Funding Agencies

The PAWS regional system is located in a unique configuration as in encompasses two states as well as multiple federal regions of most federal agencies. Below is a list of the agencies that could participate financially in this project. The list was taken from a search of the EPA Water Finance Clearinghouse as well as knowledge of funding agencies.

EPA Water Infrastructure Finance and Innovation Act (WIFIA)

The Water Infrastructure Finance and Innovation Act of 2014 (WIFIA) established the program. The mission of the WIFIA program is:

> "*Accelerate investment in our nation's water and wastewater infrastructure by providing long-term, low-cost supplemental credit assistance under customized terms to creditworthy water and wastewater projects of national and regional significance*."

The program is structured to supplement the State Revolving Fund (SRF) programs to help provide subsidized financing for large dollar-value projects.

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Eligible development and implementation activities include:

- Development phase activities, including planning, preliminary engineering, design, environmental review, revenue forecasting, and other pre-construction activities
- Construction, reconstruction, rehabilitation, and replacement activities
- Acquisition of real property or an interest in real property, environmental mitigation, construction contingencies, and acquisition of equipment
- Capitalized interest necessary to meet market requirements, reasonably required reserve funds, capital issuance expenses and other carrying costs during construction

A few of the key program features are:

- $20 million: Minimum project size for large communities (population of 25,000 or more)
- 49%: Maximum portion of eligible project costs that WIFIA can fund
- Total federal assistance may not exceed 80% of a project's eligible costs
- 35 years: Maximum final maturity date from substantial completion
- 5 years: Maximum time that repayment may be deffered after substantial completion of the project construction
- Interest rate will be equal to or greater than the U.S. Treasury rate of a similar maturity at the date of closing
- Projects must be creditworthy and have a dedicated source of revenue
- NEPA, Davis-Bacon, American Iron and Steel, and all other federal cost-cutter provisions apply

There are a number of key benefits that this program provides to help facilitate a project like PAWS:

- A single fixed interest rate is established at closing. A borrower may receive multiple disbursements over several years at the same fixed interest rate.
- Interest rate is equal to the US Treasury rate of a similar maturity. The WIFIA program sets its interest rate based on the U.S. Treasury rate on the date of loan closing. The rate is calculated using the weighted average life (WAL) of the loan rather than the loan maturity date. The WAL is generally shorter than the loan's actual length resulting in a lower interest rate.
- Interest rate is not impacted by the borrower's credit or loan structure. All borrowers benefit from the AAA Treasury rate, regardless of whether they are rated AA or BBB. The WIFIA program does not charge a higher rate for flexible financial terms. Because the PAWS organization will be a newly organized entity, they will be starting with no financial history to obtain a higher credit worthiness, which in most cases, negatively impacts the interest rate.

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- **Customized repayment schedules**. Borrowers can customize their repayments to match their anticipated revenues and expenses for the life of the loan. This flexibility provides borrowers with the time they may need to phase in rate increases to generate revenue to repay the loan. It also allows the PAWS organization to manage the amortization schedule for communities that may not need to join the PAWS system initially but have committed to joining the system at a later date once their existing debt service has expired.
- **Long repayment period**. WIFIA loans may have a length of up to 35 years after substantial completion, allowing payment amounts to be smaller throughout the life of the loan. Due to the increased life expectancy of a traditional water treatment system vs. a more mechanical plant, increasing the length of the loan is an excellent opportunity to keep rates manageable.
- **Deferred payment**. Payments may be deferred up to 5-years after the project's substantial completion. Deferring payments allows the utility to establish a positive operational account and emergency contingency fund.
- **Subordination**. Under certain circumstances, WIFIA may take a subordinate position in payment priority, increasing coverage ratios for senior bond holders. This is important to be provide local lending institutions better security.
- WIFIA loans can be combined with various funding sources. WIFIA loans can be combined with private equity, revenue bonds, corporate debt, grants, and State Revolving fund (SRF) loans.

Department of Agriculture, Rural Development, Infrastructure Investment

The Water and Environmental Programs (WEP) through Rural Development focuses on technical assistance and financing to develop drinking water and waste disposal systems in rural America. They recognize that these systems are vital not only to public health, but also to the economic vitality of rural America. The program exclusively focuses on rural water and waste infrastructure needs of rural communities with populations of 10,000 or less. The majority of communities associated with the PAWS system qualify.

Eligible development and implementation activities include:

- Finance and acquisition, construction or improvement of drinking water sourcing, treatment, storage and distribution.
- Legal and Engineering fees
- Land acquisition, water and land rights, permits and equipment
- Start-up operations and maintenance
- Interest incurred during construction
- Purchase of facilities to improve service or prevent loss of service
- Other costs determined to be necessary for completion of the project

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A few key program features are:

- Up to 40-year payback period, based on the useful life of the facilities financed
- Fixed interest rates, based on the need for the project and the median household income of the area to be served
- Borrowers must have the legal authority to construct, operate and maintain the proposed services or facilities
- All facilities receiving federal financing must be used for a public purpose
- Partnerships with other federal, state, local, private and nonprofit entities that offer financial assistance are encouraged
- Projects must be financially sustainable

Because USDA is a national program administered by each state, if this funding mechanism is utilized, the project will have to coordinate with the field staff from each state or, enter into an agreement for a single representative to administer Federal Funds through one states program. In either case, resource should be a viable opportunity for the project.

Department of Housing and Urban Development, Community Development Block Grant Program (CDBG)

The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs. The program is one of the longest continuously run programs through the Department of Housing and Urban Development, starting in 1974. The PAWS project is located in primarily a low income area. By providing a reliable and affordable drinking water source, the CDBG program can meet its goals of providing an affordable living environment to some of the most vulnerable communities. CDBG funds typically come in the form of grants with a match rather than loans.

State Revolving Funds (SRF)

State Revolving Fund is a program administered by each state, Nebraska and Wyoming, for the purpose of providing low-interest loans for investments in water and sanitation infrastructure, as well as for the implementation of nonpoint source pollution control and estuary protection projects. The SRF gets its initial capital from federal grants and state contributions. States must contribute 20% of the funds administered. It then emits bonds that are guaranteed by the initial capital. The money then “revolves” through the repayment of principal and the payment of interest on outstanding loans. The Drinking Water State Revolving Loan Fund (DWSRF) was established by the 1996 amendments to the Safe Drinking Water Act (SDWA). The program is intended to create a strong relationship between the EPA and each State.

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Typical project types funded through SRF include:

- Drinking water treatment improvements
- Replacement of old distribution systems
- Improving water source and water supply
- Replacement and/or new water storage tanks
- Other infrastructure projects needed to protect public health

States are responsible for the operation of their DWSRF programs. Under the DWSRF, states may provide various types of assistance, including:

- Loans
- Refinancing
- Purchasing
- Guaranteeing local debt
- Purchasing bond insurance
- Loan terms set by the state may include:
- Interest rates from zero percent to market rate
- Repayment periods of up to 30-years

States review project applications and then produce a Project Priority List. The PAWS project has been submitted to each state for inclusion on their priority lists. Priorities are typically given to projects that:

- Address the most serious risks to human health
- Are necessary to ensure compliance with the SDWA
- Assist systems most in need according to state affordability criteria

In addition to loans, states have the authority to customize loan terms to meet the needs of small and disadvantaged communities or to provide incentives for certain types of projects. Additional subsidization may be provided as:

- Grants
- Principal forgiveness
- Negative interest rate loans

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Nebraska Water Sustainability Fund (NWSF)

The Nebraska Water Sustainability Fund (NWSF) is in its infancy. Established in 2014, the fund has eight main goals:

a) Provide financial assistance to programs, projects, or activities that increase aquafer recharge, reduce aquifer depletion, and increase streamflow

b) Remediate or mitigate threats to drinking water

c) Promote the goals and objectives of approved integrated management plans or ground water management plans

d) Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits wildlife habitat, conservation, and preservation of water resources

e) Assist municipalities with the cost of constructing, upgrading, developing, and replacing sewer infrastructure facilities as part of a combined sewer overflow project

f) Provide increased water productivity and enhance water quality

g) Use the most cost-effective solutions available

h) Comply with interstate compacts, decrees, other state contracts and agreements and federal law

In order to meet those goals, the water sustainability fund is a source of financial support to help local project sponsors achieve with projects that can help attain these goals. The PAWS project will help the Nebraska Natural Resource commission attain all but goal (e), which addresses sanitary sewer projects only.

Because the program is so new, the types of projects being funded hasn't established a solid trend. However, as you can see, the PAWS project should be strongly considered as it meets the majority of the mission intended for the program. The application period for funding requests are accepted between July 16th and 31st of each year. Although the program isn't heavily funded at the current time, any allocation to the PAWS project should be leveraged with other financial opportunities to maximize usefulness.

There is a local match requirement of 40% or more of the total project costs. After deducting all other sources of funding contributed to offset costs of the project (such as federal, state, Nebraska Environmental Trust and/or others regardless of the method(s) of recording and receiving such funds), financial assistance from the Fund will be up to 60% of the remaining costs which otherwise would have to be paid from local sources.

Eligible development and implementation activities include:

- Engineering
- Inspection
- Land rights acquisition
- Capital construction Costs

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Wyoming Water Development Commission (WWDC)

The Wyoming portion of this Level 2 study has been paid for by WWDC.

The Wyoming Water Development Commission has a strong history in supporting Wyoming Municipalities with their water needs. It was established in 1975 to promote the optimal development of the state's human, industrial mineral, agricultural, water and recreational resources. Eligible activities include:

- Planning
- Selection
- Financing
- Construction
- Acquisition
- Operation

Typical types of projects vary from the conservation, storage, transmission, supply, and use of water, necessary in the public interest to develop and preserve Wyoming's water and related land resources.

With the formalization of this study, the PAWS project will have completed both an Appraisal Investigation, paid for by the Bureau of Reclamation and this Level II study which have been paid for by multiple funding organizations, one being WWDC. WWDC considers Level III to include project design, permitting, land acquisition, construction and construction engineering. Applications for Level III projects must be submitted no later than September 1st and must include Legislative authorization. Financial participation through WWDC is reviewed and provided at the time of award and can very based on project eligibility and outside resources.

Bureau of Reclamation WaterSMART (Sustain and Manage America's Resources for Tomorrow)

As challenges continue to arise in regards to drought, increased populations, aging infrastructure, and environmental requirements, the BOR has established a program to cooperatively work with states, tribes, and local entities. This plan identifies ways to implement actions to increase water supply through investments to modernize existing infrastructure and attention to local water conflicts.

One local example of the types of projects funded through this mechanism was the lining of 3.3 miles of earthen Lateral to polyvinyl chloride pipe in the Pathfinder Irrigation District. The project is expected to result in saving 675 acre-feet of water annually.

This project was funded through the water and energy efficiency grants (formerly Challenge Grants). Reclamation provides 50/50 cost share funding to irrigation and water districts, tribes, states and other entities with water or power delivery authority. Projects conserve and use water more efficiently; increase the production of hydropower; mitigate conflict risk in areas at a high risk of future water conflict; and accomplish other benefits that contribute to water supply reliability in the western United States. Projects are selected through a competitive process and the focus is on projects that can be completed within two or three years.

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State of Wyoming, State Land and Investment Board

The State of Wyoming, State Land and Investment Board administers the The Mineral Royalty Grant (MRG) program, and awards grants to:

- Alleviate an emergency situation which poses a direct and immediate threat to public health, safety or welfare;
- To comply with federal or state mandates; or
- To provide an essential public service.

4.3. Ability to Pay

CURRENT CONDITIONS

PAWS will act as the wholesale drinking water provider for all communities associated with the system. Water will be charged at the same rate to all communities through metering at the point of delivery. This is important to understand as each community will then have their own distribution systems and staff to maintain. This will then require each entity to have their own utility rate set by them to cover their costs. The PAWS governance will only be responsible for determining the wholesale rate of water to each entity. The effect the PAWS system will have on each individual community's water rates will vary based on the current infrastructure of each community. Based on conversations with multiple entities in the PAWS region, the cost of water development is unknown.

For comparison purposes, a current average water bill has been calculated for each participating community based on their rate structure provided in the user information form, ***Table 14.1***. The assumptions used for each community is a household of 4 using 123 gallons per capita per day in a 30-day month. The consumption use for the financial evaluation is based on the actual consumption per capita of the Shoshone Municipal Pipeline (SMP), an existing regional system in northwest Wyoming with many similarities to the PAWS system.

Table 14.1

	Current Average Rate	Number of Services
Wyoming		
Torrington	$50.10	2437
Guernsey	$32.76	500
Fort Laramie	$46.00	159
Nebraska		
Morrill	$48.39	478
Mitchell	$37.92	800
Scottsbluff	$37.29	6,200
Terrytown	$51.54	536
Minatare	$67.67	342
Bayard	$53.67	537
Bridgeport	$77.16	744

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According to the American Water Works Association, water rates have increased at 4.9% annually, almost twice the rate of inflation as measured by the Consumer Price Index. Fixed costs related to capital improvements are driving these rate increases. Regulatory compliance and infrastructure renewal are typically the fastest-growing pieces of the utility budget. After review of the systems within the PAWS region, unless there was a significant capital improvement project associated with the community, water rates within the region have not increased at the national average rate and in some cases, haven't increased in a number of years.

The United States Environmental Protection Agency (USEPA) has set a national standard for considering what "Affordable Water Rates" means. AWWA has adopted this standard with the caveat that the "Affordable Rate" structure should also take into consideration poverty rate levels and other demographics. The "Affordable monthly Rate" schedule is based on 2.5% of the monthly median household income (MHI) for each community.

Table 14.2 identifies the MHI (censes 2017) as well as the percentage currently identified as the base rate:

Table 14.2

Community	MHI	MHI % of Current Rate
Wyoming		
Torrington	$42,202	1.42
Guernsey	$53,981	0.73
Fort Laramie	$29,886	1.85
Nebraska		
Morrill	$44,201	1.31
Mitchell	$44,426	1.02
Scottsbluff	$41,143	1.09
Terrytown	$39,762	1.56
Minatare	$34,167	2.38
Bayard	$41,944	1.54
Bridgeport	$45,357	2.04

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PROJECT FINANCE ALTERNATIVES

The PAWS system will have a base operating budget as well as a debt service requirement based on the financial package selected for the project. An operations budget has been developed based on the Shoshone Municipal Pipeline (SMP) system. The PAWS system is expected to be very similar in size and configuration to the SMP. There are two items listed in the SMP expenditures that are not accounted for in the PAWS budget: Capital Projects and USBR. Neither item is anticipated to effect the PAWS system for the first five operating years. Following, are the anticipated expenditures in today's dollars:

EXPENDITURES		
Advertising & Promotion	$	5,900
Board Expenses	$	7,080
Capital Projects		
Computers	$	30,090
Education	$	15,340
Insurance Expense	$	61,360
Laboratory Operations	$	30,090
Legal & Accounting	$	20,060
Machinery & Equipment	$	106,790
Maintenance & Repair	$	166,970
Office Supplies & Equipment	$	19,824
Production Chemicals	$	177,000
Purchased Services	$	56,640
Salaries & Benefits	$	1,076,986
USBR		
Utilities	$	188,092
Vehicles	$	63,720
	$	**2,025,942**

Regardless of debt service, it is important that the utility has the ability to cover the cost of operating and maintaining the system. Based on initial population estimates and conservative water use for financial planning purposes, we would propose a water usage rate of $1.34 per 1000 gallons as well as a $1 per tap equivalent fee for O&M. Based on expected usage, that rate would produce roughly $2,096,288.50 covering the above expenditures.

Dept service then becomes the impetus for rates. A tap equivalent fee to retire debt service should then be set based on the grant to loan ratio received for the construction of the overall project. We would anticipate that the U.S Treasury Rate will be the rate set for any loans necessary for the capital construction of the project. The U.S Treasury rate at the time of this report is 2% which is the rate used for the financial evaluation of anticipated debt service. We are also anticipating that the loan terms will be set at a 30-year amortization rate.

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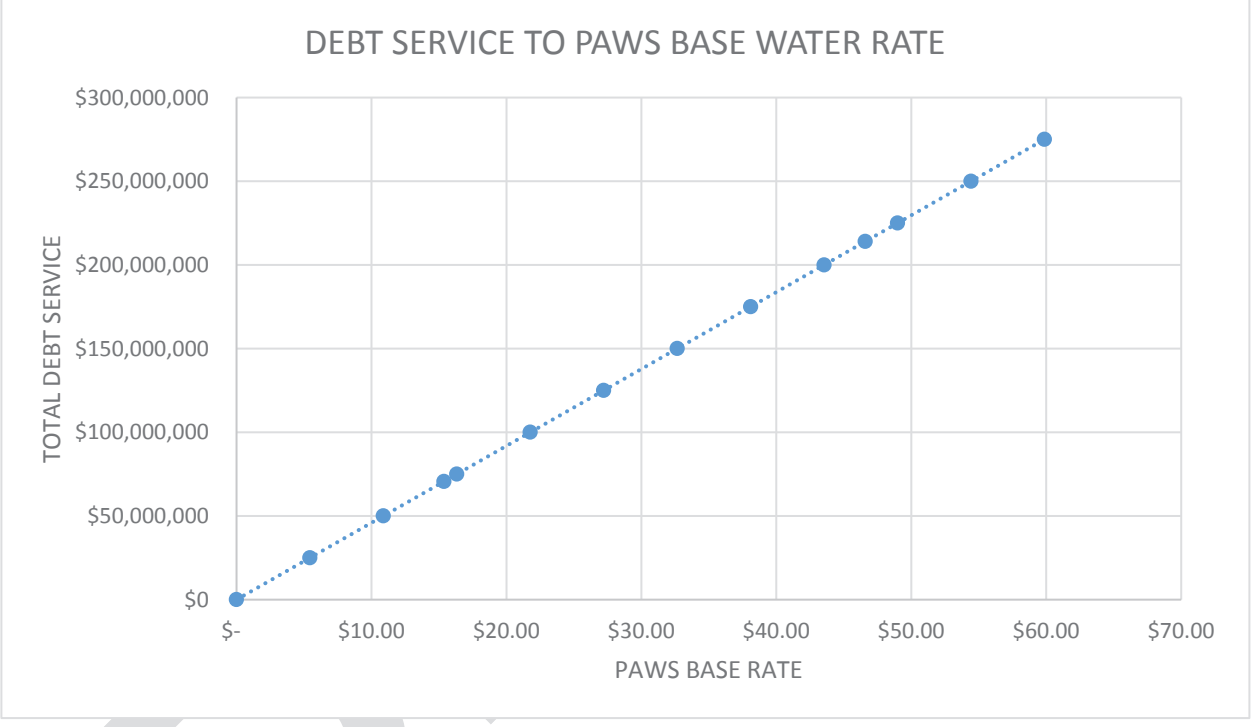
Each community has a unique number of service connections associated with their population base. The size of types also vary significantly. A "Tap Equivalent" must then be estimated to adjust for the difference in demands for the size of tap. For example a 1-inch service can provide nearly twice as much water as a ¾-inch service and therefore should be considered nearly twice in the base rate calculation. For the financial evaluation of this report a multiplier of 1.33 has been established based on number of services to water use. The total number of estimated tap equivalents for the 12 participating communities is 16,978.

The following graph, ***Figure 14.1*** depicts the affect debt service will have on the rates that will be charged by the PAWS system:

Figure 14.1



As part of this project we are required to provide four separate funding scenarios for consideration. The scenarios are anticipating a total project cost of $274,659,460.

1. No State or Federal Funding Assistance.

This scenario suggests that the water utility must be self-supporting including all necessary debt service.

Water Rate = $1.34 per 1,000 gallons

Equivalent Tap Fee (O&M) = $1.00

Equivalent Tap Fee (DS) = $59.80

Total Rate = $1.34 per 1,000 gallons and a Tap Equivalent fee of $60.80

2. Funding for WWDC Eligible Components (67% Grant and 33% Loan)

Because the intent of this system is to keep consistent water rates across the associated communities, this funding mechanism must assume that the grant/loan ratio stays consistent for all communities as well. Total project costs will then be $184,021,838 grant and $90,637,622 loan.

Water Rate = $1.34 per 1,000 gallons

Equivalent Tap Fee (O&M) = $1.00

Equivalent Tap Fee (DS) = $19.73

Total Rate = $1.34 per 1,000 gallons and a Tap Equivalent fee of $20.73

3. Consider Two Additional Loan Sources, DWSRF and USDA RD

Both funding agencies were contacted early in the project. The PAWS project is included in the Nebraska Drinking Water State Revolving Fund Intended Use plan. It currently has 175 Priority Points which is the third highest in the state of Nebraska. The needs survey has been completed for inclusion in the 2020 Wyoming Intended Use plan.

During our conversations with USDA Rural Development, it was noted that a funding package through these agencies couldn't be conceptualized until after this report is complete.

Environmental impacts have been carefully considered for the conceptual design proposed as part of this Level II study. It is anticipated that the treatment plant will be located to appropriately address negative impacts to the environment and the majority of the pipeline alignment considered follows existing road infrastructure. For these reasons it is anticipated that this project should be considered for a categorical exclusion. If there is significant changes to the concept, these same environmental impacts should be considered. Review for potential impacts from appropriate agencies will be provided during the pre-design stage of this project.

4. Grants from DSWRF, RD and other sources

A number of funding sources were identified and explained earlier in this chapter, in **Section 14.2 Funding Agencies**. These agencies are the more common agencies however, additional sources should continue to be researched. Due to the potential impacts this project has on other infrastructure, continued dialogue could pose additional resources. One example of this could be the positive impact a new water source may have on the domestic waste streams for communities. By utilizing conventional treatment of a cleaner water source, the amount of byproducts will be minimized therefore reducing contaminants in wastewater effluents as well sludge to be disposed of in solid waste facilities.

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14.4. Capacity Assessment and Financial Worksheets

Wyoming Department of Environmental Quality has established worksheets to help evaluate systems for Capacity and Financial stability. Although these worksheets appear to be focused on existing systems, the worksheets were completed as thorough as possible based on the assumptions presented in the report. The worksheets can be found in **APPENDIX A14-1**.

14.5. Funding and Timing

Nine communities have agreed to continue to evaluate this project and its applicability. A number of them currently have a substantial debt service for capital improvement projects required to meet their current needs. A list of these communities and projects include:

- Torrington – Reverse Osmosis Water Treatment Plant
- Bridgeport – Ion Exchange Water Treatment Plant
- Bayard – Water Treatment Plan
- Henry, Morrill, Lyman – Regional Well Field
- Minatare – Connection to City of Scottsbluff
- Terrytown – Connection to Gering

All of these projects were necessary projects and couldn't be avoided. It is important to also note that all of these projects include components that can be utilized in the PAWS project. Some of these improvements include transmission mains that will be utilized to connect to each community through PAWS and storage tanks that will help maximize the operations of the systems.

Timing of not only the construction but of the funding package will be critical to the success of this project as well. The communities that are already burdened with debt service for projects that currently meet their needs will not be able to afford to connect to the PAWS system until their existing system requires major upgrades or until their existing debt service is retired. One component of the WIFIA financial program allows for more flexibility than typically seen in other loan programs. The repayment schedule can be personalized to accommodate a repayment structure to allow for communities to enter into the system at different times.

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CHAPTER 14 APPENDICES:

APPENDIX A14-1 Capacity Assessment Worksheets for Public Water Systems to Demonstrate Capacity Development

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PAWS

PLATTE ALLIANCE WATER SUPPLY

REPORTS

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The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study, no later than July 1, 2018. Five (5) CD/DVD copies containing the draft report in a Searchable Image Adobe Acrobat (pdf) format will also be provided, and two (2) CD/DVD copies of the draft ArcGIS coverages (if applicable). The digital report will be completely assembled into one standalone Acrobat file, and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

After receipt and incorporation of the Office and the Sponsor's review comments, the Consultant shall submit all final documents and materials to the Office on or before September 1, 2018. These final documents and materials shall include: 1) Fifteen (15) hard copies of the final report and 2) Fifteen (15) hard copies of the executive summary. The summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, consultant and date.

Six (6) CD/DVD copies containing the final report and executive summary in a Searchable Image Adobe Acrobat (pdf) format will be provided. The digital report will be completely assembled into one standalone Acrobat file for each report, and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

Two (2) CD/DVD copies containing the final report and executive summary in their original formats (Word, Excel, etc.), and Searchable Image Adobe Acrobat (pdf) format will be provided. The Acrobat version will be completely assembled and contained in one pdf file. These files will be the same version as the hard copies. Each CD/DVD shall have a hard copy table of contents attached.

Four (4) CD/DVD copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD/DVD shall have a hard copy table of contents attached. One of these copies will be included in the project notebook.

Four (4) CD/DVD/Flash Drive/Portable Hard Drive copies of the Arcview GIS project file, and all associated files will be provided. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources, and shapefiles saved in the decimal degree coordinate system with a NAD83 datum stored in feet for all mapped features. A hard copy table of contents shall be attached.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, consultant and date.

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CHAPTER 15 REPORTS

Submission Contents

Five hard copies of the Level II Draft Report, accompanied with a jump drive containing the Level II Draft Report in a single digital PDF file are provided to WWDC, and two copies are provided to the City of Scottsbluff, NE.

Also, following submittal of the Level II Draft Report, additional hard copies of the Level II Draft Report, accompanied with a jump drive containing the Level II Draft Report in a single digital PDF file will be prepared and transmitted to municipalities, appropriate impacted government agencies, sub-consultants, Advisory Group members and stakeholders. A list of those entities provided with a copy of the Level II Draft Report will be maintained and included in the Level II Final Report.

The following list identifies participating communities and districts as well as involved personnel, entities, and agencies receiving copies of the Draft Platte Alliance Water Supply Level II Study Report.

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PAWS

PLATTE ALLIANCE WATER SUPPLY

REPORT PRESENTATIONS

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Upon completion of the draft final report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant's key project personnel shall attend the hearing and will participate in the presentation. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only); any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Cheyenne to present the results to the WWDC. This presentation may be at the request of the Commission for general informational purposes and/or to act as a technical resource for the sponsor if they intend to seek Level III funding. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study shall also serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

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CHAPTER 16 REPORT PRESENTATIONS

Following submittal of the Draft Level II Study Report and during the review period, the Project Team will be available to respond to questions, comments, and clarifications. Opportunities for presentations of the Level II Study Report will be coordinated with the funding agencies.

Input received during the comment period will be incorporated into the Final Level II Study Report.

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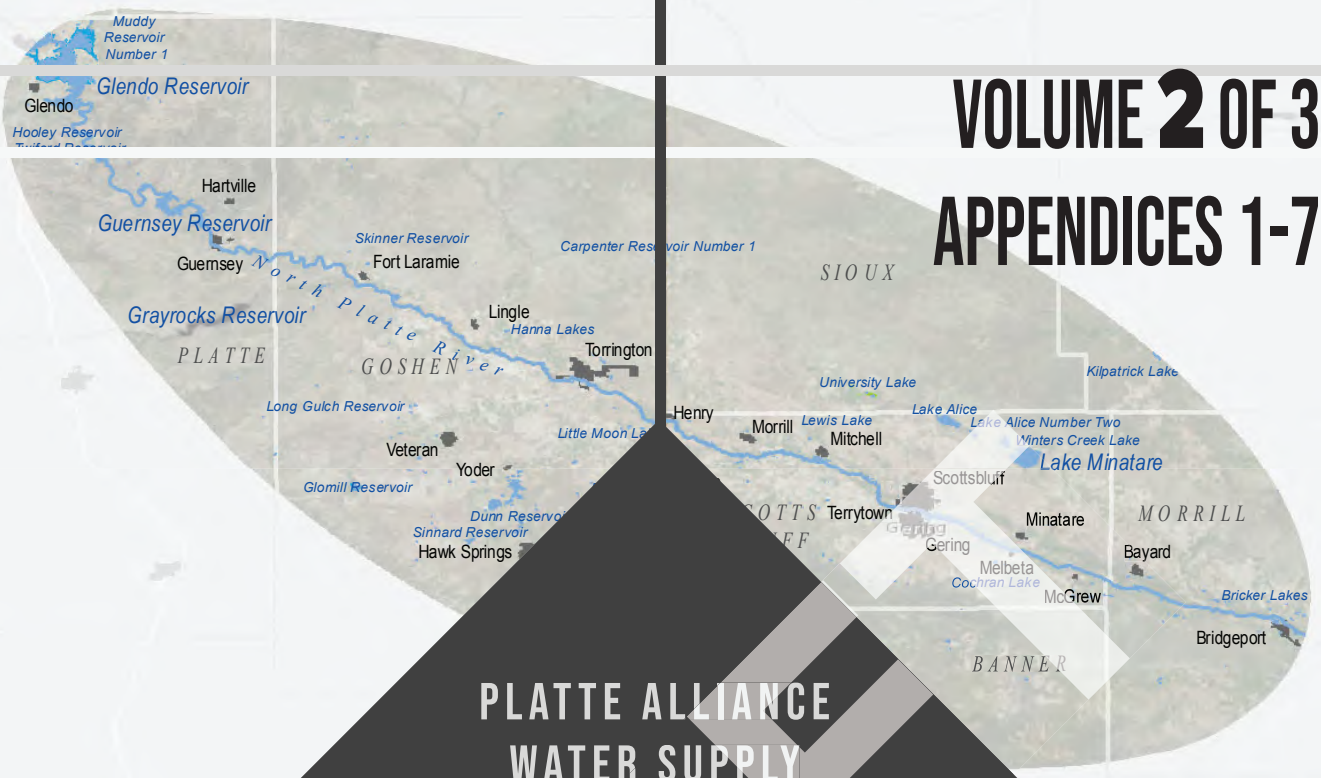

VOLUME 2 OF 3
APPENDICES 1-7

PLATTE ALLIANCE WATER SUPPLY

LEVEL II STUDY

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JULY 31, 2019

Working together for affordable high quality water

APPENDICES

A1

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APPENDIX A1-1

ADVISORY GROUP CONTACT INFORMATION, MEETINGS HELD, NOTES

- CONTACT INFORMATION
- ADVISORY GROUP MEETING #1 11-7-2016
- ADVISORY GROUP MEETING #2 1-30-2017
- ADVISORY GROUP PRESENTATION SLIDES 1-13-2017
- ADVISORY GROUP MEETING #3 8-9-2018
- ADVISORY GROUP UPDATE 5-11-2019

NOTE: PARTICIPATION VARIED THROUGHOUT THE STUDY DEPENDING UPON SPECIFIC ITEMS DISCUSSED, PARTICIPANTS' SCHEDULE REQUIREMENTS, AND POSITION CHANGES.

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Platte Alliance Water Supply (PAWS) Level II Study

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AGENDA
Platte Alliance Water Supply (PAWS)
Level II Study

Advisory Group Meeting #1

What: Initial Advisory Group Meeting

When: Monday November 7, 2016

Where: Torrington, Wyoming Platte Valley Bank Community Room (directly north of the Post Office on Main Street)

Time: 11:00am through 3:00pm (lunch provided)

Advisory Group

Kevin Boyce/WWDC, Project Manager
Nathan Johnson/City of Scottsbluff, NE, City Manager
Carl Rupp/Chairman, Goshen County Commissioners
Dave Schaff/MC Schaff, Vice President
Victor Anderson/Wenck Associates, Principal
Reed Armijo/Jorgensen Associates, President
Howard Olsen/Simmons Olsen Law Firm, Principal
Jeff Fassett/Nebraska State Engineer
Pat Tyrell/Wyoming State Engineer
Mike Purcell/Retired, former WWDC Director
John Lawson/Retired, former USBR Region & North Platte River Operations Manager/Casper
Jeff Fuller/MC Schaff, Project Manager

Attendees

MC Schaff/MC Schaff, President
Levi Mickelson/Missouri Basin Power Cooperative
Jeff Cowley/WY State Engineer's Office, River Basin Coordinator
Michael Olsen/Mc Schaff, Engineer
Josh Fuller/Jorgensen Associates, Engineer
Barry Lawrence/WWDC

11:00 am **Introductions**

Why we are here

- Historical Update
- Role of the Advisory Group
- Agreements
- Scope
- Schedule
- Goal of Study

12:00 pm **LUNCH**

1:00 pm **Water Supply Discussion**

2:00 pm **Governance Discussion**

2:30 pm **Outreach Discussion**

2:45 – 3:00 pm **Wrap Up & What's Next**

MEETING NOTES

These notes are not a verbatim record of the conversations rather a brief summary of the discussions. Additional thoughts/clarifications/modifications with regard to these meeting notes should be emailed to Jeff Fuller.

Platte Alliance Water Supply (PAWS)
Level II Study

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MC Schaff/MC Schaff, President
Levi Mickelson/Basin Electric Power Cooperative
Brian Larson/Plant Manager, Basin Electric Power Cooperative
Jeff Cowley/WY State Engineer's Office, River Basin Coordinator
Doug Oliver/State Engineer's Office
Michael Olsen/MC Schaff, Engineer
Josh Fuller/Jorgensen Associates, Engineer
Barry Lawrence/WWDC

11:00 am **Introductions**

Why we are here

Historical Update

A brief summary of the Appraisal Investigation and the USBR Appraisal Report and the process to provide a subsequent Level II study was provided. The Appraisal Investigation study identified alternatives to provide potable water to rural municipalities along the North Platte River basin basically from Guernsey, WY to the Bridgeport, NE area. Two "plausible" alternatives were identified for further consideration; one with a water source from Greyrocks Reservoir; and the other with a water source from the North Platte River in the vicinity of Guernsey, WY.

This Level II Study is sponsored by Goshen County, and funded equally by the City of Scottsbluff, NE and the Wyoming Water Development Commission(WWDC), with the WWDC taking the lead on the day to day project management.

Role of the Advisory Group

The Advisory Group, comprised of individuals with specific expertise and experience, will provide significant input, review, and direction of key project issues. As this regional potable water supply project includes both Wyoming and Nebraska; water supply and governance are key issues that must be successfully addressed, along with significant public outreach and preliminary engineering to develop a feasible alternative to proceed to preliminary design engineering; or to determine these alternative concepts are not feasible for further study.

Agreements

The WWDC and City of Scottsbluff have entered into a Memorandum of Agreement (MOA) for funding and administering this Level II Study. MC Schaff & Associates contracted as a consultant to the WWDC; and Wenck & Associates, Jorgensen Associates, Simmons & Olsen Law Firm, John Lawson and Mike Purcell are all subconsultants to MC Schaff. Subconsultant invoices (including time and expenses identified by task) should be submitted by the last day of each month to MC Schaff & Associates to the attention of Dave Schaff.

Scope

The agreement between MC Schaff and the WWDC identifies 16 tasks for completion of this Level II Study. These were discussed and include: review of previous studies and information developed in the Appraisal Investigation and Appraisal Report, development of a "doable" water supply scenario; development of a GIS database; identify a "doable" governance scenario; develop a significant outreach program which enlists support of the users; refine a preferred alternative including hydraulic analysis; prioritization of identified improvements; provide cost estimates, economic and funding scenarios; and prepare final Level II Study Reports.

Schedule

It is anticipated this study will extend approximately 18 months; however, there are contingencies to extend this time period if necessary.

Goal of Study

The intent is to provide sufficient concept designs and identify regulatory processes to provide sufficient level of detail to bring this project forward to potential funding agencies and funding scenarios; to proceed with preliminary and final designs and subsequent construction.

12:00 pm LUNCH

1:00 pm Water Supply Discussion

It was noted the "political" climate is timely and beneficial for this study, for consideration of water supply issues (as both Wyoming and Nebraska have a current good working relationship); and both states have a real current need to address potable water supplies. This need is imminent and, in all likelihood will not diminish. With respect to water supply, the two identified alternatives include water from Greyrocks, and/or water from the North Platte River. Both contain significant and different water supply issues. It was noted this is not a water rights, rather a water depletions issue. The consultants will obtain copies of the current Wyoming and Nebraska water depletions plans.

It was discussed that if the water supply intake comes from Greyrocks Reservoir; the intent is that incorporating water supply from Greyrocks Reservoir will not impede or degrade any water supply issues the Basin Electric Power Cooperative(BEPC) has in place; and potentially enhance water reliability for BEPC. The BEPC representatives will discuss this/these issues "internally" and report back to this Advisory Group of any resolution; and/or contact any member of the Advisor Group with additional questions/thoughts/clarifications.

It was suggested that this group initially look at the potentially "easiest" water supply resolution; that we look at water supply for Wyoming from upstream Pathfinder and or Glendo Reservoirs; and the water supply for Nebraska from Glendo Reservoir. Previous reports provided water supply information in gallons per minute (GPM), million gallons per day (MGD), and or gallons per capita per day (GPCPD). This information will be "converted" and information will be provided to identify, for both Wyoming and Nebraska independently, water supply needs on a monthly basis, in acre/feet for the initial start-up of the PAWS Project; at 17MGD; and at the ultimate water supply need of 34 MGD.

2:00 pm Governance Discussion

The basic concept is that this project will use an upstream raw water supply to a water treatment plant; and deliver potable water, by gravity, to downstream users. This project will create a water "wholesaler"; providing potable water taps to existing municipalities and/or rural water districts. These municipalities and or rural water districts would continue to provide local water storage and distribution to individual users.

Howard Olsen provided governance information from the Lewis and Clark project, a 3-state (South Dakota, Iowa and Minnesota) "similar" potable water supply project. For this project a 3-state 501C (4) corporation was created, with one member for each user. Initially members are assessed a membership fee, with a subsequent annual fee. It was noted that both Wyoming and Nebraska have enabling state statutes (NE 13804, WY 16101) to allow for this governing scenario.

Another option was discussed where each state would create a Joint Powers Board (JPB); and both the WY JPB and the NE JPB would have an agreement with a 2-state Joint Powers Board.

Also, it was discussed that corporate or JPB representation would be comprised of water user entities.

Howard Olsen will develop a draft memorandum providing additional detail of the make-up and authority of a PAWS governing entity.

2:30 pm Outreach Discussion

MC Schaff will provide a project web site; this web site will contain; previous studies, including the Appraisal Investigation; the scope and schedule of the Level II study; contact information; notices of upcoming meetings, and provide for the opportunity to accept user input.

All identified user entities will be contacted to ascertain water supply needs, connection points, and identify contact information of staff identified to be able to speak for the entity. It was noted that the project team do not prematurely discuss water cost with users, until the project team has more detailed information.

2:45 – 3:00 pm Wrap Up & What's Next

- ✓ Staff will review current and projected water use and population values (Tasks 2, 3, 5) to verify any modifications to the information collected and provided in the Appraisal Investigation.
- ✓ User contacts will be initiated (Task 1).
- ✓ Staff will take water quality tests at Greyrocks Reservoir, Guernsey Reservoir and on the North Platte River in the vicinity of the Town of Guernsey (this latter location may not be able to be tested if Guernsey is not releasing water) (Task 4).
- ✓ An initial draft governance memorandum will be prepared (Task 9).
- ✓ Water use information (in acre feet per month) will be provided to the Advisory Board; and an initial draft water supply memorandum will be prepared (Task 6).
- ✓ An initial BEPC response, with respect to the opportunity for water supply to come from Greyrocks Reservoir, will be prepared (Task 6).
- ✓ The next Advisory Group meeting is scheduled for Monday January 30, 2016; 11:00am to 3:00pm, in Scottsbluff, NE (location to be determined) (Task 1). **Please advise if you cannot make this meeting, and we will attempt to reschedule, as attendance by ALL is important.**

AGENDA
Platte Alliance Water Supply (PAWS)
Level II Study

Advisory Group Meeting #2

What: Advisory Group Meeting #2

When: Monday January 30, 2017

Where: Scottsbluff Fairfield Inn & Suites 902 Winter Creek Drive; Scottsbluff, Nebraska

Time: 11:00am through 3:00pm (lunch provided)

Advisory Group

Kevin Boyce/WWDC, Project Manager
Nathan Johnson/City of Scottsbluff, NE, City Manager
Carl Rupp/Chairman, Goshen County Commissioners
Dave Schaff/MC Schaff, Vice President
Victor Anderson/Wenck Associates, Principal
Reed Armijo/Jorgensen Associates, President
Howard Olsen/Simmons Olsen Law Firm, Principal
Jeff Fassett/Nebraska State Engineer
Pat Tyrell/Wyoming State Engineer
Mike Purcell/Retired, former WWDC Director
John Lawson/Retired, former USBR Region & North Platte River Operations Manager/Casper
Jeff Fuller/MC Schaff, Project Manager

Attendees

MC Schaff/MC Schaff, President
Levi Mickelson/Missouri Basin Power Cooperative
Jeff Cowley/WY State Engineer's Office, River Basin Coordinator
Michael Olsen/MC Schaff, Engineer
Josh Fuller/Jorgensen Associates, Engineer
Barry Lawrence/WWDC
Brian Pugsley/WY SEO
Rick Deuell/WY SEO

11:00 am **Introductions - Why we are here - Update**

11:15 am **Water Demand Discussions**

12:15 pm **LUNCH**

12:45 pm **Continued Water Demand Discussions**

2:00 pm **Governance Memorandum**

2:15 -3:00pm **Outreach - Web Site – Invoicing - Wrap Up & What's Next**

PLATTE ALLIANCE WATER SUPPLY (PAWS)



AGENDA

- ✓ 11:00 am Introductions – Why we are here – Update
- ✓ 11:15 am Water Demand Discussions
- ✓ 12:15 pm LUNCH
- ✓ 12:45 pm Continued Water Demand Discussions
- ✓ 2:00 pm Governance Memorandum
- ✓ 2:30 pm Outreach Web Site Invoicing Wrap up & What's Next



PLATTE ALLIANCE WATER SUPPLY (PAWS)

2nd Advisory Group Meeting

Advisory Group

Kevin Boyce	*Nathan Johnson*	*Dave Schaff*	*Carl Rupp*	*Jeff Fassett*
Mike Purcell	*John Lawson*	*Pat Tyrrell*	*Howard Olsen*	*Victor Anderson*
Reed Armijo	*Jeff Fuller*			

Participants

MC Schaff	*Levi Mickelsen*	*Jeff Cowley*	*Michael Olsen*	*Josh Fuller*
Barry Lawrence	*Brian Pugsley*	*Rick Deuell*		

PROJECT SCHEDULE

PLATTE ALLIANCE WATER SUPPLY (PAWS) Level II Study Wed 1/25/17

ID	Task Name	Duration	Start	Finish
0	**PLATTE ALLIANCE WATER SUPPLY (PAWS) Level II Study**	**365 days?**	**Mon 11/7/16**	**Fri 3/30/18**
1	1 Project Management	360 days	Mon 11/7/16	Fri 3/23/18
2	2 Research & Review Existing Information	20 days	Mon 11/21/16	Fri 12/16/16
3	3 Inventory/Evaluate Existging Water Systems	20 days	Mon 11/21/16	Fri 12/16/16
4	4 Water Source Data Collection	90 days	Mon 11/28/16	Fri 3/31/17
5	5 Population Growth, Water Demand Projections	20 days	Mon 11/28/16	Fri 12/23/16
6	6 PAWS Regional System Water Supply	200 days	Mon 11/14/16	Fri 8/18/17
7	7 Creation of a GIS	50 days	Mon 1/16/17	Fri 3/24/17
8	8 Hydraulic Model	60 days	Mon 3/13/17	Fri 6/2/17
9	9 Evaluation of Regional System Governance & Operations	160 days	Mon 12/12/16	Fri 7/21/17
10	10 Discretionary Task	290 days	Mon 1/9/17	Fri 2/16/18
11	11 Identification of Alternatives, Selection of Preferred Alternatives and Conceptual Designs	305 days	Mon 11/21/16	Fri 1/19/18
12	12 Cost Estimates	35 days	Mon 11/27/17	Fri 1/12/18
13	13 Prioritization of Recommendations	35 days	Mon 12/11/17	Fri 1/26/18
14	14 Regional Water System Economics and Financing	50 days	Mon 11/6/17	Fri 1/12/18
15	15 Reports	40 days	Mon 1/8/18	Fri 3/2/18
16	16 Report Presentations	35 days	Mon 2/12/18	Fri 3/30/18

WATER DEMAND

LEVEL II SCOPE – *EFFECTIVELY ADDRESSING THE ISSUES PROVIDES COST-EFFECTIVE SOLUTIONS*

Key Issues

- Water Supply - Water Rights
- Multi-State Governance
- Funding

GOVERNANCE

WRAP UP

OUTREACH

WEB SITE http://mcschaff.com/projects/platte-alliance-water-supply/

INVOICING

WHAT'S **NEXT** ?

PLATTE ALLIANCE WATER SUPPLY (PAWS)

MEETING NOTES

These notes are not a verbatim record of the conversations rather a brief summary of the discussions. Additional thoughts/clarifications/modifications with regard to these meeting notes should be emailed to Jeff Fuller.

Platte Alliance Water Supply (PAWS)
Level II Study

Advisory Group Meeting #2

What: Advisory Group Meeting #2
When: Monday January 30, 2017
Where: Fairfield Inn & Suites; 902 Winter Creek Drive; Scottsbluff, Nebraska
Time: 11:00am through 3:00pm (lunch provided)
Participants: ***Advisory Group:***
Kevin Boyce/WWDC, Project Manager
Nathan Johnson/City of Scottsbluff, NE, City Manager
Carl Rupp/Chairman, Goshen County Commissioners
Dave Schaff/MC Schaff, Vice President
Victor Anderson/Wenck Associates, Principal
Reed Armijo/Jorgensen Associates, President
Jeff Fassett/Nebraska State Engineer
Mike Purcell/Retired, former WWDC Director
John Lawson/Retired, former USBR Region & North Platte River Operations Manager/Casper
Jeff Fuller/MC Schaff, Project Manager
Attendees:
Barry Lawrence/WWDC
Adam Hoesing, Simmons Olsen Law Firm
MC Schaff/MC Schaff, President
Levi Mickelson/Basin Electric Power Cooperative
Brian Pugsley/ WY Sate Engineer's Office
Joel Farber/Consultant
Michael Olsen/MC Schaff, Engineer

11:00 am **Introductions**

11:15 am **Water Demand Discussions**
A spreadsheet identifying Wyoming municipal use, demand and depletions was provided (attached: WY Guernsey to State Line Water Use 1-30-17) and discussion followed. Simplistically, it appears, for Wyoming, the municipal water demands can be accommodated. It is doubtful these benchmarks will come in to play given the checks and balances in Wyoming's Depletion Plan.

12:15 pm LUNCH

12:45 pm **Continued water Demand Discussions**

The need to compile data on water demands, depletions, firm yields, etc., for Wyoming and Nebraska municipalities was discussed, including:

- Determine consumptive use of identified participating municipalities from decommissioned wells, particularly with regard to flows into McConaughy Reservoir, during irrigation and non-irrigation seasons.
- Obtain contract/storage water information from Bureau of Reclamation regarding storage rights in entire North Platte system

1:30 pm **Governance Memorandum**

A memorandum providing recommendations for governance of the PAWS system (attached: PAWS Governance Memo 21-30-2017) was distributed and discussed.

2:00 pm Outreach-Web Site – Wrap up & What's next

- ✓ User (municipalities) contacts will be initiated.
- ✓ The Manager of the Shoshone Municipal Pipeline (SMP) project will be contacted. The similarities of the two projects will be discussed; as well as operation, water use, water cost and lessons learned of the SMP system.
- ✓ Staff will take water quality tests at Greyrocks Reservoir, Guernsey Reservoir and on the North Platte River in the vicinity of the Town of Guernsey (this latter location may not be able to be tested if Guernsey is not releasing water) (Task 4).
- ✓ An initial BEPC response, with respect to the opportunity for water supply to come from Greyrocks Reservoir, will be prepared.
- ✓ The PAWS web site will be finalized and "activated" on line.

Platte Alliance Water Supply (PAWS)
Level II Study

Advisory Group Meeting #3

What: Advisory Group Meeting #3
When: Thursday August 9, 2018
Where: Conference call -
Time: 11:00am through 12:30pm
Participants: ***Advisory Group:***
Kevin Boyce/WWDC, Project Manager
Nathan Johnson/City of Scottsbluff, NE, City Manager
Carl Rupp/Chairman, Goshen County Commissioners
Dave Schaff/MC Schaff, Vice President
Victor Anderson/Wenck Associates, Principal
Reed Armijo/Jorgensen Associates, President
Adam Hoesing/ Partner, Simmons Olsen Law Firm
Jeff Fassett/Nebraska State Engineer
Mike Purcell/Retired, former WWDC Director
John Lawson/Retired, former USBR Region & North Platte River Operations Manager/Casper
Jeff Fuller/MC Schaff, Project Manager
Also Invited: *Brian Pugsley/ WY SEO*
Pat Tyrell/ WY SEO
Michael Olsen/MCS
Barry Lawrence/WWDC
Bob Juve/MCS

Introduction/Housekeeping – (*Jeff Fuller)*

Water Demand - *(Bob Juve/Michael Olsen)*

Water Supply – *(*Mike Purell/ John Lawson)

Governance – *(Bob Juve, Michael Olsen, Adam Hoesing)*

Funding – *(Dave Schaff)*

Concepts - *(*Jeff Fuller)

Wrap up & What's next – *(Jeff Fuller)*

This email provides a brief status update on the PAWS project. 5/11/19

Of the identified communities that PAWS will provide potable water to; eight **new** mayors and numerous **new** municipal council members were elected this last fall.

Mike Purcell has been appointed by the Governor to be a Commissioner on the Wyoming Water Development Commission; and has resigned from his capacity on the Advisory Group.

We recently had a very positive meeting with representative from Central Nebraska Public Power & Irrigation District (CNPPID), and we are moving forward with the necessary modeling to further discussions with them. Jeff Fassett has offered his agency to "run" the COHYST (Platte River **Co**operative **Hy**drology **St**udy) model that will further delineate water impacts along the North Platte River.

We have had numerous discussions with the Federal Agency regarding the WIFIA funding program.

We have had conversations with the Midwest Assistance Program (MAP) a member of the Rural Community Assistance Partnership Program (RCAP) regarding the PAWS project and the ways they can assist the study and the participating rural communities.

We currently have 6 committed communities in Nebraska and 2 in Wyoming. We recently secured Guernsey's approval of the Governance Agreement which assures that we can form a Joint Powers Board on the Wyoming side to complement the already formed Interlocal Agreement on the Nebraska side.

Until we have completely defined the participating communities, we are not certain of required water volume, so both governance and water source obviously go hand-in-hand.

We have requested an extension of the submittal of the draft and final report for the Platte Alliance Water Supply Level II Study. The current scope of services identifies delivery of the Draft Report by May 1, 2019 and submittal of the Final Report by July 15, 2019. This request is to delay these submittals until July 31, 2019 (Draft) and December 1, 2019 (Final), respectively. These extensions will enable a more succinct resolution to the water rights, governance and funding issues associated with this Level II Study.

In essence, the justification for the extension is the time it has taken to form governance with local communities and the process of working through water right requirements and source. With the political dynamics of local communities, it has been a challenge to date, one over which it is difficult for us to exercise control. Until we have completely defined the participating communities, we are not certain of required water volume, so both governance and water source obviously go hand-in-hand.

This project may be of historic proportions for Wyoming and Nebraska, and both from a size and water control perspective it includes a lot of dependent moving parts. We certainly concur that it would be nice to be further along, but caution that moving too fast would have detrimental effects that could be disastrous. We hope to see the project come to fruition, as do committed local communities, and we hope to have our efforts further that goal.

We will schedule a subsequent Advisory Meeting as we soon as we confirm the Governance Committee members.

Please contact me with additional questions/clarifications/thoughts/etc. As always, your input is beneficial and appreciated. THANKS!

APPENDIX A1-2

INITIAL PUBLIC MEETING

- PUBLIC MEETING POWERPOINT 4-19-2018

DRAFT

PAWS
PLATTE ALLIANCE WATER SUPPLY

To: Potential PAWS participants and interested members of the public
From: C.R., Goshen County Commissioner
N.J., Scottsbluff City Manager

Date: April 10th, 2018
Subject: Public Meeting

On behalf of The Platte Alliance Water Supply, we invite you to participate in a Town Hall Meeting. The meeting will be held on **Thursday, April 19th,** 2018 from 6 pm to 8 pm, at the Gering Civic Center.

We are hosting this town hall meeting to inform the public and answer questions concerning the Platte Alliance Water Supply project. The meeting is part of an ongoing effort to inform the public of dependable water quality limits the ability of the region to remain vibrant and sustain how current and future growth and economic vitality.

We encourage you to attend this meeting, ask questions and gather input. We are organizing this meeting to be an open house format with informative stations.

Please join us for the public Town Hall Meeting Thursday, April 19th at 6 pm in the Gering Civic Center.

PAWS

PLATTE ALLIANCE WATER SUPPLY

INVITES YOU TO ATTEND A

TOWN HALL MEETING

THURSDAY APRIL 19th, 2018
GERING CIVIC CENTER

6pm - 8pm

OPEN TO THE PUBLIC

TOPICS FOR DISCUSSION

1. The need for **Water Quality**
2. Resolution of **Water Rights**
3. **Governance** of a Regional PAWS entity
4. **Funding** for design and construction
5. **Design**

The Platte Alliance Water Supply (PAWS) Project is a rural municipal water supply project incorporating 11 communities and additional rural water districts in Southeastern Wyoming and Western Nebraska, along the North Platte River basin. These rural municipalities are experiencing significant financial hardships to treat for significant nitrates, arsenic and uranium contaminants in their water systems. The project will be the first multi-state treated water project for both Wyoming and Nebraska; will involve piping treated water from the North Platte River downstream to the rural municipalities and water districts

FOR ADDITIONAL INFORMATION

http://www.mcschaff.com/projects/platte-alliance-water-supply/

PAWS
PLATTE ALLIANCE WATER SUPPLY

WELCOME to:

INITIAL GOVERNANCE COMMITTEE MEETING FOR PLATTE ALLIANCE WATER SUPPLY (PAWS)

TODAY:

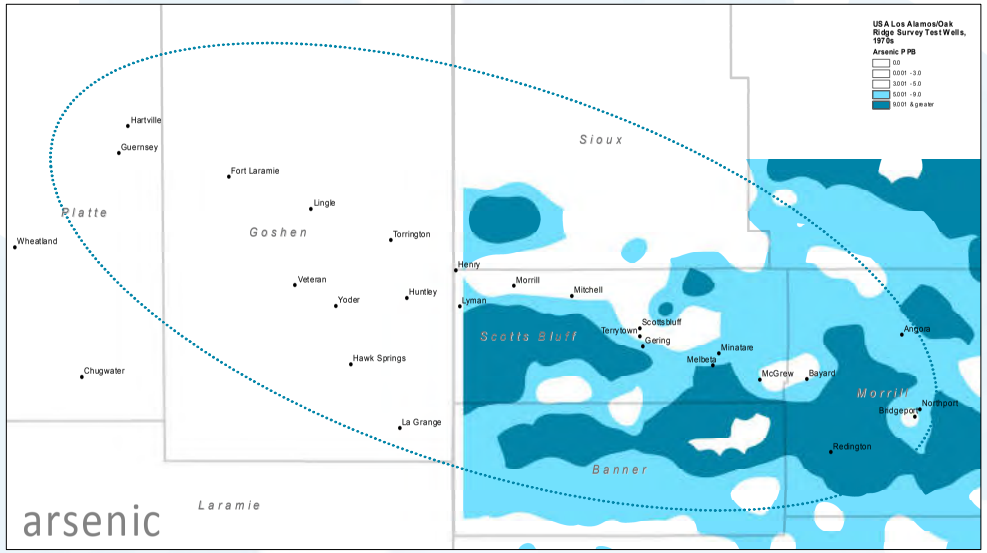
- An open meeting format to gain a greater understanding of the project need, history, and solutions.
- Discuss issues with the Project Team
- Visit information stations
- Discuss potential impacts of the project
- Discuss project issues with agencies and "neighboring" communities
- Next Steps

Project Team:

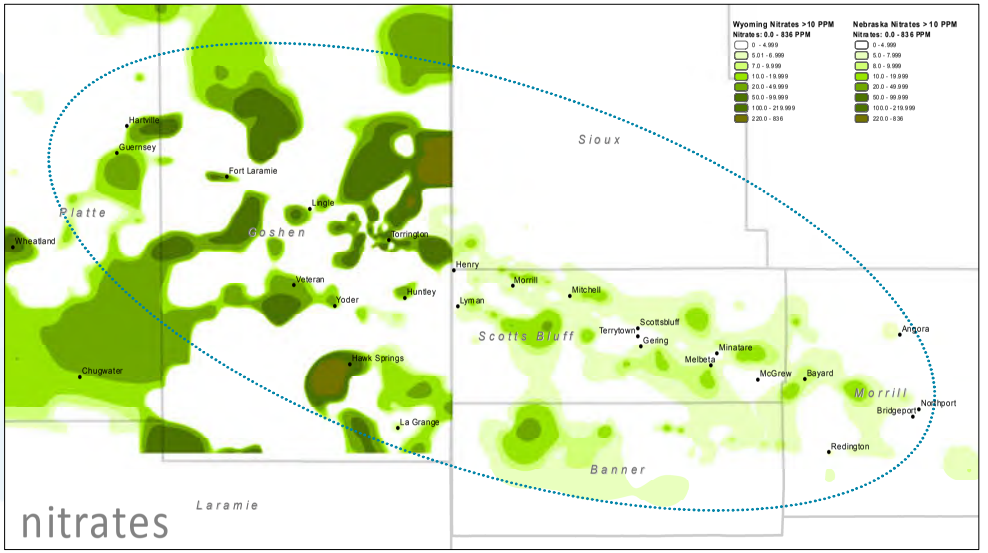
Project Sponsors:

PAWS
PLATTE ALLIANCE WATER SUPPLY

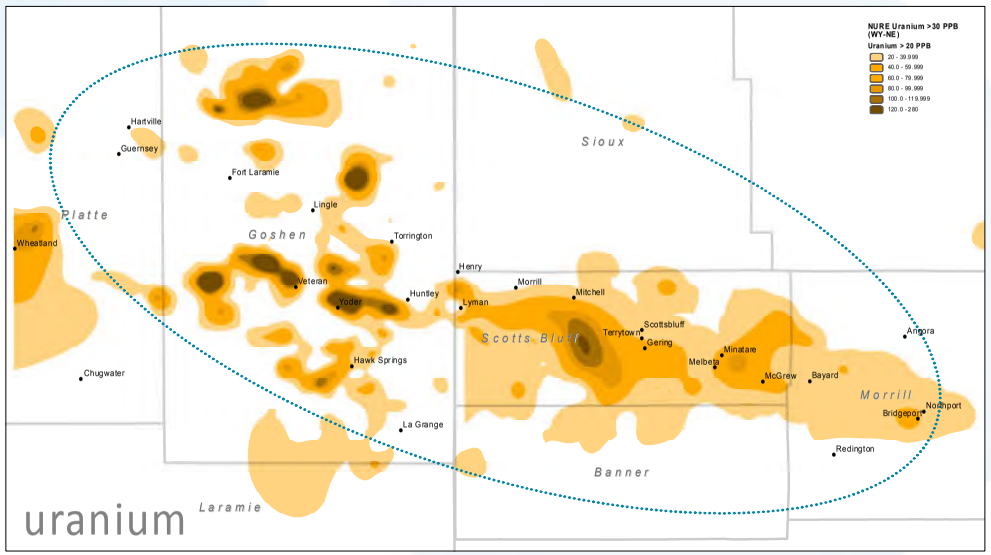
NEED / WATER QUALITY



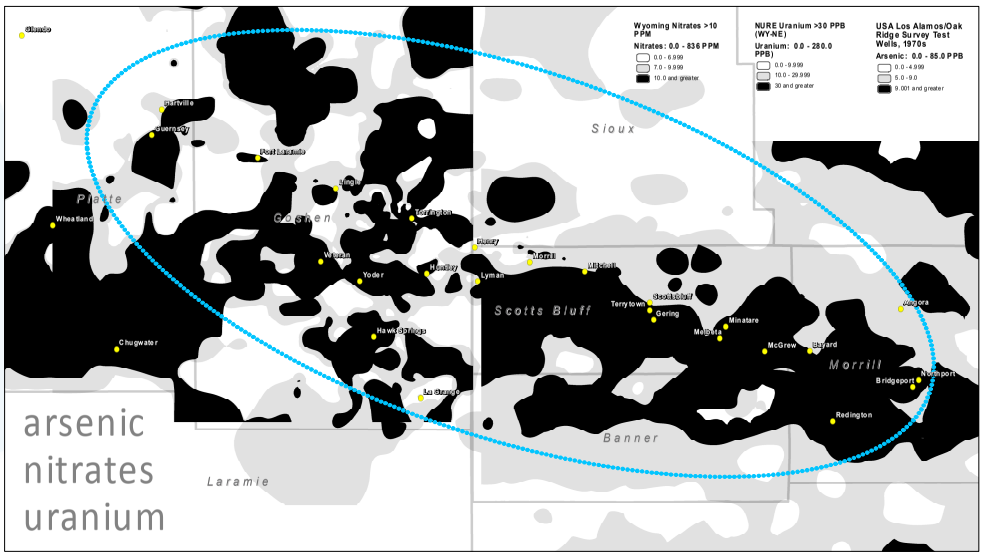
arsenic



nitrates



uranium

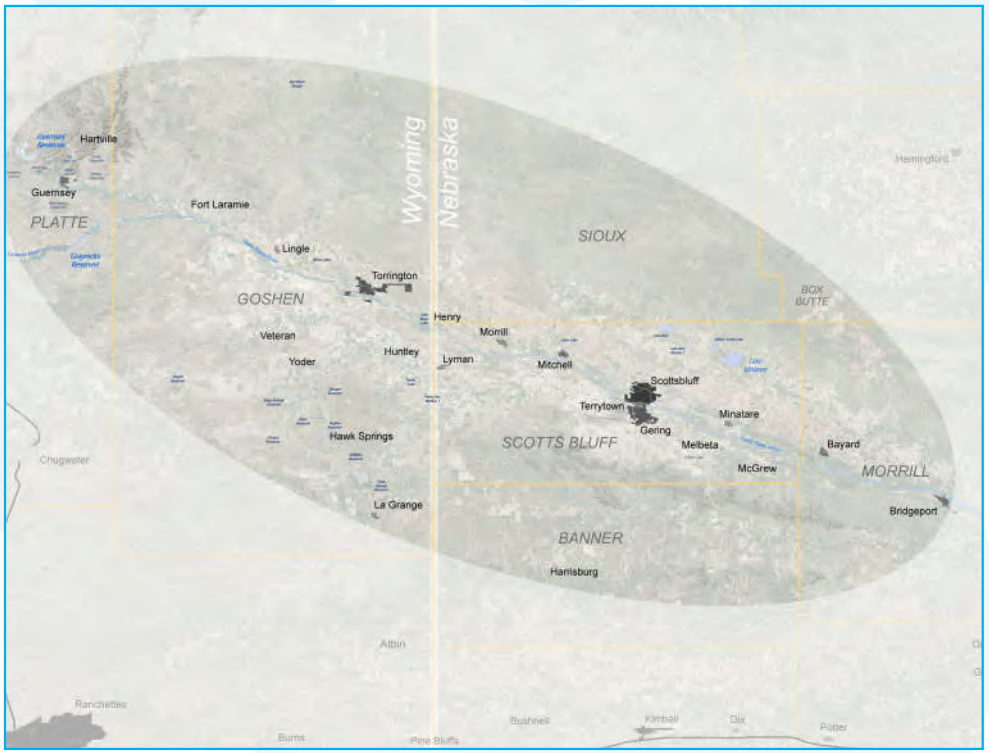


arsenic
nitrates
uranium

PAWS
PLATTE ALLIANCE WATER SUPPLY

WATER RIGHTS

This is not **"NEW"** water, neither Wyoming nor Nebraska will receive more or less water than stipulated in the Decree.



WYOMING:

IN-STREAM FLOW RIGHT

- Would be junior right
- Would get called nearly every irrigation season

WYOMING ACCOUNT IN GLENDO

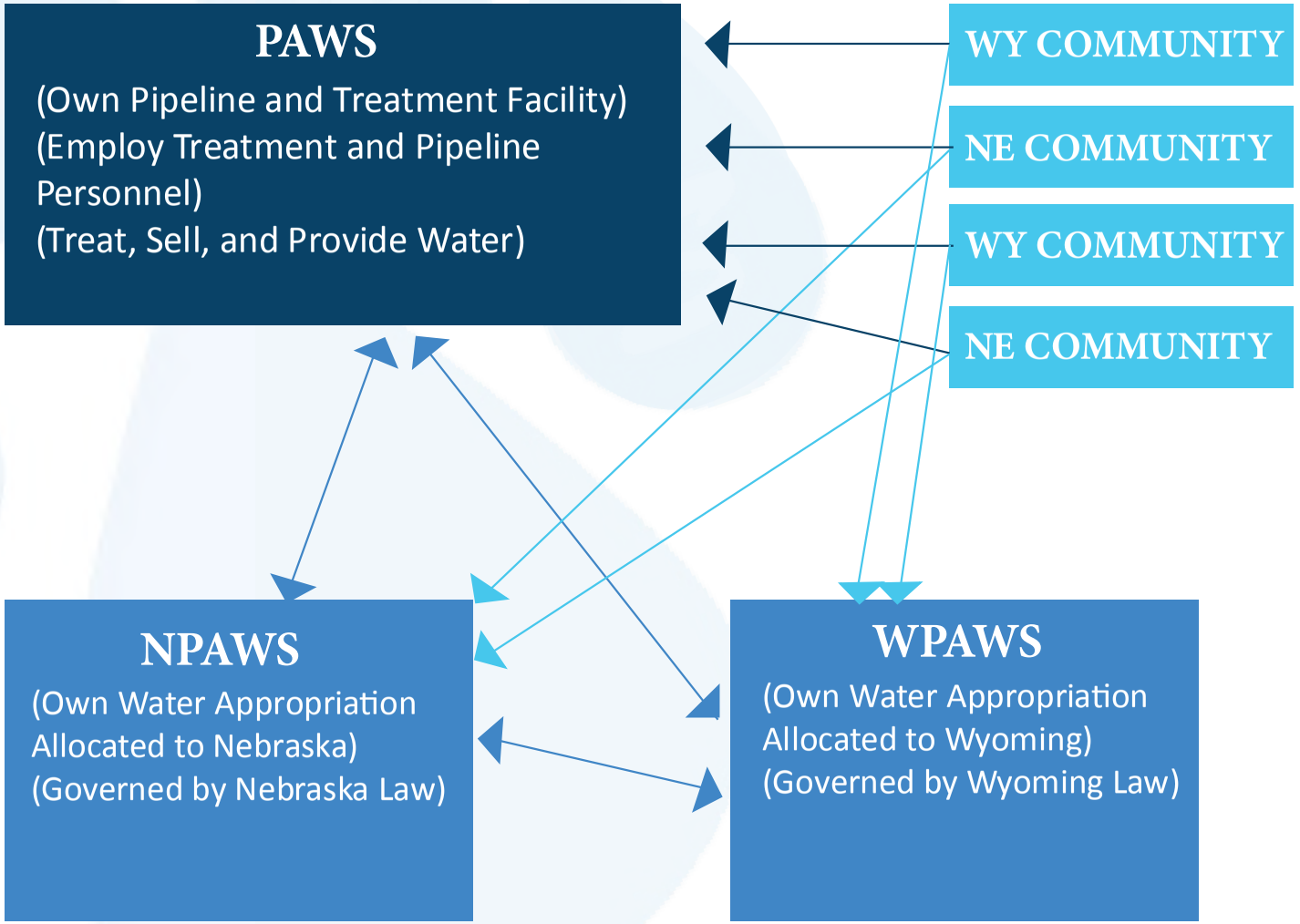
- Storage water
- Wyoming water and would not impact the Decree

NEBRASKA:

STORAGE RIGHT IN GLENDO

- Working with USBR and USBR contractor to obtain a storage water
- Nebraska water and would not impact the Decree

GOVERNANCE


PAWS
(Own Pipeline and Treatment Facility)
(Employ Treatment and Pipeline Personnel)
(Treat, Sell, and Provide Water)
WY COMMUNITY
NE COMMUNITY
WY COMMUNITY
NE COMMUNITY
NPAWS
(Own Water Appropriation Allocated to Nebraska)
(Governed by Nebraska Law)
WPAWS
(Own Water Appropriation Allocated to Wyoming)
(Governed by Wyoming Law)

PAWS
PLATTE ALLIANCE WATER SUPPLY

FUNDING & FINANCING

FUNDING VS. FINANCING: WHAT'S THE DIFFERENCE?

FUNDING:

Providing "One-way" financial resources to support a need, program, or project.

1. A utility fills the need for funds through generating its own internal reserves. The use of rate revenues, cash reserves and connection fees are referred to as "Pay as you go" or "Pay Go" funding.

2. The recipient obtains a grant or similar form of funds that do not require repayment and do not carry an interest expense. "One-way" refers to the characteristic of not requiring repayment of principal or interest to the funder.

FINANCING:

The "Two-way" acquisition of money for a program or project.

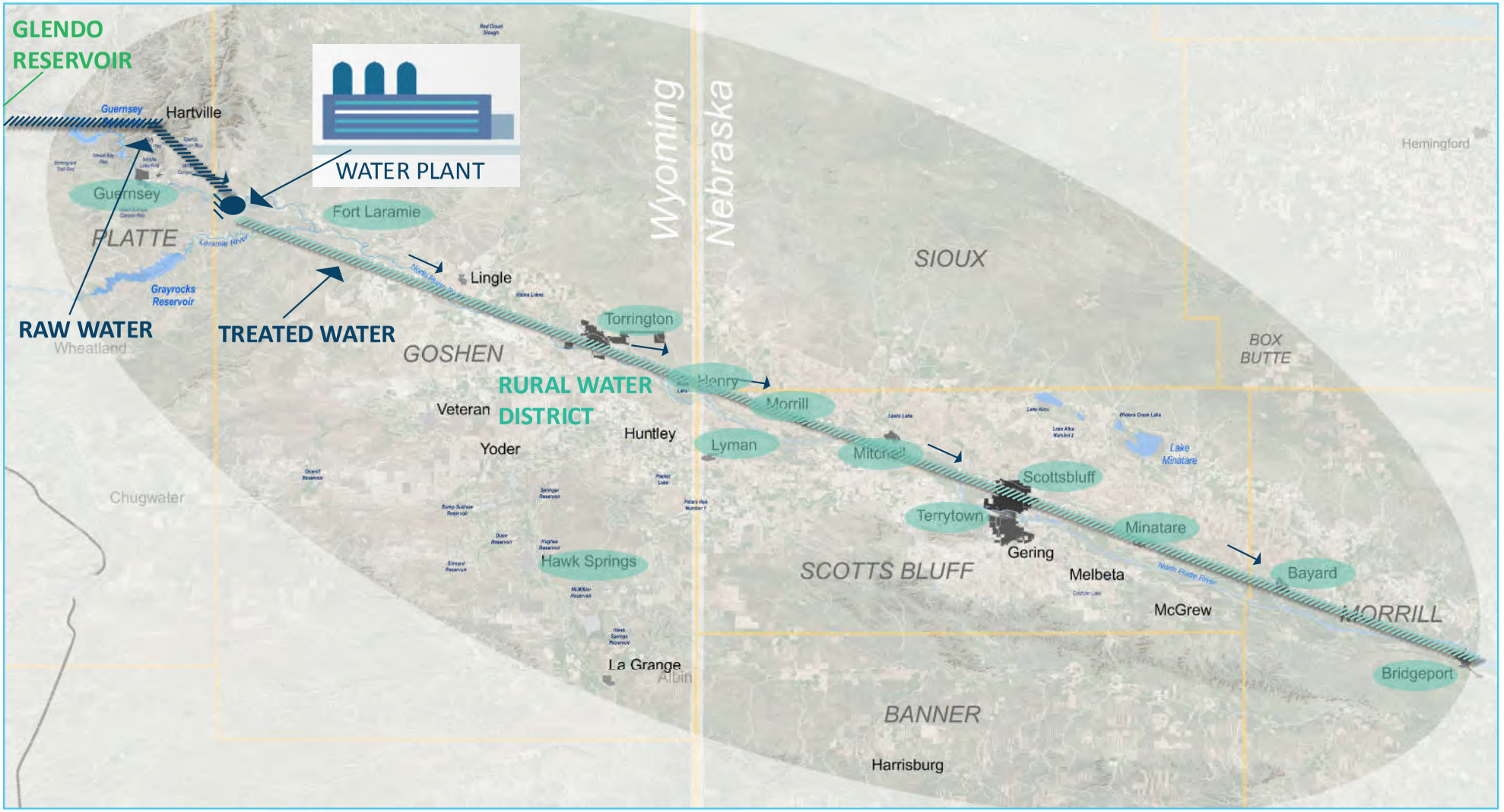
1. Monetary resource need is filled from external, borrowed money where principal and interest are owed to the source of funds.

2. Includes CWSRF and DWSRF funds provided as loans, municipal bonds, and other sources of monetary resources that require repayment of principal and interest.

Typically, these resources will tie to a capital asset and will not be available for supporting ongoing operational expenses.

PAWS
PLATTE ALLIANCE WATER SUPPLY

DESIGN



EXAMPLE - NOT ACTUAL DESIGN

APPENDIX A1-3

DISCUSSIONS, PRESENTATIONS, MEETINGS, CONTACTS

- KEY CONTACTS
- GENERAL CONTACTS
- CONTACT/MEETING NOTES 9-7-2017
- US BUREC CONTACTS 9-7-2017

DRAFT

State	Entity	Title	Name,	Email	Phone #	Mailing Address
			KEY CONTACTS			
	USBR	Deputy Area Manager	**Lyle Myler**	lmyler@usbr.gov	307.261.5676	705 Pendell Blvd. Mills; WY 82644
		Technical Administrator	**Kip Gjerde**	jgjerde@usbr.gov	406.247.7750	316 North 26th Billings; MT 59101
	WWDC	Director	**Harry LaBonde**	hlabonde@state.wy.us	307.777.7613	n/a
	GCEDC	Executive Director	**Ashley Harpstreith**	ashley@goshenwyo.com	307.532.4162	n/a
	WY Association of Rural Water Systems	n/a	**Michelle Christopher**	mchristopher@warws.com		n/a
	Deb Fischer's Representative (Scottsbluff)	Greater NE Director of Constituent Services	**Brandi McCaslin**	brandi_mccaslin@fischer.senate.gov	308-630-2329	120 East 16th Street, Suite 203 Scottsbluff;NE 69361
	Office of Senator John Barrasso, M.D.	Water Resources Advisor	**Abbey Linsk**	Abbey_Linsk@barrasso.senate.gov	202-224-6441	n/a
EBRASKA	North Platte NRD	General Manager	**John Berge**	JBerge@npnrd.org	308.632.2249	PO Box 280 Scottsbluff; NE 69363
	n/a	n/a	**Tom Knutson**	tom.kuntson819@gmail.com		n/a
/YOMING	Missouri Basin Power Cooperative	N/A	**Levi Mickelsen**	Lmickelsen@bepc.com	307-322-9601	244 Grayrocks Rd, Wheatland, WY 82201
/YOMING	State Engineer's Office	River Basin Coordinator	**Jeff Cowley**	jeff.cowley@wyo.gov	307-777-7641	122 W 25th St, Cheyenne, WY 82001
/YOMING	State Engineer's Office	Assistant State Engineer	**Rick Deuell**	rick.deuell@wyo.gov	307-777-7641	123 W 25th St, Cheyenne, WY 82001
/YOMING	State Engineer's Office	Superintendent Water Division 1	**Brian Pugsley**	brian.pugsley@wyo.gov	307-532-2248	124 W 25th St, Cheyenne, WY 82001
/YOMING	State Engineer's Office	N/A	**Doug Oliver**	doug.oliver@wyo.gov	307-322-4163	123 W 25th St, Cheyenne, WY 82001
/YOMING	WWDC	Deputy Planning Director	**Barry Lawrence**	barry.lawrence@wyo.gov	(307) 777-7626	6920 Yellowtail Rd, Cheyenne, WY 82009
EBRASKA	MC Schaff & Associates	President	**Clint Schaff**	MCSchaff@mcschaff.com	308-635-1926	819 South Beltline Highway East,Scottsbluff, NE 69361
EBRASKA	Scotts Bluff County	Vice Chairman, County Commissioners	**Ken Meyer**	kmeyer@scottsbluff.org	308 631-8499	1602 Ave P; Scottsbluff, NE 69361
EBRASKA	Holdrege	Director CNPPID	**Don Kraus**	n/a	(308) 995-8601	P.O. Box 740 Holdrege, NE 68949-0740
EBRASKA	NRD	General Manager	**John Berge**	JBerge@npnrd.org	(308) 632-2749	100547 Airport Rd, Scottsbluff, NE 69363
EBRASKA	NeDNR Bridgeport	Supervisor	**Tom Hayden**	tom.hayden@nebraska.gov	(308)-262-1932	n/a

State	Entity	Title	Name,	Email	Phone #	Mailing Address
GENERAL CONTACTS						
VYOMING	Town of Wheatland	Mayor	**Joe Fabian**	mayor@townofwheatlandwy.org	307.322.2962	600 9th Street Wheetland; Wy 82201-2997
VYOMING	Town of Wheatland	City Clerk	**Cany Wright**	clerk@townofwheatlandwy.org	307.322.2962	601 9th Street Wheetland; Wy 82201-2997
VYOMING	Town of Wheatland	Town Engineer	**Russ Schamel**	n/a	307.322.9789	602 9th Street Wheetland; Wy 82201-2997
VYOMING	Town of Yoder	Mayor	**Norm Schamel**	townofyoder@vistabeam.com	(307)464-1666	PO Box 158 Yoder; WY 82244
VYOMING	Hawk Springs S&WD	Dennis Simmons, Vice-Chair; HSW&SDBOD	**Tim Teetters**	toeeter@wyomail.com	N/A	PO Box 26 Hawk Springs; WY 82219
VYOMING	Town of La Grange	Mayor	**Mark Marshall**	lagrange@lagrangewyo.com	(307)834-2466	PO Box 185 LaGrange; WY 82221
VYOMING	Town of La Grange	Clerk/Treasurer	**Cathy Stoddard**	lagrange@lagrangewyo.com	(307)834-2466	PO Box 185 LaGrange; WY 82221
VYOMING	Town of Fort Laramie	Deputy Clerk/Treasurer	**Neal Stone**	nstone@townofftlaramie.org	(307)837-2711	PO Box 177 Fort Laramie; WY 82213
VYOMING	Town of Fort Laramie	Clerk/Treasurer	**Kimberly Craft**	kcraft@townofftlaramie.org	(307)837-2711; Ext 1	PO Box 177 Fort Laramie; WY 82214
VYOMING	Town of Fort Laramie	Public Works Supervisor	**Will Goyen**	wgoyen@townofftlaramie.org	(307)837-2711; Ext 4	PO Box 177 Fort Laramie; WY 82215
	Midwest Assistance Program	Tech Assistance Advisor	**Jerry Popp, PE**	jpopp@map-inc.org	(307)262-8302	PO Box 1674, Glenrock, WY 82637

PAWS – Level II Study

Contact/Meeting Notes

Time: 10:30am Thursday September 7, 2017

Location: WYDOT District 2 Office in Casper, WY

Participants: Lowell Fleenor (Dist 2 Engineer), Jeff Fuller

N O T E S

Jeff Provided an introduction to the PAWS project and status of the Level II Study. The intent was to provide an introduction to the project such that if any discussion occurred, it would not be "surprise" to Lowell. Jeff provided a hard copy of Volume I of the PAWS Appraisal Investigation; and pointed out the conceptual alignment of the water supply pipeline followed the US 20/26 highway right of way. Although not final, it would appear that some segments of this alignment would probably occur within the highway right of way; and at some point WYDOT would be approached to acquire an easement within the highway right of way.

Lowell grew up in Scottsbluff, NE, and understood the quality water need.

Lowell was aware of the Shoshone Municipal Pipeline (SMP) project; and issues associated with highway expansion within the right of way. The SMP easement agreements state the pipeline will be moved within or outside of the highway right of way, upon the request of WYDOT, if desired to "widen" the roadway. There have been several occasions, due to increased roadway traffic, WYDOT has expanded the 2-lane roadway to a 5-lane section. As per existing utility easement agreements, WYDOT has required the SMP project relocate the pipeline to outside of the WYDOT right of way. These costs have been significant, and have been funded to some degree by the SMP, the Wyoming Water Development Commission (WWDC), and WYDOT.

Jeff noted that operation of the SMP began in 1998/1999; and until now there has never been a pipeline leak within the WYDOT right of way. Jeff also noted throughout cities and towns there are many locations of water pipelines underneath state roadways.

Would WYDOT entertain a utility easement that would not require relocation of the pipeline if WYDOT widens the roadway; rather require PAWS to repair or replace in kind (all under the direction of WYDOT) all repairs/reclamation of the pipeline within the highway right of way if there were a leak or any decrease in the function of the highway due to the PAWS pipeline? Based on the experience of the SMP, this would represent a significant decrease in cost to WYDOT, the SMP and the WWDC; without any reduction in function of the highway.

Lowell mentioned that if there is a leak within a water line under a state roadway in a small community (Lingle, as an example) often times the town does not have the financial resources to repair the leak and WYDOT has to incur these costs to maintain the function of the roadway. This has not been as great a concern with the larger cities, ie Casper, by way of example. Maybe WYDOT could require a bond, to insure funds are available in the event of a pipeline leak.

Jeff noted the PAWS project will initially serve a population (WY and NE) of approximately 50,000, which is similar, in population served, to Casper.

Lowell appreciated the project "heads up"; and will contact Jeff if he has future questions/thoughts/etc. Jeff will keep Lowell appraised of the project progress. They can continue discussions to reduce costs (to both entities) and maintain function.

(These N O T E S are not verbatim, and indicate a general understanding of the discussions that occurred.)

PAWS – Level II Study
Contact/Meeting Notes

Time: 1:00pm Thursday September 7, 2017

Location: USBR Area Office; 705 Pendell Ave, Mills, WY

Participants: Carlie Ronca Area Manager; Lyle Myler; Deputy Area Manager; Mahonri Williams, Chief Resources Management Division; Mike Olsen, MC Schaff; Bob Juve, MC Schaff; Jeff Fuller, MC Schaff

N O T E S

Jeff provided an update to recent PAWS activities; Simons Olsen Law Firm hiring Steve Smith, attorney; identification of current and projected water use; looking at additional water source options;

- pumping out of the North Plate River in the vicinity of the Town of Guernsey to a storage reservoir and/or a storage tank and gravity from these reservoirs to a treatment plant; then depending upon elevations gravity or pump to the transmission pipe to deliver water to the PAWS municipalities
- Construction of an infiltration gallery in the North Platte River upstream of Guernsey Reservoir and gravity/pump to a water treatment plant
- Construction of an intake facility within the Glendo Reservoir, and pump or gravity to a water treatment plant located in the vicinity of Guernsey
- Through modifications to the existing outlet works facilities at Glendo Reservoir provide a water pipe to deliver raw water to a water treatment plant located in the vicinity of Guernsey;

and discussions for obtaining storage water and/or water rights.

The discussion of water source facility options included:

- PAWS service area includes providing potable water to municipalities in both Wyoming and Nebraska. The intent is that Nebraska will not "get" any additional water from Wyoming; Wyoming will not "get" any additional water identified for Nebraska. Water supply issues will comply with all stipulations of the current Wyoming Nebraska water compact.
- The Glendo Reservoir has existing water storage contracts with both Wyoming and Nebraska entities. Glendo storage water is currently all contracted. There have been previous letters requesting additional storage water if existing contracted entities no longer need the water. Current entities with water contracts cannot sub lease the contracted water. If the USBR receives notification existing water contract entities no longer desire the water, this water can be transferred on a first come first served basis. Based on the timing of previous requests, allocation of water contract(s) may be based on highest and best use. The USBR will have to determine the time line and adjudication of previous requests. ***It would behoove PAWS to submit a letter of desire and intent for Glendo storage water.***
- Acquisition of water downstream of Glendo will have to deal with operation of Guernsey Reservoir (silt run) and winter shutdown to keep the water as far upstream as possible prior to the irrigation season. Construction of PAWS intake facilities within Glendo Reservoir will have to be permitted through the USBR.
- A river infiltration intake facility must address freezing issues.
- If a PAWS intake facility is constructed downstream of Glendo Reservoir, existing outlet works valving must be evaluated to be able to deliver low winter water supply needs.
- ***The USBR requires a letter from PAWS requesting plans, specifications and documents of existing outlet works facilities for use in evaluation of modifications to provide PAWS water.***
- If it is determined modifications to the existing Glendo outlet works facilities would be the desired option; further discussion will determine who/how these designs and construction will occur.

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APPENDIX A1-4

MIDWEST ASSISTANCE PROGRAM SOURCE MAGAZINE

SPRING 2019

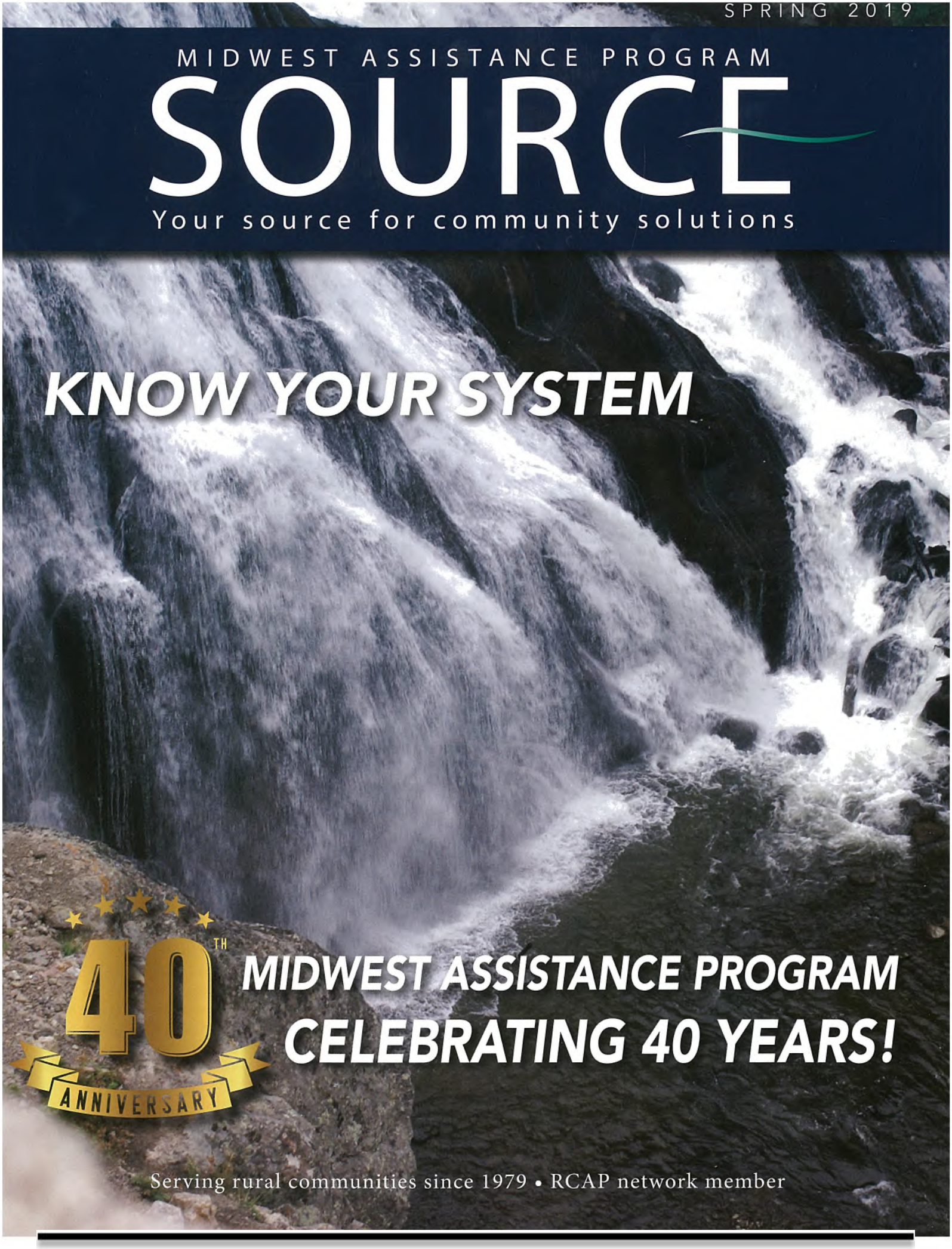
DRAFT

SPRING 2019

MIDWEST ASSISTANCE PROGRAM

SOURCE

Your source for community solutions



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— Continued on Pg. 3 —

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Infrastructure Asset Management (IAM)

by Ron Vanderpool

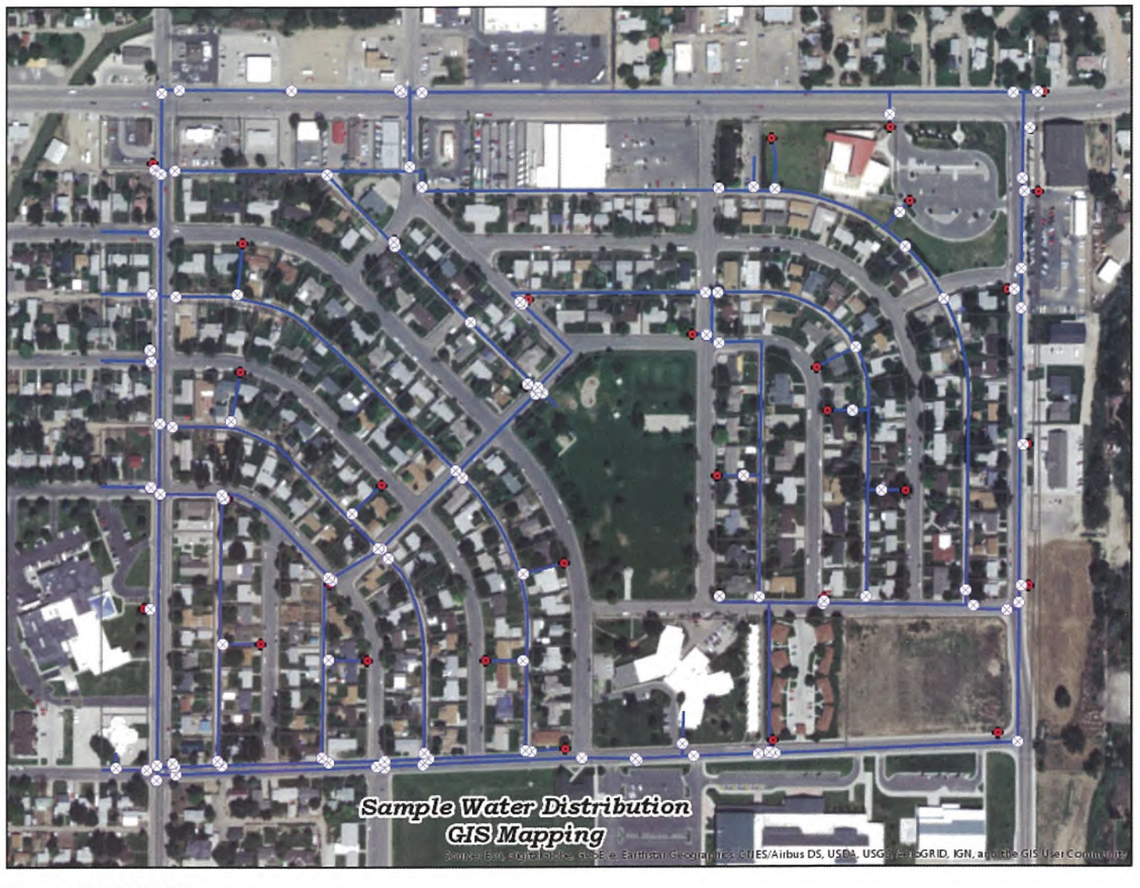
The thought process of implementing an asset management plan, as a whole, or in part, often sends small water and wastewater systems into downward spiraling path of confusion and frustration. Operators, clerks, treasurers, and boards hear about asset management and how important it is for a system's health on regular basis, but many steer away from what appears to be an insurmountable task of incorporating an adopted plan.

Everyone needs to understand that most systems are already performing some form of infrastructure asset management. Making repairs when failures occur, developing and implementing budgets based on revenues and expenditures, making rules and regulations to manage the system, are all significant functions of a sound plan.

A small system should implement proactive infrastructure management but keep it simple.

The first step, always, is to take an inventory of the system, as a whole, component by component. Every valve, manhole, pump, treatment facility, etc. has a function. System components (features) do something, thus have value and need to be identified. Those features also have a physical location on this planet and knowing where it is, is as important as knowing the function. The inventory can be listed in a simple paper ledger, spreadsheet, database, or fully interactive software. Regardless of what format is used, each and every feature needs to have at a minimum, a unique identifier and a physical location (address or lat/long) so the component can be separated from similar components and mapped. The initial inventory should also include size, type, manufacturer, date of install, and specific notes that are relative to that specific feature.

Once all of the system's features have been identified and mapped through the inventory process, relating attributes need to be assigned. These attributes at the minimum need to include information about the feature that will help the managers, operators, clerks and treasurers understand that feature's importance to the system. Very simply adding the feature's age, condition, system criticality, value (new and depreciated) and life expectancy will provide the managers with a great wealth of information that can be used for many analytics, trends, and predictions necessary for the future of the system.



When there is a good inventory of the system and an understanding of each feature, proper management is possible. It is important to know where it is, what condition and criticality it has, and how long it should be efficient or functional.

The next step in developing proper management of the system is to establish an attainable Level of Service (LOS). Then, implementing that into the management scheme including developing operation and maintenance plans. The LOS should cover all management functions; financial and operational, yet be simple. It should establish health and safety standards including setting management and governing responsibilities for the public-owned infrastructure.

The Operations & Maintenance (O&M) plans are based on the information acquired during the inventory acquisition and analysis. It should include associated budgets designed to fund the proper maintenance of the infrastructure. The O&M plans should contain feature group descriptions, inspection procedures, feature maintenance including scheduling for maintenance, and lastly rehabilitation and replacement schedules. All of this should relate back to the inventory database and the LOS.

The last part to an Infrastructure Asset Management Plan (IAM) is to apply minimum life-cycle costing to the infrastructure features. Through developing reserve funds, based on user fees that offset depreciation of infrastructure, it will provide renewable funding to replace aging infrastructure on a programmatic basis. Some features last longer than others and may not require full replacement as much as steady maintenance. Setting life-cycle costing for all features will help managers understand where immediate and future funds need to be expended.

Utilizing these basic steps, the system can establish capital improvement planning which promotes proactive sustainability. This information is typically well received where funding agencies are concerned. When components of the infrastructure are rehabilitated or replaced, the cycle process of IAM begins again. It all starts at the same place, inventory acquisition and mapping.

Many plans and software programs can either provide certain portions or be all inclusive for a good IAM. Several larger systems have moved infrastructure asset management into a GIS environment. Years ago, this required a large investment in equipment, software and personnel. This is not necessarily the case today.

Utilization of the new online GIS environments as the core for an IAM plan is becoming more accessible for systems, including small systems. Inventory can be mapped, feature databases with attributes developed, online maintenance forms created and deployed for all O&M with direct relationships to the feature databases, in-depth analytics can be run and costing projects created, capital improvement needs identified, and the list goes on.

With new technologies and access to infinite data, setting up an IAM plan is easier than ever. The staff at Midwest Assistance Program are here to help you break through the confusion and develop a plan that fits the needs of your community and your system.

Executive Director Continued....

ties and to establish a national program to deliver services to them.

MAP's program of work expanded to include solid waste management in 1987 and housing initiatives in 1995.

(1999) Today, MAP has 34 employees, with multiple field offices in each of the 9 states in its region; and an operating budget of nearly $2.3 million from federal, state, and private funding sources. During Fiscal Year 1999, MAP served more than 400 communities.

Kenneth Bruzelius
Executive Director

Midwest Assistance Program
serving rural communities since 1979
RCAP NETWORK MEMBER

Celebrating 40 years!

Today, 20 years after this article was written, MAP still has multiple staff in all nine states. We continue our work through funding from federal, state and private sources. Our strength continues to be in the areas of water and wastewater treatment, distribution, management and finance.

As MAP moves forward, we are looking at how we can help the rural areas capitalize on their assets and provide assistance in a more holistic way. We are working with RCAP and all of our partners to find ways to help maintain rural population and make it a vibrant place for all of us to live and enjoy for the next 40 years or more.

Mike Brownfield
Executive Director (2013 – Present)

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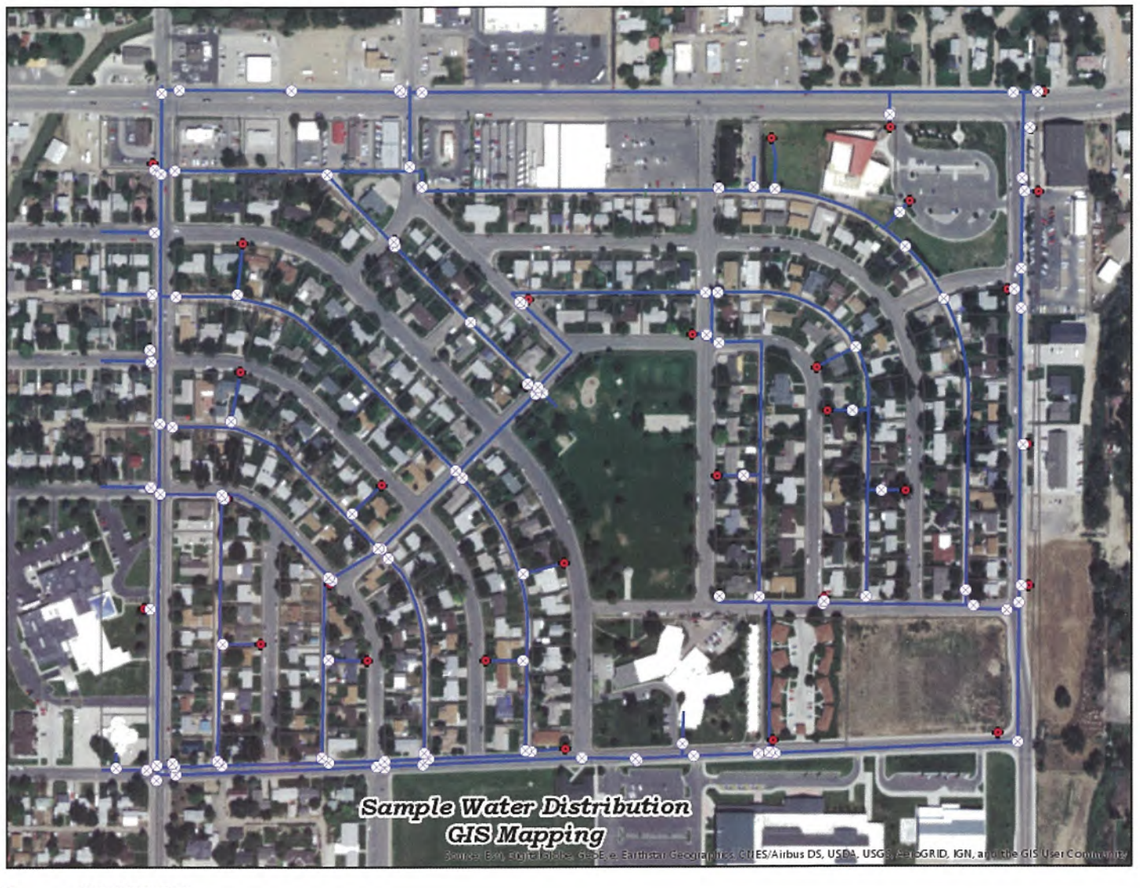

When there is a good inventory of the system and an understanding of each feature, proper management is possible. It is important to know where it is, what condition and criticality it has, and how long it should be efficient or functional.

The next step in developing proper management of the system is to establish an attainable Level of Service (LOS). Then, implementing that into the management scheme including developing operation and maintenance plans. The LOS should cover all management functions; financial and operational, yet be simple. It should establish health and safety standards including setting management and governing responsibilities for the public-owned infrastructure.

The Operations & Maintenance (O&M) plans are based on the information acquired during the inventory acquisition and analysis. It should include associated budgets designed to fund the proper maintenance of the infrastructure. The O&M plans should contain feature group descriptions, inspection procedures, feature maintenance including scheduling for maintenance, and lastly rehabilitation and replacement schedules. All of this should relate back to the inventory database and the LOS.

The last part to an Infrastructure Asset Management Plan (IAM) is to apply minimum life-cycle costing to the infrastructure features. Through developing reserve funds, based on user fees that offset depreciation of infrastructure, it will provide renewable funding to replace aging infrastructure on a programmatic basis. Some features last longer than others and may not require full replacement as much as steady maintenance. Setting life-cycle costing for all features will help managers understand where immediate and future funds need to be expended.

Utilizing these basic steps, the system can establish capital improvement planning which promotes proactive sustainability. This information is typically well received where funding agencies are concerned. When components of the infrastructure are rehabilitated or replaced, the cycle process of IAM begins again. It all starts at the same place, inventory acquisition and mapping.

Many plans and software programs can either provide certain portions or be all inclusive for a good IAM. Several larger systems have moved infrastructure asset management into a GIS environment. Years ago, this required a large investment in equipment, software and personnel. This is not necessarily the case today.

Utilization of the new online GIS environments as the core for an IAM plan is becoming more accessible for systems, including small systems. Inventory can be mapped, feature databases with attributes developed, online maintenance forms created and deployed for all O&M with direct relationships to the feature databases, in-depth analytics can be run and costing projects created, capital improvement needs identified, and the list goes on.

With new technologies and access to infinite data, setting up an IAM plan is easier than ever. The staff at Midwest Assistance Program are here to help you break through the confusion and develop a plan that fits the needs of your community and your system.

Executive Director Continued....

ties and to establish a national program to deliver services to them.

MAP's program of work expanded to include solid waste management in 1987 and housing initiatives in 1995.

(1999) Today, MAP has 34 employees, with multiple field offices in each of the 9 states in its region; and an operating budget of nearly $2.3 million from federal, state, and private funding sources. During Fiscal Year 1999, MAP served more than 400 communities.

Kenneth Bruzelius
Executive Director

Midwest Assistance Program
serving rural communities since 1979
RCAP NETWORK MEMBER

Celebrating 40 years!

Today, 20 years after this article was written, MAP still has multiple staff in all nine states. We continue our work through funding from federal, state and private sources. Our strength continues to be in the areas of water and wastewater treatment, distribution, management and finance.

As MAP moves forward, we are looking at how we can help the rural areas capitalize on their assets and provide assistance in a more holistic way. We are working with RCAP and all of our partners to find ways to help maintain rural population and make it a vibrant place for all of us to live and enjoy for the next 40 years or more.

Mike Brownfield
Executive Director (2013 – Present)

The Team

Everyone in a community is part of a team.

This team must work together for the betterment of a community. Each team member (resident/customer, clerk/auditor, operators, and board/council) has different roles and responsibilities to perform and each needs to do their part. Respect for each other's roles and understanding is essential to making an effective team.

Small System Water and Wastewater Operators Are an Essential Element of a Well-Tuned Municipality.

An operator's first duty is to procure and maintain their mandatory water and wastewater certifications, as they are the essential component of a safe drinking water system. It is also the operator's responsibility to assure their customers receive safe, potable drinking water and ensure effective management of the municipal sewer system.

A small system water and sewer operator might be considered the unsung hero of their municipality. There is no less a glamorous position to be employed in and is often performed with good humor and an eye for detail. Small system operators are tasked with multiple budgets and departments and in some cases, water and sewer utilities are the only funds contributing to a municipal general ledger.

A municipal operator is responsible for keeping their utilities in compliance with state and federal ever-changing regulations. These regulations have a tendency to be costly to implement, causing operators to maintain systems that have outlived their useful life. This means operators find themselves trying to maintain a failing, underfunded system while working to bring their local government on board to approve even the most minimal of necessary upgrades.

An operator makes their job look easy from the outside due to vast experience and by prioritizing their workload. Duties would include, but are in no way limited to:

- Understanding of proper operations of their utilities and performing laboratory tests such as pH, temperature, and chlorine residual.
- Make process control decisions and apply the results of those tests to facility operations.
- Maintain accurate and orderly records.
- Troubleshoot problems and routinely perform equipment, grounds and building maintenance.
- Ensuring compliance with state and federal laws and regulations.
- Operators and office staff are often the face of the city and work together to accomplish day to day operations.
- Working with city staff to coordinate problems and seek solutions.
- Forging relationships with regulating agencies and facilitating those relationships with the governing board.
- Working with customers to address and correct issues.
- Attending monthly board meetings and reporting to the council which is requested.

Clerk/Auditor

- Acts as a liaison between users of system and governing body or board members.
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Controlling Management - Board/Council

by Jerry Popp

A key component of a functioning Water System is the controlling management. In Wyoming this is likely to be the Board of Directors of a 'special district' or the Town Council of an incorporated municipality. Among the many options of private and public types of administration, this article will describe the example of a small municipality, the Mayor-Council form of government specifically, since it is a fairly representative concept to most systems. It should be noted that this is not intended to be a legal reference, but for illustration only, and readers are asked to translate these ideas into the language of their own particular state, local and system governance.

To provide for the needs of the public community they serve, the Mayor and Council fill two primary roles in the operation of a water system; the **establishment of policy** and **oversight** of the administration of the system. They are not intended to be directly involved in the physical day to day operations. These are the individuals held directly accountable by the voters to provide adequate and safe drinking water to the community members. They are also accountable to the regulating agencies for ensuring that the actual technical, managerial, and financial management of the system meets the established requirements. In these roles, the Mayor and Council comprise the head of the leadership team. They are not the operators or managers, but should effectively function as the CEO and the legislative body, making the rules of operation from a legal, financial, and public priority point of view.

The Mayor and Council put these leadership roles into action in this manner:

The Mayor, with confirmation from the Council, makes the appointment of the upper Management staff (department heads) needed to perform the work, mainly the Clerk, Treasurer and a Chief Operator or a Public Works Director. After an election, this may be as simple as the affirmation of existing staff appointments. If a replacement is needed for any reason, the Mayor may direct and be very involved in the advertisement, selection, interviewing and hiring of the department heads. These department heads then carry out the necessary execution of the day to day operations including hiring of additional staff.

The entire Council, under the leadership and participation of the Mayor, will establish the budget, policy and procedures necessary for complete operation of the system. This will require input and assistance from the appointed department heads. The Mayor and Council are jointly responsible to ensure that budgets, policy and procedures are in place to provide for hiring of sufficient staff, and to provide the entire staff with all necessary training, tools, equipment and time to perform the necessary day to day tasks involved in the continuous operation of the system. They are also responsible for ensuring the system is self-sustaining and that all monies, income and expenditures, have been properly accounted for.

In summary, the 'rubber meets the road' for the Council and Mayor in their active conduct of public meetings, effective communication with the staff and with the community. Through proper monthly, periodic and/or annual review of financial reports, operational and maintenance reports, approval of annual budgets, and approval of funding requests made to other agencies and government entities good stewardship is ensured. Not to be ignored for a municipality or a district, with wider responsibility than just providing water, there are the additional accountabilities of the board. It could include fire protection, police, sanitary and solid waste collection and disposal, streets, parks along with other services and infrastructure in which they would have these same responsibilities to address.

Residents/Customers

- Residents/Customers are the main reason a municipal system exists and why the highest quality of service is strived for.
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- Provides on the ground observations that can be quickly relayed to the operator.
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What do you mean Loan Obligations?

by Aubrey Neussendorfer

Each year, more and more communities sign the dotted lines to accept funds from various sources to provide the funds necessary to improve or replace their existing water or wastewater infrastructure. Members of the community are usually involved with the project in the very beginning when everything is visible, as preparing and construction is taking place. But once the dirt settles as this phase is completed, often as years go by, those original loan obligations are often overlooked. As city employees and governing body members change over the life of a loan commitment, these new members will not be aware of these loan obligations unless they review the original documents and understand those obligations. Often times once these papers are signed they are filed away to never be seen again.

These loan obligations are referred to as covenants within the original documentation from the funding agency. There are three types of covenants; action, prohibitive, and performance. Action covenants are ones that refer to the borrower completing an action such as submitting annual reports. Prohibitive covenants address things that are not allowed without obtaining the funding agency's permission first. This includes selling assets the funding agency has a lien against. The last type of covenant is a performance covenant and it addresses the operational, managerial, and financial aspects of a system the funding agency expects them to maintain throughout the course of the loan.

Phillip Fishburn, a Technical Assistance Provider in Kansas since 1995, believes this an important area in which Midwest Assistance Program (MAP) can assist communities. The creation or development of a "Life of Loan Manual" for them to use as a tool. This would aid them during the course of their loan to help them to comply with all of their loan obligations. MAP can also provide training and education to staff and council members concerning these obligations on a continuing basis. During his career, Mr. Fishburn, has noticed many communities fail to fully understand the consequences if they do not meet their obligations. Public officials often do not fully engage their management capacities within their systems.

The most common failure is when communities fail to adequately manage the funding required to efficiently operate a system. In other words, revenue vs expenses. Governing body members are typically very hesitant to review and adjust utility rates to accommodate the needs of the system to cover current expenses and additional funds to prepare for future repairs and improvements and projects. Mr. Fishburn also believes residents should be involved in and vocally outcry when their community is not getting the "biggest bang for their buck".

While many communities with loan obligations encounter typical loan issues, there are a few grey areas which need to be more clearly defined by the funding agencies. One example is for the system to maintain adequate insurance during the course of the loan. This leaves each community to define what adequate is and can vary greatly. Each funding agency has different needs of what they deem as adequate insurance coverage and this could highly impact the funds needed to sustain a system each year.

Education is key, as each year more communities are tackling water and wastewater projects. More education on the loan processes and the obligations surrounding them needs to be implemented within the industry. In a recent article from Jeff Case the USDA Rural Development Missouri State Director, he states, *"This year, USDA Rural Development has* ***more than $4 billion*** *in direct loans available to help rural communities to build or upgrade water infrastructure."*

While many communities will reach out to agencies such as Midwest Assistance Program for help with the process towards the initial funding of a project, many do not seek out assistance or education to maintain these loans. Technical Assistance Providers from MAP can provide the on-going necessary training, education, and tools to aid communities in not only meeting all of their loan obligations, but in areas to develop more managerial, financial, and technical skills to improve their systems.

So Here's A "Plug" For Fire Hydrants...!

by Jeffrey Kormann

See what we did there? In all seriousness, and whether you choose to call them fireplugs, fire cocks, fire pumps, Johnny pumps, or even something else, hydrants are a major component of water distribution systems and represent a key element of the fire-fighting infrastructure which society depends on today.



The Hydrant in History

Records show that the Chinese may have been the first to develop a concept of storing water for use in fighting fires. (Perhaps there is a connection to the fact that the Chinese also invented gunpowder.) Iron cauldrons were placed in strategic locations and kept filled with water in case of need. In other parts of the Asian world, fire cisterns are still used which store water below ground for better access in the event of an earthquake.



Although scholars differ on the true origins of the modern fire hydrant in America, credit for its invention is widely attributed to Frederick Graff, Sr., in 1801. Mr. Graff, as Chief Engineer of the Philadelphia Water Works, wanted to improve on the bucket brigade concept and apparently patented a design for a wooden post or pillar type of appurtenance that connected to the wooden water mains of the day. The following year, the first cast iron hydrants were being manufactured by cannon maker Foxall & Richards and became standard equipment in conjunction with the cast iron mains in use for most of the next 150 years. The Mathews Improved model, patented in 1858, was widely used after that and supposedly some examples can still be found in service today. Later modifications advanced the basic concepts of wet-barrel and dry-barrel hydrants, along with flush hydrants that have generally been used for distribution system maintenance. Another offshoot of the basic concept has been the development of non-pressurized "dry" hydrants, which are installed adjacent to lakes and ponds which a pipe runs below the standard water line. When needed, fire fighters simply connect to the barrel end of the hydrant and draft water into the pumper engine or tank through the principle of suction.

Ironically, history indicates that all records pertaining to Mr. Graff's original fire hydrant designs were lost in an 1836 fire that destroyed the U.S. Patent Office building.



Today's Uses

Most people associated with the water industry are aware of how fire hydrants are opened and connected by fire departments to pumper trucks when fighting fires. Other *legal* purposes for accessing their bounty include the temporary permits issued to construction contractors until such time that a service line can be installed to a property, the filling of in-ground swimming pools and water tank trucks, and the local wastewater department when cleaning out collection lines. Of course, fire hydrants play a key role in the periodic flushing of the water distribution systems they are connected to, which is recommended maintenance for both the lines and hydrants. Valves that are frozen or rusted shut, and not easily opened by fire departments when needed, could jeopardize both life and property.

A more exotic function is that hydrants supply a source for water cannons that are sometimes used to break up riots and other civil disturbances.

Fun Facts for You

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According to Wikipedia, hydrant bodies are also supposed to be color-coded. These colors and their meanings are as follows:

WHITE—public system hydrant
YELLOW—private system hydrant, connected to public water main
RED—special operations hydrant, often intended to identify flush hydrants for system maintenance only
VIOLET—non-potable source of supply, such as a pond or lake

Of course, municipalities have been known to deviate from these standards and often use their hydrants as promotional artwork, similar to the concept of painting the town's water tower in school colors. Many towns and some rural supply districts marked the nation's Bicentennial in 1976 by painting their hydrants in a red, white, and blue motif. An example of how this backfired in one small community was when an old abandoned house was razed. Clearing away the nearby brush revealed a fire hydrant that had been missed when the other hydrants in town had been repainted many years previously. The embarrassing oversight revealed the need for a cataloged inventory of all hydrants on the local system along with complete service records, a good practice in asset management which could be assigned jointly to the water system personnel and the local fire department.

A Closing Thought

Although no longer an "Ancient Chinese Secret", fire hydrants in some form have been around almost as long as humans have lived in proximity to one another and assumed common responsibility for sharing the essential element of water. It appears likely that the same basic concept will continue to be an often-overlooked but vitally important part of our lives for many generations to come.

Private Wells

by Jesse Campbell



You walk into the kitchen and draw a glass of water from the sink to quench your child's thirst. You do not question if the water is safe to drink because you believe someone else is responsible for providing you with safe, clean drinking water. But, what happens when you are the owner, operator, and consumer. Who is responsible for ensuring the water is safe to drink? If you can't figure it out, looking in the mirror will give you a hint!

This is reality for the over 15 million U.S. Households that rely on private well water as their primary source of drinking water. These water systems are not regulated by the U.S. EPA, states or local regulatory agencies. The individuals maintaining these private systems are not licensed water operators or utility managers; they are the rest of us. In most cases, they do not know, what they do not know; so they are unaware of the risks associated with managing their private well.

Having a private drinking water source can be very rewarding but it is also a major commitment. It is definitely not a file and forget system. There are financial, maintenance, and testing requirements which must be planned for, completed, and followed up on to maintain a safe well. Something as simple as a missing well cap or a mismanaged piece of treatment could contaminate the system and cause major health concerns. Without proper testing and follow up maintenance or treatment your friends and family may be exposed to contaminants without any knowledge of their presence. Furthermore, when a piece of the system breaks it can be costly to repair or replace. Without proper financial planning you may be leaving your family without access to any water for an extended period of time. As a private well owner, obtaining as much knowledge as possible about where your water comes from, how your well and distribution system works, the components of the system, and how to maintain the water quality is essential. Knowledge about your system is a key step to maintaining that piece of mind that your water is safe and healthy. Don't gamble with your friend's and family's health with each glass of water that comes out of the tap.

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CASE STUDY: PENDLETON MOBILE HOME PARK, MISSOURI

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His choices boiled down to closing the mobile home park and dislocating approximately 20 residents, or trying to find a solution that would keep people in their homes while satisfying the requirements of the State primacy agency. Sometimes life requires us to make difficult decisions. John Pendleton, the owner of a mobile home park and small engine repair shop in rural Callaway County, Missouri, began receiving correspondence from the Missouri Department of Natural Resources (MO DNR) indicating his State-permitted wastewater treatment facility was in chronic violation of the Clean Water Act. He wanted to keep it open. He wanted to do what was right. He needed help and MAP played a significant role in identifying the problem and finding a solution.



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The first hurdle John and his family business faced in this process was trying to determine the causes for failure of their innovative process. The park had installed a process which used septic tanks, a two-stage wetland bed for filtration of nutrients, and then discharge the remaining effluent into the classified receiving stream. The system, which had been installed in 2000, generally performed well in addressing biological oxygen demand (BOD) and total suspended solids (TSS), but failed consistently to meet permitted limits for the removal of ammonia and disinfection. Performance was further compromised by a misunderstanding in which Pendleton acted on a recommendation by officials to remove deep-rooted vegetation from the berm and mowing the wetlands beds on a weekly basis. That activity was stopped upon discovery by MAP Technical Assistance Provider (TAP) Kristina Hartley during her initial site visit in 2016. The mowing affected key components and caused long-term damage to the system. It was obvious by then that major changes would have to be made to the system and its operation, in order to have a realistic chance of meeting the current permitted limits and avoiding significant enforcement actions from MO DNR.

Recognizing the need for evaluation of the system by a professional engineer, Hartley began a lengthy and often-frustrating search. She finally connected with an expert in the design of small treatment systems. Dennis Sievers, P.E. out of Columbia, MO, who committed to helping Pendleton find a solution. Sievers chose to redesign the current system to function as a no-discharge facility through installation of a drip irrigation process. This option he deemed feasible given the ability to incorporate the four existing septic tanks and take advantage of the natural gentle slope of the available land. Ultimately the decision had to be made to abandon the wetlands altogether and install a Delta Ecopod aerobic treatment unit as part of the overall process.

Getting a new treatment design on the drawing board represented a significant step forward, but the path ahead was by no means smooth for John Pendleton and the people who were dependent on finding a solution. MAP TAP Jeffrey Kormann began working Pendleton. As Kormann was becoming familiar with the project and the family, correspondence from MO DNR offered a reminder that the current system was continuing to operate in non-compliance. In February of 2017, Pendleton met with MO DNR to let them know they were serious about fixing the system, but they needed additional time. MAP often served as the liaison to help Pendleton work through a complex maze of regulations, requirements, and jurisdictions to make the improvements a reality.



One of the most challenging areas of the project, administratively, was the determination of oversight jurisdiction for the new system. The current Operating Permit had expired, and a decision had to be made on whether to renew it given that plans were in the works for a new system that would require a different permit level. Since the initial plan using the wetlands went away, the new system could use a no-discharge permit process. A no-discharge process with flow of less than 3,000 gpd does not fall under State jurisdiction, but is classified as an onsite wastewater system under the jurisdiction of the Callaway County Health Department. MO DNR agreed to allow the Pendleton's to delay renewal of their Operating Permit, pending what was hoped would be a rapid installation of the new system.

The next step was finding a contractor who would take on such a small project and complete it in a timely, affordable manner. This also proved difficult, but perseverance finally paid off in a favorable bid from Buscher Backhoe Service of Freeburg, MO. Owner Marty Buscher sat down with MAP and John Pendleton in January of 2018 for a pre-construction meeting which gave all parties hope that the system could be installed that spring. Instead, they faced a myriad of delays and unexpected challenges which threatened to unravel the entire effort. By late fall, however, the contractor was finally able to take advantage of favorable conditions to get the drip irrigation system installed, tested, and approved by the County just as winter weather began making an early appearance in mid-Missouri.

Today the drip irrigation system is continuing to operate as designed, and although the muddy conditions have prevented the contractor from closing the wetlands in accordance with MO DNR requirements, John Pendleton has succeeded in what he set out to do. MAP is proud to have played a supporting role in helping a small private system attain regulatory compliance, keep people in their homes, and safeguard the surrounding natural environment.

According to Wikipedia, hydrant bodies are also supposed to be color-coded. These colors and their meanings are as follows:

WHITE—public system hydrant
YELLOW—private system hydrant, connected to public water main
RED—special operations hydrant, often intended to identify flush hydrants for system maintenance only
VIOLET—non-potable source of supply, such as a pond or lake

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MIDWEST ASSISTANCE PROGRAM

SOURCE

Midwest Assistance Program, Inc.
Central Office
303 N. Market St., Suite 2.
Maryville, MO 64468
Email: map@map-inc.org
Website: www.map-inc.org

Source Mission:
To provide information for the clients of the Midwest Assistance Program so they better understand the programs and services MAP offers to help them improve their communities and tribal associations; and to showcase the expertise of MAP employees.

FIND US ON FACEBOOK!

MAP Source is funded through a grant from the HHS/Office of Community Services and prepared by the Midwest Assistance Program, Inc. Material not otherwise attributed was written or redacted by the editor.

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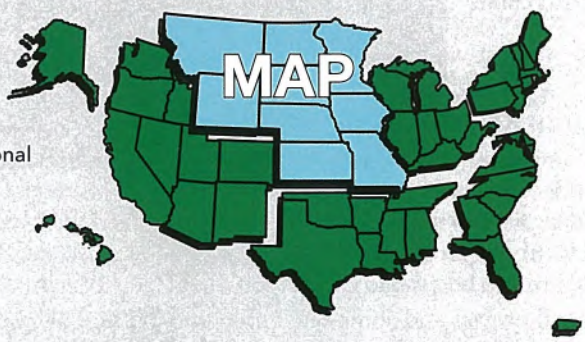
Midwest Assistance Program
serving rural communities since 1979
RCAP NETWORK MEMBER

Midwest Assistance Program, Inc.
303 N. Market St., Suite 2.
Maryville, MO 64468

Printed with inks containing soy and/or vegetable oils

The Midwest Assistance Program (MAP) is a member of The Rural Community Assistance Partnership (network). RCAP is made up of a total of six regional partners including MAP.



RCAP Regional Breakdown

MAP has been helping communities and tribal nations meet their infrastructure and development needs through information, resource management, expertise and technical assistance since 1979. MAP provides solutions to more than 400 such communities each year in Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North and South Dakota and Wyoming. Through individualized support from MAP staff, residents are given the knowledge and tools to revitalize their communities. MAP staff members live in the communities served and have a deep commitment to the strength, vitality, and future of rural America.

GSA Contract Holder
Contract GS-10F-0025T

Midwest Assistance Program has been designated and approved vendor by the General Services Administration, which means:

- MAP is already a GSA-approved contract holder
- Agencies can bypass the full request-for-proposal process and come directly to MAP
- Less delay getting projects underway

MAP is the first member of the RCAP network to receive this designation.

APPENDIX A1-5

MUNICIPAL CONTACTS

- WYOMING GOVERNACE COMMITTEE CONTACTS
- NEBRASKA GOVERNACE COMMITTEE CONTACTS

DRAFT

State	Entity	Title	Name,	Email	Phone #	Mailing Address
Wyoming General Contacts (to)						
WYOMING	Town of Fort Laramie	Mayor	**Joyce Evans**	jevans@townofftlaramie.org	(307)837-2711	PO Box 177 Fort Laramie; WY 82212
WYOMING	Town of Fort Laramie	Board Member	**Cody Flayler**	cfproductions@woh.rr.com	937-681-0241	PO Box 177 Fort Laramie; WY 82212
WYOMING	Town of Fort Laramie	Clerk/Treasurer	**Kim Craft**	KCRAFT@TOWNOFFTLARAMIE.ORG		PO Box 177 Fort Laramie; WY 82212
WYOMING	Town of Guernsey	Mayor	**Nicholas Paustian**	n.paustian@hotmail.com	307-575-5976	PO Box 667 Guernsey; WY 82214
WYOMING	Town of Guernsey	Clerk/Treasurer	**Kate Farmer**	kate@townofguernseywy.us	307.836.2335	PO Box 667 Guernsey; WY 82214
WYOMING	Town of Guernsey	Public Works Director	**Mike Montgomery**	mikem@townofguernseywy.us	307.836.2335	PO Box 667 Guernsey; WY 82214
WYOMING	Town of Guernsey	Community Development Coordinator	**Sarah Cowan**	sarah@townofguernseywy.us	307.836.2689	PO Box 667 Guernsey; WY 82214
WYOMING	Town of Guernsey	Planner/Building Inspector	**Matt Allred**	matt@townofguernseywy.us	307.836.2689	PO Box 667 Guernsey; WY 82214
WYOMING	Stone Creek Subdivision; Cottonwood I & Cottonwood II Subdivisions	Chief Operator	**Tom Feeser**	tom@cottonwoodconstruction.com	307-532-1633	N/A
WYOMING	City of Torrington	City Engineer	**Jeff Harkins**	jharkins@torringtonwy.gov	307.532.4815	PO Box 250 Torrington; WY 82240
WYOMING	City of Torrington	Water Department Supervisor	**Tom Troxel**	ttroxel@torringtonwy.gov	307.532.2012	PO Box 250 Torrington; WY 82240
WYOMING	City of Torrington	Mayor	**Randy Adams**	radams@torringtonwy.gov	n/a	PO Box 250 Torrington; WY 82240

State	Entity	Title	Name,	Email	Phone #	Mailing Address
Nebraska General Contacts (to)						
JEBRASKA	City of Bayard	City Treasurer/Deputy Clerk	**Samantha Jackson**	samantha.jackson@cityofbayard.net	308-586-1121	PO Box 160 Bayard; NE 69334
JEBRASKA	City of Bayard	Utilities Superintendent	**Dan Coolidge**	city.utilities@cityofbayard.net	308-586-1121	PO Box 160 Bayard; NE 69334
JEBRASKA	City of Bridgeport	Mayor	**Charlie Browne**	cbrowne@rodaklaw.com	308-262-1623	809 Main Street Bridgeport; NE 69336
JEBRASKA	City of Bridgeport	City Clerk/Treasurer	**Doretta Huck**	dhuck@cityofbport.com	308-262-1623	810 Main Street Bridgeport; NE 69336
JEBRASKA	City of Bridgeport	Utilities Superintendent	**Wayne Kautz**	wkautz@cityofbport.com	308-262-1624	812 Main Street Bridgeport; NE 69336
JEBRASKA	City of Gering	Mayor	**Tony Kaufman**	mayorkaufman@gering.org	308.632.4141	PO Box 687 Gering; NE 69341
JEBRASKA	City of Gering	City Administrator	**Lane Danielzuk**	ldanielzuk@gering.org	308 436-5096	PO Box 687 Gering; NE 69341
JEBRASKA	City of Gering	Public Works Director	**Pat Heath**	pheath@gering.org	308.436.6834	PO Box 687 Gering; NE 69341
JEBRASKA	City of Gering	City Clerk	**Kathleen Welfl**	kwelfl@gering.org	308.436.6812	PO Box 687 Gering; NE 69341
JEBRASKA	Village of Henry	Operator	**Terry Derr**	n/a	308.225.098	1564 Nichols Ave Henry; NE 69358
JEBRASKA	Village of Henry	n/a	**Keitha Green**	greenkeitha@yahoo.com	308.641.3066	1564 Nichols Ave Henry; NE 69358
JEBRASKA	Village of Lyman	Board Member	**Allan Thomas**	awthomas49@gmail.com	308.787.1444	414 Jeffers Street Lyman; NE 69352-2383
JEBRASKA	Village of Lyman	City Clerk	**Kim Robb**	volyman@prairieweb.com	308.787.1444	414 Jeffers Street Lyman; NE 69352-2383
JEBRASKA	Village of McGrew	City Clerk	**Karla Fiscus**	mcgrewvillage@vistabeam.com	308.783.1720	PO BOX 48 McGrew; NE 69353
JEBRASKA	Village Of Melbeta	n/a	**n/a**	n/a	308. 783.6331	303 Main Street Bayard; NE 69341
JEBRASKA	City Of Minatare	City Clerk	**Carolyn Nelson**	cnelson@cityofminatare.com	308.783.1414	PO Box 483 Minatare; NE 69356-9700
JEBRASKA	City of Mitchell	City Administrator	**Perry Mader**	cityadmin@mitchellcity.net	308.623.1616	Po Box 305 Mitchell; NE 69357
JEBRASKA	City of Mitchell	Mayor	**Dave Curits**		308.623.1616	Po Box 305 Mitchell; NE 69357
JEBRASKA	City of Mitchell	City Clerk	**Ronda D.Conn**	cityclerk@mitchellcity.net	308.623.1523	Po Box 305 Mitchell; NE 69357
JEBRASKA	Village of Morrill	City Clerk	**Janine**	janine@villageofmorrill.com	308.247.2312	Po Box 305 Morrilll; NE 69358
JEBRASKA	Village of Morrill	Board Chairperson	**Tony Schuler**	tschulertrk@gmail.com	308.247.2312	Po Box 305 Morrilll; NE 69358
JEBRASKA	Village of Morrill	Board Member	**Paul Adams**	pam.adams56@gmail.com		Po Box 305 Morrilll; NE 69358
JEBRASKA	City of Scottsbluff	City Manager	**Nathan Johnson**	njohnson@scottsbluff.org	308.630.6202	2525 Circle Drive Scottsbluff; NE 69361
JEBRASKA	City of Scottsbluff	Council Member	**Scott Shaver**	sshaver@scottsbluff.org	308.632.4136	2525 Circle Drive Scottsbluff; NE 69361
JEBRASKA	City of Scottsbluff	Council Member	**Nathan Green**	ngreen@scottsbluff.org	308.632.4136	2525 Circle Drive Scottsbluff; NE 69361
JEBRASKA	City of Scottsbluff	Economic Development Director	**Starr Lehl**	slehl@scottsbluff.org	308.630.6213	2525 Circle Drive Scottsbluff; NE 69361
JEBRASKA	City of Terrytown	City Clerk	**Tammy Leeling**	cityofterrytown@cityoftt.com	(308) 632-7211	115 Terry Blvd. Gering; NE 69341
JEBRASKA	City of Terrytown	Representative	**Kent Greenwalt**	kgb2@embarqmail.com	(308) 632-7211	115 Terry Blvd. Gering; NE 69341
JEBRASKA	City of Terrytown	Mayor	**Chris Perales**		(308) 632-7211	115 Terry Blvd. Gering; NE 69341
JEBRASKA	City of Terrytown	City Administrator	**Lonnie Miller**		(308) 632-7211	115 Terry Blvd. Gering; NE 69341
JEBRASKA	City of Terrytown	Utilities Superintendent	**Hugo Chairez**		(308) 632-7211	115 Terry Blvd. Gering; NE 69341

PLATTE ALLIANCE WATER SUPPLY
A region wide municipal rural water supply project

27 March 2018

Edward Delgado, Mayor
P.O. Box 667
Guernsey, WY 82214

Dear Mayor Delgado:

The Platte Alliance Water Supply (PAWS) project contemplates a regional approach as the most efficient solution to water supply problems in the Platte River Basin. The project supports using upstream water source (or sources), upstream water treatment, a potable water pipeline, and the wholesale selling of water in lieu of each community attempting to solve the quality issues on the their own at a higher cost. Concept scope is to provide potable water from Guernsey downstream to Bridgeport, Nebraska. It should go without saying that the source water would necessarily comply with regulation of the Platte River. Centralized water treatment will assist to off-set long term cost increases impacting individual communities and there most likely will be benefits in seeking funding at a larger-scale instead of each individual community searching for fiscal solutions on their own.

This letter is to provide you information related to the project. Attached you will find an overview outlining project milestones since 2010, Resolutions by both Goshen County and the City of Scottsbluff supporting the project and encouraging participation, and a draft resolution presented as a template that could be used by the Town of Guernsey. I am also providing you with a copy of Volume I (the Report) of the Appraisal Investigation completed in 2013. In addition to Goshen County and the City of Scottsbluff, Resolutions have been approved by the City of Torrington, City of Bridgeport, Village of Lyman, and the City of Mitchell. Current status of the project is a Level II Study under Wyoming Water Development Commission (WWDC) parameters, this Study being funded by the City of Scottsbluff, Nebraska in conjunction with the WWDC.

A regional approach will require the formation of an organization to operate the system. As you can see from the draft Resolution, we are asking for your support and participation in the yet-to-be-determined organization to operate and govern the regional water system. The greater the level of participation in both southeastern Wyoming and western Nebraska, the greater the probability of success. We ask that you show your community support by passing the enclosed Resolution (or a facsimile of same) showing your understanding and concurrence, and that you intend to participate in the regional solution.

Sincerely,

Bob Juve
M.C. Schaff & Associates

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A region wide municipal rural water supply project

01 May 2018

William Baker, Mayor
P.O. Box 177
Fort Laramie, WY 82212

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The Platte Alliance Water Supply (PAWS) project contemplates a regional approach as the most efficient solution to water supply problems in the Platte River Basin. The project supports using upstream water source (or sources), upstream water treatment, a potable water pipeline, and the wholesale selling of water in lieu of each community attempting to solve the quality issues on the their own at a higher cost. Concept scope is to provide potable water from Guernsey downstream to Bridgeport, Nebraska. It should go without saying that the source water would necessarily comply with regulation of the Platte River. Centralized water treatment will assist to off-set long term cost increases impacting individual communities and there most likely will be benefits in seeking funding at a larger-scale instead of each individual community searching for fiscal solutions on their own.

This letter is to provide you information related to the project. Attached you will find an overview outlining project milestones since 2010, Resolutions by both Goshen County and the City of Scottsbluff supporting the project and encouraging participation, and a draft resolution presented as a template that could be used by the Town of Fort Laramie. I have previously provided you with a copy of Volume I (the Report) of the Appraisal Investigation completed in 2013. In addition to Goshen County and the City of Scottsbluff, Resolutions have been approved by the City of Torrington, City of Bridgeport, Village of Lyman, and the City of Mitchell. Current status of the project is a Level II Study under Wyoming Water Development Commission (WWDC) parameters, this Study being funded by the City of Scottsbluff, Nebraska in conjunction with the WWDC.

A regional approach will require the formation of an organization to operate the system. We are asking for your support and participation in the yet-to-be-determined organization to operate and govern the regional water system. The greater the level of participation in both southeastern Wyoming and western Nebraska, the greater the probability of success will be. We ask that you express your community support by passing the enclosed Resolution (or a facsimile of same) showing your understanding and concurrence, and that you intend to participate in the regional solution.

Sincerely,

Bob Juve
M.C. Schaff & Associates

APPENDIX A1-6

COMMENTS | CRITICISM RESPONSE

DRAFT

PLATTE ALLIANCE WATER SUPPLY (PAWS)
A region wide municipal rural water supply project

Platte Alliance Water Supply (PAWS) Level II Study

INTRODUCTION

The original PAWS Level I (Appraisal Investigation) Study, was wholly funded by the United States Bureau of Reclamation (USBR). The USBR review and report concurred with the evaluations and solutions of the Level I Study. The ongoing PAWS Level II Study, funded jointly by the City of Scotttsbluff, Nebraska and the Wyoming Water Development Commision, is a subsequent, more detailed evaluation to define a long-term solution for deteriorating rural municipal potable water supply.

To identify solutions, it is imperative that the rural communities lead further efforts, as this is ***THEIR*** solution, and they must create a legal entity (1) to evaluate and apply (if desired) for the numerous funding oportunities identified within this Study, and (2) begin discussions as a group for water rights/contracts as may be necessary. One task of this Level II Study is to create the necessary joint powers and interlocal entities.

With participation in this process, each community does not, at this time, commit to any financial requirement. Non-participation does, however, necessarily eliminate a non-participating community's inclusion in water supply evaluations and facilities infrastructure design, two necessary components of identifying a long-term solution.

This Level II Study has provided numerous opportunities for public and community input. Several communities, rather than electing to participate in the discusions and provide input, have commissioned other engineering firms to review the Level I Study results and processes. Conclusions drawn from the review by other firms are not accurate. This UPDATE provides some brief comments to the inaccuracies of the Level I Study review.

UPDATE

To begin, please first keep in mind that the USBR provided extensive nationwide review of the Level I Study and concurred with the solutions identified in the Level I Study (upon which this Level II Study is based). The Level II Study is nearing completion, and the project team would like to thank the supporting communities for their commitment and willingness to support the future of our region and make it a better place for our successors. The project has come a long way in the past 8-years. Although 8 years seems like an eternity, it exemplifies that it is critical to think almost a generation ahead in order for large scale projects such as this to come to fruition. Likewise, it should exemplify (at least anecotedly) the superficiality of a Level I cursory review, as review of a final Level I product does not have the benefit of the facts, thought processes, and data that 8 years provides.

The results of the current Level II Study will detail some of the current concerns and criticisms, including refining alternatives and costs, and the Level II Study is likewise intended to set forth a methodology for water rights and governance for the final project. Not all details will be fully addressed, given the very nature of the Level II Study process, as delineated by the Wyoming Water Development Commission and set forth in the project agreement. At this time, however, we intend to make comments in response to the recent concerns and criticisms in order to provide accurate information and to enhance dialogue.

Concerns and criticisms by others, in no particularly intended order, include:

1. *Consultants have asked communities to pass a resolution in support of PAWS without any of them having seen the results of the Level II Study, and …the support of such a plan and the formation of a yet to be determined organization to run such a system would commit these Cities and Towns to a very costly and unneeded project that would severely impact user rates and costs of operation in the future;*
2. *Some communities either do not need these improvements and have no problems with current water quality, have already addressed water quality treatment with much more cost effective measures, or can address any future concerns of water quality with much more cost effective measures;*
3. *Scottsbluff for example has seen levels of uranium decrease with both of their newest wells…levels of arsenic, uranium, and nitrates in many communities have not seen any significant increases and in many cases, the opposite is true. Changes to maximum contaminant levels for these and other elements have changed over the years…;*
4. *The study does not account for Cities that already have a treatment system in place. The cost calculations assume that an entire new system for each city would be needed…;*
5. *The study vastly overestimates annual O&M calculations for a smaller local system;*
6. *The study greatly over estimates costs for capital improvements;*
7. *The report vastly overstates the current "problems" with water quality and assumes that every community will need to treat their water at some point;*
8. *The only way such a costly proposal is justified in the study is to manipulate or miscalculate the costs and push the evaluation and comparison of options out to a 50 year window. For towns without current treatment facilities, installing small scale treatment options or connections to other larger Cities nearby, would be much more cost effective. Torrington is a great example of where a treatment process has already successfully been implemented more than 10 years ago, and has proven to be a cost effective solution to meet the City's needs. The proposed resolution is asking for a commitment from the Cities and Towns in the study area to a system that is far from a proven cost effective solution for the City, and is asking for a commitment to a yet to be determined operation and governance body. We see no advantage financially or operationally for any community to make such a commitment, and based on the data available and the basis on which these statements are made, we would strongly advise against any such commitment.*
9. *The probablility that Gering would benefit from participation in the PAWS project, as proposed, is very low. Gering should decline to participate financially and should plan to operate and maintain Gering water supply infrastructure indefinitely, and*
10. *Gering has no apparent reason to oppose – or support – the PAWS project.*

Responses to these comments and criticisms, again not in any particularly intended order, are as follows:

1. Concern over the current resolutions and agreement is misplaced, and the impact of this action is misinterpreted. Communities are being asked to provide support for the project through passage of

resolutions and agreements, as an integral part of the Level II Study. It is true that the Level II Study is in process and a draft report is not yet available, but communities are not being asked to bind themselves in any manner other than their time and interest. As part of the governance process the Communities themselves would determine project costs, associated rate of provided water, and whether the project ultimately goes forward or not. That will be based upon, for the most part, the final Level II report and which communities choose to move forward to a more binding relationship. Knowing the interested communities, their needs and desires, and their concerns, is important to produce an accurate Level II Study.

2. Until the Level II Study is completed, project refinements are made, and available funding options are vetted, it is premature to make any comparison of costs of a regional system to individual solutions. It is, however, difficult to imagine that multiple treatment systems along the Valley will be less costly than one larger system due simply to the economies of scale in a regional system.

3. Scottsbluff realizes the merit in looking at best available options for potable water and is a primary agency providing funding for the Level II Study. It is clear they believe in the merits of the regional system. Torrington has a relatively successful reverse osmosis process, but knowing the potential pitfalls of that system and any local treatment, Torrington likewise remains open to future solutions.

4. It is assummed that with changing water quality and regulations each community's needs may change. Some communities will need new systems and others will need systems where they did not have them before. The Appraisal Investigation made the assumption that as treatment changed in each of the downstream communities, the O & M costs would increase, which has historically happened in water treatment. The Appraisal Investigation used then-current costs with an inflation factor given that the construction would not be immediate and cost inflation was high at that time. It is difficult to state with exact specificity which communities will require a new system, but it is likewise evident that the region as a whole will expect continued costs and continued projects for potable water quality; and evident that O & M cost on any solution will continue to increase as they have.

5. Capital costs at the time of the Appraisal Investigation were inflating rapidly and for a future project it is only prudent to assume relatively conservative (ie: high) costs. The 50-year window was not an advantageous or strategic decision in predicting costs. Rather, the 50-year window was simply required criteria by the Bureau of Reclamation. And in reality, fifty years is also not an unreasonable time period for any endeavor to provide long term quality water.

6. The fundamental point not addressed by any criticism or concern is that the regional system intends to treat higher-quality upstream water instead of designing and building multiple, individual systems for downstream lesser-quality water that may be subject to the subsurface movement of contaminants. Movement of contaminants, in and of itself, can cause any given plant to be outdated at any given time. It is difficult to imagine that all downstream communities could ever need new solutions at the very same time. It is not, however, difficult to imagine that they could work together to determine a long-term solution that would ultimately help each of them at different times.

7. Comment was also made that it is foreseable at some time in the future that a regional system could be justified. At this point no one is asking Gering or any other community to participate financially. The exception, of course, being Scottsbluff who volunteered. We concur that Gering should operate and maintain their water supply infrastructure. We do, however, believe that it is not prudent for any municipality to not look at other potential sources for potable water. What we are inviting Gering to do is to participate in developing a governance system for a potential regional water system, as we have invited others to do, and then to look at the costs in comparison to their current and anticipated future system. It is true that Gering has no apparent reason to oppose the PAWS proposal and we encourage them to participate in the current process. We would add that if there is a possible regional system that could be developed now, and if it were going to likely be needed in the future at

some undefined moment, it would be prudent to have a voice in the governance of that system when invited to do so, which is now.

In closing, the Level II Study will first advise every community to pursue methods of providing potable water in the best fashion that they can. To that end, the Appraisal Investigation finds that a regional system would be beneficial, assuming adequate funding presents itself and the knowledge for governance and water rights is present and able to identify solutions. The Level II Study has identified an oversite group with greater knowledge of available water than has been available in the past, and Federal funding opportunities are greater than they have historically been. It continues to be the recommendation that each community in the region participate to the degree that they feel comfortable, until the project is on-line or until they can be sure that this is not the system for them. We hope that the decision is through informed discussion and understanding of the Level II Study, and not from a cursory review that does not benefit from a years-long review of the issues and solutions.

APPENDIX A1-7

AWWA ABSTRACT #49135 & PRESENTATION

DRAFT

PLATTE ALLIANCE WATER SUPPLY (PAWS)

by Jeff B. Fuller, PE, M AWWA
Michael Olsen, PE, M AWWA
MC Schaff and Associates, PC

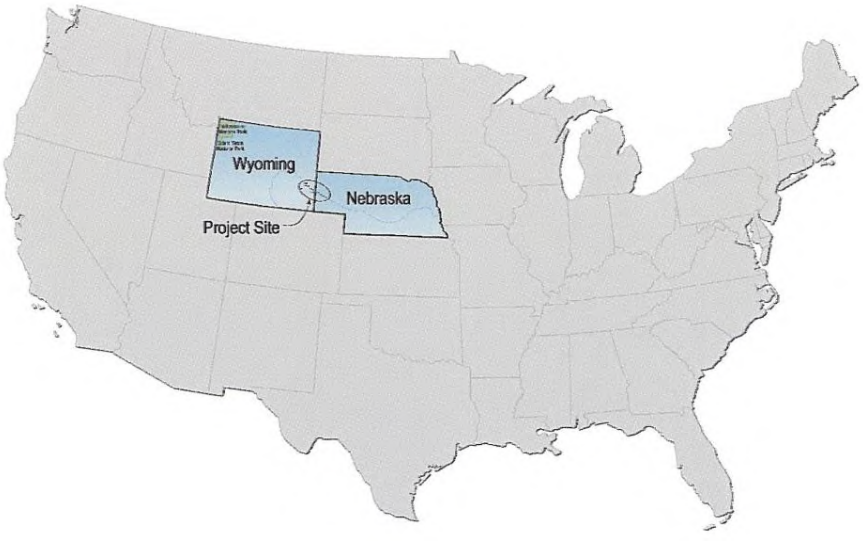
Abstract #49135:
The PAWS project is a rural municipal water supply project incorporating 11 communities and additional rural water districts in Southeastern Wyoming and Western Nebraska, along the North Platte River basin. These rural municipalities are experiencing significant financial hardships to treat for nitrates, arsenic and uranium contaminates in the public water supply system. Upstream, in Wyoming, the water quality is significantly improved. The planning concept is to take water upstream in the Platte River, where only conventional treatment processes will be required; and via gravity transmission, pipe the treated water downstream to the rural municipalities and water districts. The project will be a first multi-state treated water project for both Wyoming and Nebraska; will involve significant water rights issues (although this is a water quality issue not a water quantity issue); operations and governance issues; and financial considerations. The initial planning study was conducted via funding from the Bureau of Reclamation (USBR); and the current subsequent (Level II) planning study is sponsored by Goshen County, Wyoming and funded jointly by the Wyoming Water Development Commission (WWDC) and the City of Scottsbluff, Nebraska.

Platte Alliance Water Supply (PAWS)

<u>The Need…</u>

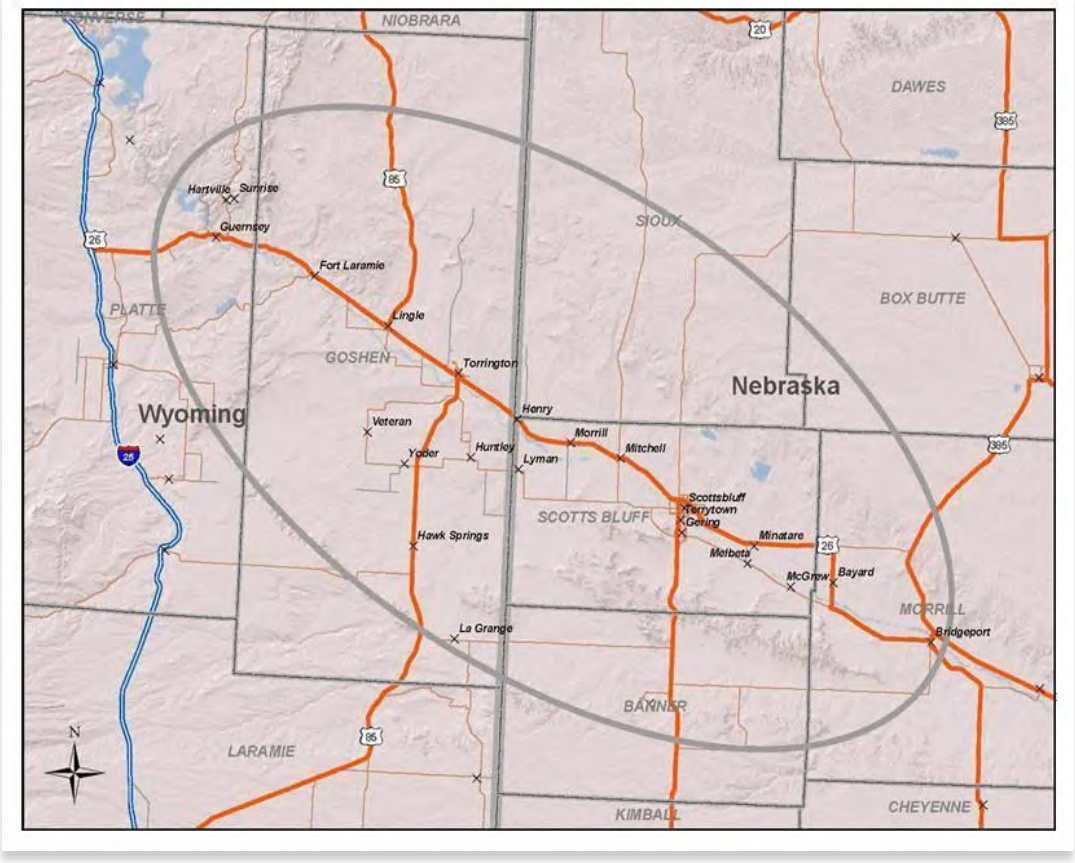
Rural communities in Southeast Wyoming (Goshen and Platte Counties) and Western Nebraska (Scotts Bluff and Morrill Counties) and adjacent rural areas along the North Plate River basin within these Counties are experiencing deteriorating water quality, and it is becoming increasingly difficult and expensive to meet public water quality standards. This lack of dependable water quality limits the ability of the region to remain vibrant and sustain current and future growth and economic vitality.

The project area is located in southeastern Wyoming and Western Nebraska.



Goshen and Platte counties in Wyoming and Scotts Bluff and Morrill counties in Nebraska is a rural, agricultural area. The agriculture aspect of this area comes from the raising of corn (a portion of the corn is produced and provided to the local ethanol plant), oats, wheat, sugar beets, hay alfalfa, beans and other crops for food and/or feed for livestock. The average rainfall is 14 inches per year.

The North Platte River flows west to east through the center of the area. The North Platte River is the common, significant surface water supply for the entire region. The USBR provides operation and maintenance of the North Platte River and associated facilities throughout this entire region.



The area includes the incorporated communities of Guernsey, Hartville, Lingle, Fort Laramie, Torrington, Yoder, Veteran, and La Grange in Wyoming; and Henry, Morrill, Mitchell, Scottsbluff, Gering, Terrytown, Bridgeport, Bayard, and Minatare in Nebraska; and the rural areas of Melbeta and McGrew in Nebraska, and Huntley, and Hawk Springs in Wyoming.

Most community potable water supplies within the area are from alluvial wells and the water quality has been deteriorating. The Environmental Protection Agency (EPA), through the Safe Drinking Water Act (SDWA), has developed constituent standards for Maximum Contaminant Levels (MCLs) of constituents within the water source. As identified within the SDWA, this list of constituents and corresponding MCL standards are likely to continually evolve and expand, potentially requiring modifications to existing water treatment processes for current and future compliance.

The following chart identifies rural communities and rural area water supplies that have exceeded primary maximum contamination levels (PMCLs) and secondary maximum contaminant levels (SMCLs) for constituents as identified in the Safe Drinking Water Act (SDWA).

Community	Contaminants							
	PMCLs						SMCLs	
	Radon	Arsenic	Uranium	Nitrates	Lead	Copper	Iron	Manganese
Hartville			X	X				
Guernsey	X						X	X
Lingle				X				
Torrington				X				
Goshen County, WY*		X	X	X				
Yoder		X	X					
Henry					X	X		
Lyman		X	X					
Morrill			X	X				
Minatare			X					
Gering			X					
Bayard				X				
Bridgeport			X					
Morrill County, NE*				X				
* Indicates the unincorporated areas within the county								

Previous Studies…

Previous studies identifying existing water quantity, water quality, water transmission, storage and distribution and planned improvements within the rural communities have been conducted both in Wyoming and Nebraska. Also, North Platte River basin studies and plans that identify current and anticipated water situations and issues have been reviewed.

Existing situation…

- Historically, within the PAWS area, agricultural uses account for 80+% of the North Platte River basin water use. Existing community potable water uses account for a small percentage of the use of existing water rights.
- Currently the PAWS communities' water supply comes from pumping shallow groundwater from wells adjacent to the North Platte River.
- Water quantity is not the issue for the communities, rather the water quality; and the cost to provide potable water to the communities. Moving points of diversion from existing municipal water supplies must account for maintaining North Platte River streamflow; and not detrimentally impact irrigation water rights. *Change in the point of diversion requires mitigation of impact to surface water users.*
- Most community potable water supplies within the area are from alluvial wells and the water quality has been deteriorating. The PAWS area is experiencing a progressively increasing presence of some elements, particularly Nitrates, Uranium and Arsenic in the public water systems. Treatment of these constituents requires increasingly more elaborate and expensive treatment processes.

- The Environmental Protection Agency (EPA), through the Safe Drinking Water Act (SDWA), has developed standards for Maximum Contaminant Levels (MCLs) of constituents within the water source. As identified within the SDWA, this list of constituents and corresponding MCL standards will continually evolve and expand, potentially requiring modifications to existing water treatment processes for future compliance.
- Due to the rural nature of these communities, potable water use, per capita, has been relatively high.

Appraisal Investigation…

Goshen County, Wyoming, Scotts Bluff County, Nebraska, City of Scottsbluff, Nebraska and the City of Torrington, Wyoming signed an initial proposal to the Bureau of Reclamation (USBR) for funds to conduct an Appraisal Investigation of potable water supply alternatives to the region. Goshen County, as the contracting entity, then entered into an agreement with the USBR for execution of the Appraisal Investigation Study. The project team, comprised of representation from Wyoming and Nebraska counties and communities and the USBR personnel, met with representatives of the consultant on a regular basis throughout the study. As well, an Advisory group, consisting of representatives of the USBR, Wyoming State Water Officials and Nebraska State Water Officials provided key input during the study process. Numerous meetings were held with community and county representatives, state water officials, and representatives of entities/agencies with water supply interests within the project area.

The Appraisal Investigation Study was completed under the Rural Water Supply Act of 2006; in response to the Bureau of Reclamation Rural Water Supply Program Funding Opportunity Announcement No. R10SF80458. USBR personnel provided valued direction and input throughout this Appraisal Investigation.

The Appraisal Investigation study reviewed historic water use, evaluated the current situation, identified potential opportunities, and defined a cost-effective alternative to most effectively address water quality issues.

Numerous alternative potable water supply solutions, including the “do nothing (no action)” alternative, were identified and evaluated. Based on historical and regulatory directions, it became obvious a “no action” alternative is not viable, as it does not address the critical potable water health and safety issues.

Numerous PAWS regional potable water supply alternatives were evaluated; including,

- ✓ *No-Action Alternative*
- ✓ Regional System with Supply from Grayrocks Reservoir
- ✓ *Regional System with Supply from New Off-River Site*
- ✓ Minimal Potable Water Use Regional System
- ✓ Regional System with Supply from Guernsey Reservoir
- ✓ Regional System with Supply from wells in the vicinity of the Laramie River and the North Platte River
- ✓ Regional System with Supply from wells in the Wheatland Flats area

No-Action Alternative

The No-Action Alternative assumes each rural community will continue to address water quality issues with individual treatment processes. Treatment processes will continue to become more elaborate to address the deteriorating water quality as well as compliance with current and future Safe Drinking Water Act regulations. Costs developed with the No-Action Alternative include hiring additional certified operation personnel, pumping costs, construction of enhanced treatment facilities and disposal of highly contaminated water. To provide for a relative comparison costs developed for the No-Action Alternative anticipate the rural communities will incorporate water conservation measures to reduce, over time, average daily use by 50%.

Typical considerations for construction and improvement projects include evaluations of a variety of options that permit ranking based on cost and other considerations. An additional, and equally important option, is to "do nothing" or consider what would happen if the project did not occur. In this case, with regards to supplying potable water meeting drinking water standards, "do nothing" is not a particularly viable alternative. The reasons why "No Action" is not viable are as follows:

First, ground water meeting current EPA standards is a limited quantity. As referenced in the background literature, when communities have sought to replace current water sources that fail to meet current standards, they are progressively finding it harder to locate the "pockets" of quality water. These pockets of water may either migrate away from the current well fields or be depleted altogether.

Secondly, the stated Drinking Water Strategy of the EPA is to "strengthen public health from contaminants in the drinking water." The effective result of this goal is that the allowable MCLs for existing "known contaminants" have been decreasing and will continue to decrease. The strategy states that the EPA may list additional contaminants' MCLs as they are identified. Effectively, in the effort to ensure that drinking water is safe for consumption, the trend will likely be towards stricter standards. Water that is presently considered "unfit" for consumption will not be considered "fit" through a relaxation of standards. Furthermore, water that is either "marginal" or "safe" under present standards may be considered "unfit" as standards become more stringent.

The No-Action alternative considers of each community developing an independent reverse osmosis treatment capability. In light of the above, this is a fair cost basis and a likely reality in the absence of a regional treatment alternative.

For comparison purposes, initial cost estimated developed for the No-Action alternative have been developed utilizing these assumptions. Based on these assumptions, at a conceptual level, cost estimates indicate a $170M capital cost, and $28.3M in annual Operation and Maintenance (O&M) costs.

Regional Alternative

Assumptions used in the identification and evaluation of regional alternatives includes; surface water quality diminishes from west to east through the study area; ground water quality diminishes from west to east through the study area; ground water and surface water quality will continue to diminish in the future; and the Environmental Protection Agency (EPA) will continue to incorporate regulations for additional water quality constituents, with corresponding increased operational requirements. Costs

developed anticipate significant operational savings in the hiring of certified operation personnel and the construction of treatment facilities for a regional treatment system. Cost of regional potable water facilities is based on a 50-year design life. Fifty-year regional population is forecasted to double; however, water use will decrease by 50%. Regional pipeline facilities will be sized for the 50-year capacity; however, treatment facilities will be sized to accommodate a 25-year capacity with the ability to add additional capacity, if and when needed.

PAWS will deliver the 2070 peak day demand of 310 gallons per capita per day to the projected 2070 population. The peak day demand is calculated as two times the average daily demand of 155 gallons per capita per day.

For purposes of initial concepts and cost estimates, the PAWS system will not include rehabilitation of existing distribution facilities; will not include pipeline extension to connect to existing distribution systems and will not include storage facilities for the cities, towns, villages and or water districts. Regional alternatives evaluated upstream treatment water supply, construction of regional water treatment facilities, and provide treated water via gravity flow downstream to the PAWS communities.

The regional alternative includes:

- Create a PAWS entity (Joint Powers Board) comprised of Wyoming, Nebraska state and local officials to mitigate impacts to surface users due to change in points of diversion; and assure both state allocations and requirements are maintained in accordance with current compacts.

- Provide a water supply to the PAWS communities at a location upstream in the North Platte River in the vicinity of the Town of Guernsey, Wyoming. Based on preliminary investigations, this upstream source does not contain the nitrates, uranium and arsenic concentrations; and the treatment processes would be significantly simplified. As an example, the Town of Douglas' (located approximately 40 miles upstream from the Town of Guernsey) water supply (from the North Platte River), requires only a slow sand filter and chlorination to comply with current regulations.

- Incentivize PAWS communities to reduce consumptive potable water use; through water conservation measures, including: "metering" of individual tap use; upgrades to distribution piping; use of nonpotable sources for lawn watering, municipal parks and golf courses, etc.; and public education.

- The PAWS system will provide wholesale water to cities, towns, villages and water districts. No individual taps will be provided. A tap will be provided in the PAWS transmission pipeline at a pressure to fill the entities existing storage facilities.

- ***Storage Reservoir.*** A dam and reservoir will be constructed north and east of the Town of Guernsey. Based on the understanding that a reservoir impounding less than 5,000 acre feet and an embankment with a maximum height less than 50 feet meets the requirements for USBR funding eligibility; this embankment will be constructed with a maximum 50-foot height and impound approximately 4,144 acre feet of water. An intake facility will be constructed in the North Platte River immediately south of the embankment and pump water approximately 1½ miles to fill the

reservoir. The reservoir will be filled during the winter months (November through March). Peak demand of 17 Million Gallons per Day (MGD) for 90 days equals 4504 acre feet; therefore, this reservoir could provide the summer peak daily demand for approximately 80 days. Depending upon water use, some additional pumping of water from the North Platte River to the reservoir may be required during the summer months.

- ***Water Treatment Plant.*** A water treatment plant will be constructed adjacent to the dam. A 17 MGD capacity water treatment plant will initially be constructed, with the ability to expand to the 34 MGD capacity in approximately 25 years. At this time, the embankment and reservoir would also have to be expanded. The Water Treatment Plant capacity will provide the peak day demand of 34 MGD for the forecasted population for the year 2070. The water treatment plant will be designed for construction in two phases. The initial construction phase will provide a 17 MGD capacity and the subsequent construction phase will complete the 34 MGD capacity. It is anticipated the second construction phase would not be required until after the year 2045.

- ***Transmission Pipeline.*** The transmission pipeline will generally follow the US Highway 20/26 beginning in Guernsey and extending to and through Fort Laramie, Lingle, Torrington, Henry, Morrill, Mitchell, Scottsbluff, Minatare and Bayard; and at South Bayard will intersect Nebraska Highway 92 and extend to Bridgeport. The transmission pipeline will be a 42" diameter pipeline extending approximately to the Wyoming/Nebraska state line, a 36" diameter pipeline extending approximately to Scottsbluff, a 24" diameter pipeline extending approximately to Bayard, and a 16" diameter pipeline extending to Bridgeport.

  The PAWS pipeline will generally have approximately a maximum 225 psi and a minimum 30 psi pressure. Three pressure reducing stations will be provided along the alignment, generally in the vicinity of Lingle, Morrill, and Minatare. It is anticipated some energy and economic savings may be realized with the construction of facilities to produce power at these pressure reducing stations. It is recommended that these pressure reducing stations be evaluated for the economic viability to produce power in a subsequent Feasibility Study.

- Conceptually, in addition to the taps for the identified cities, towns, villages and water districts, county rural water taps are provided at the east boundary (downstream point of the pipeline) of each county.

- "Fill" stations may be incorporated at convenient locations, so rural residents without access to a public water system may access the PAWS water system. This use is encouraged. This may also function as a temporary situation, if and until a rural area desires and meets established criteria as a pubic system to ask for a tap into the PAWS transmission pipeline.

- Costs developed for a regional system anticipate the rural communities will incorporate water conservation measures to reduce the historic potable water use by approximately 50%.

Based on these assumptions, at a conceptual level, cost estimates indicate a $328M capital cost, and $12.7M in annual O&M costs.

Budget level cost estimates indicate the capital costs for construction of the regional PAWS facilities (at a 50% grant, 50% loan at 4%) will break even with the current O&M costs within 12 years; and the required increase in water rates to individual users within the PAWS system are within USBR parameters (less than 2% of the poverty level income).

Level II Study…

Goshen County, WY sponsored an application to the Wyoming Water Development Commission (WWDC), and a follow-on *PAWS Level II Study* was funded equally by the WWDC and the City of Scottsbluff, NE.

Currently, Level II Study efforts are ongoing to provide concept designs of the Appraisal Investigation, and address the critical issues:

- *Resolution to water right adjustments;*
  Efforts are ongoing to determine and refine each community's water demand and depletion issues. The concept is; this project addresses a water quality issue, not a water quantity issue. Wyoming will not provide additional water to Nebraska nor provide any less water to Nebraska; and Nebraska will not require any additional "Wyoming" water.

- *Governance of a Regional PAWS entity;*
  Research has identified both states' statutes allow creation of a PAWS entity; i.e. a Nebraska (NEPAWS) and a Wyoming PAWS (WYPAWS) with each of these entities entering into an agreement with a multi-state PAWS Board. Representatives for these entities are being identified.

- *Funding for the proposed capital facilities.*
  Funding for the $318M capital improvements (Regional Storage Reservoir, Regional Water Treatment Plant, and Regional Water Transmission Pipeline) is being explored. Possibilities exist for funding from several different agencies. Innovative P3 (Public Private Partnership) approaches are being explored, as well. Associated with funding is exploring opportunities to reduce project capital improvement costs.

PLATTE ALLIANCE WATER SUPPLY (PAWS)



Jeff Fuller, PE, MAWWA
Michael Olsen, PE, MAWWA

M.C. SCHAFF AND ASSOCIATES, INC.

PLATTE ALLIANCE WATER SUPPLY (PAWS)



PLATTE ALLIANCE WATER SUPPLY (PAWS)



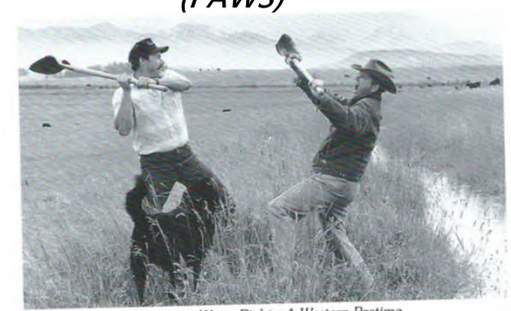
PLATTE ALLIANCE WATER SUPPLY (PAWS)

Deteriorating Water Quality

Community	Contaminants							
	PMCLs						SMCLs	
	Radon	Arsenic	Uranium	Nitrates	Lead	Copper	Iron	Manganese
Hartville			X	X				
Guernsey	X						X	X
Lingle				X				
Torrington				X				
Goshen County, WY*		X	X	X				
Yoder		X	X					
Henry					X	X		
Lyman		X	X					
Morrill			X	X				
Minatare			X					
Gering			X					
Bayard				X				
Bridgeport			X					
Morrill County, NE*				X				

* Indicates the unincorporated areas within the county

PLATTE ALLIANCE WATER SUPPLY (PAWS)



Discussing Water Rights, A Western Pastime

Appraisal Investigation

Identifies Needs and Provides Alternative Solutions

In 2010… *Goshen County*
City of Torrington
Scotts Bluff County
City of Scottsbluff … applied for and awarded USBR grant

Appraisal Investigation

Identifies Needs and Provides Alternative Solutions

Alternative solutions Identified

- No Action Alternate
- Regional System w/ Supply from Grayrocks Reservoir
- Regional System w/ Supply from New Off-River Site
- Minimal Potable Water Use Regional System
- Regional System w/ Supply from Guernsey Reservoir
- Regional System w/ Supply from wells in vicinity of Laramie River and North Platte River
- Regional System w/ Supply from wells in Wheatland Flats Area

Appraisal Investigation

Identifies Needs and Provides Alternative Solutions

Recommended Regional Water Supply System

✓ Water supply from North Platte River

✓Construct Regional Treatment Plant

✓Deliver potable water to PAWS communities

Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

Construct Storage Reservoir

✓5,000 acre Feet capacity

✓Peak summer daily demand for approximately 80 days

Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

Water Treatment Plant

✓Initial construction of 17 MGD

✓ability to expand to 34 MGD

Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

Transmission Pipeline

✓Gravity flow, generally along US Highway 20/26 from Guernsey, WY to Bridgeport, NE

✓ approximately 105 miles

✓42" diameter pipe to 16" diameter pipe

✓Three pressure reducing stations

Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

Operations

✓Deliver peak day demand of 310 gpcpd to 2070 population

✓Create a PAWS entity (Joint Powers Board) to provide wholesale treated water to cities, town villages and water districts along alignment

✓At water supply, anticipated only conventional treatment required

✓Incentivize water conservation

Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

- ✓Public meetings
- ✓Recommendation versus no action
- ✓Widespread support of need

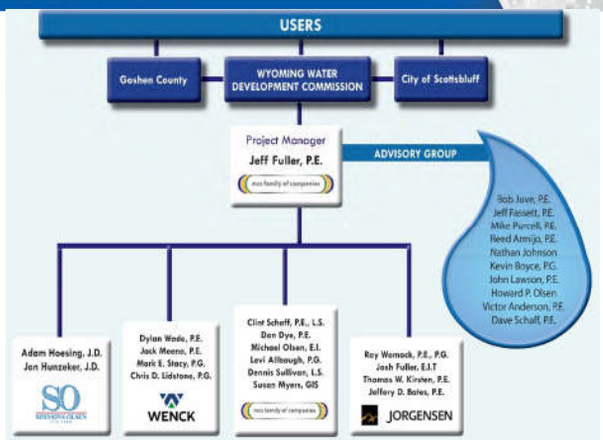
Appraisal Investigation
Identifies Needs and Provides Alternative Solutions

USBR Reviews

- ✓Significant input during Appraisal Investigation
- ✓USBR Appraisal Report concurred with Investigation findings; however no currently available USBR funding assistance for design and construction.
- ✓If funding is acquired, recommended Level II Study

PAWS Level II Study

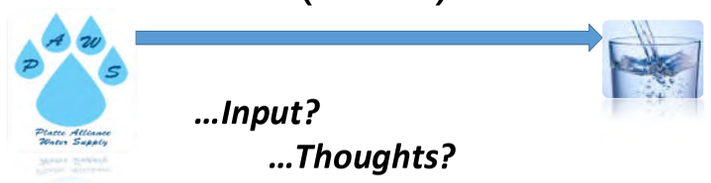
- ❖2015 Goshen County Applied to Wyoming Water Development Commission (WWDC) for Level II Study to finalize recommended alternate and complete conceptual design
- ❖Level II Study funded equally by WWDC and the City of Scottsbluff



PAWS Level II Study

- ❖Resolution of water rights adjustments
- ❖Governance of a Regional PAWS entity
- ❖Funding for Design and Construction of Level II Study recommended capital facilities
- ❖Anticipated completion September 2018

PLATTE ALLIANCE WATER SUPPLY (PAWS)



…Input?

…Thoughts?

…Questions?

…Clarifications?

APPENDIX A1-8

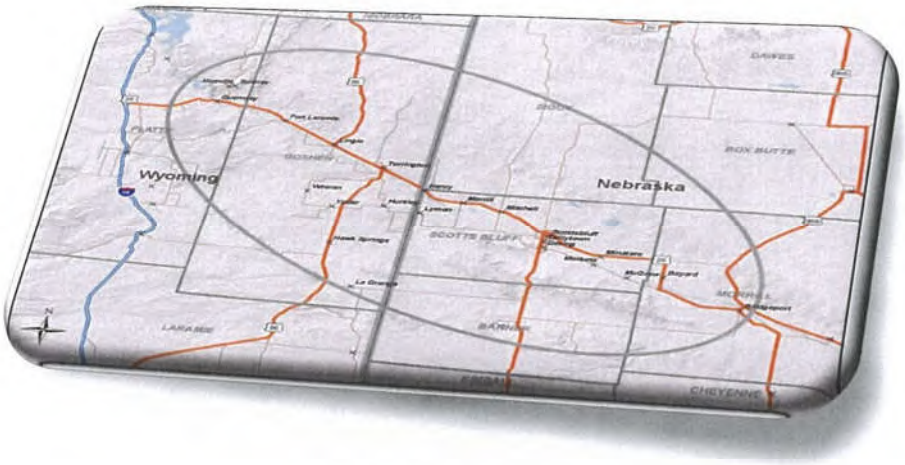
SPONSOR / FUNDING AGENCY UPDATE PRESENTATION

11-16-2017

DRAFT



Platte Alliance Water Supply (PAWS)
Level II Study



November 2017 Update

First, the Level II Study acknowledges the leadership and support of the City of Scottsbluff, through funding and resolution to effectively address a long-term solution toward regional sustainable drinking water.

Working with the Bureau of Reclamation and Nebraska and Wyoming water officials; opportunities to provide potential water supply solutions; that comply with current water compacts, address water quality and do not require changes to water quantity, and cost effectively provide solutions are being identified. The current concept is to provide PAWS water supply from the North Platte River upstream of Guernsey, Wyoming; treat this water supply through conventional water treatment (eliminating the need to treat for Arsenic, Uranium and Nitrates); and deliver the treated water downstream, via gravity, to municipalities and rural water districts downstream through Southeastern Wyoming and Western Nebraska.

The Level II Study has examined current Nebraska and Wyoming State statutes. Creation of Nebraska PAWS and Wyoming PAWS Boards; and agreements with a Regional PAWS Board will provide the governance an operation of the Regional PAWS System in compliance with current state statutes.

The Level II Study has examined current rural municipal water demands and operations; and is now expanding the evaluations and discussions to the councils and elected officials of the municipalities. This PAWS solution must be understood and supported by these councils to be able to effectively address constituent concerns and solicit public support for the solution; as the PAWS provides the long-term sustainable SOLUTION to THEIR public water issues.

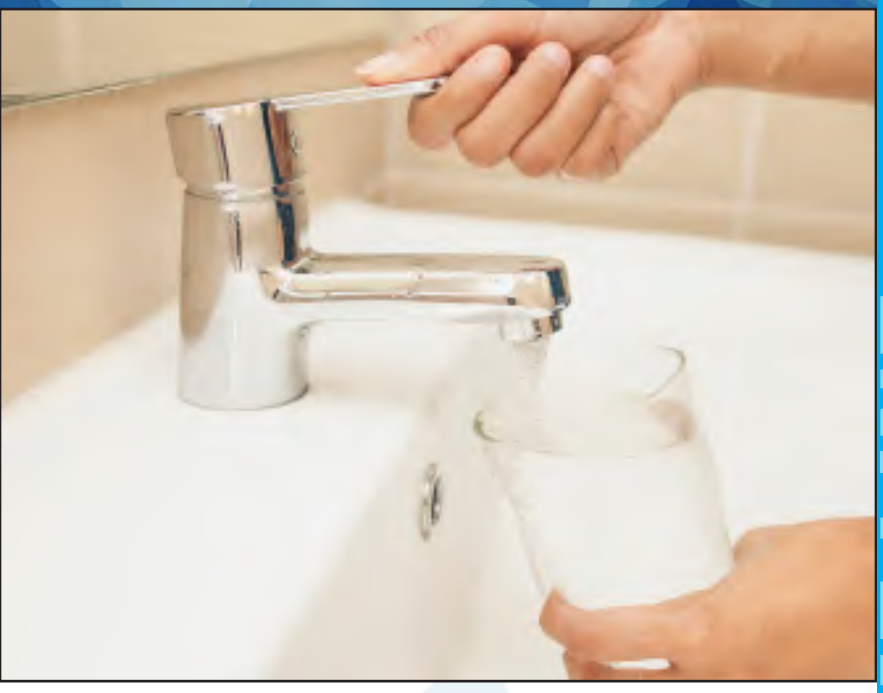
APPENDIX A1-9

PAWS TIMELINE WITH WATER QUALITY AND NATIONAL SAFE DRINKING WATER ACT

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY



WATER QUALITY

With deteriorating water quality issues facing communities in the North Platte River Basin in southeast Wyoming and western Nebraska, the potential for regional water systems have been discussed and considered in the Valley long before this specific project.

NATIONAL SAFE WATER DRINKING ACT

The ever-increasing regulatory requirements of the Environmental Protection Agency (EPA), particularly through the National Safe Water Drinking Act, of 1996 and the effects those have on our fiscal ability to produce quality potable water for our constituents only enhances the benefit of a regional approach to provide potable water.

TIME LINE

PRE -2010

- Multiple studies in Nebraska and Wyoming were conducted to address water quality within the rural communities in the North Platte River Valley.

2010

- May- Goshen County and the City of Torrington submitted a Statement of Interest to the Bureau of Reclamation (BUREC).
- July – Goshen County, City of Torrington, Scotts Bluff County, & City of Scottsbluff Submitted Proposal to BUREC.
- December – BUREC Appraisal Investigation Agreement executed with Goshen County as the Sponsor.

2014

- December- Following multiple reviews, the PAWS Appraisal Investigation was completed and the Bureau of Reclamation issued their Report concurring with the Appraisal Investigation findings.

2015

- August - Goshen County submitted an application to WWDC for a PAWS Level II Study.
- December- WWDC & Legislature Select Water Committee approved funding for a PAWS Level II Study.

2016

- June - M.C. Schaff & Associates selected as the engineering study team.
- August - Memorandum of Understanding was approved by the WWDC and the City of Scottsbluff.

2017-2018

- Continued evaluation of water supply and alternatives; and coordinated multiple meetings with State Water Agencies, Water Source Entities, Advisory Group, & Municipal Officials.
- Formation of NE & WY Governance Committees for PAWS Regional Water System.

2019

- December - Anticipated completion of the PAWS Level II Study.

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A2

DRAFT

APPENDIX A2-1

REFERENCES

DRAFT

Appendix A2-1 Existing Information References

jbfconsulting and M.C. Schaff & Associates, December 2013, Appraisal Investigation for the Platte Alliance Water Supply (PAWS). Consultants prepared the report for Goshen County, Wyoming; Scotts Bluff County, Nebraska; cities of Torrington, Wyoming and Scottsbluff, Nebraska; and the United States Bureau of Reclamation.

AVI Professional Corporation, August 2013, Guernsey Master Plan Level I Study. Consultant prepared the report for the Wyoming Water Development Commission and Town of Guernsey.

AVI p.c., September 2015, Town of Guernsey Groundwater Exploration Grant. Consultant prepared the report for the Wyoming Water Development Commission and Town of Guernsey.

Wyoming Groundwater, LLC, October 2011, Yoder Groundwater Level II Study. Consultant prepared the report for the Wyoming Water Development Commission and Town of Yoder.

AVI Professional Corporation, October 2013, Hawk Springs Level II Master Plan Study. Consultant prepared the report for the Wyoming Water Development Commission and Horse Creek Conservation District.

RESPEC, November 2016, Middle North Platte-Glendo Watershed Study Level I Watershed Management Plan. Consultant prepared the report for the Wyoming Water Development Commission.

Wyoming State Geological Survey (WSGS), December 2013, Available Groundwater Determination-WWDC Platte River Basin Water Plan Update. WSGS prepared the report for the Wyoming Water Development Commission.

M.C. Schaff & Associates, August 2014, Preliminary Engineering Report-City of Terrytown Water System. Consultant prepared the report for the Nebraska Department of Health and Human Services and the City of Terrytown.

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A3

DRAFT

APPENDIX A3-1

COMPLETED COMMUNITY QUESTIONNAIRES

DRAFT

USER INFORMATION

Entity Name: City of Torrington, Wyoming

Primary Contact: Jeff Harkins, City Engineer

Mailing Address: P.O. Box 250

Torrington, WY 82240

Telephone: 307.532.4815

Potable Water Consumption:

Avg Daily Demand	1.34	mgd
Peak Daily Demand	3.57	mgd
Average Annual Demand	526.4	mgd
Peak Annual Demand	644.38	mgd

Current Population: 6,715 2016 Census estimate

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): 3 WELLS LOCATED ON GOLF COURSE, WELL 15

Current Water Storage: 3.03 MG

Planned Future Storage: Not at this time

Current Water Treatment Operations: REVERSE OSMOSIS

Current Number of Water Taps: 2437

Current Water Rate: $ 2.00 / 1,000 gallons under 50,000 gallons
2.60 / 1,000 gallons over 50,000 gallons

Description of Proposed Location of Supply from PAWS:

Other:

Completed by: Date:

USER INFORMATION

Entity Name: Morrill, Nebraska

Primary Contact: Timothy Cleays

Mailing Address: 118 S. Center Avenue, PO Box 305

Morrill, NE 69358

Telephone: (308) 247-2312

Potable Water Consumption:			
	Avg Daily Demand	0.146	mgd
	Peak Daily Demand	0.292	mgd
	Average Annual Demand	53.24	mgd
	Peak Annual Demand	79.86	mgd

Current Population: 915

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The Village's current water source is the Western Nebraska Joint Water Board. The wells are shallow, alluvium, groundwater wells that are located west of the Village. The WNJWB also serves Lyman and Henry.

Current Water Storage: 300,000 multi-leg tower

Planned Future Storage: None at this time

Current Water Treatment Operations: Just chlorination if needed

Current Number of Water Taps: 478

Current Water Rate: $_____ / 1,000 gallons

Description of Proposed Location of Supply from PAWS: At WNJWB or tower?

Other:

Completed by: Tim Cleays Date: 8/22/17

USER INFORMATION

Entity Name: Scottsbluff, Nebraska

Primary Contact: Nathan Johnson

Mailing Address: 2525 Circle Drive

Scottsbluff, NE 69361

Telephone: (308) 630-6202

Potable Water Consumption:

Avg Daily Demand	3.170	mgd
Peak Daily Demand	3.398 (max over past 5 yrs)	mgd
Average Annual Demand	1156.89	mgd
Peak Annual Demand	1819.23	mgd

Current Population: 15,039

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply includes 12 groundwater wells that pump out of the North Platte River alluvium.

Current Water Storage: 1 MG Hydropillar and three more multi-leg towers for a total capacity of 2,550,000 gallons.

Planned Future Storage:

Current Water Treatment Operations: Just chlorination if needed

Current Number of Water Taps: 6200

Current Water Rate: $_____ / 1,000 gallons

Description of Proposed Location of Supply from PAWS:

Other:

Completed by: Jack Satur/Michael Olsen Date: 8/23/17

USER INFORMATION

Entity Name: Terrytown, Nebraska

Primary Contact: Hugo Chairez

Mailing Address: 116 Terry Boulevard

Gering, NE 69341

Telephone: (308) 632-7212

Potable Water Consumption:			
	Avg Daily Demand	0.432	mgd
	Peak Daily Demand	1.156	mgd
	Average Annual Demand	157.59	mgd
	Peak Annual Demand	236.34	mgd

Current Population: 1,647 (service area, only 1,177 in city limits)

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply is one groundwater well with two others on emergency use. The wells have capacities of 1,790 gpm, 1,780 gpm and 700 gpm. However, currently the City is completing a project to connect to the City of Gering for their water source.

Current Water Storage: 70,000 gallon multi-leg tank

Planned Future Storage: probably no storage after the existing tank outlives its design life

Current Water Treatment Operations: Chlorination if needed. Once hooked to Gering they will have chlorinated and fluorinated water.

Current Number of Water Taps: 536

Current Water Rate: $_____ / 1,000 gallons

Description of Proposed Location of Supply from PAWS: I would guess along Five Rocks Road, or through the City of Gering's Connection.

Other: _____

Completed by: Hugo Chairez/Jeff Wolfe Date: 8/23/17

USER INFORMATION

Entity Name: Bayard, Nebraska

Primary Contact: Dan Coolidge or Nate Heffron

Mailing Address: 445 Main Street, PO Box 160

Bayard, NE 69334

Telephone: (308) 586-1121

Potable Water Consumption:			
	Avg Daily Demand	0.168	mgd
	Peak Daily Demand	0.336	mgd
	Average Annual Demand	61.2 (may check this)	mgd
	Peak Annual Demand	91.8	mgd

Current Population: 1,209

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply is from three groundwater wells that are pumping from the North Platte Alluvium. The wells have capacities of 500, 395, and 403 gpm.

Current Water Storage: 200,000 gallon pedisphere tank

Planned Future Storage: none planned for the immediate future, but have a 150,000 gallon tank recommended in the last PER.

Current Water Treatment Operations: The City is currently constructing a low waste, ion exchange treatment plant to remove nitrates and uranium. The plant's capacity is 925 gpm.

Current Number of Water Taps: 537

Current Water Rate: $_____ / 1,000 gallons

Description of Proposed Location of Supply from PAWS: Along Hwy 26/Main Street

Other: NRD has them at 128.72 MG/yr for 2016.

Completed by: Dan Coolidge Date: 8/24/17

USER INFORMATION

Entity Name: Henry Nebraska

Primary Contact: Terry Derr

Mailing Address: 1565 Nichols Avenue

Henry, NE 69358

Telephone: (308) 225-0097

Potable Water Consumption:			
	Avg Daily Demand	0.025	mgd
	Peak Daily Demand	0.05	mgd
	Average Annual Demand	9.11	mgd
	Peak Annual Demand	13.67	mgd

Current Population: 161

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The Village's current water source is the Western Nebraska Joint Water Board. The wells are shallow, alluvium, groundwater wells that are located just south of the Village. The WNJWB also serves Lyman and Morrill.

Current Water Storage: 50,000 ground level storage tank.

Planned Future Storage: None at this time

Current Water Treatment Operations: Just chlorination if needed

Current Number of Water Taps: 74

Current Water Rate: $ 35 base @ 1.20 / 1,000 gallons

Description of Proposed Location of Supply from PAWS: At WNJWB or tie on Nichols Avenue?

Other:

Completed by: Terry Derr Date: 8/27/19

USER INFORMATION

Entity Name: Lyman, Nebraska Feb 21st

Primary Contact: Terry Derr

Mailing Address: 414 Jeffers Street, PO Box 301

Lyman, NE 69352

Telephone: (308) 787-1444

Potable Water Consumption:

Avg Daily Demand	0.063	mgd
Peak Daily Demand	0.126	mgd
Average Annual Demand	22.91	mgd
Peak Annual Demand	34.37	mgd

Current Population: 328

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The Village's current water source is the Western Nebraska Joint Water Board. The wells are shallow, alluvium, groundwater wells that are located just north of the Village. The WNJWB also serves Henry and Morrill.

Current Water Storage: 1, 100,000 and 1, 50,000 multi-leg tower (150,000 gallons total)

Planned Future Storage: None at this time

Current Water Treatment Operations: Just chlorination if needed

Current Number of Water Taps: 191

Current Water Rate: $ $28 base $1.25 / 1,000 gallons

Description of Proposed Location of Supply from PAWS: At WNJWB?

Other:

Completed by: Terry Derr Date: 8/27/17

USER INFORMATION

Entity Name: Western Nebraska Joint Water Board Apr. 1

Primary Contact: Terry Derr

Mailing Address: 414 Jeffers Street, PO Box 301

Lyman, NE 69352

Telephone: (308) 787-1444

Potable Water Consumption:

Avg Daily Demand		mgd
Peak Daily Demand		mgd
Average Annual Demand		mgd
Peak Annual Demand		mgd

Current Population:

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The wells are shallow, alluvium, groundwater wells that are located between Henry and Lyman. The WNJWB serves Lyman, Henry and Morrill.

Current Water Storage: None

Planned Future Storage: None at this time

Current Water Treatment Operations: Just chlorination if needed

Current Number of Water Taps: 3

Current Water Rate: $ 0.50 / 1,000 gallons

Description of Proposed Location of Supply from PAWS: I would guess we would be looking at coming in where there is space for a new well.

Other:

Completed by: Terry Derr Date: 8/27/17

STATE
DEPARTMENT O
P.O.
LINCOLN, NE
(40

PUBLIC WATER SUPPLIER

Name and address of public water supplier:
Western NE Joint Water Board
P O Box 301
Lyman, Nebraska 69352

Telephone: (308) 247-2312 Contact:

Permit Number(s): MT-40

Average daily permitted:	482,941	gallons per day
Maximum daily permitted:	1,620,000	gallons per day
Maximum annual permitted:	176,273,381	gallons per year
Special permit conditions:		

REPORT COMPLETION INSTRUCTIONS:

- Please complete the report by filling in the information requested in Section 1 below and in Section 2 on the bac
  wellfields that are not listed in Section 2, because they do not fall under this permit and do not need to be
  to complete all items in the report, you may attach additional sheets as necessary. **All users must complete Sec**
- If any of the permitholder's name, address, or other contact information printed at the top of the form has change
- Sign and date the reporting form at the bottom of page 1 before returning it.
- Return the completed and signed report to the **Department of Natural Resources** at the address at the top of thi

SECTION 1: Ground water transferred in calendar year 2017.

Average daily amount withdrawn: 424,900 gallons

Maximum day amount withdrawn: 1,059,638 gallons pumped on 7-23-

Total annual amount withdrawn: 155,0888 gallons

If the withdrawal amounts reported above exceed the permitted limits listed at the top of the form, please provide an

If applicable, please complete the following additional questions:
List the well registration number(s) of any well(s) under this permit that were decommissioned in calendar year 2017

List the well registration number(s) of any replacement well(s) that were constructed in calendar year 2017:

Terry Dean Water operator 1-3-18
Signature and title Date

IEI GROUND WATER WELL REPORT

.ONS.

ed per well per month

	July	Aug	Sep	Oct	Nov	Dec	Total pumped
	8.1832	5.5940	4.8173	2.4948	2.3058	0.9081	46.8065
	7.8651	5.7547	5.4640	2.0204	2.1879	2.9394	48.8517
	13.0119	11.9953	6.3484	3.5480	1.6876	2.6620	59.4306

SECTION 2: Monthly ground water withdrawals for calendar year 2017. Please report all quantities in GALLON

Well #	Volume pumped :					
	Jan	Feb	Mar	Apr	May	June
G-155040	2.9001	2.0972	2.2386	3.1695	4.2121	7.8858
G-162496	3.0008	2.1636	2.5331	3.1641	3.9084	7.8502
G-162497	2.6363	1.7904	1.9047	2.8404	3.9432	7.0624

USER INFORMATION

Entity Name: Minatare, Nebraska

Primary Contact: Tom Case

Mailing Address: PO Box 483

Minatare, NE 69356

Telephone: (308) 783-1414

Potable Water Consumption:			
	Avg Daily Demand	0.121	mgd
	Peak Daily Demand	0.241	mgd
	Average Annual Demand	44.010	mgd
	Peak Annual Demand	48.143	mgd

Current Population: 802

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply is from the City of Scottsbluff.

Current Water Storage: 250,000 gallon pedisphere tank

Planned Future Storage: none planned at this time

Current Water Treatment Operations: Chlorination if needed.

Current Number of Water Taps: 342

Current Water Rate: $_____ / 1,000 gallons

Description of Proposed Location of Supply from PAWS: Along Hwy 26 either at the booster station or in town at the intersection of Hwy 26 and Main Street.

Other:

Completed by: Tom Case/Michael Olsen Date: 8/30/17

USER INFORMATION

Entity Name: Gering, Nebraska

Primary Contact: Lane Danielzuk, or Pat Heath

Mailing Address: 1025 P Street 225 East D Street

Gering, NE 69341 Gering, NE 69341

Telephone: 308.436.5096 or 308.436.6834

Potable Water Consumption:	Avg Daily Demand	**2.64**	mgd
	Peak Daily Demand	**8.23**	mgd
	Average Annual Demand	**961.86**	mgd
	Peak Annual Demand	**1178.73**	mgd
Sanitary Sewer Discharge:	Avg Annual Discharge	**29.83**	mgd

Current Population: **8500**

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): **Source is groundwater, 4 wells located 5 miles northwest of Gering, (north of Riverview Golf Course. 5 Wells located in north Gering near the North Platte River.**

Current Water Storage: **2 – 1.0 mg distribution storage tanks, 1 – 1.0 mg raw water tank for blending water sources.**

Planned Future Storage: **Construct a 2nd 1.0 mg raw water tank.**

Current Water Treatment Operations: **No treatment at this time, City currently blends the two water sources and adds fluoride and chlorine prior to pumping to the distribution system.**

Current Number of Water Taps: **3657**

Current Water Rate: $ **1.52** / 1,000 gallons

Description of Proposed Location of Supply from PAWS: **A single connection to the Gering system would need to be connected at the raw water storage reservoir located at 2215 Country Club Road. City does have a 24-inch transmission pipeline from the wellfield north of Riverview Golf Course. If properly sized, it is possible the pipeline could be used for the PAWS connection. However, the City may choose to maintain use of the existing pipeline and wells.**

Other:

Completed by: **Pat Heath** Date: **12/5/2017**

USER INFORMATION

Entity Name: Mitchell, Nebraska

Primary Contact: Jeff Sprock or William Baer

Mailing Address: 1280 Center Avenue

Mitchell, NE 69357

Telephone: (308) 623-1616

Potable Water Consumption:	Avg Daily Demand	0.426	mgd
	Peak Daily Demand	0.852	mgd
	Average Annual Demand	155.49	mgd
	Peak Annual Demand	182.46	mgd

Current Population: 1,722

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply includes four groundwater wells that pump out of the North Platte River alluvium. One of the wells is currently under emergency use only.

Current Water Storage: 200,000 multi-leg tower

Planned Future Storage:

Current Water Treatment Operations:

Current Number of Water Taps:

Current Water Rate: $17.70 base rate plus $1.37 / 1,000 gallons

Description of Proposed Location of Supply from PAWS: At tower or along Hwy 26

Other:

Completed by: Jeff Sprock and Michael Olsen Date: 1/9/2018

USER INFORMATION

Entity Name: Bridgeport, Nebraska

Primary Contact: Wayne Kautz

Mailing Address: 809 Main Street

Bridgeport, NE 69336

Telephone: (308) 262-1623

Potable Water Consumption:	Avg Daily Demand	0.267	mgd
	Peak Daily Demand	0.534	mgd
	Average Annual Demand	97.38	mgd
	Peak Annual Demand	128.89	mgd

Current Population: 1,540

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): The City's current water supply is from three groundwater wells that are pumping from the North Platte Alluvium.

Current Water Storage: one, 250,000 gallon elevated tank and one, 50,000 gallon elevated tank.

Planned Future Storage: None at this time

Current Water Treatment Operations: The City is currently treating their water with an ion exchange system.

Current Number of Water Taps: 880 with 744 active services

Current Water Rate: $2.60 / 1,000 gallons

Description of Proposed Location of Supply from PAWS: Near the WTP? Yes

Other:

Completed by: Wayne Kautz Date: 1/19/2018

USER INFORMATION

Entity Name: Town of Fort Laramie, Wyoming

Primary Contact: Joyce Evan, Mayor

Mailing Address: P.O. Box 177

Fort Laramie, WY 82212

Telephone: 307.837.2711

Potable Water Consumption:	Avg Daily Demand	Unable to supply at this time	mgd
	Peak Daily Demand	Unable to supply at this time	mgd
	Average Annual Demand	unable to supply at this time	mgd
	Peak Annual Demand	Unable to supply at this time	mgd
Sanitary Sewer Discharge:	Avg Annual Discharge	Unknown	mgd

Current Population: 200

Current Water Supply (general or specific description, groundwater or surface water, location of wells or point of diversion): Two ground wells, located at 315 North Laramie avenue. Water supplied to 150,000 gallon new water tower

Current Water Storage: 150,000 gallon water storage tank built 2015

Planned Future Storage: Same

Current Water Treatment Operations: Pump related chlorine injection into distrubation line

Current Number of Water Taps: 159

Current Water Rate: $ 46.00 per-10,000 gallons $ 1,000 gallons

Description of Proposed Location of Supply from PAWS:

Other: The meters located in the well houses are in accurete, so we are not able to supply usage informtion at this time. We are installing new meters at both well point in our phase II up grade of our water and sewer grants late July August.

Completed by: Neal Stone Facility Administrator Water and Sewer Date: 07/15/2019

APPENDIX A3-2

STATE OF WYOMING 2018 PUBLIC WATER SYSTEM SURVEY REPORT

DRAFT

STATE OF WYOMING

2018

Public Water System Survey Report

Wyoming Water Development Commission
6920 Yellowtail Rd.
Cheyenne, WY 82002
307-777-7626
wwdc.state.wy.us

The Wyoming Water Development Commission
2018 Public Water System Survey Report

During early 2018, the Wyoming Water Development Commission (WWDC) conducted a survey, administered by the Water Resources Data System (WRDS), of all known municipal and non-municipal community public water systems in the State of Wyoming. Out of 192 potential surveys, 102 were returned. The WWDC is grateful for the cooperation of the entities that submitted information.

The results of this survey have been summarized in the following reports. All information contained in these reports was submitted by municipalities, special districts, utility companies, or homeowners associations. Data were checked or verified only if a conflict or obvious discrepancy was noted during the data entry process. Some entities responded with incomplete information, and others indicated that systems were closed, incorporated into another entity or so small that the questions on the survey did not apply. Therefore, some data may not appear for certain entities. Water rates, testing costs, and other information may have changed since the survey was completed. If more specific or more current data are necessary, users should contact individual systems.

The WWDC hopes these reports are of benefit to Wyoming communities, agencies and water users. If the information in these reports is inaccurate for your community, please send corrections to the WWDC as the database will be updated on a regular basis.

The 2018 Water System Survey Report consists of six separate reports, each of which is explained in detail within the following *Key to Water System Survey Reports*. This key identifies and defines the individual fields in the reports. Codes used in various fields are explained at the beginning of each report. If the question was not answered, a ‘no answer’, ‘unknown’ or ‘no data’ comment was inserted.

If you have any questions, comments or suggestions on this survey or future surveys, please contact

Jodee Pring
Wyoming Water Development Commission
6920 Yellowtail Rd.
Cheyenne, WY 82002
Office: 307-777-7626
jodee.pring@wyo.gov

OR

Rosemary Hatch
Water Resources Data System
1000 E. University Ave.
Laramie, WY 82070
Office: 307-766-2741
rhatch2@uwyo.edu

KEY TO WATER SYSTEM SURVEY REPORTS

Report #1: Mailing List
This Report contains the date of last completed survey, entity name & type, EPA's public water systems (PWS) identification number, mailing address, and phone number. Entities that did not respond to the 2016 survey may have incorrect contact information.

Report #2: System Data
System data refers to the source of the entity's water supply, storage, treatment, and volumes of water. The individual fields are defined as follows:

Number of Wells:	The number of wells used by an entity.
Number of Springs:	The number of springs used by an entity.
Surface Water Source:	The surface source of an entity's water supply.
Type of Diversion:	How the surface source is diverted. NA is used for entities with no source of surface water.
Other Water Sources:	The name of other water sources, water systems or municipalities that provide the entity with water supply.
System Capacity:	The total production capabilities of all water sources in the particular entity, expressed in gallons per day (gpd).
Raw/Treated Water Storage:	The maximum values of water storage capacity, raw/treated, in gallons.
Treatment Methods:	Methods the water system currently uses on a regular basis to treat the water supply.

Report #3: System Use
This report contains information pertaining to water system usage, providing information on the total population served, amount of average use, and other factors that may affect water consumption levels. The individual fields are defined as follows:

Total Population Served:	Number of people in the entity receiving water services
Number of Taps Inside & Outside entity:	The number of service connections within the boundaries of the entity. The number of service connections outside the entity boundaries.
Total annual water use by the system:	The total gallons of water used by the water system annually in gallons.
Peak day water use for the system:	The maximum gallons of water used by the system in a 24 hour period in gallons.
Whom do you sell water to:	For those entities that sell water, to whom do you sell?
What is the estimated loss to leakage (gpd &/or %):	The estimated total water lost by the system lost through leakage in gallons per day or in a percentage. Most answers are approximations.

Report #4: Billing Rates

The Billing Rates Report consists of billing information for each entity. The individual fields are defined as follows:

Is the System billed by Meter:	Yes or No, does the entity bill by meter.
Average Monthly Water Bill:	The entity's estimate of the average residential water bill.
Residential Tap Fees:	The dollar amount a person pays to connect his or her home to an entity's water supply.
Residential Base Water Rate:	The dollar amount the entity charges as a base rate. Additional water use above the base rate may increase the total water bill.
Residential Gallons Included in Base Water Rate:	The gallon amount the household can use for the base rate. Many entities allow a certain gallon amount to be used before they charge extra. Others charge a base rate for service and charge an additional amount for all gallons used.
Rate for each 1,000 gallons above the base amount:	The dollar amount per thousand gallons a homeowner must pay after using the specified monthly amount.

Report #5: Fiscal Data

This report consists of the entity's budget and includes the primary breakdown of the annual budget. Details of funding capabilities and liabilities are also covered in this report. The individual fields are defined below:

System Budget:	The total annual operating budget.
Operation & Maintenance:	The annual dollar amount allocated to maintain, repair, and operate the water system.
Water Quality Testing:	The dollar amount of the annual budget that is allocated to meet water quality testing requirements.
Sinking Fund Contributions:	The dollar amount of the annual budget that is allocated to a sinking fund. If the value is zero the entity does not regularly contribute to a sinking fund.
Emergency | Replacement Fund:	The dollar amount of the annual budget that is allocated to an emergency|replacement fund. If the value is zero the entity does not regularly contribute to a sinking fund.
Water Bill Revenues:	The dollar amount of the annual revenues from water bills.
Tap Fees Revenues:	The dollar amount of the annual revenues from tap fees.
Is The System Self Supporting:	Yes or No, if the revenues generated by billing fully cover the system operating costs.
Other Funding Sources | What Are The Sources:	Other organizations or areas of funding that are utilized by the entity to support system construction, repairs or maintenance.

Report #6: Wellhead Protection and Conservation Measures

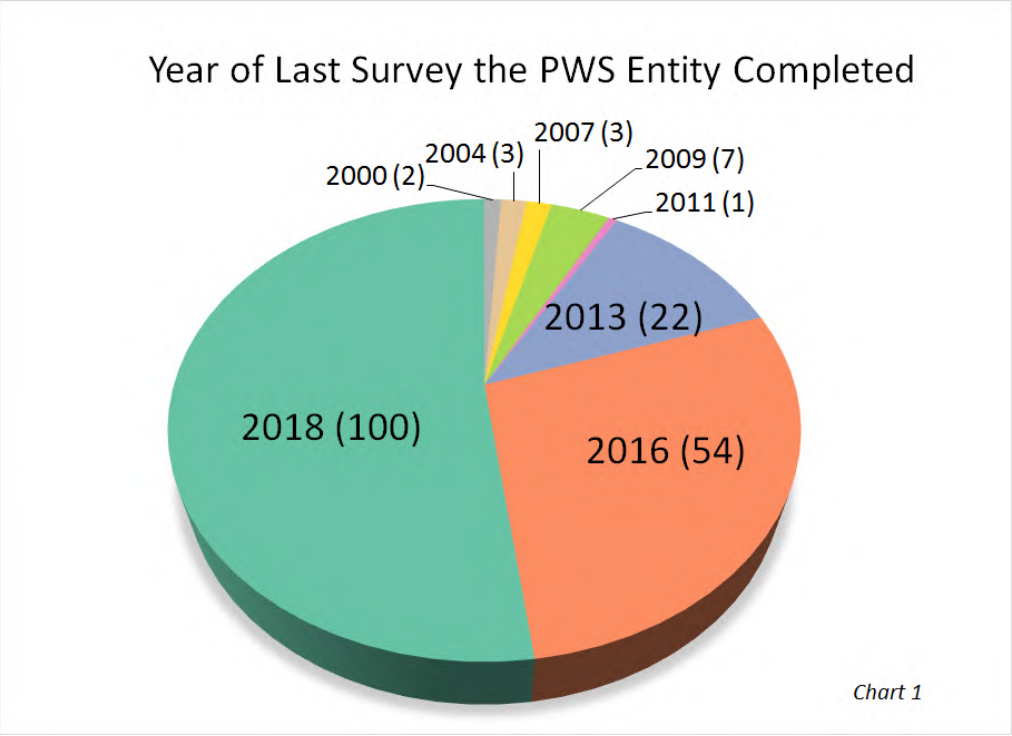
The Wellhead Protection and Conservation Measures Reports are designed to give additional information on wells located in an entity and the conservation practices in place. The individual fields are defined below:

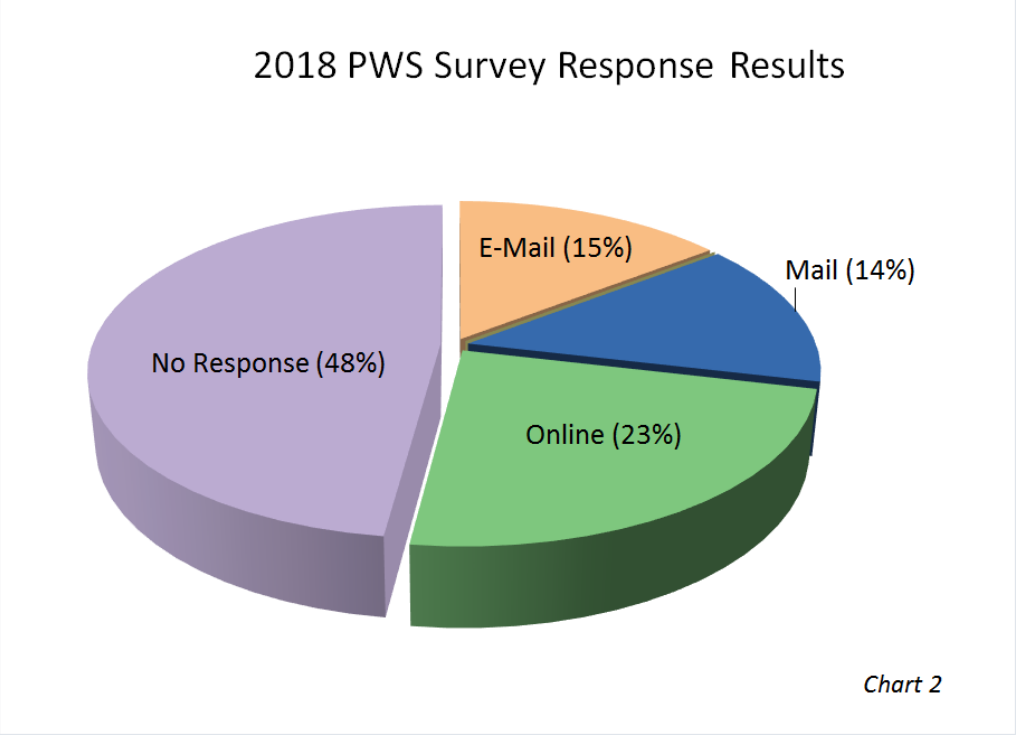
Number of Wells:	The number of wells used by an entity.
Well Depth:	The depth of all wells located in an entity in feet. In some cases, average depth was given for multiple wells.
Wellhead Protection:	Yes or No, if the entity presently has a wellhead or source water protection plan in place.
Types of Conservation Measures:	Programs supported by the entity to reduce water consumption and increase public awareness about water conservation.
Estimated Water Savings:	Estimated water savings from conservation practices.

*Entities with red font did not respond to the current survey or did not answer; data of last survey completed given.

Wyoming Public Water System Survey General Statistics:

A total of 192 Public Water Systems (PWS) are listed in the WRDS database. From those, 100 Public Water System Entities responded (2016 survey had 139 respondents), 2 are new entities for this survey, 2 are no longer operating, and 9 of the entities contact information was out of date and unreachable. 92 entities have not completed a survey since 2013 at the earliest (C*hart 1*). Survey response methods varied: 45 (45%) were taken online, 28 (28%) were sent in by email, 27 (27%) by mail, and 92 (48%) did not respond to the survey (*Chart 2*).





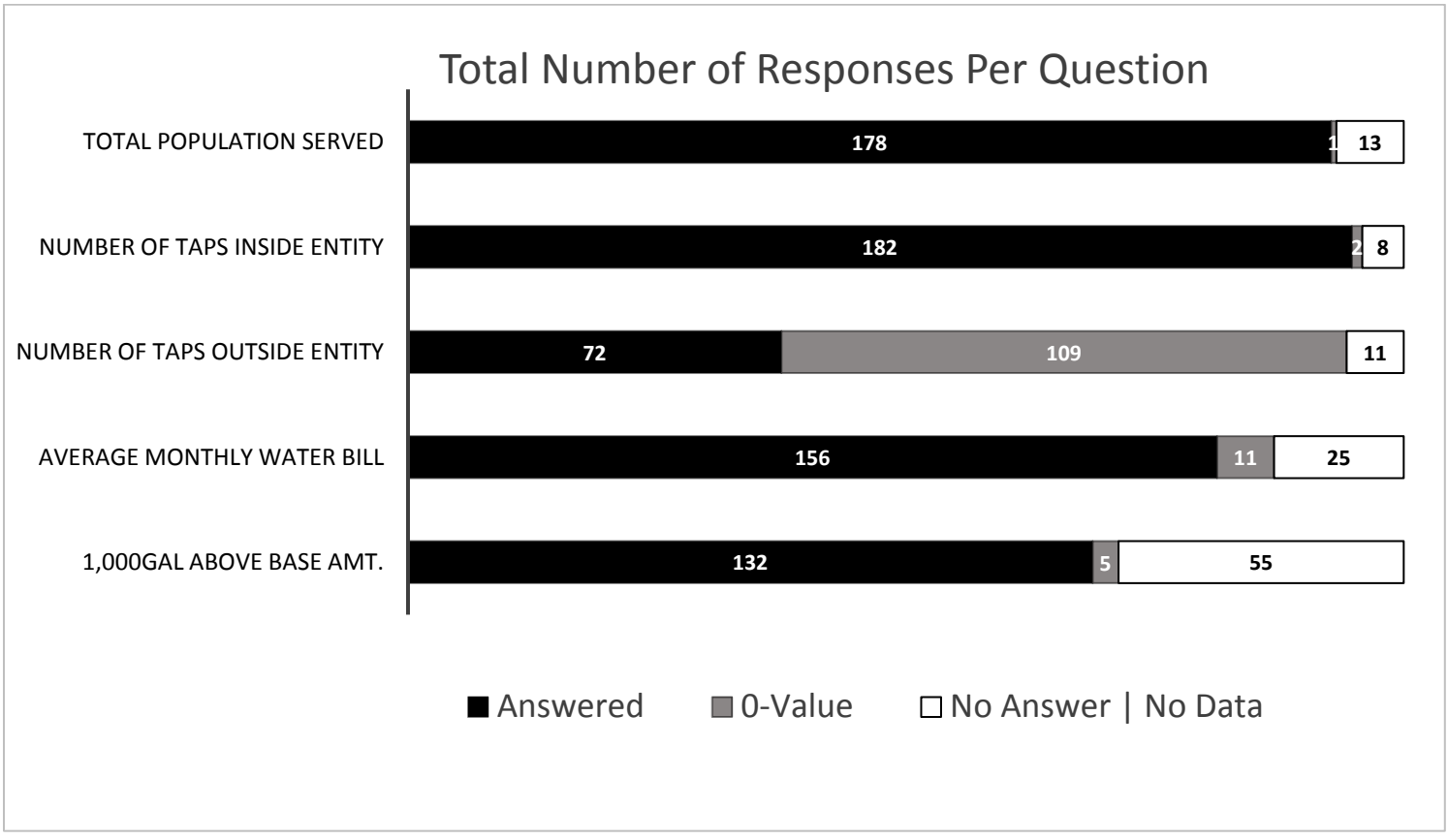
The table below provides basic information for public water use across the state. The survey data were reviewed and tabulated, with unexplained outliers removed to provide averages and totals for water use, rates and general fiscal information.

In previous years, the Total Population Served statistic included systems that sold water to other entities. In this report, any population that has been determined to be served by a consecutive system, and consequently double counted by the parent system, has been removed from the total count.

	Total Amount	Average
Total Population Served	480,512	
Number of Taps in Entity	196,695	
Number of Taps outside Entity	18,790	
Number of Wells	446	
Number of Springs	45	
Total System Capacity (gal/day)	408,106,562	
Total Raw Water Storage (gal)	27,908,622,134	
Total Treated Water Storage (gal)	293,606,161	
Total Annual System Water Use (gal)	38,890,430,875	
Peak Day System Water Use (gal)	12,191,522,436	
Percentage of System Metered		80%
Residential Tap Fees	$253,732	$1,922
Residential Base Water Rate		$34
Residential: Gallons included in Base Water Rate	970646	
Commercial Tap Fees	$194,794	$2,214
Commercial Base Water Rate		$60
Commercial: Gallons included in Base Water Rate		$7,930
Average Monthly Water Bill		$40
Rate for Each 1,000 gal above Base Amount		$2
Household Bill for Using 10,000 gal/month		$48
Household Bill for Using 20,000 gal/month		$71
Annual Budget for the System	$197,376,231	$1,290,041
Annual Operation & Maintenance	$74,572,138	$507,293
Annual Water Quality Testing Cost	$897,702	$5,541
Emergency | Replacement Fund	$93,708,889	$637,475
Annual Sinking Fund Contributions	$8,638,715	$68,561
Water Bill Revenues	$109,375,508	$804,232

The chart below displays the total number of responses per question from a subset of the previous table's questions. If a question in the survey had a response then the number of entities that answered it is displayed in black; if the question had a "0" value entered it is displayed in grey; and if the question was left blank a 'No Answer | No Data' label is displayed in white. The number in the column is the total response count for each category.

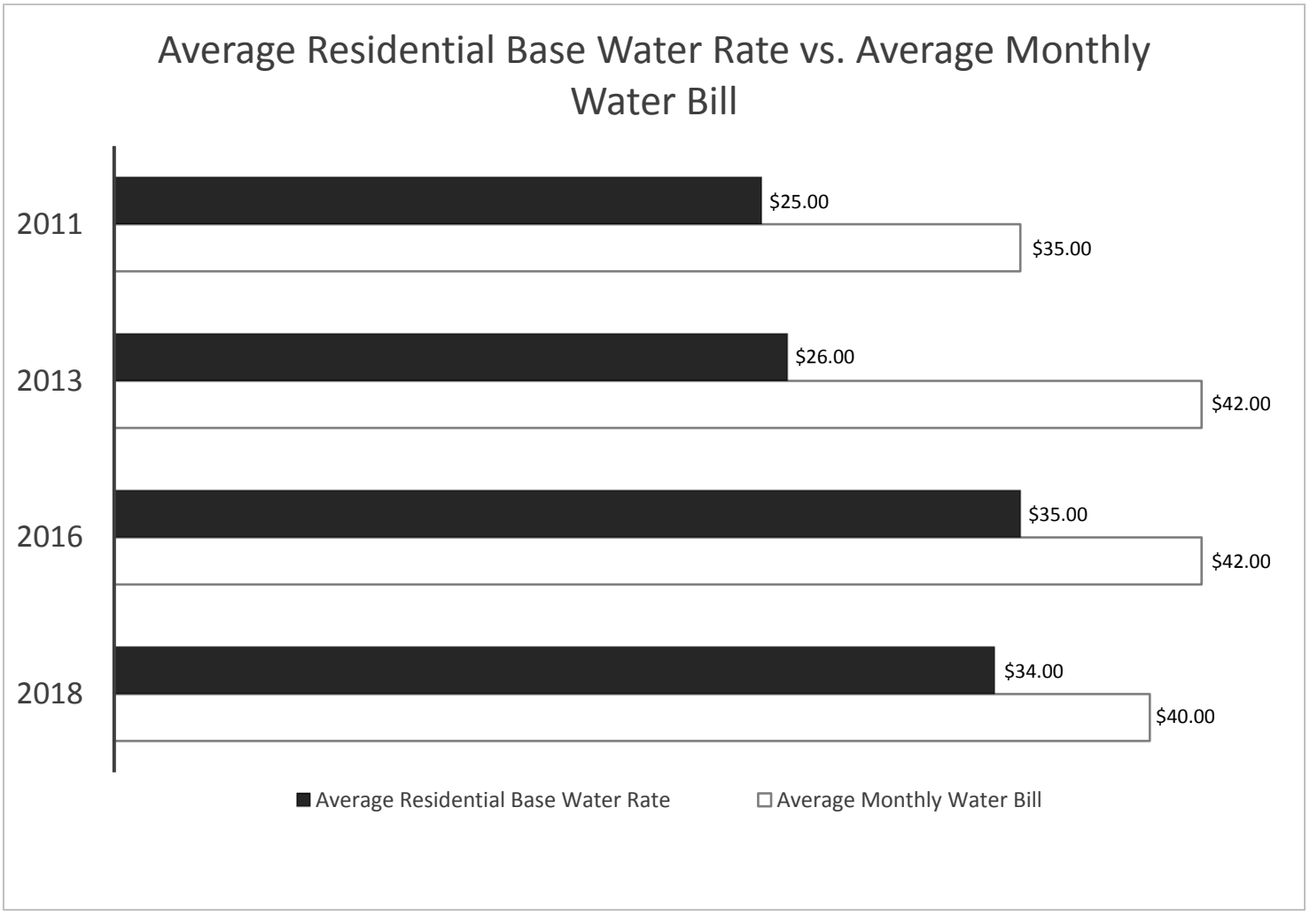
These data give us a sense of data completeness for a given answer as all entities did not answer every question. For example the question "Number of Taps inside an Entity", 182 entities gave an answer, 2 entities entered in a 0-value and 8 did not answer the question. Therefore 95% of the entities completed this question, and the more times a question is answered the more confident we can be in the general results derived from that question. Whereas, any summary results that we tabulate from a question with fewer responses may not be indicative of a larger trend, making us slightly less confident in the quality of the results.



The following table displays the responses for the yes/no survey questions. If the question was left blank in the survey a 'No Data' response was noted and tabulated in the last column.

	Yes	No	No Data
The Entity Bills by Meter	137	45	10
Water System Self-Supporting	141	33	18
Wellhead Protection Plan in Place	89	61	42

A comparison of the Average Residential Base Water Rate and Average Monthly Water Bill for the last three survey is shown in the table below. The Y-axis displays data from the year of the survey and the X-axis is the dollar amount. From 2011 to 2016, an increase in the Average Residential Base Water Rate is shown, and then slightly decreased between 2016 and 2018. The Average Monthly Water Bill had an increase between 2011 and 2013 but between 2013 and 2016 has remained the same, followed by a decrease in 2018.



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1	1/6/2016	Afton, Town of	Municipality	5600002C	PO Box 310	Afton	WY	83110	Lincoln	(307) 885-9831
2	4/14/2018	Air Base Acres I&S District	District	5600080C	2814 Burris Road	Casper	WY	82604	Natrona	(307) 251-2118
3	3/20/2018	Albin, Town of	Municipality	5600189C	PO Box 188	Albin	WY	82050	Albany	(307) 246-3386
4	3/5/2009	Alpine	Municipality	5600156C	PO Box 3070	Alpine	WY	83128	Lincoln	(307) 654-7754
5	11/12/2015	American Road Water & Sewer District	Special District	5600968C	PO Box 2874	Gillette	WY	82717	Campbell	(307) 685-8235
6	3/19/2018	Antelope Valley Improvement & Service District	District	5600251C	PO Box 2917	Gillette	WY	82717	Campbell	(307) 299-3544
7	2/22/2018	Aspens Pines Water & Sewer District	District	5600220C	PO Box 716	Wilson	WY	83014	Teton	(307) 739-9777
8	6/4/2013	Avalon Mobile Manor	Mobile Home Park	5600266C	429 Gardenia Dr.	Cheyenne	WY	82009	Laramie	(307) 635-1645
9	3/1/2018	Baggs, Town of	Municipality	5600058C	130 Penland St	Baggs	WY	82321	Carbon	(307) 380-7335
10	3/21/2018	Bairoil, Town of	Municipality	5600003C	1101 Antelope Dr, P.O. Box 58	Bairoil	WY	82322	Sweetwater	(307) 324-7653
11	9/30/2013	Basin, Town of	Municipality	5600004C	PO Box 599	Basin	WY	82410	Big Horn	(307) 568-3331
12	1/25/2018	Bear River Regional Joint Powers Board	Joint Powers Board	5601019C	81 Elk Drive	Bear River	WY	82930	Uinta	(307) 789-2800
13	6/19/2013	Bedford Water & Sewer, District	District	5600006C	PO Box 4144, 219 B Street	Bedford	WY	83112	Lincoln	(307) 883-4144
14	11/12/2015	Bennor Estates Improvement & Service District	Special District	5601596C	PO Box 2544	Gillette	WY	82717	Campbell	(307) 685-8235
15	1/26/2016	Big Horn Regional Joint Powers Board	JPB	5601630C	PO Box 346	Worland	WY	82401	Washakie	(307) 347-4042
16	6/12/2013	Big Piney, Town of	Municipality	5600007C	PO Box 70	Big Piney	WY	83113	Sublette	(307) 260-6362
17	7/3/2013	Big Valley & Crossed Arrows Improvement District	District	5601193C	PO Box 33	Meeteetse	WY	82133	Park	(307) 868-2644
18	2/16/2018	Bridger Valley Joint Powers Board	Joint Powers Board	5600757C	5716 S. Hwy 410	Mountain View	WY	82932	Uinta	(307) 782-3130
19	3/27/2018	Broken Wheel Ranch Improvement & Service District	District	5601625C	PO Box 3573	Alpine	WY	83128	Lincoln	(307) 654-6770
20	2/22/2018	Buffalo Valley Water District	District	5600435C	PO Box 321	Moran	WY	83013	Teton	(307) 543-2555
21	2/27/2018	Buffalo, City of	Municipality	560005C	46 N. Main St	Buffalo	WY	82834	Johnson	(307) 684-7335
22	2/21/2018	Burlington, Town of	Municipality	5601098C	PO Box 38	Burlington	WY	82411	Big Horn	(307)762-3502
23	2/5/2018	Burns, Town of	Municipality	5600188C	PO Box 247	Burns	WY	82056	Laramie	(307) 547-2206
24	3/27/2018	Byron, Town of	Municipality	5600008C	35 S. Pryor	Byron	WY	82412	Big Horn	(307) 548-7490
25	1/10/2016	Cambria Improvement and Service District	District	5601028C	PO Box 91	Newcastle	WY	82701	Weston	(307) 746-8057
26	1/10/2016	Canyon Improvement and Service District	District	5601632C	PO Box 111	Newcastle	WY	82701	Weston	(307) 746-8057
27	4/19/2018	Casper, City of	Municipality	5601415C	200 N David Street	Casper	WY	82601	Natrona	(307) 235-7543
28	4/19/2018	Casper, City of | Central Wyoming Regional Water System	Joint Powers Board	5600009C	200 N David Street	Casper	WY	82601	Natrona	(307) 235-7543
29	9/16/1999	Cedar Hills Water Association	Company	5600780C	PO Box 2917	Gillette	WY	82717	Campbell	(307) 299-9911
30	2/9/2016	Centennial Water District	Municipality	5601232C	14 Fox Creek Rd	Laramie	WY	82070	Albany	(307) 742-5629

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31	3/28/2018	Cheyenne Board of Public Utilities, City of	Municipality	5600011C	2416 Snyder Ave	Cheyenne	WY	82001	Laramie	(307) 637-6415
32	1/28/2018	Chugwater, Town of	Municipality	5600200C	PO Box 151	Chugwater	WY	82210	Platte	(307) 422-3369
33	1/29/2018	Clearmont, Town of	Municipality	5600013C	PO Box 127	Clearmont	WY	82835	Sheridan	(307) 758-4465
34	2/5/2018	Clearview Improvement & Service District	District	5600091C	PO Box 2634	Rock Springs	WY	82902	Sweetwater	(307) 362-1140
35	10/7/2015	Cody, City of	Municipality	5600207C	PO Box 2200	Cody	WY	82414	Park	(307) 527-7511
36	1/11/2016	Cokeville, Town of	Municipality	5600015C	110 Pine St	Cokeville	WY	83114	Lincoln	(307) 279-3227
37	11/12/2015	Cook Road Water District	Special District	5601399C	PO Box 2682	Gillette	WY	82717	Campbell	(307) 685-8235
38	1/6/2016	Cooper Subdivision Mobile Home Park	Private Company	5601450C	1217 Lane 8	Powell	WY	82435	Park	(307) 202-1260
39	2/16/2018	Cottonwood Acres Subdivision	Community	5601233C	1957 Rd 84	Lingle	WY	82223	Goshen	(307) 575-4624
40	9/5/2007	Countryside Court	Private Company	5600756C	Box 2974	Mills	WY	82644	Natrona	(307) 265-0925
41	3/11/2009	Countryside Water Users, Inc.	Private Company	5600192C	PO Box 2917	Gillette	WY	82717	Campbell	(307) 299-9911
42	2/2/2018	Cowley, Town of	Municipality	5600206C	PO Box 635	Cowley	WY	82420	Big Horn	(307) 548-7700
43	11/12/2015	Crestview Improvement & Service District (formerly Crestview Estates Subdivision)	Special District	5600853C	PO Box 1626	Gillette	WY	82717	Campbell	(307) 685-8235
44	6/19/2013	Dave Johnston Power Plant	Industrial-Non-transient/non-community PWS	5600291C	1591 Tank Farm Rd.	Glenrock	WY	82637	Converse	(307) 995-5150
45	2/20/2018	Dayton, Town of	Municipality	5600202C	PO Box 100	Dayton	WY	82836	Sheridan	(307) 655-2217
46	3/1/2018	Deaver, Town of	Municipality	5600016C	PO Box 207	Deaver	WY	82421	Big Horn	(307) 664-2736
47	6/24/2013	Dillman Estates	Private Homeowners Association	5601248C	7615A Road 39G	Torrington	WY	82240	Goshen	(307) 532-8756
48	3/1/2018	Dixon, Town of	Municipality	5600059C	PO Box 38	Dixon	WY	82323	Carbon	(307) 383-2555
49	3/12/2018	Douglas, Town of	Municipality	5600137C	420 W. Grant	Douglas	WY	82633	Converse	(307) 358-9750
50	2/20/2018	Dubois, Town of	Municipality	5600177C	PO Box 555	Dubois	WY	82513	Fremont	(307) 455-2345
51	2/10/2016	East Thermopolis, Town of	Municipality	5600226C	112 East Warren	Thermopolis	WY	82443	Hot Springs	(307) 864-9221
52	6/21/2013	Edgerton, Town of	Municipality	5600017C	PO Box 407; 311 N. 2nd	Edgerton	WY	82635	Natrona	(307) 437-6763
53	11/12/2015	Eight Mile Improvement & Service District	Special District	5600829C	PO Box 471	Gillette	WY	82717	Campbell	(307) 685-8235
54	2/1/2016	Elk Mountain, Town of	Municipality	5600065C	PO Box 17	Elk Mountain	WY	82324	Carbon	(307) 348-7388

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55	1/31/2018	Encampment, Town of	Municipality	5600060C	PO Box 5	Encampment	WY	82325	Carbon	(307) 327-5501
56	8/10/2009	Etna Water & Sewer District	Municipality	5600157C	PO Box 5031	Etna	WY	83118	Lincoln	(307) 883-4198
57	2/7/2018	Evanston, Town of	Municipality	5600150C	266 Ortega Ct	Evanston	WY	82930	Uinta	(307) 677-1388
58	1/20/2016	Evansville, Town of	Municipality	5600018C	PO Drawer 158	Evansville	WY	82363	Natrona	(307) 234-9678
59	2/20/2011	Fairview Water & Sewer District	Private	5600166C	PO Box 1617	Afton	WY	83110	Lincoln	(307) 887-9077
60	5/2/2013	Force Road Joint Powers Board	Joint Powers Board	5600148C	PO Box 260	Upton	WY	82730	Weston	(307) 468-2427
61	1/29/2018	Fort Laramie, Town of	Town Municipality	5600185C	PO Box 117	Fort Laramie	WY	82212	Goshen	(307) 837-2711 Ext. 2
62	11/12/2015	Fox Ridge Subdivision Improvement & Service District	Special District	5601615C	PO Box 4314	Gillette	WY	82717	Campbell	(307) 685-8235
63	1/5/2016	Frannie, Town of	Municipality	5600210C	PO Box 72	Frannie	WY	82423	Big Horn/Park	(307) 664-2323
64	11/12/2015	Freedom Hills Improvement and Service District	Special District	5600789C	PO Box 4432	Gillette	WY	82717	Campbell	(307) 685-8235
65	4/1/2009	Gardens North Home Owners Association	Private Company	5600774C	1101 E. Park Ave.	Riverton	WY	82501	Fremont	(307) 709-4375
66	2/15/2018	Gillette, City of	Municipality	5600019C	PO Box 3003	Gillette	WY	82717	Campbell	(307) 686-5276
67	1/24/2018	Glendo, Town of	Municipality	5600231C	PO Box 396	Glendo	WY	82213	Platte	(307) 735-4242
68	2/10/2016	Glenrock, Town of	Municipality	5600199C	219 South 3rd	Glenrock	WY	82637	Converse	(307) 436-4294
69	11/12/2015	Grace Land Improvement & Service District	Special District	0000001C	PO Box 2384	Gillette	WY	82717	Campbell	(307) 685-8235
70	2/1/2002	Granger, Town of	Municipality/Town	5600020C	PO Box 42	Granger	WY	82934	Sweetwater	(307) 875-5557
71	2/1/2016	Greater Smoot Water & Sewer District	District	5601937C	PO Box 76	Smoot	WY	83126	Lincoln	(307) 886-9330
72	2/20/2018	Green River, City of	Municipality	5601181C	50 E 2nd North	Green River	WY	82935	Sweetwater	(307) 872-2542
73	4/17/2018	Green River/Rock Spring/Sw. Co Joint Powers Board	Joint Powers Board	5600050C	PO Box 1299	Green River	WY	82935	Sweetwater	(307) 875-4317
74	3/13/2018	Green Valley Estates Improvement & Service District	Improvement & Service District	5601245C	111 Arrow Drive	Gillette	WY	82716	Campbell	(307) 686-3869
75	2/22/2018	Greybull, Town of	Municipality	5600022C	PO Box 271	Greybull	WY	82426	Big Horn	(307) 765-9431
76	2/13/2018	Gros Ventre North HOA	Water District	5601357C	PO Box 775	Wilson	WY	83014	Teton	(307) 690-5512
77	3/5/2018	Guernsey, Town of	Municipality	5600023C	PO Box 667	Guernsey	WY	82214	Platte	(307) 836-2335
78	12/9/2015	Hanna, Town of	Municipality	5600025C	PO Box 99	Hanna	WY	82327	Carbon	(307) 325-9424

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79	2/3/2016	Happy Valley Pipeline	Private	5600153C	3272 HWY 241	Afton	WY	83110	Lincoln	(307) 887-1626
80	7/1/2013	Hartville, Town of	Municipality/Town	5600186C	PO Box A	Hartville	WY	82215	Platte	(307) 836-2288
81	5/2/2013	Heritage Village Water & Sewer District	District	5600249C	PO Box 260	Upton	WY	82730	Weston	(307) 468-2427
82	2/21/2018	Hudson, Town of	Municipality	5600183C	PO Box 565	Hudson	WY	82515	Fremont	(307) 332-3605
83	3/27/2018	Hulett, Town of	Municipality	5600026C	PO Box 278	Hulett	WY	82720	Crook	(307) 467-5771
84	1/30/2018	Indian Paintbrush Water District	District	5324206C	PO Box 1985	Wilson	WY	83014	Teton	(307) 733-5459
85	6/13/2013	Jackson, Town of	Municipality	5600213C	PO Box 1687	Jackson	WY	83001	Teton	(307) 733-3079
86	1/25/2018	Jeffrey City Water and Sewer District	District	5600106C	PO Box 100	Jeffrey City	WY	82310	Fremont	(307) 540-8003
87	8/2/2013	Juby's Mobile Home Park	Private Company	5601496C	938 19th St.	Cody	WY	82414	Park	(307) 899-0576
88	1/15/2016	Kaycee, Town of	Municipality	5600196C	PO Box 265	Kaycee	WY	82639	Johnson	(307) 738-2301
89	1/29/2018	Kemmerer-Diamondville JPB	Joint Powers Board	5600028C	PO Box 1020	Kemmerer	WY	83101	Lincoln	(307) 877-2261
90	5/8/2018	LaBarge, Town of	Municipality	5600222C	PO Box 327	LaBarge	WY	83123	Lincoln	(307) 286-2676
91	3/1/2018	LaGrange, Town of	Municipality	5600788C	PO Box 185	LaGrange	WY	82221	Goshen	(307) 834-2466
92	11/18/2015	Lance Creek Water & Sewer District	District	5600109C	PO BOX 133	Lance Creek	WY	82222	Niobrara	(307) 334-2942
93	2/13/2018	Lander, City of	Municipality	5600176C	240 Lincoln St	Lander	WY	82520	Fremont	(307) 332-2870
94	2/23/2018	Laramie, City of	Municipality	5600029C	PO Box C	Laramie	WY	82073	Albany	(307) 721-5206
95	2/2/2018	Lingle, Town of	Municipality	560003C	PO Box 448	Lingle	WY	82223	Goshen	(307) 837-24222
96	3/20/2018	Lovell, Town of	Municipality	5600031C	PO Box 188	Lovell	WY	82431	Big Horn	(307) 548-6651
97	5/8/2013	Lucerne Water & Sewer District	District	5600935C	PO Box 611	Thermopolis	WY	82443	Hot Springs	(307) 864-5659
98	3/19/2018	Lusk, Town of	Municipality	5600032C	PO Box 390	Lusk	WY	82225	Niobrara	(307) 334-3612
99	6/25/2004	Lyman, Town of	Municipality/Town	5600033C	PO Box 300	Lyman	WY	82937	Uinta	(307) 787-6018
100	1/6/2015	Manderson, Town of	Municipality	5600204C	PO Box 96	Manderson	WY	82432	Big Horn	(307) 568-2680
101	2/21/2018	Marbleton, Town of	Municipality	5600223C	10700 hwy 189	Marbleton	WY	83113	Sublette	(307) 276-3815
102	11/12/2015	Meadow Springs Improvement & Service District	Special District	5601507C	PO Box 471	Gillette	WY	82717	Campbell	(307) 685-8235
103	11/12/2015	Means First Extension Water & Sewer District	Special District	5600760C	PO Box 1661	Gillette	WY	82717	Campbell	(307) 685-8235
104	1/26/2018	Medicine Bow, Town of	Municipality	5600034C	PO Box 156	Medicine Bow	WY	82329	Carbon	(307) 379-2225
105	1/26/2018	Meeteetsee, Town of	Municipality	5600035C	PO Box 38	Meeteetse	WY	82433	Park	(307) 868-2278

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106	4/17/2018	Melody Ranch Improvement and Service District	District	5601440C	PO Box 4337	Jackson	WY	83001	Teton	(307) 690-1183
107	2/10/2016	Midwest, Town of	Municipality	5600201C	PO Box 190	Midwest	WY	82643	Natrona	(307) 473-6513
108	10/14/2015	Miller Lower Mobile Home Park	Private Company	5600051C	6414 N. College Dr.	Cheyenne	WY	82009	Laramie	(307) 634-3286
109	2/21/2018	Mills, Town of	Municipality	5600036C	PO Box 789	Mills	WY	82644	Natrona	(307) 235-1378
110	2/3/2016	Moorcroft, Town of	Municipality	5600037C	PO Box 70	Moorcroft	WY	82721	Crook	(307) 756-3526
111	8/22/2007	Mountain View Estates	District	5601270C	7409 Julia Rd	Cheyenne	WY	82009	Laramie	(307) 637-8419
112	5/7/2013	Mountain View, Town of	Municipality	5600847C	PO Box 249	Mountain View	WY	82939	Uinta	(307) 782-3100
113	4/6/2018	Natrona County International Airport	County	5600079C	8500 Airport Parkway	Casper	WY	82604	Natrona	(307) 472-6688
114	1/5/2016	Newcastle, City of	Municipality	5600256C	10 W Warwick	Newcastle	WY	82701	Weston	(307) 746-3535
115	8/6/2013	North Platte Water & Sewer District	District	5600081C	PO Box 614	Casper	WY	82602	Natrona	(307) 237-1257
117	1/31/2018	Northwest Rural Water District	District	5601254C	PO Box 2347	Cody	WY	82414	Park	(307) 527-4426
118	2/21/2018	Opal, Town of	Municipality	5600835C	PO Box 130	Opal	WY	83124	Lincoln	(307) 877-3919
119	1/24/2018	Orchard Valley Water Co.	Municipality	5600012C	2209 S. 3rd Ave.	Cheyenne	WY	82007	Laramie	(307) 632-0162
120	1/10/2016	Osage Water District	District	5600038C	PO Box 83	Osage	WY	82723	Weston	(307) 746-8057
121	9/30/2015	Osmond Pipeline Company	Private	5600154C	PO Box 858	Afton	WY	83110	Lincoln	(307) 866-9540
123	3/19/2018	Peoples Improvement and Service District	District	5600898C	2805 Grandview Drive	Gillette	WY	82718	Campbell	(307) 682-2060
124	2/21/2018	Pine Bluffs, Town of	Municipality	5600040C	PO Box 429	Pine Bluffs	WY	82082	Laramie	(307) 245-3746
125	2/12/2018	Pine Haven, Town of	Municipality	5600191C	24 Waters Dr	Pine Haven	WY	82721	Crook	(307) 756-9807
126	3/5/2009	Pinedale Municipal Water System	Municipality	5600041C	PO Box 709	Pinedale	WY	82941	Sublette	(307) 749-7771
127	11/12/2015	Pineview Im. & Svc. District (formerly: Glory Hole Homeowners Association)	Special District	5601490C	PO Box 3827	Gillette	WY	82717	Campbell	(307) 685-8235
128	2/21/2018	Pioneer Water & Sewer District	District	5600828C	8917 Poison Spider Rd	Casper	WY	82604	Natrona	(307) 472-7300
129	1/11/2016	Pleasant View Water Co, Inc.	Private Water Co.	5600082C	PO Box 443	Mills	WY	82604	Natrona	(307) 266-0048
130	2/2/2018	Point of Rocks, Town of	Private Company	560093C	MP 130 I-80	Point of Rocks	WY	82942	Sweetwater	(307) 350-4185
131	3/19/2018	Poison Spider Improvement & Service District	District	5600073C	4420 S 12 Mile Rd	Casper	WY	82604	Natrona	(307) 267-4628
132	4/25/2018	Powell, City of	Municipality	5600042C	270 N Clark Street	Powell	WY	82435	Park	(307) 754-9803
133	11/12/2015	Rafter D Improvement & Service District	Special District	5601609C	PO Box 432	Gillette	WY	82717	Campbell	(307) 685-8235
134	3/20/2018	Rafter J ISD	Private Company	5600822C	2951 Big Trail Dr	Jackson	WY	83001	Teton	(307) 733-5262

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136	2/7/2018	Ranchester, Town of	Municipality	5600044C	PO Box 695	Ranchester	WY	82839	Sheridan	(307) 655-7702
137	9/25/2013	Rawlins, City of	Municipality	WY56000045	PO Box 953	Rawlins	WY	82301	Carbon	(307) 328-4564
138	1/5/2016	Red Lane Domestic Water, Inc.	Private Company	5600232C	250 HWY 20 N.	Thermopolis	WY	82443	Hot Springs	(307) 864-3265
139	2/1/2018	Riverside Mobile Home Court LLC	Private Company	5600072C; 5601641C	1250 N Center	Casper	WY	82601	Natrona	(307) 234-6871
140	2/20/2018	Riverton, City of	Municipality	5600047C	816 N. Federal Blvd	Riverton	WY	82501	Fremont	(307) 856-3687
141	2/13/2018	Rock River, Town of	Municipality	5600048C	PO Box 280	Rock River	WY	82083	Albany	(307) 460-8752
142	2/26/2018	Rock Springs, City of	Municipality	5601182C	212 D Street	Rock Springs	WY	82901	Sweetwater	(307) 352-1405
143	1/31/2018	Rolling Hills, Town of	Municipality	5600782C	38 South Badger Road	Rolling Hills	WY	82637	Converse	(307) 436-5348
144	11/12/2015	Rozet Ranchettes Improvement & Service District	Special District	5601620C	PO Box 3290	Gillette	WY	82717	Campbell	(307) 685-8235
145	2/2/2018	Salt Creek Joint Powers Board	Joint Powers Board		PO. Box 146	Midwest	WY	82643	Natrona	(307) 437-6513
146	8/14/2017	Saratoga, Town of	Municipality	5600061C	PO Box 486	Saratoga	WY	82331	Carbon	(307) 326-8335
147	6/26/2013	Shell Valley West Water & Sewer	District	5601272C	917 W. 5th	Greybull	WY	82426	Big Horn	(307) 765-9201
148	1/13/2016	Shell Water Users, Inc.	District	5600205C	917 W. 5th	Greybull	WY	82426	Big Horn	(307) 765-9201
149	2/15/2018	Sheridan, City of	Municipality	5600052C	PO Box 848	Sheridan	WY	82801	Sheridan	(307) 675-4233
150	11/10/2015	Shoshone Municipal Pipeline	JPB	5601198C	50 Agua Via	Cody	WY	82414	Park	(307) 527-6492
151	12/15/2015	Shoshoni, Town of	Municipality	5600053C	PO BOX 267	Shoshoni	WY	82649	Fremont	(307) 876-2515
152	3/19/2018	Sierra Madre Water & Sewer Joint Powers Board	Joint Powers Board	5601332C	PO Box 263	Encampment	WY	82325	Carbon	(307) 327-5084
153	1/28/2018	Sinclair, Town of	Municipality	5600054C	PO Box 247	Sinclair	WY	82334	Carbon	(307) 324-3058
155	8/20/2007	Sleepy Hollow Subdivision (formerly Central Campbell County Improvement & Service District)	District	5600764C	6304 Irving Blvd.	Gillette	WY	82718	Campbell	(307) 686-1221
156	9/30/2013	South Big Horn County JPB	Joint Powers Board	5601454C	PO Box 599	Basin	WY	82410	Big Horn	(307) 568-3331
157	2/28/2018	South Cheyenne Water and Sewer District	District	5600239C	215 E Allison Rd	Cheyenne	WY	82007	Laramie	(307) 635-5608
159	2/3/2016	South Fork Improvement & Service District	District	5600832C	5407 Roany Rd.	Gillette	WY	82718	Campbell	(307) 682-4208
160	10/13/2015	South of Laramie Water & Sewer District	District	5601393C	2461 County Shop Rd.	Laramie	WY	82070	Albany	(307) 742-8955

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161	5/7/2013	South Thermopolis Water & Sewer District	Water District	5601083	PO Box 889	Thermopolis	WY	82443	Hot Springs	(307) 921-9269
162	3/20/2018	South Torrington Water & Sewer District	Special District	5600168C	371 East 6th Avenue	Torrington	WY	82240	Goshen	(307) 532-3900
163	2/9/2018	South Worland Water Users	Non profit private company	5600235C	103 Country Dr	Worland	WY	82401	Washakie	(307) 347-2117
164	5/7/2009	Southside Well I&S District	District	5600122C	PO Box 2917	Gillette	WY	82717	Campbell	(307) 299-9911
165	3/28/2000	Spring Creek Improvement District	District	5600811C	PO Box 7692	Jackson	WY	83001	Teton	(307) 880-0427
166	7/30/2004	Squaw Creek Water District	District	5600737C	PO Box 7692	Jackson	WY	83001	Teton	(307) 880-0427
167	1/25/2018	Star Valley Ranch, Town of	Municipality	5600287C	560 Middle Branch Drive #7028	Star Valley Ranch	WY	83127	Lincoln	(307) 883-8696
168	4/28/2018	Star Valley Trailer Court	Private Company	5601017C	PO Box 1388	Afton	WY	83110	Lincoln	(307) 886-9774
169	11/12/2015	Stone Gate Estates Improvement & Service District	District	5601329C	PO Box 992	Gillette	WY	82717	Campbell	(307) 685-8235
170	2/27/2018	Sundance West Water District	District		PO Box 1503	Sundance	WY	82729	Crook	(307) 761-0106
171	2/9/2018	Sundance, City of	Municipality	5600055C	PO Box 542	Sundance	WY	82729	Crook	(307) 283-3451
172	2/21/2018	Sundance, City of (In cooperation with Sundance West Homeowners Association	Municipality		PO Box 542	Sundance	Wy	82729	Crook	(307) 283-3451
173	7/31/2009	Sunridge Estates	Private Company	5601225C	1101 E. Park Ave.	Riverton	WY	82501	Fremont	(307) 709-4375
174	1/10/2016	Sunset Ranch Water District	District	5601633C	PO Box 624	Newcastle	WY	82701	Weston	(307) 746-8057
175	11/9/2015	Superior, Town of	Municipality	5600092C	PO Box 40	Superior	WY	82945	Sweetwater	(307) 362-8173
176	10/1/2013	Sylvan Bay Homeowners Assn.	Company	5601111C	853 Burr Dr.	Rock Springs	WY	82901	Sublette	(307) 872-2178
177	1/19/2016	Targhee Town Water District	District	5600787C	PO Box 1137	Alta	WY	83414	Teton	(307) 413-7983
178	2/10/2016	Ten Sleep, Town of	Municipality	5600203C	PO Box 5	Ten Sleep	WY	82442	Washakie	(307) 366-2265
179	2/21/2018	Teton Village Water & Sewer District	District	5600218C	PO Box 586	Teton Village	WY	83025	Teton	(307) 733-9231
180	2/27/2018	Thayne, Town of	Municipality	5600159C	PO Box 298	Thayne	WY	83127	Lincoln	(307) 880-2668
181	2/27/2018	Thermopolis, Town of	Municipality	5600056C	420 Broadway Street	Thermopolis	WY	82443	Hot Springs	(307) 864-9285
182	4/13/2018	Torrington, City of	Municipality	5600164C	436 East 22nd Ave	Torrington	WY	82240	Goshen	(307) 532-5666
183	2/2/2016	Upton, Town of	Municipality	5600140C	PO Box 203	Upton	WY	82730	Weston	(307) 468-2441
184	3/20/2018	Vista West Improvement & Service District	District	5600246C	PO Box 851	Sundance	WY	82729	Crook	(307) 290-2777
185	1/26/2018	Vista West Water Co	Private Company	5300069C	PO Box 565	Casper	WY	82602	Natrona	(307) 237-2507
186	5/21/2013	Wamsutter, Town of	Municipality	5600105C	231 McCormick St.	Wamsutter	WY	82336	Sweetwater	(307) 328-0468

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187	./24/2018	Wardwell Water & Sewer District	District	5600067C	PO Box 728	Mills	WY	82644	Natrona	(307) 265-7034
188	./28/2018	Warm Springs Water District	District	5600186C	PO Box 1390	Dubois	WY	82513	Fremont	(307) 455-2296
189	.1/23/2015	Washakie Rural Improvement & Service District	District	5601523C	PO Box 212	Worland	WY	82401	Washakie	(307) 342-4737
190	?/23/2018	Water Unlimited Inc	Private Company	5600132C	3 Seminoe Ave	Newcastle	WY	82701	Weston	(307) 746-5794
191	./24/2018	Wessex Improvement and Service District	District	0000002C	PO Box 164	Rozet	WY	82727	Campbell	(307) 680-6850
192	5/10/2004	West End Water District	District	5601032C	PO Box 892	Newcastle	WY	82701	Weston	(307) 746-5655
193	1/9/2018	West Gros Ventre Butte Water District	District		PO Box 3584	Jackson	WY	83001	Teton	(307) 690-1654
194	3/27/2018	Westview Village Subdivision		5600864C	189 Circle Drive	Afton	WY	83110	Lincoln	(307) 248-1118
195	.1/16/2015	Wheatland, Town of	Municipality	5600187C	600 9th Street	Wheatland	WY	82201	Platte	(307) 322-2962
196	?/13/2018	Worland, City of	Municipality	5600197C	101 Grace Ave	Worland	WY	82401	Washakie	(307) 347-8978
197	.2/10/2015	Wright Water & Sewer District	District	5600136C	15009 HWY 387	Wright	WY	82732	Campbell	(307) 464-0491
198	?/21/2018	Yoder, Town of	Municipality	5600169C	PO Box 158	Yoder	WY	82244	Goshen	(307) 532-4304

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Row Number	Name of Entity	Number of Wells	Number of Springs	Surface Water Source(s)	Type of Diversion(s)	Other Water Sources	Total System Capacity (gal/day)	Total Raw Water Storage (gal)	Total Treated Water Storage (gal)	Treatment Method(s)
1	ton, Town of	2	3	None	Direct	NA	5,000,000	3,000,000	2,000,000	Disinfection/Chlorination
2	r Base Acres I&S District	0	0	Casper Regional	Surface Direct	None	No Answer	No Answer	No Answer	No Answer
3	bin, Town of	5	0	NA	NA	NA	250,000	0	125,000	Disinfection/Chlorination
4	pine	3	0	NA	Alluvial Wells	NA	750,000	750,000	750,000	Disinfection/Chlorination
5	nerican Road Water & Sewer District	5	0	None	NA	None	27,000	0	110,000	Chlorination
6	ntelope Valley Improvement & Service strict	4	0	No	NA	City of Gillette	No Answer	No Answer	746,000	No Answer
7	pens Pines Water & Sewer District	4	0	None	NA	None	5,900,000	0	0	None
8	alon Mobile Manor	1	NA	NA	NA	Ogallala Aquifer	Unknown	14,000	NA	None
9	ggs, Town of	NA	0	Little Snake River	Infiltration Gallery	NA	No Answer	No Answer	420,000	Filtration and Chlorination
10	iroil, Town of	1	1	None	None	Amplify Energy LLC Water Wells	300,000+	NA	350,000	Chlorination
11	sin, Town of	NA	NA	No	NA	We are a consecutive system fed by South Big Horn Co JPB.	1,152,000	100,000	1,000,000	SBHL JPB disinfects at well head & it's good enough for Basin & Manderson.
12	ar River Regional Joint Powers Board	NA	0	None	NA	None	No Answer	No Answer	No Answer	No Answer
13	dford Water & Sewer, District	1	1	None	None	None	1,000,000	540,000	None	Chlorination in place, if needed.
14	nnor Estates Improvement & Service strict	1	0	NA	NA	NA	0	0	125,000	Chlorination
15	g Horn Regional Joint Powers Board	8	0	None	no answer	no answer	8,312,000	0	0	Disinfection/Chlorination
16	g Piney, Town of	6	0	NA	NA	NA	270,000	270,000	NA	NA
17	g Valley & Crossed Arrows provement District	1	0	None	None	None	24,000	1,500	0	NA
18	idger Valley Joint Powers Board	NA	0	Blacks Fork River and Smithsfork River	Surface Direct	None	3,000,000	State Line Dam, Meeks Cabin Dam	2,000,000	Conventional Water Treatment Plant
19	oken Wheel Ranch Improvement & rvice District	1	0	NA	NA	None	11,000	10,532	NA	None currently. Being addressed in current Level III project
20	ffalo Valley Water District	2	0	NA	NA	NA	36,000	0	40,000	Chlorination
21	ffalo, City of	2	0	Clear Creek	Surface Direct	None	6,000,000	No Answer	No Answer	No Answer
22	rlington, Town of	2	0	NA	Alluvial Wells	None	550,000	NA	400,000	Disinfection/Chlorination

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23	urns, Town of	5	0	NA	NA	None	316,000	0	360,000	Chlorination
24	yron, Town of	NA	0	NA	NA	Distributed from Shoshone Municipal Pipeline	300,000	NA	330,000	Treated and distributed by Shoshone Municipal Pipeline
25	ambria Improvement and Service istrict	0	0	None	None	Consecutive of the City of Newcastle	12,000	84000	84,000	none
26	anyon Improvement and Service istrict	1	0	None	None	None	12,000	0	80,000	none
27	asper, City of	0	0	NA	NA	The City of Casper purchases water from the Central Wyoming Regional Water System	No Answer	No Answer	No Answer	No Answer
28	asper, City of | Central Wyoming egional Water System	29	0	North Platte River	Surface Direct	NA	39,000,000	No Answer	26,000,000	Wells: Ozone, corrosion control, chloramination. Surface Water: Floc/Sed/Filtration, ozone, corrosion control, chloramination
29	edar Hills Water Association	2	NA	None	NA	None	180	0	88,000	DC
30	entennial Water District	2	0	None	None	None	150,000	0	60,000	Disinfection
31	heyenne Board of Public Utilities, City	35	0	Hog Park, Seminoe, Rob Roy, Granite & Crystal, North Crow and South Crow, Lake Owen	Collection System, Surface direct, inflitration, well fields, dams, reservoirs, ditches	Water Rights trades	58,000,000	12,916,750,814	48,877,150	Conventional Water Treatment Plant/Chlorine Gas and Sodium Hydrochlorite
32	nugwater, Town of	3	0	None	None	None	No Answer	No Answer	No Answer	No Answer
33	earmont, Town of	2	0	No	NA	NA	54,0 GPD from the pumps. Total town usage is at 12,000-16,000 per day	0	190,000 to 252,000 in a 750,000 gallon tank	Chlorination

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34	earview Improvement & Service istrict	NA	0	Green River by Joint Powers Water Board	Surface Direct	NA	200,000	None	None	Filtration;Chlorination;Disinfection;Conventional Water Treatment Plant
35	ody, City of	0	0	Buffalo Bill Reservoir	Dams	None	1,470,000	833,000	2,800,000	Shoshone Municipal Pipeline Provides the treatment of water for the City of Cody.;Conventional Water Treatment Plant
36	okeville, Town of	2	0	None	None	None	1,728,000	0	500,000	Chlorination
37	ook Road Water District	2	0	NA	NA	NA	34,560	0	490,000	Chlorination
38	ooper Subdivision Mobile Home ark	1	0	NA	no answer	no answer	0	0	0	none
39	ottonwood Acres Subdivision	4	0	None	None	None	No Answer	No Answer	No Answer	Chlorination
40	ountryside Court	1	NA	NA	NA	None	Unknown	500	No Answer	None
41	ountryside Water Users, Inc.	3	0	NA	NA	NA	23,400	Unknown	75,000	Disinfection/Chlorination
42	owley, Town of	1	0	None	None	None	1152000 rated at 800/minute	No Answer	No Answer	None Used
43	restview Improvement & Service istrict (formerly Crestview Estates ubdivision)	1	0	NA	NA	Antelope Valley Improvement & Service District	201,600	0	570,000	Chlorination
44	ave Johnston Power Plant	1	0	North Platte River	Dam	None	504,000	100,000	5,000	Coagulation, flocculation, conventional filtration, green sand filtration, GAC filtration, chlorination
45	ayton, Town of	1	0	Tongue River	Infiltration Gallery	None	600,000	0	378,000	Direct Filtration, UV Disinfection, Chlorine Disinfection
46	eaver, Town of	NA	0	Shoshone Municipal Pipeline	NA	Raw/Irrigation Water (Non-Potable)	16,500,000	20,000	350,000	SMP is responsible for treating waste
47	illman Estates	7	NA	NA	NA	NA	194,400 (From 3 wells currently in use)	NA	330	Disinfection/Chlorination
48	ixon, Town of	NA	0	Little Snake River	Infiltration Gallery	NA	No Answer	No Answer	100,000	Filtration and Chlorination
49	ouglas, Town of	1	1	North Platte River	Surface Direct	None	3,800,000	None	6,100,000	Disinfection/Chlorination and Filtration

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50	ubois, Town of	2	0	None	NA	None	1,440,000	1,200,000	1,200,000	Corrosion Control, Chlorination, Disinfection
51	ast Thermopolis, Town of	0	0	None	None	We are a consecutive system	0	0	0	No Answer
52	dgerton, Town of	NA	N/A	Platte River	We are a consecutive system-water pipelined from Regional water in Casper, 38 miles.	Salt Creek JPB	2,400,000 - Pump station to tanks	0	1,500,000	Conventional Water Treatment Plant-Chloramines
53	ight Mile Improvement & Service istrict	1	0	NA	NA	NA	35,000	0	171,000	Disinfection/Chlorination
54	lk Mountain, Town of	2	0	None	None	none	144,000	0	200,000	Disinfection/Chlorination
55	ncampment, Town of	NA	0	North fork of the Encampment River	Surface	NA	576,000	2 Acre Feet	529,000	Flocculation, Sedimentation, Micro filtration, Chlorination
56	tna Water & Sewer District	1	1	NA	NA	NA	750,000	250,000	0	No Answer
57	vanston, Town of	4	0	Bear River and Sulpher Creek Reservoir	Surface Direct	NA	10,000	3,975,382,200	6,000,000	Conventional Water Treatment Disinfection Hypo Chlroide Filtration
58	vansville, Town of	0	0	None	Surface Direct	none	2,000,000	3,200,000	2,500,000	Conventional Water Treatment Plant
59	airview Water & Sewer District	1	0	NA	NA	NA	0	250,000	0	NA
60	orce Road Joint Powers Board	2	0	None	NONE	NONE	210,600	0	168,000	Disinfection/Chlorination
61	ort Laramie, Town of	2	0	None	NA	NA	150,000	150,000	150000	Chlorination
62	ox Ridge Subdivision nprovement & Service District	1	0	NA	NA	NA	0	0	50,000	Chlorination
63	rannie, Town of	0	0	None	None	Shoshone Municipal Pipeline	140,000	0	250,000	NA
64	reedom Hills Improvement and ervice District	2	0	NA	NA	NA	200,000	0	80,000	Chlorination
65	ardens North Home Owners ssociation	1	0	NA	NA	NA	178,000	Unknown	100,000	NA
66	illette, City of	26	0	None	None	NA	14,400,000	NA	22,000,000	Chlorination
67	lendo, Town of	2	0	None	None	NA	No Answer	No Answer	No Answer	No Answer
68	lenrock, Town of	4	0	None	None	None	1,733,000	0	600,000	Chlorination

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69	race Land Improvement & ervice District	1	0	NA	NA	NA	93,600	0	82,000	Chlorination
70	ranger, Town of	0	NA	Green River	SD	None	700	0	500,000	TP
71	reater Smoot Water & Sewer istrict	1	2	None	None	none	806,400	500000	0	No treatment but have the ability for Chlorination
72	reen River, City of	NA	0	Green River	Green River	NA	6,380,000	Under construction	6,380,000	No Answer
73	reen River/Rock Spring/Sw. Co oint Powers Board	NA	0	Green River	Surface Direct	NA	32,000,000	NA	20,500,000	Ozone Pretreatment, Filtration, Chlorination, Disinfection, Conventional Water Treatment Plan
74	reen Valley Estates Improvement Service District	1	0	NA	NA	NA	103,680 gpd (pumping 24 hours/day)	0	145,000	Chlorination
75	reybull, Town of	3	0	None	NA	Bighorn Regional	1,500,000	0	1,720,000	Chlorination
76	ros Ventre North HOA	4	0	None	NA	NA	1,094,400	200,000	0	none, Chlorination available and set up, but not in use
77	uernsey, Town of	3	0	None	None	None	2,760,000	750,000	None	Disinfection/Chlorination when/if needed for shocking system
78	anna, Town of	1	0	Rattlesnake Creek	Dam	none	21,000,000	20,000,000	6,000,000	Flocculation, Chlorination, Filtration
79	appy Valley Pipeline	0	2	None	None	none	0	1,950	1,200	Chlorination
80	artville, Town of	2	0	None	Alluvial Wells	Platte River	60,000	0	60,000	Disinfection/Chlorination
81	eritage Village Water & Sewer istrict	3	0	No	None	None	518,400	0	200,000	Disinfection/Chlorination
82	udson, Town of	11	0	Groundwater under the influence of surface water	NA	NA	374,000	4,750	390,000	Filtration; Chlorination
83	ulett, Town of	1	0	None	Ditch	No	NA	NA	NA	Disinfection/Chlorination
84	ndian Paintbrush Water District	3	0	None	None	NA	95,000	95,000	0	Chlorination
85	ackson, Town of	7	0	NA	NA	NA	9,500,000	0 MG	3,430,000	Disinfection/Chlorination
86	effrey City Water and Sewer istrict	3	0	None	NA	NA	500,000	None	None	Chlorination
87	uby's Mobile Home Park	0	NA	City of Cody	NA	NA	3-4,000	0	0	City of Cody
88	aycee, Town of	2	0	None	None	none	633,600	0	570,000	Chlorination, Calcium Hypochloride

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89	emmerer-Diamondville JPB	NA	0	Hams Fork River	Direct Diversion	Kemmerer Reservoir	4,600,000	500,000,000	5,000,000	Miox disinfection, submerged membrane filtration
90	aBarge, Town of	0	0	Green River	Infiltration Gallery	NA	907,000	35,000	650,000	Disinfection/chlorination membrane filtration water treatment plant
91	aGrange, Town of	2	0	NA	NA	NA	300,000	300,000	NA	none
92	ance Creek Water & Sewer istrict	2	0	None	None	none	172,800	210,000	210,000	Chlorination
93	ander, City of	NA	NA	None	None	NA	No Answer	No Answer	NA	No Answer
94	aramie, City of	11	0	Laramie River	Surface Direct	N/A	17,000,000	0	14,750,000	Disinfection/Chlorination and conventional water treatement plant
95	ingle, Town of	3	0	None	None	None	191,170	158000	0	As required
96	ovell, Town of	NA	0	Buffalo Bill Reservoir - North Fork Shoshone River	Buffalo Bill Reservoir - North Fork Shoshone River	no answer	No Answer	No Answer	1,400,000	No Answer
97	ucerne Water & Sewer District	0	0	Consecutive system from Big Horn Regional Water.	Alluvial wells	Town of Thermopolis surface treated water (only for emergency)	approx 16,000 gallons per day	0	200,000	Disinfection/chlorination
98	usk, Town of	4	0	NA	NA	NA	3,133,440	0	1,060,000	Chlorination
99	yman, Town of	0	NA	None	NA	Bridger Valley JPB	400	0	0	DC, F, TP
100	Manderson, Town of	0	0	No answer	no answer	no answer	0	0	0	no answer
101	Marbleton, Town of	7	0	NA	Alluvial Wells	NA	NA	750,000	NA	None
102	Meadow Springs Improvement & ervice District	1	0	NA	NA	NA	0	0	17,000	Chlorination
103	Means First Extension Water & ewer District	3	0	NA	NA	NA	0	0	332,000	Chlorination
104	Medicine Bow, Town of	4	0	None	N/A	None	303,240	None	1,500,000	Ion exhange with chlorination
105	Meeteetsee, Town of	NA	0	Lower Sunshine Reservoir Toe Drain	Infiltration Gallery	No	576,000	None	700,000	Microfiltration and Chlorination at Water Plan
106	Melody Ranch Improvement and ervice District	2	0	NA	N/A	N/A	1,152,000	NA	500,000	Chlorination

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107	idwest, Town of	0	0	None	None	Central Wyoming regional water systems	0	0	0	No Answer
108	iller Lower Mobile Home Park	2	0	NA	NA	NA	5,000	320	0	NA
109	ills, Town of	7	0	North Platte River	Infiltration Gallery	NA	3,000,000	97,200	4,800,000	Filtration; Chlorination
110	oorcroft, Town of	6	0	None	Surface Direct	none	0	0	300,000	Chlorination
111	ountain View Estates	No Answer	NA	No Answer	No Answer	NA	No Answer	No Answer	NA	No Answer
112	ountain View, Town of	0	NA	NA	NA	Bridger Valley JPB	NA	NA	NA	NA
113	atrona County International rport	NA	0	NA	Consecutive system to the City of Casper	NA	None	None	NA	No Answer
114	ewcastle, City of	4	0	none	NA	none	2,500,000	5,500,000	5500000	none
115	orth Platte Water & Sewer District	0	0	NA	NA	City of Casper	NA	0	0	City of Casper
116	orthwest Rural Water District	NA	0	Buffalo Bill Reservoir - SMP	Infiltration Gallery	NA	1,000,000	SMP	1,090,000	Disinfection, Chloramines, SMP
118	oal, Town of	3	0	NA	NA	None	152,088	312,397	132	Filtration, Chlorination, Disinfection
119	rchard Valley Water Co.	2	0	No	NA	No	720,000	110,000	NA	No filtration or disinfection/chlorination is required
120	sage Water District	1	0	None	None	none	46,000	250,000	250,000	Chlorination
121	smond Pipeline Company	0	1	NA	NA	NA	504,000	11,000	0	none
123	eoples Improvement and Service strict	1	0	NA	NA	NA	96,600	0	95,000	Chlorination, Disinfection
124	ne Bluffs, Town of	10	0	None	NA	NA	300,000	0	300,000	Disinfection, Chlorination
125	ne Haven, Town of	2	0	None	NA	NA	No Answer	0	248,000	Chlorination
126	nedale Municipal Water System	0	0	Fremont Lake	NA	NA	10,000	5,539,467,000	700,000	Disinfection/Chlorination
127	neview Im. & Svc. District ormerly: Glory Hole Homeowners ssociation)	1	0	NA	NA	NA	0	0	0	Chlorination
128	oneer Water & Sewer District	NA	0	None	None	Central Wyoming Regional Water System	No Answer	No Answer	No Answer	No Answer

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129	easant View Water Co, Inc.	0	0	None	None	None	0	0	0	Water is treated by city of Casper
130	int of Rocks, Town of	2	0	None	None	None	15,000	0	35,000	No treatment
131	ison Spider Improvement & rvice District	NA	0	None	NA	Central Wyoming Regional Water System	No Answer	0	0	No Answer
132	well, City of	0	0	Shoshone Municipal Pipeline	Dam	NA	1,900,000	0	190,000	Disinfection/Chlorination, Filtration, Conventional Water Treatment Plant
133	fter D Improvement & Service strict	1	0	NA	NA	NA	0	0	17,000	Disinfection/Chlorination
134	fter J ISD	4	0	NA	Alluvial Wells	N/A	2,500,000	0	500,000	Chlorination
135	nchester, Town of	NA	0	Tongue River	Surface Direct	NA	1,000,000	0	1,000,000	Flocculation, sedimentation, filtration(conventional) and disinfection
137	wlins, City of	3	Aprox 30 Springs	North Platte River, Atlantic Rim Reservoir, Peaking Reservoir, Rawlins Reservoir	Springs, Wells	NA	8,000,000	531,000,000	19,000,000	DE Filtration, Actiflow, chlorination
138	d Lane Domestic Water, Inc.	0	0	Thermoplis Water	no answer	no answer	0	0	17,000	no answer
139	verside Mobile Home Court LLC	2	0	None	None	NA	NA	0	0	No Answer
140	verton, City of	13	0	Wind River	Ditch, LeClair Irrigation District Riverton No. 2 Canal	NA	9,600,000	600,000	7,350,000	Disinfection/Chlorination, Filtration, Conventional Water Treatment Plan
141	ck River, Town of	NA	0	Rock Creek	Surface Direct, Infiltration Gallery	None	NA	0	500,000	Coagulation, Filtration, Chlorination
142	ck Springs, City of	NA	0	NA	NA	GR/RS/SW Co JPWB	16,000,000	0	12,000,000	Chlorination
143	lling Hills, Town of	4	0	No answer	No answer	No answer	256	No answer	300,000	Chlorination
144	zet Ranchettes Improvement & rvice District	1	0	NA	NA	NA	0	0	200,000	Disinfection/Chlorination
145	lt Creek Joint Powers Board	NA	0	None	None	NA	NA	No Answer	No Answer	No Answer

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146	ratoga, Town of	5	0	None	NA	NA	1,500,000	0	2,000,000	Chlorination; Disinfection
147	ell Valley West Water & Sewer	0	0	NA	None	Buy from Town of Greybull	NA	NA	NA	NA
148	ell Water Users, Inc.	0	0	None	None	Consecutive to the Town of Greybull	0	0	0	No Answer
149	eridan, City of	NA	0	Twin Lakes	Surface Direct	NA	18,500,000	1,235,512,944	12,500,000	Conventional Water Treatment Plant
150	oshone Municipal Pipeline	0	0	NA	The Shoshone River below Buffalo Bill Reservoir is used as an emergency source.	The Shoshone River below Buffalo Bill Reservoir is used as an emergency source.	16,500,000	3,168,900,975	5,000,000	Corrosion Control;Filtration;Chlorination; Disinfection;Conventional Water Treatment Plant
151	oshoni, Town of	4	0	No answer	Confined aquifer Wind River Formation	no answer	500,000	0	500,000	Chlorination
152	erra Madre Water & Sewer Joint wers Board	3	0	NA	NA	NA	NA	No Answer	279,500	Chlorination
153	nclair, Town of	0	0	North Platte River	Surface Direct	City of Rawlins	720,000	0	360,000	Conventional Water Treatment Plant
155	eepy Hollow Subdivision (formerly ntral Campbell County provement & Service District)	4	NA	NA	NA	NA	1,200	No Answer	500,000	DC
156	uth Big Horn County JPB	2	0	NA	NA	NA	1,200,000	NA	100,000	Disinfection/Chlorination
157	uth Cheyenne Water and Sewer strict	NA	0	NA	NA	We are a consecutive system to Board of Public Utilities	NA	NA	NA	No Answer
159	uth Fork Improvement & Service strict	1	0	NA	NA	NA	0	0	68,000	no answer
160	uth of Laramie Water & Sewer strict	0	0	NA	NA	We buy from the city and resell to customers	0	0	300,000	Booster Chlorinate at Pumphouse & water tank

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161	South Thermopolis Water & Sewer District	0	NA	None	NA	Thermopolis	38	No Answer	271,709	No Answer
162	South Torrington Water & Sewer District	NA	0	NA	NA	NA	Unknown	0	0	N/A
163	South Worland Water Users	NA	0	City of Worland	Water Line	None	NA	None	None	We buy water from the City of Worland
164	Southside Well I&S District	1	0	NA	NA	NA	43,000	0	5,000	Disinfection/Chlorination
165	Spring Creek Improvement District	2	NA	None	NA	None	1,200	No Answer	No Answer	DC
166	Squaw Creek Water District	2	NA	None	NA	None	40	0	40,000	DC
167	Star Valley Ranch, Town of	3	1	NA	NA	NA	NA	No Answer	975,000	None
168	Star Valley Trailer Court	1	1	None	NA	NA	15,000 and up	12,000	No Answer	None
169	Stone Gate Estates Improvement & Service District	2	0	NA	NA	NA	305,000	0	110,000	Disinfection/Chlorination
170	Sundance West Water District	NA	0	NA	RA	NA	NA	No Answer	No Answer	No Answer
171	Sundance, City of	3	0	None	None	NA	NA	0	1,166,000	Disinfection/Chlorination
172	Sundance, City of (In cooperation with Sundance West Homeowners Association	NA	0	None	None	None- Pursuing city water source	Unknown	Unknown	Unknown	No Answer
173	Sunridge Estates	1	0	NA	NA	NA	170,000	0	80,000	Disinfection/Chlorination
174	Sunset Ranch Water District	0	0	None	None	Consecutive Of the City of Newcastle	30,000	0	0	none
175	Superior, Town of	3	0	None	None	none	430,000	150,000	450,000	Filtration;Chlorination
176	Sylvan Bay Homeowners Assn.	0	NA	NA	NA	NA	120	15,000	0	Cholorination
177	Targhee Town Water District	3	0	NA	NA	NA	864,000	350	0	none
178	Ten Sleep, Town of	2	0	None	None	None	0	0	0	NA
179	Teton Village Water & Sewer District	5	0	None	None	None	6,912,000	NA	200,000	Chlorination
180	Thayne, Town of	1	1	None	None	NA	NA	0	300,000	Chlorination
181	Thermopolis, Town of	3	0	Big Horn River	Surface Direct	NA	2,500,000	Unknown	2,292,140	No Answer
182	Torrington, City of	4	0	NA	NA	NA	7,200,000	NA	3,030,000	Reverse Osmosis Filtration, Chlorination

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183	Upton, Town of	3	0	None	None	None	0	0	900,000	Chlorination
184	Vista West Improvement & Service District	2	0	None	None	None	Well #1=216,000 gal; Well #2=144,000 gal	None	200,000	Chlorination
185	Vista West Water Co	NA	0	None	None	None	No Answer	No Answer	No Answer	No Answer
186	Wamsutter, Town of	3	0	NA	NA	NA	1,224,000	2000	400,000	Disinfection/Chlorination
187	Wardwell Water & Sewer District	NA	0	Consecutive System under Central Wyoming Regional Water Systems	Consecutive System under Central Wyoming Regional Water Systems	No Answer	No Answer	No Answer	No Answer	Chloramines
188	Warm Springs Water District	1	0	None	None	None	250,000	0	200,000	No Answer
189	Washakie Rural Improvement & Service District	0	0	NA	NA	NA	0	0	0	NA
190	Water Unlimited Inc	1	0	None	None	None	No Answer	None	None	No Answer
191	Wessex Improvement and Service District	1	0	None	NA	NA	No Answer	No Answer	0	N/A
192	West End Water District	1	NA	None	NA	None	1,150	0	0	None
193	West Gros Ventre Butte Water District	2	0	None	None	None	250,000	80,000	80,000 if needed	All set up for chlorination, but we don't use it
194	Westview Village Subdivision	1	0	None	NA	None	28,800	13,000	13,000	Disinfection/Chlorination - Hypochlorination when needed
195	Wheatland, Town of	8	0	None	None	None	5,760,000	0	3,060,000	Chlorination
196	Worland, City of	NA	0	No Answer	No Answer	Madison Formation, Paintrock anticline	6,000,000	No Answer	5,000,000	Disinfection
197	Wright Water & Sewer District	6	0	None	None	None	2,300,000	0	1,500,000	chlorination
198	Yoder, Town of	4	0	NA	NA	None	216,000	125,000	0	Chlorination; Disinfection

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								(gal/day)	(%)
	Afton, Town of	2,000	1,000	70	357000000	2,500,000	NA	unknown	0%
	Air Base Acres I&S District	750	85	6	6,000,000	17,000	NA	1650	
	Albin, Town of	180	70	2	8,000,000	June, July, August	NA		5%
	Alpine	750	404	0	73,000,000	200,000	NA	5,000	
	American Road Water & Sewer District	228	76	0	9,059,615	68,680	NA	Unknown	0%
	Antelope Valley Improvement & Service District	1,088	333	1	49,084,000	621,000	Crestview ISD		1%
	Aspens Pines Water & Sewer District	1,500	900	50	222,400,000	1,317,110	Teton County Housing Authority	150000	
	Avalon Mobile Manor	120	42	0	-	NA	NA	NA	
	Baggs, Town of	440	266	12	27,377,926	108,000	NA		4%
	Bairoil, Town of	106	60	1	25,000 daily	50,000	NA	50	
	Basin, Town of	1,250	630	0	50,000,000	400,000	NA	1,000	
	Bear River Regional Joint Powers Board	1,200	454	0	28,000,000	190,322	NA		2-3%
	Bedford Water & Sewer, District	850-950 seasonal	386, permits available	None	200 mgy +/-	750,000 +-	NA	2% +-	
	Bennor Estates Improvement & Service District	135	45	0	5,056,700	28,155	NA	unknown	0%
	Big Horn Regional Joint Powers Board	15,000	6,515	0	390,900,000	5,500,000	Lucerne Water & Sewer District, City of Worland, Washakie Rual Improvement & sevice District, To of Basin, South Big Horn County Water Supply JPB, Town of Greybull	unknown	0%
	Big Piney, Town of	498	255	NA	80,000,000	NA	NA	Unknown	
	Big Valley & Crossed Arrows Improvement District	67	27	0	610,800	3,600	NA	0	
	Bridger Valley Joint Powers Board	1,764	588	1400	10,803,380	1,800,000	Lyman and Mt View		10%

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									(gal/day)	(%)
19		Broken Wheel Ranch Improvement & Service District	50	20	0	No Answer	No Answer	NA		5-10%
20		Buffalo Valley Water District	60	25	0	1,750,000	20,000	NA	no answer	
21		Buffalo, City of	4,585	2,134	79	556,969,000	3,200,000	NA		7%
22		Burlington, Town of	338	135	12	No Answer	No Answer	NA		Unknown
23		Burns, Town of	300	175	0	28,581,000	316,000	NA		<5%
24		Byron, Town of	593	221	0	17,423,000	68,000	NA		6%
25		Cambria Improvement and Service District	170	75	0	8,657,000	51,000	NA	unknown	0%
26		Canyon Improvement and Service District	100	48	0	3,700,000	13,000	NA		50%
27		Casper, City of	60,000	22,000	660	3,300,000,000	27,000,000	Ardon, Airbase Acres, Vista West, Natrona County International Airport, and Pleasant View		5%
28		Casper, City of | Central Wyoming Regional Water System	69,000	26,500	0	3,695,000,000	27,000,000	9 Wholesale Entities		5%
29		Cedar Hills Water Association	250	76	3	996,815	6,581	None	0	
30		Centennial Water District	200	85	0	11,315,000	50,000	NA	0	0%
31		Cheyenne Board of Public Utilities, City of	75,000	23,739	154	4,708,559,984	30,320,000	F.E. Warren and South Cheyenne Water & Sewer District		6%
32		Chugwater, Town of	212	174	0	14,690,000	150,000	NA	1200	8%
33		Clearmont, Town of	125	74	3	4,500,000	19,000	NA		1%
34		Clearview Improvement & Service District	950	326	3	42,000,000	200,000	Sweetwater County	38000	
35		Cody, City of	9,740	-	0	0	0	Green Acres Mobile Home Park, Juby's Trailer Park, Pioneer Properties	unknown	0%
36		Cokeville, Town of	539	273	3	0	0	NA	NA	0%
37		Cook Road Water District	267	89	0	13,971,160	71,129	NA	Unknown	0%
38		Cooper Subdivision Mobile Home Park	100	50	0	0	0	NA	no answer	0%
39		Cottonwood Acres Subdivision	96	38	0	No Answer	No Answer	No Answer	0	

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								(gal/day)	(%)
	Countryside Court	125	55	0	0	No Answer	No Answer	no answer	
	Countryside Water Users, Inc.	274	119	0	10,749,000	76,419	NA	Unknown	
	Cowley, Town of	690	305	83	No Answer	No Answer	South End Water Users	No Answer	
	Crestview Improvement & Service District (formerly Crestview Estates Subdivision)	738	175	0	22,488,300	372,642	NA	unknown	0%
	Dave Johnston Power Plant	195 + visitors	NA	NA	2,920,000	10,000	NA	100	
	Dayton, Town of	800	400	23	78,000,000	400,000	NA		5%
	Deaver, Town of	184	No Answer	22	6,552,000	6,085,000	Town of Cowley in case of Emergency Only		12%
	Dillman Estates	65-70	30 currently in use (3 more with noone living there)	None	7-8 million	Do not track this use	NA	0 (not metered to determine this loss - if any)	
	Dixon, Town of	94	75	4	4,199,000	31,000	NA		12%
	Douglas, Town of	6,120	2,604	108	504,093,543	3,358,455	Lonetree Trailer Park, Chalkbuttes Development, Sundance Meadows and the City of Douglas Community Golf Course	10000	
	Dubois, Town of	971	627	15	80,062,100	500,000	NA	38	
	East Thermopolis, Town of	254	180	1	650,400	25,000	NA		10%
	Edgerton, Town of	195 +	112	None	10,250,000 approx	50,000	NA	1,500	
	Eight Mile Improvement & Service District	120	40	0	9,121,843	71,129	NA	Unknown	0%
	Elk Mountain, Town of	200	130	5	9,000,000	60,000	NA	150	0%
	Encampment, Town of	450	360	0	21,972,000	approximately 40950	NA		
	Etna Water & Sewer District	150	65	0	63,000,000	200,000	NA	80	
	Evanston, Town of	12,500	4,300	0	1,068,596,486	8,900,000	Bear River Joint Powers Board	8900	0%
	Evansville, Town of	2,550	1,140	108	192,000,000	1,100,000	NA		5%
	Fairview Water & Sewer District	250	83	0	Unknown	No Answer	NA	No Answer	
	Force Road Joint Powers Board	185	62	0	14,519,688	184,014	NA	3000	

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								(gal/day)	(%)
	Fort Laramie, Town of	200	157	2	18,609,000	3,859,000	All American Plains Oil Co. and 88 Oil Co.		5-8%
	Fox Ridge Subdivision Improvement & Service District	111	41	0	4,808,520	27,267	NA	Unknown	0
	Frannie, Town of	157	91	0	12,895,000	79,700	NA		4%
	Freedom Hills Improvement and Service District	480	160	0	32,300,550	228,406	NA	Unknown	0%
	Gardens North Home Owners Association	300	120	0	12,800,000	50,000	NA	1,200	
	Gillette, City of	31,317	10,441	46	1,695,970,000	11,920,000,000	NA		7%
	Glendo, Town of	205	150	10	13.35 million gallons	86000 gallons	NA	No Answer	
	Glenrock, Town of	2,760	1,096	0	157,044,000	1,045,000	NA		11%
	Grace Land Improvement & Service District	165	55	0	5,193,186	0	NA	Unknown	0%
	Granger, Town of	170	89	0	18,250,000	100,000	WY Hwy Dept.	No Answer	
	Greater Smoot Water & Sewer District	217	147	0	17,463,000	330	NA	50,000	0%
	Green River, City of	12,800	4,300	0	807,600,000	6,000,000	Pioneer Park MH, Desert Trails MH		10%
	Green River/Rock Spring/Sw. Co Joint Powers Board	40,000	6	0	3,500,000,000	23,500,000	Green River/Rock Springs/3 Districts/1 Industrial Customer	920000	
	Green Valley Estates Improvement & Service District	150	51	0	Unknown	103,680	NA	No Answer	
	Greybull, Town of	3,200	1,146	206	217,782,000	1,500,000	Shell Water Users, Sharewater users and Greybull heights users.	No Answer	
	Gros Ventre North HOA	49	74	0	38,000,000	385,000	NA	9000	
	Guernsey, Town of	1,147	628	4	130,500,000	816,000	NA	No Answer	
	Hanna, Town of	840	425	3	90,000,000	500,000	NA		8%
	Happy Valley Pipeline	75	25	0	0	0	NA	no answer	0%
	Hartville, Town of	62	46	0	6,000,000	1,000,000	NA	Unknown	

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									(gal/day)	(%)
		Heritage Village Water & Sewer District	700	232	0	34,011,900	391,300	NA	3500	
		Hudson, Town of	560	232	0	10,801,000	120,000	NA		15%
		Hulett, Town of	274	250	5	40,611	NA	NA		NA
		Indian Paintbrush Water District	300	74	0	unknown	unknown	NA		Unknown
		Jackson, Town of	12,000 approx	3,500	52	1,584,000,000 gal (approx 4.4 MG per day)	7,300,000	Saddle Butte and Teton Science School	6%	
		Jeffrey City Water and Sewer District	No Answer	100	0	Approximately 1,500,000	Approximately 5,000	Not Applicable	1440	
		Juby's Mobile Home Park	under 500	73	0	115,000	Unknown	NA	0	
		Kaycee, Town of	263	165	27	32,000,000	320,000	NA		9%
		Kemmerer-Diamondville JPB	3,500	1,450	0	250,000,000	3,000,000	Oakley, WY	No Answer	
		LaBarge, Town of	420	260	0	33,936,900	210,000	NA	No Answer	
		LaGrange, Town of	448	147	1	72,915,600	250,000	NA		Unknown
		Lance Creek Water & Sewer District	25	30	0	8,504,098	20,442	NA	Unknown	0
		Lander, City of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Laramie, City of	36,000	9,649	35	1,853,160,000	12,330,000	1 Mile Water District, 9 Mile Water District, South Laramie Water and Sewer District, Cottonwood Estates		0.2
		Lingle, Town of	468	250	5	69,776,900	191,170	N/A		<1%
		Lovell, Town of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Lucerne Water & Sewer District	375	125	0	approx 7,000,000 gallons	20,000 gallons per day	NA	500 gpd	
		Lusk, Town of	1,600	863	0	145,681,500	3,816,000	NA	No Answer	
		Lyman, Town of	2,200	692	5	127,555,090	619,677	None	No Answer	
	0	Manderson, Town of	0	0	0	0	0	NA		0%
	1	Marbleton, Town of	750	0	350	NA	400,000	NA		10%
	2	Meadow Springs Improvement & Service District	48	16	0	2,149,500	12,253	NA	Unknown	0%

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									(gal/day)	(%)
	03	Means First Extension Water & Sewer District	513	171	0	27,362,732	176,793	NA	Unknown	0%
	04	Medicine Bow, Town of	300	165	0	33 million	62,000	NA	0	
	05	Meeteetsee, Town of	327	230	12	24,000,000	150,000	NA		13%
	06	Melody Ranch Improvement and Service District	900	387	0	103,000,000	943,000	None outside the district		28%
	07	Midwest, Town of	408	200	4	0	0	NA	no answer	0%
	08	Miller Lower Mobile Home Park	36	18	0	0	0	NA	Unknown	0%
	09	Mills, Town of	3,680	1,750	20	242,251,000	1,500,000	NA		Unknown
	10	Moorcroft, Town of	1,009	467	0	107,839,928	0	NA	No Answer	5%
	11	Mountain View Estates	No Answer	No Answer	No Answer	0	No Answer	No Answer	No Answer	No Answer
	12	Mountain View, Town of	1,286	540	8	60,745,000	305,000	NA	100,000	No Answer
	13	Natrona County International Airport	445	154	2	11,923,000	29,633	Contractors		16%
	14	Newcastle, City of	4,000	1,800	20	10,000,000	1,840,000	Cambria Water Dist. & Sunset Water Dist.	1,000	0%
	15	North Platte Water & Sewer District	varies (Non-Transient Non-Community Water System)	109-All businesses + (4) hotels included	0	66,674,287	Not known	NA	Unknown	
	17	Northwest Rural Water District	7,000	3,001	0	204,000,000	No Answer	NA		12%
	18	Opal, Town of	96	36	0	2,101,700	6,363.33	NA	267826	13%
	19	Orchard Valley Water Co.	400	109	0	5,000,000	unk	NA	0	
	20	Osage Water District	278	200	3	17,241,000	57,000	Osage Partnership	unknown	0%
	21	Osmond Pipeline Company	250	68	0	183,960,000	25,000	NA	0	0%
	23	Peoples Improvement and Service District	250	64	0	92,989,740	5,320,000	NA	No Answer	
	24	Pine Bluffs, Town of	1,120	765	0	38,779,120	116,000	NA		1%
	25	Pine Haven, Town of	495	269	0	16,825,457	201,000	NA	No Answer	
	26	Pinedale Municipal Water System	1,800	150	8	487,000,000	2,500,000	NA	1,000	

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									(gal/day)	(%)
	7	Pineview Im. & Svc. District (formerly: Glory Hole Homeowners Association)	63	21	0	0	0	NA	Unknown	0%
	8	Pioneer Water & Sewer District	1500	350	0	45,000,000	250,000	NA	12000	
	9	Pleasant View Water Co, Inc.	120	37	0	3833	0	NA		11%
	0	Point of Rocks, Town of	200	100	0	3,500,000	15,000	NA		<1%
	1	Poison Spider Improvement & Service District	200	92	0	12,000,000	55,000	NA		2%
	2	Powell, City of	6,314	2,654	22	220,794,106	1,223,000	NA		16%
	3	Rafter D Improvement & Service District	48	16	0	3,801,170	29,521	NA	Unknown	0%
	4	Rafter J ISD	1,190	476	0	158,000,000	800,000	NA		1%
	6	Ranchester, Town of	957	408	0	57,100,000	486,000	NA	No Answer	
	7	Rawlins, City of	9,006	3,664	300	684,979,000	4,421,000	Town of Sinclair	Unknown	
	8	Red Lane Domestic Water, Inc.	60	60	0	4,000,000	21,000	NA		10%
	9	Riverside Mobile Home Court LLC	No Answer	130	0	No Answer	No Answer	No Answer	No Answer	No Answer
	0	Riverton, City of	10,997	4,174	42	688,265,000	3,745,000	NA		10%
	1	Rock River, Town of	245	180	1	No Answer	No Answer	No Answer	No Answer	
	2	Rock Springs, City of	28,000	8,673	1246	1,904,060,000	14,100,000	NA		18%
	3	Rolling Hills, Town of	440	153	3	17,986,000	100,000	NA		7%
	4	Rozet Ranchettes Improvement & Service District	72	55	0	1,531,300	7,171	NA	Unknown	0%
	5	Salt Creek Joint Powers Board	750	No Answer	0	214,394,228	No Answer	Midwest and Edgerton	No Answer	
	6	Saratoga, Town of	1,800	990	30	175,000,000	1,200,000	Old Baldy Club	50000	
	7	Shell Valley West Water & Sewer	40	30	None	520,000 +	150,000 +	NA	390	
	8	Shell Water Users, Inc.	35	25	0	350,000	110,000	NA		3%
	9	Sheridan, City of	17,444	7,192	1823	1,493,378,000	9,898,000	Downer Neighborhood Improvement & Service District		<10%
	0	Shoshone Municipal Pipeline	25,700	13	10901	1,101,659,008	5,517,000	Cities of; Cody, Powell; Towns of; Byron, Lovell, Deaver, Frannie; and the Northwest Rural Water District	57534	0
	1	Shoshoni, Town of	650	477	0	56,700,000	250,000	NA	NA	0
	2	Sierra Madre Water & Sewer Joint Powers Board	200	113	0	9,384,200	No Answer	NA	No Answer	

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									(gal/day)	(%)
	3	Sinclair, Town of	433	240	3	20,611,000	360,000	Sinclair Wyoming Refinery	No Answer	
	5	Sleepy Hollow Subdivision (formerly Central Campbell County Improvement & Service District)	1,800	430	0	82,125,000	600,000	NA	50000	
	6	South Big Horn County JPB	1,000	210	Both Basin and Manderson have one tap coming into town.	93,000,000	450,000	Town of Basin, Town of Manderson, & South Big Horn Co Water District.	500	
	7	South Cheyenne Water and Sewer District	9,500	2,200	0	328,000,000	2,400,000	NA		2%
	9	South Fork Improvement & Service District	138	45	0	4,981,779	24,946	NA		6%
	0	South of Laramie Water & Sewer District	500	229	0	14,414,000	68,000	NA	4.74	12%
	1	South Thermopolis Water & Sewer District	112	112	0	No Answer	No Answer	None	No Answer	
	2	South Torrington Water & Sewer District	450	216	0	18,883,000	95,000	NA		Unknown
	3	South Worland Water Users	433	173	0	17,300,000	220,000	NA		0.14
	4	Southside Well I&S District	65	19	0	2,000,000	13,000	NA	25	
	5	Spring Creek Improvement District	No Answer	60	1	27,375,000	150,000	Spr. Cr. Equestrian	No Answer	
	6	Squaw Creek Water District	155	68	0	5,840,000	40,000	None	No Answer	
	7	Star Valley Ranch, Town of	965	1,100	5	105,000,000	200,000	NA	200000	
	8	Star Valley Trailer Court	96	32	0	Not Metered	9,500	NA	200	
	9	Stone Gate Estates Improvement & Service District	160	67	0	21607292	154,087	NA	2600 - 3600	0
	0	Sundance West Water District	No Answer	18	0	No Answer	No Answer	No Answer	No Answer	0
	1	Sundance, City of	749	672	77	No Answer	750,000	No Answer	No Answer	0
	2	Sundance, City of (In cooperation with Sundance West Homeowners Association	No Answer	19	No Answer	No Answer	No Answer	No Answer	No Answer	0
	3	Sunridge Estates	300	100	0	70,000	75,000	NA	5,000	
	4	Sunset Ranch Water District	60	26	0	11,000,000	13,000	NA		0%
	5	Superior, Town of	336	120	6	15,800,000	120,000	NA	no answer	0%

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									(gal/day)	(%)
	6	Sylvan Bay Homeowners Assn.	180	45	0	Unknown	No Answer	NA	0	
	7	Targhee Town Water District	120	52	1	8,515,900	20,000	NA		0%
	8	Ten Sleep, Town of	280	255	15	0	0	NA		6%
	9	Teton Village Water & Sewer District	No Answer	4	0	205,720,000	1,400,000	NA	No Answer	
	0	Thayne, Town of	367	247	0	103,000,000	840,000	NA		15%
	1	Thermopolis, Town of	4,164	1,400	409	209,144,000	2,000,000	Town of East Thermopolis, South Thermopolis Water District, Red Lane Water District, Owl Creek Water District, HSC Cemetary District		10-12%
	2	Torrington, City of	7,248	2,792	172	499,710,000	3,800,000	South Torrington	5000	1%
	3	Upton, Town of	1,100	503	2	73,749,000	693,000	NA	NA	0
	4	Vista West Improvement & Service District	No Answer	54	1	5,946,700	Unknown	USDA Forest Service		Unknown
	5	Vista West Water Co	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	6	Wamsutter, Town of	750	172	4	68,000,000	321,000	NA	unknown	
	7	Wardwell Water & Sewer District	3,932	1,573	0	178,583,400	1,100,750	NA		1%
	8	Warm Springs Water District	No Answer	60	0	4,500,000	30,000	NA		<1%
	9	Washakie Rural Improvement & Service District	1,100	343	0	26,398,000	96,000	NA		0
	0	Water Unlimited Inc	No Answer	No Answer	No Answer	16,000,000	No Answer	Salt Creek Water District		No Answer
	1	Wessex Improvement and Service District	16	7	0	No Answer	No Answer	No Answer		No Answer
	2	West End Water District	300	82	3	Unknown	No Answer	Oil Creek	No Answer	
	3	West Gros Ventre Butte Water District	200	76	0	11,000,000	120,000	NA		Unknown
	4	Westview Village Subdivision	80	34	0	2,336,000	8,000	NA		2-5%
	5	Wheatland, Town of	3,600	1,900	60	358,117,600	2,356,261	NA		5%
	6	Worland, City of	5,487	2,500	0	432,871,000	4,241,000	South Side Water Users	No Answer	

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								(gal/day)	(%)
97	Wright Water & Sewer District	2,900	1,002	0	268,000,000	1,230,000	NA	15,000	0%
98	Yoder, Town of	151	91	7	20,915,300	125,000	NA	No Answer	

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N	w ber	Name of Entity	Is the System Billed by Meter?	Average Monthly Water Bill	Residential Tap Fees	Residential Base Water Rate	Residential Gallons Included in Base Water Rate	Rate for each 1,000 gal above Base Water Rate
		Afton, Town of	Yes	$34.00	$4,000.00	$17.00	$34.00 for 70,000	$0.35/1,000
		Air Base Acres I&S District	Yes	$50.50	$3,500.00	$5.50	1000	$5.50
		Albin, Town of	No	$24.00	$500.00	no answer	No Answer	No Answer
		Alpine	Yes	$33.00	NA	$33.00	12,000	$2.00 per 1000
		American Road Water & Sewer District	Yes	$44.83	$3,000.00	$40.00	18,000	$3.00/1,000gal (18,000-25,000) $3.50/1,000gal (>25,000)
		Antelope Valley Improvement & Service District	Yes	$66.25	$6.50	$5,500.00	4000	$2.25
		Aspens Pines Water & Sewer District	Yes	Residential = $37, commercial = $129	$1,900.00	no answer	No Answer	No Answer
		Avalon Mobile Manor	No	NA	NA	NA	NA	NA
		Baggs, Town of	Yes	$51.55	$2,350 (3/4")	$30 for 3/4"" and 1"	999	$2.25
	0	Bairoil, Town of	No	$35.00	$750.00	$35.00	Unlimited	Basic Rate
	1	Basin, Town of	Yes	$35.00	$125.00	$1.12 per thousand	0	$1.12 per thousand
	2	Bear River Regional Joint Powers Board	Yes	$56.00	$5,000	$56.00	2000	Res. $3.25 Comm. $3.75
	3	Bedford Water & Sewer, District	Yes	$40.00	$5,000	$40.00	20,000/mo	$.25/1000 gal up to 40,000; $.50 over 40,000
	4	Bennor Estates Improvement & Service District	Yes	$130.00	NA	$130.00	10,000	$1.50/1,000gal
	5	Big Horn Regional Joint Powers Board	Yes	$10.24	NA	NA	NA	$0.45
	6	Big Piney, Town of	Yes	$36.00	$750.00	0-6000	$5.00 per 1,500 gal	$.67 per 1st 10k, $.72 per 11k-25k (see hardcopy)
	7	Big Valley & Crossed Arrows Improvement District	No	$35.00	NA	NA	NA	NA
	8	Bridger Valley Joint Powers Board	Yes	$45.00	$1,200.00	$21.00	None	$3.40/gallon
	9	Broken Wheel Ranch Improvement & Service District	No	$32.00	$2,500.00	$32.00	10000	$5.00
	0	Buffalo Valley Water District	No	$80.00	$6,334.00	$960year/developed	unlimited	NA
	1	Buffalo, City of	Yes	$39.75	$2,500.00	$39.75	10000	$0.50
	2	Burlington, Town of	Yes	No Answer	$600.00	$21.50	2000	$2.50
	3	Burns, Town of	Yes	$25.00	$1,000.00	$25.00	20000	$0.50
	4	Byron, Town of	Yes	$26.00	3 year average	$15.00	0	$0.15
	5	Cambria Improvement and Service District	Yes	$52.50	$10,000.00	$52.50/mo	15,000	unknown
	6	Canyon Improvement and Service District	Yes	0	$5,000.00	$15.00 + mill levy	10,000	No Answer
	7	Casper, City of	Yes	$44.51	$1,610.00	$7.81	1500	$3.67

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	3	Casper, City of | Central Wyoming Regional Water System	Yes	The CWRWS sells wholesale water only	no answer	no answer	No Answer	No Answer
	9	Cedar Hills Water Association	No	$35.00	NA	$35.00	No Limit	$0.00
	0	Centennial Water District	No	$33.00	$3,000.00	$33.00	30,000	$1.50
	1	Cheyenne Board of Public Utilities, City of	Yes	$27.00	See Hard Copy	no answer	No Answer	Tiered system
	2	Chugwater, Town of	Yes	$26.00	$1,000.00	$19.75	1000	1.80 residential,2.00 small business,2.20 large business
	3	Clearmont, Town of	Yes	$28.00	$600.00	$28.00	6000	$0.80-$1.00
	4	Clearview Improvement & Service District	Yes	$11.40	$30.50	$0.00	N/A	N/A
	5	Cody, City of	Yes	$36.00	$1,000	3/4 meter = $23/month	0	$2.60
	5	Cokeville, Town of	No	0	no answer	no answer	no answer	no answer
	7	Cook Road Water District	Yes	$112.25	$7,500.00	$112.25	15,000	$1.50/1,000gal
	3	Cooper Subdivision Mobile Home Park	No	0	NA	$0.00	No Answer	No Answer
	9	Cottonwood Acres Subdivision	No	None	No Answer	No Answer	No Answer	No Answer
	0	Countryside Court	No	No Answer	NA	NA	NA	No Answer
	1	Countryside Water Users, Inc.	No	$30.00	$750.00	NA	NA	Flat rate
	2	Cowley, Town of	Yes	$21.00	$1,250.00	$21.00	10000	$0.75
	3	Crestview Improvement & Service District (formerly Crestview Estates Subdivision)	Yes	$68.44	$5,000.00	$43.00 (apt/townhouse) or $52.00 (house)	13,000	$3.00
	4	Dave Johnston Power Plant	No	NA	no answer	no answer	No Answer	N/A
	5	Dayton, Town of	Yes	$22.25	$877.50	$22.25	0-3000	$1.00
	5	Deaver, Town of	Yes	$32.50	See Hard Copy	No Answer	No Answer	$2.50
	7	Dillman Estates	Yes	$58.80	Variable	$27.00	0	$1.49
	3	Dixon, Town of	Yes	$65.00	$4,000.00	$65.00	30000	$2.50
	9	Douglas, Town of	Yes	$46.25	$2500 (1")	$33.20	0	$2.61/1000 (1,000 through 30,000 gallons); $3.34/1000 (Over 31,000 gallons)
	0	Dubois, Town of	Yes	No Answer	$3,014.00	$26.63	0	0-7 = $1.25, 8-25 = $2.00, over 25 = $2.31
	1	East Thermopolis, Town of	No	0	no answer	$33.00	2,000	$5.00

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	2	Edgerton, Town of	Yes	$40.00	$10.00 per month	$30.00	8,000	$2.30 per 1,000 (2.35 after 7/2013)
	3	Eight Mile Improvement & Service District	Yes	0	$2,500.00	$100	20,000	$1/1000 gal (20,000-30,000 gal); $2/1000 over 30,000 gal
	4	Elk Mountain, Town of	Yes	$29.00	$400.00	$20.00	0	$1.50
	5	Encampment, Town of	Yes	$37.00	$1,200.00	$37.00	10000	$2.25
	6	Etna Water & Sewer District	No	$32.00	no answer	$32.00	14,000	$0.50
	7	Evanston, Town of	Yes	$19.80	$1,250.00	$8.80	1000	$2.20
	8	Evansville, Town of	Yes	$19.55	$970.00	$5.80	0	$2.75
	9	Fairview Water & Sewer District	Yes	$25.00	$25.00	no answer	50,000	$0.50
	0	Force Road Joint Powers Board	No	$50.00	NA	NA	NA	$50.00
	1	Fort Laramie, Town of	Yes	$46.00	$1,050.00	$46.00	15000	$2.00
	2	Fox Ridge Subdivision Improvement & Service District	Yes	$76.50	None	$75 mo. + $400 yr.	15,000	$1.50/1,000
	3	Frannie, Town of	Yes	$47.00	$34.50	$2.80	1,000	$2.80
	4	Freedom Hills Improvement and Service District	No	$85.00	NA	$85.00	Unlimited	NA
	5	Gardens North Home Owners Association	No	$27.00	$500.00	$27.00	Unlimited	NA
	6	Gillette, City of	Yes	$20.29	Based on Meter Size	$6.50	0	$3.95
	7	Glendo, Town of	Yes	$35.00	$1,800.00	$20.00	2000	$1.37
	8	Glenrock, Town of	Yes	$52.50	$1,700.00	$20.00	3,000	$2.50
	9	Grace Land Improvement & Service District	Yes	$50.00	$500.00	$50.00	15,000	$1.50
	0	Granger, Town of	No	$30.00	$1,000.00	$30.00	No Limit	$0.00
	1	Greater Smoot Water & Sewer District	Yes	$22.00	$2,500.00	$22.00	11,999	$1.00
	2	Green River, City of	Yes	$30.00	See Hard Copy	See Hard Copy	See Hard Copy	See Hard Copy
	3	Green River/Rock Spring/Sw. Co Joint Powers Board	Yes	NA	no answer	no answer	no answer	N/A
	4	Green Valley Estates Improvement & Service District	Yes	$45/month minimum (winter)	$3,000.00	$45/month	20000	$1.50/1000 (21,000-50,000 gal); $2.00/1000 (50,000-80,000 gal); $3.00/1000 (80,000-110,000 gal); $5.00/1000 (111,000 gal +)
	5	Greybull, Town of	Yes	$37.46 (base) + $0.91/Thousand gallons	$1,500.00	$37.46 (3/4")	0	$0.91 up to 9,999 = $8.19
	6	Gros Ventre North HOA	No Answer	0	No Answer	No Answer	No Answer	No Answer
	7	Guernsey, Town of	Yes	$30.00	$1800 (1")	$30/month	12000	$1/1000 gallons

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	3	Hanna, Town of	Yes	$36.78	no answer	$36.78	7,000 (price increases every 7,000 gal) see hardcopy	$1.19/1,000 tier level
	9	Happy Valley Pipeline	No	$25.00	no answer	$25.00	no answer	no answer
	0	Hartville, Town of	Yes	$31.05	$750.00	$31.05	1,500	NA
	1	Heritage Village Water & Sewer District	No	$35.00	NA	NA	NA	NA
	2	Hudson, Town of	Yes	$53.25	$500.00	$53.25	9000	$3.10
	3	Hulett, Town of	Yes	$24.00	$600.00	$18.00	1000	$2.00
	4	Indian Paintbrush Water District		No Answer	No Answer	No Answer	No Answer	No Answer
	5	Jackson, Town of	Yes	$28.30	$430.00	$9.93	1,500	$1.89 per gal
	5	Jeffrey City Water and Sewer District	No	$55.00	$15.00	$55.00	Unlimited	Not Applicable
	7	Juby's Mobile Home Park	Yes	$3,500-$4,500	$12.00	$2.37 per gal	NA	None
	3	Kaycee, Town of	Yes	$21.73	$800.00	$21.73	6,000	$8.75 more = 6,001 - 11,000gal
	9	Kemmerer-Diamondville JPB	Yes	$53.56	$850.00	$38.56	3500	$2.35
	0	LaBarge, Town of	Yes	$58.50	$750.00	$25.00	0	$4.25
	1	LaGrange, Town of	No	$17.00	$1,500.00	No Answer	No Answer	No Charge
	2	Lance Creek Water & Sewer District	Yes	$61.00	$200.00	$48.00	2,000	$1.30
	3	Lander, City of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	4	Laramie, City of	Yes	$47.18 + consumption	$5,832.00	$3.76/1000 gal	0	$4.69/$5.85/$8.82 tiered rate
	5	Lingle, Town of	No	$28.00	$500.00	$28.00	Unlimited	$1 for industrial
	5	Lovell, Town of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	7	Lucerne Water & Sewer District	Yes	$50.00	$3,500.00	$43.00	3,000	$3.75
	3	Lusk, Town of	Yes	$17.45	$250.00	$17.45	10000	$1.00
	9	Lyman, Town of	Yes	$25.00	$500.00	$25.00	10,000	$2.10
	0	Manderson, Town of	No	0	no answer	No Answer	No Answer	No Answer
	1	Marbleton, Town of	No	$25.00	No Answer	$25 monthly	No Answer	NA
	2	Meadow Springs Improvement & Service District	No	$65.00	$6,500.00	$65.00	Unlimited	NA
	3	Means First Extension Water & Sewer District	Yes	$35.28	$5,000/$7,000	$35.00	15,000	$1.00/1,000
	4	Medicine Bow, Town of	Yes	$40.00	$1,500.00	$31.50	8000	$1.50
	5	Meeteetsee, Town of	Yes	$45.25	$2,500.00	$45.25	6000	$5.35
	6	Melody Ranch Improvement and Service District	Yes	$25.00	$1,000.00	NA	NA	$1.40
	7	Midwest, Town of	Yes	$41.00	No Answer	No Answer	No Answer	No Answer
	8	Miller Lower Mobile Home Park	No	0	No Answer	No Answer	No Answer	No Answer

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	09	Mills, Town of	Parks, Municipal Buildings	No Answer	No Answer	$23.00	4500	$2.10
	10	Moorcroft, Town of	Yes	$45.00	$1,000.00	$45.00	10,000	$2.50
	11	Mountain View Estates	No Answer	No Answer	no answer	No Answer	No Answer	No Answer
	12	Mountain View, Town of	Yes	$20,833.00	$1,000.00	$35.45	10,000	$2.50
	13	Natrona County International Airport	Yes	$22.00	$600.00	$22.00	7000	$3.10
	14	Newcastle, City of	Yes	$32.00	$15.00	$10.22/2,000 | $3.24/1,000 next 3,000gal | $2.69/1,000 over 5,000gal	No Answer	$10.22/first 2,000gal
	15	North Platte Water & Sewer District	Yes	Varies	0 (none)	NA	NA	$3.54
	17	Northwest Rural Water District	Yes	$60.00	$3,800.00	$51.00	0	$2.25
	18	Opal, Town of	Yes	$47.12	$2,000.00	$47.12	10000	$4.90
	19	Orchard Valley Water Co.	Yes	$30.00	$1,500.00	$40.00	4000	$2.00
	20	Osage Water District	Yes	$55.00	$5,000.00	$55.00	15,000	unknown
	21	Osmond Pipeline Company	No	$15.00	NA	$180.00	unlimited	NA
	23	Peoples Improvement and Service District	Yes	$25.00 if they don't water their yards in the summer. 75% don't	$3,000.00	$25.00	10000	$1.30
	24	Pine Bluffs, Town of	Yes	$49.75	$1,350.00	$27.50	12000	No Answer
	25	Pine Haven, Town of	Yes	$44.95	$1,500.00	$34.00	3500	$3.20 (3500 to 15,000 gallons); $4.80 (15,001-50,000 gallons), $6.40 (>50,001 gallons)
	26	Pinedale Municipal Water System	No	$30.00	$2,000.00	$20.00	Unlimited	NA
	27	Pineview Im. & Svc. District (formerly: Glory Hole Homeowners Association)	No	$80.00	NA	$80.00 mo	Unlimited	NA
	28	Pioneer Water & Sewer District	Yes	$60.00	$1,000.00	$60.00	5000	Tiered- $1.00 for 10,000, $5.00 after
	29	Pleasant View Water Co, Inc.	Yes	$42.50	$3,500.00	$20.00	none	$3.50
	30	Point of Rocks, Town of	No	Included in monthly rent as set charge	0	No Answer	No Answer	No info
	31	Poison Spider Improvement & Service District	Yes	No Answer	$2,500.00	No Answer	0	$2.50
	32	Powell, City of	Yes	$52.69	$580 (3/4")	$32.78	0	$2.90
	33	Rafter D Improvement & Service District	Yes	$80.00	0	$80.00	15,000	$2.00
	34	Rafter J ISD	Yes	$20.22	$500-$1000	0	N/A	$1.20
	36	Ranchester, Town of	Yes	$30.00	$500.00	$23.15	2000	$23.75

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	7	Rawlins, City of	Yes	$30.00	$1,800.00	$14.00	1,000	$2.00 per 1000 gallons over base rate
	8	Red Lane Domestic Water, Inc.	Yes	$60.00	Cost of meter	$37.50	0	$5.15
	9	Riverside Mobile Home Court LLC	No	No Answer	No Answer	No Answer	No Answer	No Answer
	0	Riverton, City of	Yes	Residential - $41.03; Commercial - $74.13 based on calendar year 2017 data	$608.71	$18.04	0	This is a tiered rate. See attached resolution
	1	Rock River, Town of	Yes	$43.00	No Answer	$43.00	10000	$1.00
	2	Rock Springs, City of	Yes	$39.37	Variable	$14.02	2004	$4.47
	3	Rolling Hills, Town of	Yes	$78.75	$3,500.00	$38.75	0	Stair step usage plan
	4	Rozet Ranchettes Improvement & Service District	Yes	$80.00	$1,500.00	$80.00	15,000	$2.00 per 1,000 gal (15,000-30,000)/$3 per 1,000 over 30,000 gal
	5	Salt Creek Joint Powers Board	Yes	$4,000 winter/$10,000 Summer	$10.00	$47.00	8000	$2.50
	6	Saratoga, Town of	Yes	$48.00	$2500-3500	$29.86	7000	7K-20K=$4.26; 20K-60K=$2.67; 60K and up=$2.99
	7	Shell Valley West Water & Sewer	Yes	$78.89	$3,000.00	$48.50	5,000	$0.99 per thousand
	8	Shell Water Users, Inc.	Yes	$70.00	NA	$70.00	5,000	$1.00
	9	Sheridan, City of	Yes	$28.47	$3570 for 3/4	$19.98	2244	$1.35 per 100 cu ft
	0	Shoshone Municipal Pipeline	Yes	0	$10.00 -Tap Equivalent based on size	$1.34/1,000	0	$1.34
	1	Shoshoni, Town of	Yes	$25.34	$750.00	$25.00	10,000	$1.00
	2	Sierra Madre Water & Sewer Joint Powers Board	Yes	$34.00	$2,000.00	$24.00	1000	$1.00
	3	Sinclair, Town of	Yes	$40.00	$1,000.00	$7.00	0	$1.80
	5	Sleepy Hollow Subdivision (formerly Central Campbell County Improvement & Service District)	Yes	included	$3,000.00	$40.00	30,000	2.5/1000 up to 35k, 3.5 to 40k, $5 up
	6	South Big Horn County JPB	Yes	$62.50	$2,000.00	$53.50	4,000	$1.50
	7	South Cheyenne Water and Sewer District	Yes	$65.18	See Hard Copy	No Answer	No Answer	$5.57
	9	South Fork Improvement & Service District	Yes	$50.00	no answer	no answer	no answer	$2.00
	0	South of Laramie Water & Sewer District	Yes	$81.57	$40.00	$6.45	1,000	No Answer
	1	South Thermopolis Water & Sewer District	Yes	$32.68	$1,000.00	$23.00	3,000	$4.68
	2	South Torrington Water & Sewer District	Yes	$28.45	$25.00	$10.00	0	$2.75

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	3	South Worland Water Users	Yes	$85.00	$3,500.00	$70.00	0-3000 Gal	$2.50
	4	Southside Well I&S District	No	$70.00	NA	NA	NA	Flat rate
	5	Spring Creek Improvement District	No	$42.00	No Answer	$41.24	14,600	$0.00
	6	Squaw Creek Water District	Yes	$21.00	$8,500.00	$15.00	0	$1.00
	7	Star Valley Ranch, Town of	Yes	$55.00	$5,000.00	$45.00	0	$2.00
	8	Star Valley Trailer Court	No	None	No Answer	No Answer	No Answer	No Answer
	9	Stone Gate Estates Improvement & Service District	Yes	0	NA	$960.00	20,000	$1 to $30,000; $2 for 30,000-50,000; $5 over 50,000
	0	Sundance West Water District	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	1	Sundance, City of	Yes	$41.65	$2,789.00	$16.00	1000	$5.10
	2	Sundance, City of (In cooperation with Sundance West Homeowners Association	Unknown	No Answer	No Answer	No Answer	No Answer	No Answer
	3	Sunridge Estates	No	$25.00	NA	$25.00	Unlimited	NA
	4	Sunset Ranch Water District	Yes	0	Unknown	Unknown	Unknown	unknown
	5	Superior, Town of	No	$59.40	$1,500.00	$59.40	0	No Answer
	6	Sylvan Bay Homeowners Assn.	No	No Answer	NA	NA	NA	NA
	7	Targhee Town Water District	Yes	$25.00	No Answer	$25.00	10,000	$1.50
	8	Ten Sleep, Town of	Yes	$30.00	$850.00	$22.00 - $30.00	12,000	$0.25
	9	Teton Village Water & Sewer District	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	0	Thayne, Town of	Yes	$34.75	No Answer	$34.75	30000	$1.50
	1	Thermopolis, Town of	Yes	$34.00	$450: 3/4"-1" line	$22.00	1000	$4.00; 1,500,000 + greater: $5.00/1,000
	2	Torrington, City of	Yes	$41.11 (Residential based on 11,000 gallons per month)	$595.65	$33.94	8000	$2.39 per 1000 gallons
	3	Upton, Town of	Yes	$36.00	$1,800.00	$13.50	1,000	$2.40
	4	Vista West Improvement & Service District	No	$49.00	None	$49.00	4000	NA
	5	Vista West Water Co	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
	6	Wamsutter, Town of	Yes	$100.00	$1,000.00	$15.00	$0.50 per 1000g	25%
	7	Wardwell Water & Sewer District	Yes	$35.00	$5,000.00	$14.00	0	$3.00
	8	Warm Springs Water District	no	NA	$3,000.00	N/A	N/A	N/A
	9	Washakie Rural Improvement & Service District	Yes	$67.34	$4,500.00	$67.34	3,000	$1.50/1000
	0	Water Unlimited Inc	Partial	No Answer	$4,000.00	Mostly flate rates	$180 to $240 per year	No Answer
	1	Wessex Improvement and Service District	No	$54.17	0	$650.00	No Answer	0
	2	West End Water District	Yes	$55.00	$2,700.00	$55.00	27,000	$1.00
	3	West Gros Ventre Butte Water District	No	Don't bill except $407 per year	No Answer	$407 per year	Designed for $1400/lot/day	NA

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	04	Westview Village Subdivision	No	$15/month for potable water. The subdivision has a separate irrigation water system	0	$15.00	Unlimited	0
	05	Wheatland, Town of	Yes	$20.00	$1,000.00	$20.00	10,000	$0.50
	06	Worland, City of	Yes	$59 (winter)/ $120 (summer)	$1500 (3/4")	$9.91	Prices vary based on usage	$3.25 each 1000 until 4000 then $2.28 each 1000 for next 3000 then $1.67 each 1000 after
	07	Wright Water & Sewer District	Yes	$13.00	3/4" = 1,760	$13.00	9,000	$1.44, $1.79, $1.92, $1.95
	08	Yoder, Town of	Yes	$36.05	$1,500.00	$36.05	7300	$.55/1,000 gallons

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Report #5: Fiscal Data
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N	ber	Name of Entity	Annual							Is The System Self Supporting?	Other Funding Sources	What are the Other Funding Sources
			System Budget	Operation & Maintenance	Water Quality Testing Cost	Sinking Fund Contributions	Emergency | Replacement Fund	Water Bill Revenues	Tap Fee Revenues			
		Afton, Town of	$457,809.00	$187,965.00	$3,500.00	$15,000.00	$31,090.00	$422,809.00	$74,000.00	Yes	No	NA
		Air Base Acres I&S District	$40,000.00	$35,000.00	$500.00	5%	$45,000.00	$35,000.00	$7,500.00	Yes	Yes	Maintenance fees
		Albin, Town of	$51,000.00	No Answer	$6,000.00	No Answer	$5,000.00	$52,000.00	0	No	Yes	6th Penny Grants
		Alpine	$219,000.00	$208,300.00	$1,500.00	$44,000.00	$25,180.24	$204,000.00	$15,000.00	Yes	No	NA
		American Road Water & Sewer District	$51,363.00	$35,755.00	$1,400.00	$1,500.00	$110,000.00	$40,031.00	0	No	Yes	County Grant
		Antelope Valley Improvement & Service District	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Aspens Pines Water & Sewer District	$360,000.00	$30,000.00	$1000-$6000	$47,000.00	$200,000.00	$360,000.00	$5,000.00	Yes	No	NA
		Avalon Mobile Manor	$0.00	$0.00	$0.00	$0.00	NA	NA	NA	NA	NA	NA
		Baggs, Town of	$167,554.00	$55,000.00	$2,000.00	$16,000.00	$61,000.00	$111,000.00	None	Yes	Yes	MOU with Town of Dixon, interest on accounts, carry over
		Bairoil, Town of	No Answer	$12,000.00	$600+Operator Fees	Unknown	Unknown	$25,200.00	$750.00	Yes	No	NA
		Basin, Town of	$560,224.00	$13,500.00	$1,500.00	$0.00	$64,000.00	$294,205.00	$375.00	Yes	No	NA
		Bear River Regional Joint Powers Board	$352,600.00	$121,000.00	$4,000.00	$10,000.00	$110,000.00	$330,650.00	$10,000.00	Yes	No	NA
		Bedford Water & Sewer, District	$200,000.00	$156,000.00	$3,500.00	$20,000.00 +-	$20,000.00	$180,000.00 +	$20,000.00 +-	Yes	Grants and Loans - nothing new this year.	WWDC, WBC
		Bennor Estates Improvement & Service District	$74,550.00	$36,052.00	$1,500.00	$6,030.00	$13,087.00	$73,647.00	0	No	Yes	County grants
		Big Horn Regional Joint Powers Board	$720,000.00	$250,000.00	$8,000.00	#########	$60,000.00	$784,000.00	0	Yes	Yes	WWDC, RD/RUS, SRF, SLIB
		Big Piney, Town of	$45,000.00	$32,000.00	$4,000.00	NA	$35,000.00	$81,000.00	NA	Yes	No	NA
		Big Valley & Crossed Arrows Improvement District	$5,244.00	$2,500.00	$1,200.00	$0.00	$500.00	$8,820.00	$0.00	Yes	No	NA
		Bridger Valley Joint Powers Board	$1,333,729.00	$263,850.00	$6,000.00	No Answer	$800,000.00	$914,636.00	$6,000.00	Yes	No	NA
		Broken Wheel Ranch Improvement & Service District	$7,680.00	$4,600.00	$864.00	No Answer	$0, currently being built up	$7,680.00	0	Yes	Yes	WWDC Level III Grant, USDA ECWAG Grant, SRF Loan
		Buffalo Valley Water District	$34,000.00	$4,500.00	$1,000.00	0	$20,000.00	$26,000.00	0	Yes	Yes	WWDC

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Report #5: Fiscal Data
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N	ber	Name of Entity	Annual							Is The System Self Supporting?	Other Funding Sources	What are the Other Funding Sources
			System Budget	Operation & Maintenance	Water Quality Testing Cost	Sinking Fund Contributions	Emergency | Replacement Fund	Water Bill Revenues	Tap Fee Revenues			
		Buffalo, City of	$823,545.00	$823,545.00	$6,707.00	Maintain 3.4 million in 2 funds	$408,507.00	$1,367,000.00	$30,000.00	Yes	Yes	WWDC
		Burlington, Town of	$65,000.00	$60,000.00	$1,000.00	No Answer	$25,000.00	$63,000.00	$600.00	Yes	No Answer	No Answer
		Burns, Town of	$52,500.00	$20,500.00	$3,000.00	$10,000.00	$77,593.00	$50,000.00	$0.00	Yes	Have done upgrades with SPT.	Specific Purpose Tax has enabeled us to do upgrades
		Byron, Town of	$108,950.00	$12,150.00	$1,000.00	$35,000.00	$142,996.69	$50,641.34	$59,775.96	Yes	No	NA
		Cambria Improvement and Service District	0	0	0	0	0	0	0	Yes	No	NA
		Canyon Improvement and Service District	0	0	0	0	0	0	0	Yes	No	NA
		Casper, City of	$18,000,000.00	$10,000,000.00	$65,000.00	No Answer	$7,000,000.00	$13,000,000.00	$120,000.00	For Operations - Yes	For Capital - Yes	WWDC and OSLI grants and loans
		Casper, City of | Central Wyoming Regional Water System	$11,000,000.00	$3,000,000.00	$66,500.00	No Answer	$7,000,000.00	$6,700,000.00	$65,000.00	For Operations - Yes	For Capital - Yes	WWDC and OSLI grants and loans
		Cedar Hills Water Association	$28,000.00	$2,000.00	$500.00	$10,000.00	NA	NA	NA	Yes	NA	None
		Centennial Water District	$117,589.00	$37,352.00	$1,000.00	0	$31,142.00	$71,263.00	$6,000.00	Yes	No	NA
		Cheyenne Board of Public Utilities, City of	$49,625,060.00	$11,271,256.00	$221,100.00	No Answer	$7,661,124.00	$20,621,900.00	$1,868,800.00	Yes	No	NA
		Chugwater, Town of	No Answer	No Answer	No Answer	any overages collected after expenses	$171,000.00	No Answer	No Answer	Unknown	Unknown	NA
		Clearmont, Town of	$29,085.00	$25,585.00	$3,500.00	0	$100,000.00	$29,100.00	$600.00	Yes	No	NA
		Clearview Improvement & Service District	$374,092.00	$201,000.00	$2,000.00	$18,400.00	$400,000 which includes sewer reserves	$45,000.00	$120,500.00	Yes	No	NA
		Cody, City of	$3,234,147.00	$3,234,147.00	$600.00	$20,000.00	$2,044,409.00	$3,220,191.00	$59,412.00	Yes	Yes	On occasions - WWDC, SLIB - MRG
		Cokeville, Town of	0	0	0	0	0	0	0	No	No	no answer
		Cook Road Water District	$120,774.00	$35,200.00	$1,100.00	$5,000.00	$75,026.00	$120,085.00	$7,500.00	No	Yes	County & State grants
		Cooper Subdivision Mobile Home Park	0	0	0	0	0	0	0	No	No	NA

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		Cottonwood Acres Subdivision	$16,000.00	$15,000.00	$2,500.00	$10,000.00	$2,500.00	No Answer	None	No Answer	No Answer	No Answer
		Countryside Court	$0.00	$0.00	$2,200.00	No Answer	NA	NA	NA	No	NA	Rental income
		Countryside Water Users, Inc.	$55,080.00	$33,000.00	$800.00	$12,000.00	$10,000.00	NA	NA	Yes	No	NA
		Cowley, Town of	$137,137.00	$31,000.00	$240.00	$51,000.00	$135,691.00	$131,262.00	$6,300.00	Yes	No	NA
		Crestview Improvement & Service District (formerly Crestview Estates Subdivision)	$219,000.00	$154,541.00	$1,100.00	0	$360,000.00	$137,000.00	0	No	Yes	County/other grants/loans
		Dave Johnston Power Plant	$100,000	$50,000	$2,000.00	NA	$200,000	NA	NA	No	Yes	Corporate support
		Dayton, Town of	$136,230.00	$136,230.00	$5,000.00	No Answer	$306,616.00	$155,000.00	$4,387.50	Yes	Yes	Reserves, Interest Income
		Deaver, Town of	$81,953.00	$28,265.00	$1,000.00	No Answer	$35,500.00	$17,034.00	$34,832.00	No Answer	Yes - for water system project	Drinking Water State Revolving Fund Loan #152 and #179, WWDC, CDBG, and USDA-RD
		Dillman Estates	$16,000 - $18,000	$15,000.00	$10,800.00	0	$37,200.00	$24.00	Part of emergency fund	Currently, yes	No	N/A
		Dixon, Town of	$55,400.00	$25,000.00	$2,000.00	$8,220.00	$22,170.00	$48,000.00	0	Yes	Yes	Carry Over from previous year, Interest on Bank Account
		Douglas, Town of	$3,762,502.00	$2,096,000.00	No Answer	$615,000.00	$4,106,127.00	$2,000,000.00	$15,000.00	Yes	Yes	Government and State Aid for high dollar projects
		Dubois, Town of	$291,738.00	$215,517.00	$2,745.00	$25,000.00	$250,000.00	$296,650.00	$12,148.00	Yes	No	NA
		East Thermopolis, Town of	$45,000.00	0	$800.00	0	0	0	$1,000.00	Yes	Yes	SLIB board
		Edgerton, Town of	$58,000 (approx) *	$12,600 (approx)*	$750 + or -*	$14,000 (approx)*	$20,000 (approx)*	$68,200 (approx)*	(Included in water bills)*	No	Yes	Annual Fiscal Budget
		Eight Mile Improvement & Service District	$54,475.00	$25,390.00	$800.00	0	$20,919.00	$48,240.00	0	No	Yes	County and State Grants
		Elk Mountain, Town of	$26,000.00	$25,000.00	$1,000.00	0	$375,000.00	$35,000.00	$800.00	Yes	No	NA
		Encampment, Town of	$174,617.00	$164,023.00	$619.00	$8,898.00	$358,303.00	$165,219.57	$12,000.00	Yes	No (grants in the past)	NA
		Etna Water & Sewer District	NA	No Answer	No Answer	NA	NA	NA	NA	Yes	No	NA

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		Evanston, Town of	$3,158,341.00	$2,842,507.00	$18,000.00	$250,000.00	$15,233,738.00	$2,465,528.00	$29,757.00	Yes	NA	NA
		Evansville, Town of	$458,500.00	$184,000.00	$3,160.00	$20,000.00	$220,212.84	$695,197.00	$35,000.00	Yes	No	NA
		Fairview Water & Sewer District	NA	NA	NA	NA	NA	NA	NA	No Answer	No Answer	No Answer
		Force Road Joint Powers Board	$30,000.00	$5,400.00	$750.00	$7,800.00	$15,000.00	$3,720.00	$0.00	No	Yes	Mill levy
		Fort Laramie, Town of	$85,000.00	$81,271.60	$2,132.00	$2,400.00	$5,097.00	$93,891.00	0	Yes	Yes	Rate Increases, Federal Grants, State Grants
		Fox Ridge Subdivision Improvement & Service District	$54,100.00	$40,095.00	$800.00	0	0	$50,394.00	0	No	Yes	County Grants
		Frannie, Town of	0	0	$240.00	0	0	0	0	Yes	No	NA
		Freedom Hills Improvement and Service District	$179,495.00	$132,016.00	$800.00	$10,000.00	$20,007.00	$163,200.00	0	No	Yes	County & State Grants
		Gardens North Home Owners Association	$38,000.00	$38,000.00	$650.00	$0.00	$0.00	$38,000.00	$0.00	Yes	No	NA
		Gillette, City of	No Answer	No Answer	$15,000.00	None	Per City Policy, 90 day operating reserve ($1,672,947); capitol reserves= one year of depreciation expense ($4,888,929). Also 3.5 M in reserves.	No Answer	FY17 revenues from tapp fees were $55,560	No	Yes	The City's share of the Campbell County's Optional 1% Sales Tax-which also helps the City of Gillette leverage grants and loans as they are available for applicable capitol projects.
		Glendo, Town of	$77,800.00	$65,000.00	$4,000.00	$5,000.00	$49,000.00	$75,000.00	average 1-2 per year	Yes	No	NA
		Glenrock, Town of	$604,480.00	$400,000.00	$4,800.00	$500,000.00	$500,000.00	$550,429.00	$5,000.00	Yes	Yes	WWDC & SLIB
		Grace Land Improvement & Service District	$75,000.00	$48,000.00	$1,000.00	0	0	$33,000.00	0	Yes	Yes	County Grants
		Granger, Town of	$48,000.00	0	$0.00	$0.00	NA	NA	NA	Yes	NA	Bulk Sales
		Greater Smoot Water & Sewer District	$55,000.00	$88,367.00	$1,500.00	$16,500.00	$50,000.00	$50,076.00	0	Yes	No	NA
		Green River, City of	$2,600,000.00	$1,604,000.00	$6,000.00	Depends on the year	$4,000,000.00	No Answer	Depends	yes	No	NA

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		Green River/Rock Spring/Sw. Co Joint Powers Board	$6,473,000.00	$3,324,000.00	$10,100.00	$474,000.00	$9,104,000.00	$5,804,000.00	N/A	Yes	Yes	Interest Income/State Improvement Investments/Other Non-Operating Income
		Green Valley Estates Improvement & Service District	$27,000.00	$9,600.00	unsure at this time	To be determined	Approx $120,000-$140,000	No Answer	None	At this time	No	NA
		Greybull, Town of	$850,000.00	$10,000.00	$849.06	No Answer	No Answer	$922,722.66	$7,500.00	Yes	No	NA
		Gros Ventre North HOA	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Guernsey, Town of	$160,600.00	$16,000.00	$1,500.00	$10,000.00	$148,993.00	$350,000.00	$5,000.00	Yes	No	NA
		Hanna, Town of	$338,946.00	$250,000.00	$4,000.00	0	$55,000.00	$245,000.00	$1,500.00	Yes	Yes	Specific Purpose Tax
		Happy Valley Pipeline	$4,000.00	$1,600.00	$600.00	0	0	$8,200.00	0	Yes	No	NA
		Hartville, Town of	$15,250.00	$21,590.00	$700.00	$0.00	$0.00	NA	$0.00	No	No	NA
		Heritage Village Water & Sewer District	$100,000.00	$50,000 varies	$1,000.00	$50,000.00	$62,000.00	$20,000.00	$0.00	Currently, yes.	Yes	Mill levy.
		Hudson, Town of	$156,000.00	$120,000.00	$6,400.00	$34,800.00	$105,847.00	$139,581.00	0	Yes	No	No Answer
		Hulett, Town of	$88,841.00	$60,000.00	$2,000.00	$10,000.00	$150,000.00	$95,000.00	$600.00	Yes	No	No Answer
		Indian Paintbrush Water District	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Jackson, Town of	$1,600,000.00	$850,000.00	$10,500.00	NA	$3,111,000.00	$1,938,000.00	$77,000.00	Yes	NA	NA
		Jeffrey City Water and Sewer District	No Answer	No Answer	Approximately $1,500	Unknown	Unknown	No Answer	Approximately $1,800	Unknown	Yes	Mil Levy Fremont County
		Juby's Mobile Home Park	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes	No	NA
		Kaycee, Town of	$62,000.00	$48,100.00	$2,500.00	10000	$77,252.00	$85,800.00	0	Yes	No	NA
		Kemmerer-Diamondville JPB	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		LaBarge, Town of	$213,385.00	$213,385.00	$10,000.00	$72,036.00	$285,302.00	$213,385.00	0	Yes	No	N/A
		LaGrange, Town of	$33,820.00	$30,058.00	$800.00	$5,000-$10,000	$120,000.00	$35,551.00	$4,500.00	No	No	Grants are needed or we take money from the general fund
		Lance Creek Water & Sewer District	$38,023.00	$20,230.00	$1,000.00	5000	$4,596.00	$21,023.00	$17,000.00	Yes	No	NA
		Lander, City of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer

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		Laramie, City of	$26,587,500.00	$6,882,516.00	$20,000.00	$10,000.00	$393000 + 6 month operation	$8,871,064.00	$132,984.00	Yes	Yes	Grant/loans
		Lingle, Town of	$93,500.00	No Answer	$4,000 to $5,000	$5,000 to $10,000	$120,000.00	No Answer	$1,000.00	Yes	Yes	Reserves and Possible grants
		Lovell, Town of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Lucerne Water & Sewer District	$125,000.00	$20,000.00	$450.00	$10,000.00	$315,000.00	6,500.00 (approx) per month, depends if there is a request for tap, some years there is no request.	Depends if there is a request for tap, some years that is no request.	Yes	Yes	The District accesses a 4 mil levy each year through the County Treasurer.
		Lusk, Town of	$238,000.00	75%	$4,000.00	0	0	No Answer	$2,000.00	Yes	Yes	Grants for projects and large rehab project
		Lyman, Town of	$200,000.00	$20,000.00	$5,000.00	$10,000.00	NA	NA	NA	Yes	NA	None
	0	Manderson, Town of	0	0	0	0	0	0	0	No	No	NA
	1	Marbleton, Town of	No Answer	No Answer	NA	NA	NA	No Answer	NA	Yes	No	NA
	2	Meadow Springs Improvement & Service District	$25,281.00	$16,648.00	$800.00	0	0	$11,700.00	0	No	Yes	County and State Grants
	3	Means First Extension Water & Sewer District	$150,392.00	$47,624.00	$800.00	0	0	$63,180.00	0	No	Yes	State and County Grants
	4	Medicine Bow, Town of	$157,797.00	$132,900.00	$3,500.00	$2,000.00	$24,897.00	$42,000.00	0	Yes	No	NA
	5	Meeteetsee, Town of	$238,649.73	$183,825.48	$5,143.54	$3,000.00	$107,407.84	$169,505.94	$1,023.72	Yes	Yes	Reserve Account
	6	Melody Ranch Improvement and Service District	$227,000.00	$167,000.00	$9,200.00	$60,000.00	$490,000.00	$96,000.00	$2,000.00	Yes	Yes	$340/lot annual assessment collected with country property taxes for water, sewer, and roads
	7	Midwest, Town of	0	0	0	0	0	0	0	No	No	NA
	8	Miller Lower Mobile Home Park	0	0	$300.00	0	0	0	0	Yes	No	NA
	9	Mills, Town of	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	Yes	NA	NA
	0	Moorcroft, Town of	$212,169.81	$301,328.88	$10,085.00	0	$35,576.81	$231,482.23	0	Yes	Yes	Water investment fees

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	1	Mountain View Estates	No Answer	No Answer	No Answer	No Answer	NA	NA	NA	No Answer	NA	NA
	2	Mountain View, Town of	$343,825.00	$91,000.00	$1,000.00	NA	$300,000.00	$321,060.00	$5,700.00	Yes	No	NA
	3	Natrona County International Airport	$11,000.00	$7,328.86	$984.00	0	0	0.00	0	No	Yes	Airport operation funds
	4	Newcastle, City of	$1,590,000.00	$368,000.00	$5,229.00	$40,000.00	$107,865.00	$985,000.00	$3,000.00	Yes	Yes	General Fund
	5	North Platte Water & Sewer District	$388,954.00 (projected)	$210,905.00	$6,095.00	Unknown	$263,633.00	$243,764.00	$8,900.00	No	Property tax.	$71,904.00 (8 Mils Property Tax)
	7	Northwest Rural Water District	$2,400,000.00	$1,900,000.00	$4,000.00	$150,000.00	$1,030,723.00	$2,600,000.00	$60,000.00	Yes	Not for operations	SRF and WWDO Grants and Loans for Construction Projects
	8	Opal, Town of	No Answer	$20,160.00	$1,883.00	$1,832.00	$13,326.00	$19,273.00	0	Yes, The difference between the funds collected from water bill payments (19,273.00) and the total collected by the water department in FY17 (21,393.48) is primarily bulk water sales (2,120.48).	No	NA
	9	Orchard Valley Water Co.	$20,000.00	$7,500.00	$1,000.00	No Answer	$15,000.00	$25,000.00	0	Yes	No	NA
	10	Osage Water District	0	0	0	0	0	0	0	Yes	No	NA
	11	Osmond Pipeline Company	$12,240.00	$5,000.00	$1,500.00	0	$25,000.00	$12,240.00	0	Yes	No	NA
	13	Peoples Improvement and Service District	$42,800.00	$39,000.00	$1,700.00	No Answer	$45,000.00	$25,000.00	0 because we have no subdividing going on at this time	Yes	No	NA
	14	Pine Bluffs, Town of	$209,000.00	$120,565.00	$3,280.00	$88,435.00	$50,014.00	$206,500.00	$2,500.00	Yes	Yes but only for projects	SRF Loan and WWDC Grant/Loan

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5	Pine Haven, Town of	$108,246.00	$41,095.00	$1,945.00	$30,000 (A portion of this to repay SLIB loan for current water/well tank project)	$114,446 (a portion of this is to repay SLIB loan for current water/well tank project)	$156,980.00	$3,900.00	Yes	No Answer	No Answer
5	Pinedale Municipal Water System	$2,000,000.00	$200,000.00	$25,000.00	$0.00	$200,000.00	$100,000.00	$40,000.00	Yes	Yes	Sales Tax Revenue
7	Pineview Im. & Svc. District (formerly: Glory Hole Homeowners Association)	$22,982.00	$10,897.00	$900.00	0	0	$20,160.00	0	Yes	No	None
3	Pioneer Water & Sewer District	$375,000.00	$210,000.00	$1,000.00	$30,000.00	$616,819.00	$285,000.00	$7,000.00	Yes	No	NA
9	Pleasant View Water Co, Inc.	$20,000.00	$20,010.80	$240.00	0	$17,197.00	$21,834.00	0	Yes	No	none
0	Point of Rocks, Town of	No Answer	No Answer	$1,000.00	No funding	No funding	No Answer	No info	No	Retail business	Camper park, mobile home park, bar, café
1	Poison Spider Improvement & Service District	$110,000.00	$37,000.00	$300.00	$5,000.00	$40,000.00	$52,000.00	Applies to new members	Yes	Yes	Assessments ($625 per tap)
2	Powell, City of	$1,504,956.00	$593,000.00	$2,000.00	No Answer	$950,000.00	$1,574,285.00	$9,570.00	Yes	No	NA
3	Rafter D Improvement & Service District	$15,360.00	$10,790.00	$800.00	0	0	$15,360.00	0	No	Yes	County Grants
4	Rafter J ISD	$99,809.00	$61,931.00	$2,423.00	$50,000.00	$150,000.00	$111,629.00	$1,500.00	Yes	Yes	Special Assessment (Ending 2021)
5	Ranchester, Town of	$160,000.00	$128,000.00	$7,000.00	$25,000.00	$80,000.00	$176,200.00	$4,000.00	Yes	No Answer	No Answer
7	Rawlins, City of	$982.12	$629.03	$1,500.00	$100.00	$510.61	$1,699,426.00	$52,974.00	Yes	No	NA
3	Red Lane Domestic Water, Inc.	$18,000.00	0	$2,500.00	0	0	0	0	Yes	No	NA
9	Riverside Mobile Home Court LLC	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
0	Riverton, City of	$3,496,065.00	No Answer	$18,039.00	Varies	$532,236 (Operating Reserve); $879,937 (N. Federal Boulevard Construction	$2,371,833.00	$8,345.00	Operationally, yes. We have loans and grants for upcoming & ongoing projects.	Yes	Loans and Grants

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	1	Rock River, Town of	$142,295.00	$99,000.00	$1,000.00	$5,700.00	$42,000.00	$92,000.00	$57,000.00	No	Yes	WWDC, SLIB, and General Funds
	2	Rock Springs, City of	$17,368,565.00	$5,095,398.00	$21,200.00	$150,000.00	$2,790,000.00	$5,796,935.71	$187,470.00	Yes	Yes	Capital Facilities Tax (6th Cent Tax)
	3	Rolling Hills, Town of	$129,408.00	$49,722.00	$8,200.00	No Answer	$245,000.00	$123,000.00	no answer	Yes	No	NA
	4	Rozet Ranchettes Improvement & Service District	$28,020.00	$16,065.00	$900.00	0	0	$23,040.00	$4,500.00	No	Yes	County Grants
	5	Salt Creek Joint Powers Board	$108,700.00	$43,700.00	unknown	No Answer	0	$65,000.00	NA (Towns)	No, Working towards	No Answer	No Answer
	6	Saratoga, Town of	$536,200.00	$536,200.00	$3,000.00	No Answer	$265,891.00	$520,000.00	$17,500.00	Yes	No	NA
	7	Shell Valley West Water & Sewer	NA	NA	NA	NA	NA	NA	NA	Yes	No	NA
	8	Shell Water Users, Inc.	0	0	0	0	0	0	0	Yes	No	NA
	9	Sheridan, City of	$4,750,000.00	$3,400.00	$28,000.00	10 year average is $85,000	$1,600,000.00	$3,500,000.00	$225,000.00	Yes	Yes	Capital facilities tax assists on some capital projects
	0	Shoshone Municipal Pipeline	$3,385,000.00	$2,020,000.00	$19,200.00	$100,000.00	$2,363,700.00	$1,474,000.00	$1,546,000.00	Yes	No	NA
	1	Shoshoni, Town of	$136,163.00	$116,577.73	$2,060.00	0	$150,057.63	$140,617.72	0	Yes	No	NA
	2	Sierra Madre Water & Sewer Joint Powers Board	No Answer	No Answer	$2,000.00	$8,600.00	$215,000.00	No Answer	Varies	Yes	No	NA
	3	Sinclair, Town of	$451,500.00	$270,000.00	$300.00	$373,350.00	$2,300,000.00	$84,695.00	Varies	Yes	Yes	Lease of our water rights to Sinclair Wyoming Refinery
	5	Sleepy Hollow Subdivision (formerly Central Campbell County Improvement & Service District)	$300,000.00	$250,000.00	$2,500.00	$50,000.00	NA	NA	NA	Yes	NA	NA
	5	South Big Horn County JPB	$242,871.00	$106,060.00	$500.00	$0.00	$27,221.00	$262,852.00	$10,000.00	Yes	No	NA
	7	South Cheyenne Water and Sewer District	$5,017,960.00	$3,381,500.00	$10,000.00	No Answer	$1,102,612.00	$2,273,398.00	$508,900.00	Yes	Yes	Mill levy - property tax
	9	South Fork Improvement & Service District	$40,000.00	$11,800.00	$7,560.00	0	0	$28,200.00	0	Yes	No	NA

Wyoming Water Development Commission
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Report #5: Fiscal Data
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Nu	ber	Name of Entity	Annual							Is The System Self Supporting?	Other Funding Sources	What are the Other Funding Sources
			System Budget	Operation & Maintenance	Water Quality Testing Cost	Sinking Fund Contributions	Emergency | Replacement Fund	Water Bill Revenues	Tap Fee Revenues			
	)	South of Laramie Water & Sewer District	$178,771.00	$16,000.00	$500.00	0	$75,000.00	$94,489.00	$146,340.00	Yes	No	NA
	L	South Thermopolis Water & Sewer District	$119,652.00	$5,000.00	$350.00	$0.00	NA	NA	NA	No	NA	Sur Charge of $5
	2	South Torrington Water & Sewer District	$284,139.93	$222,422.96	$240.00	$50,000.00	$328,276.18	$119,749.97	$150.00	Yes (excludes tax levy dollars from Goshen County)	Yes	Goshen County Property Taxes
	3	South Worland Water Users	$158,133.13	$69,230.37	Postage	Whatever we can	$41,522.87	$149,919.77	$3,500.00	Yes	No	NA
	4	Southside Well I&S District	$14,000.00	$3,300.00	$2,000.00	$100.00	$100.00	$9,000.00	$0.00	Yes	No	NA
	5	Spring Creek Improvement District	$56,100.00	$20,000.00	No Answer	No Answer	NA	NA	NA	No	NA	HA Dues
	5	Squaw Creek Water District	$65,000.00	$22,000.00	$1,000.00	$42,000.00	NA	NA	NA	No	NA	Tax Assessment
	7	Star Valley Ranch, Town of	$3,089,365.00	$1,073,701.00	$1,650.00	No Answer	No Answer	$1,034,611.00	$50,000.00	Yes	Yes	SLIB, State revolving fund, Rural Development
	3	Star Valley Trailer Court	$3,000.00	$1,500.00	$650.00	$1,500.00	$10,000.00	No Answer	No Answer	Yes	No	NA
	9	Stone Gate Estates Improvement & Service District	$69,000.00	$20,000.00	$500.00	$12,000.00	$74,500.00	$9,500.00	0	Yes	Yes	Campbell County District Support Group
	)	Sundance West Water District	No Answer	No Answer	NA	NA	NA	No Answer	NA	NA	No Answer	No Answer
	L	Sundance, City of	$602,000.00	$100,000.00	$6,300.00	$11,200.00	$88,800.00	$280,000.00	$10,000.00	Yes	Yes	WWDO
	2	Sundance, City of (In cooperation with Sundance West Homeowners Association	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	Yes, funding to provide the water source will be paid for via special assessments from the landowner	No	NA
	3	Sunridge Estates	$20,000.00	$5,000.00	$50.00	No Answer	$12,000.00	$22,000.00	$0.00	Yes	No	NA
	4	Sunset Ranch Water District	0	0	0	0	0	0	0	Yes	No	NA
	5	Superior, Town of	0	0	0	0	0	0	0	No	No	no answer
	5	Sylvan Bay Homeowners Assn.	$1,500.00	$500.00	$500.00	$0.00	NA	NA	NA	No	NA	Homeowner Assessment

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Report #5: Fiscal Data
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Nu	ber	Name of Entity	Annual							Is The System Self Supporting?	Other Funding Sources	What are the Other Funding Sources
			System Budget	Operation & Maintenance	Water Quality Testing Cost	Sinking Fund Contributions	Emergency | Replacement Fund	Water Bill Revenues	Tap Fee Revenues			
		Targhee Town Water District	$64,000.00	$23,000.00	$600.00	$5,000.00	$110,000.00	$21,500.00	$750.00	Yes	Yes	Tax Assesment
		Ten Sleep, Town of	$43,497.34	$10,000.00	$1,500.00	0	$80,037.00	$65,000.00	$5,000.00	Yes	No	NA
		Teton Village Water & Sewer District	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Thayne, Town of	$119,500.00	$50,700.00	$2,500.00	No Answer	No Answer	$117,500.00	$2,000.00	Yes	No	NA
		Thermopolis, Town of	$1,333,810.00	$1,157,125.00	$4,217.00	$444,664.00	$1,541,412.00	$1,288,854.00	0	Yes	Yes on some replacement/ expansion projects	WWDC, SRF, SLIB
		Torrington, City of	$1,605,815.00	$1,462,395.00	$5,000.00	0	0	$2,008,120.00	$1,163.00	Yes, not supporting Capital program or Reserves	Yes	Grants and loans
		Upton, Town of	$218,701.00	$195,601.00	$2,500.00	$14,000.00	$52,955.13	$210,200.00	$4,000.00	Yes	No	NA
		Vista West Improvement & Service District	$26,000.00	$20,000.00	$1,000.00	$6,000.00	$45,000.00	No Answer	None	Yes: We are essentially self supporting but have had substantial financial assistance in the past from the Wyoming Water Commission. The users are charged an additional $17 monthly to make the annual payment for the water improvement project.	Yes	No Answer
		Vista West Water Co	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer	No Answer
		Wamsutter, Town of	$267,000.00	$43,230.00	$900.00	$10,000.00	$156,000.00	$120,000.00	$1,500.00	Yes	No	NA
		Wardwell Water & Sewer District	No Answer	No Answer	$2,000.00 to $3,000.00 depending on what tests are due	$100,000.00 to $200,000.00	$2,274,500.00	No Answer	FY 16/ $25,217.00	Yes	Yes	8 Mils from AdValorem taxes
		Warm Springs Water District	$80,000.00	$49,000.00	$2,000.00	$5,000.00	$25,000.00	0.00	$3,000.00	Yes	No	NA

Wyoming Water Development Commission
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N	w ber	Name of Entity	Annual							Is The System Self Supporting?	Other Funding Sources	What are the Other Funding Sources
			System Budget	Operation & Maintenance	Water Quality Testing Cost	Sinking Fund Contributions	Emergency | Replacement Fund	Water Bill Revenues	Tap Fee Revenues			
	9	Washakie Rural Improvement & Service District	$496,128.00	$119,746.00	$579.00	$43,500.00	$190,634.00	$51,108.00	$7,300.00	Yes	Yes	RD/RUS
	0	Water Unlimited Inc	No Answer	No Answer	$1,200.00	$10,000.00	$50,000.00	No Answer	0	Marginal	No other source required to date	NA
	1	Wessex Improvement and Service District	$2,800.00	$2,800.00	$100.00	$1,750.00	$3,000.00	0.00	0	Yes	No	NA
	2	West End Water District	$59,000.00	$24,500.00	$2,500.00	$25,000.00	NA	NA	NA	Yes	NA	None
	3	West Gros Ventre Butte Water District	$27,496.00	$14,000.00	$150.00	$17,000.00	$60,000.00	$30,700.00	$13,000 (tax fees)	Yes	Yes	There is a $228 per year property tax assessment to pay off capital improvements done in 1990
	4	Westview Village Subdivision	No Answer	$500.00	$1,000.00	$400.00	$8,500.00	$5,400.00	N/A	Currently Yes	No	NA
	5	Wheatland, Town of	$605,000.00	$355,000.00	$10,000.00	0	0	$620,000.00	$15,000.00	Yes	No	NA
	6	Worland, City of	$2,172,424.00	$1,473,556.00	$4,000.00	No Answer	$3,018,142.00	$1,391,477.00	$5,000.00	Unknown	Unknown	No Answer
	7	Wright Water & Sewer District	$640,000.00	$355,164.00	$8,493.00	$100,000.00	$200,000.00	$281,931.00	$5,544.00	Yes	Yes	motor vehicle, capital tax, property tax
	8	Yoder, Town of	No Answer	$52,547.00	$1000-$2000	$7,000.00	$27,703.00	$59,547.00	0	Yes, Self supporting but not for major repairs	No Answer	No Answer

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Report #6: Wellhead Protection and Conservation Measures
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Name of Entity	Number of Wells	Well Depth (ft.)	Wellhead Protection	Types of Conservation Measures	Estimated Water Savings
Afton, Town of	2	300	Yes	We are from WY, we are a naturally conservative bunch	Summertime, 30 - 40 %
Air Base Acres I&S District	0	NA	Unknown	No Answer	No Answer
Albin, Town of	5	350	Yes	No Answer	No Answer
Alpine	3	260	Yes	We establish water restrictions in the other summer months by resolution along with the county.	approx. 1/4
American Road Water & Sewer District	5	540', 540', 495', 495', 1762'	Yes	Water meters	Unknown
Antelope Valley Improvement & Service District	4	No Answer	Yes	Everything is metered	No Answer
Aspens Pines Water & Sewer District	4	100	Yes	Leak detector/repair; Homeowner education	leak repair: 0-40%
Avalon Mobile Manor	1	180	Yes	None	NA
Baggs, Town of	0	NA	No	No Answer	No Answer
Bairoil, Town of	1	650	Yes	Water waste ordinance	Unknown
Basin, Town of	NA	NA	NA	Replacing old fire hydrants, put in new 1,000,000 water 2 yrs ago (old one leaked badly).	5%-10%
Bear River Regional Joint Powers Board	No Answer	NA	No	N/A	N/A
Bedford Water & Sewer, District	1	320	Yes	Meters, irrigation ordinance, education.	50%
Bennor Estates Improvement & Service District	1	2030	No	water meters	unknown
Big Horn Regional Joint Powers Board	8	2400 to 5200	Yes	no answer	no answer
Big Piney, Town of	6	120-901	Yes	NA	NA
Big Valley & Crossed Arrows Improvement District	1	90	Yes	None	NA
Bridger Valley Joint Powers Board	NA	NA	NA	No Answer	No Answer
Broken Wheel Ranch Improvement & Service District	1	300	No Answer	No Answer	No Answer
Buffalo Valley Water District	2	140	Yes	Voluntary	Unknown
Buffalo, City of	2	30	No	Tiered water rates, even and odd days irrigation	75,000,000 gal annually
Burlington, Town of	2	48	Yes	Our entire system is pvc pipe	No Answer
Burns, Town of	5	No Answer	Yes	Metering	Unknown
Byron, Town of	NA	NA	NA	None	NA
Cambria Improvement and Service District	0	none	No	Meters	unknown
Canyon Improvement and Service District	1	2100	No	Metered Services	no answer

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Name of Entity	Number of Wells	Well Depth (ft.)	Wellhead Protection	Types of Conservation Measures	Estimated Water Savings
Casper, City of	0	NA	For CWRWS - yes	Voluntary	Unknown
Casper, City of | Central Wyoming Regional Water System	29	38	Yes	Voluntary	Unknown
Cedar Hills Water Association	2	1500	No	No	NA
Centennial Water District	2	800, 860	Yes	Irrigation only in early morning and late evening in the heat of summer.	5-10%
Cheyenne Board of Public Utilities, City of	35	475	Yes	No watering between 10-5 (May 1st - Sept 1st). Wasting water, washing hard surfaces; more measure if it's a drought year, BMP's	10-15%
Chugwater, Town of	3	121	Yes	Voluntary,public edgucation,Water restrictions during drought	No Answer
Clearmont, Town of	2	985	Unknown	No Answer	No Answer
Clearview Improvement & Service District	No Answer	NA	NA	Water rates tied to sewer rates. Education. Conditions set by Joint Powers Board	N/A
Cody, City of	0	NA	No	Meters and relatively high cost of water. Annual leak detection of the entire system. Customer discretion, with our raw water system for irrigation needs, treated water use is fairly conservative.	Unknown
Cokeville, Town of	2	173, 175	No	no answer	no answer
Cook Road Water District	2	2230' (1995), 2304' (2012 well)	No	Water meters	Unknown
Cooper Subdivision Mobile Home Park	1	100	No	no answer	NA
Cottonwood Acres Subdivision	4	70	Yes	Rotate Lawn Watering	No Answer
Countryside Court	1	50	Yes	None	NA
Countryside Water Users, Inc.	3	850	No	No	no answer
Cowley, Town of	1	2600	Yes	No Answer	No Answer
Crestview Improvement & Service District (formerly Crestview Estates Subdivision)	1	1600	No	Water meters	unknown
Dave Johnston Power Plant	1	No Answer	Yes	Leak protection	NA
Dayton, Town of	1	2600	Yes	We have a separate non-potable raw water system for irrigation for lawns and gardens	400000
Deaver, Town of	NA	NA	NA	Complete water system replacement - transmission & distribution	unknown at this time of the project
Dillman Estates	7	80' - 115'	Yes	None	NA
Dixon, Town of	NA	NA	No	No Answer	No Answer
Douglas, Town of	1	No Answer	Yes	Watering restrictions during sever drought conditions	Unknown; customer participation is encouraged and enforced if necessary

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Ro Nu	ber	Name of Entity	Number of Wells	Well Depth (ft.)	Wellhead Protection	Types of Conservation Measures	Estimated Water Savings
		Dubois, Town of	2	75	Yes	None. Meter the water makes people realize the water costs money.	No Answer
		East Thermopolis, Town of	0	NA	No	no answer	no answer
		Edgerton, Town of	Unknown	Unknown	No	No	No Answer
		Eight Mile Improvement & Service District	1	1,994	No	Water meters	unknown
		Elk Mountain, Town of	2	2974	Yes	Tiered Rates	Unknown
		Encampment, Town of	NA	NA	No	Water meters, also have separate irrigation system with untreated water for lawns, gardens, etc.	unknown savings, but large burden removed from water plant by utilizing the irrigation system
		Etna Water & Sewer District	1	450	Yes	No unrestricted hose ends	NA
		Evanston, Town of	4	350	Yes	NA	NA
		Evansville, Town of	0	NA	No	No Answer	No Answer
		Fairview Water & Sewer District	1	125	No Answer	No Answer	No Answer
		Force Road Joint Powers Board	2	1520	Yes	Odd - Even watering days.	50%
		Fort Laramie, Town of	2	81	Yes	We have installed new water meter's with leak indications and they are addressed with property owner	Unsure, will have some information next year
		Fox Ridge Subdivision Improvement & Service District	1	1,800	No	Water meters	Unknown
		Frannie, Town of	0	NA	No	no answer	no answer
		Freedom Hills Improvement and Service District	2	1,300 1,254	No	None	Unknown
		Gardens North Home Owners Association	1	400	Yes	No	0
		Gillette, City of	26	2598.5	Yes	Odd/Even Days, No watering on Mondays, Water budgets for large irrigators	UK
		Glendo, Town of	2	550	Yes	watering during late evening and early morning, repairing broken lines and meters	50,000 gallons
		Glenrock, Town of	4	1,230	Yes	Messages on Water Bills, Facebook page, and Webpage	18%
		Grace Land Improvement & Service District	1	1770	Yes	Water meters	Unknown
		Granger, Town of	0	NA	No	No	NA
		Greater Smoot Water & Sewer District	1	350	Yes	Metered Water	no answer
		Green River, City of	0	NA	NA	Changin meters out to radio read with base towers	Will identify leaks quicker
		Green River/Rock Spring/Sw. Co Joint Powers Board	0	NA	NA	No Answer	No Answer
		Green Valley Estates Improvement & Service District	1	1260	Yes	Water meters, also have separate irrigation system with untreated water for lawns, gardens, etc.	Unknown

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		Greybull, Town of	3	3000	No	If needed during peak demand	Unknown
		Gros Ventre North HOA	4	386	Not that I am aware of	None	no answer
		Guernsey, Town of	3	137	Yes	Tiered Water Rates	Undetermined
		Hanna, Town of	1	no answer	No	no answer	no answer
		Happy Valley Pipeline	0	NA	No	no answer	no answer
		Hartville, Town of	2	60 ft	Yes	Replace pumps and chlorinator.	NA
		Heritage Village Water & Sewer District	3	1000	Yes	Odd - Even watering days.	50%
		Hudson, Town of	11	30	Yes	Well in cemetary, park, canal fed water system through town for law irrigation versus treated water	To be determined
		Hulett, Town of	1	NA	No Answer	No Answer	Not known
		Indian Paintbrush Water District	3	350	No Answer	No Answer	No Answer
		Jackson, Town of	7	120	Yes	Meters	50%
		Jeffrey City Water and Sewer District	3	300	Unknown	Recommendations that are mentioned in the annual CCR Report	Unknown
		Juby's Mobile Home Park	0	NA	Yes, City of Cody	NA	NA
		Kaycee, Town of	2	2000, 1750	Yes	Water restrictions in place during summer months	200,000 gpd
		Kemmerer-Diamondville JPB		NA	No Answer	No Answer	No Answer
		LaBarge, Town of	0	NA	No Answer	No Answer	No Answer
		LaGrange, Town of	2	100	Yes	No Answer	Unknown
		Lance Creek Water & Sewer District	2	231	No	per gallon charge above minimum base	5000,000 gal year
		Lander, City of	No Answer	No Answer	No Answer	No Answer	No Answer
		Laramie, City of	11	770	Yes	Tiered water rates and conservation measures as needed	NA
		Lingle, Town of	3	76	Yes	Voluntary and water saving ordinance	5% to 10%
		Lovell, Town of	No Answer	NA	No Answer	No Answer	No Answer
		Lucerne Water & Sewer District	0	NA	Yes, through the Big Horn Regional.	NA since we are a consecutive system from the Big Horn Regional.	NA
		Lusk, Town of	4	423	Yes	Extra charge for usage above the minimum	NA
		Lyman, Town of	0	NA	No	TR, WO	NA
	)	Manderson, Town of	0	no answer	No	No Answer	No Answer
	L	Marbleton, Town of	7	500	Yes	No Answer	No Answer
	2	Meadow Springs Improvement & Service District	1	992	No	None	Unknown
	3	Means First Extension Water & Sewer District	3	1,075 1,030	No	Water meters	Unknown
	4	Medicine Bow, Town of	4	773	Yes	Metered and pressure monitoring	30 percent
	5	Meeteetsee, Town of	No Answer	NA	NA	No Answer	No Answer

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Number	Name of Entity	Number of Wells	Well Depth (ft.)	Wellhead Protection	Types of Conservation Measures	Estimated Water Savings
	Melody Ranch Improvement and Service District	2	111	No	Water meters	Not determined
	Midwest, Town of	0	NA	No	No Answer	No Answer
	Miller Lower Mobile Home Park	2	225, 400	Yes	no answer	no answer
	Mills, Town of	7	35	Yes	No Answer	No Answer
	Moorcroft, Town of	6	420 - 658	Yes	Fence around well head and cement pad around wellhead and building around them	none
	Mountain View Estates	No Answer	No Answer	No Answer	No Answer	NA
	Mountain View, Town of	0	NA	NA	NA	NA
	Natrona County International Airport	NA	NA	NA	NA	NA
	Newcastle, City of	4	3000	Yes	Meters	no answer
	North Platte Water & Sewer District	0	NA	No	None	NA
	Northwest Rural Water District	NA	NA	NA	Tiered rates	5 million gallons annually
	Opal, Town of	3	495	Unknown	None	NA
	Orchard Valley Water Co.	2	252	Yes	Water restrictions in summer months.	No Answer
	Osage Water District	1	2100	Yes	Metering	No Answer
	Osmond Pipeline Company	0	NA	Yes	Monitor for leaks and customer support	NA
	Peoples Improvement and Service District	1	1420	No	Well services are metered	NA
	Pine Bluffs, Town of	10	180	Yes	Summer Water Restrictions	Approximately 45,000 gal/day
	Pine Haven, Town of	2	3400	Yes	No Answer	No Answer
	Pinedale Municipal Water System	0	NA	No	No	No Answer
	Pineview Im. & Svc. District (formerly: Glory Hole Homeowners Association)	1	1,280	No	None	Unknown
	Pioneer Water & Sewer District	NA	NA	NA	Low monthly allowance and tiered rate structure	500,000
	Pleasant View Water Co, Inc.	0	none	No	Water is restricted when City of Casper tells us to.	The most water is used in the summer time.
	Point of Rocks, Town of	2	300	Yes	Strict oversight by management	unknown
	Poison Spider Improvement & Service District	NA	NA	No Answer	No Answer	No Answer
	Powell, City of	0	NA	NA	N/A	NA
	Rafter D Improvement & Service District	1	1,500	No	Water meters	Unknown
	Rafter J ISD	4	165	Yes	None	NA
	Ranchester, Town of	NA	NA	No Answer	No Answer	No Answer
	Rawlins, City of	3	1500 feet	Yes	NA	NA
	Red Lane Domestic Water, Inc.	0	no answer	No	None	NA
	Riverside Mobile Home Court LLC	2	Unknown	Yes	No Answer	No Answer
	Riverton, City of	13	750	Yes	Tiered rates	No Answer
	Rock River, Town of	NA	NA	NA	None	No Answer
	Rock Springs, City of	NA	NA	NA	Reclaimed water for Irrigation	1,000,000 gal/day
	Rolling Hills, Town of	4	1741	Yes	Information to residents in newsletters and packets available at town hall	No Answer

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	4	Rozet Ranchettes Improvement & Service District	1	1,200	No	Water meters	Unknown
	5	Salt Creek Joint Powers Board	NA	NA	NA	No Answer	No Answer
	5	Saratoga, Town of	5	300 +	Yes	Tiered Rules- Cost increases with usage	5%
	7	Shell Valley West Water & Sewer	0	NA	No	None	None
	8	Shell Water Users, Inc.	0	NA	No	none	unknown
	9	Sheridan, City of	NA	NA	NA	No Answer	No Answer
	0	Shoshone Municipal Pipeline	0	NA	No	Our rates and the rates charged by the entities we sell to are high enough to be considered conservation rates.	Unknown
	1	Shoshoni, Town of	4	580, 620, 1051, 1040	Yes	no answer	no answer
	2	Sierra Madre Water & Sewer Joint Powers Board	3	489	Yes	Customers are asked to conserve, installed AMR system for leak detection	Unknown - Not measured
	3	Sinclair, Town of	0	N/A	No	Mandatory water restrictions during drought years	unknown
	5	Sleepy Hollow Subdivision (formerly Central Campbell County Improvement & Service District)	4	2560	Yes	None	NA
	5	South Big Horn County JPB	2	5300, 5400	Yes	No	NA
	7	South Cheyenne Water and Sewer District	NA	NA	No Answer	We follow the Board of Public Utilities Conservation measures/provider to the district	No Answer
	9	South Fork Improvement & Service District	1	1530	No	no answer	no answer
	0	South of Laramie Water & Sewer District	0	NA	No	NA	A lot of our customers use wells to water lawns, trees, shrubs, etc.
	1	South Thermopolis Water & Sewer District	0	NA	No Answer	No	NA
	2	South Torrington Water & Sewer District	NA	NA	Yes	Irrigation scheduling for residential watering	Unknown
	3	South Worland Water Users	NA	NA	No Answer	Our water rates encourage water conservation	No Answer
	4	Southside Well I&S District	1	1,900	Yes	Voluntary restrictions on use	500,000
	5	Spring Creek Improvement District	2	250	Yes	No	NA
	5	Squaw Creek Water District	2	30	No	TR	NA
	7	Star Valley Ranch, Town of	3	117	Yes	No Answer	No Answer
	8	Star Valley Trailer Court	1	160	Yes	Daily Monitoring of total use at source	No Answer
	9	Stone Gate Estates Improvement & Service District	2	1706, 1620	No	Water meters	Unknown
	0	Sundance West Water District	NA	NA	No Answer	No Answer	No Answer
	1	Sundance, City of	3	1200	No Answer	No Answer	No Answer
	2	Sundance, City of (In cooperation with Sundance West Homeowners Association	NA	NA	No	No Answer	No Answer
	3	Sunridge Estates	1	440	Yes	Encourage to conserve	Unknown
	4	Sunset Ranch Water District	0	NA	No	meters	unknown
	5	Superior, Town of	3	1700, 1720, 968	No	no answer	no answer
	5	Sylvan Bay Homeowners Assn.	0	NA	Yes	NA	NA

Wyoming Water Development Commission
2018 Wyoming Public Water Systems Report
Report #6: Wellhead Protection and Conservation Measures
Entities in red font did not respond to current survey, most recent data given.

Number	Name of Entity	Number of Wells	Well Depth (ft.)	Wellhead Protection	Types of Conservation Measures	Estimated Water Savings
7	Targhee Town Water District	3	220 to 450	No	Educational Info to Customers	unknown
3	Ten Sleep, Town of	2	1,000	Yes	metering	unknown
9	Teton Village Water & Sewer District	5	160	No Answer	No Answer	No Answer
0	Thayne, Town of	1	310	No	No Answer	No Answer
1	Thermopolis, Town of	3	45	No	N/A	N/A
2	Torrington, City of	4	120	Yes	Full time lawn watering restrictions	0.53
3	Upton, Town of	3	3400	No	NA	NA
4	Vista West Improvement & Service District	2	1270	Unknown	None	None
5	Vista West Water Co	No Answer	NA	No Answer	No Answer	No Answer
5	Wamsutter, Town of	3	2820 ft.	Yes	Meters	NA
7	Wardwell Water & Sewer District	No Answer	NA	NA	none	None
3	Warm Springs Water District	1	560	No	Voluntary\	Unknown
9	Washakie Rural Improvement & Service District	0	NA	No	NA	NA
0	Water Unlimited Inc	1	2700	Yes	No Answer	No Answer
1	Wessex Improvement and Service District	1	600	No	No Answer	No Answer
2	West End Water District	1	2775	Yes	No	NA
3	West Gros Ventre Butte Water District	2	520	No	None	None
4	Westview Village Subdivision	1	280	Yes 0 it is inclused in a pump house	None	NA
5	Wheatland, Town of	8	530 average	No	Year round water restrictions.	Unknown
5	Worland, City of	No Answer	2827	Yes	Meter Improvements, back flow devices, leak detection, public education	No Answer
7	Wright Water & Sewer District	6	2400, 3000	Yes	none	none
3	Yoder, Town of	4	150	yes	None	No Answer

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A4

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APPENDIX A4-1

WYOMING COMMUNITIES' CURRENT WATER SUPPLIES, WATER RIGHTS, WATER USE

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III. Guernsey Dam to the State Line

A. Guernsey

1. Water Supply

Guernsey's water supply system consists of wells located throughout the corporate limits. The wells are relatively shallow and are tributary to the North Platte River.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	1562	5/6/1965	1.338	93 feet deep
Groundwater	24291	9/12/1973	0.267	Cemetery
Groundwater	61817	6/29/1981	1.561	100 feet deep
Groundwater	86235	4/22/1991	0.669	80 feet deep-golf course
Groundwater	106505	5/15/1997	2.230	225 feet deep

3. Water Use

Year	Diversion (MG)	Population	Per Capita Use (gpcpd)
1994	240.14	1,161	567
1995	187.21	1,156	444
1996	286.16	1,164	674

4. Wastewater System

The town's wastewater is treated in a lagoon system and discharged into the North Platte River. Studies completed by TST indicate that the town returned approximately 100 gallons per capita per day back to the river in the 1992-1996.

5. Guernsey's Existing Water Related Baseline

Baseline year:	1996
Municipal population:	1,154
Other service areas:	10 (3 taps)
Baseline population:	1,164

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	210.33	192.61	645.71	592
Non-irrigation	75.83	51.28	232.81	159
Total annual	286.16	243.89	878.52	751

* Irrigation season-May through September; Non-irrigation season-October through April.

B. Hartville.

1. Water Supply

The Town of Hartville obtains its water from three relatively shallow groundwater wells and two springs, all located near the North Platte River.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	WR363	4/4/1955	0.134	8 feet deep
Groundwater	33900	3/10/1976	0.223	400 feet deep
Groundwater	56437	4/8/1981	0.669	300 feet deep
Groundwater	71532	10/3/1985	0.602	100 feet deep

These wells are located outside the exclusion (green) area and are therefore considered hydrologically connected. However, well specific analyses may be warranted for the wells located near the town.

3. Water Use

A 1995 report indicated that the per capita use in Hartville was 301 gallons per capita per day. The maximum population from 1992 to 1996 of the service area was 77 in 1996. The baseline water use is 8.46 million gallons/year.

4. Wastewater System

The town's wastewater is treated in a tank system and discharged into a stream tributary to the river. However, there is no information available relating to the amount of discharge. Therefore, it is assumed that all of the water diverted is depleted.

5. Hartville's Existing Water Related Baseline

Baseline year: 1996
Baseline population: 77

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	6.22	6.22	19.09	20
Non-irrigation	2.24	2.24	6.88	7
Total annual	8.46	8.46	25.97	27

* Irrigation season-May through September; Non-irrigation season-October through April.

C. Fort Laramie

1. Water Supply

Fort Laramie obtains its water from four alluvial wells near the North Platte River.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	WR95	12/8/1950	1.840	80 feet deep
Groundwater	2066	10/3/1967	1.070	82 feet deep
Groundwater	9902	8/4/1971	0.714	82 feet deep
Groundwater	62637	12/30/1981	0.045	95 feet deep

3. There is no available water use information. Therefore, it is assumed that the per capita use is the same as the 1992-1996 average per capita use for the City of Torrington, which is 430 gallons per capita per day. The maximum population from 1992 to 1996 of the service area was 253 in 1996. The baseline diversions are 39.71 million gallons per year.

4. Wastewater System

The wastewater is treated in a lagoon which intermittently discharges into the river. As there is no continuous discharge, it is assumed for purposes of this report that the wastewater treatment system basically serves as a zero discharge/evaporation facility.

5. Fort Laramie's Existing Water Related Baseline

Baseline year:	1996	
Municipal population:	245	
Addition service area:	8	Two ranches
Baseline population:	253	

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	25.84	25.84	79.33	80
Non-irrigation	13.87	13.87	42.58	43
Total annual	39.71	39.71	121.91	123

* Irrigation season-May through September; Non-irrigation season-October through April.

D. Lingle

1. Water Supply

Lingle obtains its water from four alluvial wells near the North Platte River. The town also has two additional wells that are used to irrigated the cemetery.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	629	11/4/1960	1.338	82 feet deep
Groundwater	8564	4/8/1971	1.059	70 feet deep
Groundwater	41620	10/27/1976	1.115	78 feet deep
Groundwater	78253	3/8/1982	1.338	78 feet deep
Groundwater	86095	7/31/1991	0.223	95 feet deep-cemetery
Groundwater	86096	7/31/1991	0.446	150 feet deep-cemetery

3. There is no available water use information. Therefore, it is assumed that the per capita use is the same as the 1992-1996 average per capita use for the City of Torrington, which is 430 gallons per capita per day. The maximum population from 1992 to 1996 of the service area was 529 in 1996. The baseline diversions are 83.03 million gallons per year.

4. Wastewater System

The wastewater is treated in a lagoon which intermittently discharges into the river. As there is no continuous discharge, it is assumed for purposes of this report that the wastewater treatment system basically serves as a zero discharge/evaporation facility.

5. Lingle's Existing Water Related Baseline

Baseline year:	1996
Municipal population:	499
Addition service area:	30 (10 taps)
Baseline population:	529

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	54.03	54.03	165.87	166
Non-irrigation	29.00	29.00	89.04	90
Total annual	83.03	83.03	254.91	256

* Irrigation season-May through September; Non-irrigation season-October through April.

E. Yoder

1. Water Supply

Yoder is located approximately 10 miles south of the North Platte River and obtains its water from relatively deep, low production groundwater wells.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	33229	5/20/1976	0.045	115 feet deep
Groundwater	64676	10/16/1981	0.027	420 feet deep
Groundwater	64677	12/11/1981	0.040	90 feet deep
Groundwater	64678	12/11/1981	0.036	85 feet deep
Groundwater	69496	1/14/1985	0.156	100 feet deep*
Groundwater	69497	1/25/1985	0.040	350 feet deep*
Groundwater	81444	11/28/1989	0.089	195 feet deep*
Groundwater	94572	2/14/1994	0.056	185 feet deep*
Groundwater	94573	2/14/1994	0.027	193 feet deep*

* These well are located inside the exclusion (green) area and are therefore non-hydrologically connected groundwater wells.

3. Water Use

There is no available water use information. Therefore, it is assumed that the per capita use is the same as the 1992-1996 average per capita use for the City of Torrington, which is 430 gallons per capita per day. The maximum population from 1992 to 1996 of the service area was 181 in 1996. The baseline diversions are 28.41 million gallons per year.

4. Wastewater System

The wastewater is treated in a lagoon. As there is no continuous discharge, it is assumed for purposes of this report that the wastewater treatment system basically serves as a zero discharge/evaporation facility.

5. Yoder's Existing Water Related Baseline

As the town's primary water supply comes from non-hydrologically connected groundwater wells, a baseline for purposes of the depletions plan is not necessary.

F. Torrington

1. Water System

In 1997, Torrington's water supply consisted of 10 wells varying in depth from 60 to 175 feet. The city served South Torrington Water and Sewer District, plus an additional 50 people. The city is in the process of reconfiguring its water system to resolve a problem with nitrates in the water.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	P437C	12/31/1918	0.669	90 feet
Groundwater	P438C	12/31/1918	0.669	90 feet
Groundwater	SC439	1938	1.671	57 feet
Groundwater	SC440	1945	1.783	75 feet
Groundwater	P156G	8/21/1952	1.671	90 feet
Groundwater	757	7/19/1961	2.674	132 feet
Groundwater	868	5/1/1962	1.671	80 feet
Groundwater	1356	11/18/1964	1.671	100 feet
Groundwater	2629	6/25/1969	2.228	100 feet
Groundwater	14763	6/15/1972	2.228	175 feet-Golf course
Groundwater	14789	7/18/1972	2.900	175 feet
Groundwater	31932	9/11/1975	0.111	60 feet
Groundwater	45138	9/21/1978	2.005	125 feet-Cemetery
Groundwater	45139	9/21/1978	1.337	65 feet
Groundwater	71692	10/24/1983	0.223	57 feet
Groundwater	65949	11/15/1983	2.228	70 feet
Groundwater	69070	12/4/1984	2.117	128 feet
Groundwater	78576	6/10/1986	0.390	75 feet
Groundwater	79681	7/1/1987	2.228	80 feet-Golf course
Groundwater	81751	10/20/1988	2.228	110 feet
Groundwater	80868	4/21/1989	0.223	57 feet

3. Water Use

The following table uses diversion information supplied by the City of Torrington and DAI annual population estimates.

Year	Diversion (MG)	Population	Per Capita Use (gpcpd)
1992	1,052.53	6,256	461
1993	944.86	6,307	410
1994	1,022.16	6,320	443
1995	943.11	6,330	408
1996	966.97	6,358	417

4. Wastewater System

The city's wastewater is treated in a lagoon system and discharged into the North Platte River. The city does not provide water to the West Highway Water and Sewer District but does treat its wastewater. The water and sewer district has a population of approximately 450. Therefore, a reduction in the recorded effluent was made to account for the district's return flow. In order to calculate the depletions for 1992, the baseline year, the monthly diversions and adjusted effluent for 1996 were used. The resulting depletion factors were applied to 1992 diversions to determine the 1992 depletions. Torrington depletes approximately 65% of the water diverted or pumped.

5. Torrington's Existing Water Related Baseline

Baseline year:	1992
Municipal population:	5,670
South Torrington:	536
Other:	50
Baseline population:	6,256

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	650.39	503.81	1,996.71	1,547
Non-irrigation	402.14	182.54	1,234.56	561
Total annual	1,052.53	686.35	3,231.27	2,108

* Irrigation season-May through September; Non-irrigation season-October through April.

IV. Horse Creek Basin

LaGrange

1. Water Supply

LaGrange is the only municipality located in the Horse Creek drainage. It is approximately 25 miles from the North Platte River and obtains its water from groundwater wells. The wells are operated to produce a maximum of 450 gallons per minute.

2. Water Rights

Source	Permit	Priority	CFS	Remarks
Groundwater	3799	12/9/1969		Wendt Well-emergency supply only
Groundwater	55678	9/5/1980	1.004	100 feet deep
Groundwater	55679	9/5/1980	1.004	100 feet deep
Groundwater	74020	2/11/1987	0.279	100 feet deep

3. There is no available water use information. Therefore, it is assumed that the per capita use is the same as the 1992-1996 average per capita use for the City of Torrington, which is 430 gallons per capita per day. The maximum population from 1992 to 1996 of the service area was 300 in 1996. The baseline diversions are 47.09 million gallons per year.

4. Wastewater System

The wastewater is treated in a lagoon. As there is no continuous discharge, it is assumed for purposes of this report that the wastewater treatment system basically serves as a zero discharge/evaporation facility.

5. LaGrange's Existing Water Related Baseline

Baseline year:	1996
Municipal population:	291
Addition service area:	9 (2 taps)
Baseline population:	300

Season	Diversions (MG)	Depletions (MG)	Diversions (AF)	Baseline Depletions (AF)
Irrigation	30.64	30.64	94.07	95
Non-irrigation	16.45	16.45	50.50	55
Total annual	47.09	47.09	144.57	150

* Irrigation season-May through September; Non-irrigation season-October through April.

Demands (AF)	Guernsey	Hartville	Ft. Laramie	Lingle	Yoder	Hawk Springs	La Grange	Torrington
PAWS	335.6	21.5	74.1	156.4	51.7	21.7	105.7	1794.2
DP Benchmark								
Irrigation	592	20	80	166	NA	NA	95	1547
Non-Irrigation	159	7	43	90			55	561
Total	751	27	123	256			150	2108
Irrigation	323	6	98	114	NA	NA	100	942
Non-irrigation	187	5	14	40			59	354
2016 Actual	510	11	112	154			159	1296

APPENDIX A4-2

NEBRASKA COMMUNITIES' CURRENT WATER SUPPLIES, WATER RIGHTS, WATER USE

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Appendix A4-2: Nebraska Community's Current Water Supply

Morrill (via WNJWB[1])	
Well	**Production (gpm)**
WNJWB #1	750
WNJWB #2	750
WNJWB #3	750

[1] - Western Nebraska Joint Water Board

Mitchell	
Well	**Production (gpm)**
Well #1	500
Well #2	650
Well #3	700
Well #4	1,000

Scottsbluff	
Well	**Production (gpm)**
Well #1	750
Well #3	1,000
Well #5	1,000
Well #9	1,000
Well #10	1,000
Well #11	1,000
Well #12	1,000
Well #13	1,800
Well #14	750
Well #15B	750
Well #17	2,000
Well #18	2,000
Well #19	1,500
Well #20	1,500

Terrytown
City of Gering's Wellfield

Minatare
City of Scottsbluff's Wellfield

Bayard	
Well	**Production (gpm)**
Well #811	395
Well #812	403
Well #2016-1	500

Bridgeport	
Well	**Production (gpm)**
Well #1	1,000
Well #2	1,000
Well #3	1,000
Well #4	1,000

APPENDIX A4-3

SAMPLE AND ANALYSIS PLAN

FOR PAWS LEVEL II STUDY

PREPARED FOR
WWDC; GOSHEN COUNTY, WY; CITY OF SCOTTSBLUFF, NE

MAY 17, 2017

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Sample and Analysis Plan for:

PAWS LEVEL II STUDY

Wyoming Water Development Commission; Goshen County, Wyoming; City of Scottsbluff, Nebraska

PREPARED BY
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Scottsbluff, Nebraska 69361
(308) 635-1926

PROJECT MANAGER
Jeff Fuller, PE

PROJECT NO.
RM160321-00

May 17, 2017

M.C. SCHAFF AND ASSOCIATES, INC. | PGE PANHANDLE GEOTECHNICAL & ENVIRONMENTAL | ENVIRO SERVICE

CERTIFICATE OF ENGINEER

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.





Michael Olsen

Prepared by Michael Olsen

M.C. Schaff & Associates, Inc.
Organization

Jeff B Fuller

Approved by Jeff Fuller

M.C. Schaff & Associates, Inc.
Organization

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I. Introduction

Southeast Wyoming (Goshen and Platte Counties) and Western Nebraska (Scotts Bluff and Morrill Counties) and adjacent rural areas along the North Platte River basin are experiencing deteriorating water quality, and it is becoming increasingly difficult and expensive to meet public water quality standards. This lack of dependable water quality limits the ability of the region to remain vibrant and sustain current and future growth and economic vitality. In order to determine preliminary water quality determinations that may affect the preliminary design and cost estimations, water quality samples will be taken from various locations along the North Platte and Laramie Rivers. The specific locations are outlined later in this plan.

This plan will include the following:

- Reference to Enviro Service, Inc.'s Quality Assurance Plan,
- Sample Site Locations and Background,
- Purpose and Objectives of the Sampling Plan,
- Study Design.

II. Credible Data Statement

This SAP fulfills requirements set forth by Wyoming State Statutes 35-11-103 (c) (xix), and 35-11-302 (b) (i) and (ii), commonly known as the Credible Data Law.

III. Quality Assurance Project Plan

A. Sampling

Standard operating procedures will be utilized as a primary tool to ensure field procedure quality control. Staff performing field activities for this project will receive the training necessary to ensure that all SOPs are fully and properly used when completing field-monitoring activity. Water Quality samples will be collected in accordance with the U.S. EPA Surface Water Sampling Guide, SESDPROC-201-R3. Primary SOPs utilized for this project will be the SOPs for Scoop Sampling, Bailer Sampling, and Bucket Sampling.

B. Sample Handling and Custody

Standard operating procedures will be utilized as a primary tool to ensure sampling handling and transference quality control. Staff preforming sample handling activities will do so in accordance the Enviro Service, Inc., Laboratory Quality Assurance Plan, last reviewed in January 21, 2016. A copy of this Quality Assurance Plan can be submitted to the reviewing agency at its request. SOP #3 details the sample handling and custody requirements.

C. *Water Quality Testing*

Standard operating procedures will be utilized as a primary tool to ensure water quality testing quality control. Staff performing Nitrates in Water, water quality testing activities will do so in accordance the Enviro Service, Inc., Laboratory Quality Assurance Plan, last reviewed in January 21, 2016. A copy of this Quality Assurance Plan can be submitted to the reviewing agency at its request. SOP #18 details the Nitrates in Water testing in accordance with Standard Methods 4500-NO_3 D method. Water quality testing for Arsenic and Uranium in water will be conducted by an Enviro Service, Inc. subcontractor. The subcontractor is required to have SOPs for each of the tests that are in accordance with EPA Method 200.8, Revision 5.4: Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma- Mass Spectrometry.

IV. Background/Site History

Southeast Wyoming (Goshen and Platte Counties) and Western Nebraska (Scotts Bluff and Morrill Counties) and adjacent rural areas along the North Platte River basin are experiencing deteriorating water quality, and it is becoming increasingly difficult and expensive to meet public water quality standards. This lack of dependable water quality limits the ability of the region to remain vibrant and sustain current and future growth and economic vitality. An Appraisal Investigation was completed in January of 2012 and identified the following water quality issues. The following chart identifies rural communities and rural area water supplies that have exceeded primary maximum contamination levels (PMCLs) and secondary maximum contaminant levels (SMCLs) for constituents as identified in the Safe Drinking Water Act.

Community	Contaminants							
	PMCLs						SMCLs	
	Radon	Arsenic	Uranium	Nitrates	Lead	Copper	Iron	Manganese
Hartville			X	X				
Guernsey	X						X	X
Lingle				X				
Torrington				X				
Goshen County, WY*		X	X	X				
Yoder		X	X					
Henry					X	X		
Lyman		X	X					
Morrill			X	X				
Minatare			X					
Gering			X					
Bayard				X				
Bridgeport			X					
Morrill County, NE*				X				

* Indicates the unincorporated areas within the county

V. Purpose and Objectives

The purpose of the water quality testing is to identify whether current water quality regulations will be able to be met by conventional surface water treatment techniques in the surface water sources of Grayrocks Reservoir, Guernsey Reservoir and along the North Platte River downstream of Guernsey Reservoir to the confluence of The Laramie River and the North Platte River. Based on the initial test results; location, frequency and test parameters may be modified to determine PAWS water supply locations. Depending upon the requirements to meet current water quality regulations, a site may be eliminated from evaluation in the Level II Study or adjustments will be have to be made to the cost estimates in regards to the technical approach to treat the source water.

VI. Study Design

The sampling is designed to assess nitrates, arsenic, and uranium levels in the source water from various locations along the North Platte and Laramie Rivers. Additional water quality constituents may be sampled, as well, depending upon preliminary test results.

A. Personnel

Jeff Fuller is the Project Manager and will oversee the sampling and water quality testing. Michael Olsen will also oversee water sampling and the test results. Sampling will be done by Kevin Misner (Nebraska Grade 6 Water Operators License, Nebraska Grade 2 Wastewater Operator License, 20 years of experience with M.C. Schaff & Associates.) Water Quality testing for Nitrates will be conducted by Stephen Hancock (6 years of experience and training in Enviro Service, Inc. Laboratory Quality Assurance Plan).

B. Site Location/Permission

Testing Sites will be located at Greyrocks Reservoir on the Laramie River (permission has been given by Levi Mickelsen of Basin Electric); along the North Platte River downstream of Guernsey Reservoir and upstream of the Laramie and North Platte River's confluence; and in Guernsey Reservoir. Locations will be identified at the time of first sampling via GPS and will be added to this plan and the GIS Plan.

C. Water Quality Parameters

The water quality tests will consist of testing for Nitrates, Arsenic, and Uranium: however additional water quality test constituents may be included, as identified.

D. Field Instruments and Equipment

Water samples will be taken via scoop, bailer, or bucket as per the U.S. EPA Surface Water Sampling procedure SESDPROC-201-R3. Specific makes and

models of the instruments and equipment used for the water quality testing are contained within the respective lab's Quality Assurance Plans.

E. Sample Duration and Frequency

For the Level II Study, samples will be taken quarterly to evaluate potential seasonal variations in the source water quality. During the water testing analysis, the testing frequency may also be adjusted to more frequent times, if deemed beneficial.

F. Sample Collection and Analytical Methods

As stated previously in this plan;

Standard operating procedures will be utilized as a primary tool to ensure sampling handling and transference quality control. Staff preforming sample handling activities will do so in accordance the Enviro Service, Inc., Laboratory Quality Assurance Plan, last reviewed in January 21, 2016. A copy of this Quality Assurance Plan can be submitted to the reviewing agency at its request. SOP #3 details the sample handling and custody requirements.

Standard operating procedures will be utilized as a primary tool to ensure water quality testing quality control. Staff preforming Nitrates in Water, water quality testing activities will do so in accordance the Enviro Service, Inc., Laboratory Quality Assurance Plan, last reviewed in January 21, 2016. A copy of this Quality Assurance Plan can be submitted to the reviewing agency at its request. SOP #18 details the Nitrates in Water testing in accordance with Standard Methods 4500-NO_3 D method. Water quality testing for Arsenic and Uranium in water will be conducted by an Enviro Service, Inc. subcontractor. The subcontractor is required to have SOPs for each of the tests that are in accordance with EPA Method 200.8, Revision 5.4: Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma- Mass Spectrometry.

G. Sample Containers and Labeling

Sampling will consist of obtaining one, 500 mL and one, 100 mL bottle per test, per location. The 500 mL bottle will contain the sample for testing arsenic and uranium levels and the 100 mL bottle will contain the sample for testing nitrate levels.

At a minimum; the samples will be labelled with the following:

- Sample Identification
- Sample Location
- Name of Sampler
- Sample Date

- Sample Time
- Sample Type
- Matrix of Sample.

The sample shall also be accompanied with a Chain of Custody Record.

Once the sample is received by the Laboratory; the Laboratory will verify the following:

- Chain of Custody Protocols
- Sample Condition Upon Arrival at the Laboratory
- Analysis Data vs. Applicable Sample Holding Time
- Frequency of QA/QC Analysis
- Laboratory Blank Contamination
- Laboratory Precision (relative percent difference vs. control limits)
- Laboratory Accuracy (percent recovery vs. control limits).

H. Field Notes

Field notes will consist of the following table:

Sampler:	
Sample of:	
Sample for:	
Date:	
Time:	
Weather:	
GPS Location:	Yes/No
Issues During Sampling:	

I. Corrective Action

On the basis of audit results, if it appears that field or laboratory data indicate discrepancies, or potential errors; this will be documented and appropriate corrective actions will be taken. Corrective actions may include one or more of the following:

- Measurements may be repeated to check the error.
- Calibrations may be checked and/or repeated.
- Instrument or measuring devices may be replaced or repaired.
- New samples may be collected and/or reanalyzed.

sample analysis plan

Feet
0 4,000 8,000 12,000 16,000

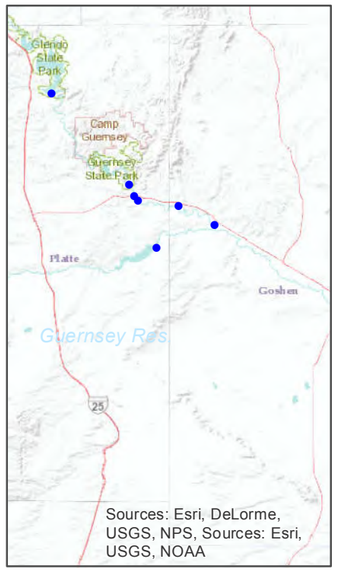
Document Path: G:\Jobs\RM160321-00 PAWS - Level II Study\Task 7 GIS\PAWSmaps\Sample Analysis\RM160321 PAWS Map—Sample Analysis Plan.mxd

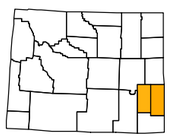
RM160321-00
PAWS Level II Study

County Boundary

Potential Water Sampling Location

1 Grayrocks Reservoir spillway
2 Guernsey Reservoir spillway
3 Guernsey Hwy 26 bridge (west)
4 S Guernsey Rd bridge (south)
5 Road 3 bridge (CR-51)
6 Gray Rocks Rd bridge (WY-160/CR-53)
7 Glendo Reservoir spillway (see inset map)





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Scottsbluff

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APPENDIX A4-4

WATER QUALITY TESTING RESULTS

DRAFT

Appendix A4-4 Water Quality Testing Results

Sample Date		6/1/2017			9/28/2017					3/29/2018						7/23/2018 (Silt Run)			
Contaminant	Units	Grayrocks Reservoir	Guernsey Reservoir	North Platte River	Grayrocks Reservoir	Guernsey Reservoir	North Platte River	Glendo Reservoir	Reach between Glendo and Guernsey	Grayrocks Reservoir	Guernsey Reservoir	North Platte River	Glendo Reservoir	Reach between Glendo and Guernsey	Downstream of Confluence	Guernsey Reservoir	North Platte River	Glendo Reservoir	Reach between Glendo and Guernsey
Nitrate	ppm	0.72	0.66	0.76	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.3	n.d.	n.d.	0.3	n.d.	n.d.	n.d.	n.d.
Arsenic	ppb	1	n.d.	0.5	2.5	2.4	2.1	1.8	1.7	1.9	1.6	1.6	1.8	1.4	1.7	4.5	2.5	2.2	1.5
Uranium	ppb	10	7.5	7.7	11.7	7.8	7.7	7.6	10.5	14.3	12.6	14.8	11.4	14.2	15	9.5	9	8.1	8.2
Sodium	ppm	42	42.9	46.3	40.4	37.6	40.1	40.7	38.8	40	38	44	54	40.6	40.1	43.6	41.9	41	42.2
Calcium	ppm	57	52.4	55.4	59.8	53.9	56.3	55.4	55.4	65.3	61.9	62.9	66.4	58.5	66	63.2	58.3	50.6	53.8
Magnesium	ppm	20.7	16.4	16.8	22.3	16.5	17.2	17.3	17.4	22.9	18.6	17	22.9	18.2	20.8	20.5	18.5	17.2	17.7
pH		8.43	8.51	8.45	8.28	8.47	8.5	8.33	8.58	8.47	8.31	8.17	8.44	8.48	8.3	8.01	8.21	8.48	8.13
Sulfate	ppm	133	144	145	124	126	127	136	126	126	166	141	198	145	142	146	142	144	142
Conductivity	mmhos/cm	0.59	0.559	0.569	0.589	0.53	0.543	0.552	0.542	0.615	0.59	0.602	0.682	0.576	0.632	0.591	0.565	0.553	0.56
TDS	ppm	384	363	370	383	344	353	359	352	400	384	391	443	374	411	384	367	359	364
Hardness	gr/gal	13.3	11.6	12.1	14.1	11.8	12.4	12.2	12.3	15	13.5	13.3	15.2	12.9	14.6	14.2	13	11.5	12.1
Iron	ppm	0.58	0.25	0.56	0.28	0.48	0.2	0.5	0.05	0.11	0.06	0.12	1.2	0.05	0.48	4.23	2.81	0.12	0.28
Manganese	ppm	0.02	0.017	0.026	0.028	0.06	0.041	0.036	0.039	0.016	0.029	0.052	0.039	0.026	0.042	0.328	0.104	n.d.	0.058
Chloride	ppm	13	12	12	13	10	10	11	10	15	10	13	15	11	13	12	11	11	12
Fluroide	ppm	0.3	0.1	1.8	0.4	0.4	0.3	0.3	0.3	0.5	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.4
Turbidity	NTU				6.1	3.4	2.4	9.7	1	1.3	2.2	2.8	23	1.3	15	30	17	1.9	6

Contaminant	Units	MCL
Nitrate	ppm	10
Arsenic	ppb	10
Uranium	ppb	30
Sodium	ppm	
Calcium	ppm	
Magnesium	ppm	
pH		6.5-8.5
Sulfate	ppm	250
Conductivity	mmhos/cm	
TDS	ppm	500
Hardness	gr/gal	
Iron	ppm	0.3
Manganese	ppm	0.05
Chloride	ppm	250
Fluroide	ppm	4
Turbidity	NTU	5 Max but if it is filtered it can't go above 1

Enviro Service, Inc.

818 South Beltline Hwy East
Scottsbluff, NE 69361
Phone: 308-632-3933
Fax: 308-635-7807

Certificate of Analysis

Date Reported: 6/19/2017 8:18:48 AM

M.C. Schaff & Associates
818 South Beltline Hwy East
Scottsbluff, NE 69361

Date Sampled : 6/1/2017
Date Received : 6/1/2017
Methodology : Standard Methods, 20th Ed.

Project ID : Water Analysis
Client Sample ID : Site 5 North Platte River
Sample Number : 20170625-01
Sample Type : Grab

Requested Analysis

Analyte	Method	Analysis Date	Result	Units	MDL
Nitrate-N	4500-NO3 D	6/2/2017	**0.76**	mg/L	0.5

MDL = Method Detection Limit

Suitability Limit for Drinking Water = 10.0 mg/L

Data Qualifiers

A = Results based on an average of two determinations.
J = Estimated value; results not accurate.

Brian Hilbert
Lab Manager

cc: Mike Olson

Enviro Service, Inc.

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Scottsbluff, NE 69361
Phone: 308-632-3933
Fax: 308-635-7807

Certificate of Analysis

Date Reported: 6/19/2017 8:18:56 AM

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818 South Beltline Hwy East
Scottsbluff, NE 69361

Date Sampled : 6/1/2017
Date Received : 6/1/2017
Methodology : Standard Methods, 20th Ed.

Project ID : Water Analysis
Client Sample ID : Site 1 Grey Rocks
Sample Number : 20170625-02
Sample Type : Grab

Requested Analysis

Analyte	Method	Analysis Date	Result	Units	MDL
Nitrate-N	4500-NO3 D	6/2/2017	**0.72**	mg/L	0.5

MDL = Method Detection Limit

Suitability Limit for Drinking Water = 10.0 mg/L

Data Qualifiers

A = Results based on an average of two determinations.
J = Estimated value; results not accurate.

Brian Hilbert
Lab Manager

cc: Mike Olson

Enviro Service, Inc.

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Scottsbluff, NE 69361
Phone: 308-632-3933
Fax: 308-635-7807

Certificate of Analysis

Date Reported: 6/19/2017 8:19:02 AM

M.C. Schaff & Associates
818 South Beltline Hwy East
Scottsbluff, NE 69361

Date Sampled : 6/1/2017
Date Received : 6/1/2017
Methodology : Standard Methods, 20th Ed.

Project ID : Water Analysis
Client Sample ID : Site 2 Guernsey Reservoir
Sample Number : 20170625-03
Sample Type : Grab

Requested Analysis

Analyte	Method	Analysis Date	Result	Units	MDL
Nitrate-N	4500-NO3 D	6/2/2017	**0.66**	mg/L	0.5

MDL = Method Detection Limit

Suitability Limit for Drinking Water = 10.0 mg/L

Data Qualifiers

A = Results based on an average of two determinations.
J = Estimated value; results not accurate.

Brian Hilbert
Lab Manager

cc: Mike Olson

REPORT NUMBER
17-162-4006
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2678246
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Jun 01, 2017
TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

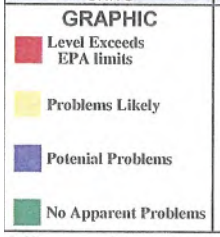
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analytical Results for 0625-01 SITE 5 N. PLATTE RIVER

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	46.3	55.4	16.8	8.45	n.d.	145	0.569	370	12.1		0.56	0.026	12	1.8
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0625-01 SITE 5 N. PLATTE RIVER**	Lab Number: **2678246**		Date Sampled: **2017-06-01 1440**			
Uranium (total)	0.0077	mg/L	0.0001	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11
Arsenic (total)	0.0005	mg/L	0.0005	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.
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2678247

DATE SAMPLED
Jun 01, 2017

TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

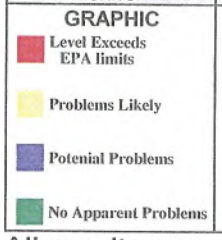
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analytical Results for 0625-02 SITE 1 GREY ROCK

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	42.0	57.0	20.7	8.43	n.d.	133	0.590	384	13.3		0.58	0.020	13	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

17-162-4007

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BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0625-02 SITE 1 GREY ROCK**	Lab Number: **2678247**	Date Sampled: **2017-06-01 1508**				
Uranium (total)	0.0100	mg/L	0.0001	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11
Arsenic (total)	0.0010	mg/L	0.0005	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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REPORT NUMBER
17-162-4008
REPORT DATE
Jun 11, 2017
RECEIVED DATE
Jun 02, 2017
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8537

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ISSUE DATE
Jun 12, 2017
LAB NUMBER
2678248
DATE SAMPLED
Jun 01, 2017
TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

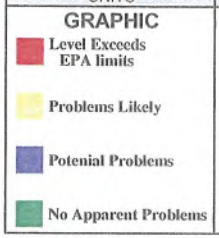
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analytical Results for 0625-03 SITE 2 GUERNSEY R

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	42.9	52.4	16.4	8.51	n.d.	144	0.559	363	11.6		0.25	0.017	12	0.1
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

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Account Manager
hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER:
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ISSUE DATE
Jun 12, 2017

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
20170625

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0625-03 SITE 2 GUERNSEY R**	Lab Number: **2678248**	Date Sampled: **2017-06-01 1535**				
Uranium (total)	0.0075	mg/L	0.0001	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11
Arsenic (total)	n.d.	mg/L	0.0005	EPA 200.8	cjm4-2017/06/09	kkh9-2017/06/11

All results are reported on an AS RECEIVED basis., n.d. = not detected

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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Enviro Service, Inc.
818 South Beltline Hwy East
Scottsbluff, NE 69361
308-632-3933
bhilbert@panhandlegeotech.com

Chain of Custody Record

enviroservice

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Michael Olsen	Site Contact: Platte Co. NE	Date: 6/1/17	COC No:
M C. Schaff + Assoc.	Tel/Fax: 308-635-1926	Lab Contact:	Carrier:	____ of ____ COCs
818 S. Beltline Hwy E	Analysis Turnaround Time			Sampler:
Scottsbluff, NE 69361	☑ STANDARD ☐ RUSH			For Lab Use Only:
Phone #: 308-635-1926	TAT Requested if Rush ____			Cooler Temp. (°C): ____
Sampler Name: Michael Olsen				
Sampler Signature: Michael Olsen				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Preservation	Nitrates	Uranium	Arsenic	Domestic Suitability	Laboratory Sample #:
Sample Site 3 North Platte River	6/1	2:40	G	Water	1			X	X	X	X	20170625-01
Sample Site 1 Grey Reefus	6/1	3:08	G	Water	1			X	X	X	X	20170625-02
Sample Site 2 Guernsey Reservoir	6/1	3:35	G	Water	1			X	X	X	X	20170625-03

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Matrix: S=Soil, DW=Drinking Water, WW=Wastewater, A=Air, OT=Other ____

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Olsen	M C. Schaff + Assoc	6/1/17 1707			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
			Steve Hansen	Enviro	6-1-17 1707

REPORT NUMBER
17-278-4125

REPORT DATE
Oct 05, 2017

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8537

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Sep 29, 2017

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ISSUE DATE
Oct 05, 2017

LAB NUMBER
2727512

DATE SAMPLED
Sep 28, 2017

TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

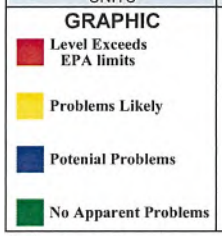
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analytical Results for 1157-02, #1 GREY ROCKS

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.4	59.8	22.3	8.28	n.d.	124	0.589	383	14.1		0.28	0.028	13	0.4
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
17-278-4125

REPORT DATE
Oct 05, 2017

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8537

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ISSUE DATE
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ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **1157-02, #1 GREY ROCKS**	Lab Number: **2727512**	Date Sampled: **2017-09-28 1535**				
Arsenic (total)	0.0025	mg/L	0.0005	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Uranium (total)	0.0117	mg/L	0.0001	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Turbidity	6.1	NTU	0.50	SM 2130 B-(2001)	alq6-2017/10/02	cmw2-2017/10/03

All results are reported on an AS RECEIVED basis.

For questions please contact:

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17-278-4127

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Oct 05, 2017

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ISSUE DATE
Oct 05, 2017

LAB NUMBER
2727514

DATE SAMPLED
Sep 28, 2017

TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

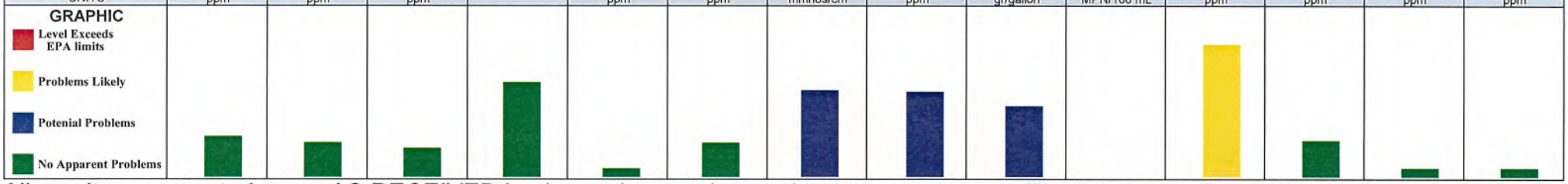
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analytical Results for 1157-04, #6 GLENDO

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.7	55.4	17.3	8.33	n.d.	136	0.552	359	12.2		0.50	0.036	11	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **1157-04, #6 GLENDO** Lab Number: **2727514** Date Sampled: **2017-09-28 1319**						
Arsenic (total)	0.0018	mg/L	0.0005	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Uranium (total)	0.0076	mg/L	0.0001	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Turbidity	9.7	NTU	0.50	SM 2130 B-(2001)	alq6-2017/10/02	cmw2-2017/10/03

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For questions please contact:

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Account Manager
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REPORT NUMBER
17-278-4126

REPORT DATE
Oct 05, 2017

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RECEIVED DATE
Sep 29, 2017

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ISSUE DATE
Oct 05, 2017

LAB NUMBER
2727513

DATE SAMPLED
Sep 28, 2017

TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

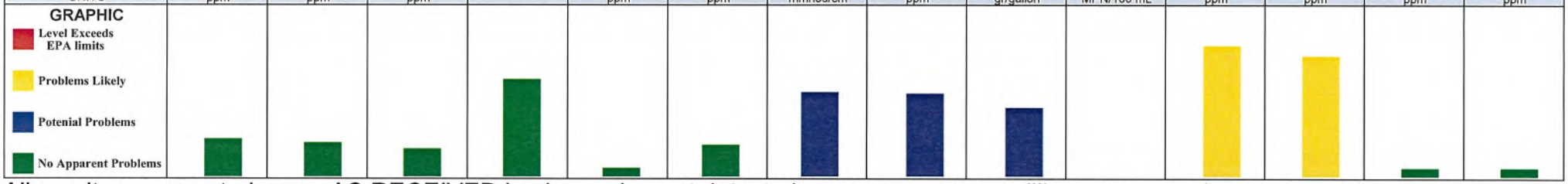
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analytical Results for 1157-03, #2 GUERNSY RES.

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	37.6	53.9	16.5	8.47	n.d.	126	0.530	344	11.8		0.48	0.060	10	0.4
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
17-278-4126

EPORT DATE
Oct 05, 2017

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8537

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Sep 29, 2017

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ISSUE DATE
Oct 05, 2017

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **1157-03, #2 GUERNSY RES.**	Lab Number: **2727513**	Date Sampled: **2017-09-28 1500**				
Arsenic (total)	0.0024	mg/L	0.0005	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Uranium (total)	0.0078	mg/L	0.0001	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Turbidity	3.4	NTU	0.50	SM 2130 B-(2001)	alq6-2017/10/02	cmw2-2017/10/03

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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17-278-4128

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ISSUE DATE
Oct 05, 2017

LAB NUMBER
2727515

DATE SAMPLED
Sep 28, 2017

TIME SAMPLED
12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

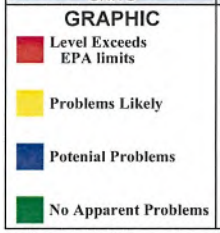
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analytical Results for 1157-05, #7 REACH

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	38.8	55.4	17.4	8.58	n.d.	126	0.542	352	12.3		0.05	0.039	10	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **1157-05, #7 REACH** Lab Number: **2727515** Date Sampled: **2017-09-28 1438**						
Arsenic (total)	0.0017	mg/L	0.0005	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Uranium (total)	0.0105	mg/L	0.0001	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Turbidity	1.0	NTU	0.50	SM 2130 B-(2001)	alq6-2017/10/02	cmw2-2017/10/03

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REPORT NUMBER
17-278-4124

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Oct 05, 2017

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Oct 05, 2017

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2727511

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Sep 28, 2017

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12:00

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

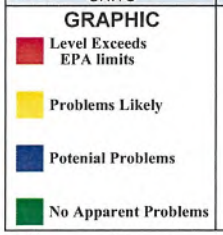
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analytical Results for 1157-01, #5 N. PLATTE RIVER

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.1	56.3	17.2	8.50	n.d.	127	0.543	353	12.4		0.20	0.041	10	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF-PAWS LEVEL 2
20171157

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **1157-01, #5 N. PLATTE RIVER**	Lab Number: **2727511**	Date Sampled: **2017-09-28 1601**				
Arsenic (total)	0.0021	mg/L	0.0005	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Uranium (total)	0.0077	mg/L	0.0001	EPA 200.8	cjm4-2017/10/05	kkh9-2017/10/05
Turbidity	2.4	NTU	0.50	SM 2130 B-(2001)	alq6-2017/10/02	cmw2-2017/10/03

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Enviro Service, Inc.
318 South Beltline Hwy East
Scottsbluff, NE 69361
308-632-3933
philbert@panhandlegeotech.com

Chain of Custody Record

enviroservice

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
M.C. Schaff	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
PAWS Level 2	Analysis Turnaround Time ☐ STANDARD ☐ RUSH			Sampler:
Phone #: 308-635-1926	TAT Requested if Rush ____			For Lab Use Only:
Sampler Name: Michael Olsen				
Sampler Signature: Michael Olsen				Cooler Temp. (°C): ____

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Preservation	Dissolve Solids	Nitrate-N	Turbidity	Total Arsenic	Total Uranium	Laboratory Sample #:
Site 5 North Platte River	9-28-17	4:01 P	G	OT	2		1	X	X	X	X	X	20171157-01
Site 1 Grey Rocks	9-28-17	3:35 P	G	OT	2		1	X	X	X	X	X	20171157-02
Site 2 Guernsey Reservoir	9-28-17	3:00 P	G	OT	2		1	X	X	X	X	X	20171157-03
Site 6 Glendo	9-28-17	1:19 P	G	OT	2		1	X	X	X	X	X	20171157-04
Site 7 Reach Between Glendo & Guernsey	9-28-17	2:38 P	G	OT	2		1	X	X	X	X	X	20171157-05

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Matrix: S=Soil, DW=Drinking Water, WW=Wastewater, A=Air, OT=Other Surface Water

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Michael Olsen	Company: M.C. Schaff	Date/Time: 9/28 5:04	Received in Laboratory by:	Company: Enviro Service	Date/Time: 9-28-17 / 1714

REPORT NUMBER
18-096-4336

REPORT DATE
Apr 06, 2018

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8537

RECEIVED DATE
Mar 30, 2018

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1113

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

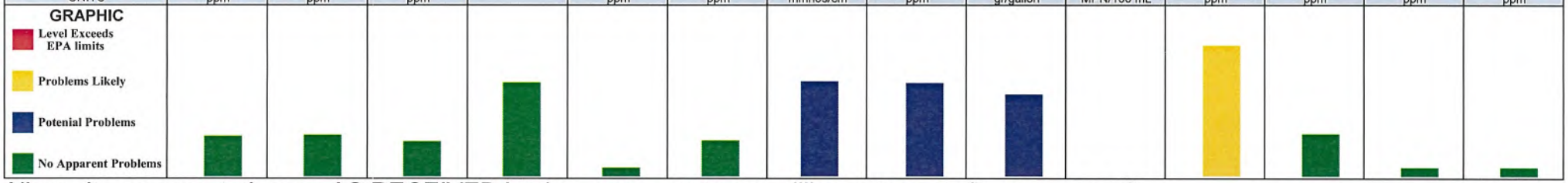
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-06 #8 NORTH P. DOWN

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.1	66.0	20.8	8.30	0.3	142	0.632	411	14.6		0.48	0.042	13	0.4
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
18-096-4336

REPORT DATE
Apr 06, 2018

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8537

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ISSUE DATE
Apr 06, 2018

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-06 #8 NORTH P. DOWN**	Lab Number: **2793686**	Date Sampled: **2018-03-29 1113**				
Turbidity	15	NTU	5.00	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0150	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0017	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

All results are reported on an AS RECEIVED basis.

For questions please contact:

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Account Manager
hramig@midwestlabs.com (402)829-9891

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Mar 29, 2018
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BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

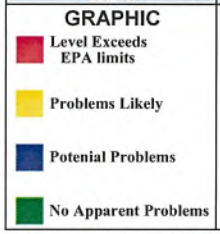
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-05 #7 REACH BETWEEN

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.6	58.5	18.2	8.48	n.d.	145	0.576	374	12.9		0.05	0.026	11	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-05 #7 REACH BETWEEN**	Lab Number: **2793685**	Date Sampled: **2018-03-29 1400**				
Turbidity	1.3	NTU	0.50	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0142	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0014	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

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Mar 29, 2018

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SCOTTSBLUFF NE 69361-3509

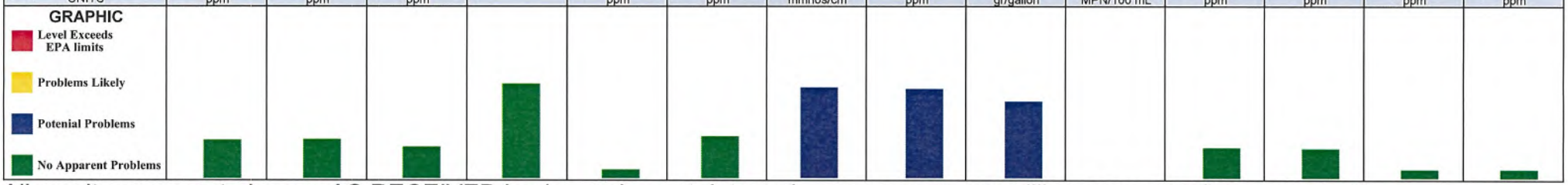
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-03 #3 GUERNSEY RES.

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	38.0	61.9	18.6	8.31	n.d.	166	0.590	384	13.5		0.06	0.029	10	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-03 #3 GUERNSEY RES.**	Lab Number: **2793683**	Date Sampled: **2018-03-29 1425**				
Turbidity	2.2	NTU	0.50	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0126	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0016	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

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BRIAN HILBERT
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SCOTTSBLUFF NE 69361-3509

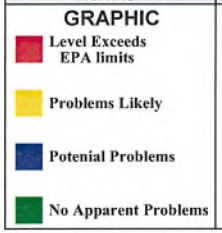
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-04 #6 GLENDO

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	54.0	66.4	22.9	8.44	n.d.	198	0.682	443	15.2		1.20	0.039	15	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
18-096-4334

REPORT DATE
Apr 06, 2018

SEND TO
8537

RECEIVED DATE
Mar 30, 2018

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ISSUE DATE
Apr 06, 2018

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-04 #6 GLENDO**	Lab Number: **2793684**	Date Sampled: **2018-03-29 1255**				
Turbidity	23	NTU	5.00	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0114	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0018	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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REPORT NUMBER
18-096-4332

REPORT DATE
Apr 06, 2018

SEND TO
8537

RECEIVED DATE
Mar 30, 2018

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ISSUE DATE
Apr 06, 2018

LAB NUMBER
2793682

DATE SAMPLED
Mar 29, 2018

TIME SAMPLED
1149

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

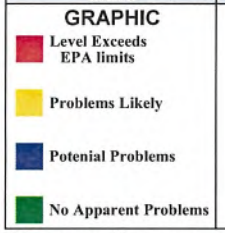
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-02 #1 GREY ROCKS

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	40.0	65.3	22.9	8.47	n.d.	126	0.615	400	15.0		0.11	0.016	15	0.5
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

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Account Manager
hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
18-096-4332

REPORT DATE
Apr 06, 2018

SEND TO
8537

RECEIVED DATE
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ISSUE DATE
Apr 06, 2018

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-02 #1 GREY ROCKS**	Lab Number: **2793682**	Date Sampled: **2018-03-29 1149**				
Turbidity	1.3	NTU	0.50	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0143	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0019	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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REPORT NUMBER
18-096-4331

REPORT DATE
Apr 06, 2018

SEND TO
8537

RECEIVED DATE
Mar 30, 2018

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ISSUE DATE
Apr 06, 2018

LAB NUMBER
2793681

DATE SAMPLED
Mar 29, 2018

TIME SAMPLED
1130

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

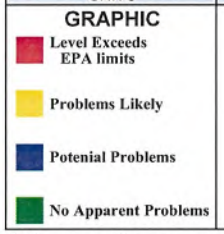
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analytical Results for 0337-01 #5 NORTH PLATTE RIVER

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	44.0	62.9	17.0	8.17	0.3	141	0.602	391	13.3		0.12	0.052	13	0.4
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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For questions please contact:

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Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
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Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

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N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
18-096-4331

REPORT DATE
Apr 06, 2018

SEND TO
8537

RECEIVED DATE
Mar 30, 2018

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ISSUE DATE
Apr 06, 2018

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. SCHAFF
2018

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **0337-01 #5 NORTH PLATTE RIVER**	Lab Number: **2793681**		Date Sampled: **2018-03-29 1130**			
Turbidity	2.8	NTU	0.50	SM 2130 B-(2001)	nam7-2018/03/30	cmw2-2018/04/04
Uranium (total)	0.0148	mg/L	0.0001	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06
Arsenic (total)	0.0016	mg/L	0.0005	EPA 200.8	cjm4-2018/04/06	bab2-2018/04/06

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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2793681-686
Samples: 6 Page: 1/1
Lora L Mikels
2018 03 30 11:32

Midwest Laboratories, Inc.

Account Number: 8537

Chain of Custody Record Yes_____ No X

Purchase Order Number: _____

Samples for Regulatory Use Yes_____ No X

REPORT & BILL TO	IDENTIFICATION	COPY TO
Enviro Service		
818 S. Beltline Highway East		
Scottsbluff, NE ZIP 69361		ZIP
PHONE (308) 632-3933		PHONE ( )

Project Information

PROJ. NO. 2018

Project Name/Company M.C. Schaff

COMPANY: *(Signature)*

SAMPLER: *(Signature)*

SAMPLE ID/LOCATION	DATE	TIME	COMP	GRAB	No. of Containers	Proper Preservation(Y/N)	Matrix*	Regulatory (Y/N)	W34 Domestic Suitability	Total Uranium	Total Arsenic	Turbidity	Lab Number/ Order # (Internal Use)
0337-01 #5 North Platte River	3-29-18	1130		X	5	Y	WA	N	X	X	X	X	2793681
0337-02 #1 Grey Rocks	3-29-18	1149		X	5	Y	WA	N	X	X	X	X	2793682
0337-03 #2 Guernsey Res.	3-29-18	1425		X	5	Y	WA	N	X	X	X	X	2793683
0337-04 #6 Glendo	3-29-18	1255		X	5	Y	WA	N	X	X	X	X	2793684
0337-05 #7 Reach between	3-29-18	1400		X	5	Y	WA	N	X	X	X	X	2793685
0337-06 #8 North P. dam	3-29-18	1113		X	5	Y	WA	N	X	X	X	X	2793686

Bottle Order Info. | Tests Requested

Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*
	3-29-18/1205	
Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*

Cooler arrived intact: Yes_____ No_____

Temperature on Arrival (½C) 5.2 88

Preserved in Field: Yes_____ No_____

Chain of Custody will have a signature upon receipt but no subsequent signatures
Distribution: Original accompanies shipment; copy to Coordinator Field Files
Code: SO-Soil, WA-Water, SL-Sludge, OT-Other
*Matrix

Remarks:
Total Arsenic pres. w/ HNO_3
Total Uranium pres. w/ HNO_3
Packed in ice.

REPORT NUMBER
18-213-4083

REPORT DATE
Aug 01, 2018

SEND TO
8537

RECEIVED DATE
Jul 24, 2018

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13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770
www.midwestlabs.com

ISSUE DATE
Aug 01, 2018

LAB NUMBER
2830797

DATE SAMPLED
Jul 23, 2018

TIME SAMPLED
0737

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

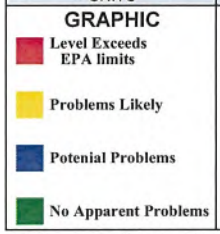
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analytical Results for 084601/North Platte River

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	41.9	58.3	18.5	8.21	n.d.	142	0.565	367	13.0		2.81	0.104	11	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **084601/North Platte River**	Lab Number: **2830797**	Date Sampled: **2018-07-23 0737**				
Turbidity	17	NTU	5.00	SM 2130 B-(2001)	nam7-2018/07/24	jdb5-2018/07/27
Arsenic (total)	0.0025	mg/L	0.0005	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01
Uranium (total)	0.0090	mg/L	0.0001	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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DATE SAMPLED
Jul 23, 2018

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0810

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

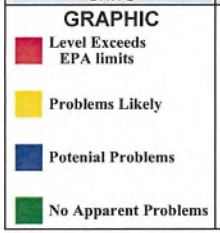
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analytical Results for 084602/Guernsey Res

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	43.6	63.2	20.5	8.01	n.d.	146	0.591	384	14.2		4.23	0.328	12	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **084602/Guernsey Res** Lab Number: **2830798** Date Sampled: **2018-07-23 0810**						
Turbidity	30	NTU	5.00	SM 2130 B-(2001)	nam7-2018/07/24	jdb5-2018/07/27
Arsenic (total)	0.0045	mg/L	0.0005	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01
Uranium (total)	0.0095	mg/L	0.0001	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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Jul 23, 2018

TIME SAMPLED
0840

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BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

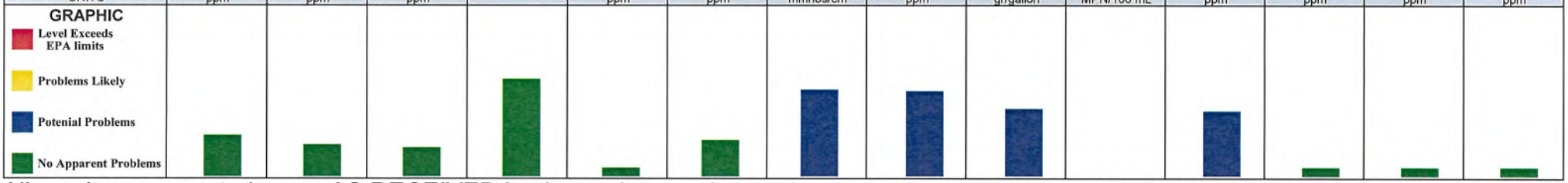
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analytical Results for 084603/Glendo Res

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	41.0	50.6	17.2	8.48	n.d.	144	0.553	359	11.5		0.12	n.d.	11	0.3
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

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BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **084603/Glendo Res** Lab Number: **2830799** Date Sampled: **2018-07-23 0840**						
Turbidity	1.9	NTU	0.50	SM 2130 B-(2001)	nam7-2018/07/24	jdb5-2018/07/27
Arsenic (total)	0.0022	mg/L	0.0005	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01
Uranium (total)	0.0081	mg/L	0.0001	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
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hramig@midwestlabs.com (402)829-9891

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0946

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

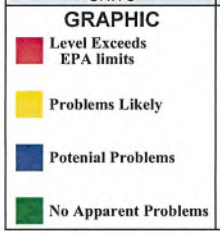
Domestic Suitability

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analytical Results for 084604/Reach

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	42.2	53.8	17.7	8.13	n.d.	142	0.560	364	12.1		0.28	0.058	12	0.4
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



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For questions please contact:

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hramig@midwestlabs.com (402)829-9891

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SUGGESTED WATER QUALITY GUIDELINES FOR HUMAN CONSUMPTION

Sodium (Na)	Less than 20 ppm: No adverse effects.	20-80 ppm: Persons on restricted sodium diets should consult a physician concerning use.	More than 80 ppm: Should be used sparingly by persons on low-sodium diets.
Calcium (Ca)	Less than 80 ppm: No adverse effects.	80-150 ppm: Hard water problems such as scale formation can be expected.	More than 150 ppm: May be associated with high levels of sulfate (see sulfate below). Extreme hardness is undesirable for household use.
Magnesium (Mg)	Less than 30 ppm: No adverse effects.	30-80 ppm: Contributes to hardness when associated with high calcium levels.	More than 80 ppm: When associated with high sulfate, is likely to have a laxative effect (magnesium sulfate is Epsom Salts).
pH	Less than 6.5: Corrosive to metal.	6.5-8.5: No adverse effects.	Higher than 8.5: Possible bitter taste, and germicidal activity of chlorine is reduced, corrosive to pipes.
Nitrate Nitrogen (NO3-N)	Less than 2 ppm: No adverse effects.	2-10 ppm: No acute toxicity. Could have some negative health effects in young children.	More than 10 ppm: Increasing probability of health effect in children under 6 months of age due of reduced oxygen carrying capacity of the blood. EPA MCL standard of < 10 ppm.
Sulfate (SO4)	Less than 250 ppm: No adverse effects.	250-500 ppm: Likely to have a laxative effect, especially when first introduced. Diarrhea may or may not persist.	More than 500 ppm: Strongly laxative.
Conductivity	Less than 0.30: Extremely pure water can be corrosive metal.	0.30-1.50: No adverse effects.	Greater than 1.50: High levels of dissolved solids (see below).
Total Dissolved Solids (TDS)	Less than 200 ppm: No adverse health or nutritional effects. May be corrosive if extremely pure.	200-1000 ppm: No adverse effects.	More than 1000 ppm: Increasingly adverse effects, especially diarrhea. Water loses esthetic effect.
Hardness	Less than 6 gr/gal: No adverse effects (17.1 mg/L CaCO3 = (1 gr/gal).	6-12 gr/gal: Some scale may form in pipes and water heaters. Softening may be desirable.	More than 12 gr/gal: Scale will form rapidly and laundry will not come clean. Softening for household use is desirable.
Total Coliform*	Negative: No coliform bacteria present in 100 mL of water.		Positive: Coliforms are a bacteria that are naturally present in the environment and can be used to indicate the presence of other potentially harmful bacteria such as Fecal Coliform or *E.coli*. The presence of Fecal and *E. coli* may indicate a contamination from human or animal waste. The EPA acceptable level is less than one (<1) MPN (most probable number) per 100 mL of water.
Iron (Fe)	Less than 0.3 ppm: No adverse effects.	0.3-1.0 ppm: Some staining will occur.	More than 1.0 ppm: Iron oxide (rust) will cause extensive staining and will precipitate out, forming a red sludge. Taste will be bitter.
Manganese (Mn)	Less than 0.05 ppm: No adverse effects.	0.05-0.50 ppm: May cause black or brown staining of pipes, sinks and laundry.	More than 0.50 ppm: Besides the staining effect, will cause a metallic taste.
Chloride (Cl)	Less than 200 ppm: No adverse effects.	200-500 ppm: Increasingly salty taste.	More than 500 ppm: Very salty taste.

*Holding/Transit time between sampling and analysis cannot exceed 30 hours. If this time has been exceeded, the results might be invalid.
N.D. = Not Detected
EPA Guidelines suggest less than 0.015 ppm (mg/L) for Lead (Pb) and 1.30 ppm (mg/L) for Copper (Cu).

REPORT NUMBER
18-213-4087

REPORT DATE
Aug 01, 2018

SEND TO
8537

RECEIVED DATE
Jul 24, 2018

Midwest Laboratories®
13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770
www.midwestlabs.com

ISSUE DATE
Aug 01, 2018

ENVIRO SERVICE INC
BRIAN HILBERT
818 S BELTLINE HWY E
SCOTTSBLUFF NE 69361-3509

REPORT OF ANALYSIS

For: (8537) ENVIRO SERVICE INC
M.C. Schaff

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **084604/Reach** Lab Number: **2830800**	Date Sampled: **2018-07-23 0946**					
Turbidity	6.0	NTU	0.50	SM 2130 B-(2001)	nam7-2018/07/24	jdb5-2018/07/27
Arsenic (total)	0.0015	mg/L	0.0005	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01
Uranium (total)	0.0082	mg/L	0.0001	EPA 200.8	trh1-2018/08/01	bab2-2018/08/01

All results are reported on an AS RECEIVED basis.

For questions please contact:

Heather Ramig
Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.
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Enviro Service, Inc.
818 South Beltline Hwy East
Scottsbluff, NE 69361
308-632-3933
philbert@panhandlegeotech.com

Chain of Custody Record

enviroservice

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
M.C. Schaff	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
818 S. Beltline Hwy East	Analysis Turnaround Time			Sampler:
Scottsbluff NE 69361	☐ STANDARD ☐ RUSH			For Lab Use Only:
Phone #: 308 635 1926	TAT Requested if Rush ____			
Sampler Name: Michael Olsen				Cooler Temp. (°C): ____
Sampler Signature: Michael Olsen				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Preservation	Domestic Surcability	Turbidity	Total Arsenic	Total Uranium	Laboratory Sample #
North Platte River	7/23/18	0737	G	OT	5	N	1	X	X	X	X	20180846-01
Guernsey Res.	7/23/18	0810	G	OT	5	N	1	X	X	X	X	20180846-02
Glendo Res.	7/23/18	0840	G	OT	5	N	1	X	X	X	X	20180846-03
Reach	7/23/18	0946	G	OT	5	N	1	X	X	X	X	20180846-04
			~~G~~	~~OT~~	~~5~~	A	1	X	X	X	X	2018 ~~272318~~

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Matrix: S=Soil, DW=Drinking Water, WW=Wastewater, A=Air, OT=Other Surface Water

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Olsen	M.C. Schaff	7/27/18 1204			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: Enviro Serv	Date/Time: 7-27-18 / 1204

APPENDIX A4-5

MUNICIPAL WELL PUMPING REDUCTIONS EFFECT ON BASEFLOW FOR PAWS, NE DNR

JULY 19, 2019

DRAFT

NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

Pete Ricketts, Governor

DATE: July 19, 2019

TO: Jesse Bradley, Assistant Director,
Nebraska Department of Natural Resources

FROM: Kari Burgert, IWM Analyst, and Jackie Polashek, IWM Specialist Intern,
Nebraska Department of Natural Resources

SUBJECT: Municipal Pumping Reductions Effect on Baseflow for PAWS

MEMORANDUM

A modeling analysis is completed for PAWS that simulates the changes in baseflow resulting from reduced groundwater pumping for select municipalities. Michael Olsen, PE, MCS, provided a spreadsheet of annual municipality demand reductions, monthly demand distribution, and corresponding well locations. A total of 5,527.6 acre-feet per year pumping reduction is distributed across 30 wells for a 50 year simulation time period from 2014-2063. At the end of fifty years of pumping reduction, baseflow of the North Platte River between the Wyoming-Nebraska state line and the upstream end of Lake McConaughy increased by more than 97% of the reduction. During the first year of the pumping reduction, approximately 50% of the reduction resulted in an increase in baseflow of the North Platte River between the Wyoming-Nebraska state line and the upstream end of Lake McConaughy. By year 8 of the pumping reduction, the baseflow of the North Platte River between the Wyoming-Nebraska state line and the upstream end of Lake McConaughy had nearly reached an equilibrium at 99% of the pumping reduction. The monthly peaks in baseflow increase slightly lagged the peak pumping reduction months (June-September), occurring August-November. A technical description of the analysis is provided in the following section. Processed results are provided in the spreadsheet *20190717_PAWS_MunicipalPumpingReduction_Results.xlsx*.

Gordon W. "Jeff" Fassett, P.E., Director

Department of Natural Resources

301 Centennial Mall South
P.O. Box 94676
Lincoln, Nebraska 68509

OFFICE 402-471-2363
FAX 402-471-2900

dnr.nebraska.gov

Municipal Pumping Reductions Effect on Baseflow for PAWS Analysis Documentation

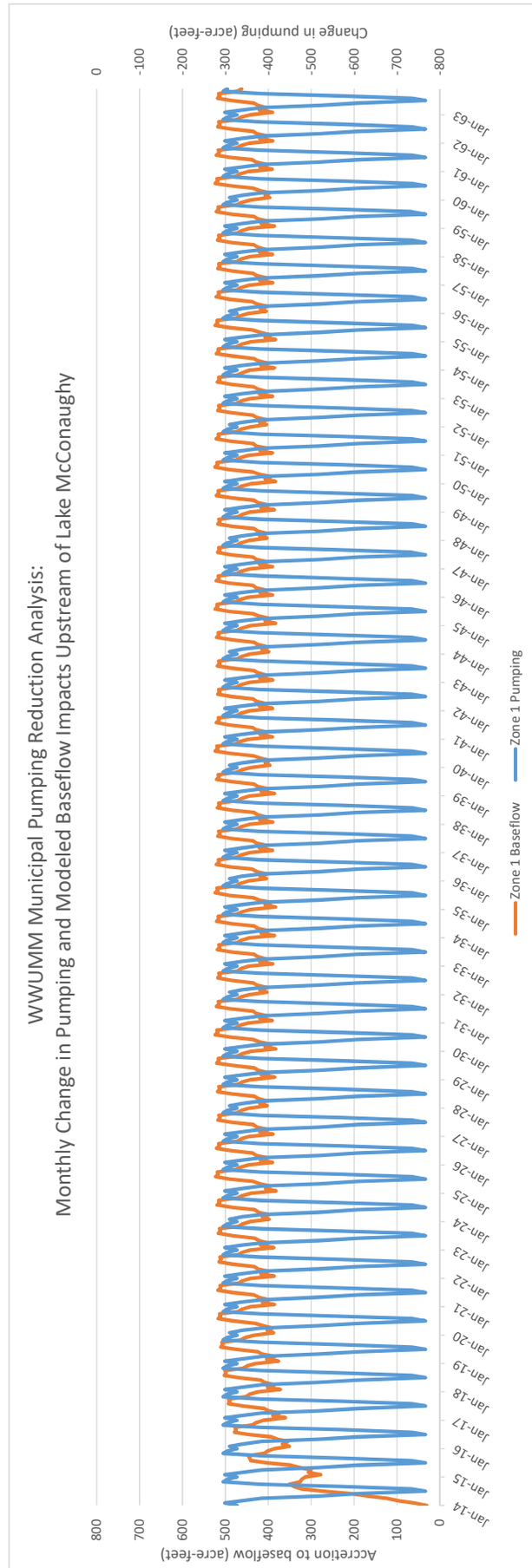
Project Objective: Simulate the changes in baseflow resulting from reduced groundwater pumping for select municipalities.

Conceptual Approach:
Develop two model simulations for the time period 2014-2063. The baseline simulation pumping is based on projection of actual historic pumping. The scenario pumping has reduced pumping from the selected municipalities based on the distributions provided by PAWS for the years 2014-2063. Depletions to baseflow are calculated by the monthly difference in baseflow on the North Platte River above Lake McConaughy between the two simulations.

Model(s) and Inputs to be utilized:
The baseline model used is the historical baseline with metered pumping and 5-year weather repeat used in the Robust Review, documented on http://upjointplanning.nebraska.gov/. The spreadsheet "Municipal Wells_Mike.xlsx" from Michael Olsen directs the well locations, annual use reduction per municipality, and distribution instructions. Model cell locations are identified for each well using an intersection of the well coordinates provided and the model grid. Pumping reduction per cell in model units (feet and days) is calculated for the model files.

Input Modifications:
For the municipal use reduction scenario, the WWUM_MunPumpRedScenario.WEL file repeats the baseline pumping with the addition of positive rates of pumping (injection wells) for the municipal well cells to reflect the reduction in pumping.

Post-Processing and Results Format:
The cell-by-cell budgets of the groundwater model runs are processed with the USGS's ZONEBUDGET using a zone file. The zone file flags the WWUM grid cells as the North Platte River between the stateline and Lake McConaughy (Zone 1), the North Platte River stream reaches downstream of Lake McConaughy (Zone 2), or the remaining model area (Zone 3). The zoned budgets for the two simulations are each netted and converted to acre-feet, and the difference between the two are taken and summarized monthly in *20190717_PAWS_MunicipalPumpingReduction_Results.xlsx*.


WWUMM Municipal Pumping Reduction Analysis:
Monthly Change in Pumping and Modeled Baseflow Impacts Upstream of Lake McConaughy
Change in pumping (acre-feet)
0
-100
-200
-300
-400
-500
-600
-700
-800
Accretion to baseflow (acre-feet)
0
100
200
300
400
500
600
700
800
Zone 1 Baseflow
Zone 1 Pumping
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
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Jan-59
Jan-60
Jan-61
Jan-62
Jan-63

Month	Zone 1 Pumping	Zone 1 Baseflow
Jan-14	-327.113262	30.82860761
Feb-14	-299.0497661	60.34891251
Mar-14	-338.4150961	96.95102784
Apr-14	-383.9484104	123.9234371
May-14	-519.2959659	167.7793135
Jun-14	-608.4973053	207.164368
Jul-14	-765.873421	273.0610574
Aug-14	-734.2499343	324.12969
Sep-14	-570.5176915	340.5735718
Oct-14	-381.5743402	350.7705222
Nov-14	-294.7746514	325.3009595
Dec-14	-304.5577022	322.4235988
Jan-15	-327.1129062	314.3596373
Feb-15	-299.0497661	278.1150098
Mar-15	-338.4149538	306.623159
Apr-15	-383.9488925	300.5172133
May-15	-519.3010187	326.6005807
Jun-15	-608.4964788	347.3690262
Jul-15	-765.8771217	403.3232074
Aug-15	-734.2271611	441.3830132
Sep-15	-570.5113554	442.9250395
Oct-15	-381.5736286	446.457994
Nov-15	-294.774307	409.3322944
Dec-15	-304.5577734	401.3038663
Jan-16	-327.1129062	385.9375404
Feb-16	-309.7300483	351.1477643
Mar-16	-338.4149538	367.1942593
Apr-16	-383.9486859	354.4304357
May-16	-519.300734	379.7305424
Jun-16	-608.4986827	392.8666151
Jul-16	-765.8714284	444.8473842
Aug-16	-734.2423195	478.455981
Sep-16	-570.5156254	475.2967103
Oct-16	-381.5736997	477.5258387
Nov-16	-294.7742382	437.4106916
Dec-16	-304.5577734	428.5868549
Jan-17	-327.1131197	411.9075124
Feb-17	-299.0497661	360.2829455
Mar-17	-338.415025	389.7852599
Apr-17	-383.9520606	374.8844069
May-17	-519.2955389	399.1718453
Jun-17	-608.4997846	409.7885616
Jul-17	-765.9109968	459.9677122
Aug-17	-734.2314311	493.12642
Sep-17	-570.5151433	489.9970086
Oct-17	-381.5737709	492.6026368

Nov-17	-294.7741693	451.6354389
Dec-17	-304.5579157	442.6247449
Jan-18	-327.112835	424.7638062
Feb-18	-299.0497018	372.2867562
Mar-18	-338.4148826	402.1884622
Apr-18	-383.9486171	386.5873452
May-18	-519.3072813	409.3002198
Jun-18	-608.492691	417.914365
Jul-18	-765.8608246	469.3208495
Aug-18	-734.221539	502.5154963
Sep-18	-570.5119064	498.6612646
Oct-18	-381.5739132	500.9319296
Nov-18	-294.774307	458.7137216
Dec-18	-304.5577734	448.8324545
Jan-19	-327.113262	430.4474953
Feb-19	-299.0497661	376.8049379
Mar-19	-338.4150961	403.7948021
Apr-19	-383.9484104	384.2291037
May-19	-519.2959659	415.124818
Jun-19	-608.4966166	424.1115641
Jul-19	-765.873421	474.9122598
Aug-19	-734.2428177	510.7534591
Sep-19	-570.5108045	506.0736842
Oct-19	-381.5736286	507.7578363
Nov-19	-294.7746514	464.4848418
Dec-19	-304.5577022	453.7809967
Jan-20	-327.1129062	433.1505065
Feb-20	-309.7300483	388.0356617
Mar-20	-338.4149538	402.4518958
Apr-20	-383.9482038	390.3908346
May-20	-519.300307	412.7588975
Jun-20	-608.4964788	429.4857606
Jul-20	-765.870005	483.0739562
Aug-20	-734.2271611	516.8886978
Sep-20	-570.5182425	511.6721689
Oct-20	-381.5736286	513.2642029
Nov-20	-294.774307	470.1300437
Dec-20	-304.5577734	460.2179801
Jan-21	-327.1129062	441.2202798
Feb-21	-299.0497018	386.2685436
Mar-21	-338.4149538	413.9960034
Apr-21	-383.9486859	398.8800448
May-21	-519.300734	422.1925712
Jun-21	-608.4917956	433.6356687
Jul-21	-765.8714284	483.0400336
Aug-21	-734.2423195	517.5258726
Sep-21	-570.5156254	510.8803875

Oct-21	-381.5736997	512.4737836
Nov-21	-294.7742382	469.5456774
Dec-21	-304.5577734	460.1994768
Jan-22	-327.1131197	441.4370995
Feb-22	-299.0497661	386.5513718
Mar-22	-338.415025	417.184368
Apr-22	-383.9520606	400.0105544
May-22	-519.3026555	423.949309
Jun-22	-608.4997846	432.6746953
Jul-22	-765.9109968	482.6167133
Aug-22	-734.2314311	514.857377
Sep-22	-570.5151433	510.2234775
Oct-22	-381.5737709	512.7273725
Nov-22	-294.7741693	470.3332118
Dec-22	-304.5579157	461.1061343
Jan-23	-327.112835	442.4769564
Feb-23	-299.0497018	387.5378426
Mar-23	-338.4148826	418.3293137
Apr-23	-383.9486171	401.1455406
May-23	-519.3072813	422.0258051
Jun-23	-608.492691	431.3953106
Jul-23	-765.8608246	482.2668128
Aug-23	-734.221539	516.627162
Sep-23	-570.5119064	511.4615399
Oct-23	-381.5739132	513.5311948
Nov-23	-294.774307	470.3596121
Dec-23	-304.5577734	460.3644638
Jan-24	-327.113262	441.4022281
Feb-24	-309.7297155	398.1745657
Mar-24	-338.4150961	413.5420816
Apr-24	-383.9484104	398.6031853
May-24	-519.2959659	422.5799526
Jun-24	-608.4966166	431.6779093
Jul-24	-765.873421	482.73307
Aug-24	-734.2428177	519.0855986
Sep-24	-570.5108045	513.7946437
Oct-24	-381.5736286	515.4513776
Nov-24	-294.7746514	471.6698738
Dec-24	-304.5577022	460.7275301
Jan-25	-327.1129062	439.6712287
Feb-25	-299.0497661	382.1798537
Mar-25	-338.4149538	406.6964856
Apr-25	-383.9482038	396.3452652
May-25	-519.300307	419.2032347
Jun-25	-608.4964788	434.8258661
Jul-25	-765.870005	488.9331885
Aug-25	-734.2271611	522.6730871

Sep-25	-570.5182425	516.9900063
Oct-25	-381.5736286	518.6090222
Nov-25	-294.774307	475.0830969
Dec-25	-304.5577734	465.1760111
Jan-26	-327.1129062	445.9363457
Feb-26	-299.0497018	390.3496271
Mar-26	-338.4149538	418.8019759
Apr-26	-383.9486859	402.6416379
May-26	-519.300734	428.0825237
Jun-26	-608.4917956	436.7584877
Jul-26	-765.8714284	488.9516918
Aug-26	-734.2423195	520.4028851
Sep-26	-570.5156254	514.0234086
Oct-26	-381.5736997	515.7035432
Nov-26	-294.7742382	472.6005442
Dec-26	-304.5577734	463.2552351
Jan-27	-327.1131197	444.4800479
Feb-27	-299.0497661	389.1602485
Mar-27	-338.415025	419.9631712
Apr-27	-383.9520606	402.5927398
May-27	-519.3026555	426.517816
Jun-27	-608.4997846	435.0060773
Jul-27	-765.9109968	485.055342
Aug-27	-734.2314311	517.2310072
Sep-27	-570.5151433	512.4641799
Oct-27	-381.5737709	514.9680405
Nov-27	-294.7741693	472.4225139
Dec-27	-304.5579157	463.1913042
Jan-28	-327.112835	444.4985511
Feb-28	-309.7300483	402.9838211
Mar-28	-338.4148826	419.8621152
Apr-28	-383.9486171	402.6229281
May-28	-519.3072813	423.3808096
Jun-28	-608.492691	432.7603243
Jul-28	-765.8608246	483.7879904
Aug-28	-734.221539	518.0730221
Sep-28	-570.5119064	512.842853
Oct-28	-381.5739132	514.91858
Nov-28	-294.774307	471.6627572
Dec-28	-304.5577734	461.6817503
Jan-29	-327.113262	442.6772893
Feb-29	-299.0497661	385.4339859
Mar-29	-338.4150961	416.6357952
Apr-29	-383.9484104	399.7876435
May-29	-519.2959659	423.8244123
Jun-29	-608.4966166	432.8565135
Jul-29	-765.873421	483.9215457

Aug-29	-734.2428177	520.2565199
Sep-29	-570.5108045	514.9005895
Oct-29	-381.5736286	516.5581308
Nov-29	-294.7746514	473.0933127
Dec-29	-304.5577022	461.6606377
Jan-30	-327.1129062	440.6030316
Feb-30	-299.0497661	383.0285528
Mar-30	-338.4149538	407.6604318
Apr-30	-383.9482038	394.2877583
May-30	-519.300307	420.3491292
Jun-30	-608.4964788	435.8384923
Jul-30	-765.870005	489.9138589
Aug-30	-734.2271611	523.6242234
Sep-30	-570.5182425	517.8779769
Oct-30	-381.5736286	519.4529348
Nov-30	-294.774307	475.8877342
Dec-30	-304.5577734	465.9725981
Jan-31	-327.1129062	446.7004336
Feb-31	-299.0497018	391.0127737
Mar-31	-338.4149538	419.8405281
Apr-31	-383.9486859	403.1825011
May-31	-519.300734	428.6607491
Jun-31	-608.4917956	435.6288964
Jul-31	-765.8714284	489.8957115
Aug-31	-734.2423195	521.193423
Sep-31	-570.5156254	514.7208374
Oct-31	-381.5736997	516.3733358
Nov-31	-294.7742382	473.2153284
Dec-31	-304.5577734	463.8589618
Jan-32	-327.1131197	445.0529359
Feb-32	-309.7301815	403.3515361
Mar-32	-338.415025	420.1368167
Apr-32	-383.9520606	402.7936122
May-32	-519.3026555	426.7538506
Jun-32	-608.4997846	435.2488459
Jul-32	-765.9109968	485.3321785
Aug-32	-734.2314311	517.5262284
Sep-32	-570.5151433	512.7518292
Oct-32	-381.5737709	515.261008
Nov-32	-294.7741693	472.7095892
Dec-32	-304.5579157	463.4816623
Jan-33	-327.112835	444.7821485
Feb-33	-299.0497018	389.5531012
Mar-33	-338.4148826	420.4887336
Apr-33	-383.9486171	403.6360135
May-33	-519.3072813	423.9253497
Jun-33	-608.492691	433.1900764

Jul-33	-765.8608246	484.2122596
Aug-33	-734.221539	518.5214878
Sep-33	-570.5119064	513.2587162
Oct-33	-381.5739132	515.3241087
Nov-33	-294.774307	472.0328215
Dec-33	-304.5577734	462.0344975
Jan-34	-327.113262	443.0142613
Feb-34	-299.0497661	385.7657734
Mar-34	-338.4150961	416.9298302
Apr-34	-383.9484104	400.0672578
May-34	-519.2959659	424.113703
Jun-34	-608.4966166	433.1330287
Jul-34	-765.873421	484.2043127
Aug-34	-734.2428177	520.5471152
Sep-34	-570.5108045	515.1730872
Oct-34	-381.5736286	516.8193107
Nov-34	-294.7746514	473.3304569
Dec-34	-304.5577022	461.8926395
Jan-35	-327.1129062	440.8260191
Feb-35	-299.0497661	383.2392813
Mar-35	-338.4149538	407.9060739
Apr-35	-383.9482038	394.4923038
May-35	-519.300307	420.5676095
Jun-35	-608.4964788	436.014227
Jul-35	-765.870005	490.0955699
Aug-35	-734.2271611	523.8182699
Sep-35	-570.5182425	518.0449879
Oct-35	-381.5736286	519.6688056
Nov-35	-294.774307	476.0533678
Dec-35	-304.5577734	466.1387712
Jan-36	-327.1129062	446.8644717
Feb-36	-309.7300483	404.8998449
Mar-36	-338.4149538	419.1974228
Apr-36	-383.9486859	403.1443927
May-36	-519.300734	426.6146021
Jun-36	-608.4917956	437.7193463
Jul-36	-765.8714284	489.8072282
Aug-36	-734.2423195	521.1549933
Sep-36	-570.5156254	514.6994875
Oct-36	-381.5736997	516.3666937
Nov-36	-294.7742382	473.2140657
Dec-36	-304.5577734	463.8696367
Jan-37	-327.1131197	443.1008468
Feb-37	-299.0497661	390.1997495
Mar-37	-338.415025	420.8302128
Apr-37	-383.9520606	403.3202421
May-37	-519.3026555	427.2247337

Jun-37	-608.4997846	435.7327761
Jul-37	-765.9109968	485.6920423
Aug-37	-734.2314311	517.8683006
Sep-37	-570.5151433	513.0457915
Oct-37	-381.5737709	515.5406912
Nov-37	-294.7741693	472.9409941
Dec-37	-304.5579157	463.6962284
Jan-38	-327.112835	444.9720436
Feb-38	-299.0497018	389.7121921
Mar-38	-338.4148826	420.6538392
Apr-38	-383.9486171	403.7872991
May-38	-519.3072813	424.1112121
Jun-38	-608.492691	433.3304575
Jul-38	-765.8608246	484.3576759
Aug-38	-734.221539	518.6654807
Sep-38	-570.5119064	513.3922102
Oct-38	-381.5739132	515.4542243
Nov-38	-294.774307	472.1450804
Dec-38	-304.5577734	462.1431446
Jan-39	-327.113262	443.1175709
Feb-39	-299.0497661	385.8730125
Mar-39	-338.4150961	417.0282768
Apr-39	-383.9484104	400.1554121
May-39	-519.2959659	424.2094215
Jun-39	-608.4966166	433.229103
Jul-39	-765.873421	484.3054874
Aug-39	-734.2428177	520.6476968
Sep-39	-570.5108045	515.2696207
Oct-39	-381.5736286	516.9126571
Nov-39	-294.7746514	473.4071328
Dec-39	-304.5577022	461.966771
Jan-40	-327.1129062	440.9021669
Feb-40	-309.7300483	396.7069234
Mar-40	-338.4149538	407.488091
Apr-40	-383.9482038	397.1262569
May-40	-519.300307	420.032321
Jun-40	-608.4964788	435.643474
Jul-40	-765.870005	489.8141076
Aug-40	-734.2271611	523.5542433
Sep-40	-570.5182425	517.8792396
Oct-40	-381.5736286	519.4700147
Nov-40	-294.774307	475.9088545
Dec-40	-304.5577734	466.0067579
Jan-41	-327.1129062	446.679914
Feb-41	-299.0497018	390.6605239
Mar-41	-338.4149538	419.2783151
Apr-41	-383.9486859	403.1850263

May-41	-519.300734	428.6931297
Jun-41	-608.4917956	437.416316
Jul-41	-765.8714284	489.6698774
Aug-41	-734.2423195	521.1260523
Sep-41	-570.5156254	514.7069485
Oct-41	-381.5736997	516.3946857
Nov-41	-294.7742382	473.2551585
Dec-41	-304.5577734	463.9198089
Jan-42	-327.1131197	443.1351252
Feb-42	-299.0497661	390.2330675
Mar-42	-338.415025	420.8891621
Apr-42	-383.9520606	403.3805038
May-42	-519.3026555	427.2989837
Jun-42	-608.4997846	435.8094519
Jul-42	-765.9109968	485.7749509
Aug-42	-734.2314311	517.9540559
Sep-42	-570.5151433	513.1272883
Oct-42	-381.5737709	515.6128063
Nov-42	-294.7741693	473.0058472
Dec-42	-304.5579157	463.7551777
Jan-43	-327.112835	445.0181831
Feb-43	-299.0497018	389.7465815
Mar-43	-338.4148826	420.6966575
Apr-43	-383.9486171	403.8275883
May-43	-519.3072813	424.1764478
Jun-43	-608.492691	433.3785521
Jul-43	-765.8608246	484.4240977
Aug-43	-734.221539	518.7268023
Sep-43	-570.5119064	513.4481101
Oct-43	-381.5739132	515.5051081
Nov-43	-294.774307	472.1896167
Dec-43	-304.5577734	462.1795579
Jan-44	-327.113262	443.1474607
Feb-44	-309.7297155	399.3046736
Mar-44	-338.4150961	415.2206552
Apr-44	-383.9484104	400.1249942
May-44	-519.2959659	424.1159565
Jun-44	-608.4966166	433.1441627
Jul-44	-765.873421	484.2356259
Aug-44	-734.2428177	520.6567112
Sep-44	-570.5108045	515.2602084
Oct-44	-381.5736286	516.8954586
Nov-44	-294.7746514	473.3871603
Dec-44	-304.5577022	461.9354578
Jan-45	-327.1129062	440.8508086
Feb-45	-299.0497661	383.2332819
Mar-45	-338.4149538	407.861595

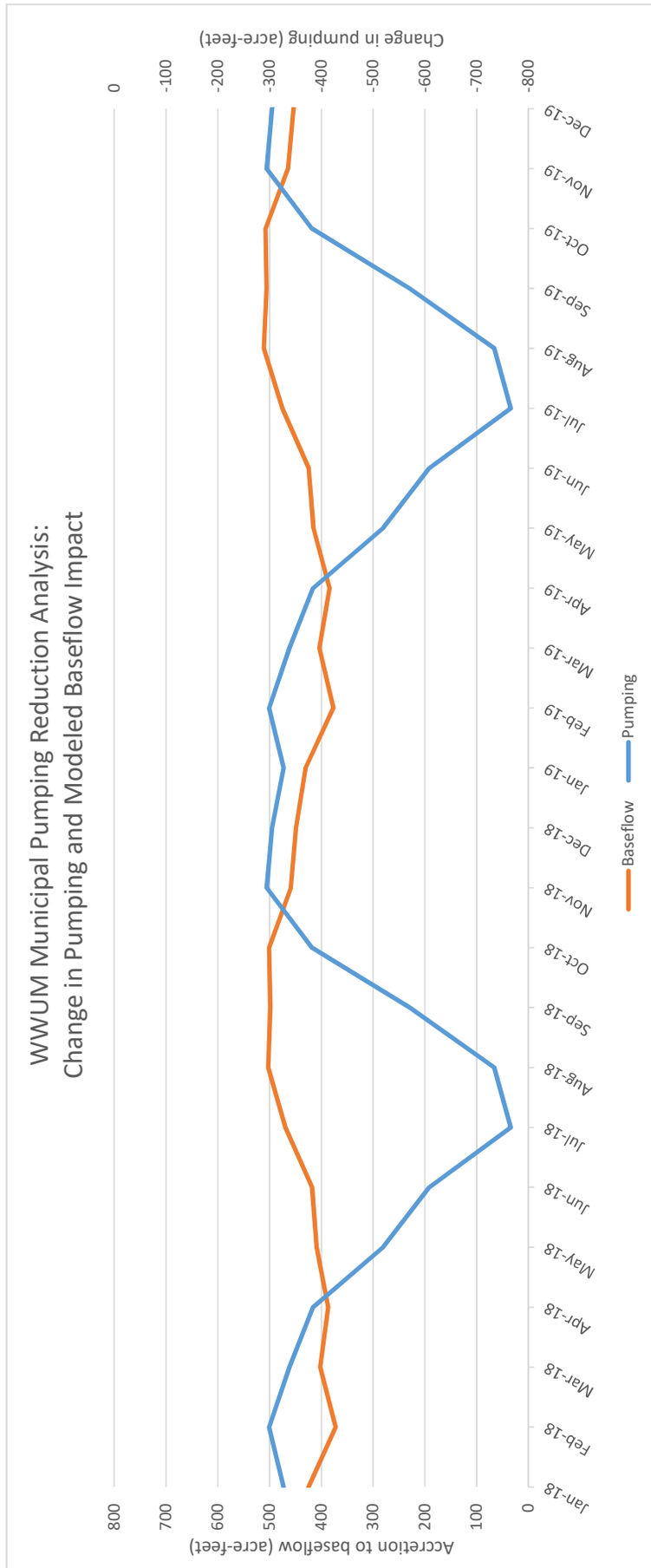
Apr-45	-383.9482038	394.511358
May-45	-519.300307	420.5832661
Jun-45	-608.4964788	436.0921654
Jul-45	-765.870005	490.2031495
Aug-45	-734.2271611	523.9068719
Sep-45	-570.5182425	518.1308465
Oct-45	-381.5736286	519.7345158
Nov-45	-294.774307	476.1380785
Dec-45	-304.5577734	466.2196635
Jan-46	-327.1129062	446.870758
Feb-46	-299.0497018	390.8191863
Mar-46	-338.4149538	419.7857301
Apr-46	-383.9486859	403.222446
May-46	-519.300734	428.7574165
Jun-46	-608.4917956	435.7973996
Jul-46	-765.8714284	490.1090915
Aug-46	-734.2423195	521.4262551
Sep-46	-570.5156254	514.9377795
Oct-46	-381.5736997	516.597628
Nov-46	-294.7742382	473.4276791
Dec-46	-304.5577734	464.0977244
Jan-47	-327.1131197	443.3002308
Feb-47	-299.0497661	390.3637685
Mar-47	-338.415025	421.0089586
Apr-47	-383.9520606	403.4886306
May-47	-519.3026555	427.4060889
Jun-47	-608.4997846	435.9212518
Jul-47	-765.9109968	485.8792094
Aug-47	-734.2314311	518.0553491
Sep-47	-570.5151433	513.2209522
Oct-47	-381.5737709	515.7044921
Nov-47	-294.7741693	473.0834413
Dec-47	-304.5579157	463.8294278
Jan-48	-327.112835	445.0875701
Feb-48	-309.7300483	403.5075432
Mar-48	-338.4148826	420.4083158
Apr-48	-383.9486171	403.1458849
May-48	-519.3072813	423.9266544
Jun-48	-608.492691	433.2745576
Jul-48	-765.8608246	485.6580011
Aug-48	-734.221539	518.0074306
Sep-48	-570.5119064	513.1414068
Oct-48	-381.5739132	515.3090452
Nov-48	-294.774307	472.0539418
Dec-48	-304.5577734	460.1117052
Jan-49	-327.113262	443.620716
Feb-49	-299.0497661	386.0495659

Mar-49	-338.4150961	417.2032271
Apr-49	-383.9484104	400.2848886
May-49	-519.2959659	424.3213897
Jun-49	-608.4966166	433.3360819
Jul-49	-765.873421	484.4417706
Aug-49	-734.2428177	520.7887245
Sep-49	-570.5108045	515.3861266
Oct-49	-381.5736286	517.0135945
Nov-49	-294.7746514	473.4780694
Dec-49	-304.5577022	462.0278553
Jan-50	-327.1129062	440.949018
Feb-50	-299.0497661	383.3224157
Mar-50	-338.4149538	407.9738004
Apr-50	-383.9482038	394.5941174
May-50	-519.300307	420.6601256
Jun-50	-608.4964788	436.1407192
Jul-50	-765.870005	490.2492889
Aug-50	-734.2271611	523.9420991
Sep-50	-570.5182425	518.19283
Oct-50	-381.5736286	519.7730641
Nov-50	-294.774307	476.1718251
Dec-50	-304.5577734	466.2484858
Jan-51	-327.1129062	446.9000548
Feb-51	-299.0497018	390.8436124
Mar-51	-338.4149538	419.5010653
Apr-51	-383.9486859	403.3508895
May-51	-519.300734	428.8513559
Jun-51	-608.4917956	435.8808477
Jul-51	-765.8714284	490.1589078
Aug-51	-734.2423195	521.471327
Sep-51	-570.5156254	514.9859889
Oct-51	-381.5736997	516.6431744
Nov-51	-294.7742382	473.4680832
Dec-51	-304.5577734	464.1188371
Jan-52	-327.1131197	443.3200388
Feb-52	-309.7301815	404.0916264
Mar-52	-338.415025	420.6655816
Apr-52	-383.9520606	403.2097049
May-52	-519.3026555	427.1603283
Jun-52	-608.4997846	435.7159028
Jul-52	-765.9109968	485.6934656
Aug-52	-734.2314311	517.8921413
Sep-52	-570.5151433	513.0813746
Oct-52	-381.5737709	515.576986
Nov-52	-294.7741693	472.9709528
Dec-52	-304.5579157	463.7263554
Jan-53	-327.112835	442.9970628

Feb-53	-299.0497018	390.2544939
Mar-53	-338.4148826	420.9916415
Apr-53	-383.9486171	403.5717343
May-53	-519.3072813	424.3795087
Jun-53	-608.492691	433.557845
Jul-53	-765.8608246	484.8953366
Aug-53	-734.221539	518.7079432
Sep-53	-570.5119064	513.4925316
Oct-53	-381.5739132	515.5901517
Nov-53	-294.774307	472.2688178
Dec-53	-304.5577734	460.2705244
Jan-54	-327.113262	443.758304
Feb-54	-299.0497661	386.1963366
Mar-54	-338.4150961	417.307367
Apr-54	-383.9484104	400.3743055
May-54	-519.3030825	424.408331
Jun-54	-608.4973053	433.4121838
Jul-54	-765.873421	484.5269329
Aug-54	-734.2428177	520.8659399
Sep-54	-570.5176915	515.4521276
Oct-54	-381.5743402	517.0715949
Nov-54	-294.7746514	473.5237535
Dec-54	-304.5577022	462.0691317
Jan-55	-327.1129062	440.9873291
Feb-55	-299.0497661	383.3711607
Mar-55	-338.4149538	408.0468643
Apr-55	-383.9482038	394.6376206
May-55	-519.300307	420.7027067
Jun-55	-608.4964788	436.1566742
Jul-55	-765.8771217	490.2980378
Aug-55	-734.2271611	523.981715
Sep-55	-570.5182425	518.2077519
Oct-55	-381.5736286	519.7778086
Nov-55	-294.774307	476.1831887
Dec-55	-304.5577734	466.2656843
Jan-56	-327.1129062	446.9807098
Feb-56	-309.7300483	405.0069195
Mar-56	-338.4149538	418.8328146
Apr-56	-383.9486859	403.3530704
May-56	-519.300734	426.771998
Jun-56	-608.4986827	437.8648927
Jul-56	-765.8714284	489.5824616
Aug-56	-734.2423195	521.3116775
Sep-56	-570.5087383	514.8467557
Oct-56	-381.5736997	516.5053492
Nov-56	-294.7742382	473.3435423
Dec-56	-304.5577734	463.999515

Jan-57	-327.1131197	445.1498405
Feb-57	-299.0497661	389.7983262
Mar-57	-338.415025	420.3367938
Apr-57	-383.9520606	402.9199896
May-57	-519.2955389	426.994511
Jun-57	-608.4928976	435.6182215
Jul-57	-765.9109968	485.689077
Aug-57	-734.2314311	517.9123051
Sep-57	-570.5151433	513.1166134
Oct-57	-381.5737709	515.6222951
Nov-57	-294.7741693	473.0199656
Dec-57	-304.5579157	463.7803231
Jan-58	-327.112835	443.0530469
Feb-58	-299.0497018	390.2965968
Mar-58	-338.4148826	421.0392042
Apr-58	-383.9486171	404.0723082
May-58	-519.3001647	424.3725107
Jun-58	-608.499578	433.5589928
Jul-58	-765.8608246	485.9364982
Aug-58	-734.221539	518.3002795
Sep-58	-570.5119064	513.383831
Oct-58	-381.5739132	515.5304907
Nov-58	-294.774307	472.2347269
Dec-58	-304.5577734	462.2272393
Jan-59	-327.113262	443.1965654
Feb-59	-299.0497661	385.9453266
Mar-59	-338.4150961	417.1099993
Apr-59	-383.9484104	400.2390897
May-59	-519.3030825	424.3058517
Jun-59	-608.4966166	433.3360819
Jul-59	-765.873421	484.4466337
Aug-59	-734.246376	520.7929945
Sep-59	-570.5108045	515.4046069
Oct-59	-381.5743402	517.0332838
Nov-59	-294.7746514	473.5098646
Dec-59	-304.5577022	462.0674712
Jan-60	-327.1129062	440.9927852
Feb-60	-309.7300483	396.7819311
Mar-60	-338.4149538	407.5591386
Apr-60	-383.9482038	397.2064911
May-60	-519.300307	420.0932867
Jun-60	-608.4964788	435.7154437
Jul-60	-765.8771217	489.9773154
Aug-60	-734.2271611	523.739394
Sep-60	-570.5159468	517.9257272
Oct-60	-381.5743402	519.5446206
Nov-60	-294.774307	476.0157186

Dec-60	-304.5577734	466.1494461
Jan-61	-327.1129062	446.8795352
Feb-61	-299.0497018	391.1750785
Mar-61	-338.4149538	419.6681873
Apr-61	-383.9486859	403.4701503
May-61	-519.300734	428.9259618
Jun-61	-608.4986827	437.5517614
Jul-61	-765.878545	489.7877761
Aug-61	-734.2423195	521.1715987
Sep-61	-570.5156254	514.7440238
Oct-61	-381.5736997	516.4268291
Nov-61	-294.7742382	473.2808701
Dec-61	-304.5577734	463.9422263
Jan-62	-327.1131197	445.099787
Feb-62	-299.0497661	389.7533308
Mar-62	-338.415025	420.2931452
Apr-62	-383.9520606	402.8844065
May-62	-519.2955389	426.9627234
Jun-62	-608.4928976	435.5899845
Jul-62	-765.8398306	485.6664225
Aug-62	-734.2314311	517.8920227
Sep-62	-570.5151433	513.0938861
Oct-62	-381.5737709	515.6020128
Nov-62	-294.7741693	472.9966644
Dec-62	-304.5579157	463.7531614
Jan-63	-327.112835	443.0420161
Feb-63	-299.0497018	390.272385
Mar-63	-338.4148826	421.0110936
Apr-63	-383.9486171	404.0474001
May-63	-519.3001647	424.362073
Jun-63	-608.492691	433.5407421
Jul-63	-765.8608246	485.9170461
Aug-63	-734.2334	518.2811832
Sep-63	-570.5187934	513.3664986
Oct-63	-381.5739132	515.512462
Nov-63	-294.774307	472.2142953
Dec-63	-304.5577734	462.2079058


WWUM Municipal Pumping Reduction Analysis:
Change in Pumping and Modeled Baseflow Impact
Change in pumping (acre-feet)
0
-100
-200
-300
-400
-500
-600
-700
-800
Accretion to baseflow (acre-feet)
800
700
600
500
400
300
200
100
0
Jan-18
Feb-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Baseflow
Pumping

		Zone 1								Zone 2								Zone 3									
Month	Year	STORAGE	CONSTANT HEAD	Pumping	DRAINS	ET	HEAD DEP BOUNDS	RECHARGE	Baseflow	STORAGE	CONSTANT HEAD	Pumping	DRAINS	ET	HEAD DEP BOUNDS	RECHARGE	Baseflow	STORAGE	CONSTANT HEAD	Pumping	DRAINS	ET	HEAD DEP BOUNDS	RECHARGE	Baseflow	Cumulative Pumping	CumulativeDepletion
Jan-14	2014	295.9731362	0	-327.113262	0	0.003795531	0	0	30.82860761	0	0	0	0	0	0	0	0	0.288223136	0	0	0	0	0	0	0.021587083	-327.113262	30.8286076
Feb-14	2014	237.813587	0	-299.0497661	0	0.027211509	0	0	60.34891251	0	0	0	0	0	0	0	0	0.755280063	0	0	0	0.000642792	0	0	0.107560451	-626.1630282	91.1775201
Mar-14	2014	239.9239367	0	-338.4150961	0	0.141620751	0	0	96.95102784	0	0	0	0	0	0	0	0	1.146962028	0	0	0	0.003914141	0	0	0.253351695	-964.5781243	188.128548
Apr-14	2014	257.9729072	0	-383.9484104	0	0.409320472	0	0	123.9234371	0	0	0	0	0	0	0	0	1.272382902	0	0	0	0.012511478	0	0	0.3735078	-1348.526535	312.051985
May-14	2014	348.5910571	0	-519.2959659	0	0.821969685	0	0	167.7793135	-2.37221E-06	0	0	0	-2.37221E-07	0	0	0	1.559726026	0	0	0	0.027280379	1.1861E-06	0	0.519513307	-1867.822501	479.831299
Jun-14	2014	397.4758896	0	-608.4973053	0	1.295913664	0	0	207.164368	0	0	0	0	0	0	0	1.14784E-05	1.817378303	0	0	0	0.057392102	-1.14778E-09	0	0.651285574	-2476.319806	686.995667
Jul-14	2014	487.7779238	0	-765.873421	0	1.814738266	0	0	273.0610574	3.55831E-06	0	0	0	0	9.48944E-10	0	2.37221E-05	2.283249125	-0.00011861	0	0	0.087771655	0	0	0.857434178	-3242.193227	960.056724
Aug-14	2014	404.4328072	0	-734.2499343	0	1.972490024	0	0	324.12969	7.11662E-06	0	0	0	0	-2.01646E-09	0	5.93052E-05	2.570286158	0	0	0	0.104377103	0	0	1.067137267	-3976.443161	1284.18641
Sep-14	2014	224.6326873	0	-570.5176915	0	1.604683172	0	0	340.5735718	1.64141E-05	0	0	0	0	2.29534E-10	0	6.88705E-05	2.403581233	-0.000114784	0	0	0.097566573	0	0	1.205348927	-4546.960853	1624.75999
Oct-14	2014	26.7086773	0	-381.5743402	0	0.624720683	0	0	350.7705222	2.60943E-05	0	0	0	2.37221E-08	0	0	0.000106749	2.065006092	-0.00011861	0	0	0.049104682	0	0	1.354648741	-4928.535193	1975.53051
Nov-14	2014	-33.53420521	0	-294.7746514	0	0.254361796	0	0	325.3009595	2.29568E-05	0	0	0	1.14784E-08	-2.06603E-09	0	0.000149219	1.396923763	0	0	0	0.019972452	0	0	1.330004572	-5223.309844	2300.83147
Dec-14	2014	-20.27643834	0	-304.5577022	0	0.09998852	0	0	322.4235988	4.26997E-05	0	0	0	0	1.06752E-09	0	0.000237221	0.964302098	0	0	0	0.008338307	0	0	1.335671086	-5527.867547	2623.25507
Jan-15	2015	10.62155632	0	-327.1129062	0	0.124422251	0	0	314.3596373	6.63032E-05	0	0	0	0	1.42325E-09	0	0.00034397	0.709289858	0	0	0	0.009488828	0	0	1.285736131	-5854.980453	2937.6147
Feb-15	2015	19.05534102	0	-299.0497661	0	0.211157022	0	0	278.1150098	8.76339E-05	0	0	0	4.28528E-08	3.21413E-05	0	0.000407101	0.580655027	0.000107132	0	0	0.015212733	-0.000108203	0	1.129277608	-6154.030219	3215.72971
Mar-15	2015	29.4983926	0	-338.4149538	0	0.496028459	-1.19E-05	0	306.623159	2.96526E-05	0	0	0	-1.42332E-07	-1.1861E-05	0	0.000604913	0.533746549	0.000593052	0	-1.1861E-07	0.034041169	-1.1861E-06	0	1.226430959	-6492.445173	3522.35287
Apr-15	2015	80.75413107	0	-383.9488925	0	0.919421474	0	0	300.5172133	9.64187E-05	0	0	0	-6.88705E-07	-1.14784E-05	0	0.000734619	0.537534428	0.000344353	0	0	0.058310376	0	0	1.174012839	-6876.394065	3822.87009
May-15	2015	189.5290109	0	-519.3010187	0	1.122053856	0	0	326.6005807	0.00011268	0	0	0	-7.11662E-07	-1.186E-05	0	0.000925161	0.739179665	0.000474441	0	0	0.085399448	0	0	1.227972893	-7395.695084	4149.47067
Jun-15	2015	257.5223792	0	-608.4964788	0	1.224747457	0	0	347.3690262	0.000140106	0	0	0	-8.03489E-07	0	0	0.001067493	0.972910913	0.000344353	0	0	0.130853993	0	0	1.245523398	-8004.191563	4496.83969
Jul-15	2015	358.4084353	0	-765.8771217	0	1.119681649	0	0	403.3232074	0.000133437	0	0	0	-8.30272E-07	0	0	0.001292853	1.443487889	0.00011861	0	0	0.180287723	0	0	1.391299337	-8770.068685	4900.1629
Aug-15	2015	288.2006004	0	-734.2271611	0	1.197964476	0.0001186	0	441.3830132	0.000129285	0	0	0	-7.11662E-07	-1.18601E-05	0	0.001482629	1.773224645	0.000237221	0	0	0.176729413	0	0	1.539680878	-9504.295846	5341.54591
Sep-15	2015	122.9338825	0	-570.5113554	0	1.168503197	4.591E-05	0	442.9250395	0.000129477	0	0	0	-5.73921E-07	1.14778E-09	0	0.001606979	1.69880622	0.000688705	0	0	0.152662991	-0.000114784	0	1.618457277	-10074.8072	5784.47095
Oct-15	2015	-68.63506176	0	-381.5736286	0	0.552249762	0.0001186	0	446.457994	0.000119085	0	0	0	-2.37221E-07	2.37151E-10	0	0.001826599	1.386554923	0.000237221	0	0	0.060965717	0	0	1.746062877	-10456.38083	6230.92895
Nov-15	2015	-117.3129001	0	-294.774307	0	0.252525249	0.0001148	0	409.3322944	0.000126951	0	0	0	-8.03489E-08	-1.14783E-05	0	0.001928375	0.765610641	0.000918274	0	0	0.027777777	-0.000114784	0	1.676882437	-10751.15514	6640.26124
Dec-15	2015	-98.8712107	0	-304.5577734	0	0.095837158	0.0001186	0	401.3038663	0.000131302	0	0	0	-3.55831E-08	-1.6604E-09	0	0.002134986	0.346342205	0.000948883	0	0	0.011030762	0	0	1.663984518	-11055.71291	7041.56511
Jan-16	2016	-60.67393546	0	-327.1129062	0	0.118491734	0.0001186	0	385.9375404	0.000115882	0	0	0	-5.93052E-08	-1.18575E-10	0	0.002324763	0.129285275	0.000948883	0	0	0.012216865	0	0	1.586531964	-11382.82582	7427.50265
Feb-16	2016	-43.1453774	0	-309.7300483	0	0.227131157	0.0002219	0	351.1477643	0.000107185	0	0	0	-6.65748E-08	-1.10955E-05	0	0.002296832	0.049931129	0.001442455	0	0	0.019639577	0	0	1.428363157	-11692.55586	7778.65041
Mar-16	2016	-30.82528652	0	-338.4149538	0	0.499230939	0.0002372	0	367.1942593	0.000115764	0	0	0	0	1.77897E-09	0	0.002621289	0.021349862	0.001660545	0	0	0.039378634	0	0	1.480731537	-12030.97082	8145.84467
Apr-16	2016	27.13613368	0	-383.9486859	0	0.86088153	0.0001263	0	354.4304357	0.00010811	0	0	0	-2.29568E-07	-1.1478E-05	0	0.002674472	0.04476584	0.001721763	0	0	0.071510559	0	0	1.39876031	-12414.9195	8500.27511
May-16	2016	136.5276228	0	-519.300734	0	1.232361476	0.0002372	0	379.7305424	0.000115052	0	0	0	-1.1861E-07	0	0	0.002929676	0.263908016	0.001897766	0	0	0.103190999	0	0	1.439099306	-12934.22024	8880.00565
Jun-16	2016	211.6861769	0	-608.4986827	0	1.775711637	0.0003444	0	392.8666151	0.000109963	0	0	0	-1.14784E-07	0	0	0.002995868	0.574035804	0.001836547	0	0	0.150367307	0	0	1.433310356	-13542.71892	9272.87226
Jul-16	2016	316.1795945	0	-765.8714284	0	2.04721454	0.0003558	0	444.8473842	0.000121576	0	0	0	-1.1861E-07	-1.1861E-05	0	0.003249923	1.027165581	0.002728038	0	0	0.207568102	0	0	1.568384581	-14308.59035	9717.71965
Aug-16	2016	250.3745755	0	-734.2423195	0	2.07805323	0.0005337	0	478.455981	0.000105563	0	0	0	-2.37221E-07	0	0	0.003392256	1.393671544	0.003083869	0	0	0.202823689	0	0	1.699686232	-15042.83267	10196.1756
Sep-16	2016	90.35009053	0	-570.5156254	0	1.574839279	0.0005854	0	475.2967103	9.52709E-05	0	0	0	-2.29568E-07	-1.14781E-05	0	0.003409091	1.34986224	0.002984389	0	0	0.171028464	0	0	1.762052316	-15613.34829	10671.4723
Oct-16	2016	-99.68131935	0	-381.5736997	0	0.705731548	0.0006998	0	477.5258387	8.30628E-05	0	0	0	-4.74441E-08	1.54193E-09	0	0.003641338	1.05800427	0.00355831	0	0	0.067607896	0	0	1.885904472	-15994.92199	11148.9982
Nov-16	2016	-145.2892541	0	-294.7742382	0	0.34320477	0.0009183	0	437.4106916	6.91001E-05	0	0	0	-2.29568E-08	2.29534E-10	0	0.003569789	0.46717171	0.004017447	0	0	0.030417814	0	0	1.805325961	-16289.69623	11586.4089
Dec-16	2016	-126.0507711	0	-304.5577734	0	0.140553258	0.0007117	0	428.5868549	6.78451E-05	0	0	0	-1.1861E-08	-2.01624E-09	0	0.003771809	0.065235689	0.004744414	0	0	0.011979645	0	0	1.7887626	-16594.25401	12014.9957
Jan-17	2017	-86.61876214	0	-327.1131197	0	0.177085244	0.0008303	0	411.9075124	0.000117306	0	0	0	-2.37221E-08	-5.93061E-05	0	0.003831114	-0.207568102	0.004388583	0	0	0.013521579	0.000122169	0	1.706209801	-16921.36713	12426.9032
Feb-17	2017	-62.84851455	0	-299.0497661	0	0.289684722	0.0009642	0	360.2829455	7.17784E-05	0	0	0	2.57117E-07	2.14413E-10	0	0.00355678	-0.181052951	0.004499541	0	1.07132E-07	0.019605142	0	0	1.480027527	-17220.41689	12787.1862
Mar-17	2017	-53.44439776	0	-338.415025	0	0.654017438	0.0010675	0	389.7852599	6.07285E-05	0	0	0	6.40496E-07	8.30255E-10	0	0.003985308	-0.221801344	0.005456076	0	1.1861E-07	0.041157789	0.00011861	0	1.58510864	-17558.83192	13176.9714
Apr-17	2017	6.456611477	0	-383.9520606	0	1.201790616	0.0010331	0	374.8844069	5.14727E-05	0	0	0	8.03489E-07	1.14791E-05	0	0.00392562	-0.174586774	0.005394858	0	1.14784E-07	0.077020201	0	0	1.492424221	-17942.78398	13551.8559
May-17	2017	116.6331097	0	-519.2955389	0	1.800505025	0.0013047	0	399.1718453	5.21886E-05	0	0	0	1.54193E-06	1.18608E-05	0	0.004151362	0.029889807	0.00676079	0	0	0.124540861	0	0	1.525447636	-18462.07952	13951.0277
Jun-17	2017	193.7718062	0	-608.4997846	0	2.894857626	0.0012626	0	409.7885616	4.70615E-05	0	0	0	1.72176E-06	1.1478E-05	0	0.004051882	0.332644623	0.006657484	0	0	0.190541779	0	0	1.498048647	-19070.5793	14360.8163
Jul-17	2017	298.9217894	0	-765.9109968	0	4.330463666	0.0015894	0	459.9677122	4.86302E-05	0	0	0	1.42332E-06	1.18594E-05	0	0.004281833	0.779269961	0.007709672	0	0	0.22061524	0	0	1.61974286	-19836.4903	14820.784
Aug-17	2017	233.444135	0	-734.2314311	0	4.574800975	0.0017673	0	493.12642	4.74441E-05	0	0	0	1.42332E-06	8.30141E-10	0	0.004329278	1.150520338	0.008065503	0	0	0.207568102	0	0	1.74036958	-20570.72173	15313.9104
Sep-17	2017	73.92447093	0	-570.5151433	0	3.430899859	0.0017332	0	489.9970086	1.83655E-05	0	0	0	8.03489E-07	4.59135E-05	0	0.004224059	1.178833775	0.008379247	0	0	0.175619832	0	0	1.798324125	-21141.23687	15803.9074
Oct-17	2017	-115.1742025	0	-381.5737709	0	1.186222052	0.0020638	0	492.6026368	2.74346E-05	0	0	0	3.20248E-07	1.18594E-05	0	0.004412305	0.931091202	0.009251607	0	0	0.077215334	0	0	1.927299482	-21522.81064	16296.51
Nov-17	2017	-159.5362695	0	-294.7741693	0	0.426078965	0.002112	0	451.6354389	2.26125E-05	0	0	0	1.37741E-07	1.14773E-05	0	0.004258494	0.346648296	0.009297521	0	0	0.031565656	0	0	1.851010074	-21817.58481	16748.1455
Dec-17	2017	-140.0349306	0	-304.5579157	0	0.163089223	0.002135	0	442.6247449	2.11126E-05	0	0	0	5.93052E-08	1.18597E-05	0	0.004412305	-0.062863482	0.01020049	0	0	0.012809917	0	0	1.838934776	-22122.14273	17190.7702
Jan-18	2018	-99.36581583	0	-327.112835	0	0.192623199	0.0026094	0	424.7638062	2.22987E-05	0	0	0	7.11662E-08	-1.06741E-09	0	0.004436027	-0.268059378	0.010912152	0	0	0.014470462	0	0	1.755314483	-22449.25556	17615.534
Feb-18	2018	-74.82629216	0	-299.0497018	0	0.321181507	0.0020355	0	372.2867562	2.22834E-05	0	0	0	1.07132E-07	-1.07207E-10	0	0.004017447	-0.296755429	0.010284665	0	0	0.021747781	0	0	1.526094254	-22748.30526	17987.8208
Mar-18	2018	-65.92683177	0	-338.4148826	0	0.800145382	0.0022536	0	402.1884622	2.59757E-05	0	0	0	2.01638E-07	-3.5584E-10	0	0.004483471	-0.351086619	0.011742424	0	0	0.046851086	0.00011861	0	1.635873867	-23086.72015	18390.0092
Apr-18	2018	-5.507116541	0	-383.9486171	0	1.523186388	0.0025253	0	386.5873452	2.45983E-05	0	0	0	3.44353E-07	2.4105E-09	0	0.004373278	-0.296143246	0.012167126	0	0	0.080922864	0	0	1.539600529	-23470.66876	18776.5966
May-18	2018	106.2037022	0	-519.3072813	0	2.182430333	0.0024908	0	409.3002198	1.54193E-05	0	0	0	5.93052E-07	3.5584E-10	0	0.004483471	-0.115052034	0.013165748	0	0	0.136401896	0	0	1.568503191	-23989.97605	19185.8968
Jun-18	2018	185.5073435	0	-608.492691	0	3.11639114	0.0028696	0	417.914365	1.93985E-05	0	0	0	6.88705E-07	1.14795E-05	0	0.004396235	0.213269051	0.012970615	0	0	0.192837463	0	0	1.53225434	-24598.46874	19603.8112
Jul-18	2018	289.7662569	0	-765.8608246	0	4.241505908	0.0030839	0	469.3208495	3.08387E-05	0	0	0	5.93052E-07	1.18575E-10	0	0.00459022	0.653542996	0.01387741	0	0	0.227731861	0	0	1.651293212	-25364.32956	20073.132
Aug-18	2018	224.5341259	0	-734.221539	0	4.139501012	0.0030246	0	502.5154963	2.72804E-05	0	0	0	4.74441E-07	4.74529E-10	0	0.004625803	1.04780378	0.014470462	0	0	0.21705693	0	0	1.768836063	-26098.5511	20575.6475
Sep-18	2018	66.11111016	0	-570.5119064	0	2.642332377	0.0030533	0	498.6612646	4.60285E-06	0	0	0	2.29568E-07	5.73891E-10	0	0.004476584	1.087006412	0.014577594	0	0	0.179063358	0	0	1.820362692	-26669.06301	21074.3088
Oct-18	2018	-123.1282122	0	-381.5739132	0	0.890052023	0.0032262	0	500.9319296	3.23806E-06	0	0	0	1.1861E-07	-5.92991E-10	0	0.004625803	0.832644616	0.015300734	0	0	0.081722527	0	0	1.947463241	-27050.63692	21575.2407
Nov-18	2018	-166.5312189	0	-294.774307	0	0.396235072	0.0035583	0	458.7137216	-4.59137E-07	0	0	0	3.44353E-08	2.29534E-10	0	0.004453627	0.261707985	0.015610652	0	0	0.033057851	0	0	1.871786015	-27345.41123	22033.9544
Dec-18	2018	-146.1860631	0	-304.5577734	0	0.160479796	0.0035583	0	448.8324545	1.89777E-06	0	0	0	1.1861E-08	9.48944E-10	0	0.004602081	-0.154193447	0.016842669	0	0	0.013047138	0.00011861	0	1.864436	-27649.969	22482.7869
Jan-19	2019	-104.9986211	0	-327.113262	0	0.19997704	0.0036769	0	430.4474953	5.45608E-06	0	0	0	1.1861E-08	1.18597E-05	0	0.004602081	-0.357017136	0.016961279	0	0	0.014114631	0	0	1.784018187	-27977.08226	22913.2344
Feb-19	2019	-79.31297713	0	-299.0497661	0	0.335537185	0.003214	0	376.8049379	7.28497E-06	0	0	0	0	4.28486E-10	0	0.004124579	-0.37924701	0.015534129	0	0	0.021640649	0	0	1.552877235	-28276.13203	23290.0393
Mar-19	2019	-67.46224268	0	-338.4150961	0	0.77879552	0.0035583	0	403.7948021	7.70967E-06	0	0	0	9.48883E-08	1.18642E-05	0	0.00459022	-0.438858273	0.017791552	0	0	0.046732476	0	0	1.665170622	-28614.54712	23693.8341
Apr-19	2019	-3.024563776	0	-383.9484104	0	1.476124864	0.0035583	0	384.2291037	6.88705E-06	0	0	0	1.14784E-07	0	0	0.004465106	-0.387741041	0.017561983	0	0	0.079201101	0	0	1.566460033	-28998.49554	24078.0632
May-19	2019	100.3609566	0	-519.2959659	0	2.242921608	0.0035583	0	415.124818	2.22987E-05	0	0	0	2.37221E-07	1.18575E-10	0	0.004637664	-0.18265993	0.018740434	0	0	0.128099172	0	0	1.599223271	-29517.7915	24493.188
Jun-19	2019	179.4937991	0	-608.4966166	0	2.923553677	0.003719	0	424.1115641	1.72176E-05	0	0	0	1.14784E-07	0	0	0.004533976	0.169651054	0.01802112	0	0	0.190541779	0	0	1.568067011	-30126.28812	24917.2996
Jul-19	2019	284.9530492	0	-765.873421	0	3.457491533	0.0036769	0	474.9122598	3.67692E-05	0	0	0	1.1861E-07	1.39971E-09	0	0.004720692	0.62389041	0.020045148	0	0	0.233662378	0	0	1.691620729	-30892.16154	25392.2119
Aug-19	2019	217.1363988	0	-734.2428177	0	3.313973016	0.0036769	0	510.7534591	3.67692E-05	0	0	0	2.37221E-07	-5.93104E-10	0	0.004779997	0.995140788	0.02051959	0	0	0.222987447	0	0	1.810824125	-31626.40436	25902.9653
Sep-19	2019	58.80739126	0	-570.5108045	0	2.579201065	0.0036731	0	506.0736842	1.80211E-05	0	0	0	1.14784E-07	3.44244E-10	0	0.004683196	0.984848471	0.020661157	0	0	0.185950411	0	0	1.857782342	-32196.91516	26409.039
Oct-19	2019	-129.9803318	0	-381.5736286	0	0.981737819	0.00427	0	507.7578363	9.48883E-06	0	0	0	5.93052E-08	0	0	0.004827441	0.731825824	0.021824303	0	0	0.08267141	0	0	1.977471658	-32578.48879	26916.7968

Nov-19	2019	-172.2612464	0	-294.7746514	0	0.412419645	0.0043618	0	464.4848418	1.14784E-05	0	0	0	2.29568E-08	-5.73891E-10	0	0.004671717	0.192837463	0.02157943	0	0	0.032369146	0	0	1.895431561	-32873.26344	27381.2817
Dec-19	2019	-151.1060202	0	-304.5577022	0	0.16546143	0.0041514	0	453.7809967	2.37221E-06	0	0	0	0	1.6604E-09	0	0.004827441	-0.214684723	0.022417355	0	0	0.012940389	0	0	1.884125317	-33177.82114	27835.0627
Jan-20	2020	-107.6709121	0	-327.1129062	0	0.197723444	0.0045072	0	433.1505065	5.6933E-06	0	0	0	0	3.5584E-10	0	0.004839302	-0.408019584	0.022654576	0	0	0.01387741	0	0	1.799318921	-33504.93405	28268.2132
Feb-20	2020	-79.87948691	0	-309.7300483	0	0.338976885	0.0039945	0	388.0356617	8.87665E-06	0	0	0	0	1.10958E-10	0	0.004515993	-0.436065191	0.021525864	0	0	0.022302571	0	0	1.61787953	-33814.6641	28656.2489
Mar-20	2020	-66.06121729	0	-338.4149538	0	0.745228792	0.0043411	0	402.4518958	1.30471E-05	0	0	0	4.74441E-08	0	0	0.004839302	-0.474441377	0.023603458	0	0	0.047325527	0	0	1.672643074	-34153.07905	29058.7008
Apr-20	2020	-9.005968649	0	-383.9482038	0	1.272956823	0.0043503	0	390.3908346	6.88705E-06	0	0	0	0	0	0	0.004706152	-0.407139572	0.023071625	0	0	0.079086317	0	0	1.573691437	-34537.02726	29449.0916
May-20	2020	103.3445998	0	-519.300307	0	1.620217301	0.0045191	0	412.7588975	2.13499E-05	0	0	0	0	5.92991E-10	0	0.004874885	-0.178508568	0.0240779	0	0	0.115052034	0	0	1.60954237	-35056.32756	29861.8505
Jun-20	2020	175.2527523	0	-608.4964788	0	1.80555553	0.0043503	0	429.4857606	1.13177E-05	0	0	0	0	0	0	0.004775023	0.144742881	0.023415978	0	0	0.17447199	0	0	1.5863177	-35664.82404	30291.3362
Jul-20	2020	278.6002791	0	-765.870005	0	1.589378612	0.0047444	0	483.0739562	4.72069E-05	0	0	0	1.1861E-07	0	0	0.004981634	0.606098859	0.027280379	0	0	0.231290171	0	0	1.714631135	-36430.69405	30774.4102
Aug-20	2020	212.6636027	0	-734.2271611	0	1.60598406	0.0050528	0	516.8886978	3.79553E-05	0	0	0	0	-8.30141E-10	0	0.005076523	0.973790926	0.026094276	0	0	0.222987447	0	0	1.838104504	-37164.92121	31291.2989
Sep-20	2020	54.18962273	0	-570.5182425	0	1.584022016	0.0050161	0	511.6721689	1.61846E-05	0	0	0	1.14784E-07	-5.73891E-10	0	0.004958678	0.981404945	0.025826446	0	0	0.185950411	0	0	1.888544509	-37735.43945	31802.9711
Oct-20	2020	-135.2418866	0	-381.5736286	0	0.704071003	0.0053375	0	513.2642029	1.1861E-05	0	0	0	1.1861E-07	-4.74529E-10	0	0.005112106	0.704545444	0.027280379	0	0	0.073538413	0	0	2.01258032	-38117.01308	32316.2353
Nov-20	2020	-177.8076191	0	-294.774307	0	0.303030299	0.0056244	0	470.1300437	1.14784E-05	0	0	0	0	6.88715E-10	0	0.004924242	0.141184571	0.026056014	0	0	0.032598714	0	0	1.924701533	-38411.78739	32786.3653
Dec-20	2020	-157.4884428	0	-304.5577734	0	0.116593968	0.0056933	0	460.2179801	1.1861E-05	0	0	0	0	-8.30141E-10	0	0.005100245	-0.262128861	0.027280379	0	0	0.013165748	0	0	1.908796269	-38716.34516	33246.5833
Jan-21	2021	-115.6688076	0	-327.1129062	0	0.141027699	0.0055747	0	441.2202798	7.11662E-06	0	0	0	0	-4.74529E-10	0	0.005088384	-0.451905411	0.0275176	0	0	0.014114631	0	0	1.820075731	-39043.45806	33687.8036
Feb-21	2021	-88.64909575	0	-299.0497018	0	0.249295987	0.0050352	0	386.2685436	8.46342E-06	0	0	0	1.07132E-08	-2.14186E-10	0	0.004628099	-0.455310676	0.025283134	0	0	0.021747781	0	0	1.580517271	-39342.50777	34074.0721
Mar-21	2021	-77.47058352	0	-338.4149538	0	0.626499838	0.0059305	0	413.9960034	9.37022E-06	0	0	0	0	-1.54193E-09	0	0.005088384	-0.514768894	0.027873431	0	0	0.04483471	0	0	1.69197656	-39680.92272	34488.0681
Apr-21	2021	-17.26377386	0	-383.9486859	0	1.073232308	0.0054637	0	398.8800448	1.26113E-05	0	0	0	0	-1.49214E-09	0	0.004958678	-0.445362712	0.027433425	0	0	0.081037648	0	0	1.590449931	-40064.87141	34886.9482
May-21	2021	94.02123372	0	-519.300734	0	1.53007344	0.0059305	0	422.1925712	2.2536E-05	0	0	0	0	0	0	0.005147689	-0.226782978	0.028703703	0	0	0.115052034	0	0	1.625436157	-40584.17214	35309.1407
Jun-21	2021	170.8746532	0	-608.4917956	0	2.052341568	0.00559	0	433.6356687	2.39899E-05	0	0	0	0	0	0	0.005027548	0.117194672	0.028236914	0	0	0.16873278	0	0	1.602043136	-41192.66394	35742.7764
Jul-21	2021	277.9396195	0	-765.8714284	0	2.315273918	0.0059305	0	483.0400336	2.47896E-05	0	0	0	0	0	0	0.005242577	0.576446273	0.029652586	0	0	0.233662378	0	0	1.730762142	-41958.53536	36225.8164
Aug-21	2021	211.3399113	0	-734.2423195	0	2.321204435	0.0064524	0	517.5258726	3.32109E-05	0	0	0	1.1861E-07	-2.37264E-10	0	0.005301882	0.955999374	0.030364248	0	0	0.22417355	0	0	1.851270252	-42692.77768	36743.3423
Sep-21	2021	54.7704308	0	-570.5156254	0	1.774563794	0.0066116	0	510.8803875	2.29568E-05	0	0	0	0	4.59181E-10	0	0.005153811	0.958448104	0.03030303	0	0	0.187098253	0	0	1.901170772	-43263.29331	37254.2227
Oct-21	2021	-134.4910832	0	-381.5736997	0	0.78579353	0.0066896	0	512.4737836	1.1861E-05	0	0	0	2.37221E-08	1.18575E-10	0	0.005337465	0.671334548	0.031431741	0	0	0.074131465	0	0	2.025153016	-43644.86701	37766.6965
Nov-21	2021	-177.2623941	0	-294.7742382	0	0.371441684	0.0068871	0	469.5456774	1.14784E-06	0	0	0	0	2.29534E-10	0	0.005153811	0.11248852	0.030647382	0	0	0.033057851	0	0	1.936983443	-43939.64125	38236.2422
Dec-21	2021	-157.490815	0	-304.5577734	0	0.151939851	0.006998	0	460.1994768	0	0	0	0	0	-1.30478E-09	0	0.005325604	-0.288223136	0.031668962	0	0	0.012809917	0	0	1.921724796	-44244.19902	38696.4416
Jan-22	2022	-115.9285643	0	-327.1131197	0	0.190962654	0.0068794	0	441.4370995	3.55831E-06	0	0	0	0	3.5584E-10	0	0.005313743	-0.477999687	0.032143403	0	0	0.014351852	0	0	1.832055376	-44571.31214	39137.8787
Feb-22	2022	-89.00198831	0	-299.0497661	0	0.322252827	0.0064279	0	386.5513718	3.21396E-06	0	0	0	0	-2.46405E-09	0	0.004778084	-0.47780838	0.029247015	0	0	0.020997857	0	0	1.590909068	-44870.36191	39524.4301
Mar-22	2022	-80.76403695	0	-338.415025	0	0.736333017	0.0068794	0	417.184368	7.11662E-06	0	0	0	0	2.49076E-09	0	0.005301882	-0.536118756	0.032143403	0	0	0.043885827	0	0	1.703244542	-45208.77693	39941.6145
Apr-22	2022	-18.64095474	0	-383.9520606	0	1.328053241	0.0066575	0	400.0105544	6.87443E-06	0	0	0	0	1.72179E-09	0	0.005142332	-0.468434337	0.031221303	0	0	0.081841137	0	0	1.600895294	-45592.72899	40341.625
May-22	2022	91.82338405	0	-519.3026555	0	1.983164955	0.0066422	0	423.949309	9.48883E-06	0	0	0	1.1861E-07	-7.1168E-10	0	0.005301882	-0.262840523	0.032617845	0	0	0.135215792	0	0	1.631129453	-46112.03165	40765.5743
Jun-22	2022	170.8953143	0	-608.4997846	0	3.022268092	0.0063131	0	432.6746953	6.88705E-06	0	0	0	1.14784E-07	-9.18362E-10	0	0.005165289	0.072658401	0.03168044	0	0	0.200872357	0	0	1.593549105	-46720.53143	41198.249
Jul-22	2022	276.3265188	0	-765.9109968	0	4.424165838	0.0067727	0	482.6167133	1.66054E-05	0	0	0	0	1.18689E-10	0	0.005337465	0.511210583	0.033092286	0	0	0.233662378	0	0	1.712140318	-47486.44243	41680.8657
Aug-22	2022	211.7111616	0	-734.2314311	0	4.689853009	0.0072945	0	514.857377	1.66054E-05	0	0	0	0	-7.1168E-10	0	0.005373049	0.893135892	0.033922558	0	0	0.222987447	0	0	1.827073742	-48220.67386	42195.7231
Sep-22	2022	53.67538949	0	-570.5151433	0	3.569788746	0.0071625	0	510.2234775	-4.59137E-06	0	0	0	0	-5.73891E-10	0	0.005199724	0.934343421	0.033516988	0	0	0.184802569	0	0	1.879246989	-48791.189	42705.9466
Oct-22	2022	-135.1849537	0	-381.5737709	0	1.189898973	0.0076385	0	512.7273725	-4.74441E-06	0	0	0	1.1861E-08	-5.93104E-10	0	0.005337465	0.693870513	0.03451561	0	0	0.081248086	0	0	2.009970892	-49172.76277	43218.674
Nov-22	2022	-178.1267192	0	-294.7741693	0	0.441115696	0.0074725	0	470.3332118	-5.73921E-06	0	0	0	0	-8.03425E-10	0	0.005119376	0.128558309	0.033287419	0	0	0.033172635	0	0	1.930670312	-49467.53694	43689.0072
Dec-22	2022	-158.4278367	0	-304.5579157	0	0.17245944	0.0073538	0	461.1061343	-2.37221E-06	0	0	0	0	8.30255E-10	0	0.005290021	-0.285850929	0.034397	0	0	0.013284359	0	0	1.920657303	-49772.09486	44150.1133
Jan-23	2023	-116.9818241	0	-327.112835	0	0.204009792	0.0074725	0	442.4769564	-2.37221E-06	0	0	0	0	-8.30369E-10	0	0.005290021	-0.486302411	0.03463422	0	0	0.015182124	0	0	1.837037011	-50099.20769	44592.5903
Feb-23	2023	-90.00152916	0	-299.0497018	0	0.337572692	0.0067493	0	387.5378426	1.07132E-06	0	0	0	0	6.42785E-10	0	0.004788797	-0.490664211	0.031389654	0	0	0.022604836	0	0	1.599158226	-50398.2574	44980.1281
Mar-23	2023	-81.9720833	0	-338.4148826	0	0.800975654	0.0072352	0	418.3293137	3.55831E-06	0	0	0	0	-1.66051E-09	0	0.00527816	-0.556282514	0.034752831	0	0	0.04827441	0	0	1.715935849	-50736.67228	45398.4574
Apr-23	2023	-20.00309889	0	-383.9486171	0	1.550734597	0.0068871	0	401.1455406	5.71625E-06	0	0	0	0	-4.59181E-10	0	0.005107897	-0.491276393	0.033402203	0	0	0.083333332	0	0	1.614898967	-51120.6209	45799.603
May-23	2023	93.51120924	0	-519.3072813	0	2.238177195	0.006998	0	422.0258051	-1.1861E-06	0	0	0	0	-4.74415E-10	0	0.005290021	-0.310759102	0.034752831	0	0	0.142332413	0	0	1.642160215	-51639.92818	46221.6288
Jun-23	2023	172.0408607	0	-608.492691	0	3.185261662	0.0065427	0	431.3953106	4.59137E-06	0	0	0	0	-6.88715E-10	0	0.005119376	0.024908172	0.033746556	0	0	0.205463725	0	0	1.597681336	-52248.42087	46653.0241
Jul-23	2023	276.8140073	0	-765.8608246	0	4.298438873	0.006998	0	482.2668128	9.48883E-06	0	0	0	-1.1861E-07	-1.18689E-10	0	0.005313743	0.461394239	0.035227272	0	0	0.240778999	-2.37221E-06	0	1.713445032	-53014.28169	47135.2909
Aug-23	2023	210.5096388	0	-734.221539	0	4.15610646	0.0072471	0	516.627162	2.37221E-05	0	0	0	2.37221E-07	-7.11793E-10	0	0.005325604	0.851385051	0.036057545	0	0	0.228917964	0	0	1.824820145	-53748.50323	47651.9181
Sep-23	2023	53.38383761	0	-570.5119064	0	2.630853957	0.0072429	0	511.4615399	-6.88705E-06	0	0	0	1.14784E-07	-8.03425E-10	0	0.005153811	0.924012843	0.035238751	0	0	0.192837463	0	0	1.870867742	-54319.01514	48163.3796
Oct-23	2023	-135.6973504	0	-381.5739132	0	0.93393785	0.0074369	0	513.5311948	-1.08054E-05	0	0	0	4.74441E-08	-3.5584E-10	0	0.005290021	0.676078962	0.036057545	0	0	0.0859925	0	0	1.999058741	-54700.58905	48676.9108
Nov-23	2023	-178.1117973	0	-294.774307	0	0.414830113	0.0075758	0	470.3596121	-1.14784E-05	0	0	0	0	-1.14937E-10	0	0.005096419	0.117079888	0.034779614	0	0	0.035009182	0	0	1.92378326	-54995.36336	49147.2704
Dec-23	2023	-157.6580556	0	-304.5577734	0	0.168070858	0.0077097	0	460.3644638	-8.30272E-06	0	0	0	1.1861E-08	5.93218E-10	0	0.005254438	-0.306014688	0.036057545	0	0	0.013806244	0	0	1.921250355	-55299.92113	49607.6349
Jan-24	2024	-115.8977256	0	-327.113262	0	0.21017753	0.0072352	0	441.4022281	-6.04913E-06	0	0	0	0	-2.2535E-09	0	0.005206994	-0.51002448	0.036176155	0	0	0.014707683	0	0	1.843204748	-55627.03439	50049.0371
Feb-24	2024	-90.00141438	0	-309.7297155	0	0.359615085	0.0065465	0	398.1745657	-2.33012E-06	0	0	0	1.10958E-08	4.43833E-10	0	0.004893251	-0.532598707	0.033731251	0	0	0.022524487	0	0	1.665480539	-55936.76411	50447.2117
Mar-24	2024	-77.1527078	0	-338.4150961	0	0.791961268	0.006998	0	413.5420816	-1.1861E-07	0	0	0	2.37221E-08	7.11566E-10	0	0.005218855	-0.584748997	0.036176155	0	0	0.047799969	0	0	1.724950235	-56275.17921	50860.7538
Apr-24	2024	-17.3622587	0	-383.9484104	0	1.471533496	0.0071166	0	398.6031853	2.29568E-06	0	0	0	1.14784E-07	0	0	0.005061983	-0.498622582	0.03466483	0	0	0.08080808	0	0	1.623048645	-56659.12762	51259.3569
May-24	2024	92.92764635	0	-519.2959659	0	2.286807436	0.006998	0	422.5799526	1.75543E-05	0	0	0	0	1.06752E-09	0	0.005254438	-0.321434033	0.036413376	0	0	0.131657482	0	0	1.65402125	-57178.42358	51681.9369
Jun-24	2024	171.9524769	0	-608.4966166	0	2.960284622	0.0065657	0	431.6779093	1.37741E-05	0	0	0	1.14784E-07	0	0	0.005096419	0.035583103	0.035353535	0	0	0.202020199	0	0	1.615472888	-57786.9202	52113.6148
Jul-24	2024	277.1176498	0	-765.873421	0	3.507307877	0.0066422	0	482.73307	4.86302E-05	0	0	0	0	-6.40512E-10	0	0.005313743	0.488674618	0.036769207	0	0	0.244337309	0	0	1.734320453	-58552.79362	52596.3479
Aug-24	2024	208.8016499	0	-734.2428177	0	3.370905981	0.0067608	0	519.0855986	3.4397E-05	0	0	0	0	5.92991E-10	0	0.00538491	0.858738892	0.037480869	0	0	0.230104068	0	0	1.847711942	-59287.03644	53115.4335
Sep-24	2024	51.14324995	0	-570.5108045	0	2.567722644	0.0068871	0	513.7946437	1.41185E-05	0	0	0	0	2.18097E-09	0	0.005245638	0.876951319	0.036845729	0	0	0.191689621	0	0	1.889807135	-59857.54724	53629.2281
Oct-24	2024	-137.6366295	0	-381.5736286	0	0.989447491	0.0071166	0	515.4513776	3.55831E-06	0	0	0	2.37221E-08	0	0	0.005408632	0.627448721	0.0378367	0	0	0.085399448	0.00011861	0	2.009970892	-60239.12087	54144.6795
Nov-24	2024	-179.4283721	0	-294.7746514	0	0.424242418	0.0066575	0	471.6698738	-1.14784E-07	0	0	0	2.29568E-08	-9.52696E-10	0	0.005245638	0.091827363	0.036845729	0	0	0.033746556	0	0	1.928030275	-60533.89552	54616.3494
Dec-24	2024	-158.0150727	0	-304.5577022	0	0.171510558	0.0074725	0	460.7275301	0	0	0	0	0	1.18616E-05	0	0.005408632	-0.314317412	0.037599479	0	0	0.013284359	0	0	1.918996758	-60838.45322	55077.0769
Jan-25	2025	-114.1541535	0	-327.1129062	0	0.203891182	0.0073538	0	439.6712287	1.1861E-06	0	0	0	0	-1.06752E-09	0	0.005396771	-0.51002448	0.0378367	0	0	0.014114631	0	0	1.834308973	-61165.56613	55516.7481
Feb-25	2025	-84.61568596	0	-299.0497661	0	0.332108964	0.0062137	0	382.1798537	5.14233E-06	0	0	0	0	1.17848E-09	0	0.004863789	-0.507805319	0.034175084	0	0	0.021854912	0	0	1.594872949	-61464.6159	55898.928
Mar-25	2025	-70.27069841	0	-338.4149538	0	0.754954841	0.0068675	0	406.6964856	5.93052E-06	0	0	0	1.1861E-08	0	0	0.00538491	-0.569329652	0.03795531	0	0	0.048037189	0	0	1.708107566	-61803.03085	56305.6245
Apr-25	2025	-15.15151493	0	-383.9482038	0	1.301652874	0.0064509	0	396.3452652	-9.64187E-05	0	0	0	-2.29568E-07	0.000160698	0	0.005222681	-1.14290632	0.03030303	0	1.37741E-06	0.080119374	-0.000542929	0	1.605831015	-62186.97905	56701.9697
May-25	2025	96.94924868	0	-519.300307	0	1.626147819	0.0069031	0	419.2032347	5.81191E-05	0	0	0	-1.30471E-06	-3.55822E-05	0	0.005432354	-0.284427605	0.032143403	0	1.54193E-06	0.118610344	1.66054E-05	0	1.640736891	-62706.27936	57121.173
Jun-25	2025	169.9680875	0	-608.4964788	0	1.825068844	0.0064279	0	434.8258661	6.36134E-05	0	0	0	-1.60698E-06	-2.29568E-05	0	0.005291552	0.061179981	0.03466483	0	9.18274E-07	0.17447199	4.59137E-06	0	1.615587672	-63314.77584	57555.9988
Jul-25	2025	272.8239554	0	-765.870005	0	1.590564715	0.0066422	0	488.9331885	7.03359E-05	0	0	0	-1.77916E-06	-1.1861E-05	0	0.005562825	0.519513307	0.03807392	0	4.74441E-07	0.237220688	0	0	1.742623177	-64080.64584	58044.932
Aug-25	2025	206.9026983	0	-734.2271611	0	1.627333922	0.007259	0	522.6730871	4.6258E-05	0	0	0	-1.30471E-06	-1.1862E-05	0	0.005610269	0.904996926	0.035820324	0	4.74441E-07	0.226545757	0	0	1.863842948	-64814.87301	58567.6051
Sep-25	2025	48.9084015	0	-570.5182425	0	1.548438913	0.0074954	0	516.9900063	2.75482E-05	0	0	0	-9.18274E-07	-2.29551E-05	0	0.005463728	0.906795212	0.035812672	0	2.29568E-07	0.185950411	0.000114784	0	1.912534408	-65385.39125	59084.5951
Oct-25	2025	-140.5141164	0	-381.5736286	0	0.693040241	0.0078283	0	518.6090222	2.4671E-05	0	0	0	-4.74441E-07	2.13504E-09	0	0.005669574	0.632193134	0.037125038	0	0	0.074724517	0	0	2.037014051	-65766.96488	59603.2041
Nov-25	2025	-182.7169395	0	-294.774307	0	0.30142332	0.0078053	0	475.0830969	1.26263E-06	0	0	0	-1.49219E-07	-1.14778E-09	0	0.005463728	0.074609733	0.035697887	0	0	0.033057851	1.14784E-06	0	1.949035785	-66061.73918	60078.2872
Dec-25	2025	-162.421447	0	-304.5577734	0	0.118373123	0.0083027	0	465.1760111	9.48883E-07	0	0	0	-7.11662E-08	-1.42325E-09	0	0.005633991	-0.329736757	0.037480869	0	0	0.013284359	0	0	1.934060272	-66366.29696	60543.4632

Jan-26	2026	-120.3586606	0	-327.1129062	0	0.143162685	0.0075911	0	445.9363457	4.6258E-06	0	0	0	-7.11662E-08	5.92991E-10	0	0.005633991	-0.520699411	0.037006427	0	0	0.014351852	0	0	1.844983904	-66693.40986	60989.3996
Feb-26	2026	-92.69493286	0	-299.0497018	0	0.242546675	0.0070707	0	390.3496271	5.24946E-06	0	0	0	-1.07132E-07	1.07093E-10	0	0.005078053	-0.517447192	0.033532292	0	-1.07132E-07	0.021854912	1.07132E-06	0	1.603014975	-66992.45957	61379.7492
Mar-26	2026	-82.2140484	0	-338.4149538	0	0.633853679	0.0074725	0	418.8019759	-9.84466E-06	0	0	0	-2.37221E-07	2.37212E-05	0	0.005633991	-0.527816032	0.037362258	0	0	0.045427762	-0.000120983	0	1.716410291	-67330.87452	61798.5512
Apr-26	2026	-21.02800704	0	-383.9486859	0	1.103076201	0.0072658	0	402.6416379	5.77824E-06	0	0	0	-5.73921E-07	2.29647E-10	0	0.005440771	-0.509641866	0.036386593	0	0	0.081152432	-1.14784E-06	0	1.613406772	-67714.82321	62201.1928
May-26	2026	88.1215552	0	-519.300734	0	1.569214853	0.0073538	0	428.0825237	2.60943E-05	0	0	0	-8.30272E-07	0	0	0.005633991	-0.285376488	0.037718089	0	-1.1861E-07	0.118610344	0	0	1.648209343	-68234.12394	62629.2753
Jun-26	2026	167.751375	0	-608.4917956	0	2.070707041	0.0071396	0	436.7584877	2.69743E-05	0	0	0	-9.18274E-07	-1.14784E-05	0	0.005509642	0.070018364	0.036616161	0	-1.14784E-07	0.16873278	0	0	1.623163429	-68842.61573	63066.0338
Jul-26	2026	272.039941	0	-765.8714284	0	2.338995987	0.0075911	0	488.9516918	5.14769E-05	0	0	0	-9.48883E-07	-1.1861E-05	0	0.005740741	0.518327204	0.038666972	0	-1.1861E-07	0.233662378	0	0	1.751637563	-69608.48716	63554.9855
Aug-26	2026	208.493263	0	-734.2423195	0	2.306971194	0.0081129	0	520.4028851	3.55831E-05	0	0	0	-5.93052E-07	1.42366E-09	0	0.005800046	0.887205374	0.039141414	0	-1.1861E-07	0.225359654	0	0	1.87119679	-70342.72948	64075.3884
Sep-26	2026	51.64370908	0	-570.5156254	0	1.794077109	0.0081382	0	514.0234086	1.95133E-05	0	0	0	-6.88705E-07	3.09922E-09	0	0.005658861	0.904499528	0.038682277	0	0	0.188246095	0	0	1.919651028	-70913.24511	64589.4118
Oct-26	2026	-137.6947486	0	-381.5736997	0	0.790182113	0.0083502	0	515.7035432	1.24304E-05	0	0	0	-2.01638E-07	-1.18603E-05	0	0.005835629	0.621518203	0.039615855	0	0	0.074368686	0	0	2.044367892	-71294.81881	65105.1154
Nov-26	2026	-180.2961407	0	-294.7742382	0	0.366161611	0.0081497	0	472.6005442	-2.64004E-06	0	0	0	-6.88705E-08	1.95132E-09	0	0.005624426	0.059687786	0.038567493	0	0	0.033057851	0	0	1.956037621	-71589.59305	65577.7159
Dec-26	2026	-160.5189371	0	-304.5577734	0	0.150160696	0.0086586	0	463.2552351	-1.45891E-05	0	0	0	-3.55831E-08	-2.13481E-09	0	0.005764463	-0.343969998	0.039734465	0	0	0.013047138	0.000119796	0	1.940702451	-71894.15082	66040.9711
Jan-27	2027	-118.9460114	0	-327.1131197	0	0.188827668	0.0085399	0	444.4800479	-1.66054E-06	0	0	0	-1.1861E-08	1.30467E-09	0	0.005764463	-0.530188238	0.039497245	0	-3.55831E-07	0.014233241	0	0	1.851270252	-72221.26394	66485.4512
Feb-27	2027	-91.58633171	0	-299.0497661	0	0.318288946	0.0073921	0	389.1602485	1.60698E-06	0	0	0	-5.3566E-08	4.28599E-10	0	0.005206611	-0.517447192	0.035674931	0	-1.07132E-07	0.020997857	0	0	1.607943044	-72520.31371	66874.6114
Mar-27	2027	-83.53465597	0	-338.415025	0	0.748312661	0.0081841	0	419.9631712	1.89777E-06	0	0	0	-9.48883E-08	-1.18609E-09	0	0.005764463	-0.58237679	0.039497245	0	0	0.043885827	1.1861E-06	0	1.721510535	-72858.72873	67294.5746
Apr-27	2027	-21.21900796	0	-383.9520606	0	1.332644609	0.0078053	0	402.5927398	1.43825E-06	0	0	0	-2.29568E-07	-2.29568E-09	0	0.005578512	-0.51629935	0.03822314	0	0	0.081955922	0	0	1.618227709	-73242.68079	67697.1674
May-27	2027	89.27444775	0	-519.3026555	0	1.980792748	0.0079469	0	426.517816	4.74441E-06	0	0	0	0	-2.84672E-09	0	0.005764463	-0.308268285	0.039378634	0	0	0.134029689	0	0	1.648209343	-73761.98345	68123.6852
Jun-27	2027	168.587004	0	-608.4997846	0	3.011937514	0.0076905	0	435.0060773	6.88705E-06	0	0	0	-3.44353E-07	-2.4105E-09	0	0.005567034	0.01939853	0.037878787	0	0	0.203168041	0	0	1.609389325	-74370.48323	68558.6912
Jul-27	2027	273.989895	0	-765.9109968	0	4.355371838	0.0081604	0	485.055342	1.30471E-05	0	0	0	-1.1861E-07	5.93104E-10	0	0.005764463	0.460208135	0.039734465	0	0	0.234848481	0	0	1.727441053	-75136.39423	69043.7466
Aug-27	2027	209.4006321	0	-734.2314311	0	4.632920043	0.0084451	0	517.2310072	1.54193E-05	0	0	0	0	-3.5584E-10	0	0.005823768	0.852333933	0.040090296	0	-1.1861E-07	0.22417355	0	0	1.841781424	-75870.62566	69560.9776
Sep-27	2027	51.4749763	0	-570.5151433	0	3.559458167	0.008517	0	512.4641799	-5.73921E-06	0	0	0	-1.14784E-07	8.03539E-10	0	0.005601469	0.897612476	0.038911845	0	0	0.185950411	0	0	1.893021093	-76441.1408	70073.4418
Oct-27	2027	-137.3745006	0	-381.5737709	0	1.157755569	0.008623	0	514.9680405	-1.86693E-05	0	0	0	-5.93052E-08	-4.74415E-10	0	0.005776324	0.655915203	0.040090296	0	0	0.081959748	0	0	2.024441354	-76822.71457	70588.4098
Nov-27	2027	-180.2157917	0	-294.7741693	0	0.43767217	0.0084137	0	472.4225139	-1.25115E-05	0	0	0	-3.44353E-08	-1.14785E-05	0	0.005544077	0.094123047	0.038797061	0	0	0.033057851	0	0	1.944788769	-77117.48874	71060.8323
Dec-27	2027	-160.4892845	0	-304.5579157	0	0.174713037	0.0084213	0	463.1913042	-7.94689E-06	0	0	0	-1.1861E-08	9.48944E-10	0	0.00572888	-0.321434033	0.040090296	0	0	0.013284359	0	0	1.935720817	-77422.04666	71524.0236
Jan-28	2028	-118.9887112	0	-327.112835	0	0.206975051	0.0084213	0	444.4985511	-5.81191E-06	0	0	0	0	-5.93104E-10	0	0.005693297	-0.520699411	0.039971686	0	0	0.015182124	0	0	1.851744693	-77749.15949	71968.5222
Feb-28	2028	-94.81033687	0	-309.7300483	0	0.351848021	0.0075451	0	402.9838211	-4.21641E-06	0	0	0	-1.10958E-08	1.10958E-10	0	0.005314891	-0.540365771	0.037170951	0	0	0.02352311	1.10958E-06	0	1.669364071	-78058.88954	72371.506
Mar-28	2028	-83.48626295	0	-338.4148826	0	0.79599402	0.0080655	0	419.8621152	-8.30272E-07	0	0	0	-2.37221E-08	5.93104E-10	0	0.005693297	-0.593051721	0.039734465	0	0	0.047918579	0	0	1.729576039	-78397.30442	72791.3681
Apr-28	2028	-21.41184542	0	-383.9486171	0	1.500229547	0.0078053	0	402.6229281	-1.04454E-06	0	0	0	-1.14784E-07	1.1471E-10	0	0.005498163	-0.525711655	0.038452708	0	-1.14784E-07	0.083333332	0	0	1.628558287	-78781.25304	73193.991
May-28	2028	92.19107611	0	-519.3072813	0	2.214455126	0.0077097	0	423.3808096	-5.93052E-06	0	0	0	0	4.74301E-10	0	0.005681435	-0.346342205	0.039260024	0	0	0.14470462	0	0	1.655563184	-79300.56032	73617.3719
Jun-28	2028	170.7288772	0	-608.492691	0	3.141643665	0.0072314	0	432.7603243	2.29568E-07	0	0	0	0	-2.06614E-09	0	0.005486685	-0.003787879	0.037764003	0	0	0.205463725	0	0	1.609504109	-79909.05301	74050.1322
Jul-28	2028	275.3562862	0	-765.8608246	0	4.277089011	0.0077097	0	483.7879904	1.30471E-05	0	0	0	-2.37221E-07	-1.54205E-09	0	0.005681435	0.419880618	0.039497245	0	0	0.241965102	0	0	1.724475794	-80674.91384	74533.9202
Aug-28	2028	209.1325727	0	-734.221539	0	4.103917908	0.0082316	0	518.0730221	1.1861E-05	0	0	0	-1.1861E-07	-5.92991E-10	0	0.005693297	0.825053554	0.040327517	0	0	0.231290171	0	0	1.835376466	-81409.13538	75051.9932
Sep-28	2028	52.07874121	0	-570.5119064	0	2.579201065	0.0079545	0	512.842853	-1.03306E-05	0	0	0	-1.14784E-07	-3.67322E-09	0	0.005509642	0.896464634	0.038911845	0	0	0.191689621	0	0	1.880509615	-81979.64728	75564.836
Oct-28	2028	-137.0779748	0	-381.5739132	0	0.933582019	0.0081841	0	514.91858	-1.42095E-05	0	0	0	-2.37221E-08	-2.96529E-09	0	0.005669574	0.648798583	0.039971686	0	0	0.086585551	0	0	2.009377841	-82361.2212	76079.7546
Nov-28	2028	-179.4272242	0	-294.774307	0	0.419191913	0.0080349	0	471.6627572	-1.36593E-05	0	0	0	-1.14784E-08	1.26261E-09	0	0.00545225	0.089531679	0.038682277	0	0	0.035009182	0	0	1.933999054	-82655.9955	76551.4174
Dec-28	2028	-158.9603972	0	-304.5577734	0	0.169968623	0.0083027	0	461.6817503	-1.41146E-05	0	0	0	0	8.30255E-10	0	0.005586547	-0.335667274	0.039971686	0	0	0.013924854	0	0	1.932399727	-82960.55328	77013.0991
Jan-29	2029	-117.1609258	0	-327.113262	0	0.212549737	0.0079469	0	442.6772893	-1.05563E-05	0	0	0	-1.1861E-08	-3.5584E-10	0	0.005562825	-0.537304859	0.039734465	0	0	0.015182124	0	0	1.855303004	-83287.66654	77455.7764
Feb-29	2029	-87.8931729	0	-299.0497661	0	0.349250071	0.0071778	0	385.4339859	-8.57055E-06	0	0	0	0	-2.46405E-09	0	0.0050352	-0.539944896	0.035889194	0	0	0.021854912	0	0	1.620156083	-83586.71631	77841.2104
Mar-29	2029	-80.27642982	0	-338.4150961	0	0.79267293	0.0080655	0	416.6357952	1.43519E-05	0	0	0	-2.37221E-08	-4.74433E-05	0	0.005550964	-0.663031824	0.039615855	0	0	0.047681358	0.000124541	0	1.739895139	-83925.1314	78257.8462
Apr-29	2029	-18.49403095	0	-383.9484104	0	1.441689603	0.0071166	0	399.7876435	0	0	0	0	2.29568E-07	0	0	0.005371901	-0.530647375	0.038108356	0	0	0.080578511	0.00011708	0	1.63682275	-84309.07981	78657.6338
May-29	2029	91.71782084	0	-519.2959659	0	2.254782643	0.0075911	0	423.8244123	1.31657E-05	0	0	0	2.37221E-07	-5.92991E-10	0	0.005562825	-0.349900515	0.039497245	0	0	0.130471379	0.00011861	0	1.666949777	-84828.37578	79081.4583
Jun-29	2029	170.8218525	0	-608.4966166	0	2.921257993	0.0070592	0	432.8565135	1.03306E-05	0	0	0	5.73921E-07	0	0	0.005417814	0.024104683	0.038452708	0	0	0.204315883	0	0	1.627066092	-85436.87239	79514.3148
Jul-29	2029	276.0145736	0	-765.873421	0	3.453933222	0.0072352	0	483.9215457	4.38858E-05	0	0	0	4.74441E-07	-1.23362E-09	0	0.005657713	0.468510859	0.040090296	0	0	0.246709516	2.37221E-06	0	1.744165111	-86202.74582	79998.2363
Aug-29	2029	207.6938293	0	-734.2428177	0	3.323461844	0.0074725	0	520.2565199	2.84665E-05	0	0	0	2.37221E-07	1.18629E-05	0	0.005705158	0.864669409	0.040683348	0	1.1861E-07	0.233662378	0	0	1.856370497	-86936.98863	80518.4928
Sep-29	2029	50.0906788	0	-570.5108045	0	2.521808963	0.0073462	0	514.9005895	1.1708E-05	0	0	0	0	1.14767E-05	0	0.005544077	0.856290162	0.039715335	0	0	0.195133147	0	0	1.897497677	-87507.49944	81033.3934
Oct-29	2029	-138.7349613	0	-381.5736286	0	0.979721443	0.0077097	0	516.5581308	-2.37221E-06	0	0	0	5.93052E-08	0	0	0.005752602	0.603726652	0.041157789	0	0	0.085636668	0	0	2.017799175	-87889.07307	81549.9516
Nov-29	2029	-180.8402178	0	-294.7746514	0	0.427226807	0.007461	0	473.0933127	-4.59137E-07	0	0	0	1.14784E-08	-4.13252E-10	0	0.005555555	0.075757575	0.039485766	0	0	0.033746556	0.000114784	0	1.935606033	-88183.84772	82023.0449
Dec-29	2029	-158.9390473	0	-304.5577022	0	0.172103609	0.0077097	0	461.6606377	-1.54193E-06	0	0	0	0	7.1168E-10	0	0.005693297	-0.329736757	0.040564738	0	-1.1861E-07	0.013165748	0	0	1.926706431	-88488.40542	82484.7055
Jan-30	2030	-115.1854705	0	-327.1129062	0	0.204840064	0.0077097	0	440.6030316	8.89578E-06	0	0	0	-2.37221E-08	-0.000106748	0	0.005705158	-0.648798583	0.039260024	0	2.37221E-07	0.014233241	0.000360575	0	1.842848917	-88815.51833	82925.3085
Feb-30	2030	-85.46449219	0	-299.0497661	0	0.334037338	0.006535	0	383.0285528	0.000113453	0	0	0	4.49954E-07	0	0	0.005153046	-0.522803788	0.035139271	0	2.14264E-07	0.021854912	0.000431742	0	1.60269358	-89114.56809	83308.3371
Mar-30	2030	-71.2338144	0	-338.4149538	0	0.760055085	0.007259	0	407.6604318	0	0	0	0	1.25727E-06	2.37221E-05	0	0.005693297	-0.588307307	0.039141414	0	2.37221E-07	0.047681358	0.000237221	0	1.71629168	-89452.98305	83715.9975
Apr-30	2030	-12.89830101	0	-383.9482038	0	1.315426978	0.0070478	0	394.2877583	-1.14784E-05	0	0	0	2.06612E-06	2.29568E-05	0	0.005509642	-0.493572077	0.037764003	0	1.14784E-07	0.079775022	0.000114784	0	1.614210261	-89836.93125	84110.2853
May-30	2030	95.81640128	0	-519.300307	0	1.611914577	0.0070573	0	420.3491292	4.74441E-06	0	0	0	2.96526E-06	5.93075E-05	0	0.005705158	-0.290595343	0.039260024	0	0	0.117424241	0	0	1.648802394	-90356.23156	84530.6344
Jun-30	2030	168.9888635	0	-608.4964788	0	1.768824584	0.0067264	0	435.8384923	2.54821E-05	0	0	0	3.21396E-06	1.14784E-05	0	0.005578512	0.058999081	0.03822314	0	0	0.175619832	0.000114784	0	1.622589508	-90964.72804	84966.4729
Jul-30	2030	271.833559	0	-765.870005	0	1.56802875	0.0071166	0	489.9138589	4.55464E-05	0	0	0	3.20248E-06	1.1861E-05	0	0.005811907	0.501721756	0.040446127	0	0	0.233662378	0	0	1.749383966	-91730.59804	85456.3868
Aug-30	2030	205.9716071	0	-734.2271611	0	1.624961715	0.0076622	0	523.6242234	2.84665E-05	0	0	0	2.37221E-06	7.1168E-10	0	0.005883073	0.880088754	0.040801958	0	0	0.226545757	0.00011861	0	1.869654855	-92464.8252	85980.011
Sep-30	2030	48.0647376	0	-570.5182425	0	1.518595019	0.0078168	0	517.8779769	8.83838E-06	0	0	0	1.72176E-06	2.29647E-10	0	0.005727732	0.890725423	0.039485766	0	0	0.185950411	0	0	1.918503186	-93035.34344	86497.889
Oct-30	2030	-141.3669248	0	-381.5736286	0	0.688177217	0.0080655	0	519.4529348	-2.13499E-06	0	0	0	5.93052E-07	1.18594E-05	0	0.005942378	0.615587686	0.041039179	0	0	0.074605906	0.00011861	0	2.043181789	-93416.91707	87017.3419
Nov-30	2030	-183.5135419	0	-294.774307	0	0.298898067	0.0078053	0	475.8877342	-1.44628E-05	0	0	0	2.75482E-07	-1.49214E-09	0	0.005750689	0.05624426	0.039830119	0	0	0.033287419	0.000114784	0	1.954889779	-93711.69138	87493.2296
Dec-30	2030	-163.2042753	0	-304.5577734	0	0.118966175	0.0079469	0	465.9725981	-1.49449E-05	0	0	0	1.1861E-07	1.18621E-05	0	0.005894934	-0.343969998	0.040683348	0	0	0.013284359	0	0	1.94034662	-94016.24915	87959.2022
Jan-31	2031	-121.1177669	0	-327.1129062	0	0.144230179	0.0080655	0	446.7004336	-4.03275E-06	0	0	0	1.30471E-07	1.89777E-09	0	0.005894934	-0.537304859	0.040683348	0	0	0.014233241	0.000237221	0	1.851151642	-94343.36206	88405.9027
Feb-31	2031	-93.35304426	0	-299.0497018	0	0.241046828	0.0071778	0	391.0127737	-2.46403E-06	0	0	0	2.03551E-07	1.60685E-09	0	0.00533517	-0.531374342	0.036424854	0	0	0.021854912	0	0	1.608371572	-94642.41176	88796.9154
Mar-31	2031	-83.28593008	0	-338.4149538	0	0.624246241	0.0079469	0	419.8405281	-4.50719E-06	0	0	0	3.55831E-07	9.48944E-10	0	0.005859351	-0.591865617	0.039971686	0	1.1861E-07	0.045309151	0.00011861	0	1.722103587	-94980.82672	89216.756
Apr-31	2031	-21.57059198	0	-383.9486859	0	1.109963253	0.0075987	0	403.1825011	-8.84068E-06	0	0	0	5.73921E-07	1.14797E-05	0	0.005704775	-0.52341597	0.039026629	0	-1.14784E-07	0.081382001	0.000114784	0	1.619145982	-95364.7754	89619.9385
May-31	2031	87.53799231	0	-519.300734	0	1.578703681	0.0078283	0	428.6607491	1.54193E-05	0	0	0	5.93052E-07	2.37221E-05	0	0.005906795	-0.301151664	0.040327517	0	0	0.116238137	0	0	1.653902639	-95884.07614	90048.5992
Jun-31	2031	168.8831472	0	-608.4917956	0	2.081037619	0.0074036	0	435.6288964	1.83655E-05	0	0	0	6.88705E-07	1.14784E-05	0	0.00573921	0.068985307	0.03960055	0	0	0.167584938	0	0	1.62890264	-96492.56793	90484.2281
Jul-31	2031	271.0898721	0	-765.8714284	0	2.353229228	0.0078283	0	489.8957115	2.37221E-05	0	0	0	8.30272E-07	0	0	0.005977961	0.502907859	0.041157789	0	-1.1861E-07	0.236034585	0	0	1.756737808	-97258.43936	90974.1238
Aug-31	2031	207.6867126	0	-734.2423195	0	2.292737953	0.0084332	0	521.193423	2.96526E-05	0	0	0	4.74441E-07	9.48944E-10	0	0.006037267	0.887205374	0.041750841	0	0	0.226545757	0	0	1.876178424	-97992.68168	91495.3173
Sep-31	2031	50.9343427	0	-570.5156254	0	1.796372793	0.0085399	0	514.7208374	1.60698E-05	0	0	0	2.29568E-07	3.44357E-10	0	0.005876951	0.894168949	0.040748392	0	-1.14784E-07	0.187098253	0.000114784	0	1.924357181	-98563.1973	92010.0381
Oct-31	2031	-138.4016662	0	-381.5736997	0	0.79255432	0.0088602	0	516.3733358	-1.20983E-05	0	0	0	1.77916E-07	2.37209E-05	0	0.006084711	0.609657169	0.042343893	0	0	0.074250075	0.00011861	0	2.049349527	-98944.771	92526.4114
Nov-31	2031	-180.9136797	0	-294.7742382	0	0.364210279	0.008494	0	473.2153284	-9.4123E-06	0	0	0	8.03489E-08	-6.88715E-10	0	0.005842516	0.051652892	0.040863177	0	-1.14784E-07	0.033057851	0	0	1.960284637	-99239.54524	92999.6268
Dec-31	2031	-161.1096166	0	-304.5577734	0	0.147788489	0.0087772	0	463.8589618	-8.77717E-06	0	0	0	3.55831E-08	-1.7792E-09	0	0.006037267	-0.351086619	0.042225283	0	0	0.012809917	0	0	1.945328255	-99544.10302	93463.4857
Jan-32	2032	-119.5117828	0	-327.1131197	0	0.18598102	0.0086586	0	445.0529359	-7.70967E-06	0	0	0	5.93052E-08	-9.4883E-10	0	0.005989822	-0.540863169	0.041750841	0	0	0.014114631	0	0	1.855540224	-99871.21613	93908.5386
Feb-32	2032	-95.14143573	0	-309.7301815	0	0.325218085	0.007878	0	403.3515361	-3.88353E-06	0	0	0	7.76706E-08	1.66438E-09	0	0.005592286	-0.547023255	0.038835322	0	0	0.021747781	0	0	1.668476407	-100180.9463	94311.8902

Mar-32	2032	-83.70711542	0	-338.415025	0	0.748312661	0.0086586	0	420.1368167	-4.26997E-06	0	0	0	1.42332E-07	4.74415E-10	0	0.005989822	-0.590679514	0.04151362	0	0	0.043648607	0.000237221	0	1.724713015	-100519.3613	94732.027
Apr-32	2032	-21.41299326	0	-383.9520606	0	1.332644609	0.0080349	0	402.7936122	-3.68802E-06	0	0	0	4.59137E-07	1.60696E-09	0	0.005773645	-0.523186402	0.039715335	0	0	0.081496785	0	0	1.621441666	-100903.3134	95134.8206
May-32	2032	89.06687965	0	-519.3026555	0	1.958256782	0.0081841	0	426.7538506	-4.74441E-06	0	0	0	1.1861E-07	0	0	0.005977961	-0.315859347	0.040801958	0	0	0.132843585	0	0	1.651411822	-101422.6161	95561.5745
Jun-32	2032	168.3574356	0	-608.4997846	0	3.002754778	0.0078053	0	435.2488459	-1.14784E-06	0	0	0	5.73921E-07	5.74005E-10	0	0.005762167	0.027203856	0.039715335	0	-1.14784E-07	0.202020199	0	0	1.612488498	-102031.1158	95996.8233
Jul-32	2032	273.7763964	0	-765.9109968	0	4.30436939	0.0083383	0	485.3321785	7.11662E-06	0	0	0	2.37221E-07	-2.37151E-10	0	0.0059661	0.451905411	0.041632231	0	0	0.234848481	0	0	1.73016909	-102797.0268	96482.1555
Aug-32	2032	209.1729003	0	-734.2314311	0	4.594964733	0.0085874	0	517.5262284	1.1861E-05	0	0	0	4.74441E-07	2.37264E-10	0	0.006001683	0.842726495	0.041750841	0	0	0.22417355	0	0	1.844035021	-103531.2583	96999.6817
Sep-32	2032	51.20982479	0	-570.5151433	0	3.529614274	0.0085399	0	512.7518292	-8.14853E-06	0	0	0	1.14784E-07	1.1479E-09	0	0.005796602	0.889577581	0.040633608	0	0	0.184802569	0	0	1.895546346	-104101.7734	97512.4335
Oct-32	2032	-137.6473044	0	-381.5737709	0	1.13711737	0.0088721	0	515.261008	-1.19322E-05	0	0	0	8.30272E-08	-1.42325E-09	0	0.005977961	0.65117079	0.042343893	0	0	0.081959748	0	0	2.027643834	-104483.3472	98027.6946
Nov-32	2032	-180.4878303	0	-294.7741693	0	0.435950407	0.0083907	0	472.7095892	-1.40037E-05	0	0	0	1.14784E-08	4.59295E-10	0	0.005750689	0.082644627	0.040289256	0	0	0.033172635	0	0	1.947887943	-104778.1214	98500.4041
Dec-32	2032	-160.7869965	0	-304.5579157	0	0.17566192	0.0086586	0	463.4816623	-1.44705E-05	0	0	0	3.55831E-08	1.18617E-05	0	0.005871212	-0.333295067	0.041632231	0	-1.1861E-07	0.013402969	0	0	1.938804686	-105082.6793	98963.8858
Jan-33	2033	-119.2721899	0	-327.112835	0	0.207805323	0.0085399	0	444.7821485	-1.20983E-05	0	0	0	2.37221E-08	-2.37219E-09	0	0.005883073	-0.531374342	0.04151362	0	0	0.015537955	0	0	1.855065783	-105409.7921	99408.668
Feb-33	2033	-92.00489613	0	-299.0497018	0	0.341215177	0.0074992	0	389.5531012	-6.64218E-06	0	0	0	1.07132E-08	-1.82126E-09	0	0.005292317	-0.529231703	0.037603305	0	0	0.022604836	0	0	1.615870806	-105708.8418	99798.2211
Mar-33	2033	-84.10564617	0	-338.4148826	0	0.790893775	0.0085399	0	420.4887336	-4.86302E-06	0	0	0	5.93052E-08	0	0	0.00584749	-0.598982238	0.041039179	0	0	0.04827441	0	0	1.734083232	-106047.2567	100218.71
Apr-33	2033	-22.4024331	0	-383.9486171	0	1.477272706	0.0076905	0	403.6360135	-5.86547E-06	0	0	0	1.14784E-07	8.03539E-10	0	0.005658861	-0.530303023	0.039715335	0	0	0.083448116	-1.14784E-06	0	1.63246095	-106431.2053	100622.346
May-33	2033	91.69528487	0	-519.3072813	0	2.182430333	0.0075911	0	423.9253497	-1.06749E-05	0	0	0	1.1861E-07	9.4883E-10	0	0.005835629	-0.353458826	0.040683348	0	0	0.14470462	-1.1861E-06	0	1.659477325	-106950.5126	101046.271
Jun-33	2033	170.3363153	0	-608.492691	0	3.110651929	0.0075758	0	433.1900764	-2.75482E-06	0	0	0	2.29568E-07	1.1471E-10	0	0.005635904	-0.01228191	0.039370982	0	0	0.206611567	0	0	1.613406772	-107559.0053	101479.461
Jul-33	2033	274.9814775	0	-765.8608246	0	4.255739149	0.0078283	0	484.2122596	4.74441E-06	0	0	0	0	4.74415E-10	0	0.005823768	0.440044377	0.04139501	0	0	0.240778999	-3.55831E-06	0	1.727559663	-108324.8661	101963.673
Aug-33	2033	208.7091338	0	-734.221539	0	4.058845978	0.0081604	0	518.5214878	1.89777E-05	0	0	0	2.37221E-07	-1.89789E-09	0	0.005859351	0.819004427	0.041750841	0	0	0.231290171	0	0	1.838341724	-109059.0876	102482.195
Sep-33	2033	51.68732708	0	-570.5119064	0	2.542470119	0.0079201	0	513.2587162	-1.37741E-05	0	0	0	2.29568E-07	3.78793E-09	0	0.005681818	0.889577581	0.040059687	0	0	0.195133147	0	0	1.882805299	-109629.5995	102995.454
Oct-33	2033	-137.4717611	0	-381.5739132	0	0.927295671	0.0083739	0	515.3241087	-1.90014E-05	0	0	0	8.30272E-08	1.54193E-09	0	0.005823768	0.644054169	0.041039179	0	-1.1861E-07	0.086704162	0	0	2.011750048	-110011.1735	103510.778
Nov-33	2033	-179.7727247	0	-294.774307	0	0.420913676	0.0079201	0	472.0328215	-1.84803E-05	0	0	0	2.29568E-08	-9.18249E-10	0	0.005589991	0.083792469	0.039944903	0	-1.14784E-07	0.035353535	0	0	1.936524306	-110305.9478	103982.811
Dec-33	2033	-159.3162282	0	-304.5577734	0	0.170680285	0.0081841	0	462.0344975	-1.67241E-05	0	0	0	0	-1.6604E-09	0	0.00572888	-0.340411688	0.040801958	0	0	0.013972299	0	0	1.935483596	-110610.5055	104444.845
Jan-34	2034	-117.5013375	0	-327.113262	0	0.212905568	0.0080655	0	443.0142613	-1.43519E-05	0	0	0	3.55831E-08	-1.54193E-09	0	0.005705158	-0.54797979	0.040801958	0	0	0.014707683	0	0	1.858624093	-110937.6188	104887.859
Feb-34	2034	-88.21885395	0	-299.0497661	0	0.350321391	0.0069636	0	385.7657734	-9.85614E-06	0	0	0	3.21396E-08	-3.21393E-10	0	0.005142332	-0.542230173	0.036853382	0	0	0.021854912	0	0	1.623048645	-111236.6686	105273.625
Mar-34	2034	-80.52906985	0	-338.4150961	0	0.791368216	0.0079469	0	416.9298302	-8.77717E-06	0	0	0	3.55831E-08	4.74415E-10	0	0.005693297	-0.61677379	0.040327517	0	0	0.047562748	0	0	1.742504566	-111575.0837	105690.555
Apr-34	2034	-18.77410441	0	-383.9484104	0	1.42332413	0.0072314	0	400.0672578	-1.14784E-06	0	0	0	0	0	0	0.005498163	-0.558425153	0.039026629	0	0	0.080922864	0	0	1.639577571	-111959.0321	106090.622
May-34	2034	91.46636691	0	-519.2959659	0	2.225130057	0.0074725	0	424.113703	2.83479E-05	0	0	0	1.1861E-07	1.77909E-09	0	0.005717019	-0.355831033	0.040801958	0	0	0.130417379	0	0	1.669677815	-112478.328	106514.736
Jun-34	2034	170.6095017	0	-608.4966166	0	2.881083521	0.0072888	0	433.1330287	1.95133E-05	0	0	0	3.44353E-07	0	0	0.005567034	0.009871442	0.039370982	0	-1.14784E-07	0.204315883	0	0	1.629476561	-113086.8247	106947.869
Jul-34	2034	275.7654919	0	-765.873421	0	3.404116878	0.0073538	0	484.2043127	3.32109E-05	0	0	0	2.37221E-07	-1.03182E-09	0	0.005764463	0.460208135	0.041039179	0	0	0.245523412	2.37221E-06	0	1.746655928	-113852.6981	107432.073
Aug-34	2034	207.438817	0	-734.2428177	0	3.279576016	0.0078283	0	520.5471152	2.96526E-05	0	0	0	0	3.08387E-09	0	0.005859351	0.831458513	0.041632231	0	0	0.233662378	1.1861E-06	0	1.858505483	-114586.9409	107952.62
Sep-34	2034	49.85881471	0	-570.5108045	0	2.489669386	0.0076905	0	515.1730872	9.06795E-06	0	0	0	0	2.29534E-10	0	0.00567034	0.850550952	0.040633608	0	0	0.193985305	0	0	1.899104656	-115157.4517	108467.793
Oct-34	2034	-138.9792986	0	-381.5736286	0	0.973672315	0.0078283	0	516.8193107	-2.37221E-06	0	0	0	-1.1861E-08	0	0	0.005883073	0.600168342	0.041988062	0	0	0.085873889	0	0	2.01957833	-115539.0253	108984.613
Nov-34	2034	-181.0824125	0	-294.7746514	0	0.428489434	0.0075758	0	473.3304569	-2.29568E-05	0	0	0	0	-3.44357E-10	0	0.00567034	0.066574838	0.040289256	0	0	0.033631772	0	0	1.93744258	-115833.8	109457.943
Dec-34	2034	-159.1667792	0	-304.5577022	0	0.170561675	0.0073538	0	461.8926395	-2.37221E-06	0	0	0	-1.1861E-08	2.37151E-10	0	0.005835629	-0.336853377	0.04151362	0	0	0.013521579	-1.1861E-06	0	1.928960027	-116138.3577	109919.836
Jan-35	2035	-115.4031205	0	-327.1129062	0	0.202586468	0.0075911	0	440.8260191	6.04913E-06	0	0	0	-3.55831E-08	-0.000130472	0	0.005835629	-0.652356893	0.039734465	0	5.93052E-07	0.01387741	0.000478	0	1.844628073	-116465.4706	110360.662
Feb-35	2035	-85.66932843	0	-299.0497661	0	0.334358734	0.006535	0	383.2392813	0.00010981	0	0	0	4.39241E-07	1.07121E-05	0	0.005270891	-0.526017746	0.035889194	0	3.21396E-07	0.021854912	0.000216406	0	1.604300558	-116764.5204	110743.901
Mar-35	2035	-71.47815171	0	-338.4149538	0	0.762190072	0.0073776	0	407.9060739	9.48883E-06	0	0	0	1.41146E-06	3.55831E-05	0	0.005823768	-0.591865617	0.039971686	0	2.37221E-07	0.047562748	0.000355831	0	1.717952225	-117102.9353	111151.807
Apr-35	2035	-13.10376473	0	-383.9482038	0	1.318870504	0.0069674	0	394.4923038	-2.29568E-05	0	0	0	2.29568E-06	1.14784E-05	0	0.005635904	-0.50837924	0.038567493	0	0	0.080119374	0	0	1.615702456	-117486.8835	111546.3
May-35	2035	95.62199893	0	-519.300307	0	1.596495233	0.0071878	0	420.5676095	1.1861E-06	0	0	0	3.08387E-06	2.37225E-05	0	0.00584749	-0.290713954	0.040208907	0	1.1861E-07	0.116238137	0.000237221	0	1.650225719	-118006.1838	111966.867
Jun-35	2035	168.8696027	0	-608.4964788	0	1.728650113	0.0067378	0	436.014227	2.75482E-06	0	0	0	3.44353E-06	1.14784E-05	0	0.005681818	0.047291092	0.039370982	0	0	0.175619832	0.000114784	0	1.62373735	-118614.6803	112402.881
Jul-35	2035	271.6995293	0	-765.870005	0	1.546678888	0.0073538	0	490.0955699	2.19429E-05	0	0	0	3.32109E-06	1.1861E-05	0	0.005942378	0.499349549	0.041157789	0	0	0.236034585	0.000237221	0	1.750925901	-119380.5503	112892.977
Aug-35	2035	205.8031804	0	-734.2271611	0	1.620217301	0.0075673	0	523.8182699	2.72804E-05	0	0	0	2.72804E-06	1.18689E-10	0	0.006013544	0.850436168	0.04151362	0	0	0.227731861	0.000237221	0	1.87119679	-120114.7775	113416.795
Sep-35	2035	47.88796993	0	-570.5182425	0	1.511707967	0.0077594	0	518.0449879	1.87098E-05	0	0	0	1.72176E-06	1.14788E-05	0	0.005865473	0.888429739	0.040633608	0	0	0.188246095	0	0	1.919536244	-120685.2957	113934.84
Oct-35	2035	-141.5234905	0	-381.5736286	0	0.68248392	0.0081841	0	519.6688056	9.72605E-06	0	0	0	5.93052E-07	1.18623E-05	0	0.006049128	0.610843273	0.041869451	0	0	0.074605906	0.00011861	0	2.044130672	-121066.8693	114454.509
Nov-35	2035	-183.6903096	0	-294.774307	0	0.297520657	0.0080349	0	476.0533678	-2.98439E-06	0	0	0	2.64004E-07	5.73891E-10	0	0.005808081	0.052800734	0.040633608	0	0	0.033172635	0	0	1.956037621	-121361.6436	114930.562
Dec-35	2035	-163.3489799	0	-304.5577734	0	0.118254513	0.0080655	0	466.1387712	-3.20248E-06	0	0	0	1.1861E-07	1.18625E-05	0	0.006037267	-0.351086619	0.0412764	0	0	0.013284359	0	0	1.941651334	-121666.2014	115396.701
Jan-36	2036	-121.2743325	0	-327.1129062	0	0.141857972	0.0080655	0	446.8644717	-5.33747E-06	0	0	0	1.30471E-07	1.18619E-05	0	0.005989822	-0.542049273	0.04139501	0	-2.37221E-07	0.014351852	0	0	1.852693576	-121993.3143	115843.566
Feb-36	2036	-96.60641505	0	-309.7300483	0	0.249544686	0.0072123	0	404.8998449	-4.7712E-06	0	0	0	1.77533E-07	-5.54678E-10	0	0.005603382	-0.553680739	0.038613406	0	0	0.022413529	0	0	1.665924371	-122303.0444	116248.466
Mar-36	2036	-82.6279985	0	-338.4149538	0	0.615350466	0.0080655	0	419.1974228	-7.59106E-06	0	0	0	3.55831E-07	-8.30255E-10	0	0.005977961	-0.595423928	0.0412764	0	0	0.044478879	0	0	1.721510535	-122641.4593	116667.663
Apr-36	2036	-21.53741934	0	-383.9486859	0	1.112258937	0.0076561	0	403.1443927	-4.35262E-06	0	0	0	6.88705E-07	-4.59181E-10	0	0.005773645	-0.525711655	0.039256198	0	0	0.08080808	0	0	1.61880163	-123025.408	117070.807
May-36	2036	89.57927633	0	-519.300734	0	1.582261991	0.0077097	0	426.6146021	9.48883E-06	0	0	0	8.30272E-07	1.1861E-05	0	0.006001683	-0.306370519	0.041039179	0	0	0.119796448	0.000237221	0	1.653902639	-123544.7087	117497.422
Jun-36	2036	166.7883355	0	-608.4917956	0	2.084481145	0.0077824	0	437.7193463	1.38889E-05	0	0	0	9.18274E-07	0	0	0.005831038	0.044536271	0.039944903	0	0	0.169880622	0	0	1.628787855	-124153.2005	117935.141
Jul-36	2036	271.1693411	0	-765.8714284	0	2.361531953	0.0078283	0	489.8072282	9.01439E-06	0	0	0	1.1861E-06	1.1861E-05	0	0.00607285	0.499349549	0.041988062	0	0	0.236034585	0.00011861	0	1.757093639	-124919.072	118424.948
Aug-36	2036	207.7697399	0	-734.2423195	0	2.284435229	0.0085281	0	521.1549933	2.72804E-05	0	0	0	7.11662E-07	-8.30255E-10	0	0.006144016	0.886019271	0.042225283	0	-1.1861E-07	0.226545757	0	0	1.876652866	-125653.3143	118946.103
Sep-36	2036	50.96074307	0	-570.5156254	0	1.803259845	0.0086433	0	514.6994875	1.60698E-05	0	0	0	4.59137E-07	1.14775E-05	0	0.005980257	0.888429739	0.041437098	0	0	0.188246095	0.000114784	0	1.924816318	-126223.8299	119460.803
Oct-36	2036	-138.3565943	0	-381.5736997	0	0.792435709	0.0089076	0	516.3666937	-1.24541E-05	0	0	0	2.2536E-07	2.37218E-05	0	0.006179599	0.604912755	0.042936945	0	0	0.074487296	0	0	2.049942578	-126605.4036	119977.17
Nov-36	2036	-180.9079405	0	-294.7742382	0	0.3647842	0.0088384	0	473.2140657	-1.90542E-05	0	0	0	8.03489E-08	1.14785E-05	0	0.005922865	0.05050505	0.041437098	0	0	0.033057851	0	0	1.96120291	-126900.1779	120450.384
Dec-36	2036	-161.1321526	0	-304.5577734	0	0.146720996	0.0088958	0	463.8696367	-1.25727E-05	0	0	0	4.74441E-08	-2.37264E-10	0	0.006120294	-0.351086619	0.042581114	0	0	0.012928528	0	0	1.946039917	-127204.7356	120914.253
Jan-37	2037	-117.6152034	0	-327.1131197	0	0.184083254	0.0088958	0	443.1008468	4.10392E-05	0	0	0	4.74441E-08	-4.74432E-05	0	0.006096572	-0.607284962	0.041869451	0	0	0.014233241	0.000122169	0	1.857082159	-127531.8487	121357.354
Feb-37	2037	-92.61340546	0	-299.0497661	0	0.310468315	0.0077135	0	390.1997495	6.53505E-06	0	0	0	3.53535E-07	1.39266E-09	0	0.005474441	-0.530303023	0.037924701	0	0	0.020997857	0.000107132	0	1.612871112	-127830.8985	121747.554
Mar-37	2037	-84.39173432	0	-338.415025	0	0.743924079	0.0084213	0	420.8302128	-5.57469E-06	0	0	0	8.0655E-07	1.18603E-05	0	0.006049128	-0.593051721	0.04151362	0	1.1861E-07	0.043885827	0	0	1.726966611	-128169.3135	122168.384
Apr-37	2037	-21.9272265	0	-383.9520606	0	1.321166188	0.0082645	0	403.3202421	-1.10055E-05	0	0	0	1.37741E-06	3.44362E-05	0	0.005831038	-0.526285576	0.040059687	0	0	0.081841137	0.000114784	0	1.623278214	-128553.2656	122571.704
May-37	2037	88.62327696	0	-519.3026555	0	1.930976403	0.0083027	0	427.2247337	-1.1861E-05	0	0	0	1.89777E-06	2.37229E-05	0	0.006037267	-0.319654878	0.0412764	0	0	0.134029689	0	0	1.653190977	-129072.5683	122998.929
Jun-37	2037	167.8845247	0	-608.4997846	0	2.995867725	0.0080349	0	435.7327761	-8.03489E-06	0	0	0	1.95133E-06	3.44346E-05	0	0.005831038	-0.008149678	0.039830119	0	0	0.204315883	0	0	1.613865909	-129681.068	123434.662
Jul-37	2037	273.4917316	0	-765.9109968	0	4.252180839	0.0082197	0	485.6920423	3.55831E-06	0	0	0	2.13499E-06	1.186E-05	0	0.006049128	0.453091515	0.041632231	0	0	0.234848481	0	0	1.731473804	-130446.979	123920.354
Aug-37	2037	208.8704439	0	-734.2314311	0	4.558195527	0.0086111	0	517.8683006	9.48883E-06	0	0	0	1.54193E-06	1.42325E-09	0	0.006049128	0.817343882	0.042106672	0	-1.1861E-07	0.225359654	0	0	1.845695566	-131181.2105	124438.222
Sep-37	2037	50.94582112	0	-570.5151433	0	3.502066065	0.0085744	0	513.0457915	-1.3773E-05	0	0	0	1.26263E-06	-9.18362E-10	0	0.005853994	0.884986213	0.040518824	0	0	0.188246095	0	0	1.896808972	-131751.7256	124951.268
Oct-37	2037	-137.8987583	0	-381.5737709	0	1.120867752	0.0090262	0	515.5406912	-2.59875E-05	0	0	0	4.15136E-07	1.1861E-05	0	0.006025405	0.647612479	0.041750841	0	0	0.081841137	0	0	2.028355496	-132133.2994	125466.809
Nov-37	2037	-180.7162508	0	-294.7741693	0	0.435720839	0.0086433	0	472.9409941	-1.77916E-05	0	0	0	1.83655E-07	1.14772E-05	0	0.005796602	0.081496785	0.040633608	0	0	0.033287419	0	0	1.948921	-132428.0735	125939.75
Dec-37	2037	-160.9720286	0	-304.5579157	0	0.17566192	0.0085399	0	463.6962284	-1.70799E-05	0	0	0	8.30272E-08	2.37229E-05	0	0.005977961	-0.333295067	0.04139501	0	0	0.013402969	0.00011861	0	1.9401094	-132732.6315	126403.446
Jan-38	2038	-119.4631525	0	-327.112835	0	0.208161154	0.0085399	0	444.9720436	-1.35216E-05	0	0	0	8.30272E-08	1.18604E-05	0	0.005930517	-0.530188238	0.041869451	0	0	0.015775176	0.00011861	0	1.856251886	-133059.7443	126848.418
Feb-38	2038	-92.16238006	0	-299.0497018	0	0.341965101	0.0076064	0	389.7121921	-7.92776E-06	0	0	0	1.28558E-07	1.07145E-05	0	0.005345883	-0.531374342	0.037389041	0	0	0.022497704	0	0	1.61662073	-133358.794	127238.13
Mar-38	2038	-84.26849817	0	-338.4148826	0	0.788047127	0.0081841	0	420.6538392	-7.59106E-06	0	0	0	2.72804E-07	1.18619E-05	0	0.005906795	-0.598982238	0.04151362	0	-1.1861E-07	0.0481558	0	0	1.734913504	-133697.2089	127658.784
Apr-38	2038	-22.53845238	0	-383.9486171	0	1.458907233	0.0078053	0	403.7872991	-7.70202E-06	0	0	0	5.73921E-07	2.29573E-05	0	0.005716253	-0.533746549	0.039944903	0	0	0.083333332	0	0	1.633494008	-134081.1575	128062.571

May-38	2038	91.52448598	0	-519.3072813	0	2.159894367	0.0077097	0	424.1112121	-1.30471E-05	0	0	0	7.11662E-07	3.32113E-09	0	0.005871212	-0.358203239	0.041039179	0	0	0.142332413	0.00011861	0	1.660544818	-134600.4648	128486.683
Jun-38	2038	170.2272703	0	-608.492691	0	3.07736451	0.007461	0	433.3304575	-6.88705E-06	0	0	0	5.73921E-07	1.1479E-05	0	0.005681818	-0.016414141	0.039485766	0	0	0.205463725	0	0	1.613751125	-135208.9575	128920.013
Jul-38	2038	274.815423	0	-765.8608246	0	4.230830977	0.0079469	0	484.3576759	3.55831E-06	0	0	0	3.55831E-07	-1.42336E-09	0	0.005894934	0.413950101	0.0412764	0	0	0.240778999	-2.37221E-06	0	1.729101597	-135974.8183	129404.371
Aug-38	2038	208.6118733	0	-734.221539	0	4.031565598	0.0080774	0	518.6654807	1.30471E-05	0	0	0	7.11662E-07	8.30141E-10	0	0.005906795	0.828730475	0.041869451	0	0	0.231290171	-2.37221E-06	0	1.839171997	-136709.0398	129923.036
Sep-38	2038	51.58746482	0	-570.5119064	0	2.514921911	0.0080119	0	513.3922102	-1.49219E-05	0	0	0	6.88705E-07	-2.18097E-09	0	0.00573921	0.888429739	0.040633608	0	-1.14784E-07	0.193985305	0.000113636	0	1.883723573	-137279.5517	130436.428
Oct-38	2038	-137.596302	0	-381.5739132	0	0.922195426	0.0083976	0	515.4542243	-2.05077E-05	0	0	0	1.89777E-07	1.06741E-09	0	0.00584749	0.644054169	0.04139501	0	0	0.086822772	0	0	2.012224489	-137661.1257	130951.883
Nov-38	2038	-179.90817	0	-294.774307	0	0.421487597	0.0081497	0	472.1450804	-1.97429E-05	0	0	0	1.14784E-07	-1.14824E-10	0	0.005635904	0.081496785	0.039715335	0	0	0.035238751	0	0	1.937213012	-137955.9	131424.028
Dec-38	2038	-159.4253497	0	-304.5577734	0	0.170917506	0.0084213	0	462.1431446	-1.8266E-05	0	0	0	3.55831E-08	5.92991E-10	0	0.005764463	-0.340411688	0.04139501	0	0	0.01398416	0	0	1.936195258	-138260.4577	131886.171
Jan-39	2039	-117.6033424	0	-327.113262	0	0.213380009	0.0081841	0	443.1175709	-1.47077E-05	0	0	0	2.37221E-08	-5.93104E-10	0	0.005764463	-0.545607583	0.040920569	0	0	0.015300734	0	0	1.859928807	-138587.571	132329.288
Feb-39	2039	-88.34098434	0	-299.0497661	0	0.35085705	0.0074992	0	385.8730125	-2.39976E-05	0	0	0	2.14264E-08	-3.21389E-05	0	0.005206611	-0.577441069	0.036853382	0	-1.07132E-07	0.021854912	0.000110346	0	1.624548492	-138886.6208	132715.161
Mar-39	2039	-80.6638112	0	-338.4150961	0	0.790063503	0.0075911	0	417.0282768	5.37305E-05	0	0	0	2.96526E-07	-2.37222E-05	0	0.005740741	-0.674892858	0.040327517	0	0	0.047681358	0.000244337	0	1.745351215	-139225.0359	133132.19
Apr-39	2039	-18.82116594	0	-383.9484104	0	1.41184571	0.0075758	0	400.1554121	-2.29568E-06	0	0	0	1.03306E-06	1.14784E-05	0	0.005555555	-0.546831948	0.039026629	0	0	0.080693295	0.000114784	0	1.642332391	-139608.9843	133532.345
May-39	2039	91.3940146	0	-519.2959659	0	2.199035781	0.0075911	0	424.2094215	7.23523E-06	0	0	0	1.42332E-06	1.18608E-05	0	0.005752602	-0.357017136	0.040446127	0	1.1861E-07	0.134029689	0	0	1.672524463	-140128.2802	133956.555
Jun-39	2039	170.5555531	0	-608.4966166	0	2.850091786	0.0071625	0	433.229103	8.03489E-06	0	0	0	1.72176E-06	0	0	0.005589991	-0.012855831	0.039370982	0	1.14784E-07	0.203168041	0	0	1.631313108	-140736.7769	134389.784
Jul-39	2039	275.6990701	0	-765.873421	0	3.364975464	0.0074725	0	484.3054874	3.20248E-05	0	0	0	1.66054E-06	-8.53902E-10	0	0.005823768	0.457835929	0.040920569	0	0	0.244337309	3.55831E-06	0	1.747604811	-141502.6503	134874.089
Aug-39	2039	207.3664647	0	-734.2428177	0	3.24992343	0.0074725	0	520.6476968	2.37221E-05	0	0	0	1.42332E-06	2.37206E-05	0	0.005894934	0.843319547	0.041632231	0	0	0.233662378	0	0	1.858979924	-142236.8931	135394.737
Sep-39	2039	49.78994419	0	-570.5108045	0	2.462121177	0.0073462	0	515.2696207	9.06795E-06	0	0	0	6.88705E-07	9.18249E-10	0	0.005727732	0.850550952	0.040289256	0	0	0.193985305	0.000114784	0	1.899793361	-142807.4039	135910.006
Oct-39	2039	-139.0741869	0	-381.5736286	0	0.969876784	0.0075911	0	516.9126571	-4.74441E-06	0	0	0	3.08387E-07	0	0	0.005918656	0.602540548	0.041869451	0	0	0.0859925	0	0	2.01945972	-143188.9775	136426.919
Nov-39	2039	-181.1627614	0	-294.7746514	0	0.428374649	0.0075758	0	473.4071328	-1.37741E-06	0	0	0	1.26263E-07	1.42336E-09	0	0.005704775	0.068870522	0.040174471	0	0	0.03386134	0	0	1.937672148	-143483.7522	136900.326
Dec-39	2039	-159.2403176	0	-304.5577022	0	0.169138351	0.0074725	0	461.966771	-3.79553E-06	0	0	0	3.55831E-08	-1.66051E-09	0	0.005883073	-0.336853377	0.0412764	0	0	0.013402969	0.00011861	0	1.929434469	-143788.3099	137362.293
Jan-40	2040	-115.47998	0	-327.1129062	0	0.200570092	0.0074725	0	440.9021669	2.72804E-06	0	0	0	2.37221E-08	-9.4889E-05	0	0.005871212	-0.652356893	0.039734465	0	1.1861E-07	0.014114631	0.000359389	0	1.845102514	-144115.4228	137803.195
Feb-40	2040	-88.50769692	0	-309.7300483	0	0.345079579	0.0068794	0	396.7069234	0.000109405	0	0	0	5.32599E-07	-1.10966E-05	0	0.005470233	-0.544804094	0.036838077	0	4.43832E-07	0.022524487	0.000112068	0	1.661153175	-144425.1528	138199.902
Mar-40	2040	-71.06420161	0	-338.4149538	0	0.763376175	0.007259	0	407.488091	-1.66054E-05	0	0	0	1.42332E-06	3.55831E-05	0	0.00584749	-0.591865617	0.039853076	0	0	0.047562748	0	0	1.717121953	-144763.5678	138607.39
Apr-40	2040	-15.92171694	0	-383.9482038	0	1.324609715	0.0070822	0	397.1262569	-0.00012741	0	0	0	2.41047E-06	0.000183655	0	0.005647383	-1.162534419	0.032024793	0	1.60698E-06	0.079430669	-0.000313361	0	1.614325046	-145147.516	139004.516
May-40	2040	96.16143877	0	-519.300307	0	1.585820302	0.007425	0	420.032321	3.08387E-05	0	0	0	2.01638E-06	-1.18609E-05	0	0.005883073	-0.283478723	0.03463422	0	1.66054E-06	0.117424241	0.00013403	0	1.649158225	-145666.8163	139424.549
Jun-40	2040	169.2583768	0	-608.4964788	0	1.702249746	0.0069674	0	435.643474	1.98577E-05	0	0	0	2.29568E-06	3.44353E-05	0	0.005727732	0.036616161	0.034205693	0	6.88705E-07	0.17447199	4.59137E-06	0	1.623163429	-146275.3128	139860.192
Jul-40	2040	271.9723331	0	-765.870005	0	1.527701233	0.0072352	0	489.8141076	5.5391E-05	0	0	0	2.13499E-06	0	0	0.0059661	0.504093963	0.036413376	0	4.74441E-07	0.233662378	0	0	1.750095628	-147041.1828	140350.006
Aug-40	2040	206.0154929	0	-734.2271611	0	1.616658991	0.0078046	0	523.5542433	3.20248E-05	0	0	0	1.66054E-06	1.18575E-10	0	0.006049128	0.900252512	0.038429752	0	3.55831E-07	0.22417355	0	0	1.870366517	-147775.4099	140873.561
Sep-40	2040	48.08080739	0	-570.5182425	0	1.516299335	0.007725	0	517.8792396	2.08907E-05	0	0	0	1.14784E-06	-2.2942E-10	0	0.00588843	0.890725423	0.037764003	0	0	0.188246095	0	0	1.919077107	-148345.9282	141391.44
Oct-40	2040	-141.3609943	0	-381.5736286	0	0.677620896	0.0080655	0	519.4700147	-1.3403E-05	0	0	0	4.74441E-07	2.3723E-05	0	0.00607285	0.614401583	0.039141414	0	1.1861E-07	0.074250075	1.1861E-06	0	2.043063178	-148727.5018	141910.91
Nov-40	2040	-183.5468293	0	-294.774307	0	0.29706152	0.0080349	0	475.9088545	-1.37741E-05	0	0	0	1.95133E-07	-4.59067E-10	0	0.005865473	0.05624426	0.037764003	0	0	0.032943067	0	0	1.955808053	-149022.2761	142386.819
Dec-40	2040	-163.2268112	0	-304.5577734	0	0.11730563	0.0081841	0	466.0067579	-2.37221E-06	0	0	0	4.74441E-08	1.18591E-05	0	0.006049128	-0.347528308	0.038785583	0	0	0.013047138	0.00011861	0	1.940702451	-149326.8339	142852.825
Jan-41	2041	-121.1450472	0	-327.1129062	0	0.139960206	0.0080655	0	446.679914	-6.13215E-05	0	0	0	3.55831E-08	-4.74446E-05	0	0.006037267	-0.5859351	0.038429752	0	0	0.014351852	1.1861E-06	0	1.851981914	-149653.9468	143299.505
Feb-41	2041	-92.96694081	0	-299.0497018	0	0.240296905	0.0070707	0	390.6605239	7.68136E-05	0	0	0	2.14264E-07	5.35651E-05	0	0.005420875	-0.490664211	0.034925007	0	0	0.021747781	-0.000107132	0	1.609014363	-149952.9965	143690.166
Mar-41	2041	-82.5992948	0	-338.4149538	0	0.604438314	0.0081841	0	419.2783151	-3.89042E-05	0	0	0	7.11662E-07	7.11663E-05	0	0.005989822	-0.494605135	0.040090296	0	-1.1861E-07	0.04483471	-2.37221E-06	0	1.722933859	-150291.4115	144109.444
Apr-41	2041	-21.57885644	0	-383.9486859	0	1.114554621	0.0078053	0	403.1850263	2.10744E-06	0	0	0	5.73921E-07	1.14778E-09	0	0.005808081	-0.52341597	0.03822314	0	-3.44353E-07	0.080693295	-1.14784E-06	0	1.619605119	-150675.3601	144512.629
May-41	2041	87.49766479	0	-519.300734	0	1.587006405	0.0077097	0	428.6931297	1.1861E-05	0	0	0	7.11662E-07	0	0	0.006013544	-0.300914443	0.039497245	0	-1.1861E-07	0.116238137	0	0	1.654732912	-151194.6609	144941.322
Jun-41	2041	167.0844788	0	-608.4917956	0	2.087924671	0.0076676	0	437.416316	1.62994E-05	0	0	0	1.14784E-06	0	0	0.005853994	0.045798897	0.038452708	0	-1.14784E-07	0.165289254	0	0	1.629017424	-151803.1527	145378.739
Jul-41	2041	271.2760904	0	-765.8714284	0	2.362718056	0.0080655	0	489.6698774	2.0401E-05	0	0	0	1.1861E-06	0	0	0.006108433	0.502907859	0.039971686	0	-2.37221E-07	0.233662378	0.00011861	0	1.75744947	-152569.0241	145868.409
Aug-41	2041	207.7697399	0	-734.2423195	0	2.279690815	0.0084213	0	521.1260523	2.37221E-05	0	0	0	7.11662E-07	-1.77909E-09	0	0.006167738	0.894321995	0.040920569	0	-2.37221E-07	0.225359654	0.00011861	0	1.876890086	-153303.2664	146389.535
Sep-41	2041	50.94237759	0	-570.5156254	0	1.80555553	0.0086777	0	514.7069485	1.14784E-05	0	0	0	5.73921E-07	1.14785E-05	0	0.005991735	0.889577581	0.040289256	0	0	0.187098253	0	0	1.925045886	-153873.782	146904.242
Oct-41	2041	-138.3933635	0	-381.5736997	0	0.791724047	0.0087772	0	516.3946857	-3.55831E-07	0	0	0	2.01638E-07	1.1861E-05	0	0.006179599	0.609657169	0.041157789	0	0	0.074131465	0	0	2.050061189	-154255.3557	147420.636
Nov-41	2041	-180.9435236	0	-294.7742382	0	0.365358121	0.0087236	0	473.2551585	-1.10193E-05	0	0	0	9.18274E-08	1.14762E-05	0	0.005968779	0.052800734	0.040059687	0	-1.14784E-07	0.032943067	0	0	1.961317694	-154550.13	147893.891
Dec-41	2041	-161.171294	0	-304.5577734	0	0.146365165	0.0088958	0	463.9198089	-1.26913E-05	0	0	0	3.55831E-08	1.18689E-10	0	0.006120294	-0.351086619	0.040920569	0	0	0.013047138	0	0	1.946158527	-154854.6878	148357.811
Jan-42	2042	-117.6507865	0	-327.1131197	0	0.182422709	0.0086586	0	443.1351252	3.90228E-05	0	0	0	2.37221E-08	-5.93068E-05	0	0.006108433	-0.563399135	0.040327517	0	2.37221E-07	0.013996021	0.000243151	0	1.863961559	-155181.8009	148800.946
Feb-42	2042	-92.64404519	0	-299.0497661	0	0.307790017	0.0077135	0	390.2330675	6.64218E-06	0	0	0	3.32109E-07	-1.49987E-09	0	0.005506581	-0.531374342	0.036317722	0	0	0.020997857	2.14264E-06	0	1.615763674	-155480.8506	149191.179
Mar-42	2042	-84.44926034	0	-338.415025	0	0.738349392	0.0080655	0	420.8891621	-7.82828E-06	0	0	0	8.18411E-07	1.18607E-05	0	0.006096572	-0.593051721	0.040327517	0	0	0.043174165	0	0	1.729338818	-155819.2657	149612.069
Apr-42	2042	-21.98117507	0	-383.9520606	0	1.313131294	0.0081497	0	403.3805038	-1.10526E-05	0	0	0	1.37741E-06	3.44325E-05	0	0.005876951	-0.524793381	0.038911845	0	0	0.081382001	0.000229568	0	1.62454084	-156203.2177	150015.449
May-42	2042	88.5675301	0	-519.3026555	0	1.910812645	0.0084213	0	427.2989837	-1.30471E-05	0	0	0	1.66054E-06	1.18615E-05	0	0.00607285	-0.318587384	0.040090296	0	0	0.132843585	0	0	1.65402125	-156722.5204	150442.748
Jun-42	2042	167.8156541	0	-608.4997846	0	2.984389305	0.0075758	0	435.8094519	-8.03489E-06	0	0	0	2.06612E-06	2.29594E-05	0	0.005876951	0.014577594	0.038567493	0	0	0.203168041	0	0	1.614669398	-157331.0202	150878.558
Jul-42	2042	273.3968433	0	-765.9109968	0	4.214225529	0.0080892	0	485.7749509	0	0	0	0	1.89777E-06	-4.74415E-10	0	0.00607285	0.464952549	0.040446127	0	-1.1861E-07	0.234848481	0.00011861	0	1.732422687	-158096.9312	151364.332
Aug-42	2042	208.7862305	0	-734.2314311	0	4.529729044	0.0083264	0	517.9540559	5.93052E-06	0	0	0	1.66054E-06	1.18621E-05	0	0.006096572	0.829086306	0.040801958	0	-1.1861E-07	0.222987447	0	0	1.846288617	-158831.1626	151882.287
Sep-42	2042	50.87809844	0	-570.5151433	0	3.479109224	0.0086433	0	513.1272883	-2.42195E-05	0	0	0	1.03306E-06	-2.29534E-10	0	0.005853994	0.887281897	0.03960055	0	0	0.185950411	0.000229568	0	1.897268109	-159401.6777	152395.414
Oct-42	2042	-137.9734829	0	-381.5737709	0	1.109362549	0.0087653	0	515.6128063	-1.29878E-05	0	0	0	4.6258E-07	-7.11566E-10	0	0.006037267	0.649984686	0.040920569	0	-1.1861E-07	0.081603917	0	0	2.028829937	-159783.2515	152911.027
Nov-42	2042	-180.8011912	0	-294.7741693	0	0.435606054	0.0085055	0	473.0058472	-1.89394E-05	0	0	0	1.72176E-07	1.1477E-05	0	0.005808081	0.080348943	0.03960055	0	-1.14784E-07	0.033057851	0	0	1.949150569	-160078.0257	153384.032
Dec-42	2042	-161.0348921	0	-304.5579157	0	0.176254971	0.0087772	0	463.7551777	-1.8266E-05	0	0	0	5.93052E-08	-9.48944E-10	0	0.005989822	-0.32736455	0.040683348	0	-2.37221E-07	0.013284359	0	0	1.94034662	-160382.5836	153847.788
Jan-43	2043	-119.5105967	0	-327.112835	0	0.208161154	0.0085399	0	445.0181831	-1.47077E-05	0	0	0	8.30272E-08	1.1861E-05	0	0.0059661	-0.529002135	0.040801958	0	-1.1861E-07	0.015419345	0	0	1.856251886	-160709.6964	154292.806
Feb-43	2043	-92.19880492	0	-299.0497018	0	0.341857969	0.0074992	0	389.7465815	-8.78482E-06	0	0	0	1.28558E-07	-3.21393E-09	0	0.005378023	-0.531374342	0.036531986	0	0	0.022390572	0	0	1.617156389	-161008.7461	154682.552
Mar-43	2043	-84.30740237	0	-338.4148826	0	0.785912141	0.0083027	0	420.6966575	-8.65856E-06	0	0	0	2.72804E-07	2.37222E-05	0	0.005930517	-0.602540548	0.040327517	0	0	0.048037189	0	0	1.735625166	-161347.161	155103.249
Apr-43	2043	-22.56278664	0	-383.9486171	0	1.448576655	0.0079201	0	403.8275883	-7.56428E-06	0	0	0	5.73921E-07	2.29568E-09	0	0.00573921	-0.533746549	0.038797061	0	0	0.082874195	0	0	1.634067929	-161731.1096	155507.077
May-43	2043	91.48060015	0	-519.3072813	0	2.137358402	0.0075911	0	424.1764478	-1.42332E-05	0	0	0	5.93052E-07	-5.93104E-10	0	0.005906795	-0.352272722	0.039497245	0	0	0.143518516	0	0	1.66101926	-162250.4169	155931.253
Jun-43	2043	170.2054613	0	-608.492691	0	3.05440767	0.0076905	0	433.3785521	-7.11662E-06	0	0	0	5.73921E-07	1.14803E-05	0	0.005693297	-0.010904499	0.038108356	0	0	0.206611567	0	0	1.61443983	-162858.9096	156364.632
Jul-43	2043	274.7976315	0	-765.8608246	0	4.215411632	0.0077097	0	484.4240977	5.93052E-06	0	0	0	4.74441E-07	0	0	0.005894934	0.413950101	0.040208907	0	-1.1861E-07	0.240778999	-2.37221E-06	0	1.728745766	-163624.7704	156849.056
Aug-43	2043	208.5573126	0	-734.221539	0	4.016146254	0.0081723	0	518.7268023	1.66054E-05	0	0	0	5.93052E-07	-7.11566E-10	0	0.005906795	0.828374644	0.040801958	0	-2.37221E-07	0.231290171	0	0	1.839171997	-164358.992	157367.783
Sep-43	2043	51.55302956	0	-570.5119064	0	2.49770428	0.0081382	0	513.4481101	-1.60698E-05	0	0	0	4.59137E-07	0	0	0.005716253	0.888429739	0.039485766	0	0	0.191689621	0	0	1.883838357	-164929.5039	157881.231
Oct-43	2043	-137.6437461	0	-381.5739132	0	0.91662074	0.0084925	0	515.5051081	-1.93098E-05	0	0	0	1.77916E-07	1.18575E-10	0	0.005871212	0.641681962	0.040446127	0	0	0.08622972	0	0	2.012224489	-165311.0778	158396.736
Nov-43	2043	-179.9494924	0	-294.774307	0	0.421717166	0.0081497	0	472.1896167	-1.76768E-05	0	0	0	6.88705E-08	-2.29534E-10	0	0.005647383	0.083792469	0.039256198	0	0	0.035238751	0	0	1.936983443	-165605.8521	158868.925
Dec-43	2043	-159.4609328	0	-304.5577734	0	0.170917506	0.0083027	0	462.1795579	-1.94521E-05	0	0	0	3.55831E-08	1.1861E-05	0	0.005811907	-0.340411688	0.040446127	0	-1.1861E-07	0.013948576	0	0	1.936551089	-165910.4099	159331.105
Jan-44	2044	-117.6353671	0	-327.113262	0	0.213380009	0.0080655	0	443.1474607	-1.45891E-05	0	0	0	2.37221E-08	1.18588E-05	0	0.005800046	-0.545607583	0.039734465	0	0	0.015182124	0	0	1.860284638	-166237.5231	159774.252
Feb-44	2044	-91.13540579	0	-309.7297155	0	0.363609575	0.0069904	0	399.3046736	-1.27602E-05	0	0	0	4.43832E-08	-7.76708E-10	0	0.005392562	-0.565886126	0.037170951	0	0	0.022635445	0	0	1.681902333	-166547.2528	160173.557
Mar-44	2044	-78.81372706	0	-338.4150961	0	0.788521568	0.0079469	0	415.2206552	-1.02005E-05	0	0	0	1.42332E-07	9.4883E-10	0	0.005740741	-0.621518203	0.039378634	0	0	0.047562748	0	0	1.74369067	-166885.6679	160588.778
Apr-44	2044	-18.78213931	0	-383.9484104	0	1.401515131	0.0076905	0	400.1249942	-3.44353E-06	0	0	0	1.14784E-07	0	0	0.005578512	-0.54660238	0.038337924	0	0	0.080463727	0	0	1.640725413	-167269.6164	160988.903
May-44	2044	91.50195001	0	-519.2959659	0	2.181244229	0.0073538	0	424.1159565	1.37588E-05	0	0	0	3.55831E-07	1.42347E-09	0	0.005764463	-0.358203239	0.039853076	0	-1.1861E-07	0.130471379	0	0	1.670508087	-167788.9123	161413.019
Jun-44	2044	170.657711	0	-608.4966166	0	2.827134946	0.0073347	0	433.1441627	5.73921E-06	0	0	0	0	0	0	0.005589991	0.021235078	0.038682277	0	0	0.203168041	0	0	1.630394834	-168397.4089	161846.163

Jul-44	2044	275.8034472	0	-765.873421	0	3.338881189	0.0073538	0	484.2356259	2.84665E-05	0	0	0	5.93052E-07	-2.37605E-11	0	0.005823768	0.460208135	0.040327517	0	-1.1861E-07	0.245523412	-1.1861E-06	0	1.746774539	-169163.2824	162330.398
Aug-44	2044	207.3629064	0	-734.2428177	0	3.222643051	0.0074725	0	520.6567112	3.4397E-05	0	0	0	5.93052E-07	-5.92991E-10	0	0.005871212	0.853994478	0.040920569	0	-1.1861E-07	0.232476275	0	0	1.858031041	-169897.5252	162851.055
Sep-44	2044	49.81634455	0	-570.5108045	0	2.444903546	0.007461	0	515.2602084	1.0101E-05	0	0	0	1.14784E-07	-1.14778E-09	0	0.005762167	0.84940311	0.039830119	0	0	0.193985305	0	0	1.899104656	-170468.036	163366.315
Oct-44	2044	-139.0563953	0	-381.5736286	0	0.968097629	0.0078283	0	516.8954586	-1.1861E-06	0	0	0	8.30272E-08	0	0	0.005918656	0.602540548	0.040801958	0	0	0.085873889	0	0	2.018985279	-170849.6096	163883.211
Nov-44	2044	-181.1306218	0	-294.7746514	0	0.426997239	0.0075758	0	473.3871603	-2.29568E-07	0	0	0	4.59137E-08	8.83801E-10	0	0.005727732	0.066574838	0.039256198	0	-2.29568E-07	0.03386134	0.000114784	0	1.937098227	-171144.3843	164356.598
Dec-44	2044	-159.2094789	0	-304.5577022	0	0.167833637	0.0077097	0	461.9354578	-3.67692E-06	0	0	0	1.1861E-08	4.74415E-10	0	0.005894934	-0.335667274	0.040683348	0	0	0.013402969	0	0	1.928604196	-171448.942	164818.533
Jan-45	2045	-115.3215166	0	-327.1129062	0	0.199146768	0.0073538	0	440.8508086	-6.04913E-06	0	0	0	2.37221E-08	1.18609E-09	0	0.005835629	-0.530188238	0.040683348	0	0	0.01387741	0	0	1.844035021	-171776.0549	165259.384
Feb-45	2045	-85.66075787	0	-299.0497661	0	0.330609117	0.0066422	0	383.2332819	-6.42792E-06	0	0	0	4.28528E-08	1.17836E-09	0	0.005292317	-0.526017746	0.036424854	0	0	0.021747781	0	0	1.604193427	-172075.1046	165642.618
Mar-45	2045	-71.44256861	0	-338.4149538	0	0.763494785	0.0073894	0	407.861595	-3.55831E-06	0	0	0	0	0	0	0.005871212	-0.590679514	0.039971686	0	0	0.047444138	0	0	1.717477784	-172413.5196	166050.479
Apr-45	2045	-13.11065179	0	-383.9482038	0	1.320018346	0.0071855	0	394.511358	-3.44353E-06	0	0	0	2.29568E-07	0	0	0.005681818	-0.531221296	0.038797061	0	0	0.079660238	0	0	1.615128535	-172797.4678	166444.991
May-45	2045	95.61535675	0	-519.300307	0	1.579889784	0.0073301	0	420.5832661	1.54193E-05	0	0	0	0	-3.55953E-10	0	0.005859351	-0.302456378	0.039853076	0	-1.1861E-07	0.116238137	0	0	1.650225719	-173316.7681	166865.574
Jun-45	2045	168.838611	0	-608.4964788	0	1.686179957	0.0070478	0	436.0921654	-1.14784E-07	0	0	0	1.14784E-07	1.14784E-05	0	0.005716253	0.035927456	0.037993572	0	0	0.173324148	0.000114784	0	1.623852135	-173925.2646	167301.666
Jul-45	2045	271.6236187	0	-765.870005	0	1.513467992	0.006998	0	490.2031495	2.22987E-05	0	0	0	0	0	0	0.005942378	0.501721756	0.040920569	0	0	0.236034585	0	0	1.75080729	-174691.1346	167791.869
Aug-45	2045	205.7201531	0	-734.2271611	0	1.611914577	0.0078283	0	523.9068719	3.67692E-05	0	0	0	2.37221E-07	2.37151E-10	0	0.006060989	0.888391478	0.041157789	0	0	0.226545757	0	0	1.870840959	-175425.3617	168315.776
Sep-45	2045	47.80647314	0	-570.5182425	0	1.512855809	0.0080119	0	518.1308465	9.4123E-06	0	0	0	0	-2.86957E-09	0	0.005876951	0.888429739	0.040518824	0	0	0.187098253	0	0	1.919191892	-175995.88	168833.907
Oct-45	2045	-141.5910984	0	-381.5736286	0	0.67204621	0.0084213	0	519.7345158	0	0	0	0	2.37221E-07	2.3722E-05	0	0.006108433	0.612029376	0.041750841	0	0	0.074605906	0	0	2.043893451	-176377.4536	169353.641
Nov-45	2045	-183.7580322	0	-294.774307	0	0.296946736	0.0080349	0	476.1380785	-1.14784E-07	0	0	0	1.14784E-08	0	0	0.00588843	0.053948576	0.040059687	0	-2.29568E-07	0.032828282	0	0	1.955693268	-176672.2279	169829.779
Dec-45	2045	-163.4486126	0	-304.5577734	0	0.115763696	0.0084213	0	466.2196635	-1.1861E-05	0	0	0	0	-1.77909E-09	0	0.006049128	-0.349900515	0.0412764	0	-1.1861E-07	0.013165748	0	0	1.941295503	-176976.7857	170295.999
Jan-46	2046	-121.3288933	0	-327.1129062	0	0.13782522	0.0079469	0	446.870758	-5.93052E-05	0	0	0	-3.55831E-08	-5.93049E-05	0	0.006049128	-0.588307307	0.041039179	0	1.1861E-07	0.014351852	0.000119796	0	1.852456355	-177303.8986	170742.87
Feb-46	2046	-93.12421047	0	-299.0497018	0	0.239332718	0.007285	0	390.8191863	7.90634E-05	0	0	0	1.17845E-07	2.1426E-05	0	0.005453015	-0.494949488	0.036853382	0	0	0.021640649	-1.07132E-06	0	1.609228627	-177602.9483	171133.689
Mar-46	2046	-83.25046559	0	-338.4149538	0	0.595305317	0.0078283	0	419.7857301	1.53007E-05	0	0	0	5.93052E-07	-3.55824E-05	0	0.006013544	-0.644054169	0.039971686	0	1.1861E-07	0.045071931	0.000120983	0	1.723645522	-177941.3633	171553.475
Apr-46	2046	-21.61811264	0	-383.9486859	0	1.115702463	0.0076446	0	403.222446	-1.5629E-05	0	0	0	6.88705E-07	2.2957E-05	0	0.005808081	-0.524563812	0.038911845	0	0	0.080578511	0.000229568	0	1.620408608	-178325.3119	171956.697
May-46	2046	87.4300569	0	-519.300734	0	1.588192508	0.0079469	0	428.7574165	4.74441E-06	0	0	0	1.30471E-06	0	0	0.006037267	-0.311233543	0.039853076	0	1.1861E-07	0.117424241	0	0	1.65425847	-178844.6127	172385.455
Jun-46	2046	168.7006404	0	-608.4917956	0	2.091368198	0.0075528	0	435.7973996	1.15932E-05	0	0	0	1.03306E-06	1.14784E-05	0	0.005876951	0.04476584	0.039256198	0	0	0.16873278	0	0	1.627869582	-179453.1045	172821.252
Jul-46	2046	270.8348599	0	-765.8714284	0	2.361531953	0.0079469	0	490.1090915	1.90963E-05	0	0	0	1.06749E-06	0	0	0.006096572	0.501721756	0.040920569	0	0	0.234848481	0	0	1.756737808	-180218.9759	173311.361
Aug-46	2046	207.4969361	0	-734.2423195	0	2.276132505	0.008706	0	521.4262551	2.37221E-05	0	0	0	1.06749E-06	-1.18609E-09	0	0.006179599	0.908555236	0.04151362	0	0	0.22417355	0	0	1.876652866	-180953.2182	173832.787
Sep-46	2046	50.71740056	0	-570.5156254	0	1.804407688	0.0083448	0	514.9377795	1.26263E-05	0	0	0	8.03489E-07	1.14785E-05	0	0.006014692	0.889577581	0.040863177	0	0	0.187098253	0	0	1.92516067	-181523.7338	174347.725
Oct-46	2046	-138.5997455	0	-381.5736997	0	0.792079878	0.0089195	0	516.597628	-1.25727E-05	0	0	0	2.49082E-07	-9.48717E-10	0	0.00619146	0.607284962	0.042106672	0	-1.1861E-07	0.074250075	0	0	2.049823968	-181905.3075	174864.323
Nov-46	2046	-181.1237348	0	-294.7742382	0	0.365358121	0.0087236	0	473.4276791	-2.1809E-05	0	0	0	1.26263E-07	1.14775E-05	0	0.0059573	0.047061524	0.040518824	0	0	0.033057851	0	0	1.96120291	-182200.0818	175337.75
Dec-46	2046	-161.3503956	0	-304.5577734	0	0.146009334	0.0092516	0	464.0977244	-1.29285E-05	0	0	0	7.11662E-08	1.3049E-09	0	0.006120294	-0.354644929	0.041750841	0	0	0.012928528	0	0	1.946632969	-182504.6396	175801.848
Jan-47	2047	-117.8156549	0	-327.1131197	0	0.180762165	0.0088958	0	443.3002308	4.12764E-05	0	0	0	4.74441E-08	-4.74437E-05	0	0.006108433	-0.604912755	0.040801958	0	1.1861E-07	0.014351852	0.000244337	0	1.856963548	-182831.7527	176245.148
Feb-47	2047	-92.77238924	0	-299.0497661	0	0.305325983	0.0077135	0	390.3637685	6.42792E-06	0	0	0	3.53535E-07	3.21385E-05	0	0.005517294	-0.531374342	0.037067646	0	1.07132E-07	0.020783593	0	0	1.613085376	-183130.8024	176635.512
Mar-47	2047	-84.56051684	0	-338.415025	0	0.733130537	0.0084213	0	421.0089586	-6.04913E-06	0	0	0	7.47245E-07	2.37218E-05	0	0.006096572	-0.590679514	0.040801958	0	1.1861E-07	0.043648607	0.00011861	0	1.727322442	-183469.2175	177056.521
Apr-47	2047	-22.07415028	0	-383.9520606	0	1.301652874	0.0080349	0	403.4886306	-1.35135E-05	0	0	0	1.49219E-06	-4.58954E-10	0	0.005865473	-0.52640036	0.039715335	0	0	0.081382001	0.000114784	0	1.623622566	-183853.1695	177460.01
May-47	2047	88.47975844	0	-519.3026555	0	1.894207196	0.0083027	0	427.4060889	-1.1861E-05	0	0	0	1.89777E-06	1.1862E-05	0	0.006084711	-0.318705995	0.040446127	0	0	0.134029689	0.00011861	0	1.653309587	-184372.4722	177887.416
Jun-47	2047	167.7157919	0	-608.4997846	0	2.976354411	0.0079201	0	435.9212518	-9.18274E-06	0	0	0	2.1809E-06	1.14772E-05	0	0.005853994	0.014577594	0.038911845	0	0	0.200872357	1.14784E-06	0	1.614095477	-184980.972	178323.337
Jul-47	2047	273.3493992	0	-765.9109968	0	4.184572942	0.0084569	0	485.8792094	0	0	0	0	2.37221E-06	3.55837E-05	0	0.006084711	0.451905411	0.040683348	0	0	0.234848481	0.00011861	0	1.731948246	-185746.883	178809.216
Aug-47	2047	208.7055755	0	-734.2314311	0	4.508379182	0.0087653	0	518.0553491	4.74441E-06	0	0	0	1.42332E-06	1.18625E-05	0	0.00607285	0.827781592	0.0412764	0	-1.1861E-07	0.222987447	0	0	1.845695566	-186481.1144	179327.272
Sep-47	2047	50.81267144	0	-570.5151433	0	3.455004542	0.0085629	0	513.2209522	-1.2741E-05	0	0	0	1.14784E-06	-1.14801E-09	0	0.00588843	0.887281897	0.040059687	0	-2.29568E-07	0.188246095	0	0	1.897153324	-187051.6295	179840.493
Oct-47	2047	-138.0482074	0	-381.5737709	0	1.100585384	0.0089076	0	515.7044921	-1.42332E-05	0	0	0	4.50719E-07	1.18617E-05	0	0.006060989	0.644054169	0.04139501	0	0	0.081841137	0.00011861	0	2.028474106	-187433.2033	180356.197
Nov-47	2047	-180.874653	0	-294.7741693	0	0.435835623	0.0086433	0	473.0834413	-1.90542E-05	0	0	0	1.95133E-07	-1.14785E-05	0	0.005808081	0.083792469	0.040059687	0	0	0.032943067	0	0	1.948691432	-187727.9775	180829.281
Dec-47	2047	-161.1214776	0	-304.5579157	0	0.176017751	0.0085399	0	463.8294278	-1.87404E-05	0	0	0	7.11662E-08	-5.92991E-10	0	0.005977961	-0.336853377	0.040920569	0	0	0.013284359	0	0	1.939990789	-188032.5354	181293.11
Jan-48	2048	-119.5758324	0	-327.112835	0	0.208161154	0.0085399	0	445.0875701	-1.56566E-05	0	0	0	7.11662E-08	1.18621E-05	0	0.0059661	-0.531374342	0.040801958	0	0	0.015300734	0	0	1.856251886	-188359.6482	181738.198
Feb-48	2048	-95.33183977	0	-309.7300483	0	0.353068559	0.007878	0	403.5075432	-1.03191E-05	0	0	0	1.3315E-07	1.3315E-09	0	0.005558999	-0.548132836	0.038280532	0	0	0.023079277	0.000110958	0	1.673802394	-188669.3783	182141.705
Mar-48	2048	-84.01633258	0	-338.4148826	0	0.785319089	0.0079469	0	420.4083158	-8.89578E-06	0	0	0	2.84665E-07	-1.18575E-10	0	0.005930517	-0.598982238	0.040683348	0	0	0.047444138	0	0	1.734083232	-189007.7932	182562.113
Apr-48	2048	-21.872704	0	-383.9486171	0	1.438246077	0.0078053	0	403.1458849	-7.58724E-06	0	0	0	4.59137E-07	4.59181E-10	0	0.005727732	-0.530303023	0.039141414	0	-1.14784E-07	0.08298898	0	0	1.632690518	-189391.7418	182965.259
May-48	2048	91.74747343	0	-519.3072813	0	2.124311264	0.0079469	0	423.9266544	-1.77916E-05	0	0	0	7.11662E-07	1.18603E-05	0	0.005906795	-0.352272722	0.040208907	0	0	0.143518516	0	0	1.660070377	-189911.0491	183389.186
Jun-48	2048	170.3248368	0	-608.492691	0	3.036042197	0.0075758	0	433.2745576	-7.2314E-06	0	0	0	5.73921E-07	1.14797E-05	0	0.005681818	-0.011363636	0.038797061	0	0	0.203168041	0	0	1.613406772	-190519.5418	183822.46
Jul-48	2048	273.5557812	0	-765.8608246	0	4.203550598	0.0078283	0	485.6580011	9.48883E-06	0	0	0	5.93052E-07	-2.37264E-10	0	0.005906795	0.415136205	0.040564738	0	0	0.241965102	0	0	1.728271325	-191285.4026	184308.118
Aug-48	2048	209.2855801	0	-734.221539	0	4.004285219	0.0079469	0	518.0074306	8.30272E-06	0	0	0	4.74441E-07	1.18622E-05	0	0.005918656	0.841777613	0.040801958	0	0	0.231290171	0.00011861	0	1.838460335	-192019.6241	184826.126
Sep-48	2048	51.86294691	0	-570.5119064	0	2.485078017	0.0079545	0	513.1414068	-1.60698E-05	0	0	0	4.59137E-07	1.14937E-10	0	0.00573921	0.888429739	0.039715335	0	0	0.191689621	0	0	1.883494004	-192590.136	185339.267
Oct-48	2048	-137.448039	0	-381.5739132	0	0.912350767	0.0085399	0	515.3090452	-2.29037E-05	0	0	0	1.42332E-07	1.18622E-05	0	0.005871212	0.640495859	0.040801958	0	0	0.086348331	0	0	2.012343099	-192971.7099	185854.576
Nov-48	2048	-179.8071599	0	-294.774307	0	0.421717166	0.0081497	0	472.0539418	-1.98577E-05	0	0	0	8.03489E-08	-4.59067E-10	0	0.005658861	0.082644627	0.039256198	0	0	0.035123966	-1.14784E-06	0	1.936983443	-193266.4842	186326.63
Dec-48	2048	-157.4409987	0	-304.5577734	0	0.171273337	0.0081841	0	460.1117052	2.89409E-05	0	0	0	1.1861E-08	-4.74437E-05	0	0.005823768	-0.398530756	0.040090296	0	1.1861E-07	0.013912993	0.000130471	0	1.937381362	-193571.042	186786.742
Jan-49	2049	-118.1074363	0	-327.113262	0	0.21373584	0.0083027	0	443.620716	6.8794E-06	0	0	0	2.2536E-07	1.18597E-05	0	0.005800046	-0.546793687	0.040208907	0	0	0.015063514	1.1861E-06	0	1.859335755	-193898.1553	187230.363
Feb-49	2049	-88.50703882	0	-299.0497661	0	0.35139271	0.0070707	0	386.0495659	-1.06061E-05	0	0	0	3.96388E-07	2.14186E-10	0	0.005206611	-0.543158854	0.03621059	0	0	0.021747781	0.000107132	0	1.624227096	-194197.205	187616.412
Mar-49	2049	-80.83520315	0	-338.4150961	0	0.788284347	0.0080655	0	417.2032271	5.6933E-06	0	0	0	8.89578E-07	-2.37217E-05	0	0.005740741	-0.671334548	0.039853076	0	1.1861E-07	0.047444138	0.000243151	0	1.744402332	-194535.6201	188033.616
Apr-49	2049	-18.94972424	0	-383.9484104	0	1.395775921	0.007461	0	400.2848886	-5.73921E-06	0	0	0	1.72176E-06	0	0	0.005578512	-0.535353528	0.038452708	0	0	0.080348943	2.29568E-06	0	1.641299334	-194919.5685	188433.9
May-49	2049	91.31691788	0	-519.2959659	0	2.164638781	0.0073538	0	424.3213897	4.74441E-07	0	0	0	2.13499E-06	3.5582E-05	0	0.005776324	-0.355831033	0.039615855	0	0	0.130471379	0.000238407	0	1.670982529	-195438.8645	188858.222
Jun-49	2049	170.4683171	0	-608.4966166	0	2.804178105	0.0070822	0	433.3360819	-2.29568E-06	0	0	0	2.75482E-06	0	0	0.005601469	-0.001951332	0.038567493	0	0	0.204315883	0.000114784	0	1.630739187	-196047.3611	189291.558
Jul-49	2049	275.6136707	0	-765.873421	0	3.313973016	0.006998	0	484.4417706	2.13499E-05	0	0	0	2.49082E-06	1.18607E-05	0	0.005823768	0.461394239	0.040327517	0	0	0.244337309	0.00011861	0	1.74736759	-196813.2346	189776
Aug-49	2049	207.2537849	0	-734.2428177	0	3.200107086	0.0078283	0	520.7887245	2.37221E-05	0	0	0	2.01638E-06	1.18602E-05	0	0.005894934	0.856366685	0.041157789	0	0	0.232476275	0	0	1.858505483	-197547.4774	190296.788
Sep-49	2049	49.70729956	0	-570.5108045	0	2.424242389	0.0073462	0	515.3861266	4.3618E-06	0	0	0	1.37741E-06	-3.44357E-10	0	0.00573921	0.84940311	0.03960055	0	0	0.192837463	0	0	1.899908145	-198117.9882	190812.175
Oct-49	2049	-139.1607724	0	-381.5736286	0	0.965725422	0.0078283	0	517.0135945	-7.11662E-06	0	0	0	5.6933E-07	0	0	0.005942378	0.601354445	0.041039179	0	0	0.085399448	0.00011861	0	2.020052772	-198499.5618	191329.188
Nov-49	2049	-181.2247449	0	-294.7746514	0	0.42539026	0.0075758	0	473.4780694	-2.52525E-06	0	0	0	2.1809E-07	1.69882E-09	0	0.005716253	0.070018364	0.03960055	0	0	0.033631772	0	0	1.937557364	-198794.3365	191802.666
Dec-49	2049	-159.2972505	0	-304.5577022	0	0.166647534	0.0075911	0	462.0278553	-4.50719E-06	0	0	0	7.11662E-08	3.5584E-10	0	0.005906795	-0.334481171	0.040564738	0	0	0.013284359	0	0	1.929197248	-199098.8942	192264.694
Jan-50	2050	-115.5243402	0	-327.1129062	0	0.197723444	0.0075911	0	440.949018	5.81191E-06	0	0	0	8.30272E-08	-0.00011861	0	0.005859351	-0.65117079	0.039260024	0	1.1861E-07	0.013996021	0.000243151	0	1.844983904	-199426.0071	192705.643
Feb-50	2050	-85.75256993	0	-299.0497661	0	0.328466478	0.0066422	0	383.3224157	0.000108525	0	0	0	5.78512E-07	2.14286E-05	0	0.00530303	-0.526017746	0.035139271	0	2.14264E-07	0.021426385	0.000214264	0	1.604621954	-199725.0568	193088.965
Mar-50	2050	-71.54694571	0	-338.4149538	0	0.763732006	0.0072471	0	407.9738004	-5.93052E-06	0	0	0	1.42332E-06	1.1861E-05	0	0.005871212	-0.591865617	0.039022803	0	2.37221E-07	0.047325527	0	0	1.718545277	-200063.4718	193496.939
Apr-50	2050	-13.19673994	0	-383.9482038	0	1.322314031	0.0069444	0	394.5941174	-3.44353E-06	0	0	0	2.98439E-06	0.00013774	0	0.00567034	-0.520890718	0.037993572	0	2.29568E-07	0.079201101	0	0	1.61581724	-200447.42	193891.533
May-50	2050	95.54525804	0	-519.300307	0	1.572773164	0.0069268	0	420.6601256	-2.37221E-06	0	0	0	3.79553E-06	2.37224E-05	0	0.005906795	-0.290476733	0.039260024	0	1.1861E-07	0.116238137	0	0	1.65081877	-200966.7203	194312.193
Jun-50	2050	168.8011913	0	-608.4964788	0	1.676997221	0.0065886	0	436.1407192	3.44353E-07	0	0	0	4.13223E-06	1.14784E-05	0	0.005716253	0.070018364	0.037764003	0	1.14784E-07	0.176767674	0	0	1.624081703	-201575.2168	194748.334
Jul-50	2050	271.5785467	0	-765.870005	0	1.49211813	0.0072352	0	490.2492889	4.23439E-05	0	0	0	4.26997E-06	2.37221E-05	0	0.0059661	0.501721756	0.038192531	0	0	0.236034585	0.00011861	0	1.751518952	-202341.0868	195238.584
Aug-50	2050	205.6632202	0	-734.2271611	0	1.600053543	0.0078164	0	523.9420991	2.01638E-05	0	0	0	3.20248E-06	2.37221E-05	0	0.006049128	0.876530443	0.040683348	0	0	0.22417355	0	0	1.871671231	-203075.3139	195762.526

Sep-50	2050	47.77318572	0	-570.5182425	0	1.514003651	0.0078398	0	518.19283	7.2314E-06	0	0	0	2.41047E-06	3.44351E-05	0	0.005865473	0.891873265	0.039830119	0	0	0.188246095	0.000114784	0	1.919880597	-203645.8322	196280.718
Oct-50	2050	-141.6421008	0	-381.5736286	0	0.668250679	0.0078283	0	519.7730641	-1.42332E-05	0	0	0	9.48883E-07	1.06752E-09	0	0.006120294	0.615587686	0.041157789	0	0	0.074250075	0	0	2.044723723	-204027.4058	196800.491
Nov-50	2050	-183.7809891	0	-294.774307	0	0.296717167	0.0080349	0	476.1718251	-3.44353E-06	0	0	0	3.67309E-07	1.14797E-05	0	0.005865473	0.053948576	0.039715335	0	0	0.032828282	0	0	1.955922837	-204322.1801	197276.663
Dec-50	2050	-163.4735208	0	-304.5577734	0	0.113510099	0.0080655	0	466.2484858	-3.4397E-06	0	0	0	1.42332E-07	1.1861E-05	0	0.006060989	-0.351086619	0.040446127	0	0	0.012809917	0.00011861	0	1.941651334	-204626.7379	197742.912
Jan-51	2051	-121.3573597	0	-327.1129062	0	0.135453013	0.0084213	0	446.9000548	-6.29821E-05	0	0	0	1.06749E-07	-3.55843E-05	0	0.006025405	-0.589493411	0.040090296	0	1.1861E-07	0.014114631	0.000119796	0	1.852574966	-204953.8508	198189.812
Feb-51	2051	-93.14788663	0	-299.0497018	0	0.237832871	0.0071778	0	390.8436124	7.5528E-05	0	0	0	3.42822E-07	5.35655E-05	0	0.005420875	-0.49173553	0.036531986	0	0	0.021640649	-1.07132E-06	0	1.60997855	-205252.9005	198580.655
Mar-51	2051	-82.85881423	0	-338.4149538	0	0.587951476	0.0078283	0	419.5010653	-2.38407E-05	0	0	0	7.11662E-07	3.55808E-05	0	0.006013544	-0.54442148	0.040564738	0	0	0.04495332	-0.000119796	0	1.723645522	-205591.3155	199000.157
Apr-51	2051	-21.74632659	0	-383.9486859	0	1.115702463	0.0073232	0	403.3508895	-1.06841E-05	0	0	0	1.26263E-06	8.03652E-10	0	0.005796602	-0.524563812	0.039256198	0	-1.14784E-07	0.080693295	0	0	1.620293824	-205975.2641	199403.507
May-51	2051	87.33754083	0	-519.300734	0	1.587006405	0.0078283	0	428.8513559	7.11662E-06	0	0	0	1.77916E-06	3.55831E-05	0	0.006001683	-0.303879702	0.040801958	0	0	0.116238137	-1.1861E-06	0	1.655207353	-206494.5649	199832.359
Jun-51	2051	168.6225871	0	-608.4917956	0	2.090220356	0.0076676	0	435.8808477	1.12489E-05	0	0	0	1.83655E-06	2.29568E-05	0	0.005876951	0.046258034	0.039715335	0	-1.14784E-07	0.169880622	0.000114784	0	1.629591345	-207103.0567	200268.24
Jul-51	2051	270.8075795	0	-765.8714284	0	2.363904159	0.0078283	0	490.1589078	3.00084E-05	0	0	0	1.77916E-06	1.1861E-05	0	0.006108433	0.504093963	0.041750841	0	0	0.233662378	0	0	1.758161132	-207868.9281	200758.399
Aug-51	2051	207.461353	0	-734.2423195	0	2.273760298	0.0083502	0	521.471327	2.60943E-05	0	0	0	1.54193E-06	2.37228E-05	0	0.006179599	0.906183029	0.041869451	0	-1.1861E-07	0.22417355	0.00011861	0	1.877245917	-208603.1704	201279.87
Sep-51	2051	50.65886061	0	-570.5156254	0	1.807851214	0.0086433	0	514.9859889	8.03489E-06	0	0	0	1.03306E-06	1.14781E-05	0	0.005991735	0.890725423	0.040748392	0	0	0.185950411	0	0	1.925505023	-209173.686	201794.856
Oct-51	2051	-138.651934	0	-381.5736997	0	0.791842658	0.0089195	0	516.6431744	-1.28099E-05	0	0	0	4.86302E-07	-2.37151E-10	0	0.00619146	0.604912755	0.042462503	0	-1.1861E-07	0.074012855	0.00011861	0	2.05065424	-209555.2597	202311.499
Nov-51	2051	-181.1570222	0	-294.7742382	0	0.365472906	0.0086088	0	473.4680832	-1.2741E-05	0	0	0	1.83655E-07	-3.44244E-10	0	0.005968779	0.047061524	0.04040404	0	0	0.032828282	0.000114784	0	1.961432479	-209850.034	202784.967
Dec-51	2051	-161.3586983	0	-304.5577734	0	0.146246554	0.0088958	0	464.1188371	-1.31657E-05	0	0	0	7.11662E-08	3.55726E-10	0	0.006120294	-0.355831033	0.041869451	0	0	0.012809917	0	0	1.946870189	-210154.5918	203249.086
Jan-52	2052	-117.8334464	0	-327.1131197	0	0.179576061	0.0087772	0	443.3200388	4.04461E-05	0	0	0	7.11662E-08	-4.74438E-05	0	0.006120294	-0.603726652	0.040920569	0	0	0.013996021	0.000482744	0	1.8575566	-210481.7049	203692.406
Feb-52	2052	-95.87153979	0	-309.7301815	0	0.314233237	0.0080999	0	404.0916264	2.77395E-06	0	0	0	4.32736E-07	1.10957E-05	0	0.005692149	-0.549242416	0.038169574	0	0	0.021636822	0.000332874	0	1.669807904	-210791.4351	204096.498
Mar-52	2052	-84.21393742	0	-338.415025	0	0.730165279	0.0085399	0	420.6655816	-1.16238E-05	0	0	0	1.06749E-06	4.74432E-05	0	0.00607285	-0.593051721	0.040801958	0	0	0.043648607	0	0	1.726136339	-211129.8501	204517.163
Apr-52	2052	-21.78948545	0	-383.9520606	0	1.297061506	0.0081497	0	403.2097049	-1.49036E-05	0	0	0	1.72176E-06	4.59132E-05	0	0.005876951	-0.526285576	0.039256198	0	0	0.080922864	0.000114784	0	1.622704293	-211513.8021	204920.373
May-52	2052	88.73121237	0	-519.3026555	0	1.885904472	0.0084213	0	427.1603283	-1.30471E-05	0	0	0	2.01638E-06	1.1859E-05	0	0.006060989	-0.31716406	0.040564738	0	0	0.132843585	0.000237221	0	1.652597925	-212033.1048	205347.533
Jun-52	2052	167.925847	0	-608.4997846	0	2.971763043	0.0078053	0	435.7159028	-1.49219E-05	0	0	0	2.52525E-06	2.29557E-05	0	0.005865473	0.026400367	0.039256198	0	0	0.200872357	0.000114784	0	1.613521556	-212641.6046	205783.249
Jul-52	2052	273.5510368	0	-765.9109968	0	4.167967494	0.0081011	0	485.6934656	-2.37221E-06	0	0	0	2.60943E-06	1.18589E-05	0	0.006084711	0.453091515	0.040920569	0	0	0.232476275	0.000237221	0	1.731355194	-213407.5156	206268.943
Aug-52	2052	208.9167019	0	-734.2314311	0	4.494145941	0.0087179	0	517.8921413	2.37221E-06	0	0	0	2.01638E-06	1.18608E-05	0	0.00607285	0.83039102	0.0412764	0	0	0.221801344	0.00011861	0	1.845339735	-214141.747	206786.835
Sep-52	2052	50.96418659	0	-570.5151433	0	3.443526121	0.0083333	0	513.0813746	-1.50379E-05	0	0	0	1.49219E-06	1.72167E-09	0	0.00588843	0.888429739	0.040289256	0	-1.14784E-07	0.185950411	0	0	1.896464619	-214712.2622	207299.916
Oct-52	2052	-137.9118055	0	-381.5737709	0	1.095129308	0.0088958	0	515.576986	-1.57752E-05	0	0	0	5.57469E-07	-1.18689E-10	0	0.006060989	0.647612479	0.04139501	0	0	0.081722527	0.000237221	0	2.028355496	-215093.8359	207815.493
Nov-52	2052	-180.7701994	0	-294.7741693	0	0.435835623	0.0085399	0	472.9709528	-1.92837E-05	0	0	0	2.06612E-07	2.2959E-05	0	0.005819559	0.084940311	0.040174471	0	0	0.032828282	0	0	1.948691432	-215388.6101	208288.464
Dec-52	2052	-160.9981229	0	-304.5579157	0	0.176017751	0.0087772	0	463.7263554	-1.85032E-05	0	0	0	8.30272E-08	1.18623E-05	0	0.006001683	-0.333295067	0.04151362	0	0	0.013402969	0	0	1.939753569	-215693.168	208752.19
Jan-53	2053	-117.4894764	0	-327.112835	0	0.208042544	0.0084213	0	442.9970628	-1.48263E-05	0	0	0	9.48883E-08	1.1861E-05	0	0.005954239	-0.532560445	0.041039179	0	0	0.015182124	0	0	1.855777445	-216020.2808	209195.187
Feb-53	2053	-92.70339628	0	-299.0497018	0	0.340358122	0.0076064	0	390.2544939	-1.03918E-05	0	0	0	1.28558E-07	1.07123E-05	0	0.005367309	-0.532445661	0.03674625	0	0	0.022497704	0	0	1.616834994	-216319.3305	209585.442
Mar-53	2053	-84.60143741	0	-338.4148826	0	0.783658544	0.0084213	0	420.9916415	-1.04377E-05	0	0	0	3.20248E-07	1.18593E-05	0	0.005918656	-0.598982238	0.040801958	0	0	0.048037189	0	0	1.734913504	-216657.7454	210006.434
Apr-53	2053	-22.26893907	0	-383.9486171	0	1.430211182	0.007461	0	403.5717343	-1.24885E-05	0	0	0	3.44353E-07	9.18362E-10	0	0.005716253	-0.491276393	0.039256198	0	-2.29568E-07	0.082874195	-4.59137E-06	0	1.633264439	-217041.694	210410.005
May-53	2053	91.30031243	0	-519.3072813	0	2.110078023	0.0074725	0	424.3795087	3.55831E-06	0	0	0	1.06749E-06	1.18575E-10	0	0.005918656	-0.351086619	0.040564738	0	-1.1861E-07	0.143518516	-1.1861E-06	0	1.660307598	-217561.0013	210834.385
Jun-53	2053	170.0573897	0	-608.492691	0	3.023415934	0.0078053	0	433.557845	-4.47658E-06	0	0	0	1.49219E-06	1.14786E-05	0	0.005704775	-0.011363636	0.039026629	0	0	0.205463725	0.000114784	0	1.613521556	-218169.494	211267.943
Jul-53	2053	274.3587732	0	-765.8608246	0	4.186945149	0.0077097	0	484.8953366	1.89777E-05	0	0	0	1.54193E-06	1.18619E-05	0	0.005906795	0.423438929	0.040564738	0	-2.37221E-07	0.240778999	0	0	1.728389935	-218935.3548	211752.838
Aug-53	2053	208.5857791	0	-734.221539	0	3.992424185	0.0080536	0	518.7079432	3.55831E-06	0	0	0	1.30471E-06	0	0	0.005954239	0.828256033	0.041039179	0	-1.1861E-07	0.230104068	0	0	1.839527828	-219669.5764	212271.546
Sep-53	2053	51.53466409	0	-570.5119064	0	2.474747439	0.0080464	0	513.4925316	-2.75597E-05	0	0	0	9.18274E-07	1.14788E-05	0	0.00573921	0.888429739	0.040059687	0	-1.14784E-07	0.192837463	0	0	1.884067925	-220240.0883	212785.039
Oct-53	2053	-137.7196567	0	-381.5739132	0	0.907369133	0.0083858	0	515.5901517	-2.34137E-05	0	0	0	3.55831E-07	-1.18575E-10	0	0.005883073	0.641681962	0.040564738	0	-1.1861E-07	0.08622972	0	0	2.01258032	-220621.6622	213300.629
Nov-53	2053	-180.0229542	0	-294.774307	0	0.422061518	0.0081497	0	472.2688178	-2.1809E-05	0	0	0	1.60698E-07	-2.18085E-09	0	0.005647383	0.084940311	0.039485766	0	0	0.035123966	0	0	1.93744258	-220916.4365	213772.897
Dec-53	2053	-157.6011226	0	-304.5577734	0	0.170917506	0.0084213	0	460.2705244	2.66873E-05	0	0	0	2.37221E-08	-3.55823E-05	0	0.005800046	-0.39971686	0.040446127	0	0	0.013901132	0.000130471	0	1.937025531	-221220.9943	214233.168
Jan-54	2054	-118.2426521	0	-327.113262	0	0.213854451	0.0079469	0	443.758304	6.40496E-06	0	0	0	2.60943E-07	2.37238E-05	0	0.005764463	-0.54442148	0.040446127	0	0	0.015063514	0	0	1.859928807	-221548.1075	214676.926
Feb-54	2054	-88.65380956	0	-299.0497661	0	0.35139271	0.0071778	0	386.1963366	-1.11417E-05	0	0	0	4.92807E-07	2.14262E-05	0	0.005206611	-0.54851545	0.03621059	0	0	0.021854912	0.000107132	0	1.624119964	-221847.1573	215063.123
Mar-54	2054	-80.93969886	0	-338.4150961	0	0.787335465	0.0078283	0	417.307367	3.91414E-06	0	0	0	1.03191E-06	-7.1168E-10	0	0.005752602	-0.671334548	0.039853076	0	2.37221E-07	0.047325527	0.000124541	0	1.744520942	-222185.5724	215480.43
Apr-54	2054	-19.04155161	0	-383.9484104	0	1.390036711	0.007461	0	400.3743055	-6.88705E-06	0	0	0	1.95133E-06	1.14784E-05	0	0.005555555	-0.559343426	0.038337924	0	1.14784E-07	0.080119374	0.0003455	0	1.641299334	-222569.5208	215880.804
May-54	2054	91.24456557	0	-519.3030825	0	2.15040554	0.0073538	0	424.408331	9.48883E-07	0	0	0	2.37221E-06	2.37222E-05	0	0.005764463	-0.357017136	0.039853076	0	0	0.130471379	0.000237221	0	1.671101139	-223088.8239	216305.213
Jun-54	2054	170.4189599	0	-608.4973053	0	2.785812632	0.007197	0	433.4121838	6.88705E-06	0	0	0	2.86961E-06	0	0	0.005612948	0.009297521	0.038682277	0	1.14784E-07	0.205463725	1.14787E-08	0	1.630624403	-223697.3212	216738.625
Jul-54	2054	275.53776	0	-765.873421	0	3.292623154	0.0072352	0	484.5269329	3.08387E-05	0	0	0	3.08387E-06	-4.27008E-10	0	0.005835629	0.460208135	0.040446127	0	0	0.245523412	0.000237221	0	1.747723421	-224463.1946	217223.152
Aug-54	2054	207.208713	0	-734.2428177	0	3.179943327	0.0074725	0	520.8659399	2.01638E-05	0	0	0	2.60943E-06	1.18597E-05	0	0.005906795	0.853994478	0.041157789	0	0	0.232476275	0.00011861	0	1.858861314	-225197.4374	217744.018
Sep-54	2054	49.65794235	0	-570.5176915	0	2.408172601	0.0075758	0	515.4521276	5.39486E-06	0	0	0	1.60698E-06	3.44334E-05	0	0.005750689	0.84940311	0.040059687	0	-1.14784E-07	0.193985305	0	0	1.899793361	-225767.9551	218259.47
Oct-54	2054	-139.2212637	0	-381.5743402	0	0.963234605	0.0078283	0	517.0715949	-7.11662E-06	0	0	0	6.52357E-07	0	0	0.005918656	0.603726652	0.041632231	0	0	0.085162227	0.00011861	0	2.019934161	-226149.5295	218776.541
Nov-54	2054	-181.267215	0	-294.7746514	0	0.423898066	0.007461	0	473.5237535	-2.64004E-06	0	0	0	2.64004E-07	1.14793E-05	0	0.005727732	0.070018364	0.039485766	0	0	0.033516988	0.000114784	0	1.937901717	-226444.3041	219250.065
Dec-54	2054	-159.336392	0	-304.5577022	0	0.165817261	0.0074725	0	462.0691317	-4.74441E-06	0	0	0	9.48883E-08	2.37218E-05	0	0.005906795	-0.339225584	0.040801958	0	0	0.013284359	0.00011861	0	1.929671689	-226748.8618	219712.134
Jan-55	2055	-115.5658539	0	-327.1129062	0	0.196893171	0.0074725	0	440.9873291	4.74441E-06	0	0	0	1.06749E-07	-9.4885E-05	0	0.005871212	-0.653542996	0.039260024	0	3.55831E-07	0.01387741	0.000359389	0	1.845576955	-227075.9747	220153.122
Feb-55	2055	-85.79477991	0	-299.0497661	0	0.326216708	0.0068564	0	383.3711607	0.000108096	0	0	0	6.32078E-07	2.14291E-05	0	0.005292317	-0.527089065	0.035032139	0	1.07132E-07	0.021640649	0.000108203	0	1.60494335	-227375.0245	220536.493
Mar-55	2055	-71.61929802	0	-338.4149538	0	0.763257565	0.0072352	0	408.0468643	-2.84665E-05	0	0	0	1.77916E-06	4.74441E-05	0	0.005859351	-0.594237824	0.039497245	0	2.37221E-07	0.047444138	0	0	1.718545277	-227713.4395	220944.54
Apr-55	2055	-13.23806225	0	-383.9482038	0	1.318870504	0.0068182	0	394.6376206	-1.37741E-05	0	0	0	3.09917E-06	3.44353E-05	0	0.005658861	-0.509297513	0.037878787	0	0	0.078971532	0	0	1.616276377	-228097.3877	221339.177
May-55	2055	95.49876278	0	-519.300307	0	1.56802875	0.0069387	0	420.7027067	-4.74441E-06	0	0	0	3.91414E-06	1.18606E-05	0	0.005883073	-0.290476733	0.039260024	0	0	0.115052034	0	0	1.65070016	-228616.688	221759.88
Jun-55	2055	168.7581472	0	-608.4964788	0	1.675849379	0.0067378	0	436.1566742	2.29568E-07	0	0	0	4.47658E-06	0	0	0.005716253	0.024219467	0.038911845	0	0	0.175619832	0.000114784	0	1.624426056	-229225.1844	222196.037
Jul-55	2055	271.5619413	0	-765.8771217	0	1.477884888	0.0073538	0	490.2980378	3.13131E-05	0	0	0	4.6258E-06	2.37221E-05	0	0.005977961	0.500535652	0.040208907	0	0	0.238406792	0.00011861	0	1.751044511	-229991.0616	222686.335
Aug-55	2055	205.6513591	0	-734.2271611	0	1.587006405	0.007686	0	523.981715	2.13499E-05	0	0	0	3.4397E-06	1.18591E-05	0	0.006037267	0.862297202	0.040920569	0	0	0.226545757	0.00011861	0	1.87143401	-230725.2887	223210.316
Sep-55	2055	47.75367241	0	-570.5182425	0	1.514003651	0.0077479	0	518.2077519	6.88705E-06	0	0	0	2.1809E-06	3.44356E-05	0	0.005899908	0.887281897	0.039944903	0	0	0.185950411	0.000114784	0	1.919651028	-231295.807	223728.524
Oct-55	2055	-141.6646368	0	-381.5736286	0	0.664692369	0.0080655	0	519.7778086	-2.84665E-06	0	0	0	9.48883E-07	2.37221E-05	0	0.006108433	0.609657169	0.041157789	0	0	0.074250075	0.00011861	0	2.044249282	-231677.3806	224248.302
Nov-55	2055	-183.8246071	0	-294.774307	0	0.296372815	0.0076905	0	476.1831887	-3.44353E-06	0	0	0	4.01745E-07	2.29574E-05	0	0.005865473	0.051652892	0.039715335	0	0	0.032828282	0.000114784	0	1.956152405	-231972.1549	224724.485
Dec-55	2055	-163.487754	0	-304.5577734	0	0.111493724	0.0081841	0	466.2656843	-1.54193E-05	0	0	0	1.42332E-07	3.55835E-05	0	0.006049128	-0.351086619	0.041039179	0	0	0.012928528	0.00011861	0	1.942007165	-232276.7127	225190.751
Jan-56	2056	-121.3846401	0	-327.1129062	0	0.133555248	0.0080655	0	446.9807098	-1.03191E-05	0	0	0	1.66054E-07	7.1168E-10	0	0.006037267	-0.538490963	0.040327517	0	0	0.014470462	0.000237221	0	1.852812186	-232603.8256	225637.732
Feb-56	2056	-96.7089403	0	-309.7300483	0	0.244440615	0.0074342	0	405.0069195	-5.32599E-06	0	0	0	2.55204E-07	2.21906E-05	0	0.005647765	-0.548132836	0.038169574	0	-1.10958E-07	0.022080655	0	0	1.666701078	-232913.5556	226042.738
Mar-56	2056	-82.18320971	0	-338.4149538	0	0.584037335	0.0079469	0	418.8328146	-3.38039E-05	0	0	0	5.93052E-07	5.93043E-05	0	0.006025405	-0.545607583	0.041157789	0	0	0.044123048	0	0	1.722103587	-233251.9706	226461.571
Apr-56	2056	-21.747704	0	-383.9486859	0	1.115702463	0.0078398	0	403.3530704	7.00184E-07	0	0	0	6.88705E-07	1.03307E-09	0	0.005808081	-0.522268128	0.039485766	0	-1.14784E-07	0.08000459	0	0	1.619145982	-233635.9193	226864.924
May-56	2056	89.41915237	0	-519.300734	0	1.587006405	0.0079943	0	426.771998	1.1861E-05	0	0	0	8.30272E-07	0	0	0.006037267	-0.303049429	0.040683348	0	-1.1861E-07	0.117424241	0	0	1.654377081	-234155.22	227291.696
Jun-56	2056	166.6391161	0	-608.4986827	0	2.089072514	0.0075758	0	437.8648927	1.73324E-05	0	0	0	8.03489E-07	1.14784E-05	0	0.005865473	0.046372818	0.039830119	0	0	0.169880622	0	0	1.629132208	-234763.7187	227729.561
Jul-56	2056	271.3733509	0	-765.8714284	0	2.36746247	0.0079469	0	489.5824616	3.26178E-05	0	0	0	8.30272E-07	1.1861E-05	0	0.006084711	0.504093963	0.041039179	0	-1.1861E-07	0.234848481	0	0	1.75756808	-235529.5901	228219.144
Aug-56	2056	207.6036854	0	-734.2423195	0	2.274946401	0.0085637	0	521.3116775	2.60943E-05	0	0	0	7.11662E-07	1.18596E-05	0	0.006179599	0.883647064	0.041632231	0	-1.1861E-07	0.22417355	0	0	1.876890086	-236263.8324	228740.455
Sep-56	2056	50.81037576	0	-570.5087383	0	1.807851214	0.0085514	0	514.8467557	1.14784E-05	0	0	0	4.59137E-07	1.14807E-05	0	0.005991735	0.890725423	0.041207529	0	0	0.188246095	0	0	1.924931102	-236834.3412	229255.302
Oct-56	2056	-138.502485	0	-381.5736997	0	0.791249606	0.0088839	0	516.5053492	-1.3403E-05	0	0	0	1.42332E-07	-9.4883E-10	0	0.00619146	0.606098859	0.042225283	0	0	0.074131465	0	0	2.050061189	-237215.9149	229771.808

Nov-56	2056	-181.0364988	0	-294.7742382	0	0.36558769	0.0087236	0	473.3435423	-9.52709E-06	0	0	0	1.14784E-07	1.14776E-05	0	0.0059573	0.048209366	0.040633608	0	0	0.032598714	0	0	1.960858558	-237510.6891	230245.151
Dec-56	2056	-161.2341575	0	-304.5577734	0	0.146246554	0.0088958	0	463.999515	-1.35216E-05	0	0	0	3.55831E-08	-1.18609E-09	0	0.006120294	-0.352272722	0.041988062	0	0	0.013047138	0	0	1.946039917	-237815.2469	230709.151
Jan-57	2057	-119.5449937	0	-327.1131197	0	0.17922023	0.0085399	0	445.1498405	-6.14402E-05	0	0	0	5.93052E-08	9.48882E-05	0	0.006108433	-0.477999687	0.042225283	0	-2.37221E-07	0.013996021	-0.000360575	0	1.856014666	-238142.36	231154.3
Feb-57	2057	-92.20319733	0	-299.0497661	0	0.301683497	0.0077135	0	389.7983262	-2.07836E-05	0	0	0	-2.03551E-07	8.57085E-10	0	0.005506581	-0.531374342	0.038138965	0	-1.07132E-07	0.020997857	-0.000107132	0	1.612656849	-238441.4098	231544.099
Mar-57	2057	-83.9385242	0	-338.415025	0	0.725183644	0.0084213	0	420.3367938	2.32476E-05	0	0	0	-4.74441E-07	-3.55831E-05	0	0.006084711	-0.653542996	0.04151362	0	0	0.043648607	0.000120983	0	1.727322442	-238779.8248	231964.436
Apr-57	2057	-21.49219436	0	-383.9520606	0	1.287878769	0.0081497	0	402.9199896	-9.19077E-06	0	0	0	-4.59137E-07	-9.18249E-10	0	0.005876951	-0.525367302	0.039485766	0	0	0.081267216	1.14784E-06	0	1.623622566	-239163.7769	232367.356
May-57	2057	88.9126862	0	-519.2955389	0	1.872857335	0.0084213	0	426.994511	-4.74441E-06	0	0	0	-8.30272E-07	-3.08387E-09	0	0.006060989	-0.318468774	0.040801958	0	0	0.134029689	0	0	1.653190977	-239683.0724	232794.35
Jun-57	2057	168.0291528	0	-608.4928976	0	2.96487599	0.0080349	0	435.6182215	-1.14784E-06	0	0	0	-8.03489E-07	1.95132E-09	0	0.005853994	0.014692378	0.039485766	0	0	0.203168041	0	0	1.613980693	-240291.5653	233229.968
Jul-57	2057	273.5628978	0	-765.9109968	0	4.143059322	0.0083383	0	485.689077	8.30272E-06	0	0	0	-7.11662E-07	5.93104E-10	0	0.00607285	0.463292004	0.041039179	0	0	0.234848481	-0.000237221	0	1.731948246	-241057.4763	233715.657
Aug-57	2057	208.9143297	0	-734.2314311	0	4.475168286	0.0084925	0	517.9123051	1.66054E-05	0	0	0	-5.93052E-07	-1.186E-05	0	0.006108433	0.815920558	0.041869451	0	0	0.225359654	0	0	1.845932786	-241791.7077	234233.57
Sep-57	2057	50.9561517	0	-570.5151433	0	3.426308491	0.0086892	0	513.1166134	-8.15197E-06	0	0	0	-2.29568E-07	-1.37743E-09	0	0.005876951	0.887281897	0.040633608	0	0	0.185950411	0	0	1.896464619	-242362.2229	234746.686
Oct-57	2057	-137.9545052	0	-381.5737709	0	1.088605739	0.0088009	0	515.6222951	-9.96327E-06	0	0	0	-1.66054E-07	-4.74529E-10	0	0.006025405	0.644054169	0.041869451	0	0	0.081603917	-0.00011861	0	2.028355496	-242743.7966	235262.309
Nov-57	2057	-180.8011912	0	-294.7741693	0	0.435950407	0.008758	0	473.0199656	-1.74472E-05	0	0	0	-5.73921E-08	-6.88715E-10	0	0.005831038	0.079201101	0.040633608	0	0	0.033057851	0	0	1.949150569	-243038.5708	235735.328
Dec-57	2057	-161.0906389	0	-304.5579157	0	0.176017751	0.0086586	0	463.7803231	-1.43519E-05	0	0	0	-2.37221E-08	0	0	0.005977961	-0.332108964	0.04151362	0	0	0.013165748	0	0	1.94022801	-243343.1287	236199.109
Jan-58	2058	-117.5428511	0	-327.112835	0	0.207805323	0.0085399	0	443.0530469	-1.10308E-05	0	0	0	-3.55831E-08	-1.18609E-05	0	0.0059661	-0.534932652	0.04151362	0	0	0.015300734	0	0	1.856370497	-243670.2416	236642.162
Feb-58	2058	-92.74517773	0	-299.0497018	0	0.339608198	0.0076064	0	390.2965968	-6.85644E-06	0	0	0	-4.28528E-08	1.07093E-10	0	0.005388736	-0.529231703	0.037174778	0	0	0.022497704	0	0	1.617263521	-243969.2913	237032.458
Mar-58	2058	-84.64757683	0	-338.4148826	0	0.782946882	0.0084213	0	421.0392042	-6.40496E-06	0	0	0	-8.30272E-08	1.66051E-09	0	0.005918656	-0.601354445	0.040683348	0	-1.1861E-07	0.048037189	1.1861E-06	0	1.735387946	-244307.7061	237453.498
Apr-58	2058	-22.78443493	0	-383.9486171	0	1.422176288	0.0080349	0	404.0723082	-6.58861E-06	0	0	0	-3.44353E-07	4.59067E-10	0	0.00573921	-0.532598707	0.039141414	0	0	0.082759411	0	0	1.63383836	-244691.6548	237857.57
May-58	2058	91.32996501	0	-519.3001647	0	2.098216988	0.0081841	0	424.3725107	-1.30471E-05	0	0	0	-1.1861E-07	-1.18575E-10	0	0.005906795	-0.353458826	0.040683348	0	0	0.14470462	0	0	1.660782039	-245210.9549	238281.942
Jun-58	2058	170.0711638	0	-608.499578	0	3.007346146	0.0075758	0	433.5589928	-5.28007E-06	0	0	0	-1.14784E-07	2.29534E-10	0	0.005681818	-0.012396694	0.039026629	0	0	0.207759409	0	0	1.614554614	-245819.4545	238715.501
Jul-58	2058	273.3150022	0	-765.8608246	0	4.170339701	0.0078283	0	485.9364982	9.48883E-06	0	0	0	-1.1861E-07	2.37151E-10	0	0.005918656	0.424625032	0.041039179	0	0	0.239592895	0	0	1.728745766	-246585.3153	239201.438
Aug-58	2058	209.0459872	0	-734.221539	0	3.984121461	0.0083264	0	518.3002795	8.30272E-06	0	0	0	-2.37221E-07	-1.18598E-05	0	0.005954239	0.840591509	0.041039179	0	0	0.230104068	-0.00011861	0	1.839290607	-247319.5369	239719.738
Sep-58	2058	51.64026556	0	-570.5119064	0	2.460973335	0.0081841	0	513.383831	-1.49679E-05	0	0	0	-2.29568E-07	6.88715E-10	0	0.005727732	0.889577581	0.039944903	0	0	0.192837463	0	0	1.884067925	-247890.0488	240233.122
Oct-58	2058	-137.6532349	0	-381.5739132	0	0.90286194	0.0086348	0	515.5304907	-1.99265E-05	0	0	0	-3.55831E-08	5.92991E-10	0	0.005859351	0.644054169	0.040801958	0	0	0.086466941	0	0	2.01258032	-248271.6227	240748.653
Nov-58	2058	-179.9850755	0	-294.774307	0	0.421717166	0.0078053	0	472.2347269	-1.83655E-05	0	0	0	0	3.44471E-10	0	0.005658861	0.080348943	0.03960055	0	0	0.035238751	0	0	1.937327796	-248566.397	241220.887
Dec-58	2058	-159.5071908	0	-304.5577734	0	0.170917506	0.0084213	0	462.2272393	-1.87404E-05	0	0	0	0	1.18575E-10	0	0.005811907	-0.341597791	0.040446127	0	0	0.013936715	0	0	1.9366697	-248870.9548	241683.115
Jan-59	2059	-117.6828113	0	-327.113262	0	0.21361723	0.0083027	0	443.1965654	-9.72605E-06	0	0	0	0	-4.74415E-10	0	0.005764463	-0.538490963	0.040683348	0	-1.1861E-07	0.015182124	0	0	1.859928807	-249198.068	242126.311
Feb-59	2059	-88.41597669	0	-299.0497661	0	0.351178446	0.0070707	0	385.9453266	-3.61035E-05	0	0	0	-3.21396E-08	-2.14272E-05	0	0.005195898	-0.578512388	0.036639118	0	1.07132E-07	0.021854912	-0.000103918	0	1.624869888	-249497.1178	242512.256
Mar-59	2059	-80.74244986	0	-338.4150961	0	0.786979634	0.0077097	0	417.1099993	5.49166E-05	0	0	0	1.06749E-07	-1.18628E-05	0	0.005764463	-0.677265065	0.040090296	0	0	0.047325527	0.000244337	0	1.74736759	-249835.5329	242929.366
Apr-59	2059	-18.88774077	0	-383.9484104	0	1.384297501	0.0073462	0	400.2390897	-3.44353E-06	0	0	0	6.88705E-07	1.14784E-05	0	0.005567034	-0.535123959	0.038337924	0	1.14784E-07	0.080119374	0	0	1.64256196	-250219.4813	243329.606
May-59	2059	91.35724539	0	-519.3030825	0	2.134986195	0.0078283	0	424.3058517	5.10024E-06	0	0	0	9.48883E-07	1.18575E-10	0	0.005764463	-0.357017136	0.040446127	0	0	0.130471379	0	0	1.672524463	-250738.7844	243753.911
Jun-59	2059	170.4958653	0	-608.4966166	0	2.768595001	0.0073462	0	433.3360819	-5.73921E-06	0	0	0	1.26263E-06	0	0	0.005601469	-0.012626262	0.039026629	0	1.14784E-07	0.207759409	1.14899E-07	0	1.631542676	-251347.281	244187.247
Jul-59	2059	275.6456954	0	-765.873421	0	3.276017706	0.0075911	0	484.4466337	1.30471E-05	0	0	0	1.1861E-06	1.186E-05	0	0.005835629	0.457835929	0.040801958	0	0	0.244337309	0	0	1.748079252	-252113.1544	244671.694
Aug-59	2059	207.3071595	0	-734.246376	0	3.162151776	0.0075911	0	520.7929945	2.60943E-05	0	0	0	9.48883E-07	-1.54205E-09	0	0.005906795	0.855180582	0.04139501	0	0	0.232476275	0	0	1.859335755	-252847.4008	245192.487
Sep-59	2059	49.7164823	0	-570.5108045	0	2.395546338	0.0072314	0	515.4046069	6.65748E-06	0	0	0	6.88705E-07	1.14781E-05	0	0.005727732	0.851698794	0.040059687	0	0	0.193985305	0	0	1.899449008	-253417.9116	245707.892
Oct-59	2059	-139.1927972	0	-381.5743402	0	0.96145545	0.0078283	0	517.0332838	-5.93052E-06	0	0	0	3.55831E-08	0	0	0.005930517	0.602540548	0.041039179	0	0	0.085518058	0	0	2.019222499	-253799.4859	246224.925
Nov-59	2059	-181.2637715	0	-294.7746514	0	0.422061518	0.007461	0	473.5098646	-1.2741E-05	0	0	0	8.03489E-08	1.14783E-05	0	0.005716253	0.070018364	0.039830119	0	0	0.03386134	0	0	1.937672148	-254094.2606	246698.435
Dec-59	2059	-159.3399503	0	-304.5577022	0	0.164749768	0.0078283	0	462.0674712	-1.53007E-05	0	0	0	2.37221E-08	-2.37264E-10	0	0.005894934	-0.339225584	0.0412764	0	0	0.013225053	0	0	1.929671689	-254398.8183	247160.502
Jan-60	2060	-115.5671586	0	-327.1129062	0	0.195707068	0.0075911	0	440.9927852	4.98163E-06	0	0	0	2.37221E-08	-0.000130469	0	0.005883073	-0.653542996	0.039141414	0	3.55831E-07	0.014114631	0.000359389	0	1.845102514	-254725.9312	247601.495
Feb-60	2060	-88.57904295	0	-309.7300483	0	0.336868682	0.0068794	0	396.7819311	0.000110847	0	0	0	5.43695E-07	3.32881E-05	0	0.005481328	-0.547023255	0.036283287	0	3.32874E-07	0.022302571	0.000113177	0	1.661264133	-255035.6612	247998.277
Mar-60	2060	-71.13299561	0	-338.4149538	0	0.762783123	0.0073183	0	407.5591386	-4.74441E-06	0	0	0	1.54193E-06	3.55831E-05	0	0.005871212	-0.590679514	0.039378634	0	1.1861E-07	0.047206917	0.000237221	0	1.716884732	-255374.0762	248405.836
Apr-60	2060	-15.99632668	0	-383.9482038	0	1.321166189	0.0070707	0	397.2064911	-0.000118228	0	0	0	2.29568E-06	0.000160698	0	0.005647383	-1.174357192	0.03168044	0	1.72176E-06	0.078856748	-0.000315657	0	1.614210261	-255758.0244	248803.043
May-60	2060	96.11150382	0	-519.300307	0	1.563284336	0.0068438	0	420.0932867	3.08387E-05	0	0	0	2.01638E-06	-5.92991E-10	0	0.005859351	-0.295102536	0.034041169	0	1.89777E-06	0.11386593	1.66054E-05	0	1.648921005	-256277.3247	249223.136
Jun-60	2060	169.2137258	0	-608.4964788	0	1.671258011	0.0067493	0	435.7154437	1.97429E-05	0	0	0	2.1809E-06	1.14784E-05	0	0.005716253	0.04832415	0.035123966	0	1.03306E-06	0.173324148	4.59137E-06	0	1.622933861	-256885.8212	249658.851
Jul-60	2060	271.8667699	0	-765.8771217	0	1.464837751	0.0071166	0	489.9773154	4.24625E-05	0	0	0	2.2536E-06	1.1861E-05	0	0.0059661	0.50646617	0.03795531	0	7.11662E-07	0.234848481	0.00011861	0	1.749858408	-257651.6983	250148.829
Aug-60	2060	205.9063714	0	-734.2271611	0	1.579889784	0.0079113	0	523.739394	2.84665E-05	0	0	0	1.77916E-06	3.55953E-10	0	0.006025405	0.876530443	0.0378367	0	3.55831E-07	0.222987447	0.000119796	0	1.870366517	-258385.9255	250672.568
Sep-60	2060	48.00275413	0	-570.5159468	0	1.512855809	0.0077594	0	517.9257272	1.83655E-05	0	0	0	1.14784E-06	4.59181E-10	0	0.00588843	0.891873265	0.037190082	0	2.29568E-07	0.188246095	0	0	1.918847539	-258956.4414	251190.494
Oct-60	2060	-141.4570687	0	-381.5743402	0	0.662082941	0.0078283	0	519.5446206	-1.42332E-06	0	0	0	4.74441E-07	1.18613E-05	0	0.006120294	0.614401583	0.038785583	0	4.74441E-07	0.074131465	0	0	2.04365623	-259338.0158	251710.038
Nov-60	2060	-183.621439	0	-294.774307	0	0.295339757	0.0080349	0	476.0157186	-2.1809E-06	0	0	0	1.72176E-07	1.14791E-05	0	0.00588843	0.058539944	0.037304866	0	1.14784E-07	0.032598714	0	0	1.955348916	-259632.7901	252186.054
Dec-60	2060	-163.3655853	0	-304.5577734	0	0.109833179	0.0080655	0	466.1494461	-1.43519E-05	0	0	0	3.55831E-08	-1.18689E-10	0	0.006049128	-0.351086619	0.038666972	0	0	0.013047138	0	0	1.940939672	-259937.3478	252652.204
Jan-61	2061	-121.2814491	0	-327.1129062	0	0.131894703	0.0084213	0	446.8795352	-9.37022E-06	0	0	0	5.93052E-08	-8.30255E-10	0	0.006013544	-0.539677066	0.038429752	0	0	0.013996021	0	0	1.852219135	-260264.4607	253099.083
Feb-61	2061	-93.50859982	0	-299.0497018	0	0.234083253	0.0073921	0	391.1750785	-6.21365E-06	0	0	0	1.17845E-07	5.35692E-10	0	0.005410162	-0.529231703	0.034817875	0	0	0.021426385	0	0	1.609014363	-260563.5104	253490.258
Mar-61	2061	-82.96129357	0	-338.4149538	0	0.577157935	0.0077097	0	419.6681873	-4.42417E-05	0	0	0	1.1861E-07	8.30272E-05	0	0.006025405	-0.496977342	0.039615855	0	-3.55831E-07	0.0447161	-0.000239593	0	1.722578028	-260901.9254	253909.926
Apr-61	2061	-21.86512824	0	-383.9486859	0	1.113406779	0.0077479	0	403.4701503	3.09688E-06	0	0	0	0	-8.03425E-10	0	0.005819559	-0.522268128	0.037993572	0	-1.14784E-07	0.080119374	-0.000114784	0	1.619719903	-261285.8741	254313.397
May-61	2061	87.26044411	0	-519.300734	0	1.588192508	0.0079943	0	428.9259618	1.66054E-05	0	0	0	0	0	0	0.006025405	-0.301270274	0.039497245	0	-2.37221E-07	0.115052034	-0.00011861	0	1.654614301	-261805.1748	254742.323
Jun-61	2061	166.9455899	0	-608.4986827	0	2.090220356	0.0076676	0	437.5517614	1.92837E-05	0	0	0	-3.44353E-07	0	0	0.005865473	0.047405876	0.037993572	0	-1.14784E-07	0.165289254	0	0	1.629361776	-262413.6735	255179.874
Jul-61	2061	271.1835743	0	-765.878545	0	2.36746247	0.0079469	0	489.7877761	4.80372E-05	0	0	0	-1.1861E-07	0	0	0.006108433	0.505280066	0.039734465	0	0	0.234848481	0	0	1.75744947	-263179.552	255669.662
Aug-61	2061	207.7578789	0	-734.2423195	0	2.271388091	0.0085755	0	521.1715987	2.96526E-05	0	0	0	0	-3.5584E-10	0	0.006167738	0.896694202	0.040683348	0	-2.37221E-07	0.22417355	0	0	1.877008697	-263913.7944	256190.834
Sep-61	2061	50.90449881	0	-570.5156254	0	1.804407688	0.0086777	0	514.7440238	1.03306E-05	0	0	0	0	8.03539E-10	0	0.005980257	0.891873265	0.039715335	0	0	0.185950411	0	0	1.92516067	-264484.31	256705.578
Oct-61	2061	-138.4408076	0	-381.5736997	0	0.791249606	0.0090025	0	516.4268291	-1.29285E-05	0	0	0	0	5.92991E-10	0	0.006179599	0.608471066	0.040920569	0	0	0.073775634	0	0	2.050061189	-264865.8837	257222.005
Nov-61	2061	-180.9756631	0	-294.7742382	0	0.36558769	0.008494	0	473.2808701	-9.98623E-06	0	0	0	0	1.14824E-10	0	0.005968779	0.048209366	0.03960055	0	0	0.032943067	-1.14784E-06	0	1.961317694	-265160.6579	257695.285
Dec-61	2061	-161.2199242	0	-304.5577734	0	0.146365165	0.0086586	0	463.9422263	-1.41146E-05	0	0	0	0	7.11566E-10	0	0.006120294	-0.351086619	0.040920569	0	0	0.012809917	0	0	1.946158527	-265465.2157	258159.228
Jan-62	2062	-119.4939912	0	-327.1131197	0	0.178508568	0.0086586	0	445.099787	-6.35751E-05	0	0	0	2.37221E-08	5.93058E-05	0	0.006108433	-0.473255273	0.041157789	0	0	0.014114631	-0.000243151	0	1.856844938	-265792.3288	258604.327
Feb-62	2062	-92.15938037	0	-299.0497661	0	0.299755123	0.0077135	0	389.7533308	-2.03551E-05	0	0	0	-2.78543E-07	1.39278E-09	0	0.005495868	-0.530303023	0.036960514	0	0	0.020569329	-0.000108203	0	1.612549717	-266091.3786	258994.081
Mar-62	2062	-83.7814841	0	-338.415025	0	0.721032282	0.0085399	0	420.2931452	-2.96526E-05	0	0	0	-8.30272E-07	1.18615E-05	0	0.006084711	-0.538490963	0.040801958	0	0	0.043292776	-3.55831E-06	0	1.726966611	-266429.7936	259414.374
Apr-62	2062	-21.44857637	0	-383.9520606	0	1.278696033	0.0082645	0	402.8844065	4.13108E-06	0	0	0	-1.49219E-06	-2.29534E-10	0	0.00588843	-0.521694207	0.03960055	0	-2.29568E-07	0.081037648	-0.000114784	0	1.622589508	-266813.7457	259817.258
May-62	2062	88.95538592	0	-519.2955389	0	1.858624093	0.0084213	0	426.9627234	8.30272E-06	0	0	0	-2.01638E-06	-1.18589E-05	0	0.00607285	-0.317994333	0.040446127	0	-1.1861E-07	0.131657482	-0.000237221	0	1.652835146	-267333.0412	260244.221
Jun-62	2062	168.0647359	0	-608.4928976	0	2.95913678	0.0076905	0	435.5899845	6.88705E-06	0	0	0	-2.06612E-06	-1.14776E-05	0	0.005853994	0.002984389	0.039026629	0	-1.14784E-07	0.202020199	-0.000229568	0	1.61363634	-267941.5341	260679.811
Jul-62	2062	273.5984809	0	-765.8398306	0	4.122895564	0.0084451	0	485.6664225	1.54193E-05	0	0	0	-2.13499E-06	-2.37247E-05	0	0.006049128	0.452735684	0.040920569	0	0	0.234848481	0	0	1.731592415	-268707.3739	261165.477
Aug-62	2062	208.9356796	0	-734.2314311	0	4.458562838	0.0085755	0	517.8920227	1.54193E-05	0	0	0	-1.42332E-06	-4.74435E-05	0	0.006096572	0.838456523	0.041039179	0	0	0.222987447	-0.00011861	0	1.845814176	-269441.6054	261683.369
Sep-62	2062	50.9699258	0	-570.5151433	0	3.410238702	0.0085285	0	513.0938861	-7.00184E-06	0	0	0	-1.26263E-06	-2.29562E-05	0	0.005899908	0.887281897	0.039944903	0	0	0.185950411	0	0	1.896808972	-270012.1205	262196.463
Oct-62	2062	-137.9201082	0	-381.5737709	0	1.083031053	0.0091093	0	515.6020128	-1.16238E-05	0	0	0	-4.38858E-07	-1.18603E-05	0	0.006049128	0.648798583	0.041157789	0	-2.37221E-07	0.081485306	0	0	2.028592716	-270393.6943	262712.065
Nov-62	2062	-180.7713473	0	-294.7741693	0	0.435720839	0.0085055	0	472.9966644	-1.71028E-05	0	0	0	-1.60698E-07	9.18249E-10	0	0.005808081	0.082644627	0.039715335	0	-1.14784E-07	0.033172635	0	0	1.948806216	-270688.4685	263185.062
Dec-62	2062	-161.068103	0	-304.5579157	0	0.176017751	0.0087772	0	463.7531614	-1.45891E-05	0	0	0	-7.11662E-08	-1.18628E-05	0	0.005989822	-0.334481171	0.040683348	0	0	0.013402969	0	0	1.939990789	-270993.0264	263648.815

Jan-63	2063	-117.587923	0	-327.112835	0	0.207449492	0.0086586	0	443.0420161	3.926E-05	0	0	0	-7.11662E-08	-7.1165E-05	0	0.005954239	-0.571701859	0.040683348	0	1.1861E-07	0.015300734	0.000129285	0	1.856370497	-271320.1392	264091.857
Feb-63	2063	-92.7216087	0	-299.0497018	0	0.339179671	0.0074992	0	390.272385	7.7135E-06	0	0	0	1.82124E-07	-3.21279E-10	0	0.005367309	-0.530303023	0.036639118	0	1.07132E-07	0.022390572	0.000215335	0	1.617370653	-271619.1889	264482.13
Mar-63	2063	-84.6173312	0	-338.4148826	0	0.781997999	0.0083027	0	421.0110936	-8.65856E-06	0	0	0	4.74441E-07	1.18627E-05	0	0.005942378	-0.598982238	0.040446127	0	0	0.047799969	0	0	1.735743777	-271957.6038	264903.141
Apr-63	2063	-22.75137708	0	-383.9486171	0	1.416437078	0.0079201	0	404.0474001	-1.12374E-05	0	0	0	6.88705E-07	1.14791E-05	0	0.00573921	-0.530303023	0.038911845	0	0	0.082529843	0	0	1.634067929	-272341.5524	265307.188
May-63	2063	91.34894267	0	-519.3001647	0	2.085169851	0.0078283	0	424.362073	-1.77916E-05	0	0	0	1.06749E-06	-8.30141E-10	0	0.005894934	-0.351086619	0.039971686	0	0	0.143518516	0	0	1.660782039	-272860.8526	265731.55
Jun-63	2063	170.0998598	0	-608.492691	0	2.995867725	0.007461	0	433.5407421	-1.10193E-05	0	0	0	1.03306E-06	1.14778E-09	0	0.005704775	-0.01228191	0.038567493	0	0	0.205463725	0.000114784	0	1.614210261	-273469.3453	266165.091
Jul-63	2063	273.3541436	0	-765.8608246	0	4.157292563	0.0080655	0	485.9170461	4.74441E-06	0	0	0	1.1861E-06	-1.06752E-09	0	0.005906795	0.43767217	0.039734465	0	-1.1861E-07	0.239592895	0.00011861	0	1.728745766	-274235.2061	266651.008
Aug-63	2063	209.0353123	0	-734.2334	0	3.975818737	0.0081723	0	518.2811832	7.11662E-06	0	0	0	7.11662E-07	1.7792E-09	0	0.005942378	0.840354288	0.040327517	0	0	0.230104068	0	0	1.839527828	-274969.4395	267169.289
Sep-63	2063	51.67470082	0	-570.5187934	0	2.449494914	0.0079545	0	513.3664986	-1.95592E-05	0	0	0	6.88705E-07	-1.14824E-10	0	0.005727732	0.888429739	0.039370982	0	0	0.191689621	0	0	1.883608788	-275539.9583	267682.656
Oct-63	2063	-137.630699	0	-381.5739132	0	0.898829188	0.0086467	0	515.512462	-2.22987E-05	0	0	0	2.13499E-07	-7.1168E-10	0	0.005871212	0.645240272	0.040564738	0	0	0.08611111	0	0	2.01269893	-275921.5322	268198.168
Nov-63	2063	-179.9747449	0	-294.774307	0	0.422291087	0.0081497	0	472.2142953	-2.16942E-05	0	0	0	9.18274E-08	1.14774E-05	0	0.005658861	0.078053259	0.038911845	0	0	0.034894398	0	0	1.937557364	-276216.3065	268670.382
Dec-63	2063	-159.485841	0	-304.5577734	0	0.171036116	0.0083027	0	462.2079058	-1.99265E-05	0	0	0	3.55831E-08	1.18575E-10	0	0.005800046	-0.339225584	0.039853076	0	-1.1861E-07	0.013924854	0	0	1.93678831	-276520.8643	269132.59

APPENDIX A4-6

WATER QUALITY —URANIUM MAP

DRAFT

water quality — uranium

U.S. Geological Survey, 2004, National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance data: U.S. Geological Survey, Denver, CO. Online Links: https://mrdata.usgs.gov/nure/sediment/ & https://mrdata.usgs.gov/nure/water/
This is part of the following larger work.
Smith, Steven M., 1997, National Geochemical Database: Reformatted Data from the National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) Program: U.S. Geological Survey Open-File Report 97-492.
Online Links: https://pubs.usgs.gov/of/1997/ofr-97-0492/

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Document Path: G:\Jobs\RM160321-00 PAWS - Level II Study\Task 7 GIS\PAWSmaps\Water Quality\RM160321 PAWS Map—Water Quality - Uranium - Wyoming-Nebraska.mxd

RM160321-00
PAWS Level II Study

- Community
- PAWS area boundary
- County Boundary

NURE Uranium >30 PPB (WY-NE)

Uranium > 20 PPB

- 20 - 39.999
- 40.0 - 59.999
- 60.0 - 79.999
- 80.0 - 99.999
- 100.0 - 119.999
- 120.0 - 280

Hartville
Guernsey
Fort Laramie
Lingle
Torrington
Henry
Morrill
Mitchell
Veteran
Yoder
Huntley
Lyman
Scottsbluff
Terrytown
Gering
Minatare
Melbeta
Angora
McGrew
Bayard
Hawk Springs
Chugwater
Northport
Bridgeport
La Grange
Redington

Wyoming

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APPENDIX A4-7

WATER QUALITY —NITRATES MAP

DRAFT

water quality — uranium

U.S. Geological Survey, 2004, National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance data: U.S. Geological Survey, Denver, CO. Online Links: https://mrdata.usgs.gov/nure/sediment/ & https://mrdata.usgs.gov/nure/water/
This is part of the following larger work.
Smith, Steven M., 1997, National Geochemical Database: Reformatted Data from the National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) Program: U.S. Geological Survey Open-File Report 97-492.
Online Links: https://pubs.usgs.gov/of/1997/ofr-97-0492/

Feet
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RM160321-00
PAWS Level II Study

- Community
- PAWS area boundary
- County Boundary

Wyoming Nitrates >10 PPM

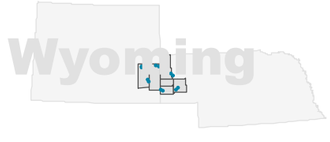
Nitrates >7.00 PPM

- 7.00 - 7.25
- 7.25 - 9.999
- 10.0 - 10.999
- 11.0 - 11.999
- 12.0 - 836

Nebraska Nitrates > 10 PPM

Nitrates > 7.00 PPM

- 7.00 - 7.25
- 7.25 - 9.999
- 10.0 - 10.999
- 11.0 - 11.999
- 12.0 - 836



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Hartville
Guernsey
Fort Laramie
Lingle
Torrington
Henry
Morrill
Mitchell
Veteran
Yoder
Huntley
Lyman
Scottsbluff
Terrytown
Gering
Minatare
Melbeta
Angora
McGrew
Bayard
Northport
Bridgeport
Redington
Chugwater
Hawk Springs
La Grange

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APPENDIX A4-8

WATER QUALITY —ARSENIC MAP

DRAFT

water quality — arsenic

U.S. Geological Survey, 2004, National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance data: U.S. Geological Survey, Denver, CO. Online Links: https://mrdata.usgs.gov/nure/sediment/ & https://mrdata.usgs.gov/nure/water/
This is part of the following larger work.
Smith, Steven M., 1997, National Geochemical Database: Reformatted Data from the National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) Program: U.S. Geological Survey Open-File Report 97-492.
Online Links: https://pubs.usgs.gov/of/1997/ofr-97-0492/

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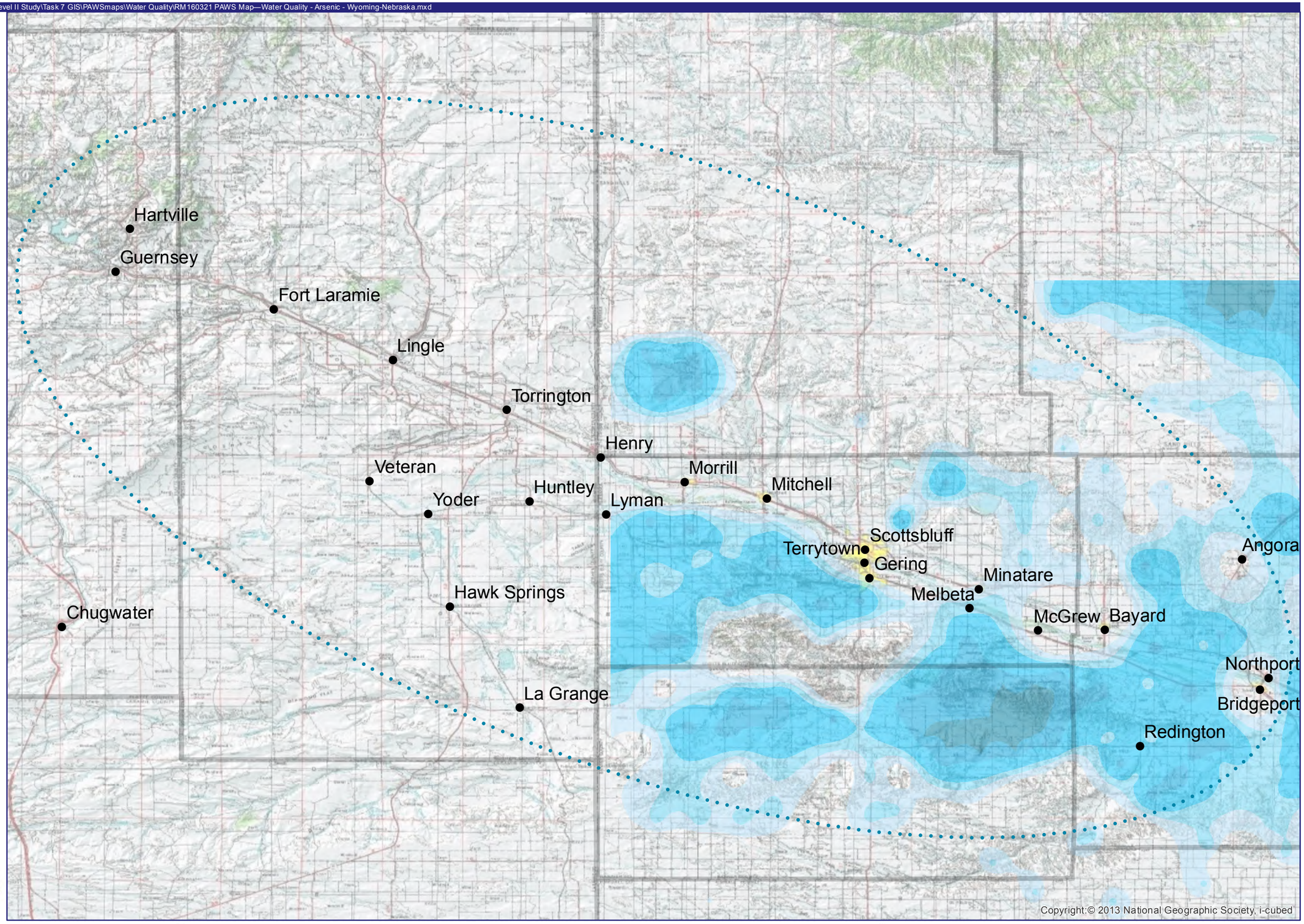
RM160321-00
PAWS Level II Study

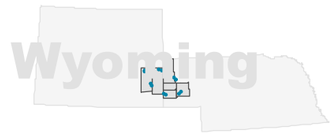
- Community
- PAWS area boundary
- County Boundary

Nebraska NRD Test Wells

Arsenic Rating Level (3.50 - 5.059)

- 3.50 - 3.849
- 3.85 - 4.1249
- 4.125 - 4.749
- 4.75 - 4.999
- 5.0 - 5.059





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APPENDIX A4-9

WATER QUALITY —ARSENIC, NITRATES, URANIUM MAP

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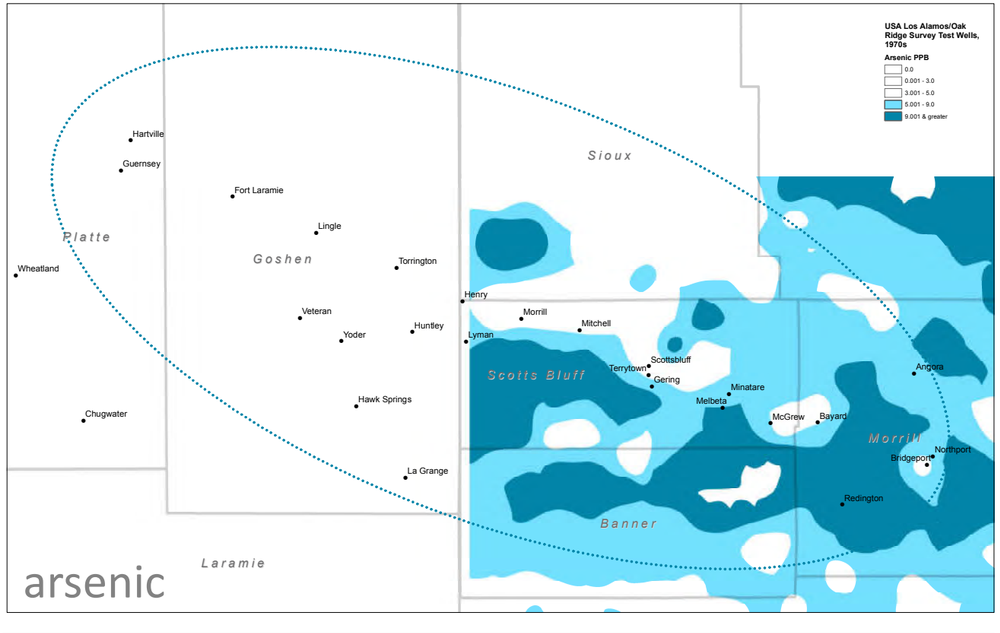
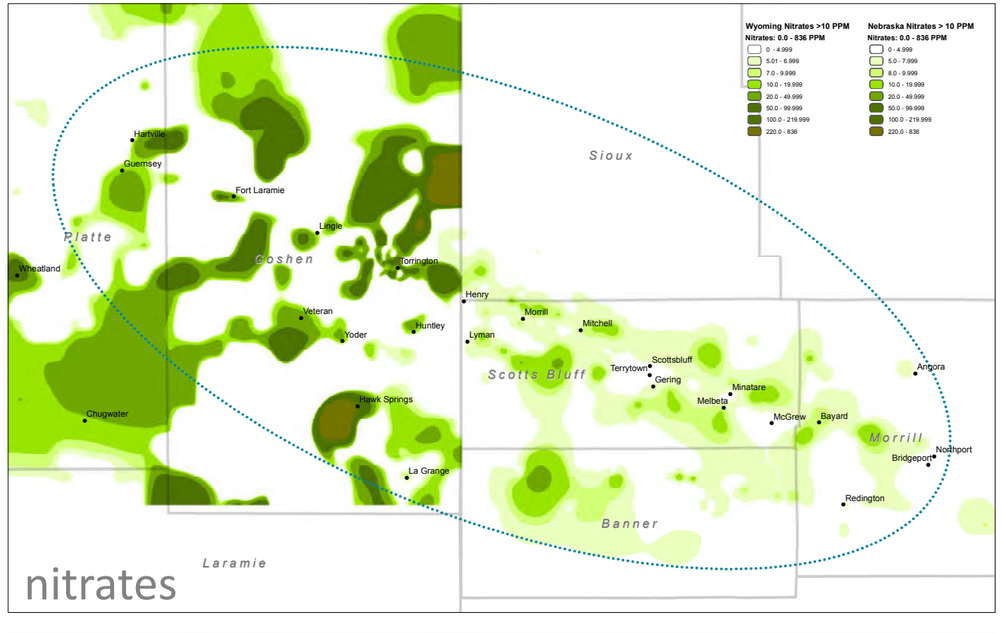
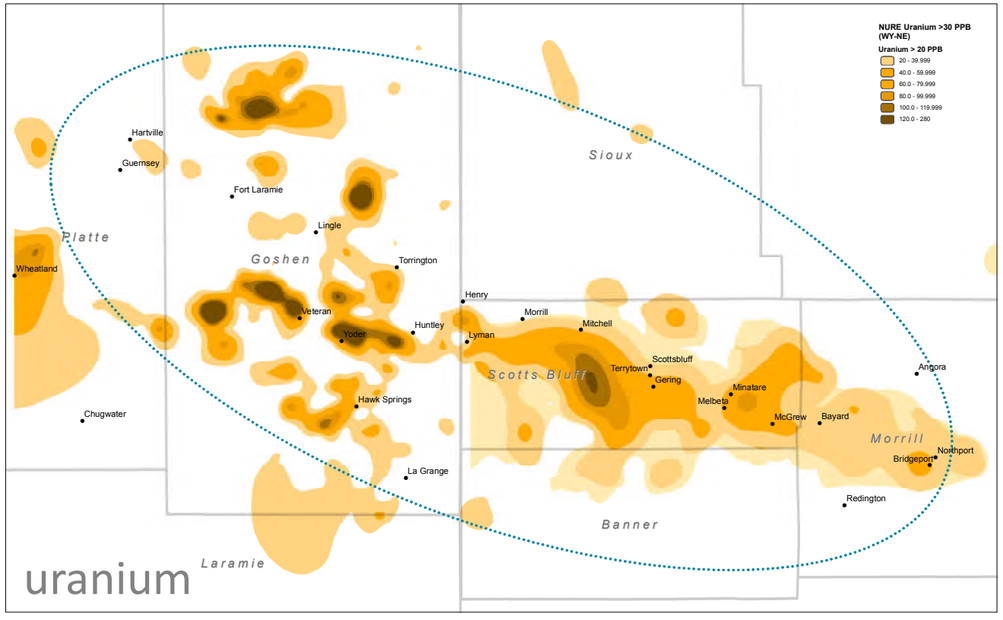
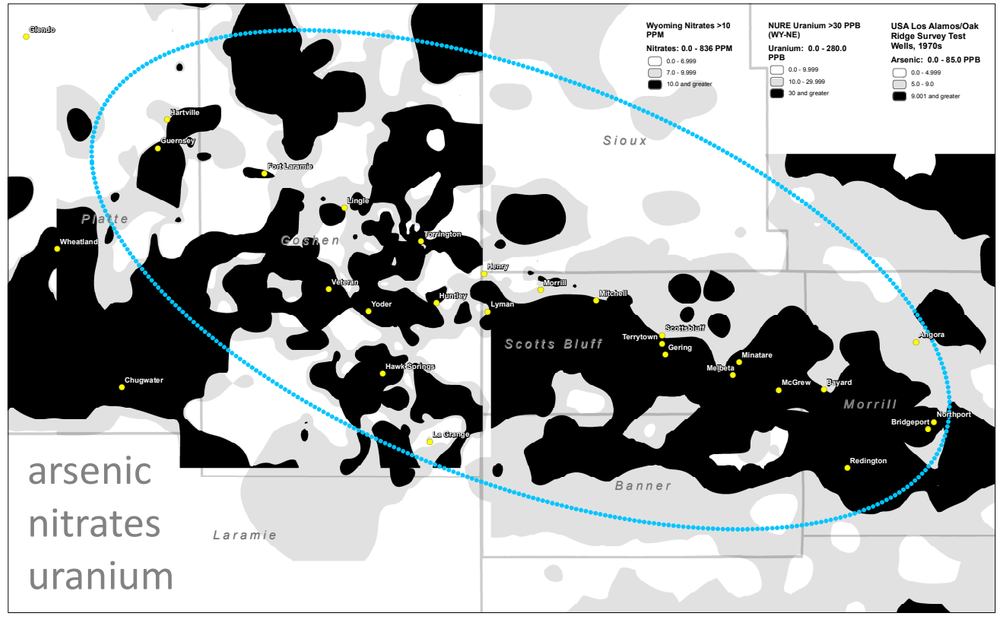
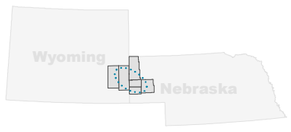
water quality — arsenic | nitrates | uranium











Community
PAWS Boundary
County Boundary

NEBRASKA — Nitrate Levels

Nebraska Registered Wells Database:
https://dnr.nebraska.gov/data/groundwater-data

Nebraska DNR Groundwater Interactive Map:
https://prodmaps2.ne.gov/Html5DNR/index.html?viewer=Groundwater

https://clearinghouse.nebraska.gov/CurrentReports/GW%20Report_2017.11.29_small.pdf

NEBRASKA — Uranium & Arsenic Levels

Data collected in the early 1970's as part of a nationwide uranium survey. Los Alamos Lab and the Oak Ridge Lab were responsible for the survey. Morrill County was surveyed by the Oak Ridge Lab, who did a very thorough analysis of the water samples collected from water wells.

NRD in January 2005 using the 1970's information.

WYOMING AND NEBRASKA — Uranium & Nitrate Levels

U.S. Geological Survey, 2004, National Uranium Resource Evaluation (NURE) Hydrogeochemical and Stream Sediment Reconnaissance data:
U.S. Geological Survey, Denver, CO. Online Links: https://mrdata.usgs.gov/nure/sediment/ & https://mrdata.usgs.gov/nure/water/

This is part of the following larger work: Smith, Steven M., 1997, National Geochemical Database: Reformatted Data from the

HSSR) Program: U.S. Geological Survey Open-File Report 97-492.

Online Links: https://pubs.usgs.gov/of/1997/ofr-97-0492/

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A5

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APPENDIX A5-1

WYOMING POPULATION ESTIMATES (WYOMING EAD/DA&I)

NEBRASKA POPULATION ESTIMATES (NEBRASKA DED)

DRAFT

ppendix A5-1 Wyoming and Nebraska Population Estimates

pulation Estimates from A&I stimates as of July 1 of each year)	2010 Census	2011		2012		2013		2014		2015		2016		2017		2018		2010-2018
		Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	% growth
uernsey	1147	1163	1.39%	1169	0.52%	1180	0.94%	1191	0.93%	1197	0.50%	1174	-1.92%	1151	-1.96%	1148	-0.26%	0.1%
atte County (total population)	8667	8695	0.32%	8727	0.37%	8709	-0.21%	8772	0.72%	8797	0.28%	8667	-1.48%	8561	-1.22%	8566	0.06%	-1.2%
rt Laramie	230	234	1.74%	234	0.00%	232	-0.85%	231	-0.43%	232	0.43%	228	-1.72%	229	0.44%	232	1.31%	0.9%
rrington	6501	6722	3.40%	6763	0.61%	6740	-0.34%	6723	-0.25%	6771	0.71%	6669	-1.51%	6715	0.69%	6701	-0.21%	3.1%
oshen County (total population)	13249	13573	2.45%	13637	0.47%	13547	-0.66%	13526	-0.16%	13551	0.18%	13333	-1.61%	13404	0.53%	13376	-0.21%	1.0%
yoming Total	**29794**	**30387**	**1.99%**	**30530**	**0.47%**	**30408**	**-0.40%**	**30443**	**0.12%**	**30548**	**0.34%**	**30071**	**-1.56%**	**30060**	**-0.04%**	**30023**	**-0.12%**	**0.8%**
yoming (Whole State)	**563626**	**567224**	**0.64%**	**576270**	**1.59%**	**582123**	**1.02%**	**582548**	**0.07%**	**585668**	**0.54%**	**584290**	**-0.24%**	**578934**	**-0.92%**	**577737**	**-0.21%**	**2.5%**

pulation Estimates from NDED	2010 Census	2011		2012		2013		2014		2015		2016		2010-2016
		Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	% growth
orrill	921	920	-0.11%	924	0.43%	928	0.43%	917	-1.19%	913	-0.44%	915	0.22%	-0.7%
itchell	1702	1699	-0.18%	1701	0.12%	1689	-0.71%	1679	-0.59%	1668	-0.66%	1669	0.06%	-1.9%
ottsbluff	15039	15033	-0.04%	15051	0.12%	15024	-0.18%	14883	-0.94%	14819	-0.43%	14883	0.43%	-1.0%
rrytown	1198	1195	-0.25%	1195	0.00%	1193	-0.17%	1181	-1.01%	1173	-0.68%	1177	0.34%	-1.8%
inatare	816	814	-0.25%	812	-0.25%	815	0.37%	804	-1.35%	800	-0.50%	802	0.25%	-1.7%
yard	1209	1183	-2.15%	1164	-1.61%	1160	-0.34%	1150	-0.86%	1146	-0.35%	1134	-1.05%	-6.2%
idgeport	1545	1508	-2.39%	1507	-0.07%	1510	0.20%	1508	-0.13%	1518	0.66%	1497	-1.38%	-3.1%
ebraska Total	**22430**	**22352**	**-0.35%**	**22354**	**0.01%**	**22319**	**-0.16%**	**22122**	**-0.88%**	**22037**	**-0.38%**	**22077**	**0.18%**	**-1.6%**
tal Population	52224	52739	**0.99%**	52884	**0.27%**	52727	**-0.30%**	52565	**-0.31%**	52585	**0.04%**	52148	**-0.83%**	**-0.1%**

pulation Estimates from NDED	2010 Census	2015		2020		2025		2030		2010-2030
		Pop	% growth	Pop	% growth	Pop	% growth	Pop	% growth	% growth
otts Bluff County (total population)	36429	36055	-1.03%	35627	-1.19%	35148	-1.34%	34647	-1.43%	-4.9%
ebraska (Whole State)	1817474	1874059	3.11%	1927316	2.84%	1976727	2.56%	2023618	2.37%	11.3%

Wyoming
ADMINISTRATION & INFORMATION

ECONOMIC ANALYSIS DIVISION

Mark Gordon, **Governor** | *Patricia L. Bach,* **Interim Director**
Kevin Hibbard, **Deputy Director of Budget & Economic Analysis**
Wenlin Liu, **Administrator**

FOR IMMEDIATE RELEASE
Thursday, May 23, 2019
Contact: Dr. Wenlin Liu, Chief Economist

Cheyenne Gained the Most Residents in 2018

CHEYENNE – About three-fourths of larger cities and towns in Wyoming lost residents between July 1, 2017 and July 1, 2018, according to population estimates released by the U.S. Census Bureau. These estimates provide a look at how the population has changed in each of Wyoming's incorporated places since the 2010 Census.

For cities and towns with population over 2,000, Cheyenne demonstrated the fastest annual growth rate of 0.6 percent, followed by Cody (0.5%), Mills (0.4%), and Buffalo (0.4%). The state's most populous city, Cheyenne, also added the most residents (370). Six cities and towns experienced population losses of at least 1.2 percent, led by Thermopolis's decrease of 2.8 percent or 81 residents. Casper and Rock Springs lost the most population during the year, at -351 and -291, respectively.

As of July 1, 2018, 68.8 percent, or 397,611 people in Wyoming lived in incorporated places. Over 47 percent of the State's residents lived in ten cities with population of more than 10,000. Because of the moderate recovery in the energy industry, Wyoming's total population in 2018 was 1,197 less than the previous year (or -0.2%). In comparison, the previous year's decline was 5,356 residents or 0.9 percent. However, the contraction rate in the 99 cities and towns, together, was 0.3 percent between July 2017 and July 2018.

July 2018 Population and Change (numerical & percent) from July 2017 for Large Cities and Towns (2,000 or more)

Rank by Population Size		Rank by Population Change		Rank by Percent Change	
Cheyenne city	63,957	Cheyenne city	370	Cheyenne city	0.6
Casper city	57,461	Laramie city	63	Cody city	0.5
Laramie city	32,473	Cody city	46	Mills town	0.4
Gillette city	31,903	Buffalo city	16	Buffalo city	0.4
Rock Springs city	23,082	Mills town	15	Laramie city	0.2
Sheridan city	17,849	Sheridan city	4	Powell city	0.1
Green River city	11,978	Powell city	4	Afton town	0.0
Evanston city	11,704	Afton town	1	Sheridan city	0.0
Riverton city	10,996	Lovell town	-1	Lovell town	0.0
Jackson town	10,429	Lyman town	-4	Lyman town	-0.2
Cody city	9,828	Newcastle city	-10	Torrington city	-0.2
Rawlins city	8,658	Bar Nunn town	-10	Newcastle city	-0.3
Lander city	7,503	Wheatland town	-12	Wheatland town	-0.3
Torrington city	6,701	Kemmerer city	-13	Bar Nunn town	-0.4
Powell city	6,310	Torrington city	-14	Gillette city	-0.4
Douglas city	6,273	Evansville town	-16	Kemmerer city	-0.5
Worland city	5,075	Glenrock town	-20	Evansville town	-0.5
Buffalo city	4,573	Douglas city	-46	Casper city	-0.6
Mills town	3,915	Lander city	-53	Riverton city	-0.7
Wheatland town	3,553	Riverton city	-77	Lander city	-0.7
Newcastle city	3,402	Thermopolis town	-81	Douglas city	-0.7
Evansville town	2,934	Worland city	-98	Glenrock town	-0.8
Thermopolis town	2,850	Green River city	-101	Green River city	-0.8
Bar Nunn town	2,761	Jackson town	-123	Jackson town	-1.2
Kemmerer city	2,734	Gillette city	-134	Evanston city	-1.2
Glenrock town	2,554	Evanston city	-143	Rock Springs city	-1.2
Lovell town	2,386	Rawlins city	-159	Rawlins city	-1.8
Lyman town	2,065	Rock Springs city	-291	Worland city	-1.9
Afton town	2,006	Casper city	-351	Thermopolis town	-2.8

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Wyoming Incorporated Place Population Estimates: April 1, 2010 to July 1, 2018

Place	April 1, 2010		Population Estimate (as of July 1)								Chge, 7/1/17 to 7/1/18		Chge, 4/1/10 to 7/1/18	
	Census	Estimates Base	2011	2012	2013	2014	2015	2016	2017	2018	Number	Percent	Number	Percent
Wyoming	**563,626**	**563,773**	**567,224**	**576,270**	**582,123**	**582,548**	**585,668**	**584,290**	**578,934**	**577,737**	**-1,197**	**-0.2**	**13,964**	**2.5**
Albany County	**36,299**	**36,299**	**36,843**	**37,360**	**37,559**	**37,622**	**37,956**	**37,903**	**38,430**	**38,601**	**171**	**0.4**	**2,302**	**6.3**
Laramie city	30,816	30,816	31,257	31,725	31,889	31,881	32,124	31,999	32,410	32,473	63	0.2	1,657	5.4
Rock River town	245	245	246	247	246	245	246	247	249	252	3	1.2	7	2.9
Balance of Albany County	5,238	5,238	5,340	5,388	5,424	5,496	5,586	5,657	5,771	5,876	105	1.8	638	12.2
Big Horn County	**11,668**	**11,669**	**11,721**	**11,757**	**11,935**	**11,853**	**11,950**	**11,943**	**11,879**	**11,881**	**2**	**0.0**	**212**	**1.8**
Basin town	1,285	1,287	1,292	1,292	1,306	1,295	1,301	1,298	1,292	1,292	0	0.0	5	0.4
Burlington town	288	288	300	307	319	325	333	336	336	339	3	0.9	51	17.7
Byron town	593	591	594	599	611	608	616	615	613	612	-1	-0.2	21	3.6
Cowley town	655	655	676	692	711	715	732	743	746	755	9	1.2	100	15.3
Deaver town	178	177	179	179	182	180	183	182	183	185	2	1.1	8	4.5
Frannie town (pt.)	138	138	138	138	140	139	139	139	138	138	0	0.0	0	0.0
Greybull town	1,847	1,848	1,849	1,851	1,878	1,862	1,875	1,870	1,859	1,856	-3	-0.2	8	0.4
Lovell town	2,360	2,360	2,366	2,370	2,403	2,385	2,403	2,403	2,387	2,386	-1	0.0	26	1.1
Manderson town	114	114	114	114	118	116	117	117	116	116	0	0.0	2	1.8
Balance of Big Horn County	4,210	4,211	4,213	4,215	4,267	4,228	4,251	4,240	4,209	4,202	-7	-0.2	-9	-0.2
Campbell County	**46,133**	**46,133**	**46,543**	**47,855**	**48,038**	**48,132**	**49,269**	**48,746**	**46,251**	**46,140**	**-111**	**-0.2**	**7**	**0.0**
Gillette city	29,087	31,393	31,936	32,957	33,199	33,342	34,178	33,810	32,037	31,903	-134	-0.4	510	1.6
Wright town	1,807	1,807	1,808	1,857	1,851	1,845	1,870	1,842	1,742	1,733	-9	-0.5	-74	-4.1
Balance of Campbell County	15,239	12,933	12,799	13,041	12,988	12,945	13,221	13,094	12,472	12,504	32	0.3	-429	-3.3
Carbon County	**15,885**	**15,884**	**15,833**	**15,708**	**15,836**	**15,872**	**15,618**	**15,684**	**15,242**	**14,971**	**-271**	**-1.8**	**-913**	**-5.7**
Baggs town	440	440	445	440	444	446	438	441	427	418	-9	-2.1	-22	-5.0
Dixon town	97	97	98	97	99	99	98	98	96	95	-1	-1.0	-2	-2.1
Elk Mountain town	191	191	192	193	194	194	193	193	189	186	-3	-1.6	-5	-2.6
Encampment town	450	450	449	445	447	448	439	443	435	427	-8	-1.8	-23	-5.1
Hanna town	841	841	836	829	832	832	814	817	791	774	-17	-2.1	-67	-8.0
Medicine Bow town	284	284	282	279	280	280	274	275	266	261	-5	-1.9	-23	-8.1
Rawlins city	9,259	9,259	9,211	9,129	9,211	9,215	9,063	9,085	8,817	8,658	-159	-1.8	-601	-6.5
Riverside town	52	52	52	51	52	52	52	54	53	53	0	0.0	1	1.9
Saratoga town	1,690	1,690	1,682	1,669	1,677	1,696	1,682	1,693	1,650	1,623	-27	-1.6	-67	-4.0

Place	April 1, 2010		Population Estimate (as of July 1)								Chge, 7/1/17 to 7/1/18		Chge, 4/1/10 to 7/1/18	
	Census	Estimates Base	2011	2012	2013	2014	2015	2016	2017	2018	Number	Percent	Number	Percent
Sinclair town	433	433	431	426	428	427	419	421	406	397	-9	-2.2	-36	-8.3
Balance of Carbon County	2,148	2,147	2,155	2,150	2,172	2,183	2,146	2,164	2,112	2,079	-33	-1.6	-68	-3.2
Converse County	**13,833**	**13,833**	**13,737**	**14,028**	**14,366**	**14,203**	**14,299**	**14,101**	**13,744**	**13,640**	**-104**	**-0.8**	**-193**	**-1.4**
Douglas city	6,120	6,110	6,101	6,281	6,482	6,458	6,544	6,483	6,319	6,273	-46	-0.7	163	2.7
Glenrock town	2,576	2,645	2,617	2,655	2,711	2,668	2,677	2,640	2,574	2,554	-20	-0.8	-91	-3.4
Lost Springs town	4	4	4	4	4	4	4	4	4	4	0	0.0	0	0.0
Rolling Hills town	440	432	427	433	439	431	431	422	411	406	-5	-1.2	-26	-6.0
Balance of Converse County	4,693	4,642	4,588	4,655	4,730	4,642	4,643	4,552	4,436	4,403	-33	-0.7	-239	-5.1
Crook County	**7,083**	**7,083**	**7,121**	**7,141**	**7,152**	**7,237**	**7,437**	**7,503**	**7,424**	**7,450**	**26**	**0.4**	**367**	**5.2**
Hulett town	383	379	382	387	394	398	408	411	413	419	6	1.5	40	10.6
Moorcroft town	1,009	1,009	1,018	1,021	1,022	1,032	1,059	1,069	1,056	1,062	6	0.6	53	5.3
Pine Haven town	490	490	493	492	492	499	519	529	523	527	4	0.8	37	7.6
Sundance town	1,182	1,182	1,191	1,207	1,213	1,233	1,266	1,279	1,268	1,274	6	0.5	92	7.8
Balance of Crook County	4,019	4,023	4,037	4,034	4,031	4,075	4,185	4,215	4,164	4,168	4	0.1	145	3.6
Fremont County	**40,123**	**40,123**	**40,511**	**41,009**	**40,908**	**40,562**	**40,228**	**40,223**	**39,834**	**39,531**	**-303**	**-0.8**	**-592**	**-1.5**
Dubois town	971	982	998	1,011	1,005	997	987	984	974	968	-6	-0.6	-14	-1.4
Hudson town	458	461	465	470	469	464	459	457	452	448	-4	-0.9	-13	-2.8
Lander city	7,487	7,597	7,676	7,769	7,798	7,730	7,650	7,623	7,556	7,503	-53	-0.7	-94	-1.2
Pavillion town	231	233	239	242	240	240	238	237	234	232	-2	-0.9	-1	-0.4
Riverton city	10,615	10,923	11,023	11,174	11,180	11,095	11,059	11,172	11,073	10,996	-77	-0.7	73	0.7
Shoshoni town	649	649	657	665	661	660	653	650	653	649	-4	-0.6	0	0.0
Balance of Fremont County	19,712	19,278	19,453	19,678	19,555	19,376	19,182	19,100	18,892	18,735	-157	-0.8	-543	-2.8
Goshen County	**13,249**	**13,247**	**13,573**	**13,637**	**13,547**	**13,526**	**13,551**	**13,333**	**13,404**	**13,376**	**-28**	**-0.2**	**129**	**1.0**
Fort Laramie town	230	230	234	234	232	231	232	228	229	232	3	1.3	2	0.9
La Grange town	448	448	454	455	452	454	450	444	445	444	-1	-0.2	-4	-0.9
Lingle town	468	468	475	477	472	471	469	461	463	462	-1	-0.2	-6	-1.3
Torrington city	6,501	6,501	6,722	6,763	6,740	6,723	6,771	6,669	6,715	6,701	-14	-0.2	200	3.1
Yoder town	151	151	153	154	158	159	159	156	157	156	-1	-0.6	5	3.3
Balance of Goshen County	5,451	5,449	5,535	5,554	5,493	5,488	5,470	5,375	5,395	5,381	-14	-0.3	-68	-1.2
Hot Springs County	**4,812**	**4,812**	**4,805**	**4,829**	**4,830**	**4,786**	**4,717**	**4,654**	**4,686**	**4,555**	**-131**	**-2.8**	**-257**	**-5.3**
East Thermopolis town	254	256	255	256	258	256	252	248	250	243	-7	-2.8	-13	-5.1
Kirby town	92	92	92	92	92	91	90	89	90	87	-3	-3.3	-5	-5.4
Thermopolis town	3,009	3,016	3,011	3,026	3,024	2,997	2,952	2,913	2,931	2,850	-81	-2.8	-166	-5.5

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	Census	Estimates Base	2011	2012	2013	2014	2015	2016	2017	2018	Number	Percent	Number	Percent
Balance of Hot Springs County	1,457	1,448	1,447	1,455	1,456	1,442	1,423	1,404	1,415	1,375	-40	-2.8	-73	-5.0
Johnson County	**8,569**	**8,569**	**8,645**	**8,641**	**8,641**	**8,582**	**8,609**	**8,480**	**8,442**	**8,460**	**18**	**0.2**	**-109**	**-1.3**
Buffalo city	4,585	4,578	4,630	4,630	4,633	4,608	4,632	4,571	4,557	4,573	16	0.4	-5	-0.1
Kaycee town	263	269	271	270	272	271	273	276	276	274	-2	-0.7	5	1.9
Balance of Johnson County	3,721	3,722	3,744	3,741	3,736	3,703	3,704	3,633	3,609	3,613	4	0.1	-109	-2.9
Laramie County	**91,738**	**91,885**	**92,561**	**94,690**	**95,706**	**96,038**	**97,006**	**97,978**	**98,460**	**98,976**	**516**	**0.5**	**7,091**	**7.7**
Albin town	181	186	186	189	189	187	192	203	209	208	-1	-0.5	22	11.8
Burns town	301	301	301	305	311	309	312	314	312	309	-3	-1.0	8	2.7
Cheyenne city	59,466	59,547	60,159	61,420	62,104	62,259	62,904	63,483	63,587	63,957	370	0.6	4,410	7.4
Pine Bluffs town	1,129	1,161	1,163	1,180	1,185	1,173	1,176	1,178	1,176	1,169	-7	-0.6	8	0.7
Balance of Laramie County	30,661	30,690	30,752	31,596	31,917	32,110	32,422	32,800	33,176	33,333	157	0.5	2,643	8.6
Lincoln County	**18,106**	**18,106**	**18,009**	**17,942**	**18,316**	**18,563**	**18,738**	**19,062**	**19,259**	**19,434**	**175**	**0.9**	**1,328**	**7.3**
Afton town	1,911	1,916	1,910	1,907	1,942	1,963	1,969	1,985	2,005	2,006	1	0.0	90	4.7
Alpine town	828	828	821	814	829	837	842	855	866	878	12	1.4	50	6.0
Cokeville town	535	535	528	529	538	546	547	553	551	548	-3	-0.5	13	2.4
Diamondville town	737	737	734	730	744	754	755	760	756	754	-2	-0.3	17	2.3
Kemmerer city	2,656	2,656	2,639	2,630	2,687	2,725	2,733	2,755	2,747	2,734	-13	-0.5	78	2.9
La Barge town	551	551	546	543	553	560	561	565	562	561	-1	-0.2	10	1.8
Opal town	96	96	95	94	98	98	100	105	104	106	2	1.9	10	10.4
Star Valley Ranch town	1,503	1,503	1,492	1,489	1,519	1,537	1,547	1,561	1,581	1,597	16	1.0	94	6.3
Thayne town	366	366	363	360	367	370	371	375	382	383	1	0.3	17	4.6
Balance of Lincoln County	8,923	8,918	8,881	8,846	9,039	9,173	9,313	9,548	9,705	9,867	162	1.7	949	10.6
Natrona County	**75,450**	**75,448**	**76,391**	**78,562**	**81,101**	**81,375**	**82,123**	**80,882**	**79,556**	**79,115**	**-441**	**-0.6**	**3,667**	**4.9**
Bar Nunn town	2,213	2,203	2,248	2,423	2,664	2,744	2,834	2,804	2,771	2,761	-10	-0.4	558	25.3
Casper city	55,316	55,313	56,079	57,674	59,475	59,660	59,990	58,896	57,812	57,461	-351	-0.6	2,148	3.9
Edgerton town	195	199	198	203	208	207	207	204	202	201	-1	-0.5	2	1.0
Evansville town	2,544	2,533	2,763	2,824	2,884	2,860	2,968	2,996	2,950	2,934	-16	-0.5	401	15.8
Midwest town	404	404	400	409	420	415	415	404	397	390	-7	-1.8	-14	-3.5
Mills town	3,461	3,468	3,446	3,514	3,650	3,743	3,854	3,889	3,900	3,915	15	0.4	447	12.9
Balance of Natrona County	11,317	11,328	11,257	11,515	11,800	11,746	11,855	11,689	11,524	11,453	-71	-0.6	125	1.1
Niobrara County	**2,484**	**2,484**	**2,483**	**2,477**	**2,545**	**2,489**	**2,496**	**2,470**	**2,397**	**2,388**	**-9**	**-0.4**	**-96**	**-3.9**
Lusk town	1,567	1,567	1,569	1,577	1,625	1,593	1,598	1,583	1,547	1,541	-6	-0.4	-26	-1.7
Manville town	95	95	95	93	95	93	93	92	88	88	0	0.0	-7	-7.4

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	Census	Estimates Base	2011	2012	2013	2014	2015	2016	2017	2018	Number	Percent	Number	Percent
Van Tassell town	15	15	15	15	15	15	15	14	14	14	0	0.0	-1	-6.7
Balance of Niobrara County	807	807	804	792	810	788	790	781	748	745	-3	-0.4	-62	-7.7
Park County	**28,205**	**28,207**	**28,446**	**28,804**	**29,047**	**28,962**	**28,925**	**29,207**	**29,189**	**29,324**	**135**	**0.5**	**1,117**	**4.0**
Cody city	9,520	9,520	9,597	9,700	9,784	9,721	9,706	9,766	9,782	9,828	46	0.5	308	3.2
Frannie town (pt.)	19	19	19	19	21	19	20	20	20	20	0	0.0	1	5.3
Meeteetse town	327	327	329	332	332	331	328	332	329	330	1	0.3	3	0.9
Powell city	6,314	6,314	6,289	6,377	6,387	6,396	6,329	6,397	6,306	6,310	4	0.1	-4	-0.1
Balance of Park County	12,025	12,027	12,212	12,376	12,523	12,495	12,542	12,692	12,752	12,836	84	0.7	809	6.7
Platte County	**8,667**	**8,667**	**8,695**	**8,727**	**8,709**	**8,772**	**8,797**	**8,667**	**8,561**	**8,566**	**5**	**0.1**	**-101**	**-1.2**
Chugwater town	212	212	213	214	212	212	211	207	203	202	-1	-0.5	-10	-4.7
Glendo town	205	205	206	207	206	208	209	206	204	205	1	0.5	0	0.0
Guernsey town	1,147	1,147	1,163	1,169	1,180	1,191	1,197	1,174	1,151	1,148	-3	-0.3	1	0.1
Hartville town	62	62	62	62	63	63	63	61	60	61	1	1.7	-1	-1.6
Wheatland town	3,627	3,627	3,622	3,627	3,626	3,645	3,650	3,596	3,565	3,553	-12	-0.3	-74	-2.0
Balance of Platte County	3,414	3,414	3,429	3,448	3,422	3,453	3,467	3,423	3,378	3,397	19	0.6	-17	-0.5
Sheridan County	**29,116**	**29,119**	**29,244**	**29,518**	**29,728**	**29,848**	**29,886**	**29,963**	**30,132**	**30,233**	**101**	**0.3**	**1,114**	**3.8**
Clearmont town	142	143	144	144	146	147	146	147	149	150	1	0.7	7	4.9
Dayton town	757	757	769	777	780	790	802	817	820	822	2	0.2	65	8.6
Ranchester town	855	857	876	898	917	940	935	941	971	1,006	35	3.6	149	17.4
Sheridan city	17,444	17,477	17,507	17,671	17,789	17,816	17,816	17,804	17,845	17,849	4	0.0	372	2.1
Balance of Sheridan County	9,918	9,885	9,948	10,028	10,096	10,155	10,187	10,254	10,347	10,406	59	0.6	521	5.3
Sublette County	**10,247**	**10,244**	**10,185**	**10,476**	**10,175**	**10,152**	**10,046**	**9,983**	**9,759**	**9,813**	**54**	**0.6**	**-431**	**-4.2**
Big Piney town	552	564	558	574	555	548	544	538	522	524	2	0.4	-40	-7.1
Marbleton town	1,094	1,111	1,103	1,158	1,126	1,164	1,148	1,138	1,107	1,111	4	0.4	0	0.0
Pinedale town	2,030	2,016	1,999	2,048	1,981	1,961	1,934	1,918	1,873	1,878	5	0.3	-138	-6.8
Balance of Sublette County	6,571	6,553	6,525	6,696	6,513	6,479	6,420	6,389	6,257	6,300	43	0.7	-253	-3.9
Sweetwater County	**43,806**	**43,806**	**43,981**	**45,005**	**45,162**	**44,957**	**44,754**	**44,275**	**43,547**	**43,051**	**-496**	**-1.1**	**-755**	**-1.7**
Bairoil town	106	106	105	107	106	106	104	102	100	98	-2	-2.0	-8	-7.5
Granger town	139	139	138	142	141	140	138	136	133	131	-2	-1.5	-8	-5.8
Green River city	12,515	12,515	12,432	12,698	12,657	12,577	12,432	12,264	12,079	11,978	-101	-0.8	-537	-4.3
Rock Springs city	23,036	23,064	23,340	23,923	24,089	23,976	24,011	23,778	23,373	23,082	-291	-1.2	18	0.1
Superior town	336	341	338	344	342	339	334	329	322	317	-5	-1.6	-24	-7.0
Wamsutter town	451	451	454	462	488	510	502	494	486	478	-8	-1.6	27	6.0

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Balance of Sweetwater County	7,223	7,190	7,174	7,329	7,339	7,309	7,233	7,172	7,054	6,967	-87	-1.2	-223	-3.1
Teton County	**21,294**	**21,298**	**21,414**	**21,625**	**22,318**	**22,777**	**23,016**	**23,161**	**23,261**	**23,081**	**-180**	**-0.8**	**1,783**	**8.4**
Jackson town	9,577	9,628	9,699	9,839	10,171	10,391	10,488	10,553	10,552	10,429	-123	-1.2	801	8.3
Balance of Teton County	11,717	11,670	11,715	11,786	12,147	12,386	12,528	12,608	12,709	12,652	-57	-0.4	982	8.4
Uinta County	**21,118**	**21,121**	**20,893**	**20,994**	**20,953**	**20,827**	**20,770**	**20,691**	**20,456**	**20,299**	**-157**	**-0.8**	**-822**	**-3.9**
Bear River town	518	519	521	524	520	528	526	526	517	513	-4	-0.8	-6	-1.2
Evanston city	12,359	12,398	12,203	12,240	12,204	12,116	12,067	11,993	11,847	11,704	-143	-1.2	-694	-5.6
Lyman town	2,115	2,111	2,091	2,100	2,098	2,086	2,086	2,084	2,069	2,065	-4	-0.2	-46	-2.2
Mountain View town	1,286	1,285	1,289	1,307	1,305	1,293	1,284	1,275	1,255	1,240	-15	-1.2	-45	-3.5
Balance of Uinta County	4,840	4,808	4,789	4,823	4,826	4,804	4,807	4,813	4,768	4,777	9	0.2	-31	-0.6
Washakie County	**8,533**	**8,528**	**8,448**	**8,408**	**8,414**	**8,275**	**8,280**	**8,168**	**8,035**	**7,885**	**-150**	**-1.9**	**-643**	**-7.5**
Ten Sleep town	260	259	258	256	258	256	256	254	256	254	-2	-0.8	-5	-1.9
Worland city	5,487	5,487	5,435	5,419	5,420	5,330	5,334	5,263	5,173	5,075	-98	-1.9	-412	-7.5
Balance of Washakie County	2,786	2,782	2,755	2,733	2,736	2,689	2,690	2,651	2,606	2,556	-50	-1.9	-226	-8.1
Weston County	**7,208**	**7,208**	**7,142**	**7,077**	**7,137**	**7,138**	**7,197**	**7,213**	**6,986**	**6,967**	**-19**	**-0.3**	**-241**	**-3.3**
Newcastle city	3,532	3,533	3,506	3,473	3,481	3,481	3,502	3,521	3,412	3,402	-10	-0.3	-131	-3.7
Upton town	1,100	1,100	1,089	1,083	1,090	1,097	1,105	1,107	1,067	1,064	-3	-0.3	-36	-3.3
Balance of Weston County	2,576	2,575	2,547	2,521	2,566	2,560	2,590	2,585	2,507	2,501	-6	-0.2	-74	-2.9

Note: The April 1, 2010 Population Estimates base reflects changes to the 2010 Census population from the Boundary and Annexation Survey (BAS) and other geographic program revisions. See Geographic Terms and Definitions at http://www.census.gov/programs-surveys/popest/guidance-geographies/terms-and-definitions.html. All geographic boundaries for the 2018 population estimates series are defined as of January 1, 2018. For population estimates methodology statements, see http://www.census.gov/programs-surveys/popest/technical-documentation/methodology.html.

Source: U.S. Census Bureau, Population Division

Release Date: May 2019

POPULATION OF NEBRASKA INCORPORATED PLACES[1]

Nebraska - 1990, 2000, 2010, and 2011 to 2016

	Census Counts			Estimates					
Place	April 1, 1990	April 1, 2000	April 1, 2010	2011	2012	2013	2014	2015	2016
Abie	106	108	69	68	68	68	68	66	66
Adams	472	489	573	580	577	584	588	595	607
Ainsworth	1,870	1,862	1,728	1,698	1,665	1,608	1,623	1,624	1,635
Albion	1,916	1,797	1,650	1,620	1,626	1,616	1,606	1,587	1,599
Alda	540	652	642	651	656	653	655	652	650
Alexandria	224	216	177	175	175	176	177	174	172
Allen	331	411	377	378	371	365	361	364	362
Alliance	9,765	8,959	8,491	8,488	8,466	8,492	8,491	8,496	8,403
Alma	1,226	1,214	1,133	1,142	1,135	1,163	1,153	1,144	1,153
Alvo	164	142	132	132	131	132	132	132	132
Ames CDP	NA	NA	24	NA	NA	NA	NA	NA	NA
Amherst	231	277	248	251	253	254	251	251	253
Anoka	10	10	6	6	6	6	6	6	6
Anselmo	189	159	145	144	143	143	143	143	143
Ansley	555	520	441	437	432	431	427	426	424
Arapahoe	1,001	1,028	1,026	1,024	1,017	1,008	1,014	1,007	997
Arcadia	385	359	311	309	308	306	308	303	305
Archer CDP	NA	NA	81	NA	NA	NA	NA	NA	NA
Arlington	1,178	1,197	1,243	1,244	1,247	1,243	1,248	1,248	1,273
Arnold	679	630	597	592	587	586	581	580	578
Arthur	128	145	117	119	122	115	115	116	119
Ashland	2,136	2,262	2,453	2,475	2,493	2,512	2,542	2,559	2,566
Ashton	251	237	194	194	193	191	190	190	189
Aten CDP	NA	NA	112	NA	NA	NA	NA	NA	NA
Atkinson	1,380	1,244	1,245	1,256	1,252	1,255	1,257	1,240	1,249
Atlanta	114	130	131	130	131	130	130	131	131
Auburn	3,443	3,350	3,460	3,468	3,430	3,386	3,366	3,327	3,299
Aurora	3,810	4,225	4,479	4,450	4,425	4,453	4,457	4,488	4,484
Avoca	254	270	242	241	240	241	242	241	244
Axtell	707	696	726	730	722	722	737	735	735
Ayr	101	98	94	94	94	96	94	94	94
Bancroft	494	520	495	491	485	479	476	480	475
Barada	24	28	24	24	24	24	23	23	23
Barneston	122	122	116	114	113	114	113	114	114
Bartlett	131	128	117	117	116	111	111	110	113
Bartley	339	355	283	283	282	281	277	277	273
Bassett	739	743	619	580	557	563	571	558	562
Battle Creek	997	1,158	1,207	1,209	1,212	1,208	1,196	1,194	1,194
Bayard	1,196	1,247	1,209	1,183	1,164	1,160	1,150	1,146	1,134
Bazile Mills	34	26	29	29	29	28	28	28	28
Beatrice	12,354	12,496	12,459	12,482	12,354	12,381	12,302	12,403	12,362
Beaver City	707	641	609	605	603	594	594	589	580
Beaver Crossing	448	457	403	400	402	400	398	407	407
Bee	209	223	191	190	192	192	192	193	193
Beemer	672	773	678	677	674	666	665	672	664
Belden	149	131	115	114	114	113	112	112	113
Belgrade	157	134	126	126	124	119	117	118	117
Bellevue	39,240	44,382	50,137	51,904	52,488	52,929	52,851	53,146	53,505
Bellwood	395	446	435	428	426	423	419	410	405
Belmar CDP	NA	NA	216	NA	NA	NA	NA	NA	NA
Belvidere	117	98	48	47	47	48	48	47	47
Benedict	230	278	234	234	235	235	236	234	236

Benkelman	1,193	1,006	953	939	940	926	887	842	857
Bennet	544	570	719	761	792	814	836	845	854
Bennington	866	937	1,458	1,474	1,485	1,495	1,501	1,506	1,510
Berea CDP	NA	NA	41	NA	NA	NA	NA	NA	NA
Bertrand	708	786	750	743	742	736	733	738	734
Berwyn	122	134	83	83	82	82	82	82	82
Big Springs	495	418	400	405	405	396	396	393	382
Bladen	280	291	237	235	235	229	230	228	227
Blair	6,860	7,512	7,990	8,000	8,003	7,977	8,000	7,984	8,089
Bloomfield	1,181	1,126	1,028	1,014	1,014	1,003	987	975	985
Bloomington	129	124	103	103	102	99	99	97	97
Blue Hill	810	867	936	923	922	907	903	894	894
Blue Springs	431	383	331	326	323	324	320	321	319
Bow Valley CDP	NA	NA	116	NA	NA	NA	NA	NA	NA
Boys Town	794	818	745	746	669	649	650	636	619
Bradshaw	330	336	273	271	273	277	275	271	270
Brady	331	366	428	424	424	422	419	415	413
Brainard	326	351	330	328	330	330	327	322	320
Brewster	22	29	17	18	18	17	18	18	17
Bridgeport	1,581	1,594	1,545	1,508	1,507	1,510	1,508	1,518	1,497
Bristow	107	88	65	65	64	63	63	63	62
Broadwater	160	140	128	126	124	124	124	124	123
Brock	143	162	112	112	111	110	109	108	107
Broken Bow	3,778	3,491	3,559	3,534	3,503	3,496	3,484	3,549	3,539
Brownlee CDP	NA	NA	15	NA	NA	NA	NA	NA	NA
Brownville	148	146	132	132	131	129	129	127	127
Brule	411	372	326	320	318	314	312	309	306
Bruning	332	300	279	276	275	277	279	275	271
Bruno	141	112	99	98	98	98	97	95	95
Brunswick	182	179	138	137	135	133	134	134	133
Burchard	105	103	82	82	82	80	79	78	78
Burr	75	66	57	57	57	57	57	57	58
Burton	9	11	10	10	10	10	10	10	10
Burwell	1,278	1,130	1,210	1,176	1,176	1,199	1,181	1,206	1,202
Bushnell	119	162	124	123	124	120	122	122	121
Butte	452	366	326	323	321	311	316	311	308
Byron	140	144	83	82	82	82	83	82	81
Cairo	733	790	785	796	803	801	806	804	804
Callaway	539	637	539	535	529	530	526	522	529
Cambridge	1,107	1,041	1,063	1,057	1,049	1,038	1,044	1,049	1,038
Campbell	432	387	347	346	344	333	333	328	328
Carleton	144	136	91	90	90	90	91	90	88
Carroll	237	238	229	228	229	226	224	222	222
Cedar Bluffs	591	615	610	608	602	599	594	595	589
Cedar Creek	334	396	390	390	389	393	396	396	400
Cedar Rapids	438	407	382	375	376	374	370	367	369
Center	112	90	94	94	94	93	92	92	93
Central City	2,868	2,998	2,934	2,896	2,921	2,913	2,889	2,884	2,905
Ceresco	825	920	889	895	896	904	899	897	889
Chadron	5,588	5,634	5,851	5,890	5,868	5,803	5,800	5,766	5,725
Chalco CDP (Sarpy C	7,337	10,736	10,994	NA	NA	NA	NA	NA	NA
Chambers	341	333	268	269	267	269	268	265	263
Champion CDP	NA	NA	103	NA	NA	NA	NA	NA	NA
Chapman	292	341	287	282	284	284	284	285	286
Chappell	979	983	929	943	945	922	927	922	898
Chester	351	294	232	230	229	230	232	229	225

Clarks	379	361	369	360	363	360	355	352	353
Clarkson	699	685	658	660	655	626	636	634	623
Clatonia	296	275	231	227	225	226	225	227	226
Clay Center	825	861	760	751	744	742	734	734	717
Clearwater	401	384	419	418	411	409	408	410	406
Clinton	33	30	41	41	40	40	40	40	40
Cody	177	149	154	155	155	155	155	156	157
Coleridge	596	541	473	470	468	462	456	454	462
Colon	128	138	110	110	109	109	108	109	108
Columbus	19,480	20,971	22,111	22,402	22,511	22,553	22,656	22,751	22,851
Comstock	135	110	93	93	92	92	92	92	92
Concord	156	160	166	167	163	161	159	159	159
Cook	333	322	321	320	319	316	314	317	316
Cordova	147	127	137	136	137	137	137	137	137
Cornlea	39	41	36	36	36	36	36	36	36
Cortland	393	488	482	472	470	470	465	474	472
Cotesfield	60	66	46	46	46	46	46	45	45
Cowles	42	48	30	30	29	29	29	29	29
Cozad	3,823	4,163	3,977	3,971	3,919	3,914	3,896	3,859	3,805
Crab Orchard	47	49	38	38	38	37	37	37	37
Craig	228	241	199	197	194	191	191	191	190
Crawford	1,115	1,107	997	1,001	993	991	974	971	961
Creighton	1,223	1,270	1,154	1,140	1,134	1,118	1,100	1,118	1,117
Creston	220	215	203	203	204	202	203	203	203
Crete	4,841	6,028	6,960	7,053	7,133	7,107	7,076	7,036	7,059
Crofton	820	754	726	715	712	699	690	690	689
Crookston	99	98	69	69	69	70	69	70	71
Culbertson	795	594	595	587	589	586	589	590	578
Curtis	791	832	939	933	933	925	923	895	896
Cushing	25	31	32	32	32	32	32	32	32
Dakota City	1,470	1,821	1,919	1,886	1,887	1,897	1,888	1,901	1,880
Dalton	282	332	315	315	317	317	314	314	311
Danbury	109	127	101	101	100	100	99	99	97
Dannebrog	324	352	303	305	305	308	305	301	301
Davenport	383	339	294	291	290	292	294	290	286
Davey	160	153	154	155	156	157	158	158	157
David City	2,522	2,597	2,906	2,887	2,890	2,900	2,884	2,831	2,815
Dawson	157	209	146	146	145	142	143	142	140
Daykin	188	177	166	168	168	168	163	162	161
Decatur	641	618	481	482	476	467	469	468	465
Denton	161	189	190	192	193	194	195	201	205
Deshler	892	879	747	738	738	745	761	747	744
Deweese	74	80	67	66	66	65	65	65	63
DeWitt	598	572	513	515	517	508	506	504	504
Dickens	16	NA	NA	NA	NA	NA	NA	NA	NA
Diller	298	287	260	260	261	260	253	259	256
Dix	229	267	255	254	254	247	250	252	249
Dixon	109	108	87	87	86	84	83	84	83
Dodge	693	700	612	613	610	608	601	597	598
Doniphan	736	763	829	840	848	846	848	844	844
Dorchester	614	615	586	589	590	580	579	576	576
Douglas	199	231	173	173	173	173	173	174	175
Du Bois	119	166	147	148	147	146	143	141	143
Dunbar	171	237	187	187	187	187	188	188	190
Duncan	387	359	351	355	360	363	363	366	365
Dunning	131	109	103	107	111	105	110	107	106

Dwight	227	259	204	202	202	202	200	197	195
Eagle	1,047	1,105	1,024	1,032	1,025	1,034	1,042	1,048	1,068
Eddyville	102	96	97	97	96	96	96	95	93
Edgar	600	539	498	492	492	489	480	482	470
Edison	148	154	133	133	132	130	131	131	129
Elba	221	243	215	215	213	216	215	216	220
Elgin	731	735	661	651	643	637	632	631	623
Elk Creek	116	112	98	98	97	97	96	97	97
Elkhorn	5,209	6,062	NA	NA	NA	NA	NA	NA	NA
Elm Creek	852	894	901	908	932	939	955	955	960
Elmwood	584	668	634	635	633	640	643	644	649
Elsie	153	139	106	105	105	104	104	106	104
Elwood	679	761	707	676	699	680	675	680	682
Elyria	61	54	51	51	50	50	50	50	50
Emerson	791	817	840	835	826	820	814	816	804
Emmet	70	77	48	48	48	48	48	47	47
Enders CDP	NA	NA	42	NA	NA	NA	NA	NA	NA
Endicott	163	139	132	132	132	132	128	127	126
Ericson	111	104	92	94	91	87	88	87	90
Eustis	452	464	401	396	395	390	388	373	373
Ewing	449	433	387	386	384	386	383	377	372
Exeter	661	712	591	584	574	565	558	538	544
Fairbury	4,335	4,262	3,942	3,934	3,927	3,913	3,792	3,749	3,714
Fairfield	458	467	387	382	378	377	373	373	364
Fairmont	708	691	560	554	543	536	537	539	564
Falls City	4,823	4,671	4,325	4,318	4,302	4,216	4,227	4,186	4,214
Farnam	188	223	171	171	169	169	168	167	165
Farwell	152	148	122	122	121	121	121	121	120
Filley	157	174	132	130	129	129	128	130	129
Firth	471	564	590	600	573	584	586	586	582
Fontanelle CDP	NA	NA	54	NA	NA	NA	NA	NA	NA
Fordyce	190	182	139	138	138	137	136	135	137
Fort Calhoun	648	856	908	913	917	914	919	918	935
Foster	57	63	51	50	50	50	50	50	50
Franklin	1,112	1,026	1,000	996	986	953	947	927	929
Fremont	23,680	25,174	26,397	26,676	26,421	26,400	26,482	26,451	26,519
Friend	1,111	1,174	1,027	1,034	1,034	1,022	1,026	1,012	992
Fullerton	1,452	1,378	1,307	1,314	1,298	1,250	1,245	1,268	1,259
Funk	198	204	194	193	194	193	193	194	193
Gandy	51	30	32	32	33	32	32	33	32
Garland	247	247	216	214	217	217	219	220	220
Garrison	71	67	54	53	53	53	53	52	52
Geneva	2,310	2,226	2,217	2,199	2,155	2,141	2,131	2,133	2,162
Genoa	1,082	981	1,003	999	992	966	950	957	954
Gering	7,946	7,751	8,500	8,496	8,479	8,476	8,375	8,342	8,360
Gibbon	1,525	1,759	1,833	1,852	1,872	1,878	1,885	1,895	1,909
Gilead	37	40	39	39	38	39	39	38	38
Giltner	367	389	352	348	343	342	338	344	347
Glenvil	304	332	310	302	299	298	295	295	288
Glenwood CDP	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goehner	192	186	154	153	154	154	155	156	158
Gordon	1,803	1,756	1,612	1,585	1,576	1,538	1,543	1,531	1,535
Gothenburg	3,232	3,619	3,574	3,579	3,540	3,537	3,528	3,507	3,475
Grafton	167	152	126	125	122	121	120	121	122
Grainton	16	NA	NA	NA	NA	NA	NA	NA	NA
Grand Island	39,386	42,940	48,520	49,482	50,088	50,566	51,118	51,229	51,517

Grant	1,239	1,225	1,165	1,151	1,145	1,125	1,117	1,131	1,115
Greeley Center	562	531	466	464	452	453	454	445	439
Greenwood	531	544	568	567	565	572	574	573	579
Gresham	253	270	223	223	224	224	225	223	222
Gretna	2,249	2,355	4,441	4,965	5,019	5,034	5,026	5,036	5,060
Gross	7	5	2	2	2	2	2	2	2
Guide Rock	290	245	225	221	219	214	213	210	207
Gurley	198	228	214	214	216	215	213	214	211
Hadar	291	312	293	290	291	294	294	301	302
Haigler	225	211	158	160	162	162	153	147	150
Hallam	309	276	213	215	216	218	218	229	236
Halsey	110	59	76	78	80	80	78	78	81
Hamlet	60	54	57	58	56	58	55	55	53
Hampton	432	439	423	423	421	427	428	431	432
Harbine	66	56	49	49	49	49	48	47	47
Hardy	206	179	159	157	157	156	155	154	152
Harrisburg CDP (Bann	NA	75	100	NA	NA	NA	NA	NA	NA
Harrison	291	279	251	254	253	253	251	242	238
Hartington	1,652	1,640	1,554	1,540	1,539	1,522	1,512	1,507	1,523
Harvard	976	998	1,013	1,002	990	986	977	978	954
Hastings	22,837	24,064	24,907	24,983	25,008	25,091	24,900	24,927	24,991
Hayes Center	259	240	214	219	210	216	207	207	200
Hay Springs	693	652	570	562	556	546	552	546	551
Hazard	78	66	70	70	70	69	68	69	68
Heartwell	69	80	71	71	70	70	71	71	70
Hebron	1,765	1,565	1,579	1,564	1,556	1,564	1,561	1,540	1,537
Hemingford	953	993	803	799	803	802	806	799	796
Henderson	999	986	991	990	994	993	1,002	998	995
Hendley	42	38	24	24	24	24	24	24	23
Henry	145	162	106	106	106	106	105	105	105
Herman	256	310	268	267	267	268	268	266	268
Hershey	579	572	665	659	659	661	661	665	663
Hickman [3]	1,081	1,111	1,657	1,737	1,795	1,848	1,975	2,078	2,139
Hildreth	364	370	378	375	371	358	355	347	344
Holbrook	233	225	207	205	204	201	203	202	199
Holdrege	5,671	5,636	5,495	5,503	5,546	5,526	5,518	5,559	5,555
Holmesville CDP	NA	NA	51	NA	NA	NA	NA	NA	NA
Holstein	207	229	214	217	221	224	226	230	230
Homer	553	590	549	543	544	549	541	539	532
Hooper	850	827	830	829	822	823	832	830	834
Hordville	164	150	144	144	143	146	145	146	146
Hoskins	307	283	285	284	290	291	289	286	288
Howard City [4]	203	221	189	189	188	190	190	189	188
Howells	615	632	561	565	561	550	553	555	547
Hubbard	199	234	236	231	233	236	234	234	231
Hubbell	55	73	68	67	67	68	68	67	66
Humboldt	1,003	941	877	876	870	856	855	848	838
Humphrey	741	786	760	763	771	785	792	790	794
Huntley	58	67	44	44	44	45	45	44	44
Hyannis	210	287	182	187	182	184	182	188	190
Imperial	2,007	1,982	2,071	2,091	2,107	2,083	2,078	2,071	2,047
Inavale CDP	NA	NA	117						
Indianola	672	642	584	581	578	573	565	563	553
Inglewood	286	382	325	325	323	322	322	322	322
Inland CDP	NA	NA	62						
Inman	159	148	129	130	129	130	129	127	126

Ithaca	133	168	148	148	147	147	151	151	150
Jackson	230	205	223	219	218	218	216	216	214
Jansen	140	143	118	118	118	118	115	114	113
Johnson	323	280	328	328	331	330	332	327	326
Johnstown	48	53	64	63	62	60	61	61	61
Julian	71	63	59	59	58	58	58	57	57
Juniata	811	693	755	769	785	800	804	820	823
Kearney	24,396	27,431	30,787	31,469	32,040	32,351	32,601	33,039	33,520
Kenesaw	818	873	880	897	908	923	930	948	945
Kennard	371	371	361	361	361	359	357	360	363
Keystone CDP	NA	NA	59	NA	NA	NA	NA	NA	NA
Kilgore	79	99	77	78	77	78	77	78	79
Kimball	2,574	2,559	2,496	2,472	2,464	2,400	2,418	2,423	2,400
King Lake CDP	NA	NA	280	NA	NA	NA	NA	NA	NA
Lakeview CDP	NA	NA	317	NA	NA	NA	NA	NA	NA
Lamar	31	19	23	23	23	23	23	23	23
La Platte CDP	NA	NA	114	NA	NA	NA	NA	NA	NA
Laurel	981	986	964	956	955	956	941	936	950
La Vista	9,840	11,699	15,758	16,833	17,031	17,108	17,050	17,054	17,143
Lawrence	323	312	304	301	300	297	296	295	291
Lebanon	75	70	80	80	80	79	78	78	77
Leigh	447	442	405	404	402	396	400	404	401
Lemoyne CDP	NA	NA	82	NA	NA	NA	NA	NA	NA
Leshara	118	111	112	112	111	111	110	111	110
Lewellen	307	282	224	227	217	209	210	211	211
Lewiston	64	86	68	68	68	67	66	64	64
Lexington	6,600	10,011	10,230	10,236	10,147	10,156	10,105	10,061	10,004
Liberty	74	86	76	75	74	75	74	75	75
Lincoln	191,972	225,581	258,379	262,393	265,697	269,141	273,273	276,611	280,364
Lindsay	321	276	255	256	256	254	254	255	254
Lindy CDP	NA	NA	13	NA	NA	NA	NA	NA	NA
Linwood	91	118	88	87	87	87	86	85	84
Lisco CDP (Garden C	NA	68	64	NA	NA	NA	NA	NA	NA
Litchfield	314	280	262	262	260	259	256	257	255
Lodgepole	368	348	318	318	321	320	317	317	313
Long Pine	396	341	305	301	295	286	286	285	286
Loomis	376	397	382	377	380	380	382	389	389
Lorenzo CDP	NA	NA	58	NA	NA	NA	NA	NA	NA
Loretto CDP	NA	NA	42	NA	NA	NA	NA	NA	NA
Lorton	61	39	41	41	41	41	41	41	41
Louisville	998	1,046	1,106	1,117	1,114	1,125	1,148	1,175	1,224
Loup City	1,104	996	1,029	1,025	1,021	1,019	1,008	1,011	1,000
Lushton	28	33	30	30	30	30	30	30	30
Lyman	452	421	341	339	337	335	330	326	328
Lynch	296	269	245	243	239	234	233	230	226
Lyons	1,144	963	851	844	830	818	814	816	814
McCook	8,112	7,994	7,698	7,673	7,680	7,696	7,595	7,578	7,526
McCool Junction	372	385	409	410	411	411	412	410	410
McGrew	99	103	105	105	105	105	104	104	104
McLean	49	38	36	36	36	35	36	36	35
Macy CDP (Thurston	836	956	1,023	NA	NA	NA	NA	NA	NA
Madison	2,135	2,367	2,438	2,397	2,399	2,397	2,381	2,372	2,364
Madrid	288	265	231	230	232	230	230	235	231
Magnet	69	79	57	57	57	56	56	55	56
Malcolm	372	413	382	390	393	395	399	401	403
Malmo	114	109	120	120	119	119	118	118	118

Manley	170	191	178	164	163	164	164	164	166
Marquette	281	282	229	229	227	229	229	232	232
Marsland	10	NA	NA	NA	NA	NA	NA	NA	NA
Martin CDP	NA	NA	92	NA	NA	NA	NA	NA	NA
Martinsburg	90	103	94	94	92	91	90	90	90
Maskell	54	67	76	76	75	73	73	73	73
Mason City	160	178	171	170	169	169	168	168	170
Max CDP	NA	NA	57	NA	NA	NA	NA	NA	NA
Maxwell	285	315	312	305	305	310	305	302	301
Maywood	313	331	261	261	261	259	258	247	248
Mead	513	564	569	569	563	561	559	557	551
Meadow Grove	332	311	301	301	302	302	302	300	301
Melbeta	116	138	112	112	112	112	111	110	111
Memphis	117	106	114	114	115	115	115	115	114
Merna	377	391	363	361	361	361	359	362	364
Merriman	151	118	128	129	128	129	128	130	131
Milford	1,886	2,070	2,090	2,093	2,157	2,189	2,142	2,108	2,112
Miller	130	156	136	137	139	139	138	138	138
Milligan	328	315	285	281	274	271	269	271	275
Minatare	807	810	816	814	812	815	804	800	802
Minden	2,749	2,964	2,923	2,974	2,976	2,964	3,006	3,004	2,996
Mitchell	1,743	1,831	1,702	1,699	1,701	1,689	1,679	1,668	1,669
Monowi	6	2	1	1	1	1	1	1	1
Monroe	309	307	284	285	289	288	288	288	288
Moorefield	52	52	32	32	32	32	31	31	31
Morrill	974	957	921	920	924	928	917	913	915
Morse Bluff	128	134	135	135	134	134	135	135	137
Mullen	554	491	509	512	490	502	500	500	481
Murdock	267	269	236	235	234	235	238	237	240
Murray	418	481	463	462	461	466	469	470	475
Naper	130	105	84	84	83	81	82	81	80
Naponee	97	132	106	106	105	102	102	100	100
Nebraska City	6,547	7,228	7,289	7,320	7,290	7,269	7,298	7,322	7,347
Nehawka	260	232	204	204	202	204	204	203	206
Neligh	1,742	1,651	1,599	1,609	1,588	1,568	1,549	1,548	1,527
Nelson	627	587	488	481	478	473	469	465	457
Nemaha	188	178	149	149	148	146	146	143	143
Nenzel	8	13	20	20	20	20	20	20	20
Newcastle	271	299	325	326	320	316	317	322	326
Newman Grove	787	797	721	724	733	729	732	729	720
Newport	136	98	97	91	88	89	90	88	89
Nickerson	291	431	369	367	364	361	358	355	353
Niobrara	406	379	370	363	362	355	350	350	349
Nora	24	20	21	21	21	20	20	20	20
Norfolk	21,476	23,516	24,210	24,312	24,392	24,472	24,453	24,384	24,348
Norman	48	49	43	43	43	43	43	43	43
North Bend	1,249	1,213	1,177	1,189	1,197	1,202	1,231	1,232	1,238
North Loup	361	339	297	295	294	292	294	289	291
North Platte	22,605	23,878	24,733	24,561	24,524	24,515	24,246	24,172	24,110
Oak	68	60	66	65	65	65	64	64	63
Oakdale	362	345	322	317	310	305	300	299	294
Oakland	1,279	1,367	1,244	1,230	1,211	1,202	1,198	1,201	1,192
Obert	39	49	23	23	23	23	22	22	23
Oconto	147	141	151	150	149	149	149	149	149
Octavia	132	145	127	126	126	126	124	122	122
Odell	291	345	307	302	300	300	299	301	300

Odessa CDP	NA	NA	130	NA	NA	NA	NA	NA	NA
Offutt West CDP (Sar	10,883	8,901	4,644	NA	NA	NA	NA	NA	NA
Ogallala	5,095	4,930	4,737	4,657	4,648	4,596	4,586	4,569	4,543
Ohiowa	146	142	115	114	112	110	110	110	112
Omaha	335,795	390,007	408,958	435,329	438,517	441,383	443,289	445,273	446,970
O'Neill	3,852	3,733	3,705	3,710	3,686	3,688	3,662	3,650	3,631
Ong	69	67	63	62	62	62	61	61	59
Orchard	439	391	379	374	367	361	356	354	349
Ord	2,481	2,269	2,112	2,115	2,105	2,083	2,086	2,060	2,078
Orleans	490	425	386	387	384	392	388	383	385
Osceola	879	921	880	871	860	856	857	848	843
Oshkosh	986	887	884	880	849	824	825	832	832
Osmond	774	796	783	773	769	767	767	764	756
Otoe	196	217	171	171	171	171	171	172	173
Overland CDP	NA	NA	153	NA	NA	NA	NA	NA	NA
Overton	547	646	594	590	585	583	579	572	563
Oxford	949	876	779	773	768	766	766	762	755
Page	191	157	166	167	165	167	166	164	163
Palisade	381	386	351	347	347	345	346	344	337
Palmer	434	472	472	466	470	469	469	471	474
Palmyra	545	546	545	548	547	549	553	558	565
Panama	207	253	256	263	276	277	281	281	279
Papillion	10,372	16,363	18,894	19,268	19,462	19,559	19,497	19,492	19,597
Parks CDP	NA	NA	23	NA	NA	NA	NA	NA	NA
Pawnee City	1,008	1,033	878	878	872	853	842	827	826
Paxton	536	614	523	514	512	506	504	500	495
Pender	1,208	1,148	1,002	998	1,002	998	1,034	1,052	1,055
Peru	1,110	569	865	789	775	824	835	796	782
Petersburg	388	374	333	327	328	326	322	322	325
Phillips	316	336	287	286	283	286	285	288	289
Pickrell	201	182	199	196	194	195	194	196	195
Pierce	1,615	1,774	1,767	1,749	1,744	1,738	1,739	1,747	1,739
Pilger	361	378	352	354	346	343	340	350	360
Pine Ridge CDP (She	NA	14	NA	NA	NA	NA	NA	NA	NA
Plainview	1,333	1,353	1,246	1,231	1,224	1,220	1,225	1,222	1,204
Platte Center	387	359	336	339	339	338	338	338	338
Plattsmouth	6,415	6,887	6,502	6,500	6,450	6,472	6,488	6,467	6,479
Pleasant Dale	253	245	205	205	212	212	212	211	215
Pleasanton	372	360	341	345	348	349	346	348	350
Plymouth	455	477	409	408	406	403	392	387	382
Polk	345	322	322	317	312	309	309	304	303
Ponca	929	1,062	961	963	955	944	932	938	937
Poole CDP	NA	NA	19	NA	NA	NA	NA	NA	NA
Potter	388	390	337	335	336	336	332	330	326
Prague	282	346	303	311	309	309	306	307	309
Preston	40	50	28	28	28	27	27	27	27
Primrose	69	69	61	60	60	60	59	59	60
Prosser	77	94	66	67	68	69	70	71	71
Raeville CDP	NA	NA	22	NA	NA	NA	NA	NA	NA
Ragan	59	46	38	38	38	39	39	38	39
Ralston	6,236	6,314	5,943	6,722	7,318	7,349	7,343	7,340	7,329
Randolph	983	955	944	938	934	924	919	921	928
Ravenna	1,317	1,341	1,360	1,378	1,386	1,382	1,364	1,369	1,373
Raymond	167	186	167	173	179	180	185	185	184
Red Cloud	1,204	1,131	1,020	1,006	1,000	972	971	965	948
Republican City	199	209	150	150	150	157	156	153	155

Reynolds	104	88	69	69	69	69	67	67	66
Richfield CDP	NA	NA	43	NA	NA	NA	NA	NA	NA
Richland	96	89	73	73	73	72	73	73	72
Rising City	341	386	374	370	370	370	366	360	358
Riverdale	208	213	182	184	186	186	184	184	185
Riverton	162	145	89	89	89	85	85	84	84
Roca	84	220	220	230	237	246	258	266	283
Rockville	122	111	106	106	105	105	104	104	103
Rogers	89	95	95	96	95	94	95	94	93
Rosalie	178	194	160	159	160	159	160	163	164
Roscoe CDP	NA	NA	63	NA	NA	NA	NA	NA	NA
Roseland	247	242	235	238	243	247	249	254	254
Royal	81	75	63	63	62	61	60	60	60
Rulo	191	226	172	172	171	168	167	164	162
Rushville	1,127	999	890	876	873	855	858	848	851
Ruskin	187	195	123	122	121	120	120	119	118
St. Edward	822	796	705	690	698	693	685	680	681
St. Helena	87	86	96	96	95	94	94	93	94
St. Libory CDP	NA	NA	264	NA	NA	NA	NA	NA	NA
St. Paul	2,009	2,218	2,290	2,310	2,324	2,333	2,335	2,355	2,349
Salem	160	138	112	112	111	109	110	109	107
Santee	365	302	346	335	337	341	340	344	347
Sarben CDP	NA	NA	31	NA	NA	NA	NA	NA	NA
Sargent	710	649	525	521	516	514	510	509	507
Saronville	38	61	47	47	46	45	45	45	45
Schuyler	4,052	5,371	6,211	6,258	6,229	6,143	6,199	6,183	6,106
Scotia	318	308	318	316	306	305	304	297	294
Scottsbluff	13,711	14,732	15,039	15,033	15,051	15,024	14,883	14,819	14,883
Scribner	950	971	857	860	852	849	844	845	843
Seneca	78	51	33	NA	NA	NA	NA	NA	NA
Seward	5,641	6,319	6,964	6,991	7,075	7,108	7,132	7,173	7,219
Shelby	690	690	714	706	697	692	695	683	688
Shelton	954	1,140	1,059	1,068	1,077	1,075	1,063	1,060	1,067
Shickley	360	376	341	338	332	330	330	332	337
Sholes	22	24	21	21	21	21	21	20	20
Shubert	237	252	150	150	149	146	147	146	144
Sidney	5,959	6,282	6,757	6,758	6,818	6,821	6,908	6,950	6,888
Silver Creek	437	441	362	354	357	356	357	358	361
Skyline CDP [2]	2,563	NA	NA	NA	NA	NA	NA	NA	NA
Smithfield	53	68	54	51	53	51	51	51	51
Snyder	280	318	300	300	299	297	298	298	298
South Bend	93	86	99	99	98	99	99	99	99
South Sioux City	9,677	11,925	13,353	13,351	13,322	13,350	13,241	13,275	13,120
Spalding	592	537	487	484	468	468	466	459	452
Spencer	536	541	455	452	446	438	438	434	426
Sprague	157	146	142	143	144	145	146	145	145
Springfield	1,426	1,450	1,529	1,568	1,586	1,594	1,588	1,592	1,604
Springview	304	244	242	241	234	234	235	235	232
Stamford	188	202	182	184	183	187	186	185	186
Stanton	1,549	1,627	1,565	1,588	1,562	1,557	1,555	1,512	1,516
Staplehurst	281	270	242	240	243	243	243	242	242
Stapleton	299	301	305	308	309	305	300	310	309
Steele City	101	84	61	61	61	61	59	59	58
Steinauer	92	74	75	75	75	73	72	71	71
Stella	248	220	152	152	151	148	149	147	146
Sterling	451	507	476	475	471	465	459	462	458

Stockham	64	60	44	44	43	43	43	43	43
Stockville	32	36	25	25	25	25	25	24	24
Strang	42	32	29	29	28	28	28	28	28
Stratton	427	396	343	339	340	337	338	339	331
Stromsburg	1,241	1,232	1,171	1,157	1,147	1,140	1,154	1,131	1,140
Stuart	650	625	590	590	587	591	601	597	592
Sumner	210	237	236	235	233	234	232	231	228
Sunol CDP	NA	NA	73	NA	NA	NA	NA	NA	NA
Superior	2,397	2,055	1,957	1,934	1,926	1,907	1,894	1,881	1,856
Surprise	55	44	43	43	43	43	42	41	41
Sutherland	1,032	1,129	1,286	1,361	1,354	1,353	1,340	1,335	1,343
Sutton	1,353	1,447	1,502	1,491	1,472	1,456	1,444	1,441	1,411
Swanton	145	106	94	95	95	94	94	94	95
Syracuse	1,646	1,762	1,942	1,949	1,949	1,952	1,969	1,990	2,007
Table Rock	308	264	269	270	270	264	261	258	260
Talmage	246	268	233	233	233	235	236	237	240
Tamora CDP	51	NA	58	NA	NA	NA	NA	NA	NA
Tarnov	61	63	46	46	46	46	46	46	46
Taylor	186	207	190	186	182	177	178	177	180
Tecumseh	1,702	1,716	1,677	1,669	1,661	1,641	1,626	1,632	1,631
Tekamah	1,852	1,892	1,736	1,805	1,776	1,741	1,742	1,743	1,730
Terrytown	656	646	1,198	1,195	1,195	1,193	1,181	1,173	1,177
Thayer	64	71	62	62	62	62	63	62	62
Thedford	243	211	188	209	210	212	209	209	218
Thurston	115	125	132	131	132	131	132	134	136
Tilden	895	1,078	953	957	954	951	944	939	933
Tobias	127	158	106	107	108	106	106	106	107
Trenton	656	507	560	554	560	554	560	561	553
Trumbull	225	212	205	203	201	200	198	199	194
Tryon CDP	NA	NA	157	NA	NA	NA	NA	NA	NA
Uehling	273	275	230	230	229	228	228	228	228
Ulysses	256	276	171	169	169	169	168	165	164
Unadilla	294	342	311	312	310	313	316	317	322
Union	299	260	233	232	231	233	233	232	235
Upland	169	179	143	143	142	138	137	135	136
Utica	718	844	861	852	857	853	850	842	851
Valentine	2,826	2,820	2,737	2,759	2,764	2,782	2,775	2,827	2,803
Valley	1,775	1,788	1,875	1,910	1,945	1,981	2,036	2,084	2,172
Valparaiso	481	563	570	568	563	560	554	552	547
Venango	192	175	164	166	166	164	163	167	165
Venice CDP	NA	NA	75	NA	NA	NA	NA	NA	NA
Verdel	59	58	30	30	30	30	30	30	30
Verdigre	607	519	575	567	565	560	550	552	557
Verdon	242	223	172	172	171	168	168	167	165
Virginia	94	67	60	59	58	59	58	59	59
Waco	211	256	236	241	242	246	246	245	243
Wahoo	3,681	3,942	4,508	4,513	4,502	4,508	4,487	4,512	4,499
Wakefield	1,147	1,411	1,451	1,451	1,424	1,407	1,404	1,400	1,389
Wallace	308	329	366	363	362	363	360	359	360
Walthill	747	909	780	773	772	763	768	778	784
Walton CDP	NA	NA	306	NA	NA	NA	NA	NA	NA
Wann CDP	NA	NA	86	NA	NA	NA	NA	NA	NA
Washington	125	126	150	150	150	149	149	148	151
Waterbury	95	89	73	73	72	71	70	70	70
Waterloo	479	459	848	860	862	863	865	900	909
Wauneta	675	625	577	582	588	579	579	577	568

Wausa	598	636	634	626	620	605	604	606	607
Waverly	1,869	2,448	3,277	3,481	3,538	3,641	3,714	3,737	3,786
Wayne	5,142	5,583	5,660	5,560	5,594	5,556	5,561	5,570	5,573
Weeping Water	1,008	1,103	1,050	1,050	1,047	1,057	1,062	1,062	1,072
Wellfleet	63	76	78	77	77	77	77	76	76
West Point	3,250	3,660	3,364	3,372	3,349	3,320	3,330	3,368	3,327
Western	264	287	235	237	239	236	236	236	237
Westerville CDP	NA	NA	39	NA	NA	NA	NA	NA	NA
Weston	299	310	324	322	320	322	322	324	326
White Clay CDP	NA	NA	10	NA	NA	NA	NA	NA	NA
Whitney	38	87	77	78	77	77	77	76	76
Wilber	1,527	1,761	1,855	1,878	1,888	1,866	1,872	1,869	1,891
Wilcox	349	360	358	360	356	355	359	358	355
Willow Island CDP	NA	NA	26	NA	NA	NA	NA	NA	NA
Wilsonville	136	118	93	93	92	91	92	91	90
Winnebago	705	768	774	771	772	767	775	788	795
Winnetoon	59	70	68	67	67	66	65	66	66
Winside	434	468	427	423	423	416	412	408	407
Winslow	140	104	103	107	106	106	106	106	106
Wisner	1,253	1,270	1,170	1,167	1,174	1,161	1,168	1,185	1,174
Wolbach	280	287	283	279	268	269	268	263	259
Wood Lake	59	72	63	63	63	64	63	64	65
Woodland Hills CDP	NA	NA	215	NA	NA	NA	NA	NA	NA
Woodland Park CDP	NA	NA	1,866	NA	NA	NA	NA	NA	NA
Wood River	1,156	1,204	1,325	1,342	1,363	1,363	1,366	1,359	1,354
Wymore	1,611	1,656	1,457	1,429	1,412	1,429	1,400	1,412	1,401
Wynot	213	191	166	165	165	167	171	170	176
Yankee Hill CDP	NA	NA	292	NA	NA	NA	NA	NA	NA
York	7,940	8,081	7,766	7,861	7,915	7,937	7,956	7,875	7,860
Yutan	1,064	1,216	1,174	1,192	1,187	1,187	1,195	1,212	1,235
City Total	**1,213,597**	**1,344,395**	**1,416,241**	**1,430,327**	**1,438,750**	**1,445,571**	**1,451,171**	**1,456,992**	**1,463,283**
Nebraska	**1,578,417**	**1,711,263**	**1,826,341**	**1,842,283**	**1,855,725**	**1,868,559**	**1,881,145**	**1,893,765**	**1,903,116**

[1] The population of incorporated places includes most, but not all towns and cities in the state.

[2]Census Designated Places (CDPs) are closely settled population centers without corporate limits. Few CDPs have intra-Census year population estimates.

[3]Corrected 2000 Census count.

[4]Howard City is Boelus.

Sources: U.S. Bureau of the Census, "1990 Census of Population and Housing " and Census Web site (www.census.gov) 2018

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by Nebraska Databook

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PROJECTED COUNTY POPULATIONS

Nebraska - 2005 to 2030

	2005	2010	2015	2020	2025	2030
Adams	33,070	33,830	34,703	35,521	36,218	36,821
Antelope	7,004	6,533	6,108	5,696	5,279	4,856
Arthur	378	361	342	322	301	282
Banner	734	709	663	612	556	498
Blaine	484	435	367	305	248	197
Boone	5,772	5,426	5,011	4,635	4,268	3,897
Box Butte	11,374	11,023	10,319	9,588	8,827	8,050
Boyd	2,261	2,076	1,854	1,652	1,460	1,278
Brown	3,328	3,194	3,057	2,932	2,813	2,696
Buffalo	43,572	45,988	48,101	49,783	51,071	52,104
Burt	7,455	7,240	7,207	7,320	7,550	7,885
Butler	8,720	8,711	8,728	8,762	8,792	8,805
Cass	25,734	27,733	30,037	32,600	35,385	38,381
Cedar	9,066	8,645	8,133	7,670	7,212	6,742
Chase	3,866	3,753	3,659	3,580	3,507	3,434
Cherry	6,098	6,051	5,927	5,788	5,632	5,461
Cheyenne	9,993	10,169	10,319	10,443	10,538	10,611
Clay	6,733	6,629	6,478	6,326	6,155	5,966
Colfax	10,433	10,166	9,755	9,409	9,096	8,790
Cuming	9,688	9,226	8,824	8,469	8,132	7,797
Custer	11,410	10,882	10,417	9,985	9,551	9,106
Dakota	20,349	21,449	22,550	23,681	24,844	26,040
Dawes	8,636	8,701	8,736	8,646	8,451	8,207
Dawson	24,617	25,398	26,287	27,303	28,406	29,568
Deuel	2,004	1,911	1,834	1,762	1,689	1,614
Dixon	6,155	6,166	6,210	6,268	6,325	6,374
Dodge	36,078	36,176	36,625	37,367	38,377	39,673
Douglas	486,929	511,227	532,354	550,918	567,702	583,538
Dundy	2,133	2,042	1,968	1,903	1,840	1,774
Fillmore	6,385	6,164	5,999	5,861	5,723	5,577
Franklin	3,421	3,275	3,150	3,037	2,925	2,812
Frontier	2,795	2,756	2,737	2,714	2,678	2,633
Furnas	5,019	4,795	4,605	4,441	4,287	4,136
Gage	23,306	23,733	24,215	24,715	25,208	25,693
Garden	1,997	1,898	1,814	1,737	1,664	1,595
Garfield	1,816	1,754	1,698	1,648	1,603	1,561
Gosper	2,020	2,096	2,188	2,296	2,419	2,560
Grant	670	579	491	405	325	251
Greeley	2,512	2,239	1,999	1,788	1,596	1,418
Hall	55,104	56,824	58,500	60,210	61,944	63,697
Hamilton	9,568	9,835	10,152	10,494	10,831	11,153
Harlon	3,462	3,369	3,311	3,278	3,255	3,233
Hayes	1,027	1,003	990	979	965	948
Hitchcock	2,970	2,851	2,752	2,666	2,584	2,503
Holt	10,784	9,970	9,251	8,589	7,943	7,295
Hooker	745	697	663	636	613	590
Howard	6,708	6,923	7,188	7,481	7,782	8,085
Jefferson	7,925	7,582	7,307	7,063	6,824	6,582
Johnson	4,695	4,525	4,440	4,398	4,371	4,348
Kearney	6,774	6,959	7,172	7,393	7,607	7,810
Keith	8,330	8,236	8,142	8,046	7,941	7,831
Keya Paha	902	826	757	696	639	585
Kimball	3,782	3,509	3,256	3,016	2,779	2,547
Knox	8,916	8,445	8,063	7,737	7,437	7,150
Lancaster	264,814	280,767	295,073	307,140	317,361	326,375
Lincoln	35,636	36,347	36,995	37,551	38,007	38,386

Logan	740	687	636	588	540	493
Loup	686	638	589	541	494	448
McPherson	507	477	450	426	401	375
Madison	35,488	34,801	34,059	33,223	32,260	31,180
Merrick	8,066	7,691	7,343	7,002	6,651	6,286
Morrill	5,165	5,084	4,993	4,886	4,761	4,625
Nance	3,666	3,405	3,157	2,920	2,685	2,450
Nemaha	6,965	6,767	6,617	6,456	6,260	6,033
Nuckolls	4,739	4,394	4,090	3,807	3,532	3,263
Otoe	15,509	15,704	16,005	16,399	16,868	17,414
Pawnee	2,878	2,734	2,624	2,533	2,447	2,364
Perkins	3,057	2,916	2,793	2,676	2,554	2,426
Phelps	9,449	9,204	8,978	8,756	8,520	8,266
Pierce	7,600	7,583	7,601	7,610	7,581	7,510
Platte	31,262	31,059	30,832	30,535	30,103	29,528
Polk	5,421	5,300	5,211	5,149	5,096	5,042
Red Willow	11,060	10,846	10,684	10,553	10,424	10,283
Richardson	8,732	8,408	8,137	7,892	7,648	7,398
Rock	1,567	1,383	1,209	1,045	890	745
Saline	14,195	14,654	15,213	15,799	16,380	16,960
Sarpy	139,371	156,696	174,201	191,540	208,441	224,709
Saunders	20,458	21,220	22,525	24,306	26,500	29,084
Scotts Bluff	36,752	36,429	36,055	35,627	35,148	34,647
Seward	16,739	17,111	17,559	17,960	18,271	18,509
Sheridan	5,668	5,492	5,362	5,261	5,170	5,086
Sherman	3,112	2,878	2,662	2,458	2,263	2,074
Sioux	1,458	1,407	1,344	1,271	1,189	1,103
Stanton	6,534	6,543	6,535	6,495	6,413	6,293
Thayer	5,436	4,911	4,444	4,025	3,635	3,265
Thomas	623	573	523	473	422	372
Thurston	7,365	7,282	7,222	7,176	7,128	7,072
Valley	4,402	4,222	4,075	3,951	3,835	3,719
Washington	19,772	21,235	23,053	25,140	27,460	30,024
Wayne	9,211	9,184	9,165	9,019	8,749	8,408
Webster	3,762	3,508	3,297	3,113	2,942	2,776
Wheeler	820	776	730	681	629	578
York	14,397	14,465	14,605	14,763	14,901	15,011
Co. Total	**1,758,789**	**1,817,474**	**1,874,059**	**1,927,316**	**1,976,727**	**2,023,618**

Source: University of Nebraska, Bureau of Business Research,
Nebraska County Population Projections, 2009

Last Updated: 7-Dec-09
by Nebraska Databook
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APPENDIX A5-2

POPULATION PROJECTIONS & WATER SUPPLY DEMAND IN THE STUDY AREA

- WATER DEMANDS IN ACRE FEET (AF)—WYOMING, NEBRASKA
- TOTAL WATER DEMAND, MGD AND AF—WYOMING, NEBRASKA
- PROJECTED WATER DEMAND, MGD—WYOMING, NEBRASKA

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Appendix A5-2 Population Estimates

Community	2010 Pop.	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2060 Pop.	2070 Pop.
Guernsey	1,147	1,267	1,400	1,546	1,708	1,887	2,084
Platte County	1,000	1,105	1,221	1,349	1,490	1,646	1,818
Fort Laramie	230	254	281	310	342	378	418
Torrington	6,501	7,181	7,932	8,762	9,679	10,692	11,811
Goshen County	5,400	5,965	6,589	7,278	8,039	8,880	9,809
Wyoming Total	**14,278**	**15,772**	**17,423**	**19,245**	**21,258**	**23,483**	**25,940**
Morrill	921	1,017	1,123	1,240	1,370	1,513	1,671
Mitchell	1,702	1,880	2,077	2,294	2,534	2,799	3,092
Scottsbluff*	15,474	17,093	18,881	20,856	23,038	25,448	28,110
Terrytown**	1,573	1,738	1,920	2,121	2,343	2,588	2,859
Minatare	816	901	995	1,099	1,214	1,341	1,481
Scottsbluff County	3,600	3,977	4,393	4,853	5,361	5,922	6,542
Bayard	1,209	1,335	1,475	1,629	1,799	1,987	2,195
Bridgeport	1,545	1,707	1,886	2,083	2,301	2,542	2,808
Nebraska Total	**26,840**	**29,648**	**32,750**	**36,175**	**39,960**	**44,140**	**48,758**
Total Population	**41,118**	**45,420**	**50,173**	**55,420**	**61,218**	**67,623**	**74,698**

* Scottsbluff includes 435 for County People served by the system

** Terrytown includes 375 for Bellevue and other SIDs

2010 Nebraska populations were from the Nebraska DED

2010 Wyoming populations are from the Wyoming A&I

Appendix A5-2 Demand Projections

2070 Demands based upon Population Projections															
Town	**Guernsey**	**Platte Co**	**Ft. Laramie**	**Torrington**	**Goshen Co.**	**Wyoming Total**	**Morrill**	**Mitchell**	**Scottsbluff**	**Terrytown**	**Minatare**	**Scottsbluff Co.**	**Bayard**	**Bridgeport**	**Nebraska Total**	**Total**
Population	2084	1818	418	11811	9809	**25940**	1671	3092	28110	2859	1481	6542	2195	2808	**48758**	**74698**
Max Demand mgd	0.646	0.564	0.130	3.661	3.041	**8.041**	0.518	0.959	8.714	0.886	0.459	2.028	0.680	0.870	**15.115**	**23.156**
Max Demand AF/day	1.983	1.730	0.398	11.237	9.332	**24.680**	1.590	2.942	26.744	2.720	1.409	6.224	2.088	2.672	**46.389**	**71.069**
Ave Demand mgd	0.323	0.282	0.065	1.831	1.520	**4.021**	0.259	0.479	4.357	0.443	0.230	1.014	0.340	0.435	**7.557**	**11.578**
Ave Demand AF/day	0.991	0.865	0.199	5.619	4.666	**12.340**	0.795	1.471	13.372	1.360	0.705	3.112	1.044	1.336	**23.195**	**35.535**
Yearly Demand AF	361.9	315.7	72.6	2050.8	1703.2	**4504.1**	290.1	536.9	4880.9	496.4	257.2	1135.9	381.1	487.6	**8466.1**	**12970.1**
Yearly Demand mgd	117.9	102.9	23.6	668.2	554.9	**1467.6**	94.5	174.9	1590.3	161.7	83.8	370.1	124.2	158.9	**2758.5**	**4226.0**

2040 Demands based upon Population Projections															
Town	**Guernsey**	**Platte Co**	**Ft. Laramie**	**Torrington**	**Goshen Co.**	**Wyoming Total**	**Morrill**	**Mitchell**	**Scottsbluff**	**Terrytown**	**Minatare**	**Scottsbluff Co.**	**Bayard**	**Bridgeport**	**Nebraska Total**	**Total**
Population	1546	1349	310	8762	7278	**19245**	1240	2294	20856	2121	1099	4853	1629	2083	**36175**	**55420**
Max Demand mgd	0.479	0.418	0.096	2.716	2.256	**5.966**	0.384	0.711	6.465	0.658	0.341	1.504	0.505	0.646	**11.214**	**17.180**
Max Demand AF/day	1.471	1.283	0.295	8.336	6.924	**18.310**	1.180	2.183	19.843	2.018	1.046	4.617	1.550	1.982	**34.418**	**52.728**
Ave Demand mgd	0.240	0.209	0.048	1.358	1.128	**2.983**	0.192	0.356	3.233	0.329	0.170	0.752	0.252	0.323	**5.607**	**8.590**
Ave Demand AF/day	0.735	0.642	0.147	4.168	3.462	**9.155**	0.590	1.091	9.921	1.009	0.523	2.309	0.775	0.991	**17.209**	**26.364**
Yearly Demand AF	268.4	234.2	53.8	1521.4	1263.7	**3341.6**	215.3	398.3	3621.3	368.3	190.8	842.6	282.8	361.7	**6281.2**	**9622.8**
Yearly Demand mgd	87.5	76.3	17.5	495.7	411.8	**1088.8**	70.2	129.8	1179.9	120.0	62.2	274.6	92.2	117.8	**2046.6**	**3135.4**

2030 Demands based upon Population Projections															
Town	**Guernsey**	**Platte Co**	**Ft. Laramie**	**Torrington**	**Goshen Co.**	**Wyoming Total**	**Morrill**	**Mitchell**	**Scottsbluff**	**Terrytown**	**Minatare**	**Scottsbluff Co.**	**Bayard**	**Bridgeport**	**Nebraska Total**	**Total**
Population	1400	1221	281	7932	6589	**17423**	1123	2077	18881	1920	995	4393	1475	1886	**32750**	**50173**
Max Demand mgd	0.434	0.379	0.087	2.459	2.043	**5.401**	0.348	0.644	5.853	0.595	0.308	1.362	0.457	0.585	**10.153**	**15.554**
Max Demand AF/day	1.332	1.162	0.267	7.547	6.269	**16.577**	1.068	1.976	17.964	1.827	0.947	4.180	1.403	1.794	**31.159**	**47.736**
Ave Demand mgd	0.217	0.189	0.044	1.229	1.021	**2.701**	0.174	0.322	2.927	0.298	0.154	0.681	0.229	0.292	**5.076**	**7.777**
Ave Demand AF/day	0.666	0.581	0.134	3.773	3.134	**8.288**	0.534	0.988	8.982	0.913	0.473	2.090	0.702	0.897	**15.580**	**23.868**
Yearly Demand AF	243.1	212.0	48.8	1377.3	1144.1	**3025.2**	195.0	360.6	3278.4	333.4	172.8	762.8	256.1	327.5	**5686.5**	**8711.7**
Yearly Demand mgd	79.2	69.1	15.9	448.8	372.8	**985.7**	63.5	117.5	1068.2	108.6	56.3	248.5	83.4	106.7	**1852.8**	**2838.5**

2017 Demands based upon User Questionnaires/Existing Pumping															
Town	**Guernsey**	**Platte Co**	**Ft. Laramie**	**Torrington**	**Goshen Co.**	**Wyoming Total**	**Morrill**	**Mitchell**	**Scottsbluff**	**Terrytown**	**Minatare**	**Scottsbluff Co.**	**Bayard**	**Bridgeport**	**Nebraska Total**	**Total**
Population	1200	1072	248	6715	6213	**15448**	915	1722	15039	1647	802	3860	1029	1540	**26554**	**42002**
Max Demand mgd	0.600	2.200	0.130	3.800	3.500	**10.230**	0.292	0.852	3.398	1.156	0.241	1.690	0.336	0.534	**8.499**	**18.729**
Max Demand AF/day	1.841	6.752	0.399	11.662	10.741	**31.395**	0.896	2.615	10.428	3.548	0.740	5.186	1.031	1.639	**26.082**	**57.477**
Ave Demand mgd	0.300	1.101	0.066	1.410	1.749	**4.626**	0.146	0.426	3.170	0.432	0.121	0.845	0.168	0.267	**5.575**	**10.201**
Ave Demand AF/day	0.921	3.379	0.203	4.327	5.367	**14.197**	0.448	1.307	9.728	1.326	0.371	2.593	0.516	0.819	**17.109**	**31.306**
Yearly Demand AF	336.0	1233.3	73.9	1579.4	1959.1	**5181.8**	163.5	477.2	3550.9	483.9	135.5	946.5	188.2	299.1	**6244.8**	**11426.6**
Yearly Demand mgd	109.5	401.9	24.1	514.7	638.4	**1688.5**	53.3	155.5	1157.1	157.7	44.2	308.4	61.3	97.5	**2034.9**	**3723.4**

1 AF	=	43560 Ft^3		1 MGD	=	0.646317 cfs
1 Ft^3	=	7.48052 Gal				
1 AF	=	43560 x	7.48052 Gal			
1 AF	=	325851.45		7 cfs	=	10.83059861 MGD
1 AF	=	0.325851 MG			=	33.23784064 AFD
1 MG	=	3.068883 AF	(inverse of 0.325851)			12131.81183 AF YR

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A6

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APPENDIX A6-1

NORTH PLATTE RIVER GAGING STATION RECORDS

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Winter Time Flows (October to March)

Year	Whalen Dam				Near Ft. Laramie				State Line			
	Average (cfs)	Peak (cfs)	Minimum (cfs)	7 Day Minimum (cfs)	Average (cfs)	Peak (cfs)	Minimum (cfs)	7 Day Minimum (cfs)	Average (cfs)	Peak (cfs)	Minimum (cfs)	7 Day Minimum (cfs)
1996	78.8	2330	3.9	5.0	79.1	476	26.0	29.6	320.2	2380	170.0	188.6
1997	409.4	3550	4.1	7.2	47.7	90	38.0	41.9	677.2	3780	140.0	165.1
1998	20.1	234	6.8	8.6	50.5	1000	36.0	40.9	269.5	564	165.0	184.0
1999	11.5	109	4.8	5.6	67.0	106	46.0	46.3	265.2	647	205.0	214.1
2000	16.2	119	6.4	8.8	48.8	65	40.0	44.7	242.0	537	160.0	162.0
2001	15.2	51	7.1	8.7	45.7	54	38.0	40.6	238.9	474	170.0	173.0
2002	8.2	206	2.7	3.1	45.2	60	39.0	40.7	147.9	766	45.6	50.8
2003	7.7	28	2.7	3.3	20.2	36	12.0	14.7	148.3	329	70.0	107.4
2004	10.6	36	6.6	7.5	19.9	49	15.0	15.4	144.3	272	80.0	105.3
2005	7.5	14	3.0	4.3	22.4	38	13.0	16.1	153.6	264	85.0	113.7
2006	6.5	13	2.5	3.3	20.8	28	14.0	17.3	136.0	250	22.0	27.3
2007	6.3	25	2.9	3.7	22.9	34	14.0	15.9	158.4	301	111.0	113.0
2008	10.4	37	5.1	6.1	19.8	32	11.0	12.1	153.0	274	88.0	106.1
2009	12.8	24	5.0	5.3	26.5	52	11.0	12.6	186.5	367	90.0	135.1
2010	16.6	75	7.4	9.5	170.6	644	40.0	47.6	819.7	4740	113.0	216.9
2011	19.1	280	7.0	7.8	52.9	115	38.0	39.1	307.6	1800	178.0	185.1
2012	10.6	220	1.0	1.5	42.9	51	39.0	40.7	196.5	625	134.0	134.1
2013	5.0	29.9	1.4	1.6	29.5	55.4	10.2	11.0	184.2	554	81.7	117.4
2014	14.1	188	3.2	4.5	91.6	130	53.9	58.3	279.0	1,300	120.0	206.9
2015	11.6	235	3.8	4.0	107.1	169	44.4	46.3	297.3	1,410	237.0	241.4
2016	46.6	186	11.9	13.4	159.2	532	40.2	57.6	362.1	1,120	145.0	230.7

Year		Whalen Dam				State Line
		Average (cfs)	Peak (cfs)	Minimum (cfs)	7 Day Minimum (cfs)	
Including April and first half of May	2000	15.6	119.0	3.4	5.2	
Including April and first half of May	2001	14.2	51.0	3.6	4.2	There were times in May where TriState diverted all water
Including April and first half of May	2002	8.3	66.0	3.6	7.6	There was a time in April/May where TriState diverted all but 4 cfs
Including April and most of May	2003	7.1	28.0	1.7	2.4	Nearly all of May TriState diverted all water
Including April and first half of May	2004	10.1	36.0	6.0	6.3	Nearly all of May TriState diverted all water
Including first half of April	2005	7.7	14.0	3.0	4.3	There was a time in June where TriState diveretd all but 7 cfs
Including April and first half of May	2006	7.5	49.0	2.5	3.3	There were times in June where TriState diverted all water
Including first half of April	2007	6.6	6.6	6.6	3.5	There were times in April where TriState diverted all but 7 cfs
Including April (had low flows in July too)	2012	9.5	220.0	0.4	0.8	There was a time in June where TriState diveretd all but 7 cfs
Including first half of April	2013	4.8	29.9	1.4	1.6	
Including first half of April	2014	13.6	188.0	3.2	4.1	
Including most of April	2015	11.0	1095.0	3.2	29.0	

APPENDIX A6-2

GAGING STATIONS —WINTER FLOW QUANTITY

MAP

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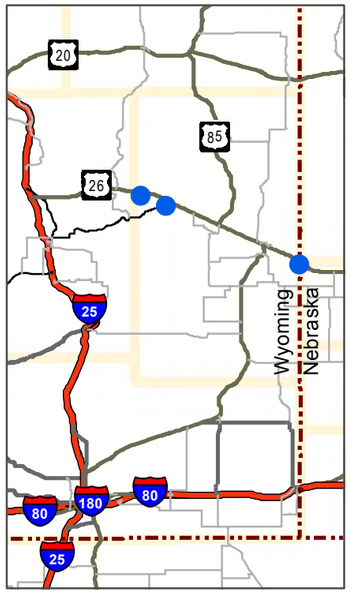
gaging stations - winter flow quantity

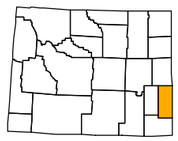
Feet
0 9,000 18,000 27,000 36,000

Document Path: G:\Jobs\RM160321-00 PAWS - Level II Study\Task 7 GIS\PAWSmaps\Sample Analysis\RM160321 PAWS Map—Gaging Stations - Winter Flow Quantity.mxd

RM160321-00
PAWS Level II Study

- Gaging Site
- County Boundary
- Hydrography Line
- Hydrography





Whalen Dam		CFS
2002	Minimum	2.7
	7-Day Minimum	**3.1**
2003	Minimum	2.7
	7-Day Minimum	3.3
2006	Minimum	**2.5**
	7-Day Minimum	3.3
2007	Minimum	2.9
	7-Day Minimum	3.7
2013	Minimum	1.4
	7-Day Minimum	1.6

Near Ft. Laramie		CFS
2002	Minimum	38.0
	7-Day Minimum	40.7
2003	Minimum	12.0
	7-Day Minimum	14.7
2006	Minimum	14.0
	7-Day Minimum	17.3
2007	Minimum	14.0
	7-Day Minimum	15.9
2013	Minimum	**10.2**
	7-Day Minimum	**11.0**

Whalen Dam	2.7	3.1	2.7	3.3	2.5	3.3	2.9	3.7	1.4	1.6
Near Ft. Laramie	38.0	40.7	12.0	14.7	14.0	17.3	14.0	15.9	10.2	11.0
State Line	45.6	50.8	70.0	107.4	22.0	27.3	111.0	113.0	83.7	117.4

State Line		CFS
2002	Minimum	45.6
	7-Day Minimum	50.8
2003	Minimum	70.0
	7-Day Minimum	107.4
2006	Minimum	**22.0**
	7-Day Minimum	**27.3**
2007	Minimum	111.0
	7-Day Minimum	113.0
2013	Minimum	83.7
	7-Day Minimum	117.4

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

MCS FAMILY OF COMPANIES
Engineering Firm | Environmental Consulting Group

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

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APPENDIX A7-1

GIS DEVELOPMENT PLAN

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PAWS Level II Study—GIS Development Plan

Overview

The goal of our GIS development for the Platte Alliance Water Supply (PAWS) project is to provide precise and reliable geospatial data that supports mapping, planning, and ongoing project data management. Ultimately, the GIS data will be provided to participating entities. Because the planned GIS does not have an existing schema to which the GIS must conform, best management practices (BMPs) will be used and subject matter experts (SMEs) will be consulted to create a schema containing newly created and compiled PAWS project geospatial data. In addition to newly created datasets, some existing data that are utilized for this study may also be included in the project geodatabase. Should the Wyoming Water Development Commission (WWDC) make schema available for use in the project following their acceptance of this plan, newly provided schema will be incorporated to the best of our ability to deliver a dataset model that can be used seamlessly in related WWDC systems. Where datasets are obtained from participating cities and counties, existing feature IDs will be retained to aid in data integration back to these entities.

Coordinate System

All datasets will be developed in one common geographic coordinate system—the Decimal Degree system using North American Datum 1983 (NAD83), with elevations in North American Vertical Datum, 1988 (NAVD88).

Metadata

A timely capture of metadata is fundamental to the accountability and quality of the data resource as a whole. Feature dataset and feature level (as part of each attribute table and linked table) metadata will be tracked throughout the geodatabase where applicable: (creator, createDate, dataCollection, dataSource, editor, dateEdited, metaNotes).

Metadata will be developed for all feature types and related/linked tables within the geodatabase providing known accuracy, precision, completeness, data sources, feature descriptions, attribute descriptions, and complete definitions for any coded attributes. Where possible, generic codes will be avoided opting for descriptive attributes.

A draft of metadata standards has been received from WWDC and will be followed to provide the "who, what, why, where" of the data to include keyword tags, purpose summary, descriptive abstract, and credits.

Schema Model

The project schema model will be developed specifically tailored to this project. No existing schema is available or recommended for use in this study. As such, our GIS staff will incorporate BMPs, make use of SMEs, and will incorporate as much as possible any schema adjustments that are made available by WWDC after the initial study schema has been developed.

Domain values will be developed and utilized extensively where applicable for all features, reinforcing uniformity.

Geospatial Datasets

The geospatial datasets assembled for this project will be developed within one cohesive **file geodatabase** containing appropriate **feature datasets**, each with **feature classes**, **attribute tables**, and where appropriate, **relationships**, and **annotation**. Geodatabase Schema will be created in ArcGIS Desktop 10.4.1.

Anticipated Feature Datasets and Feature Classes include those included below in **bold**. Additional feature datasets (numbered) and subsequent (bulleted) feature classes are listed in the event that they are included. The geodatabase deliverable will only contain populated feature classes and feature datasets. It is anticipated that the items shown in **bold** will be included to the extent that they are readily available and freely provided by participating entities, but these features will not be newly mapped, created, digitized, nor captured in the field for inclusion in the geodatabase. Items listed in grayscale are shown merely as potential feature datasets to be included in the future evolution of this geodatabase, will NOT be included in this PAWS Level II Study geodatabase, and are merely shown for planning purposes alone. ***Italics*** is used to show attributes.

1. **AppraisalData**
   - **Community (point)**
2. **WaterModel**
   - **Connection (point)**
   - **wEmergencyStorageOption (point)**
   - **wControlValve (point)**
   - **wFireHydrant (point)**
   - **wFitting (point)**
   - **wLineMain (line)**
     - ***transmissionMain***
   - **wLineService (point)**
   - **wMeter (point)**
   - **wPump (point)**
     - ***PRV***
   - **wPumpStation (polygon)**
   - wWaterServiceArea (polygon)
   - **wSource (point)**
     - ***well***
     - ***spring***
     - ***diversion structure***
   - **wStorage (point)**
     - ***tank***
   - **wTransmission (line)**
   - wWaterUsers (point)
   - **wWaterTreatment (point)**
   - **wWaterTreatment (polygon)**
3. **WaterControl**
   - Bulkhead (line)
   - ControlStructure (line)
   - **Dam (point)**
   - DikeNotch (point)
   - FloodControlEncroachment (point)
   - FloodControlEncroachment (point)
   - FloodControlProtectedLoc (polygon)
   - FloodStorageArea (polygon)
   - Floodwall (line)
   - FlowpathLine (line)
   - HighWaterMark (point)
   - JettyLine (line)
   - Levee_A (polygon)
   - Levee_L (line)
   - LeveeCrossing (point)
   - LeveeStation (point)
   - ToeDrain (line)
   - **WatercourseWithdrawal (point)**
4. **WaterWays**
   - BankArmoring_A (polygon)
   - BankArmoring_L (line)
   - Catchment
   - DischargeFlowStructure_A (polygon)
   - DischargeFlowStructure_L (line)
   - DischargeFlowStructure_P (point)
   - DistMarker (point)
   - Dock (point)
   - DredgingEvent (polygon)
   - **Hydrography (line)**
   - **Hydrography (polygon)**
   - PrecautionaryArea (polygon)
   - **Reservoir (polygon)**
   - RiverBasin
   - RiverineFlowStructure (line)
   - SubBasin

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- SubWatershed
- SupportStructure
- UnderwaterObstacle (line)
- Watershed

5. StormWater
   - dControlValve (point)
   - dCulvert (line)
   - dDischarge (point)
   - dInlet (point)
   - dLineGravity (line)
   - dManhole (point)
   - dOpenDrainage (line)
   - dPump (point)
   - dStorageReservoir (polygon)
   - dStorageReservoir (point)
6. **Wastewater**
   - sCleanOut (point)
   - sControlValve (point)
   - sFitting (point)
   - sGreaseTrap (point)
   - sLineGravityMain (line)
   - sLinePressureMain (line)
   - sLinePressurizedService (line)
   - sManhole (point)
   - sMeter (point)
   - sOilWaterSep (point)
   - **sOutfall (point)**
     - ***DischargeLocation***
   - sPump (point)
   - sPumpStation_A (polygon)
   - sPumpStation_P (point)
   - sSepticTank_A (polygon)
   - sSepticTank_P (point)
   - sTreatmentPlant_A (polygon)
   - sTreatmentPlan_P (point)
7. **Recreation**
   - Campground (point)
   - CanoeAccess (point)
   - FishingAccess (point)
   - GolfCourse (point)
   - **HikingTrail (line)**
   - **nationalRecreationArea (polygon)**
8. **Cadastre**
   - **Easement (polygon)**
     - ***UtilityEasement***
   - **LandParcel (polygon)**
   - **PAWSBoundary (polygon)**
   - **stateBoundary (polygon)**
   - **countyBoundary (polygon)**
   - **urbanAreaBoundary (polygon)**
   - Site_A (polygon)
   - Site_P (area)
9. ElectricalDistribution
10. envCulturalResources
    - archaeologicalSite
    - historicBuilding
    - historicObject
11. envHazMat
12. envHazWaste
13. envIntegratedSolidWaste
14. **envNaturalResources**
    - **irrigatedLand**
    - irrDiversion (point)
    - IrrReturnFlowPoint (point)
    - **irrWaterRights**
    - **ePowerPlant**
15. envRestoration
16. envStorageTanks
17. **envWaterQuality**
    - EnvWtrQualPermit (polygon)
    - **EnvWtrQualSampLoc (point)**
    - SpillIncidentArea (polygon)
18. Geodetic
    - ControlMonumentPoint (point)
    - StationLine (line)
    - SurveyJob (polygon)
    - Transect (line)
19. Landform
    - Contour (line)
    - Soil (polygon)
20. NaturalGas
21. Pavements
22. **Planning**
    - **LandUse**
    - **LandCover**
    - **Wetland**
    - **NaturalArea**
    - **Riparian**
23. RealProperty
24. **Transportation**
    - **RailroadCenterline**
    - **RoadCenterline**

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Attribute Tables

Attribute tables for all feature datasets will contain appropriate feature IDs that relate directly back to their appurtenant sources, i.e. parcel numbers, water system feature IDs.

- **waterPricing**
- **waterUse**
- **waterDemandProj**

Vocabulary

Domain value
A value within a coded domain. Accepted values for a domain as well as an associated description of what that value represents, a method for enforcing data integrity.

Attribute
Non-spatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier.

Feature class
A collection of geographic features with the same geometry type (such as point, line, or polygon), the same attributes, and the same spatial reference. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes.

Feature dataset
A collection of related feature classes that share a common coordinate system and area used to spatially or thematically integrate related feature classes. Their primary purpose is for organizing related feature classes to build topology, network datasets, terrains, or geometric networks.

Relationship class
Define relationships between objects in a geodatabase, they can be simple one-to-one, or complex one-to-many.

Subtype
A subset of features in a feature class or objects in a table that share the same attributes, and are used as a method to categorize the data.

Geodatabase
A collection of files in a folder on disk that can store, query, and manage both spatial and non-spatial data. The PAWS geodatabase will contain feature datasets, feature classes, non-spatial tables, and may contain relationship classes and attachments. Subtypes and domains will be used.

Case Style
Pascal Case (i.e. UpperCamelCase) is the case style in which several words are joined together and the first letter of every word is capitalized. This practice will be used for domain tables, feature classes, and feature dataset names.

Lower Camel Case (i.e. lowerCamelCase) is the case style in which several words are joined together and the first letter of every word is capitalized except for the initial word, which is not capitalized. This practice will be used for compound words in domain values and for attributes as compound words, unless they are a proper name or acronym. i.e. createDate, dataSource,

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Abbreviations
Some abbreviations may be used for specific words, with a key provided in the metadata.

a) Cultural = “Cul”
b) Distance = “Dist”
c) Environmental = “Env”
d) Hazardous (not “Hazard”) = “Haz”
e) Irrigation = “Irr”
f) Location = “Loc”
g) Management = “Mgt”
h) Military = “Mil”
i) Natural = “Nat”
j) Observation = “Obsv”
k) Obstruction = “Obst”
l) Reclamation = “Recl”
m) Recreation (not “Recreational”) = “Rec”
n) Regulated = “Reg”
o) Resource = “Res”
p) Restoration = “Rest”

Data Collection

Features mapped in the field (such as water sampling locations) will be mapped using GPS with sub-meter horizontal accuracy. Additional items (including project area boundaries) may be mapped by digitizing directly on geo-rectified ortho-imagery.

Attributes vs. Multiple Unique Layers

The PAWS GIS project will require bringing together a variety of datasets and conflating the attributes to fit our uniform schema. As such, differences, such as the data source, creation date, creator, project name, horizontal precision, and so forth, will be handled in the attributes and described in the metadata. This allows us to place, for instance, all water meters in the wMeter layer, regardless of their source or horizontal precision. If attributes are unknown, they will be attributed as such. This schema method will reduce the number of project level custom named layers, and provide a uniformity useful for almost any project moving forward. It will also allow one to easily query data for replacement should new data be made available by a community; i.e. citywide estimated meter locations are updated with sub-foot GPS horizontal positions.

Data Products

Maps and datasets will be provided as products of this study. All maps included in the final report will be provided in PDF format. All project data will be provided to WWDC via USB memory sticks.

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APPENDIX A7-2

DATASETS AND MAPS OVERVIEW

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base map	earth map	land use map	people map	utilities map	water utilties	water pricing	water supply, use & demand	surface storage	modeling
political / boundaries / infrastructure	**imagery & surface**	**landuse**	**density**	**natural gas**	**public & private water utilities**	**infrastructure condition**	**water sources**	**surface water**	historic precipitation
PAWS regional boundary	USACE orthophotos	prime farmland	US Census blocks	natural gas utilities	public water service area boundaries	infrastructure age	free-flowing streams	surface water storage	historical/simulated stream flow data
state boundary	DOQQ imagery	farmland of statewide importance	urban population	**electrical distribution**	municipal and other-than-municipal community water supply systems & facilities	materials used	groundwater aquifers	**groundwater**	**basin delineation**
county boundary	Digital Elevation Model (DEM)	farmland of local importance	historic urban growth	electrical utilities	supply	operation and maintenance issues	surface water reservoirs	groundwater storage capacity	river basin
urbanized area boundary	LiDAR	unique farmland	population and demand projections	**wastewater**	wells	maintenance schedules	estimated source yield	**reservoir**	sub-basin
US Census place	USACE contours	grazing land	household density	sanitary sewage systems—wastewater utilities	springs	water metering	reliable source yield	reservoir volume curves	watershed
PLSS	USGS topographic maps	other land	**demographics**	wastewater treatment plant	diversion structures	water loss	**water use**	**service areas**	sub-watershed
parcel ownership	**geology & natural resources**	water	demographics, employment sector (general industry group)	wastewater discharge location	transmission	**water pricing**	historic per capita total water use in region: 1979-2015 gallons per person per day	municipal water supply service areas, sources of supply, and relationship to the region	catchment
easements	hydrologic soil groups	developed land within national/state land	property values	planned sanitary sewer service areas	storage	water pricing surveys	current water use	**emergency**	**hydraulic model**
management areas	contamination attenuation potential of soils	urban and built-up land	income levels	**storm water**	tanks	energy requirements	groundwater protection areas	emergency storage options	users
roads	generalized depth to bedrock	park	education levels	storm water utilities	treatment facilities	current water utilities and local gov pricing	boundary of the groundwater management area		delivered amounts
railroads	bedrock geology (depth to bedrock and surface water)	school	economically disadvantaged communities	storm water management systems	distribution	community's ability to pay for water supply capital improvements and associated O&M	existing data on water withdrawals for various uses: public supply, irrigation, livestock, industrial, mining		pipeline route
county comprehensive plans	bedrock elevation	medical	**ability to pay**	**irrigation**	pump stations		regional water demand projections		pump curves
city comprehensive plans	approximate extent of major pre-glacial bedrock valleys	golf course	community's ability to pay for water supply capital improvements and associated O&M	irrigation districts/features	PRV locations	municipal water supply systems in the region involved in the provision of water to other utilities under cooperative agreements providing for wholesale or retail service: 2016	current regulatory water use classifications for surface waters		pressure reduction
surface water	dikes	wetlands		control points (water rights, return flow points, diversions)	other major system components		**water quality**		valve properties
hydrography (stream network)	faults	railroad			planned service areas		areas of concern		supply parameters
surface drainage and surface water (surface drainage, surface water, watershed boundary, perennial stream, water body, river segments)	groundwater basins	road			self-supplied industrial, commercial, institutional and recreational, agricultural, and irrigation water supply systems		water quality monitoring and modeling: streams, lakes, other water bodies		simulation of system over time
national wetlands inventory	land cover	wastewater treatment			capacity of existing facilities		effluent water quality from water and wastewater utilities influences existing water quality		determination of deficiencies
known springs locations	hydrologic surface water basins	woodlands			**hydrologic watering stations**		**alternatives**		**regional water system plan**
reservoirs		mining			surface water		water source alternatives during droughts		transmission
dams, levees		special purpose units of water supply management			precipitation stations		estimates of water losses in urban areas due to leaking potable water infrastructure		treatment
climate		fens and related groundwater discharge-supported wetlands			observation wells		emergency supply options		pumping and storage needs
weather stations		natural areas and critical species habitat sites			stream flow gaging stations				opportunities for sharing resources
groundwater		area of regional significance			historical & simulated precipitation and streamflow data				model for future
groundwater control areas		environmental corridors							emergency service
wells (domestic, 50 gpm, industrial, irrigation, municipal, cbm)		critical species habitat site							mutual aid
recreation		environmental corridors and isolated natural resource areas							interconnections
campgrounds		agricultural, natural and cultural resouces							regional hydraulic model integrating each individual water system model
fishing access points		**land use change**							
golf course polygons		anticipated modifications in land use							
golf course points		expected changes in cropland irrigation							
gaps in data	gaps in data	gaps in data	gaps in data	gaps in data	gaps in data	gaps in data	gaps in data	gaps in data	gaps in data

APPENDIX A7-3

PAWS GEODATABASE CATALOG

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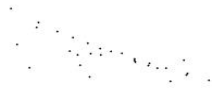
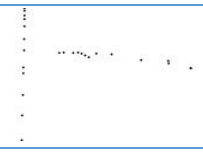
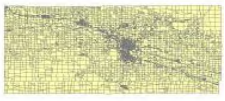
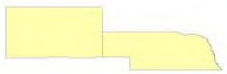
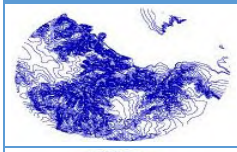
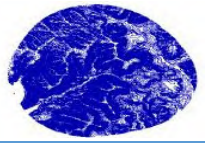
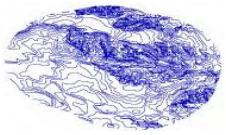
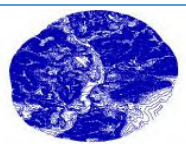
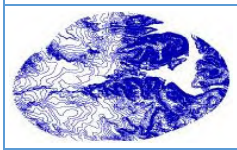
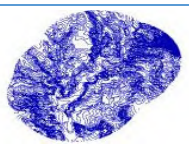
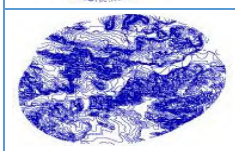
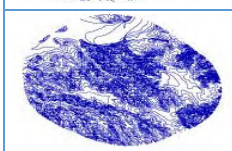
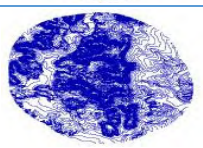
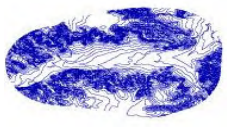
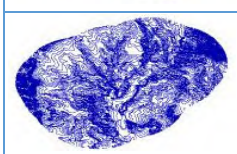
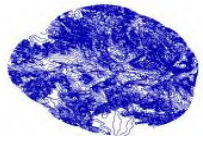
Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	AppraisalData	Community	point	name, population appraisal, max yearly water use, daily water use per capita (gal), water rate base price, water rate base note, water rate add on prices and notes, water source, water treatment
	AsBuiltWater	*Western Nebraska Regional Water System feature layers: CorporationStop, CurbStop, Hydrant, MeterPit, Structure, Valve, WaterFitting, WaterLine, WaterPT, Well*	point, polyline, polygon	various, see AsBuiltWater
	Cadastre	Buffers	polygon	1 mile and 2 mile buffers of North Platte River centerline
	Cadastre	corporateLimits	polygon	name, GIS acres
	Cadastre	countyBoundary	polygon	name, state
	Cadastre	Easement	polygon	possible treatment plant easement, USGS location and elevation
	Cadastre	parcelNEBannerCounty	polygon	parcel ID, legal acres, GIS acres, legal description, section, township, range
	Cadastre	parcelNEBayard	polygon	parcel ID, situs, street name, addition, block, lot, legal description
	Cadastre	parcelNEBridgeport	polygon	situs, streetname, zoning, legal description, subdivision, block, lot, lot size, legal acres, data source, parcel ID
	Cadastre	parcelNEMorrillCounty	polygon	situs, streetname, addition, block, lot, lot size, zoning code, data source, acres, parcel ID
	Cadastre	parcelNEScottsBluffCounty	polygon	parcel ID, acres, ownership, edit date, situs, building-improvements-land values, section, township, range, sale info, year built, subdivision
	Cadastre	parcelNESiouxCounty	polygon	parcel ID, township, range, acres, ownership, legal description

Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	Cadastre	parcelWYGoshenCounty	polygon	parcel ID, ownership, subdivision, lot, block, section, township, range, situs, acres
	Cadastre	parcelWYGuernsey	polygon	parcel ID, township, range, section, aliquot, county, acres, ownership
	Cadastre	parcelWYHartville	polygon	
	Cadastre	parcelWYPlatteCounty	polygon	parcel ID, township, range, section, aliquot, county, acres, ownership
	Cadastre	parcelWYPlatteCountyWestOfPAWS	polygon	parcel ID, township, range, section, aliquot, county, acres, ownership
	Cadastre	PAWSBoundary	polygon	name, area
	Cadastre	quartersWYPlatteCounty	polygon	quarter section
	Cadastre	sectionsWYPlatteCounty	polygon	township, range, section
	Cadastre	stateBoundary	polygon	name, area
	Cadastre	townshipsWYPlatteCounty	polygon	township, range
	envWaterQuality	EnvWtrQualNURE	point	ID number, sample and site characteristics, chemical analyses concentrations
	envWaterQuality	EnvWtrQualSampLoc	point	sample ID, location description

Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	projectReservoir	contour_01 (Guernsey Reservoir south)	polyline	contour elevation, length
	projectReservoir	contour_02 (Davis Bay east)	polyline	contour elevation, length
	projectReservoir	contour_03 (Emigrant Trail Guernsey Reservoir south)	polyline	contour elevation, length
	projectReservoir	contour_04 (Hartville)	polyline	contour elevation, length
	projectReservoir	contour_05 (Newell Bay west)	polyline	contour elevation, length
	projectReservoir	contour_06 (Sawmill Canyon)	polyline	contour elevation, length
	projectReservoir	contour_07 (Whalen Canyon small)	polyline	contour elevation, length
	projectReservoir	contour_08 (Guernsey southwest)	polyline	contour elevation, length
	projectReservoir	contour_09 (Guernsey Reservoir west)	polyline	contour elevation, length
	projectReservoir	contour_10 (Guernsey northeast)	polyline	contour elevation, length
	projectReservoir	contour_11 (Cottonwood Creek)	polyline	contour elevation, length
	projectReservoir	contour_12 (Whalen Canyon large)	polyline	contour elevation, length

Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	projectReservoir	contour_13 (Powerlines Pipelines west of Guernsey Reservoir)	polyline	contour elevation, length
	WaterControl	DamCenterline	polyline	name, surface elevation, surface area, surface acre feet
	WaterControl	GageSite	point	name, number, latitude, longitude, location, elevation, description, gage elevation, drainage area in square miles, non-contributing drainage area
	WaterControl	WatercourseWithdrawal	point	description
	WaterModel	Connection	point	name, connection
	WaterModel	labelCommunityWaterConsumption2017	annotation	community name label
	WaterModel	labelCommunityWaterUse2017	annotation	community 2017 water use label
	WaterModel	wSource	point	well source type, well number, latitude, longitude, elevation, owner, data source method, feature status, ownership status, gallons per minute (gpm), registration number, address, static water level, pumping water level, total depth
	WaterModel	wStorage	point	name, type
	WaterModel	wTransmission	polyline	feature status, pipe ownership, purpose comment
	WaterModel	wWaterTreatmentArea	polygon	location

Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	WaterModel	wWaterTreatmentPoint	point	location
	WaterWays	HydrographyLine	polyline	name, length
	WaterWays	HydrographyPolygon	polygon	name, TIGER MTFCC code
	WaterWays	Reservoir	polygon	name, surface elevation, surface area, surface acre feet
	AsBuiltWater	BoostPump	point	pump ID, description, size, maintenance date, manufacturer, company, feature status, elevation,
	AsBuiltWater	CorporationStop	point	valve ID, description, manufacurer, model, type, size, box type, open direction, normal status, current status, operation date, number of turns, next maintenance date, elevation, subtype, photo
	AsBuiltWater	CurbStop	point	item ID, address, condition, status, elevation, feature status, data source
	AsBuiltWater	DistPump	point	pump ID, pump type, elevation, feature status, data source, photo
	AsBuiltWater	Hydrant	point	hydrant ID, description, type, size, branch size, open direction, manufacturer, model, elevation
	AsBuiltWater	MeterPit	point	meter ID, description, service size, meter size, line material, shut off, pit quantity, read type, radio, condition, meter number, read ID, elevation
	AsBuiltWater	SampleStation	point	manufacturer, item ID, elevation
	AsBuiltWater	Structure	polygon	name
	AsBuiltWater	Tank	point	tank ID, name, comments, capacity, date install, photo
	AsBuiltWater	Valve		valve ID, manufacturer, model, type, subtype, size, box type, open direction, current status, normal status, maintenance date, operation date, number of turns, elevation, feature status
	AsBuiltWater	WaterFitting		fitting ID, fitting type, fitting subtype, fitting size, bend angle, elevation, photo, feature status, data source
	AsBuiltWater	WaterLine		description, material, size, line type, status, status, data source
	AsBuiltWater	WaterPT		item ID, linetype, description, elevation, photo
	AsBuiltWater	Well		well ID, location, status, elevation, feature status, data source, photo
	AsBuiltWater	WaterCustomer	polygon	customer number, customer location number, customer name, location service adddress, meter activity, comments, photo
	AsBuiltWater	WaterService	point	item ID, line type, fitting type, fitting size, bend angle, comment, location source, feature status, data source, elevation, photo
	AsBuiltWater	WaterTower	point	name, photo

Features Preview	Feaure Dataset	Feature Class	Geometry	Notable Attributes
	Cadastre	LandParcel	polygon	parcel ID, ownership, data creator, creator date, data source, source method, metanotes
	Cadastre	urbanAreaBoundary	polygon	name, county, state
	ElectricalDistribution			
	envCulturalResources			
	envHazMat			
	envHazWaste			
	envIntegratedSolidWaste			
	envNaturalResources	ePowerPlant	polygon	data source
	envNaturalResources	irrigatedLand	polygon	data source
	envNaturalResources	irrWaterRights	polygon	data source
	envRestoration			
	envStorageTanks			
	Geodetic			
	Landform			
	NaturalGas			
	Pavements			
	Planning	noteArea	polygon	comments, name, added by, date added, date completed
	Planning	noteLine	polyline	comments, name, added by, date added, date completed
	Planning	notePoint	point	comments, name, added by, date added, date completed
	RealProperty			
	Recreation			
	StormWater			
	Transportation			
	Wastewater	sOutfall	point	discharge location
	WaterControl	Dam	point	name
	WaterModel	wControlValve	point	valve ID
	WaterModel	wEmergencyStorageOption	point	name
	WaterModel	wFireHydrant	point	hydrant ID
	WaterModel	wFitting	point	fitting ID, fitting type
	WaterModel	wLineMain	polyline	water line ID, water line function
	WaterModel	wLineService	point	customer type
	WaterModel	wMeter	point	meter ID
	WaterModel	wPump	point	pump ID, pump type
	WaterModel	wPumpStation	point	pump station ID
	WaterModel	wWaterServiceArea	polygon	name
	WaterModel	wWaterUser	point	name

APPENDIX A7-4

DATA REQUESTS

DRAFT

Request for Goshen County Property Assessment Information

Fees Schedule and Order Form

Current year information becomes available at the end of the current assessment cycle, most typically it will be available by September 1 of that year. New year mapping pdfs are not typically available until April. This information is current as of the statutory Ad Valorem tax lien date of January 1.

Request for hardcopy printout:

Minimum setup fee $10.00 (includes up to 10 pages of printed data.	$10.00 _____
Each additional page of data $.25 each page	$ .25 x ( ) _____
Cost to email rather than print	$ 1.00 _____

Sort Sequence: please check one

(_____) Alphabetical by owner name
(_____) Alphabetical by Legal
(_____) Alphabetical by Tax District, Owner
(_____) Other, _____

Information to be printed: please check all that apply

(_____) Owner name
(_____) Mailing Address
(_____) Site Address
(_____) Tax District
(_____) Legal Description
(_____) Other _____

==========

Request for electronic data transfer files: *No longer offered through the assessor's office*

Can be acquired free of charge at the following link on the State of Wyoming CAMA website

http://cama.state.wy.us/CAMADOWNLOAD/TBLDATADOWNLOAD/AddTBLDATADOWNLOAD.aspx

==========

Request for mapping

(_____) **Ownership Plat PDF** will burn to CD	$500.00 _____
(X) Parcel data shape file	$500.00 _____
(X) Roads data shape file	$150.00 _____

This amount is due and payable prior to this request being processed Total = _____

By making this request for property assessment information, the requestor, by signature below, and in consideration of the information provided hereby agrees to the following terms and conditions. "Goshen County" as used below means; Goshen County, its elected and appointed officials, employees, agents and volunteers.

By requesting property assessment information and signing this form the signatory represents and warrants that they

have the authority to properly bind themselves and any entity they represent to the terms and conditions herein.

Requestor understands and agrees the information requested is found in the un-audited computer files of the Goshen County files. Requestor further understands and agrees Goshen County assumes no responsibility or liability for errors, omissions or incomplete data. Goshen County shall, under no circumstances, be liable for any incidental indirect or special consequential damages including but not limited to loss of use, revenues, profits or savings to requestor or any entities or individuals who receive the information requested herein through or as a result of the actions of requestor.

Goshen County does not waive its Governmental/Sovereign Immunity, as provided by any applicable law including W.S. 1-39-101 et seq., by providing the information requested herein. Further, Goshen County fully retains all immunities and defenses provided by law with regard to any action, whether in tort, contract or any other theory of law, based on actions and information provided pursuant to this request.

Neither Goshen County nor Requestor intends to create in any other individual or entity the status of third party beneficiary, and this request shall not be construed so as to create such status. The rights, duties and obligations contained herein shall operate only between the parties to this request, and shall inure solely to the benefit of the parties to this request.

This request represents the entire and integrated agreement and understanding between the parties to the request for property assessment information and supersedes all prior negotiations, statements, representations and agreements whether written or oral.

The parties mutually understand and agree this request shall be governed by and interpreted pursuant to the laws of the State of Wyoming. If any dispute arises between the parties from or concerning this Agreement or the subject matter hereof, any suit or proceeding at law or in equity shall be brought in the District Court of the State of Wyoming, Eighth Judicial District sitting at Torrington, Wyoming. The foregoing provisions of this paragraph are agreed by the parties to be a material inducement for execution of this request. This provision is not intended, nor shall it be construed, to waive Goshen County's governmental immunity. Further it is the express intent of the parties the provisions of this request are fully severable.

To the fullest extent permitted by law, the requestor agrees to indemnify and hold harmless Goshen County from any and all liability for injuries, damages, claims, penalties, actions, demands or expenses arising from or in connection with this request.

The Goshen County Assessor's Office will process this request and have the data available within 7 business days after receiving payment for this service.

Information Requested by:

Business or Government Agency: M.C. Schaff & Associates, Inc. on behalf of the PAWS (Platte Alliance Water Supply) Level II planning study sponsored by Goshen County, Wyoming and funded by WWDC

Direct Contact Name: Susan Myers, GIS Director

Signature _____Date July 19, 2017

Mailing Address 818 South Beltline Highway East

City, Scottsbluff State NE Zip 69631

Phone: 308.635.1926 Email: smyers@mcschaff.com

Checks can be made payable to and any questions can be directed to Debra Surratt, Goshen County Assessor, P O Box 37, 2125 East A Street, Suite 110 Torrington, WY 82240
Telephone: 307-532-2349 Fax: 307-532-3251 Email: dsurratt@goshencounty.org

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PAWS

PLATTE ALLIANCE WATER SUPPLY



VOLUME 3 OF 3

APPENDICES 8-16

PLATTE ALLIANCE WATER SUPPLY

LEVEL II STUDY

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JULY 31, 2019

Working together for affordable high quality water

APPENDICES

A8

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APPENDIX A8-1

PRELIMINARY HYDRAULIC MODEL RESULTS

JULY 24, 2017

DRAFT

Technical Memo

WENCK
Responsive partner.
Exceptional outcomes.

To: Jeff Fuller, M.C. Schaff & Associates, Inc.

From: Victor Anderson, Wenck
Randy Layton, Wenck

Date: July 24, 2017

Subject: Summary of WaterCAD Model and Results
Hydraulic Model for the Platte Valley Water Supply Transmission Line

1.0 Purpose

The purpose of this technical memorandum is to present the results of the hydraulic model developed by Wenck for the proposed Platte Alliance Water Supply (PAWS) transmission pipeline. Wenck performed this analysis on behalf of M.C. Schaff and Associates, Inc., with information provided by M.C. Schaff & Associates, Inc. as described herein. The following sections describe the evaluation of the adequacy of the water transmission system's ability to meet hydraulic requirements based on current and future demands.

2.0 Background

Per the PAWS Appraisal Investigation prepared by M.C. Schaff & Associates on December 2013, rural communities in Southeast Wyoming and Western Nebraska (**Figure 2.1**) are experiencing deteriorating water quality. Currently, the communities within the PAWS area procure water through alluvial wells located near the North Platte River. The Appraisal Investigation attributes the declining water quality to a potentially greater awareness resulting from increased monitoring and testing. The Investigation also exhibits research that illustrates increasing Nitrate, Uranium, and Arsenic levels in ground water sources as a long-term derivation of the agricultural practices in this area. In accordance with the increasing water contaminant levels, individual communities are faced with the increased cost of constructing or modifying potable water treatment facilities to comply with the Environmental Protection Agency's (EPA) Safe Drinking Water Act (SDWA). To alleviate this pressure, the PAWS Appraisal Investigation recommends the construction of a single water treatment plant, and the provision of a transmission pipeline to deliver potable water from the plant to each of the PAWS communities.

In the Investigation, M.C. Schaff & Associates, Inc. identified various supply sources while considering minimal impact to surface water users. As the intent of this study was to evaluate the hydraulic conditions of the transmission pipeline, it was assumed the "unlimited" water supply initiated at the proposed Water Treatment Plant's (WTP) clear well, rather than from any of the sources identified. It is assumed that the WTP uses conventional processes and is typical of others in the region. In the model, the treated water from the clear well is pumped to the transmission pipeline initiation. Discussed herein are the parameters set for each aspect of the hydraulic model, the corresponding results, and evaluation of the results determining water transmission adequacy.

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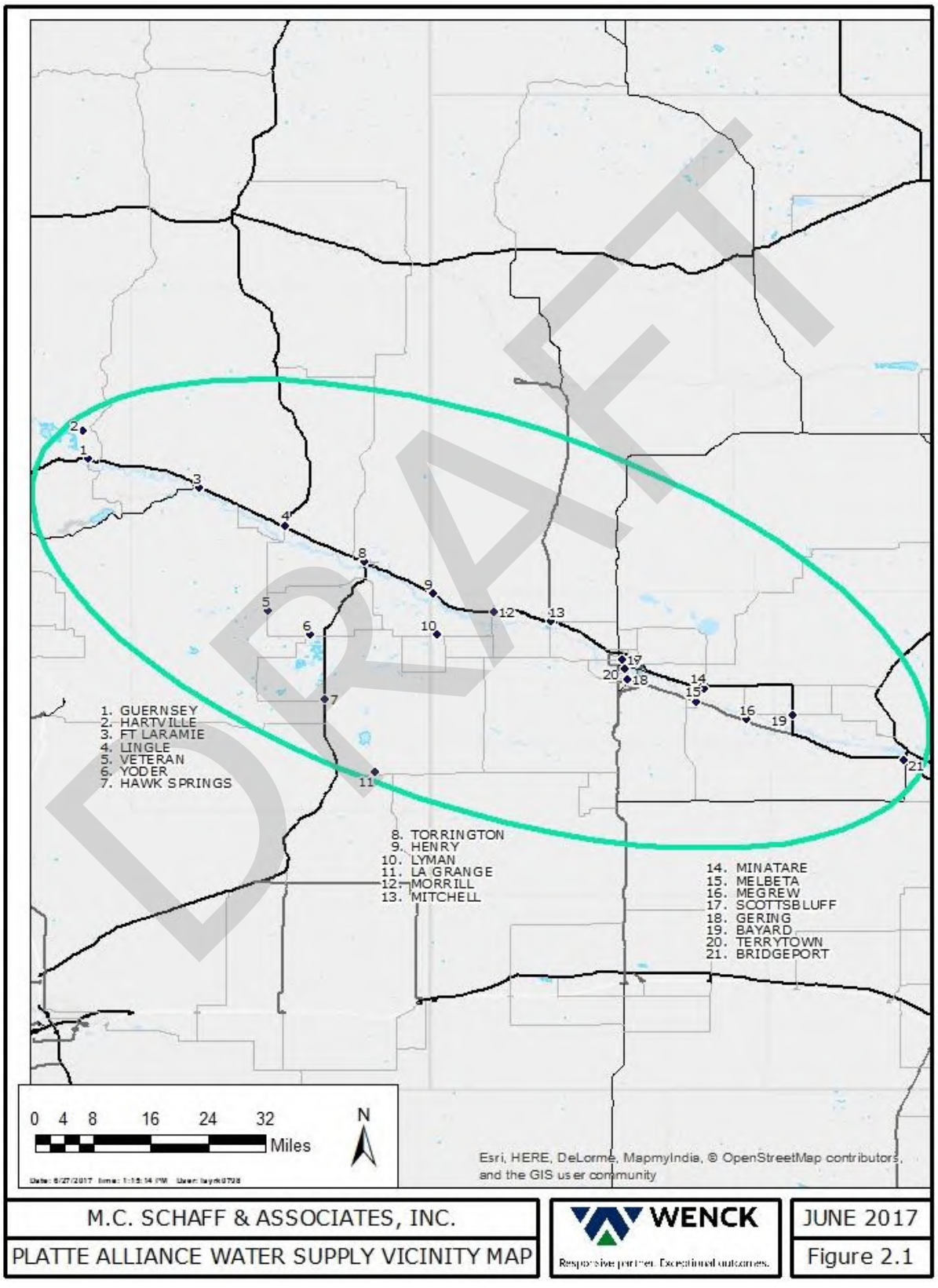
1. GUERNSEY
2. HARTVILLE
3. FT LARAMIE
4. LINGLE
5. VETERAN
6. YODER
7. HAWK SPRINGS
8. TORRINGTON
9. HENRY
10. LYMAN
11. LA GRANGE
12. MORRILL
13. MITCHELL
14. MINATARE
15. MELBETA
16. MEGREW
17. SCOTTSBLUFF
18. GERING
19. BAYARD
20. TERRYTOWN
21. BRIDGEPORT
0 4 8 16 24 32
Miles
N
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
M.C. SCHAFF & ASSOCIATES, INC.
PLATTE ALLIANCE WATER SUPPLY VICINITY MAP
WENCK
Responsive partner. Exceptional outcomes.
JUNE 2017
Figure 2.1

DRAFT

3.0 Methods

Wenck used Bentley Systems water distribution modeling and analysis software, WaterCAD, to generate the hydraulic model for the proposed PAWS transmission line. WaterCAD is widely used as a decision support tool in the design and management of water systems infrastructure. The steady state hydraulic distribution model presented here was created using Bentley WaterCAD V8i.

4.0 Model Setup

To construct a model of the proposed water transmission pipeline and evaluate its hydraulic properties, Wenck obtained existing AutoCAD Civil 3D plan and profile drawings developed by M.C. Schaff & Associates, Inc. The drawings contained the proposed alignment and elevational profile of the pipeline with locations for initiation, service-points (for each community, county, or group of communities), PRV locations, and termination. The model alignment and profile (physical location and elevational) data for the model was derived from these drawings. The provided alignment was edited by Wenck to indicate all known hydraulic model input parameters, generally derived from the alignment itself, the profile, or information in the Appraisal Investigation (**Figure 4.1**). The drawings also contained the static and dynamic Hydraulic Grade Lines (HGLs) for the proposed pipeline. The HGLs shown on the profile were developed from the peak demand, both pressure and flow rates, of the projected 2070 population; considered the worst-case-scenario for the predicted lifespan of the pipeline. These HGLs were invaluable in the determination of each service point's minimum delivery pressure, and pump and PRV requirements as discussed in greater detail in Section 4.2 Hydraulic Components. Many of the alignment, material, and additional hydraulic constraints/properties were derived from the PAWS Appraisal Investigation.

4.1 Transmission Pipeline Alignment

The provided AutoCAD drawing and Appraisal Investigation depict the pipeline initiation in Guernsey where it extends through Fort Laramie, Lingle, Torrington, Henry, Morrill, Mitchell, Scottsbluff, Minatare, and Bayard generally following US Highway 20/26. At Bayard, the pipeline then intersects Nebraska Highway 92 and continues to Bridgeport. In the route described above, the water transmission pipeline has a total length of approximately 103 miles. Wenck established the model under the anticipation that the PAWS pipeline downstream of Guernsey will remain identical regardless of the supply source, as indicated in the Appraisal Investigation. To maintain focus on the hydraulics of the transmission pipeline, the proposed WTP was located adjacent to the initiation of the pipeline in Guernsey. The distance between initiation of the pipeline and the WTP was kept to a minimum to mitigate minor hydraulic losses and to commence the hydraulic grade at approximately the same level indicated on the provided AutoCAD profile detail. Wenck utilized the ModelBuilder attribute of WaterCAD to generate a base model from the provided AutoCAD alignment. Using this method ensured that alignment propagation: initiation, bends, lengths, service-point locations (junctions), PRV locations, and terminations remained equivalent in both magnitude and direction to that proposed (**Figure 4.2**). In **Figure 4.2**, the "J"s indicate junction points (or service-points), which represent a location along the system for which water can be discharged. The junctions indicated were transposed from the AutoCAD drawing where service-points were specified. The "P"s show interconnecting pipeline between each of the junctions.

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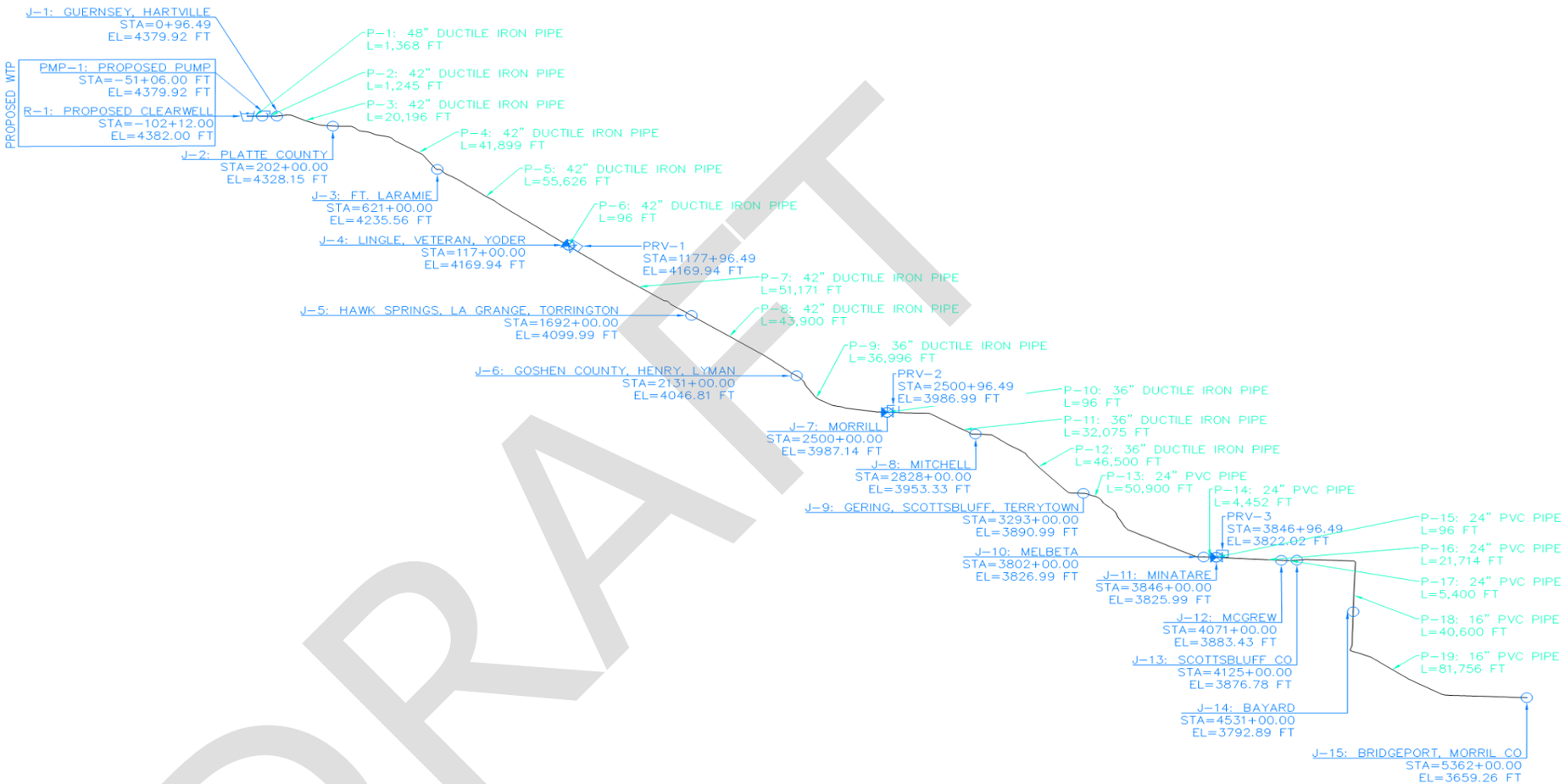

Figure 4.1 – Modified transmission pipeline alignment for hydraulic model use

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Figure 4.2 – PAWS transmission line WaterCAD model representation

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4.2 Hydraulic Components

With the base model developed, additional hydraulic elements were set in place in accordance with the provided AutoCAD drawing and Appraisal Investigation. As alluded to in 4.1 Transmission Pipeline Alignment, the proposed WTP was inserted near the initiation of the pipeline. To model the WTP within WaterCAD, it was translated as a reservoir in series with a pump. WaterCAD assumes a reservoir in the model is an unlimited supply of water, for which any demand from it does not affect its hydraulic grade. The reservoir in the model is representative of the clear well of the WTP. Supply pressure losses to the clear well were considered negligible as the clear well is assumed to have an open water surface with insignificant pressure losses between it and the supply source. Schematically, the potable water from the clear well is then pumped to the transmission line to initiate water distribution. The pump design head was derived from the difference in physical elevation and the dynamic HGL at the pipeline initiation, station 0+00.00 as shown on the provided profile detail. The indicated elevation of the dynamic HGL at station 0+00.00 is 4,650.00 ft. The physical elevation at this point was interpolated through AutoCAD C3D's Profile Inquiry to be 4,379.91 ft. The difference between these elevations is the pressure demand required from the pump, which equals 270.09 ft of head or approximately 117 psi. This pressure requirement from the pump was maintained through all trials regardless of the flow delivered by the pump, as dictated by demand. Demand is discussed in greater detail in section 4.4 Demand. As the WTP is situated adjacent to the start of the transmission pipeline, physical elevations for the components that compose the WTP (reservoir and pump) were assumed to be essentially equivalent, but with slightly greater elevations, as you progress backward, to eliminate a delineation point for backflow or separation to occur.

As described above, the model uses a single pump, and at steady state operation will meet any single given demand state. Ideally, the WTP will use a series of variable speed pumps, likely often operating in unison to meet demands. It is recommended that in subsequent studies, further consideration be given to the hydraulic and sequential requirements of the WTP clear well pump station.

PRV's were transposed in the same manner that junctions were, in the same locations along the alignment as indicated on the provided profile detail (**Figure 4.3**). In **Figure 4.3** "R-1" represent the reservoir, "PMP-1" represents the pump, and "PRV" represents the three respective PRVs. PRV pressure settings were determined in the same manner that the pressure requirement from the pump was determined. Using this method, the outlet pressure setpoints for the PRV-1, PRV-2, and PRV-3 were determined to be 125.4 PSI, 137.9 PSI, and 136.2 PSI, respectively. The determined PRV pressure settings were maintained through all trials regardless of pressure at the inlet of the PRV, as dictated by demand.

The junctions and PRVs, much like the reservoir and pump, require physical elevation as inputs, a critical component to the analysis of a gravity system. Elevations for these components were applied to the model using the provided profile detail. Elevational data for all components of the model remained consistent for all evaluation trials. An important distinction to note, WaterCAD assumes a linear traverse of pipeline section between each junction point (**Figure 4.4**). This is assumed to be a viable evaluation of the pipe routing as Wenck has calculated that the maximum deviation occurring between the physical elevation and the assumed linear profile is 2.53%.



Figure 4.3 – Reservoir, pump, and PRV locations in WaterCAD model.
Note: Junctions omitted for clarity.

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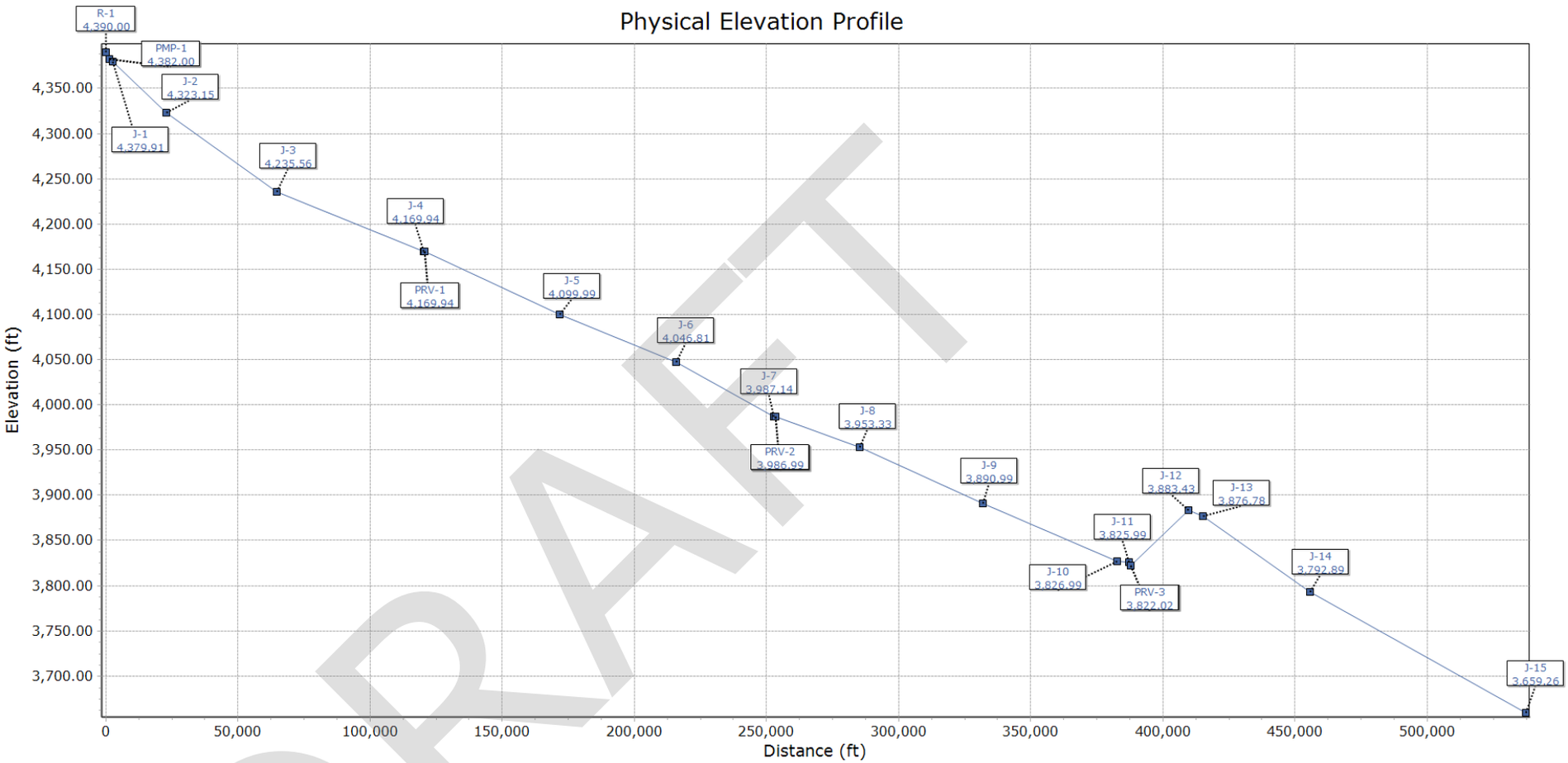

Figure 4.4 – Transmission pipeline physical elevation profile

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4.3 Size and Materials

Piping is the only hydraulic element in the model for which size and material are required as inputs. The information for material of the piping was located in the Bid Item Descriptions of the Cost Estimate in the Appraisal Investigation. Here, the 42 in and 36 in diameter pipelines are identified as being a metallic material. Knowing this a steel material type was utilized for these segments of pipeline. The Bid Descriptions portion of the Appraisal Investigation also indicates that the 24 in and 16 in diameter pipes are to be PVC construction. With this, Wenck applied a PVC material type to these portions of the pipeline. In the model, application of a material type associates common properties of that material to the specified pipe or group of pipes; these properties include: Roughness Height, Young's Modulus, Poisson's Ratio, and friction coefficient based on friction loss method used. Most commonly, in WaterCAD analyses, the Hazen-Williams friction loss method utilized; this is the friction loss method used for this model. Segments of the pipeline requiring specific pipe diameters were clearly indicated in the provided alignment detail. The pipe begins with 42" diameter piping at initiation in Guernsey and through progression decreases size in a step-wise fashion. Decreases along the pipeline occur at three (3) locations: J-6: Goshen Co, Henry, Lyman, J-9: Gering, Scottsbluff, and Terrytown, and J-13: Scottsbluff Co. The piping between the clear well and the pump, and between the pump and transmission line start in Greeley use 42" diameter steel piping, as indicated in the Bid Item Descriptions. Piping composed of steel was assumed to have ½" thick cement lining for the purposes of cathodic and erosive protection.[1] Roughness for the steel sections was modified to indicated a cement lining; changing the Hazen-Williams C coefficient from 140 to 130. Hazen Williams roughness coefficients were maintained for all demand periods as it is assumed that do not change with the age of the pipe for metallic cement-lined and plastic pipes.[2] Wenck verified that the specified pipe geometries and materials were applied to the model as proposed. **Table 4.1** below summarizes the properties of each pipe in the model.

Table 4.1 – WaterCAD model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	42.00	41.00[3]	Steel	130[5]
P-2	1,245	PMP-1	J-1	42.00	41.00[3]	Steel	130[5]
P-3	20,196	J-1	J-2	42.00	41.00[3]	Steel	130[5]
P-4	41,899	J-2	J-3	42.00	41.00[3]	Steel	130[5]
P-5	55,626	J-3	J-4	42.00	41.00[3]	Steel	130[5]
P-6	308	J-4	PRV-1	42.00	41.00[3]	Steel	130[5]
P-7	51,171	PRV-1	J-5	42.00	41.00[3]	Steel	130[5]
P-8	43,900	J-5	J-6	42.00	41.00[3]	Steel	130[5]
P-9	36,996	J-6	J-7	36.00	35.00[3]	Steel	130[5]
P-10	629	J-7	PRV-2	36.00	35.00[3]	Steel	130[5]
P-11	32,075	PRV-2	J-8	36.00	35.00[3]	Steel	130[5]
P-12	46,500	J-8	J-9	36.00	35.00[3]	Steel	130[5]
P-13	50,900	J-9	J-10	24.00	22.76[4]	PVC	150[5]
P-14	4,452	J-10	J-11	24.00	22.76[4]	PVC	150[5]
P-15	734	J-11	PRV-3	24.00	22.76[4]	PVC	150[5]
P-16	21,714	PRV-3	J-12	24.00	22.76[4]	PVC	150[5]
P-17	5,400	J-12	J-13	24.00	22.76[4]	PVC	150[5]
P-18	40,600	J-13	J-14	16.00	15.35[4]	PVC	150[5]
P-19	81,756	J-14	J-15	16.00	15.35[4]	PVC	150[5]

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4.4 Demand

Demand at junctions along the hydraulic model were obtained from Population and Use Projections in the Appraisal Investigation. Projected populations are estimated based on the 2010 census assuming a 1% per year population growth rate. Consumption per capita remained constant for each population projection with average consumption at 155 gallons per capita per day. And peak consumption at twice the average, 310 gallons per capita per day. Utilizing this data, average and max demand was determined at each junction (generally a community, group of communities, or county) for the projected populations of 2020 and 2070. The projected 2020 population average and peak demands were selected as they potentially represent the demand at the approximate installation and implementation period of the pipeline. The projected 2070 population average and peak demands were selected in accordance with the Appraisal Investigation's provision of a 50-year design life water treatment plant. The proposed water treatment plant will be designed initially for the average demand of the projected 2070 population, with the ability to expand the facility to meet maximum demands for said population. Evaluation of the pipeline at the peak demand of the projected 2070 population is prudent to ensure it has the hydraulic capability for transmission without modification. A total of four (4) analyses were performed using the two demand periods and two demand conditions for each period as described above. **Table 4.2** depicts the demand applied to each junction for each analysis based on the period and condition defined.

Table 4.2 – WaterCAD model junction demand inputs for each analysis

Junction	Community	Demand Condition/Period			
		Peak 2070 (MGD)	Average 2070 (MGD)	Peak 2020 (MGD)	Average 2020 (MGD)
J-1	GUERNSEY HARTVILLE	0.76	0.38	0.46	0.23
J-2	PLATTE CO	2.20	1.10	1.33	0.67
J-3	FT. LARAMIE	0.13	0.07	0.08	0.04
J-4	LINGLE VETERAN YODER	0.40	0.20	0.24	0.12
J-5	HAWK SPRINGS LA GRANGE TORRINGTON	3.43	1.72	2.08	1.04
J-6	GOSHEN CO HENRY LYMAN	3.82	1.91	2.31	1.16
J-7	MORRILL	0.53	0.27	0.32	0.16
J-8	MITCHELL	1.01	0.51	0.61	0.31
J-9	GERING SCOTTSBLUFF TERRYTOWN	13.42	6.71	8.13	4.07
J-10	MELBETA	0.08	0.04	0.05	0.02
J-11	MINATARE	0.49	0.25	0.30	0.15
J-12	MCGREW	0.06	0.03	0.04	0.02
J-13	SCOTTSBLUFF CO	4.91	2.46	2.97	1.49
J-14	BAYARD	0.62	0.31	0.38	0.19
J-15	BRIDGEPORT MORILL CO	2.22	1.11	1.34	0.67
	SUM	**34.08**	**17.04**	**20.64**	**10.34**

To account for varying demand amongst each of these trials, the required pump flow rate was altered to match each demand flow rate as indicated in **Table 4.2** above. All other

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hydraulic component properties remained the same across each trial, including pressure demand from the pump.

The above summarizes the flow rate requirements of the system based on each demand period and associated condition; pressure requirements at each junction were derived from the supplied profile drawing. The pressure requirement at each junction was interpolated in the same manner the pressure rise and drop from the pump and PRV's was determined. The pressure requirements at each junction are summarized in **Table 4.3**. Evaluation of the transmission line's adequacy was partially determined in its ability to meet or exceed these pressure requirements at each demand period and condition.

Table 4.3 – Pressure requirement at each junction

Junction	Community	HGL (FT)	Elevation (FT)	Desired Pressure (PSI)
J-1	GUERNSEY HARTVILLE	4650.00	4,379.91	117.09
J-2	PLATTE CO	4611.40	4,323.15	124.96
J-3	FT. LARAMIE	4540.87	4,235.56	132.36
J-4	LINGLE VETERAN YODER	4459.10	4,169.94	125.36
J-5	HAWK-SPRINGS LA GRANGE TORRINGTON	4386.65	4,099.99	124.27
J-6	GOSHEN CO HENRY LYMAN	4337.01	4,046.81	125.81
J-7	MORRILL	4305.20	3,987.14	137.89
J-8	MITCHELL	4247.79	3,953.33	127.66
J-9	GERING SCOTTSBLUFF TERRYTOWN	4172.96	3,890.99	122.24
J-10	MELBETA	4139.10	3,826.99	135.31
J-11	MINATARE	4136.22	3,825.99	134.49
J-12	MCGREW	4123.08	3,883.43	103.89
J-13	SCOTTSBLUFF CO	4119.97	3,876.78	105.43
J-14	BAYARD	4076.11	3,792.89	122.78
J-15	BRIDGEPORT MORILL CO	3882.30	3,659.26	96.69

5.0 Model Results

The model results show that the proposed PAWS transmission pipeline is inadequate in water distribution for the peak pressure and flow demands of the projected 2070 population. At this demand period and condition, the pipeline is unable to meet the pressure requirement, as show in **Table 4.3**, at junctions J-3 thru J-15. Similarly, the proposed pipeline in unable to meet the pressure requirements of junctions J-12 and J-13 for the peak demand of the projected 2020 population. **Figures 5.1-5.8** show plans and corresponding model results indicating hydraulic quantities for each component at each of the demand periods/conditions.
As demands were not met with the transmission pipeline as proposed, Wenck made consideration for meeting these demands by modifying the pipeline size; namely, the diameters of the composing pipes. Wenck performed an iterative analysis, entering various

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plausible pipe diameters for each pipe, maintaining pipe size change locations, to optimize between meeting demand and minimizing material expenditure. **Table 5.1** expresses the optimized, recommended, pipe diameters from this procedure.

Table 5.1 – Optimized/recommended transmission line pipe properties

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	45.00	44.00	Steel	130
P-2	1,245	PMP-1	J-1	45.00	44.00	Steel	130
P-3	20,196	J-1	J-2	45.00	44.00	Steel	130
P-4	41,899	J-2	J-3	45.00	44.00	Steel	130
P-5	55,626	J-3	J-4	45.00	44.00	Steel	130
P-6	308	J-4	PRV-1	45.00	44.00	Steel	130
P-7	51,171	PRV-1	J-5	45.00	44.00	Steel	130
P-8	43,900	J-5	J-6	45.00	44.00	Steel	130
P-9	36,996	J-6	J-7	42.00	41.00	Steel	130
P-10	629	J-7	PRV-2	42.00	41.00	Steel	130
P-11	32,075	PRV-2	J-8	42.00	41.00	Steel	130
P-12	46,500	J-8	J-9	42.00	41.00	Steel	130
P-13	50,900	J-9	J-10	30.00	28.77	PVC	150
P-14	4,452	J-10	J-11	30.00	28.77	PVC	150
P-15	734	J-11	PRV-3	30.00	28.77	PVC	150
P-16	21,714	PRV-3	J-12	30.00	28.77	PVC	150
P-17	5,400	J-12	J-13	30.00	28.77	PVC	150
P-18	40,600	J-13	J-14	18.00	17.27	PVC	150
P-19	81,756	J-14	J-15	18.00	17.27	PVC	150

Figures 5.7-5.8 display the resulting hydraulic quantities of the model for each demand period/condition using the pipe geometries shown in **Table 5.1**. The recommended pipe sizes ensure that minimum pressure requirements at each service point is met for each demand period/condition without exceeding the maximum pressure of 225 PSI, as indicated in the Appraisal Investigation.

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NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.60 MGD, HARTVILLE 0.16 MGD
HGL=4655.00 FT
EL=4379.91 FT
P=119.0 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4657.79 FT
EL=4382.00 FT
Q=34.08 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=5.75 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=5.75 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=33.32 MGD
V=5.62 FT/S

J-2: PLATTE COUNTY 2.20 MGD
HGL=4611.68 FT
EL=4323.15 FT
P=124.8 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=31.12 MGD
V=5.25 FT/S

J-3: FT. LARAMIE 0.13 MGD
HGL=4532.47 FT
EL=4235.56 FT
P=128.5 PSI

P-5: 42" CEMENT LINED STEEL PIPE
Q=30.99 MGD
V=5.23 FT/S

P-6: 42" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=5.16 FT/S

J-4: LINGLE 0.28 MGD, VETERAN 0.03 MGD, YODER 0.09 MGD
HGL=4428.13 FT
EL=4169.94 FT
P=111.7 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=111.5 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=5.16 FT/S

J-5: HAWK SPRINGS 0.04 MGD, LA GRANGE 0.19 MGD, TORRINGTON 3.20 MGD
HGL=4333.86 FT
EL=4099.99 FT
P=101.2 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=27.16 MGD
V=4.58 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=23.34 MGD
V=5.40 FT/S

J-6: GOSHEN COUNTY 3.50 MGD, HENRY 0.09 MGD, LYMAN 0.23 MGD
HGL=4269.37 FT
EL=4046.81 FT
P=96.3 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=83.2 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=5.28 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=5.28 FT/S

J-7: MORRILL 0.53 MGD
HGL=4180.64 FT
EL=3987.14 FT
P=83.7 PSI

P-12: 36" CEMENT LINED STEEL PIPE
Q=21.80 MGD
V=5.05 FT/S

J-8: MITCHELL 1.01 MGD
HGL=4105.48 FT
EL=3953.33 FT
P=65.8 PSI

P-13: 24" PVC PIPE
Q=8.38 MGD
V=4.59 FT/S

P-14: 24" PVC PIPE
Q=8.30 MGD
V=4.55 FT/S

J-9: GERING 4.36 MGD, SCOTTSBLUFF 8.38 MGD, TERRYTOWN 0.68 MGD
HGL=4007.21 FT
EL=3890.99 FT
P=50.3 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=25.8 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=7.81 MGD
V=4.28 FT/S

P-16: 24" PVC PIPE
Q=7.81 MGD
V=4.28 FT/S

P-17: 24" PVC PIPE
Q=7.75 MGD
V=4.24 FT/S

J-10: MELBETA 0.08 MGD
HGL=3892.92 FT
EL=3826.99 FT
P=28.5 PSI

J-11: MINATARE 0.49 MGD
HGL=3883.10 FT
EL=3825.99 FT
P=24.7 PSI

P-18: 16" PVC PIPE
Q=2.84 MGD
V=3.42 FT/S

J-12: MCGREW 0.06 MGD
HGL=3838.87 FT
EL=3883.43 FT
P=-19.3 PSI

P-19: 16" PVC PIPE
Q=2.22 MGD
V=2.67 FT/S

J-13: SCOTTSBLUFF CO 4.91 MGD
HGL=3828.38 FT
EL=3876.78 FT
P=-20.9 PSI

J-14: BAYARD 0.62 MGD
HGL=3744.67 FT
EL=3792.89 FT
P=-20.9 PSI

J-15: BRIDGEPORT 0.80 MGD, MORRIL CO 1.42 MGD
HGL=3637.85 FT
EL=3659.26 FT
P=-9.3 PSI

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PROJECT NUMBER: B6391-0001 | PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY | SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
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REV	DESCRIPTION OF REVISION	BY	DATE
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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2070 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.1

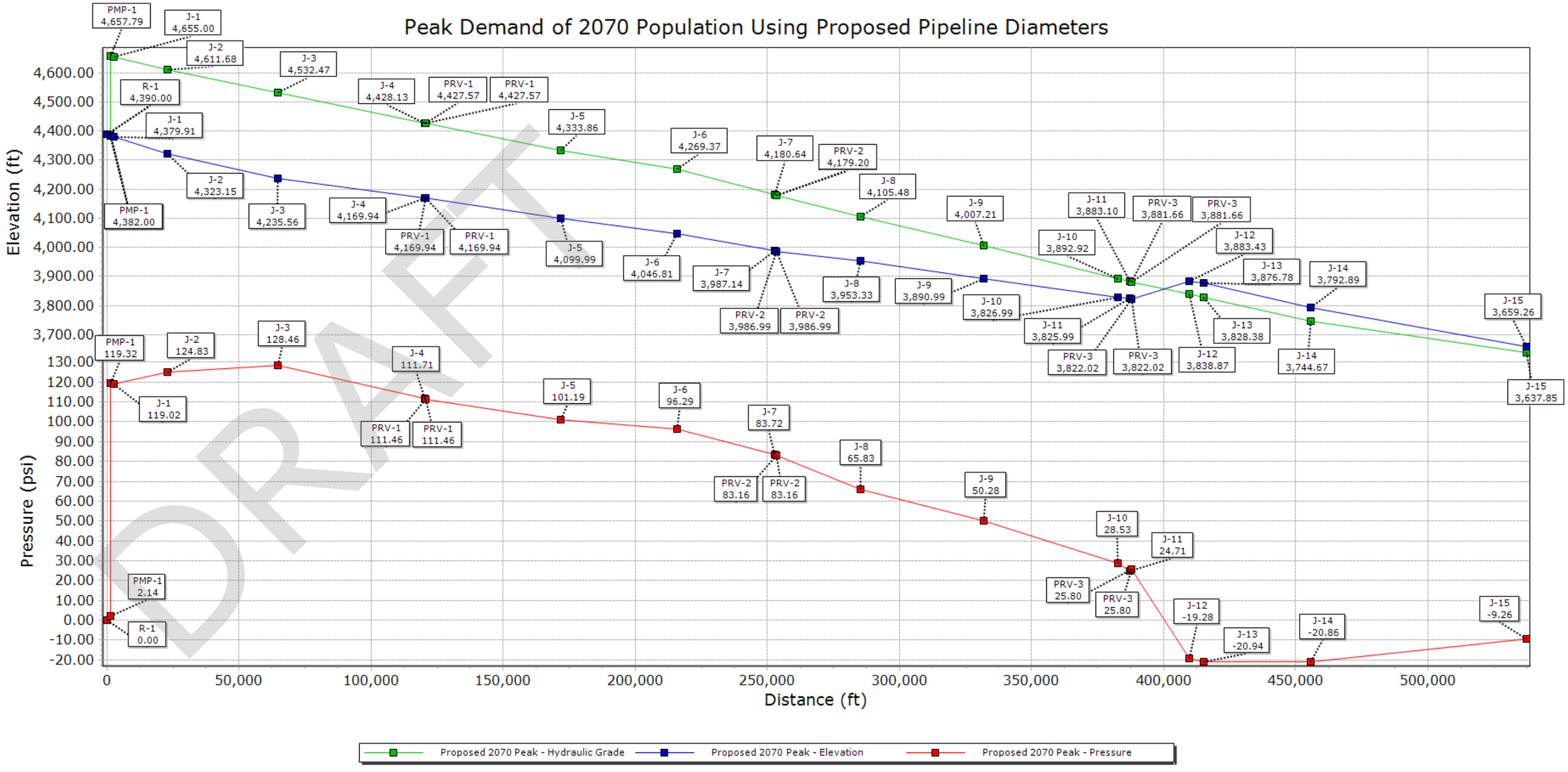
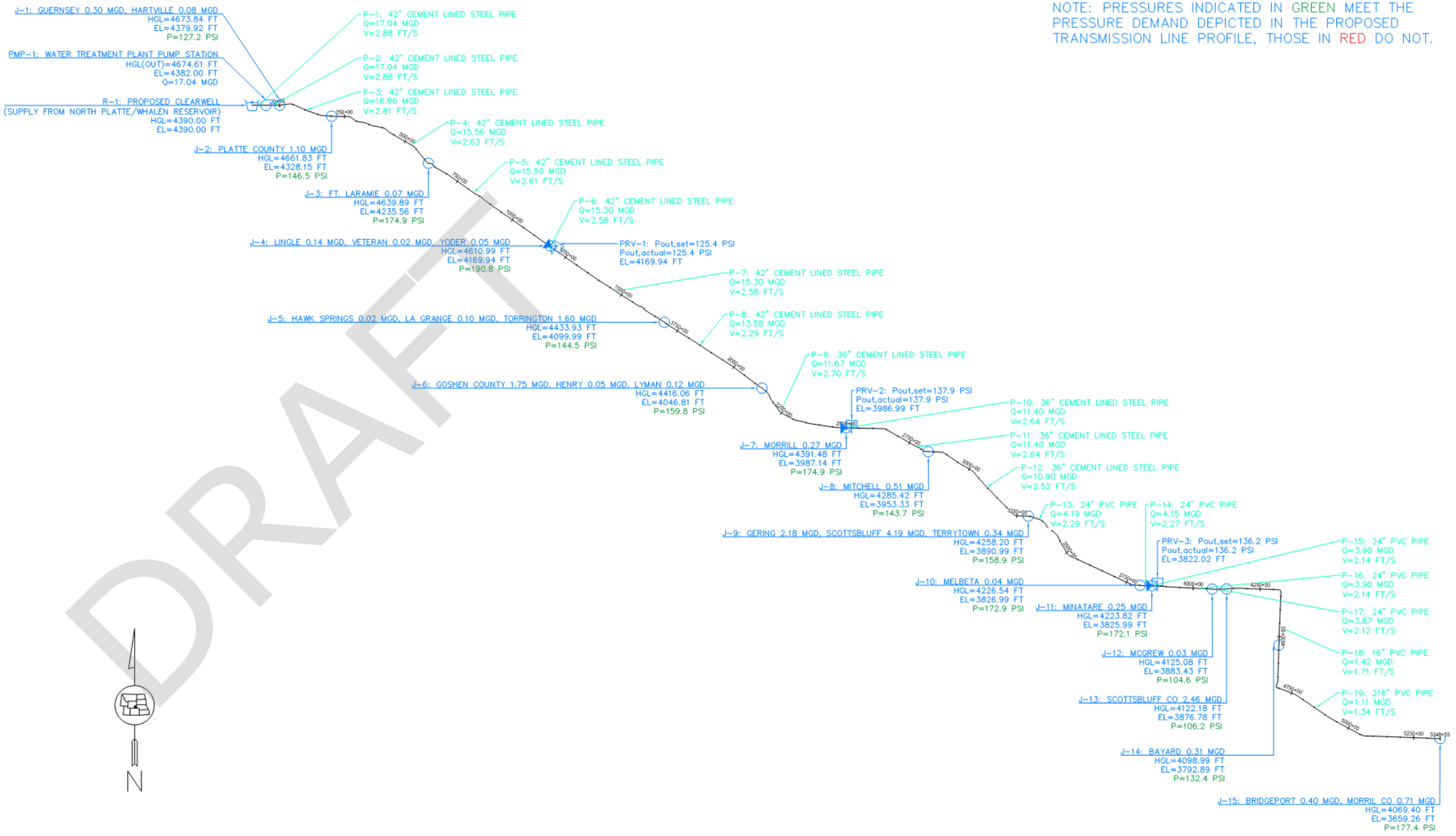


Figure 5.2 – Hydraulic model results for peak demand of projected 2070 population using proposed pipeline diameters



PROJECT NUMBER: B6391-0001 | PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY | SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
FILE NAME: 2070 AVERAGE PROPOSED.DWG | CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC. | PHONE NUMBER: (307) 634-7848

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2070 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.3

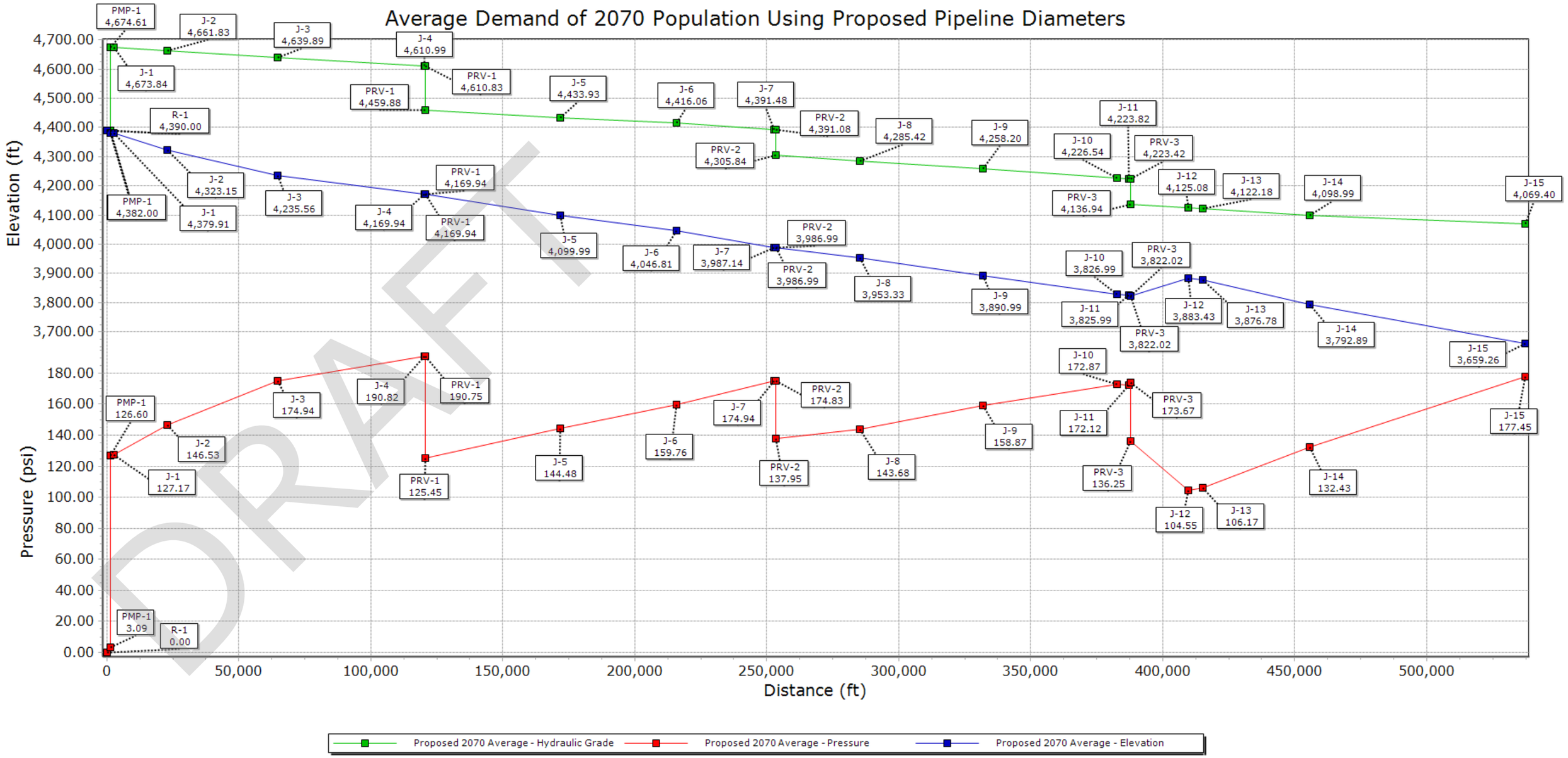

Figure 5.4 – Hydraulic model results for average demand of projected 2070 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.36 MGD, HARTVILLE 0.10 MGD
HGL=4670.06 FT
EL=4379.92 FT
P=125.5 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4671.16 FT
EL=4382.00 FT
Q=20.64 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.48 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.48 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=20.18 MGD
V=3.41 FT/S

J-2: PLATTE COUNTY 1.33 MGD
HGL=4652.95 FT
EL=4328.15 FT
P=142.7 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=18.85 MGD
V=3.18 FT/S

J-3: FT. LARAMIE 0.08 MGD
HGL=4621.65 FT
EL=4235.56 FT
P=167.0 PSI

P-5: 42" CEMENT LINED STEEL PIPE
Q=18.77 MGD
V=3.17 FT/S

P-6: 42" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=3.13 FT/S

J-4: LINGLE 0.17 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4580.42 FT
EL=4169.94 FT
P=177.6 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=3.13 FT/S

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.12 MGD, TORRINGTON 1.94 MGD
HGL=4422.85 FT
EL=4099.99 FT
P=139.7 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=16.45 MGD
V=2.78 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=14.14 MGD
V=3.27 FT/S

J-6: GOSHEN COUNTY 2.12 MGD, HENRY 0.05 MGD, LYMAN 0.14 MGD
HGL=4397.37 FT
EL=4046.81 FT
P=151.7 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=3.20 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=3.20 FT/S

J-7: MORRILL 0.32 MGD
HGL=4362.30 FT
EL=3987.14 FT
P=162.3 PSI

P-12: 36" CEMENT LINED STEEL PIPE
Q=13.21 MGD
V=3.06 FT/S

J-8: MITCHELL 0.61 MGD
HGL=4276.69 FT
EL=3953.33 FT
P=139.9 PSI

P-13: 24" PVC PIPE
Q=5.08 MGD
V=2.78 FT/S

P-14: 24" PVC PIPE
Q=5.03 MGD
V=2.75 FT/S

J-9: GERING 2.64 MGD, SCOTTSBLUFF 5.08 MGD, TERRYTOWN 0.41 MGD
HGL=4237.83 FT
EL=3890.99 FT
P=150.1 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=4.73 MGD
V=2.59 FT/S

P-16: 24" PVC PIPE
Q=4.73 MGD
V=2.59 FT/S

P-17: 24" PVC PIPE
Q=4.69 MGD
V=2.57 FT/S

J-10: MELBETA 0.05 MGD
HGL=4192.60 FT
EL=3826.99 FT
P=158.2 PSI

J-11: MINATARE 0.30 MGD
HGL=4188.72 FT
EL=3825.99 FT
P=156.9 PSI

J-12: MCGREW 0.04 MGD
HGL=4120.03 FT
EL=3883.43 FT
P=102.4 PSI

P-18: 16" PVC PIPE
Q=1.72 MGD
V=2.07 FT/S

J-13: SCOTTSBLUFF CO 2.97 MGD
HGL=4115.89 FT
EL=3876.78 FT
P=103.5 PSI

P-19: 16" PVC PIPE
Q=1.34 MGD
V=1.61 FT/S

J-14: BAYARD 0.38 MGD
HGL=4082.82 FT
EL=3792.89 FT
P=125.4 PSI

J-15: BRIDGEPORT 0.48 MGD, MORRIL CO 0.86 MGD
HGL=4040.89 FT
EL=3659.26 FT
P=165.1 PSI

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2020 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.5

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 PEAK PROPOSED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

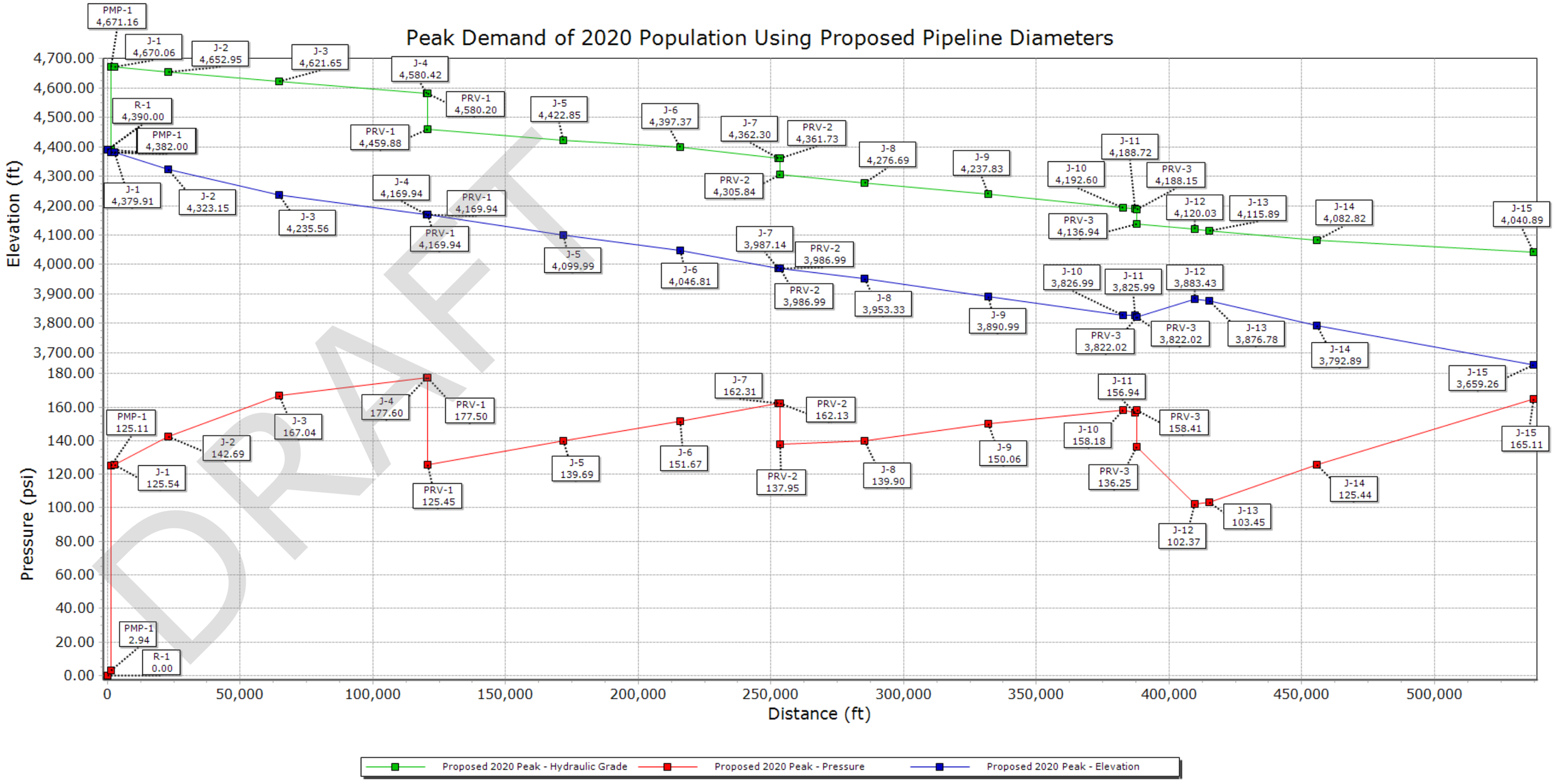

Figure 5.6 – Hydraulic model results for peak demand of projected 2020 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.18 MGD, HARTVILLE 0.05 MGD
HGL=4660.21 FT
EL=4379.92 FT
P=121.3 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4660.51 FT
EL=4382.00 FT
Q=10.34 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.74 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.74 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=10.11 MGD
V=1.71 FT/S

J-2: PLATTE COUNTY 0.67 MGD
HGL=4655.45 FT
EL=4328.15 FT
P=143.8 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=9.44 MGD
V=1.59 FT/S

J-3: FT. LARAMIE 0.04 MGD
HGL=4646.75 FT
EL=4235.56 FT
P=177.9 PSI

P-5: 42" CEMENT LINED STEEL PIPE
Q=9.40 MGD
V=1.59 FT/S

P-6: 42" CEMENT LINED STEEL PIPE
Q=9.28 MGD
V=1.57 FT/S

J-4: LINGLE 0.08 MGD, VETERAN 0.01 MGD, YODER 0.03 MGD
HGL=4636.30 FT
EL=4169.94 FT
P=201.3 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=9.25 MGD
V=1.57 FT/S

J-5: HAWK SPRINGS 0.01 MGD, LA GRANGE 0.06 MGD, TORRINGTON 0.97 MGD
HGL=4449.59 FT
EL=4099.99 FT
P=151.3 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=8.24 MGD
V=1.39 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=7.08 MGD
V=1.64 FT/S

J-6: GOSHEN COUNTY 1.06 MGD, HENRY 0.03 MGD, LYMAN 0.07 MGD
HGL=4442.51 FT
EL=4046.81 FT
P=171.2 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.60 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.60 FT/S

P-12: 36" CEMENT LINED STEEL PIPE
Q=6.61 MGD
V=1.53 FT/S

J-7: MORRILL 0.16 MGD
HGL=4432.77 FT
EL=3987.14 FT
P=192.8 PSI

J-8: MITCHELL 0.31 MGD
HGL=4297.74 FT
EL=3953.33 FT
P=149.0 PSI

P-13: 24" PVC PIPE
Q=2.54 MGD
V=1.39 FT/S

P-14: 24" PVC PIPE
Q=2.52 MGD
V=1.38 FT/S

J-9: GERING 1.32 MGD, SCOTTSBLUFF 2.54 MGD, TERRYTOWN 0.21 MGD
HGL=4286.96 FT
EL=3890.99 FT
P=171.3 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=2.37 MGD
V=1.30 FT/S

P-16: 24" PVC PIPE
Q=2.37 MGD
V=1.30 FT/S

P-17: 24" PVC PIPE
Q=2.35 MGD
V=1.29 FT/S

J-10: MELBETA 0.02 MGD
HGL=4274.43 FT
EL=3826.99 FT
P=193.6 PSI

J-11: MINATARE 0.15 MGD
HGL=4273.35 FT
EL=3825.99 FT
P=193.6 PSI

J-12: MCGREW 0.02 MGD
HGL=4132.23 FT
EL=3883.43 FT
P=107.6 PSI

P-18: 16" PVC PIPE
Q=0.86 MGD
V=1.04 FT/S

J-13: SCOTTSBLUFF CO 1.49 MGD
HGL=4131.08 FT
EL=3876.78 FT
P=110.0 PSI

P-19: 16" PVC PIPE
Q=0.67 MGD
V=0.81 FT/S

J-14: BAYARD 0.19 MGD
HGL=4121.92 FT
EL=3792.89 FT
P=142.4 PSI

J-15: BRIDGEPORT 0.24 MGD, MORRIL CO 0.43 MGD
HGL=4110.31 FT
EL=3659.26 FT
P=195.1 PSI

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N

PROJECT NUMBER: B6391-0001 | PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY | SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
FILE NAME: 2020 AVERAGE PROPOSED.DWG | CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC. | PHONE NUMBER: (307) 634-7848

REV	DESCRIPTION OF REVISION	BY	DATE
1	PRELIMINARY DESIGN	RKL	7/17

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2020 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.7

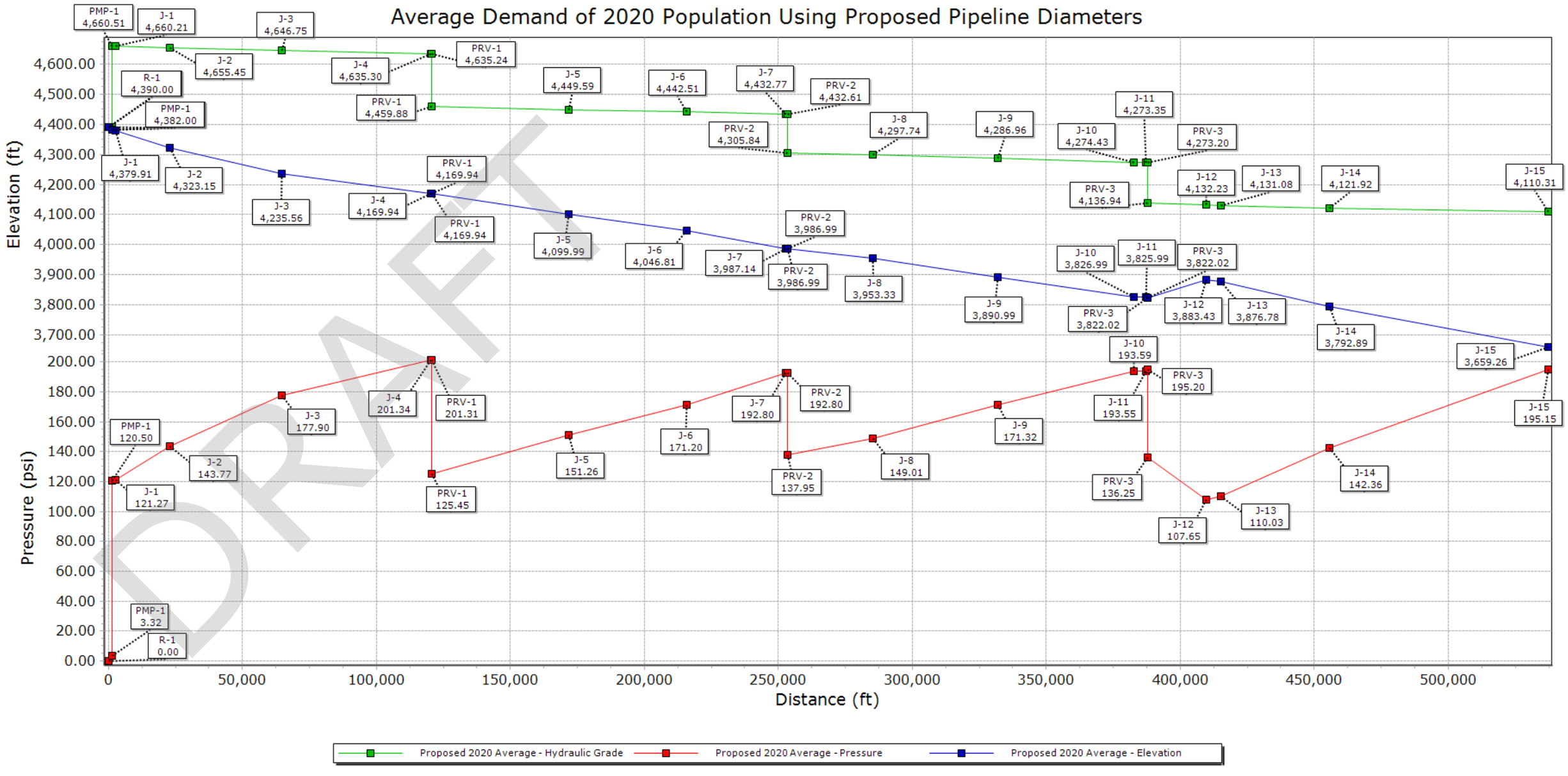

Figure 5.8 – Hydraulic model results for average demand of projected 2020 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.60 MGD, HARTVILLE 0.16 MGD
HGL=4656.71 FT
EL=4379.91 FT
P=119.8 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4658.68 FT
EL=4382.00 FT
Q=34.08 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=4.99 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=4.99 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=33.32 MGD
V=4.88 FT/S

J-2: PLATTE COUNTY 2.20 MGD
HGL=4625.99 FT
EL=4323.15 FT
P=131.0 PSI

P-4: 45" CEMENT LINED STEEL PIPE
Q=31.12 MGD
V=4.56 FT/S

J-3: FT. LARAMIE 0.13 MGD
HGL=4569.84 FT
EL=4235.56 FT
P=144.6 PSI

P-5: 45" CEMENT LINED STEEL PIPE
Q=30.99 MGD
V=4.54 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=4.48 FT/S

J-4: LINGLE 0.28 MGD, VETERAN 0.03 MGD, YODER 0.09 MGD
HGL=4495.87 FT
EL=4169.94 FT
P=141.0 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 45" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=4.48 FT/S

J-5: HAWK SPRINGS 0.04 MGD, LA GRANGE 0.19 MGD, TORRINGTON 3.20 MGD
HGL=4393.45 FT
EL=4099.99 FT
P=127.0 PSI

P-8: 45" CEMENT LINED STEEL PIPE
Q=27.16 MGD
V=3.98 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=23.34 MGD
V=3.94 FT/S

J-6: GOSHEN COUNTY 3.50 MGD, HENRY 0.09 MGD, LYMAN 0.23 MGD
HGL=4347.773 FT
EL=4046.81 FT
P=130.2 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 42" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=3.85 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=3.85 FT/S

J-7: MORRILL 0.53 MGD
HGL=4306.68 FT
EL=3987.14 FT
P=138.2 PSI

P-12: 42" CEMENT LINED STEEL PIPE
Q=21.80 MGD
V=3.68 FT/S

J-8: MITCHELL 1.01 MGD
HGL=4271.738 FT
EL=3953.33 FT
P=137.8 PSI

P-13: 30" PVC PIPE
Q=8.38 MGD
V=2.87 FT/S

P-14: 30" PVC PIPE
Q=8.30 MGD
V=2.84 FT/S

J-9: GERING 4.36 MGD, SCOTTSBLUFF 8.38 MGD, TERRYTOWN 0.68 MGD
HGL=4226.26 FT
EL=3890.99 FT
P=145.1 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 30" PVC PIPE
Q=7.81 MGD
V=2.68 FT/S

P-16: 30" PVC PIPE
Q=7.81 MGD
V=2.68 FT/S

P-17: 30" PVC PIPE
Q=7.75 MGD
V=2.66 FT/S

J-10: MELBETA 0.08 MGD
HGL=4189.76 FT
EL=3826.99 FT
P=157.0 PSI

J-11: MINATARE 0.49 MGD
HGL=4186.63 FT
EL=3825.99 FT
P=156.0 PSI

P-18: 18" PVC PIPE
Q=2.84 MGD
V=2.72 FT/S

J-12: MCGREW 0.06 MGD
HGL=4123.27 FT
EL=3883.43 FT
P=103.8 PSI

J-13: SCOTTSBLUFF CO 4.91 MGD
HGL=4119.92 FT
EL=3876.78 FT
P=105.4 PSI

P-19: 18" PVC PIPE
Q=2.22 MGD
V=2.13 FT/S

J-14: BAYARD 0.62 MGD
HGL=4071.83 FT
EL=3792.89 FT
P=122.7 PSI

J-15: BRIDGEPORT 0.80 MGD, MORRIL CO 1.42 MGD
HGL=4010.47 FT
EL=3659.26 FT
P=152.0 PSI

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N

PROJECT NUMBER: B6391-0001
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
FILE NAME: 2070 PEAK RECOMMENDED.DWG
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2070 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.9

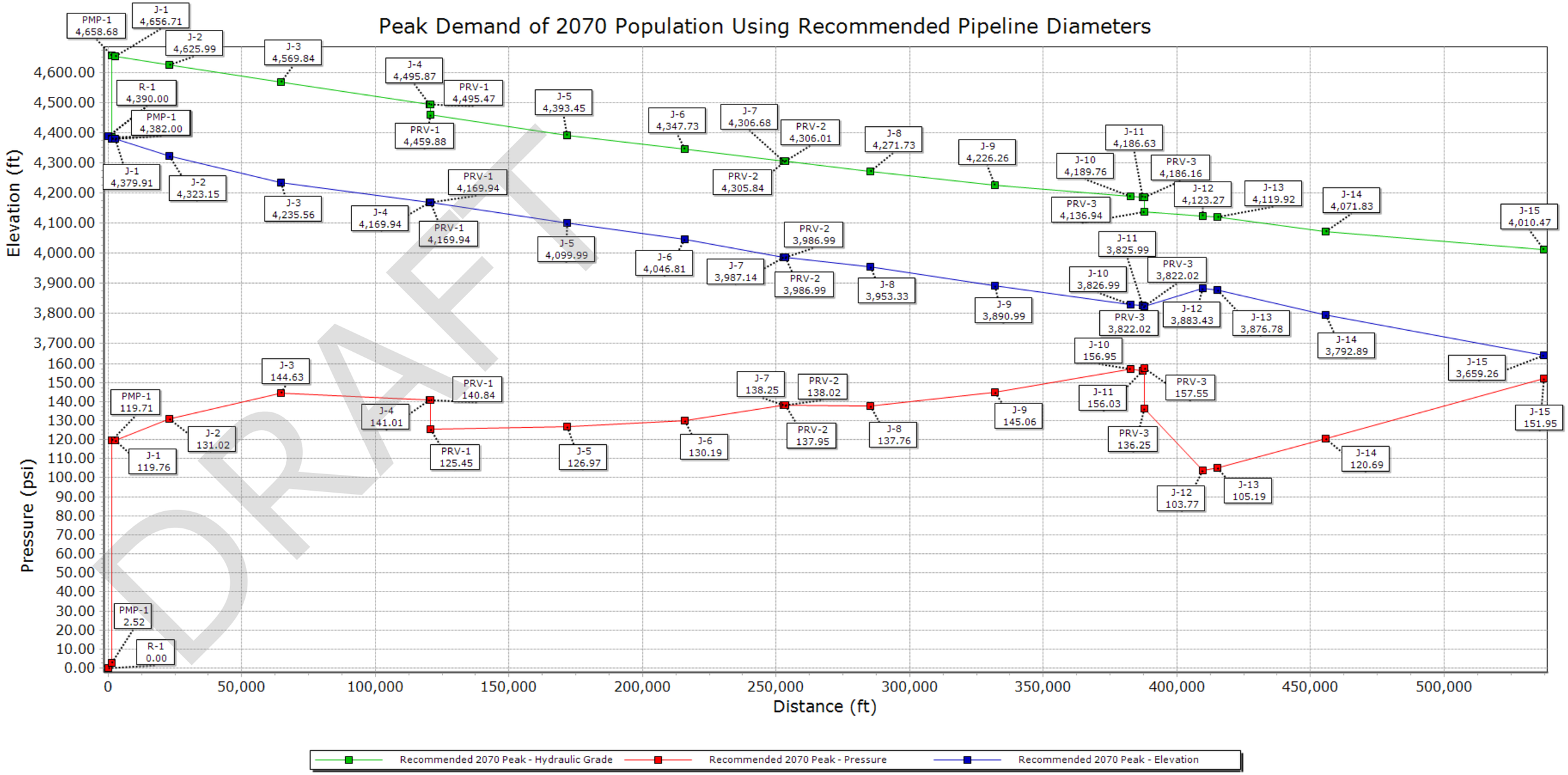

Figure 5.10 – Hydraulic model results for peak demand of projected 2070 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.30 MGD, HARTVILLE 0.08 MGD
HGL=4674.31 FT
EL=4379.92 FT
P=127.4 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4674.85 FT
EL=4382.00 FT
Q=17.04 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.50 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.50 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=16.66 MGD
V=2.44 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=15.56 MGD
V=2.28 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=15.50 MGD
V=2.27 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.24 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.24 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=13.58 MGD
V=1.99 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=11.67 MGD
V=1.97 FT/S

P-10: 42" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=1.92 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=1.92 FT/S

P-12: 42" CEMENT LINED STEEL PIPE
Q=10.90 MGD
V=1.84 FT/S

P-13: 30" PVC PIPE
Q=4.19 MGD
V=1.44 FT/S

P-14: 30" PVC PIPE
Q=4.15 MGD
V=1.42 FT/S

P-15: 30" PVC PIPE
Q=3.90 MGD
V=1.34 FT/S

P-16: 30" PVC PIPE
Q=3.90 MGD
V=1.34 FT/S

P-17: 30" PVC PIPE
Q=3.87 MGD
V=1.33 FT/S

P-18: 18" PVC PIPE
Q=1.42 MGD
V=1.36 FT/S

P-19: 18" PVC PIPE
Q=1.11 MGD
V=1.06 FT/S

J-2: PLATTE COUNTY 1.10 MGD
HGL=4665.80 FT
EL=4328.15 FT
P=148.2 PSI

J-3: FT. LARAMIE 0.07 MGD
HGL=4650.24 FT
EL=4235.56 FT
P=179.4 PSI

J-4: LINGLE 0.14 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4629.75 FT
EL=4169.94 FT
P=198.9 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.10 MGD, TORRINGTON 1.60 MGD
HGL=4441.48 FT
EL=4099.99 FT
P=147.7 PSI

J-6: GOSHEN COUNTY 1.75 MGD, HENRY 0.05 MGD, LYMAN 0.12 MGD
HGL=4428.82 FT
EL=4046.81 FT
P=165.3 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.27 MGD
HGL=4417.44 FT
EL=3987.14 FT
P=186.2 PSI

J-8: MITCHELL 0.51 MGD
HGL=4296.39 FT
EL=3953.33 FT
P=148.4 PSI

J-9: GERING 2.18 MGD, SCOTTSBLUFF 4.19 MGD, TERRYTOWN 0.34 MGD
HGL=4283.79 FT
EL=3890.99 FT
P=169.9 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.04 MGD
HGL=4273.68 FT
EL=3826.99 FT
P=193.3 PSI

J-11: MINATARE 0.25 MGD
HGL=4272.81 FT
EL=3825.99 FT
P=193.3 PSI

J-12: MCGREW 0.03 MGD
HGL=4133.15 FT
EL=3883.43 FT
P=108.0 PSI

J-13: SCOTTSBLUFF CO 2.46 MGD
HGL=4132.22 FT
EL=3876.78 FT
P=110.5 PSI

J-14: BAYARD 0.31 MGD
HGL=4118.90 FT
EL=3792.89 FT
P=141.0 PSI

J-15: BRIDGEPORT 0.40 MGD, MORRIL CO 0.71 MGD
HGL=4101.90 FT
EL=3659.26 FT
P=191.5 PSI

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N

PROJECT NUMBER: B6391-0001 | PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY | SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
FILE NAME: 2070 AVERAGE RECOMMENDED.DWG | CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC. | PHONE NUMBER: (307) 634-7848

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2070 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.11

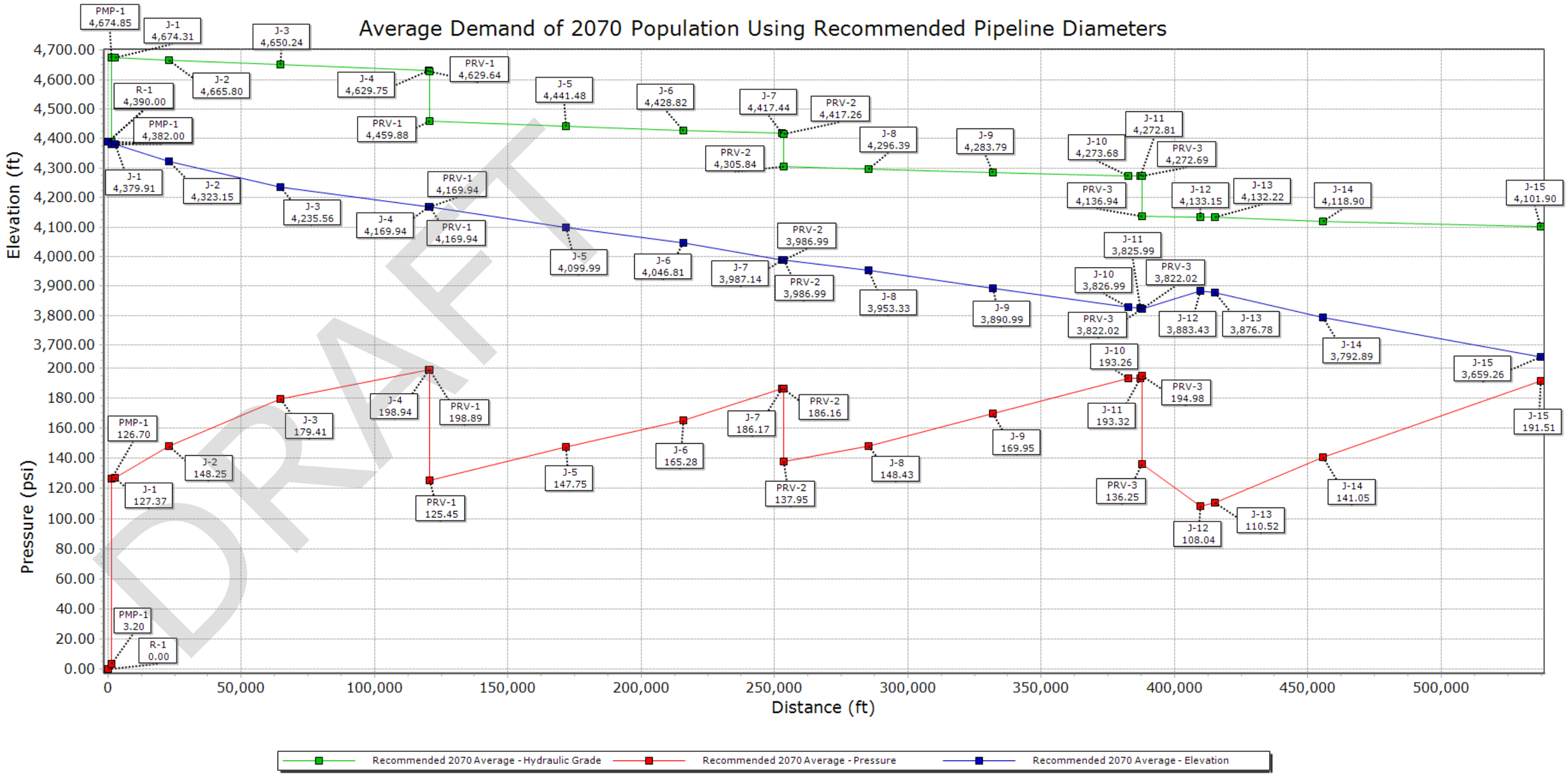

Figure 5.12 – Hydraulic model results for average demand of projected 2070 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.36 MGD, HARTVILLE 0.10 MGD
HGL=4670.73 FT
EL=4379.92 FT
P=125.8 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4671.51 FT
EL=4382.00 FT
Q=20.64 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.02 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.02 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=20.18 MGD
V=2.96 FT/S

J-2: PLATTE COUNTY 1.33 MGD
HGL=4658.60 FT
EL=4328.15 FT
P=145.1 PSI

P-4: 45" CEMENT LINED STEEL PIPE
Q=18.85 MGD
V=2.76 FT/S

J-3: FT. LARAMIE 0.08 MGD
HGL=4636.41 FT
EL=4235.56 FT
P=173.4 PSI

P-5: 45" CEMENT LINED STEEL PIPE
Q=18.77 MGD
V=2.75 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=2.72 FT/S

J-4: LINGLE 0.17 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4607.18 FT
EL=4169.94 FT
P=189.2 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 45" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=2.72 FT/S

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.12 MGD, TORRINGTON 1.94 MGD
HGL=4433.63 FT
EL=4099.99 FT
P=144.4 PSI

P-8: 45" CEMENT LINED STEEL PIPE
Q=16.45 MGD
V=2.41 FT/S

P-9: 40" CEMENT LINED STEEL PIPE
Q=14.14 MGD
V=2.39 FT/S

J-6: GOSHEN COUNTY 2.12 MGD, HENRY 0.05 MGD, LYMAN 0.14 MGD
HGL=4415.56 FT
EL=4046.81 FT
P=159.5 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 40" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=2.33 FT/S

P-11: 40" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=2.33 FT/S

J-7: MORRILL 0.32 MGD
HGL=4399.34 FT
EL=3987.14 FT
P=178.3 PSI

P-12: 40" CEMENT LINED STEEL PIPE
Q=13.21 MGD
V=2.23 FT/S

J-8: MITCHELL 0.61 MGD
HGL=4292.35 FT
EL=3953.33 FT
P=146.7 PSI

P-13: 30" PVC PIPE
Q=5.08 MGD
V=1.74 FT/S

P-14: 30" PVC PIPE
Q=5.03 MGD
V=1.72 FT/S

J-9: GERING 2.64 MGD, SCOTTSBLUFF 5.08 MGD, TERRYTOWN 0.41 MGD
HGL=4274.37 FT
EL=3890.99 FT
P=165.9 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 30" PVC PIPE
Q=4.73 MGD
V=1.62 FT/S

P-16: 30" PVC PIPE
Q=4.73 MGD
V=1.62 FT/S

P-17: 30" PVC PIPE
Q=4.69 MGD
V=1.61 FT/S

J-10: MELBETA 0.05 MGD
HGL=4259.93 FT
EL=3826.99 FT
P=187.3 PSI

J-11: MINATARE 0.30 MGD
HGL=4258.69 FT
EL=3825.99 FT
P=187.2 PSI

P-18: 18" PVC PIPE
Q=1.72 MGD
V=1.65 FT/S

J-12: MCGREW 0.04 MGD
HGL=4131.54 FT
EL=3883.43 FT
P=107.3 PSI

P-19: 18" PVC PIPE
Q=1.34 MGD
V=1.28 FT/S

J-13: SCOTTSBLUFF CO 2.97 MGD
HGL=4130.21 FT
EL=3876.78 FT
P=109.6 PSI

J-14: BAYARD 0.38 MGD
HGL=4111.22 FT
EL=3792.89 FT
P=137.7 PSI

J-15: BRIDGEPORT 0.48 MGD, MORRIL CO 0.86 MGD
HGL=4087.13 FT
EL=3659.26 FT
P=185.1 PSI

N

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PROJECT NUMBER: B6391-0001
FILE NAME: 2020 PEAK RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

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PROJECT MANAGER VEA
DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2020 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.13

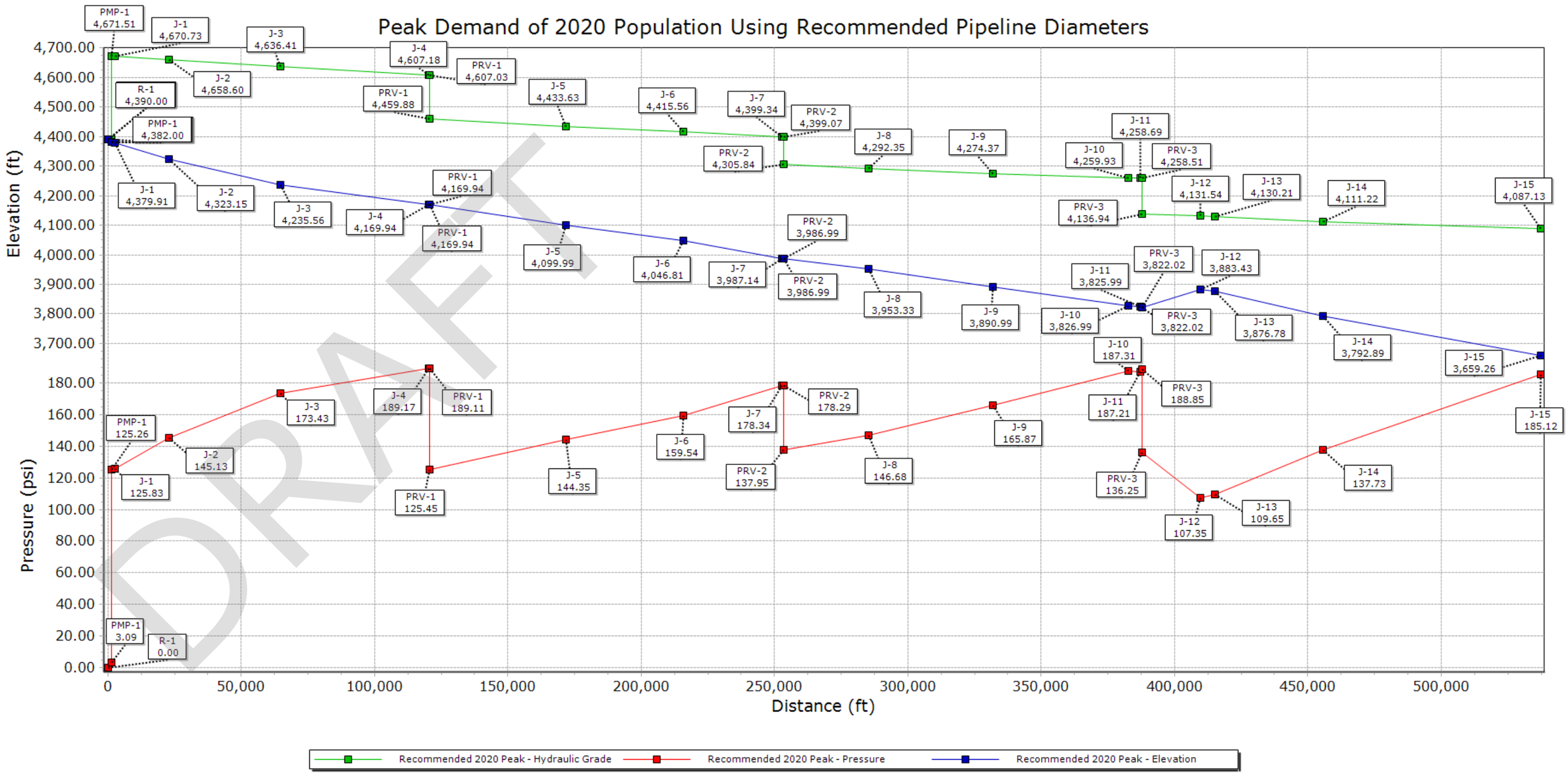

Figure 5.14 – Hydraulic model results for peak demand of projected 2020 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.18 MGD, HARTVILLE 0.05 MGD
HGL=4660.40 FT
EL=4379.92 FT
P=121.4 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4660.61 FT
EL=4382.00 FT
Q=10.34 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.52 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.52 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=10.11 MGD
V=1.48 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=9.44 MGD
V=1.38 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=9.40 MGD
V=1.38 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=9.28 MGD
V=1.36 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=9.25 MGD
V=1.36 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=8.24 MGD
V=1.21 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=7.08 MGD
V=1.19 FT/S

P-10: 42" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.17 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.17 FT/S

P-12: 42" CEMENT LINED STEEL PIPE
Q=6.61 MGD
V=1.12 FT/S

P-13: 30" PVC PIPE
Q=2.54 MGD
V=0.87 FT/S

P-14: 30" PVC PIPE
Q=2.52 MGD
V=0.86 FT/S

P-15: 30" PVC PIPE
Q=2.37 MGD
V=0.81 FT/S

P-16: 30" PVC PIPE
Q=2.37 MGD
V=0.81 FT/S

P-17: 30" PVC PIPE
Q=2.35 MGD
V=0.81 FT/S

P-18: 18" PVC PIPE
Q=0.86 MGD
V=0.82 FT/S

P-19: 18" PVC PIPE
Q=0.67 MGD
V=0.64 FT/S

J-2: PLATTE COUNTY 0.67 MGD
HGL=4657.02 FT
EL=4328.15 FT
P=144.5 PSI

J-3: FT. LARAMIE 0.04 MGD
HGL=4650.86 FT
EL=4235.56 FT
P=179.7 PSI

J-4: LINGLE 0.08 MGD, VETERAN 0.01 MGD, YODER 0.03 MGD
HGL=4642.74 FT
EL=4169.94 FT
P=204.6 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.01 MGD, LA GRANGE 0.06 MGD, TORRINGTON 0.97 MGD
HGL=4452.59 FT
EL=4099.99 FT
P=152.6 PSI

J-6: GOSHEN COUNTY 1.06 MGD, HENRY 0.03 MGD, LYMAN 0.07 MGD
HGL=4447.57 FT
EL=4046.81 FT
P=173.4 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.16 MGD
HGL=4443.06 FT
EL=3987.14 FT
P=197.3 PSI

J-8: MITCHELL 0.31 MGD
HGL=4302.09 FT
EL=3953.33 FT
P=150.9 PSI

J-9: GERING 1.32 MGD, SCOTTSBLUFF 2.54 MGD, TERRYTOWN 0.21 MGD
HGL=4297.10 FT
EL=3890.99 FT
P=175.7 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.02 MGD
HGL=4293.10 FT
EL=3826.99 FT
P=201.7 PSI

J-11: MINATARE 0.15 MGD
HGL=4292.76 FT
EL=3825.99 FT
P=201.9 PSI

J-12: MCGREW 0.02 MGD
HGL=4135.43 FT
EL=3883.43 FT
P=109.0 PSI

J-13: SCOTTSBLUFF CO 1.49 MGD
HGL=4135.07 FT
EL=3876.78 FT
P=111.7 PSI

J-14: BAYARD 0.19 MGD
HGL=4129.80 FT
EL=3792.89 FT
P=145.8 PSI

J-15: BRIDGEPORT 0.24 MGD, MORRIL CO 0.43 MGD
HGL=4123.13 FT
EL=3659.26 FT
P=200.7 PSI

N

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 AVERAGE RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

REV	DESCRIPTION OF REVISION	BY	DATE
1	PRELIMINARY DESIGN	RKL	7/17

6.50 MI 3.25 MI 0 3.25 MI 6.50 MI

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WARNING
DRAWING IS NOT TO SCALE IF THIS BAR DOES NOT MEASURE ½"

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DRAWN RKL
PEER REVIEWED VEA
PROJECT MANAGER VEA
DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2020 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.15

DRAFT

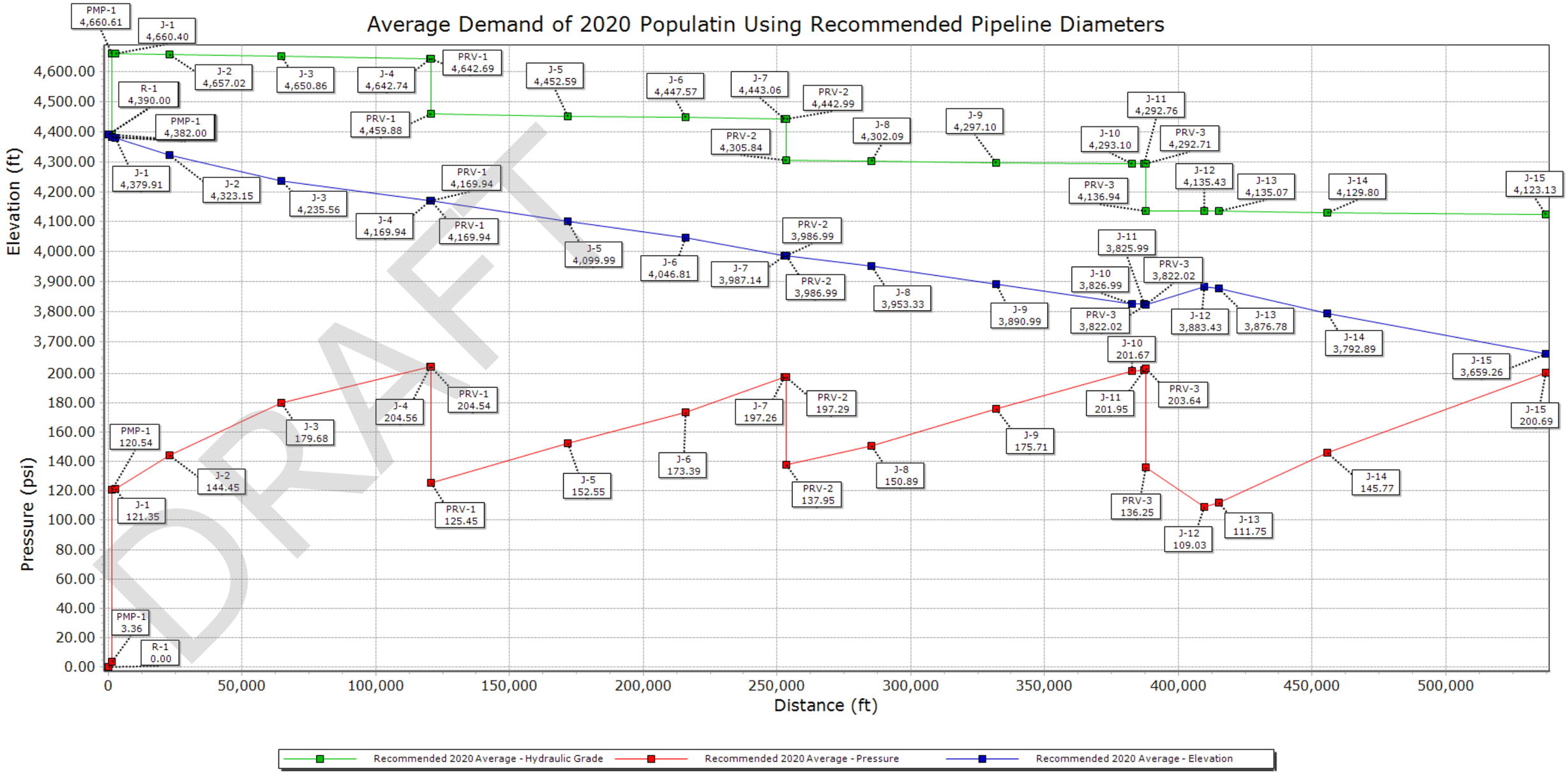

Figure 5.16 – Hydraulic model results for average demand of projected 2020 population using recommended pipeline diameters

6.0 Summary and Conclusions

Hydraulic model results indicate that the PAWS water transmission line as proposed in the Appraisal Investigations does not meet the requirements of the peak demands for the projected 2020 and 2070 populations. Using the hydraulic model, Wenck performed iterative analyses to determine the optimum pipeline geometries for meeting these demands. In these iterative analyses, the only parameter modified was the diameter of composing pipes of the transmission line. Upon review of the results of the recommended model, it is suggested that the piping for all portions of the transmission line be selected with pressure ratings in exceedance, with an appropriate factor of safety (FOS), of any corresponding pressures shown in the recommended model results.

DRAFT

References

1 *Pipeline design for water and wastewater*. (1975). New York, N.Y.: American Society of Civil Engineers.

2 Brière, F. (2007). *Drinking-water distribution, sewage, and rainfall collection*. [Montreal]: Polytechnic International Press.

3 *Steel plate engineering data-volume 3: Welded steel pipe* revised edition-1983. (1983). Washington, D.C.: American Iron and Steel Institute, Committee of Steel Plate Producers [and] Committee of Stainless Steel Producers.

4 *Big blue PVC C.I.O.D. transmission pipe*. (2009). Los Angeles, CA: J-M Manufacturing Co., Inc.

5 Tullis, J. (2010). *Hydraulics of pipelines*. New York: Wiley.

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APPENDIX A8-2

HYDRAULIC MODEL TRANSIENT RESULTS

AUGUST 7, 2017 REV. JULY 29, 2019

DRAFT

Addendum

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To: Jeff Fuller, M.C. Schaff & Associates, Inc.

From: Victor Anderson, Wenck

Date: July 29, 2019

Subject: Addendum to Summary of WaterCAD Model and Results
Hydraulic Model for the Platte Valley Water Supply Transmission Line

Introduction

Subsequent to the initial modeling effort, the hydraulic criteria were revised for the following issues.

Surge in the Event of Power Failure

Surge analysis performed utilizing the hydraulic model output resulted in unsatisfactory performance under power failure. The Surge Analysis is included in **Appendix A** as a technical memo dated August 7, 2017. Based on the results, the proposed water treatment plant (WTP) was relocated at a higher elevation. The relocation eliminates the need for pumping and the severe surge issues.

The proposed relocation places the WTP approximately one and one-half miles east of the Town of Guernsey and approximately one-half mile north of Highway 160. The site is relatively flat and adequate in size. The site elevation is approximately 4525 feet and can serve the transmission pipeline by gravity. For the hydraulic analysis, it was assumed that minimum operating level of the WTP clearwell or storage tank would be 4500 feet.

Revised System Demands

The demands on the system were revised to reflect the updated information from the users as shown in **Table 1**. The revised demands reduced the peak 2070 demands by 32% from the initial analysis. The updated analysis utilized the peak 2070 junction demands.

Table 1: Peak and Average Demand in the Years 2020 and 2070

Junction	Community	Demand Condition/Period			
		Peak 2070 (MGD)	Average 2070 (MGD)	Peak 2020 (MGD)	Average 2020 (MGD)
J-1	Guernsey	0.65	0.32	0.39	0.20
J-2	Platte Co.	0.56	0.28	0.34	0.17
J-3	Ft. Laramie	0.13	0.07	0.08	0.04
J-4	None				
J-5	Torrington Hawk Springs	3.70	1.85	2.23	1.11
J-6	Goshen Co.	3.04	1.52	1.85	0.92
J-7	Morrill	0.52	0.26	0.32	0.16
J-8	Mitchell	0.96	0.48	0.58	0.29
J-9	Scottsbluff Minatare Terrytown	10.06	5.03	6.12	3.06
J-10	None				
J-11	Minatare gets their water from Scottsbluff, but decided not to participate so they will continue to get their water from Scottsbluff and are added to J-9				
J-12	None				
J-13	Scottsbluff Co.	2.03	1.01	1.23	0.62
J-14	Bayard	0.68	0.34	0.41	0.21
J-15	Bridgeport	0.87	0.44	0.53	0.26
	SUM	**23.20**	**11.60**	**14.08**	**7.04**

Pipe Material and Size

The pipe materials and sizes were changed to allow competitive bidding of different pipe materials. Different pipe materials and pressure ranges do not have equal inside diameters, roughnesses, or available sizes. The analysis was limited to common pipe sizes of 42, 36, 30, 24, 18, and 12-inche nominal diameters.

The pipe types considered were steel, PVC and ductile iron. For this analysis, simplifying assumptions were made for inside diameter and pipe roughness. As an example, a nominal 36-inch diameter pipe was assumed to have an inside diameter of 35-inches and a Hazen Williams C of 130.

Pressure Requirements

Pressure requirements were established as a minimum pressure of 65 psi at the user outlets and a minimum pressure of 35 psi at any point on the pipeline. The minimum pressure at each user is summarized in **Table 2**.

Table 2: Hydraulic Grade Line and Elevation of Model Junctions

Junction	Community	HGL (FT)	Elevation (FT)
J-1	Guernsey	4,530	4,379.91
J-2	Platte Co.	4,473	4,323.15
J-3	Ft. Laramie	4,386	4,235.56
J-4	None		
J-5	Torrington Hawk Springs	4,250	4,099.99
J-6	Goshen Co.	4,196	4,046.81
J-7	Morrill	4,137	3987.14
J-8	Mitchell	4,103	3,953.33
J-9	Scottsbluff Minatare Terrytown	4,041	3,890.99
J-10	None		
J-11	None		
J-12	None		
J-13	Scottsbluff Co.	4,027	3,876.78
J-14	Bayard	3,943	3,792.89
J-15	Bridgeport	3,809	3,659.26

Transmission to Guernsey

The location of the proposed WTP requires a separate pipeline to Guernsey. The selection of the proposed WTP may require pumping to the elevation of the town storage tanks.

Summary

The revised plan and profile sheets are included in Appendix A 39-48. The sheets include pipe sizes, pipe capacities, outlet locations and capacities, pressure reducing stations, and hydraulic grade lines. The analysis resulted in the following nominal pipe sizes.

Section Start	Section End	Nominal Pipe Diameter
Water Treatment Plant	Torrington	42-inch
Torrington	Scottsbluff	36-inch
Scottsbluff	Scottsbluff Co.	24-inch
Scottsbluff Co.	Bayard	18-inch
Bayard	Bridgeport	12-inch
Water Treatment Plant	Guernsey	12-inch

Pressure reducing stations are proposed at Torrington, Scottsbluff, and Bayard.

The nominal pipe sizes utilized in the analysis results in conservative pipeline capacity. The upper portion of the system from Guernsey to Scottsbluff would have approximately 12% reserve capacity. The lower portion below Scottsbluff would have approximately 25% reserve capacity.

Appendix A

Hydrologic Model for the Platte Valley Water Supply Transmission Line

Technical Memo

WENCK
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To: Jeff Fuller, M.C. Schaff & Associates, Inc.

From: Victor Anderson, Wenck
Randy Layton, Wenck

Date: August 7th, 2017

Subject: Summary of HAMMER Model and Results
Hydraulic Model for the Platte Valley Water Supply Transmission Line

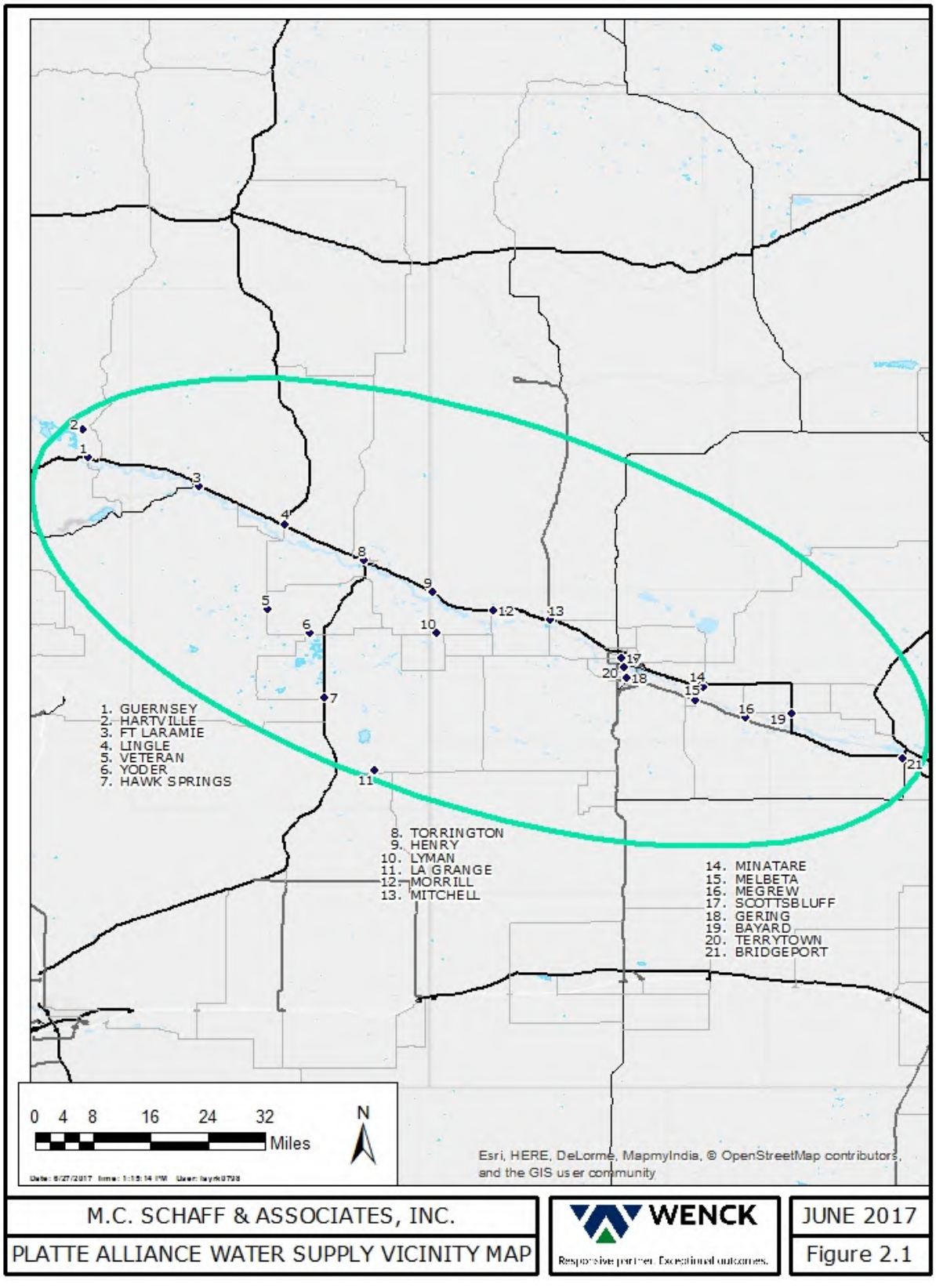
1.0 Purpose

The purpose of this technical memorandum is to present the results of an unsteady flow occurrence or transient/surge in the hydraulic model developed by Wenck for the proposed Platte Alliance Water Supply (PAWS) transmission pipeline. This memorandum is subsequent to and references information and results in the *Summary of WaterCAD Model and Results* technical memorandum, dated July 2017. Wenck performed this analysis on behalf of M.C. Schaff and Associates, Inc., with information provided by M.C. Schaff & Associates, Inc. as described herein. The following sections describe the evaluation of the adequacy of the water transmission system's ability withstand and attenuate a surge.

2.0 Background

In a preliminary analysis, as summarized in the aforementioned memorandum, Wenck developed a hydraulic model of the proposed PAWS transmission pipeline. The model was developed to evaluate the transmission line's ability to meet current and future hydraulic conditions as dictated by the demands from the communities in the PAWS vicinity (**Figure 2.1**). The model was initially created using design and demand information provided in the Appraisal Investigation from M.C. Schaff & Associates, Inc. Upon evaluation, it was determined that the transmission line, using the parameters in the Appraisal Investigation, was incapable of meeting hydraulic pressure requirements. Wenck established that the inhibiting factor in this inadequacy was the diameters of the pipes that compose the transmission line. Consequently, through iterative analyses, Wenck developed a recommended model using pipe diameters sized for meeting the hydraulic specifications while maintaining economics as a factor.

The prior analysis, as described above, was a steady state, steady flow evaluation of the distribution line at steady operating at various demand periods and conditions. The following study analyzes the pipeline during an unsteady flow condition, therefore also requiring an extended period simulation. Rapid pressure changes that result in surges and/or cavitation can easily exceed the safe operating rage of a pipeline. There are many potential causes for rapid or sudden pressure changes in a pipe system, including filling/draining, power failure to pumps, and sudden value opening or closure. If adequate design provisions and operational procedures are not provided to accommodate for unsteady flow conditions, pipeline failure is a likely result. Discussed herein are the parameters set for the surge analysis model, the corresponding results, and evaluation of the results determining the transmission line's ability to tolerate and dampen a surge.



M.C. SCHAFF & ASSOCIATES, INC.	WENCK Responsive partner. Exceptional outcomes.	JUNE 2017
PLATTE ALLIANCE WATER SUPPLY VICINITY MAP		Figure 2.1

3.0 Methods

Wenck used Bentley Systems' water hammer and transient analysis software, HAMMER, to simulate and analyze the occurrence of a surge in the hydraulic models developed and discussed in the preceding technical memorandum. HAMMER is used to efficiently identify, manage, and mitigate the risks associated with transients/surges. The surge simulation models presented here were created using Bentley HAMMER V8i, CONNECT Edition.

4.0 Model Setup

The transient analysis on the PAWS transmission line was commenced by importing the WaterCAD hydraulic model developed in the previous analysis into HAMMER (**Figure 4.1**). Compatibility between WaterCAD and HAMMER allowed for the transfer of each parameter of the hydraulic model, including: pipeline alignment, size and material, hydraulic components with associated settings, and demand periods/conditions. **Tables 4.1-4.2** summarize the junction hydraulic flow and pressure requirements, respectively; which do not waiver from those in the WaterCAD model. This transfer applied to both the proposed and recommended pipeline geometries, whereas discussed above, the recommended pipeline uses large diameter piping to meet pressure requirements. **Tables 4.3-4.4** indicate the pipeline properties for the proposed and recommended models, respectively. Additional inputs beyond those used for the steady state, steady flow model developed in WaterCAD were required in order to establish and propagate surge in the model, these parameters include: Transient Initiation, Wave Speed, and Reporting (Solver).

Table 4.1 – Junction flow demands

Junction	Community	Demand Condition/Period			
		Peak 2070 (MGD)	Average 2070 (MGD)	Peak 2020 (MGD)	Average 2020 (MGD)
J-1	GUERNSEY HARTVILLE	0.76	0.38	0.46	0.23
J-2	PLATTE CO	2.20	1.10	1.33	0.67
J-3	FT. LARAMIE	0.13	0.07	0.08	0.04
J-4	LINGLE VETERAN YODER	0.40	0.20	0.24	0.12
J-5	HAWK SPRINGS LA GRANGE TORRINGTON	3.43	1.72	2.08	1.04
J-6	GOSHEN CO HENRY LYMAN	3.82	1.91	2.31	1.16
J-7	MORRILL	0.53	0.27	0.32	0.16
J-8	MITCHELL	1.01	0.51	0.61	0.31
J-9	GERING SCOTTSBLUFF TERRYTOWN	13.42	6.71	8.13	4.07
J-10	MELBETA	0.08	0.04	0.05	0.02
J-11	MINATARE	0.49	0.25	0.30	0.15
J-12	MCGREW	0.06	0.03	0.04	0.02
J-13	SCOTTSBLUFF CO	4.91	2.46	2.97	1.49
J-14	BAYARD	0.62	0.31	0.38	0.19
J-15	BRIDGEPORT MORILL CO	2.22	1.11	1.34	0.67
	SUM	**34.08**	**17.04**	**20.64**	**10.34**

Table 4.2 – Junction pressure demands

Junction	Community	HGL (ft)	Elevation (ft)	Desired Pressure (psi)
J-1	GUERNSEY HARTVILLE	4650.00	4,379.91	117.09
J-2	PLATTE CO	4611.40	4,323.15	124.96
J-3	FT. LARAMIE	4540.87	4,235.56	132.36
J-4	LINGLE VETERAN YODER	4459.10	4,169.94	125.36
J-5	HAWK-SPRINGS LA GRANGE TORRINGTON	4386.65	4,099.99	124.27
J-6	GOSHEN CO HENRY LYMAN	4337.01	4,046.81	125.81
J-7	MORRILL	4305.20	3,987.14	137.89
J-8	MITCHELL	4247.79	3,953.33	127.66
J-9	GERING SCOTTSBLUFF TERRYTOWN	4172.96	3,890.99	122.24
J-10	MELBETA	4139.10	3,826.99	135.31
J-11	MINATARE	4136.22	3,825.99	134.49
J-12	MCGREW	4123.08	3,883.43	103.89
J-13	SCOTTSBLUFF CO	4119.97	3,876.78	105.43
J-14	BAYARD	4076.11	3,792.89	122.78
J-15	BRIDGEPORT MORILL CO	3882.30	3,659.26	96.69

Table 4.3 – Proposed model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	42.00	41.00[3]	Steel	130[5]
P-2	1,245	PMP-1	J-1	42.00	41.00[3]	Steel	130[5]
P-3	20,196	J-1	J-2	42.00	41.00[3]	Steel	130[5]
P-4	41,899	J-2	J-3	42.00	41.00[3]	Steel	130[5]
P-5	55,626	J-3	J-4	42.00	41.00[3]	Steel	130[5]
P-6	308	J-4	PRV-1	42.00	41.00[3]	Steel	130[5]
P-7	51,171	PRV-1	J-5	42.00	41.00[3]	Steel	130[5]
P-8	43,900	J-5	J-6	42.00	41.00[3]	Steel	130[5]
P-9	36,996	J-6	J-7	36.00	35.00[3]	Steel	130[5]
P-10	629	J-7	PRV-2	36.00	35.00[3]	Steel	130[5]
P-11	32,075	PRV-2	J-8	36.00	35.00[3]	Steel	130[5]
P-12	46,500	J-8	J-9	36.00	35.00[3]	Steel	130[5]
P-13	50,900	J-9	J-10	24.00	22.76[4]	PVC	150[5]
P-14	4,452	J-10	J-11	24.00	22.76[4]	PVC	150[5]
P-15	734	J-11	PRV-3	24.00	22.76[4]	PVC	150[5]
P-16	21,714	PRV-3	J-12	24.00	22.76[4]	PVC	150[5]
P-17	5,400	J-12	J-13	24.00	22.76[4]	PVC	150[5]
P-18	40,600	J-13	J-14	16.00	15.35[4]	PVC	150[5]
P-19	81,756	J-14	J-15	16.00	15.35[4]	PVC	150[5]

Table 4.4 – Recommended model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	45.00	44.00[3]	Steel	130[5]
P-2	1,245	PMP-1	J-1	45.00	44.00[3]	Steel	130[5]
P-3	20,196	J-1	J-2	45.00	44.00[3]	Steel	130[5]
P-4	41,899	J-2	J-3	45.00	44.00[3]	Steel	130[5]
P-5	55,626	J-3	J-4	45.00	44.00[3]	Steel	130[5]
P-6	308	J-4	PRV-1	45.00	44.00[3]	Steel	130[5]
P-7	51,171	PRV-1	J-5	45.00	44.00[3]	Steel	130[5]
P-8	43,900	J-5	J-6	45.00	44.00[3]	Steel	130[5]
P-9	36,996	J-6	J-7	42.00	41.00[3]	Steel	130[5]
P-10	629	J-7	PRV-2	42.00	41.00[3]	Steel	130[5]
P-11	32,075	PRV-2	J-8	42.00	41.00[3]	Steel	130[5]
P-12	46,500	J-8	J-9	42.00	41.00[3]	Steel	130[5]
P-13	50,900	J-9	J-10	30.00	28.77[4]	PVC	150[5]
P-14	4,452	J-10	J-11	30.00	28.77[4]	PVC	150[5]
P-15	734	J-11	PRV-3	30.00	28.77[4]	PVC	150[5]
P-16	21,714	PRV-3	J-12	30.00	28.77[4]	PVC	150[5]
P-17	5,400	J-12	J-13	30.00	28.77[4]	PVC	150[5]
P-18	40,600	J-13	J-14	18.00	17.27[4]	PVC	150[5]
P-19	81,756	J-14	J-15	18.00	17.27[4]	PVC	150[5]

4.1 Transient Initiation

Various methods of surge initiation were discussed in section 2.0 Background, but in an effort to simulate the most likely and worst-case scenario, it was determined that surge would be initiated through power loss to the pump station at the water treatment plant (WTP). This is the method used for surge initiation for all demand periods and conditions. It is assumed that power was interrupted suddenly and without warning, and that power remained off until attenuation of the resulting water hammer or until the reporting time period expired. Additionally, backup power/pumps were not started prior to failure or any time thereafter. The purpose of this type of transient analysis is to ensure that the system and its components can withstand the resulting differential surge pressures and determine how long you must wait for the transient energy to dissipate.

To simulate the occurrence of a power failure, various pump parameters and definitions were added/modified for the existing pump system. For the purpose of a transient analysis, it is required that a check valve is modeled just downstream of the pump to protect it from water hammer damage. HAMMER requires that an inside diameter for this check valve be specified. The check valve was sized to 41-in and 44-in for the proposed and recommended analyses, respectively, to match the sizing of the pipelines adjacent to the valve. The program then requests a pump condition for which a transient can be initiated, "Shut Down After Time Delay" was elected to model the power failure. A delay of 30 seconds was chosen to show initial steady stated conditions prior to surge initiation. This 30 second delay was maintained throughout all demand periods and conditions. HAMMER then required the input of various pump definitions, including: efficiency, inertia (pump and motor), and speed. Unlike the steady state analysis, where a single pump was selected to meet all demand

periods and conditions, different pumps were chosen in the transient model specifically for each demand period and condition to account for these varying definitions. Potable water vertical turbine pumps were selected for each demand period and condition using the Pentair Pump Selection Software, Encompass 2.0. The performance data sheets for each of the selected pumps are shown in **Figures 4.2-4.5**. The definitions for each pump by demand period and condition are summarized in **Table 4.5**.

Table 4.5 – Pump definitions by demand period and condition

Demand Period	Demand Condition	Flow Rate (MGD)	Differential Head (ft)	Motor Rating (HP)	Efficiency (%)	Inertia ($lb{\cdot}ft^2$)	Speed (RPM)
2070	Peak	34.08	270.85	2,000	86.05	12,502.10	661
2070	Average	17.04	270.85	1,000	86.30	1,755.60	1170
2020	Peak	20.64	270.85	1,250	84.38	4,036.97	868
2020	Average	10.32	270.85	600	86.62	1,472.96	879

Inertia for each pump was determined using HAMMER's Pump and Motor Inertia Calculator, where brake horsepower at the best efficiency point, and rotational speed were required as inputs. Finally, in the pump definitions for each pump, it was indicated that reverse spin was not allowed. Not allowing reverse spin reiterates there is a check valve on the discharge side of the pump.

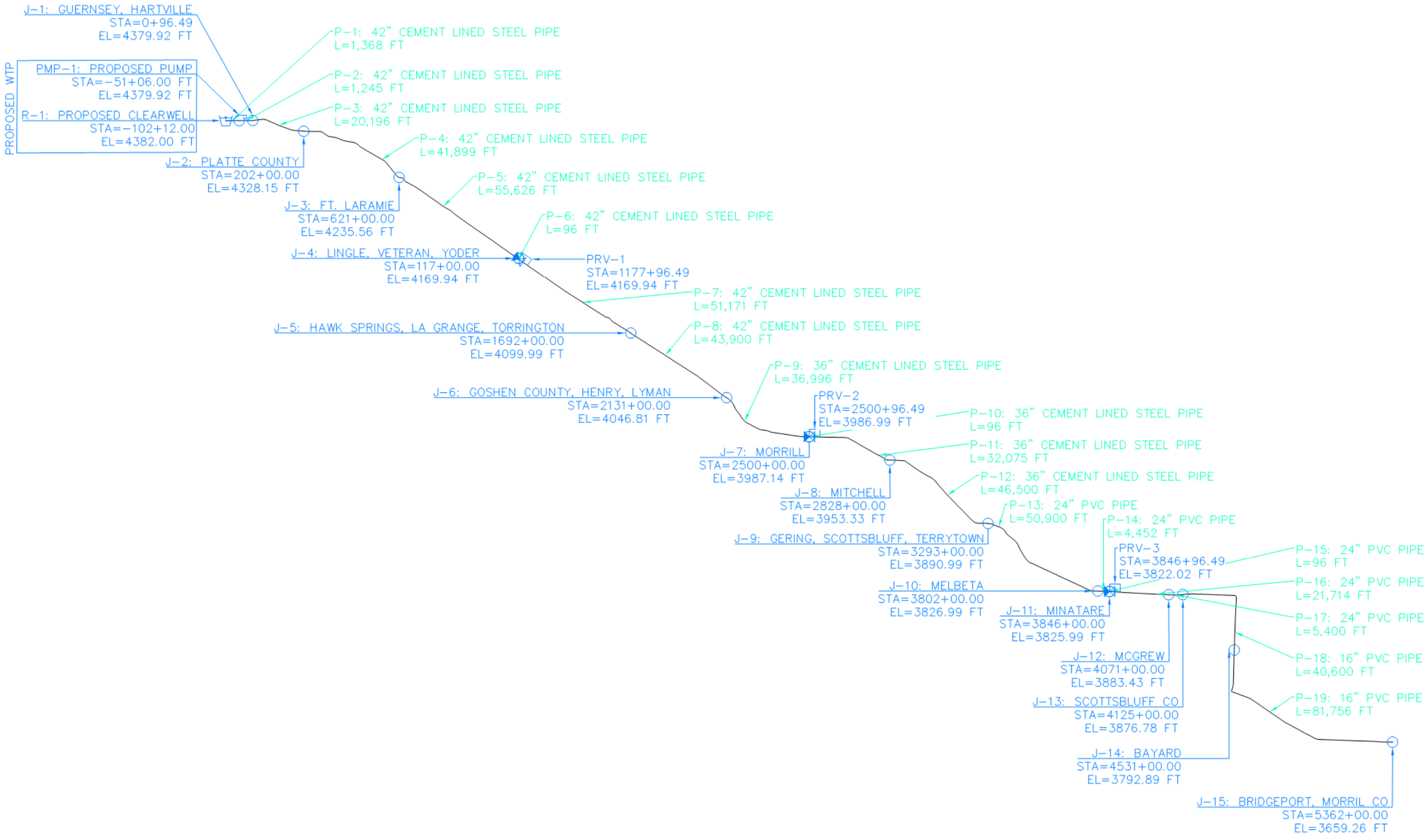


Figure 4.1 – Proposed hydraulic model alignment imported in to HAMMER

*Note: Alignment shown with pipe diameters for the proposed configuration, the recommended pipe diameter configuration uses the same alignment and hydraulic components

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 44B-BRZ
Service	:	Stages	: 3
Quantity	: 1	Based on curve number	: 44_TURB_3750_0720_BR Rev 140317
Quote number	:	Date last saved	: 31 Jul 2017 10:41 AM

Operating Conditions

Flow, rated	: 34.08 MG/day
Differential head / pressure, rated (requested)	: 270.9 ft
Differential head / pressure, rated (actual)	: 271.6 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 661 rpm
Impeller diameter, rated	: 31.94 in
Impeller diameter, maximum	: 31.94 in
Impeller diameter, minimum	: 28.78 in
Efficiency (bowl / pump)	: 86.05 / - %
NPSH required / margin required	: 24.29 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 71 / 183 Metric units
Minimum Continuous Stable Flow	: 20.25 MG/day
Head, maximum, rated diameter	: 423.9 ft
Head rise to shutoff (bowl / pump)	: 56.10 / - %
Flow, best eff. point (bowl / pump)	: 35.77 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 95.27 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 1,623 hp
Power (bowl / pump)	: 1,886 / - hp
Power, maximum, rated diameter	: 1,893 hp
Minimum recommended motor rating	: 2,000 hp / 1,491 kW

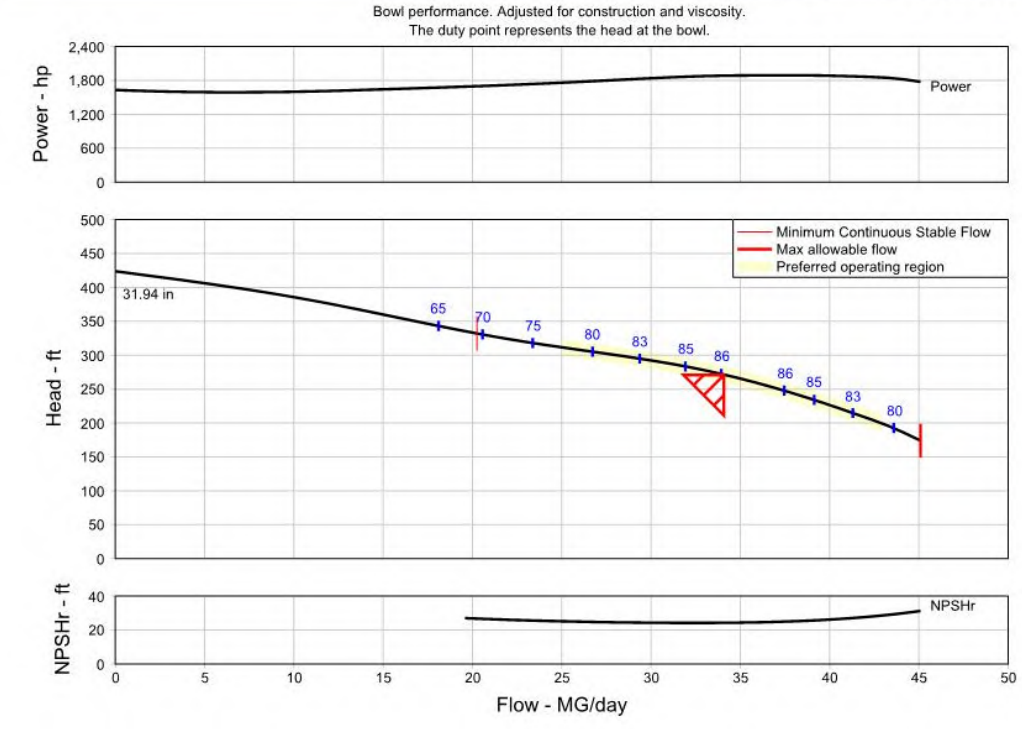


Figure 4.2 – 2070 Peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 30E-BRZ
Service	:	Stages	: 2
Quantity	: 1	Based on curve number	: 30_TURB_3440_1200_BR Rev 130808
Quote number	:	Date last saved	: 31 Jul 2017 10:47 AM

Operating Conditions

Flow, rated	: 17.04 MG/day
Differential head / pressure, rated (requested)	: 270.9 ft
Differential head / pressure, rated (actual)	: 271.5 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 1170 rpm
Impeller diameter, rated	: 21.40 in
Impeller diameter, maximum	: 21.40 in
Impeller diameter, minimum	: 18.56 in
Efficiency (bowl / pump)	: 86.30 / - %
NPSH required / margin required	: 29.08 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 62 / 197 Metric units
Minimum Continuous Stable Flow	: 9.00 MG/day
Head, maximum, rated diameter	: 392.7 ft
Head rise to shutoff (bowl / pump)	: 44.67 / - %
Flow, best eff. point (bowl / pump)	: 17.12 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 99.56 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 811 hp
Power (bowl / pump)	: 940 / - hp
Power, maximum, rated diameter	: 966 hp
Minimum recommended motor rating	: 1,000 hp / 746 kW

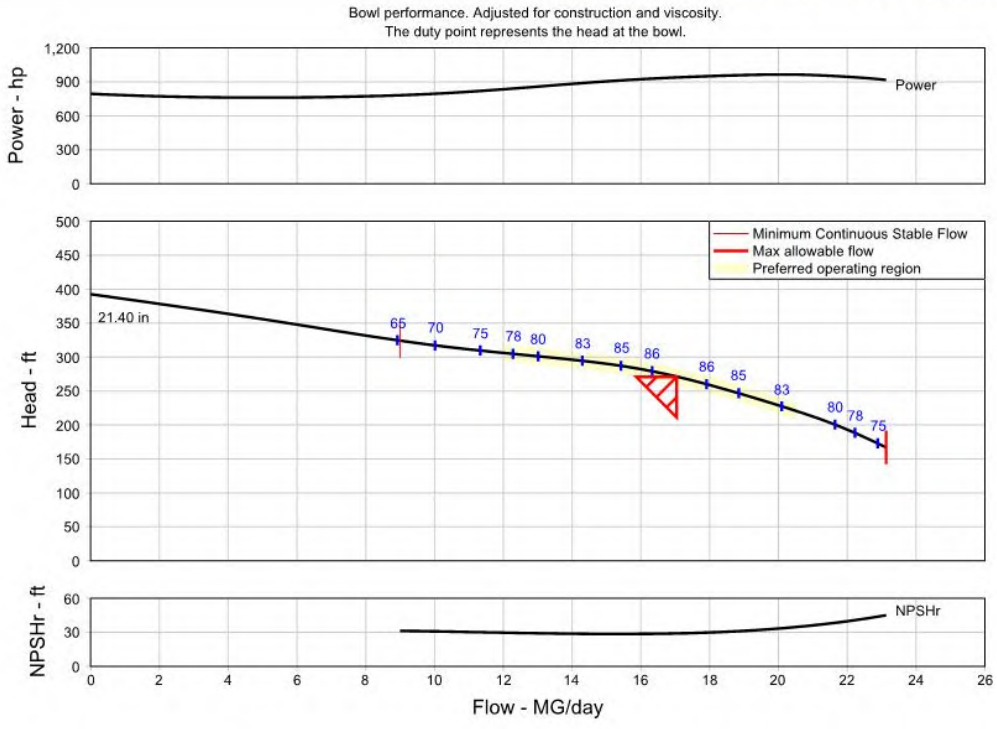


Figure 4.3 – 2070 Average demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 34H-BRZ
Service	:	Stages	: 3
Quantity	: 1	Based on curve number	: 34_TURB_3740_0900_BR Rev 140717
Quote number	:	Date last saved	: 31 Jul 2017 10:48 AM

Operating Conditions

Flow, rated	: 20.64 MG/day
Differential head / pressure, rated (requested)	: 270.9 ft
Differential head / pressure, rated (actual)	: 272.5 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 868 rpm
Impeller diameter, rated	: 21.75 in
Impeller diameter, maximum	: 21.75 in
Impeller diameter, minimum	: 18.50 in
Efficiency (bowl / pump)	: 84.38 / - %
NPSH required / margin required	: 22.63 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 68 / 194 Metric units
Minimum Continuous Stable Flow	: 10.24 MG/day
Head, maximum, rated diameter	: 459.5 ft
Head rise to shutoff (bowl / pump)	: 68.63 / - %
Flow, best eff. point (bowl / pump)	: 20.61 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 100.14 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 986 hp
Power (bowl / pump)	: 1,168 / - hp
Power, maximum, rated diameter	: 1,182 hp
Minimum recommended motor rating	: 1,250 hp / 932 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

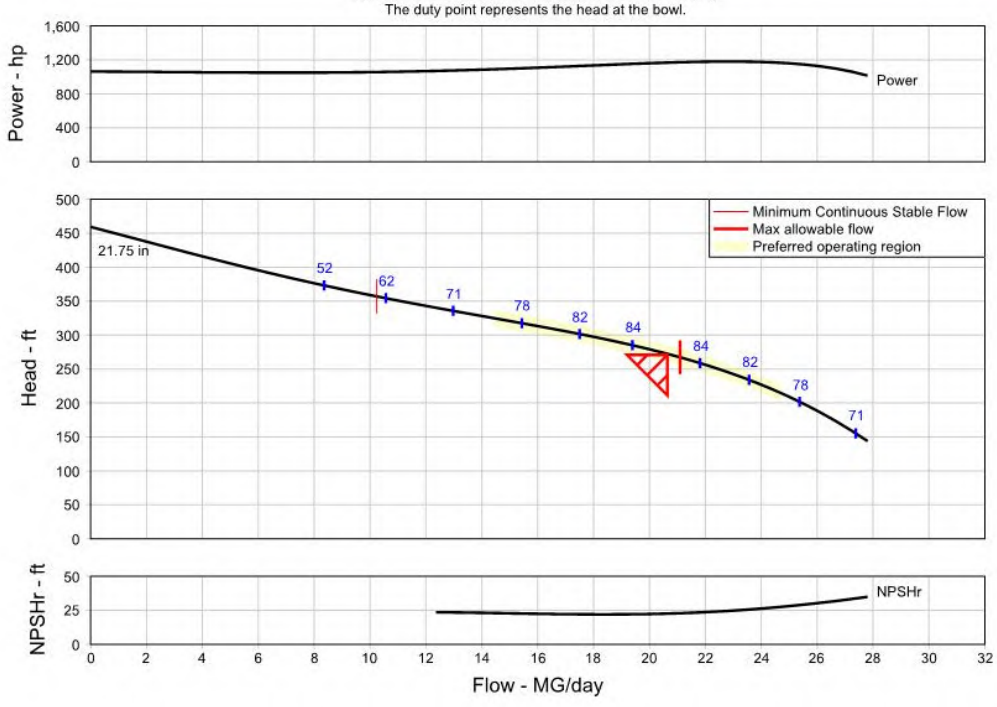


Figure 4.4 – 2020 Peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 4
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 31 Jul 2017 10:48 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 270.9 ft
Differential head / pressure, rated (actual)	: 271.0 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 879 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.62 / - %
NPSH required / margin required	: 18.03 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.47 MG/day
Head, maximum, rated diameter	: 424.6 ft
Head rise to shutoff (bowl / pump)	: 56.72 / - %
Flow, best eff. point (bowl / pump)	: 10.36 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 99.60 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 490 hp
Power (bowl / pump)	: 566 / - hp
Power, maximum, rated diameter	: 580 hp
Minimum recommended motor rating	: 600 hp / 447 kW

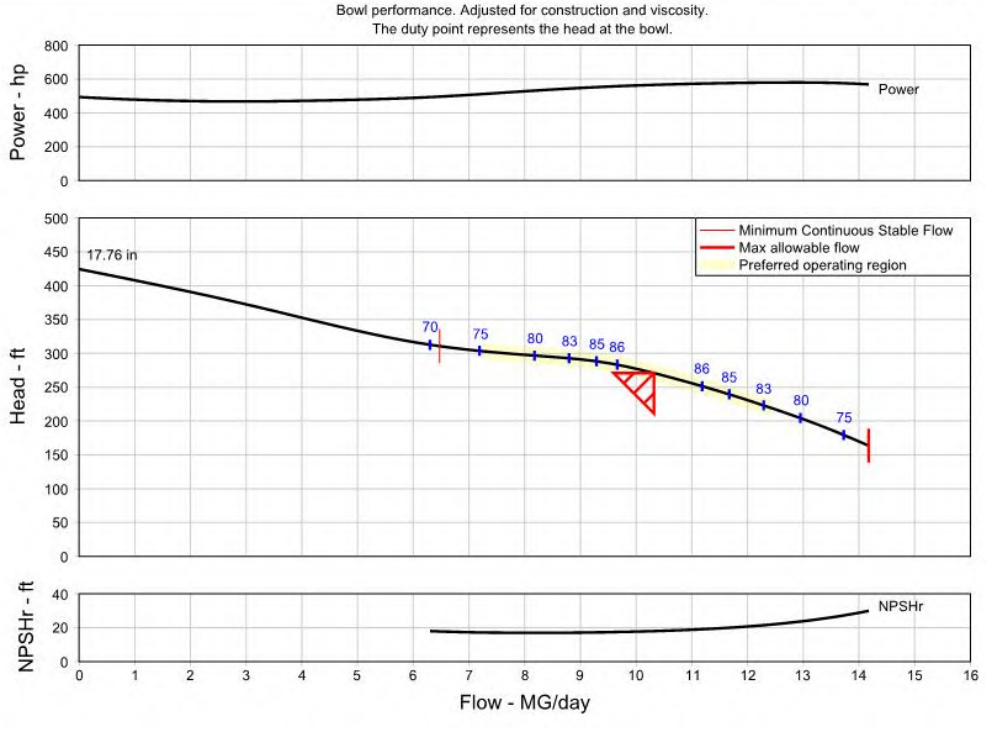


Figure 4.5 – 2020 Average demand pump performance datasheet

4.2 Transient Wave Speed

The transient pressure change is directly proportional to the transient wave speed. Wave speed is therefore a parameter that must be accurately evaluated. The magnitude of this parameter is dependent on various properties of the liquid and pipe material, as well as the presence of free air or gas within the pipeline. It is assumed that during the initial steady state conditions, prior to surge initiation, the pipeline is void of free air or gas. Wave speeds for each varying pipe type were approximated using HAMMER's Wave Speed Calculator, which required the following inputs: liquid bulk modulus of elasticity, specific gravity, and the pipeline material's Young's Modulus, Poisson's Ratio, and wall thickness. Each analysis was assumed to use Water at 39°F for the liquid type and properties. The properties for the liquid were selected from HAMMER's Engineering Liquid Library. **Figure 4.6** details the properties of the Water at 39°F as used from HAMMER's Engineering Library.

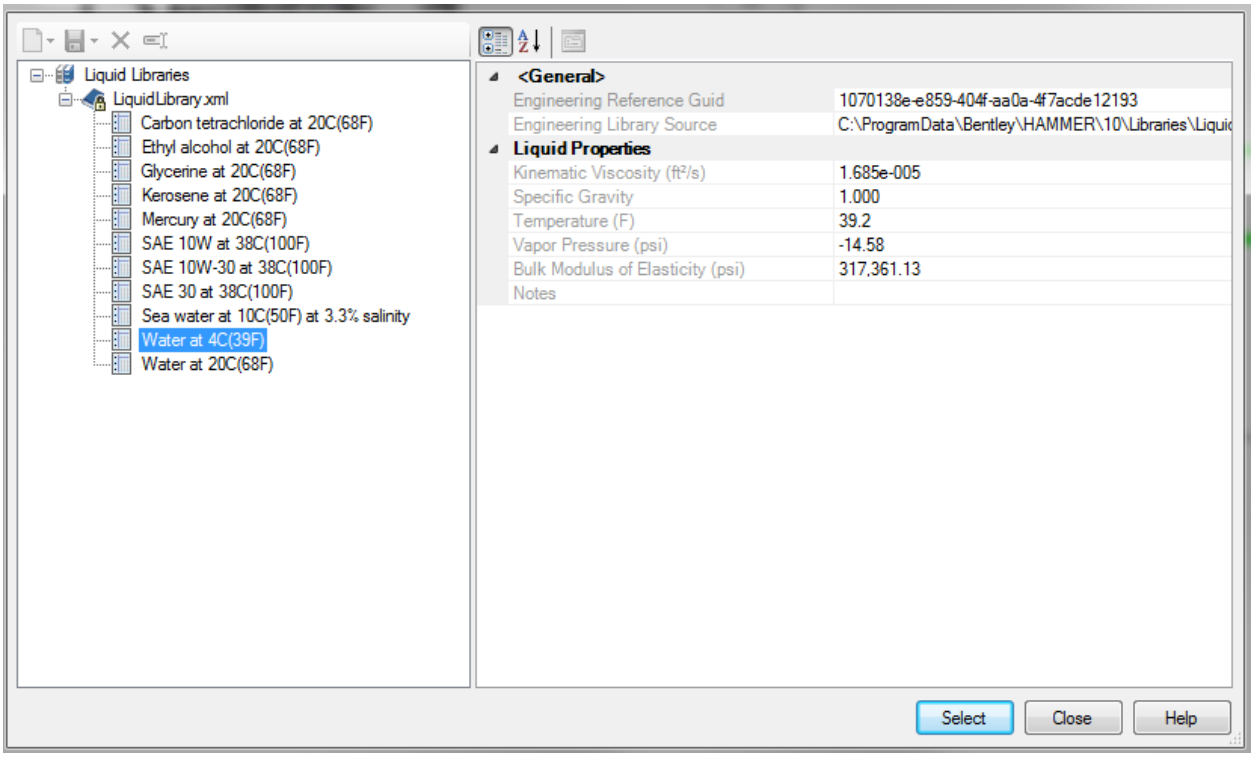


Figure 4.6 – Liquid properties of chosen liquid, water at 39°F

Pipe material properties were entered in the same manner that the liquid properties were, using HAMMER's Engineering Library for Materials. **Figures 4.7-4.8** show the material properties for the steel and PVC portions of pipe, respectively.

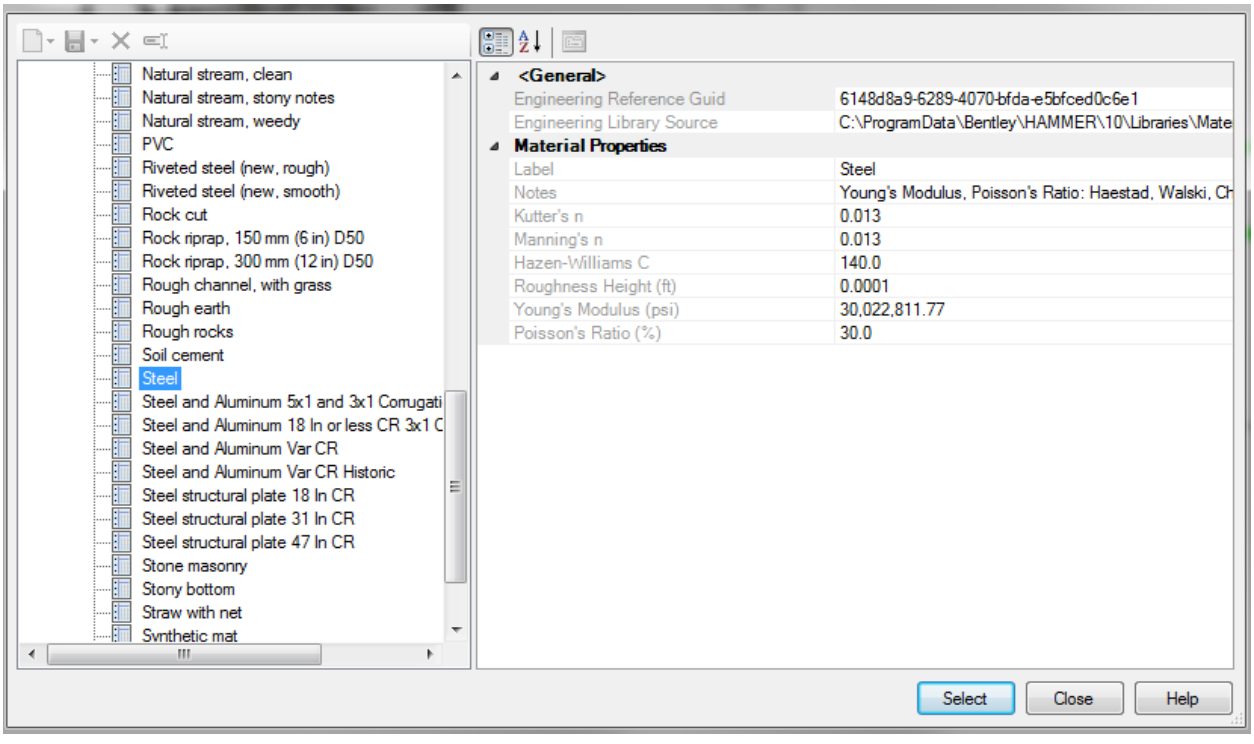


Figure 4.7 – Material properties of steel sections of pipe

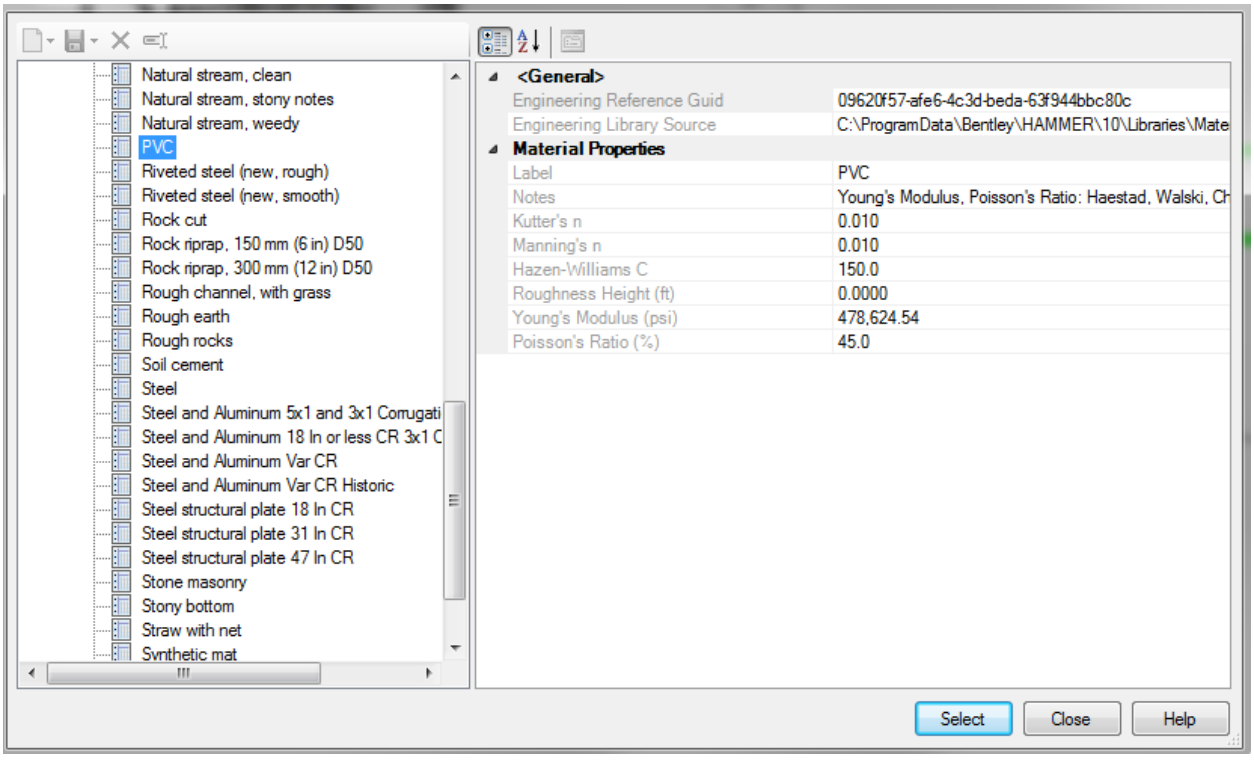


Figure 4.8 – Material properties of PVC section of pipe

Pipe wall thicknesses for the PVC sections were selected from 235-psi rated pipes with the corresponding required dimensions as shown in **Tables 4.3-4.4**. Pipe thicknesses for the steel sections of pipe were selected based on having a working pressure rating to meet the desired maximum pressure in the transmission line of 225-psi with a factor of safety of at least 2.0. Using this criterion, and for uniformity and ease, 0.5-in thick pipe was applied to all pipe using steel. For all model scenarios, any steel pipe was assumed to be 0.5-in thick and have also have a 0.5-in thick cement lining. To account for the cement lining in the wave speed calculation, the relative strength of cement to steel was used to determine an equivalent steel thickness[6]. Using this methodology, a 0.5-in cement lining equivalates to 0.05-in thick steel. The thickness used in the wave speed calculation was entered as the sum of the steel pipe thickness and the steel equivalent thickness of the cement lining. Calculated wave speeds based on corresponding pipe properties are listed in **Table 4.6**. Wave speed computation also relied on the pipeline support, here, the "Anchored Throughout" support was chosen for all pipes. This support type was chosen using information provided in the Appraisal Investigation, indicating burying of the transmission pipeline. This is also dependent on the assumption that the pipeline will be designed with appropriately size thrust blocking or the equivalent. It is recommended that subsequent studies develop provisions for thrust force mitigation. It is recommended that this support also account for the force due to thermal expansion or contraction of the pipeline.

Table 4.6 – Wave speed based on pipe properties

Material	Nominal Diameter (in)	Actual Inside Diameter (in)	Thickness (in)	Equivalent Lining Thickness (in)	Total Thickness (in)	Wave Speed (ft/s)
Steel	45.00	44.00[3]	0.50[3]	0.05	0.55	3,703.62
Steel	42.00	41.00[3]	0.50[3]	0.05	0.55	3,822.26
Steel	36.00	35.00[3]	0.50[3]	0.05	0.55	3,822.26
PVC	30.00	28.77[4]	1.25[4]	NA	1.25	1,337.26
PVC	24.00	22.76[4]	1.24[4]	NA	1.24	1,332.30
PVC	18.00	17.20[4]	0.80[4]	NA	0.80	1,453.64
PVC	16.00	15.35[4]	0.65[4]	NA	0.65	1,253.37

4.3 Transient Solver

Reporting transient results are contingent upon entering various extended period simulation parameters. The two most important parameters entered in the Transient Solver are run duration and vapor pressure. For all simulations, a run duration of 600 seconds (10 minutes) and a vapor pressure of negative 14.2-psi were used. Like the liquid properties for wave speed calculation, the vapor pressure was developed from HAMMER's Engineering Liquid Library using water at 39°F.

5.0 Simulation Results

Without surge protection, as initially modeled, simulation results indicate tremendous cavitation due to the surge for all pipe diameter configurations (proposed and recommended) at all demands. The results consistently show water hammer and the development of cavitation that starts at the pump discharge check-valve. With the pump no longer supplying water, supply becomes dependent on gravity feed from the clear well alone, which provides a significantly lower flow at each demand. Demand at each of the junctions do not change, and without an air valve this results in a vacuum being pulled and only continues to grow during the progression of the analysis. Due to the potentially

damaging conditions, operation of the system should avoid the occurrence of cavitation altogether. Applying this criterion, Wenck developed a subsequent model with surge protection equipment in an attempt to eliminate cavitation and reduce the effects of the resulting water hammer. During the development of this model, Wenck determined that dampening a surge that oscillates the entire length of the transmission line quickly became economically infeasible. Pursuant to this, Wenck developed an alternative, recommended, transmission alignment that eliminates the potential for surge from pump power loss for over 97% of the pipeline. This was achieved through the proposition of a new storage well/basin atop a bluff situated near the Whalen Canyon Reservoir; from which each demand junction will be gravity fed. Additionally, this recommended alignment only varies from the proposed alignment between J-1 and J-2, the Guernsey and Platte Valley County junctions, respectively.

The results for the proposed and recommended alignments, both with and without surge protection equipment are discussed in greater detail in the corresponding sub-sections below.

5.1 Proposed Alignment Simulation Results

Aside from the simulation for the proposed pipeline diameters during the 2070 peak demand, all scenarios computed successfully. The 2070 peak with proposed pipe diameters scenario failed due to resulting negative pressures at various junctions during the initial steady state period (before the transient even began); these results are consistent with those seen in the preceding WaterCAD Technical Memo. Upon review of the results for both the proposed and recommended pipeline diameter configurations, it is evident that surge results in either cavitation or negative pressures for all demands. Negative pressure is indicated when the hydraulic grade line (HLG) dips below the physical elevation line. Cavitation/vacuum occurs when the magnitude of the negative pressure exceeds the vapor pressure. **Figures 5.1-5.2** display the maximum and minimum HGLs resulting from the surge for each demand period/condition. These figures are organized by proposed and recommended pipeline diameter configurations, respectively. Please note that the green line represents the physical elevation and that the steady state (SS) HGLs are equivalent to the max HGLs and are therefore omitted for clarity.

5.1 Proposed Alignment Simulation with Surge Protection Results

In an attempt to eliminate cavitation and reduce the impacts of the surge on the PAWS pipeline, Wenck introduced hydropneumatic tanks into the model. This implementation uses a water treatment specific 10,000-gallon hydropneumatic tank manufactured by TIGG Corporation, **Figure 5.3** shows the cut sheet for this tank. The model began by implementing a single tank, but soon elevated to four tanks when it was observed that the tank did little to reduce the magnitude of the surge. The addition of four tanks, much like the single tank, did little for reducing the surge magnitude. Additionally, with the tanks in place, cavitation still occurs for multiple demand periods/conditions. It should be noted that the inclusion of the tanks, however, did attenuate the surge much faster than without. The four tanks were located at approximate mid points between PRVs or between a PRV and a pump or termination where applicable at the start and end of the transmission line. **Figures 5.4-5.5** display the maximum and minimum HGLs resulting from the surge for each demand period/condition with surge protection in place. These figures are organized by proposed and recommended pipeline diameter configurations, respectively. Please note that the green line represents the physical elevation and that the steady state (SS) HGLs are equivalent to the max HGLs and are therefore omitted for clarity.

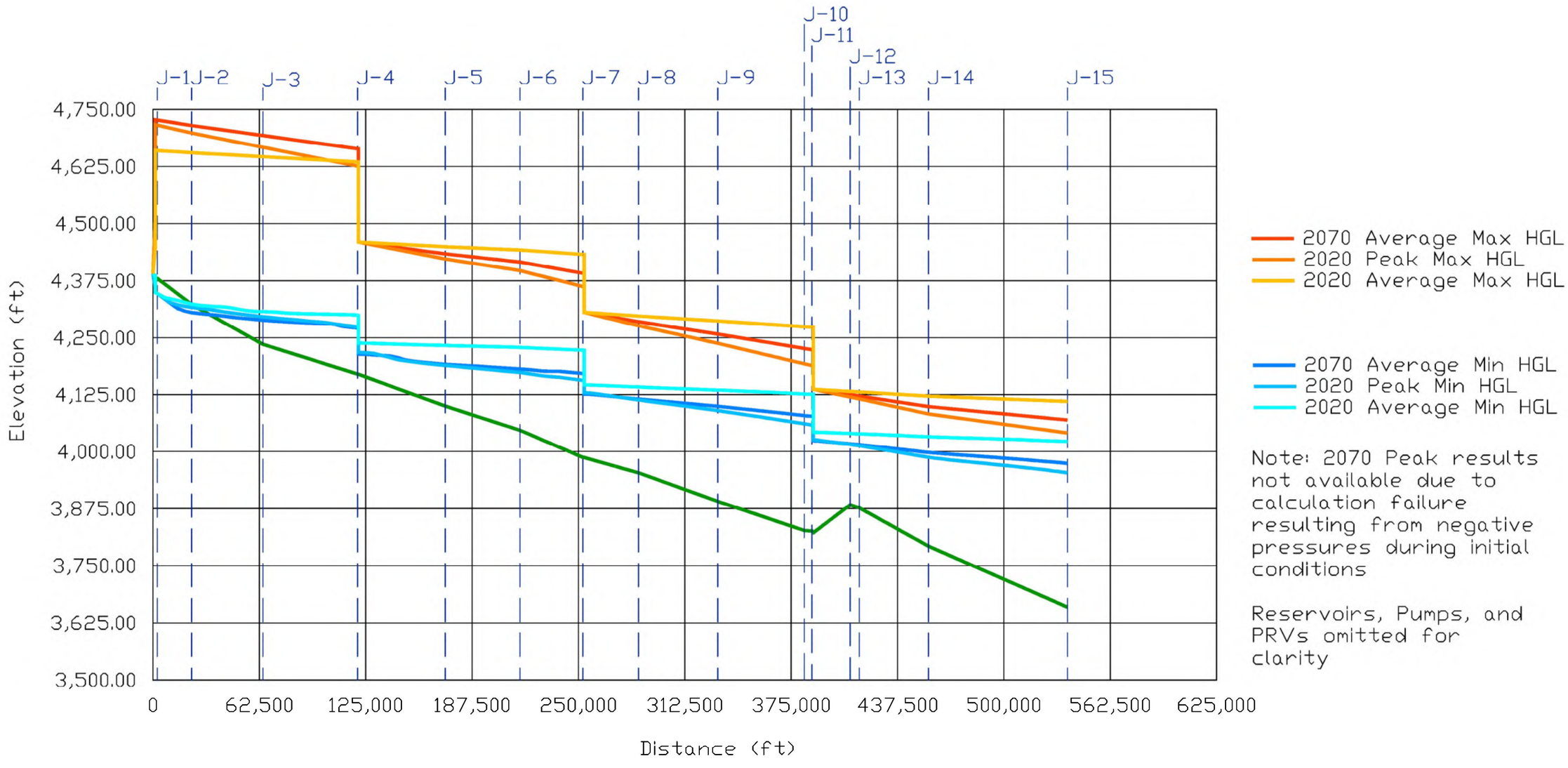


Figure 5.1 – Proposed pipeline diameters: transient hydraulic grade max and min

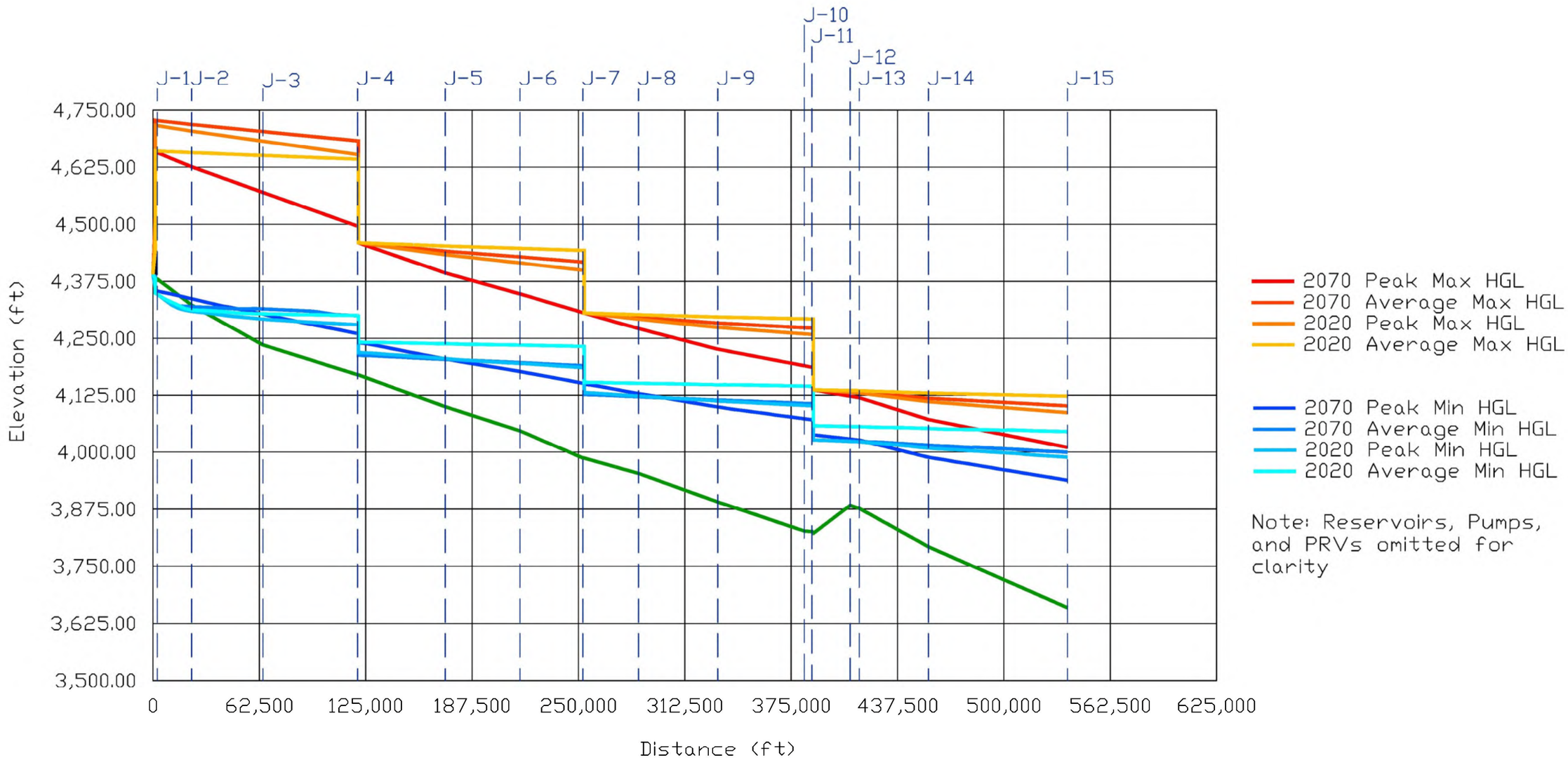
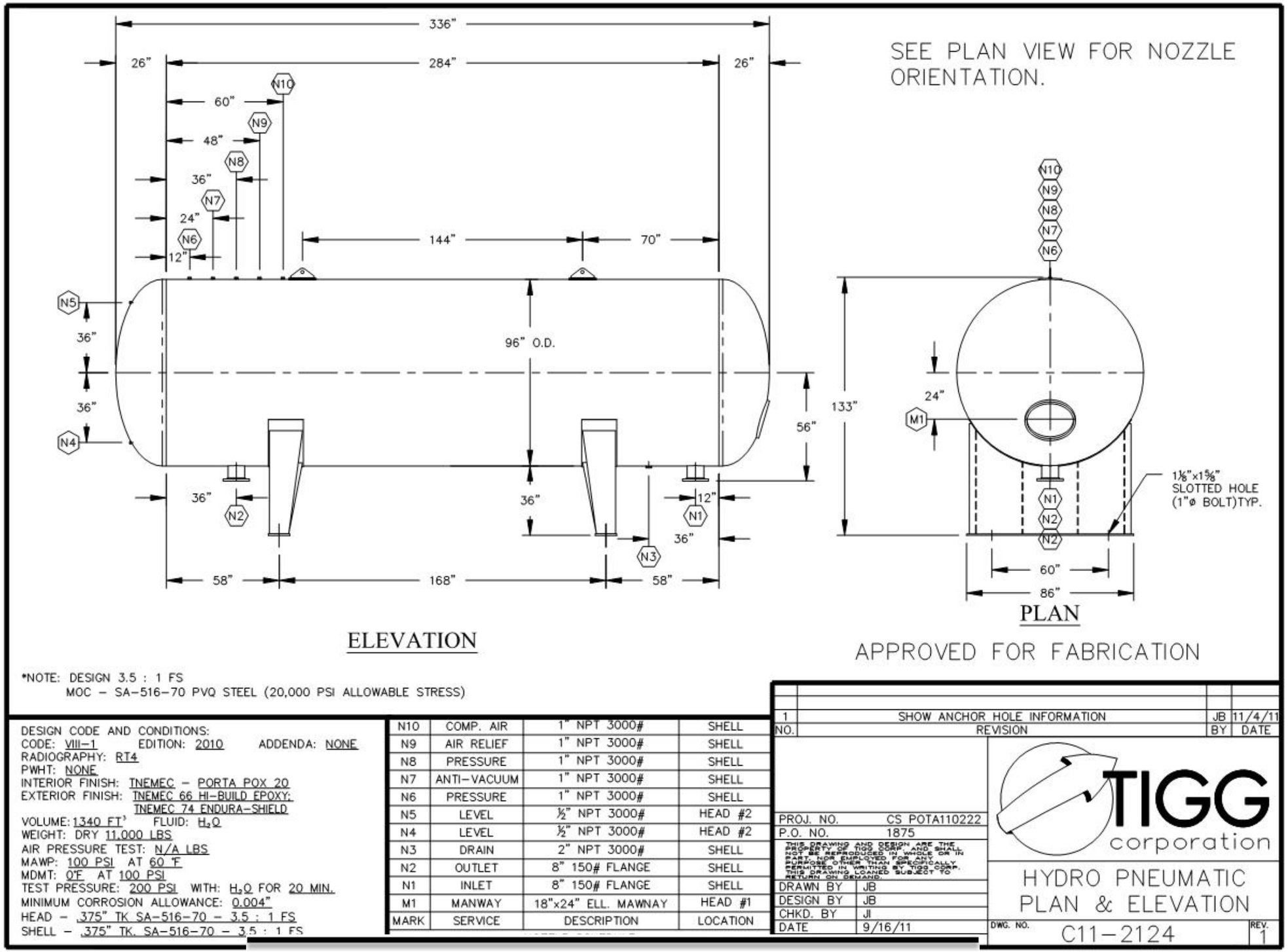


Figure 5.2 – Recommended pipeline diameters: transient hydraulic grade max and min



*NOTE: DESIGN 3.5 : 1 FS
MOC – SA-516-70 PVQ STEEL (20,000 PSI ALLOWABLE STRESS)

DESIGN CODE AND CONDITIONS:
CODE: VIII-1 EDITION: 2010 ADDENDA: NONE
RADIOGRAPHY: RT4
PWHT: NONE
INTERIOR FINISH: TNEMEC – PORTA POX 20
EXTERIOR FINISH: TNEMEC 66 HI-BUILD EPOXY; TNEMEC 74 ENDURA-SHIELD
VOLUME: 1340 FT³ FLUID: H_2O
WEIGHT: DRY 11,000 LBS
AIR PRESSURE TEST: N/A LBS
MAWP: 100 PSI AT 60 °F
MDMT: 0°F AT 100 PSI
TEST PRESSURE: 200 PSI WITH: H_2O FOR 20 MIN.
MINIMUM CORROSION ALLOWANCE: 0.004"
HEAD – .375" TK SA-516-70 – 3.5 : 1 FS
SHELL – .375" TK. SA-516-70 – 3.5 : 1 FS

MARK	SERVICE	DESCRIPTION	LOCATION
N10	COMP. AIR	1" NPT 3000#	SHELL
N9	AIR RELIEF	1" NPT 3000#	SHELL
N8	PRESSURE	1" NPT 3000#	SHELL
N7	ANTI-VACUUM	1" NPT 3000#	SHELL
N6	PRESSURE	1" NPT 3000#	SHELL
N5	LEVEL	½" NPT 3000#	HEAD #2
N4	LEVEL	½" NPT 3000#	HEAD #2
N3	DRAIN	2" NPT 3000#	SHELL
N2	OUTLET	8" 150# FLANGE	SHELL
N1	INLET	8" 150# FLANGE	SHELL
M1	MANWAY	18"x24" ELL. MAWNAY	HEAD #1

NO.	REVISION	BY	DATE
1	SHOW ANCHOR HOLE INFORMATION	JB	11/4/11

PROJ. NO.	CS POTA110222
P.O. NO.	1875
DRAWN BY	JB
DESIGN BY	JB
CHKD. BY	JI
DATE	9/16/11

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TIGG corporation

HYDRO PNEUMATIC PLAN & ELEVATION

DWG. NO. C11-2124 REV. 1

Figure 5.3 – Hydropneumatic surge tank detail and specifications

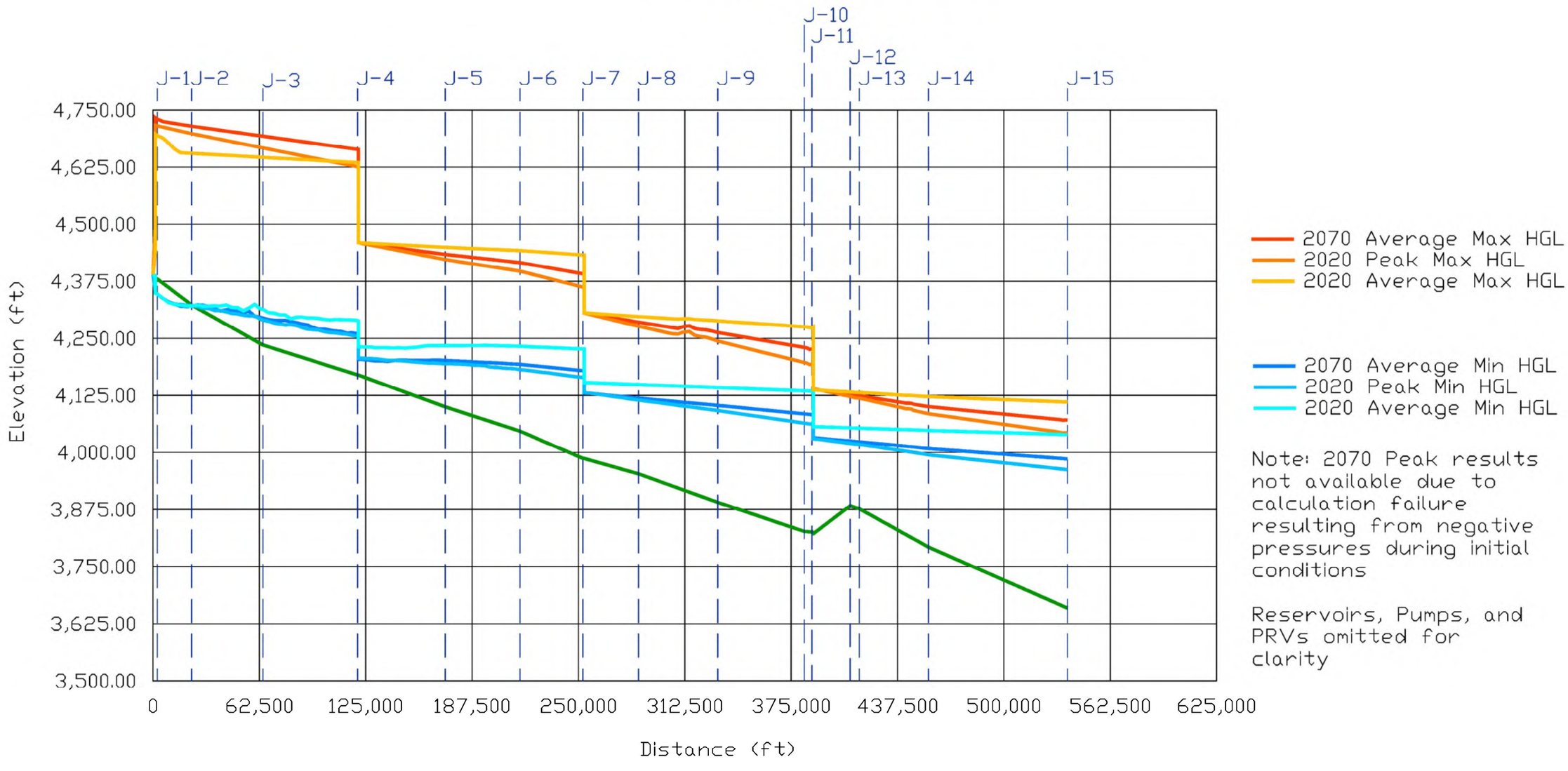

Figure 5.4 – Proposed pipeline diameters: transient hydraulic grade max and min with surge protection

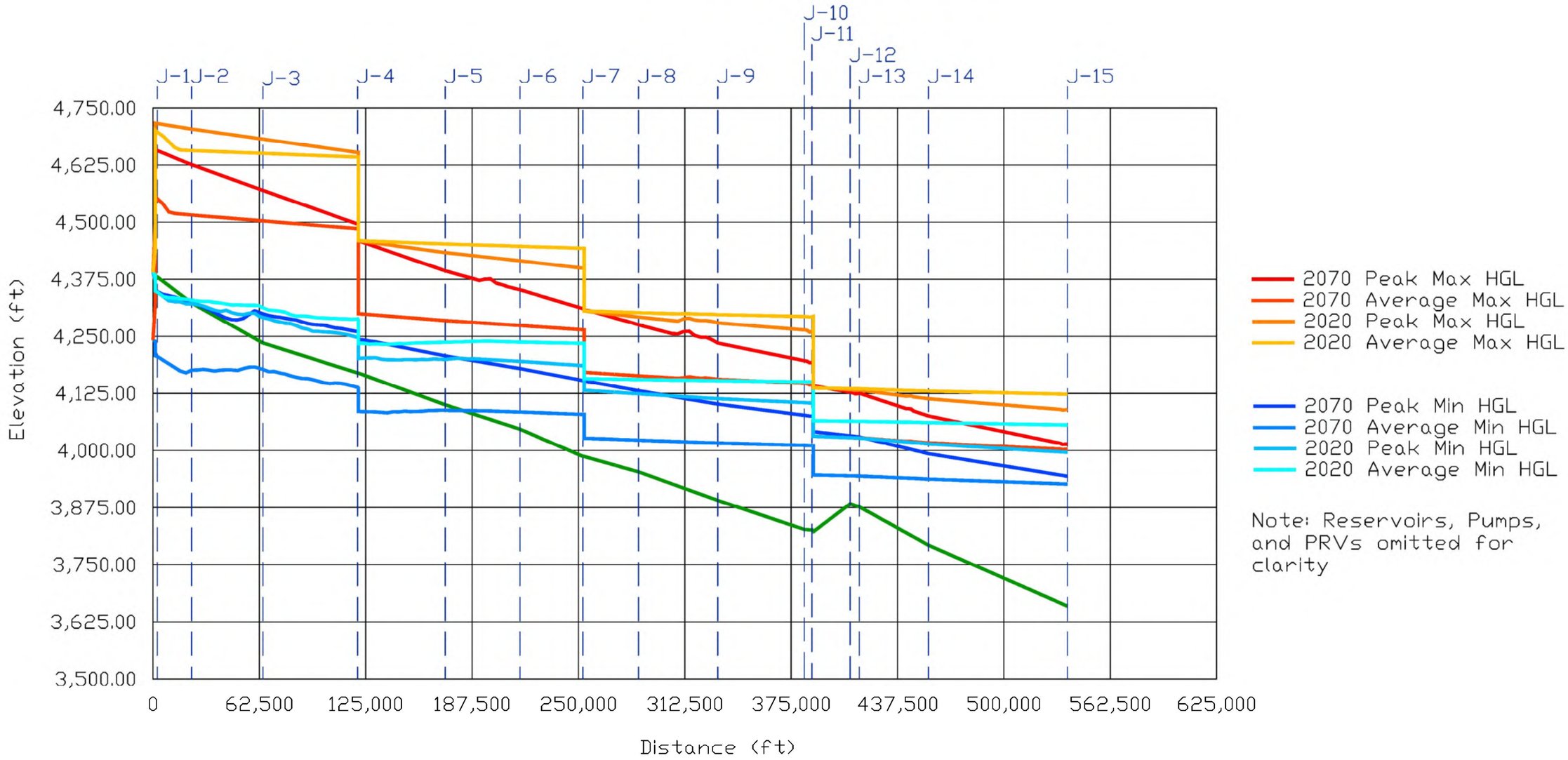

Figure 5.5 – Recommended pipeline diameters: hydraulic grade max and min with surge protection

5.2 Recommended Alignment

As briefly discussed above, the recommended pipeline alignment varies from the proposed alignment only between junctions J-1 and J-2. Although the changes only occur in this small section of transmission line, they incorporate a more in-depth analysis; accounting for supply from the North Platte River, storage in the proposed Whalen Canyon Reservoir, and the recommended storage well atop the bluff adjacent to the reservoir. **Figure 5.6** of a satellite image maps out the recommended alignment between junctions J-1 and J-2. **Figure 5.7** depicts the hydraulic model alignment used in HAMMER, and also shows the elevations of the primary hydraulic components in the region. **Figures 5.8-5.9** show topographic isometric view renderings of the reservoir and storage well.

Sequentially, the recommended alignment begins at the North Platte River (≈ 42.254908°, -104.685852°) and from there is pumped to the WTP (≈ 42.271405°, -104.679463°). In conditions of excess this water is diverted to and fills the Whalen Canyon Reservoir. In a condition for which the reservoir is full, and supply from the North Platte is not necessary or warranted, supply to the WTP will come from Whalen Canyon reservoir along the same line that is used to fill it. In any case, after treatment, it is pumped from the WTP to the recommended storage well atop the bluff adjacent to the reservoir (≈ 42.278760°, -104.665371°). From there the treated water is gravity fed to each of the junctions; where J-1 would require its own transmission line, as it will no longer be in sequence with the other junctions, but rather "behind" the supply sources. The transmission line extending from J-2 to J-3, J-4, etc. to the south east does not vary from that shown in the proposed alignment.

Due to modifications of the transmission line, including movement of the WTP, addition of new "reservoirs", and inclusion of a new pump station, various hydraulic, physical, and transient properties either required revision or inclusion. Junction hydraulic pressure and flow demands do not change from those in the proposed alignment. As a result of increased count and changes in sequence, piping properties required revision or inclusion. **Tables 5.1-5.2** indicate the pipe properties for both the proposed and recommended pipeline diameter configurations, respectfully. Based on the individual pipe's properties, transient wave speed remained the same, as selected pipe diameters, linings, materials, etc. have not varied from those selected in the proposed alignment. Wave speeds computed in the proposed alignment model were used for these new pipes, based on their affiliated properties.

Table 5.1 – Proposed pipe diameter configuration model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	322	North Platte River	North Platte Pump Station	42.00	41.00[3]	Steel	130.0[5]
P-2	5,995	North Platte Pump Station	WTP Clear Well	42.00	41.00[3]	Steel	130.0[5]
P-3	342	WTP Clear Well	WTP Pump Station	42.00	41.00[3]	Steel	130.0[5]
P-4	2,445	WTP Clear Well	Proposed Whalen Canyon Reservoir	42.00	41.00[3]	Steel	130.0[5]
P-5	4,230	WTP Pump Station	Storage Basin atop Bluff	42.00	41.00[3]	Steel	130.0[5]
P-6	19,343	Storage Basin atop Bluff	Guernsey, Hartville	42.00	41.00[3]	Steel	130.0[5]

P-7	8,771	Storage Basin atop Bluff	Platte County	42.00	41.00[3]	Steel	130.0[5]
P-8	41,899	Platte County	Ft. Laramie	42.00	41.00[3]	Steel	130.0[5]
P-9	55,626	Ft. Laramie	Lingle, Veteran, Yoder	42.00	41.00[3]	Steel	130.0[5]
P-10	308	Lingle, Veteran, Yoder	PRV-1	42.00	41.00[3]	Steel	130.0[5]
P-11	51,171	PRV-1	Hawk Springs, La Grange, Torrington	42.00	41.00[3]	Steel	130.0[5]
P-12	43,900	Hawk Springs, La Grange, Torrington	Goshen County, Henry, Lyman	42.00	41.00[3]	Steel	130.0[5]
P-13	36,996	Goshen County, Henry, Lyman	Morrill	36.00	35.00[3]	Steel	130.0[5]
P-14	629	Morrill	PRV-2	36.00	35.00[3]	Steel	130.0[5]
P-15	32,075	PRV-2	Mitchell	36.00	35.00[3]	Steel	130.0[5]
P-16	46,500	Mitchell	Gering, Scottsbluff, Terrytown	36.00	35.00[3]	Steel	130.0[5]
P-17	50,900	Gering, Scottsbluff, Terrytown	Melbeta	30.00	28.77[4]	PVC	150.0[5]
P-18	4,452	Melbeta	Minitare	30.00	28.77[4]	PVC	150.0[5]
P-19	734	Minitare	PRV-3	30.00	28.77[4]	PVC	150.0[5]
P-20	21,714	PRV-3	McGrew	30.00	28.77[4]	PVC	150.0[5]
P-21	5,400	McGrew	Scottsbluff Co.	30.00	28.77[4]	PVC	150.0[5]
P-22	40,600	Scottsbluff Co.	Bayard	18.00	17.20[4]	PVC	150.0[5]
P-23	81,756	Bayard	Bridgeport, Morrill Co.	18.00	17.20[4]	PVC	150.0[5]

Table 5.2 – Recommended pipe diameter configuration model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	322	North Platte River	North Platte Pump Station	45.00	44.00[3]	Steel	130.0[5]
P-2	5,995	North Platte Pump Station	WTP Clear Well	45.00	44.00[3]	Steel	130.0[5]
P-3	342	WTP Clear Well	WTP Pump Station	45.00	44.00[3]	Steel	130.0[5]
P-4	2,445	WTP Clear Well	Proposed Whalen Canyon Reservoir	45.00	44.00[3]	Steel	130.0[5]
P-5	4,230	WTP Pump Station	Storage Basin atop Bluff	45.00	44.00[3]	Steel	130.0[5]
P-6	19,343	Storage Basin atop Bluff	Guernsey, Hartville	45.00	44.00[3]	Steel	130.0[5]
P-7	8,771	Storage Basin atop Bluff	Platte County	45.00	44.00[3]	Steel	130.0[5]
P-8	41,899	Platte County	Ft. Laramie	45.00	44.00[3]	Steel	130.0[5]
P-9	55,626	Ft. Laramie	Lingle, Veteran, Yoder	45.00	44.00[3]	Steel	130.0[5]
P-10	308	Lingle, Veteran, Yoder	PRV-1	45.00	44.00[3]	Steel	130.0[5]
P-11	51,171	PRV-1	Hawk Springs, La Grange, Torrington	45.00	44.00[3]	Steel	130.0[5]
P-12	43,900	Hawk Springs, La Grange, Torrington	Goshen County, Henry, Lyman	45.00	44.00[3]	Steel	130.0[5]
P-13	36,996	Goshen County, Henry, Lyman	Morrill	42.00	41.00[3]	Steel	130.0[5]

P-14	629	Morrill	PRV-2	42.00	41.00[3]	Steel	130.0[5]
P-15	32,075	PRV-2	Mitchell	42.00	41.00[3]	Steel	130.0[5]
P-16	46,500	Mitchell	Gering, Scottsbluff, Terrytown	42.00	41.00[3]	Steel	130.0[5]
P-17	50,900	Gering, Scottsbluff, Terrytown	Melbeta	24.00	22.76[4]	PVC	150.0[5]
P-18	4,452	Melbeta	Minitare	24.00	22.76[4]	PVC	150.0[5]
P-19	734	Minitare	PRV-3	24.00	22.76[4]	PVC	150.0[5]
P-20	21,714	PRV-3	McGrew	24.00	22.76[4]	PVC	150.0[5]
P-21	5,400	McGrew	Scottsbluff Co.	24.00	22.76[4]	PVC	150.0[5]
P-22	40,600	Scottsbluff Co.	Bayard	16.00	15.35[4]	PVC	150.0[5]
P-23	81,756	Bayard	Bridgeport, Morrill Co.	16.00	15.35[4]	PVC	150.0[5]

PRV settings were not changed from those in the proposed pipeline alignment. Pumps, however, have changed dramatically. Each pump station is still required to meet the flow rate depicted by the demand period and conditions, but now has to overcome a new differential head due to its physical location. The North Platte pump station differential head was chosen not only to deliver water to the WTP, but to also provide water to the Whalen Canyon reservoir to the point of filling it at a HWL of 4428.0-ft as indicated in the Appraisal Investigation. With the North Platte pump station at approximately 4295.0-ft, a differential head of 133.0 ft was selected as the differential head design point for the pumps that will supply water from the North Platte. The pump station at the WTP clear well is located at an approximate elevation of 4382.0-ft and is will require pumping to the storage well atop the bluff, north-east of it. The approximate hydraulic grade of the water in the storage well when full will be at approximately 4751.0-ft. The rough dimensions for this storage basin are 320-ft x 320-ft x 45-ft deep to account for the potential maximum storage of 34.08 million gallons, and is roughly sized to appropriately fit atop the bluff. From this difference in elevation, the pump station at the WTP clear well will need to achieve a differential head of 369.0-ft. **Table 5.3** summarizes pump definitions for both the North Platte and WTP clear well pump stations.

Table 5.3 – Pump definitions by demand period and condition

Pump Station	Demand Period	Demand Condition	Flow Rate (MGD)	Differential Head (ft)	Motor Rating (HP)	Efficiency (%)	Inertia (lb·ft²)	Speed (RPM)
North Platte	2070	Peak	34.08	133.00	1,000	87.15	5,803.65	611
	2070	Average	17.04	133.00	500	86.30	687.66	1,162
	2020	Peak	20.64	133.00	600	86.43	3,551.36	565
	2020	Average	10.32	133.00	300	86.62	604.31	874
WTP Clear Well	2070	Peak	34.08	369.00	4,250	57.92	33,494.16	678
	2070	Average	17.04	369.00	1,500	86.16	3,276.04	1,130
	2020	Peak	20.64	369.00	1,750	82.49	3,890.11	1,160
	2020	Average	10.32	369.00	900	86.53	2,691.39	850

The performance data sheets for each of the selected pumps are shown in **Figures 5.10-5.17**.

Transient initiation remained as pump power failure. In this case, both pumps shutdown after a 30 second delay. Properties for the transient solver, including vapor pressure and run duration were maintained from the proposed alignment model.

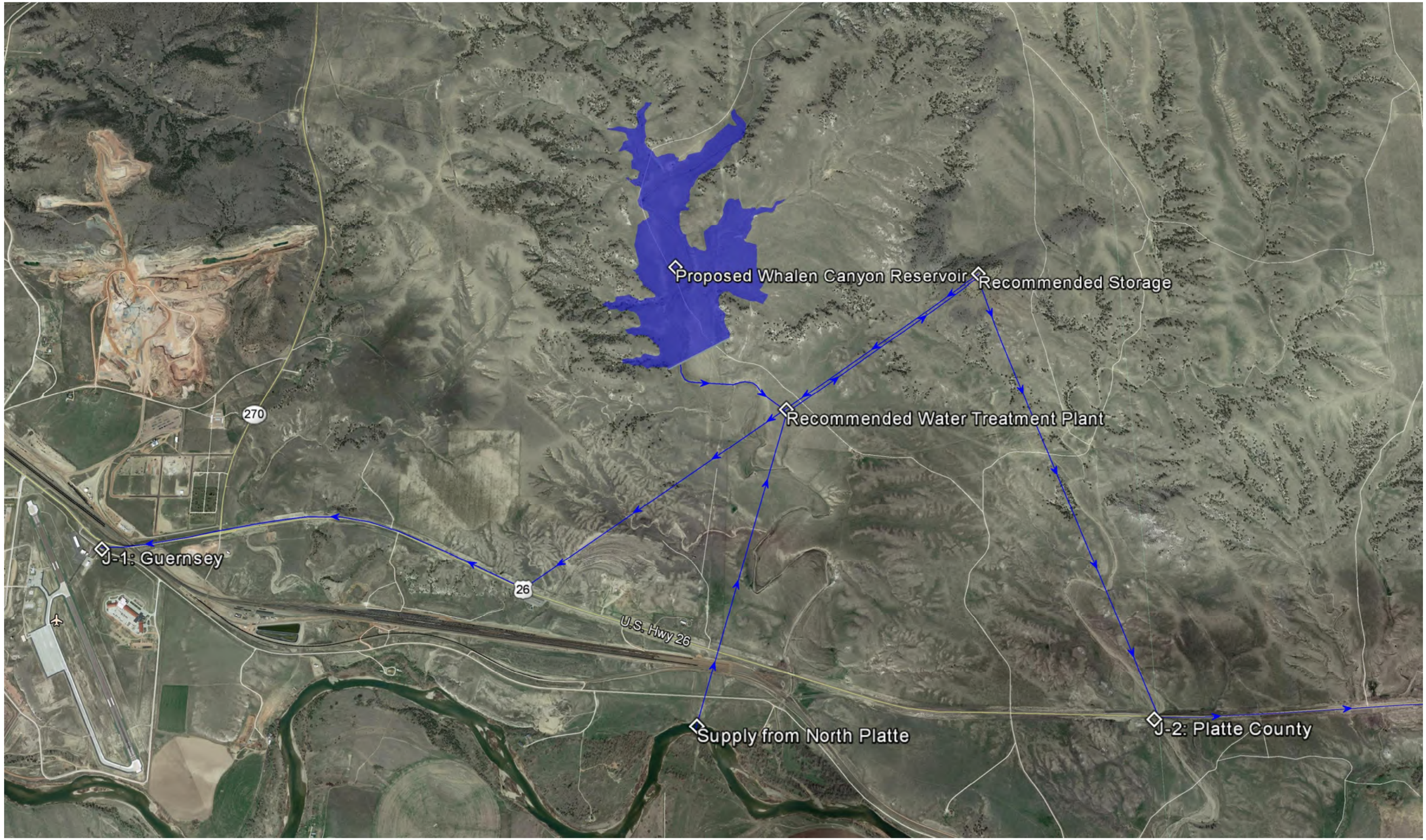

Figure 5.6 – Recommended transmission line alignment between J-1 and J-2

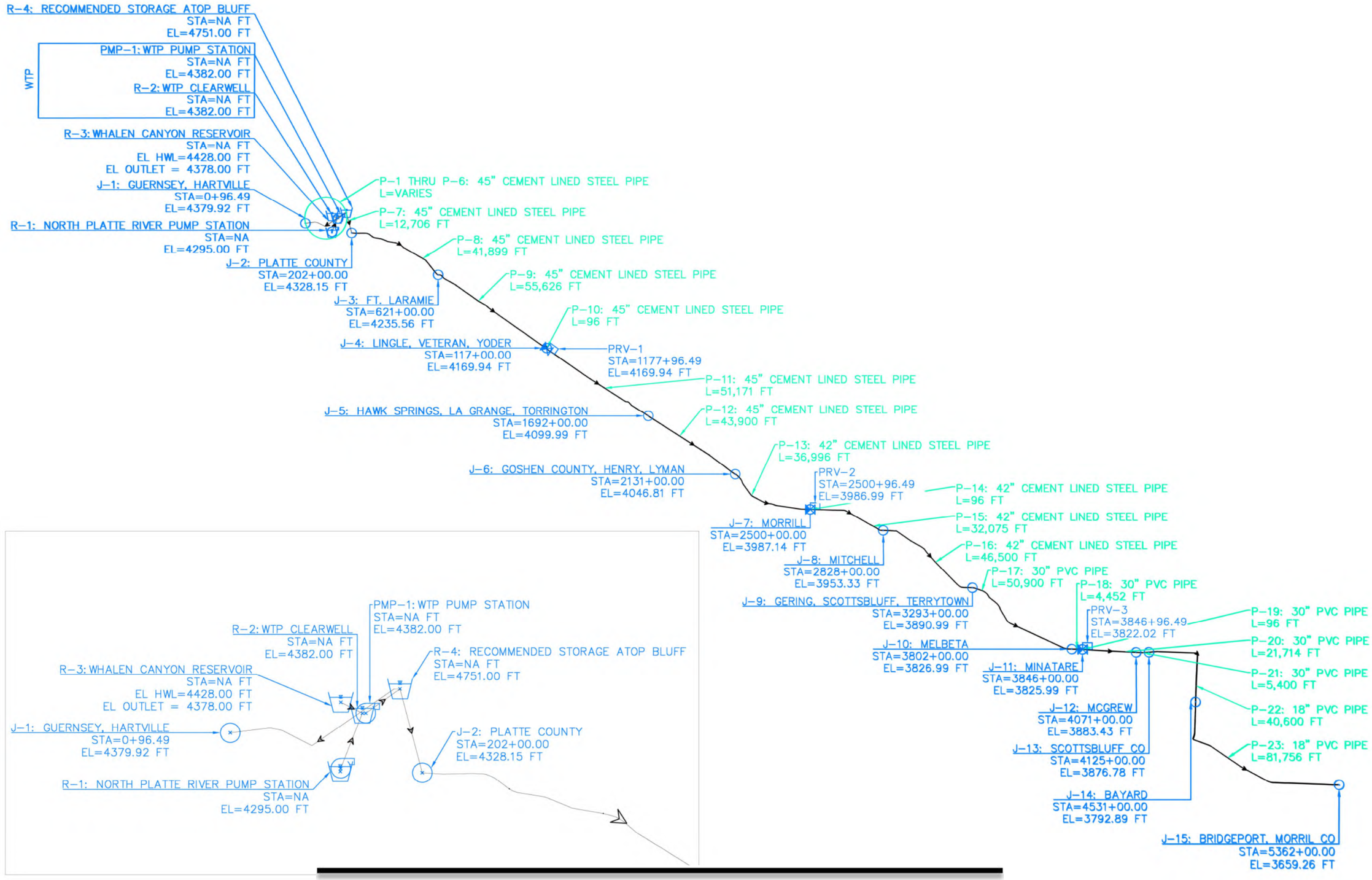

Figure 5.7 - Recommended hydraulic model alignment imported in to HAMMER

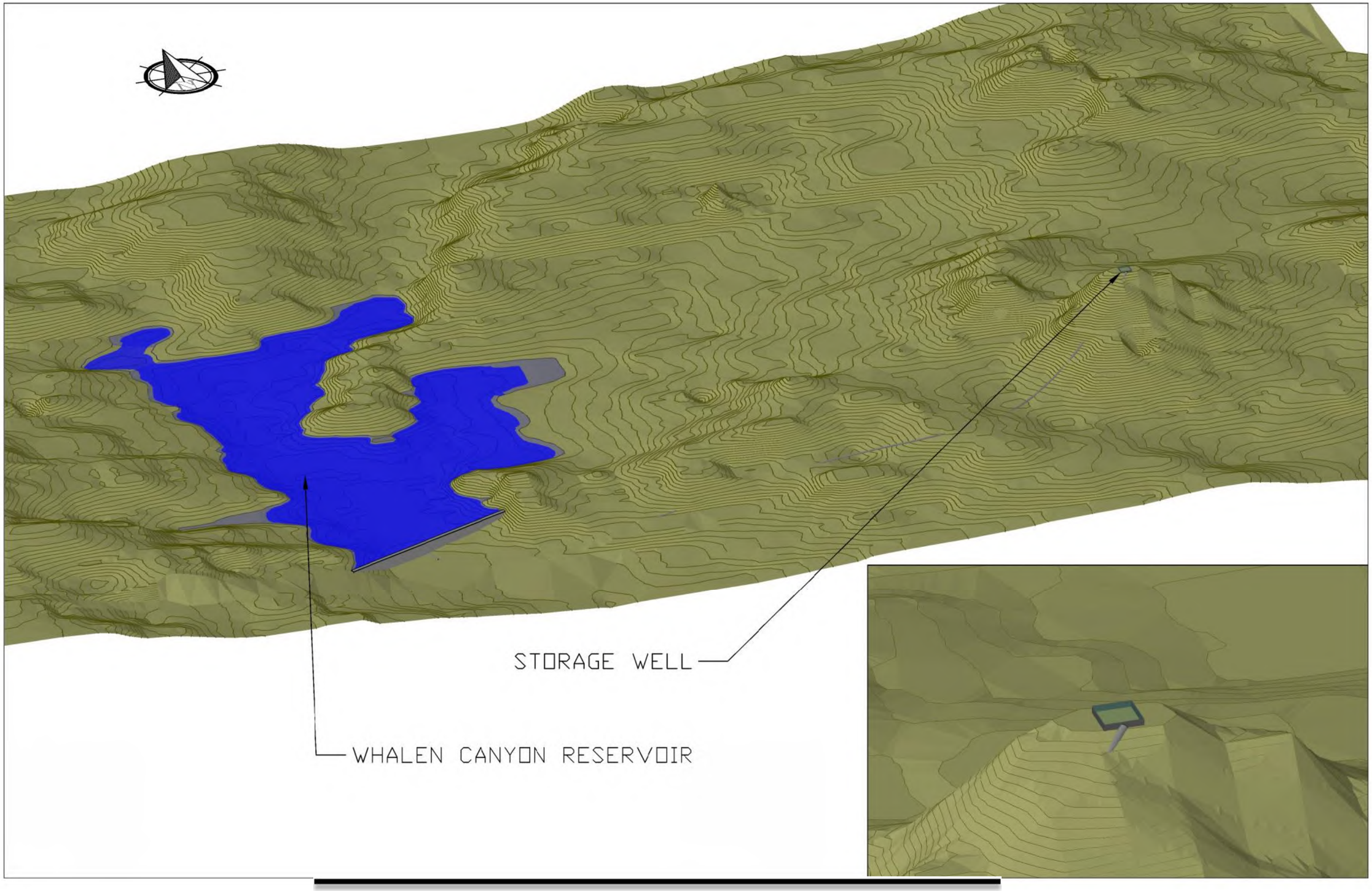

Figure 5.8 – Topographic isometric view of Whalen Canyon Reservoir and storage well

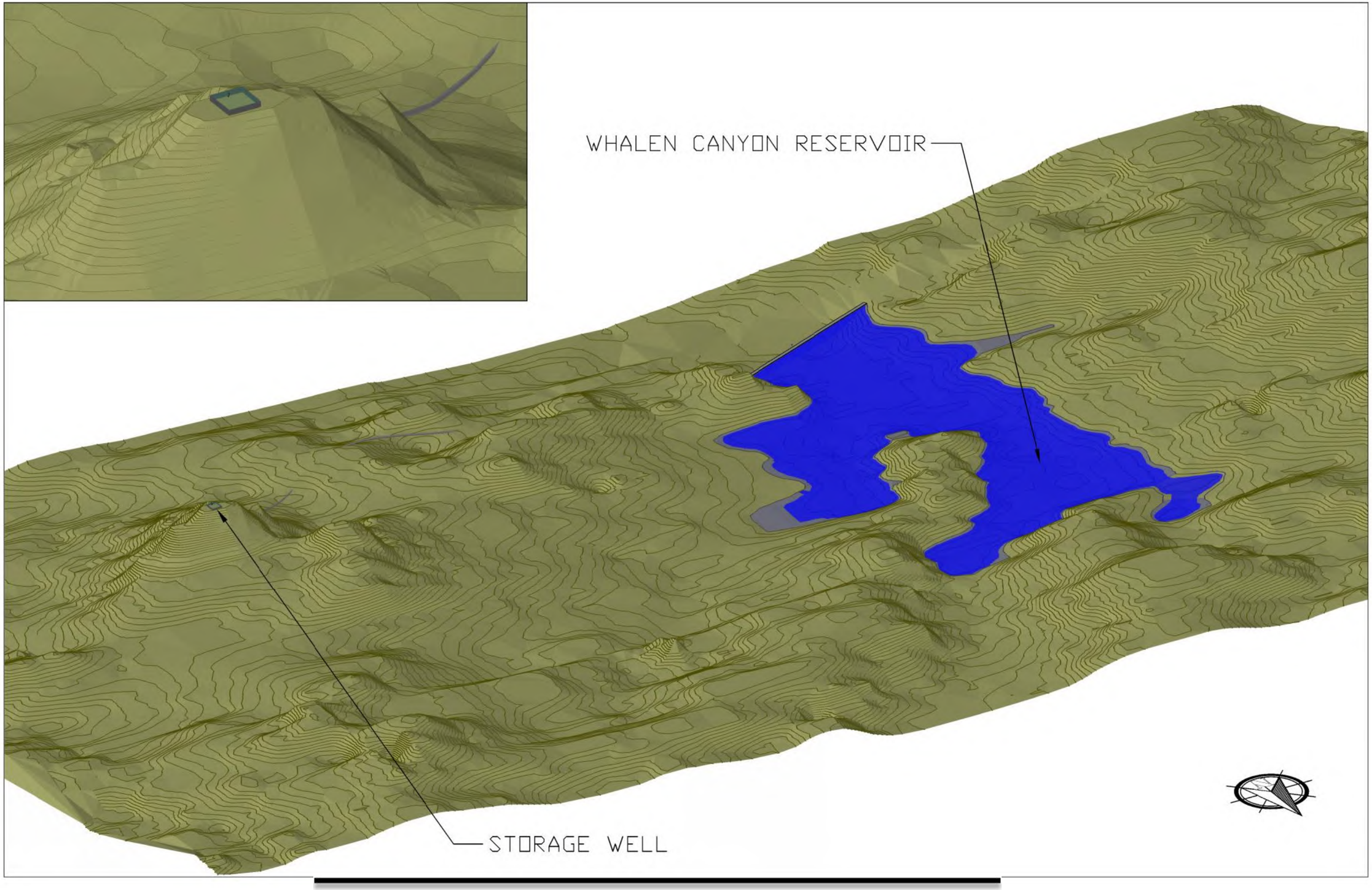

Figure 5.9 – Topographic isometric view of Whalen Canyon Reservoir and storage well

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 2
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 11:02 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 133.0 ft
Differential head / pressure, rated (actual)	: 133.3 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 874 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.62 / - %
NPSH required / margin required	: 17.88 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.44 MG/day
Head, maximum, rated diameter	: 209.9 ft
Head rise to shutoff (bowl / pump)	: 57.44 / - %
Flow, best eff. point (bowl / pump)	: 10.30 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 100.17 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 241 hp
Power (bowl / pump)	: 278 / - hp
Power, maximum, rated diameter	: 285 hp
Minimum recommended motor rating	: 300 hp / 224 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

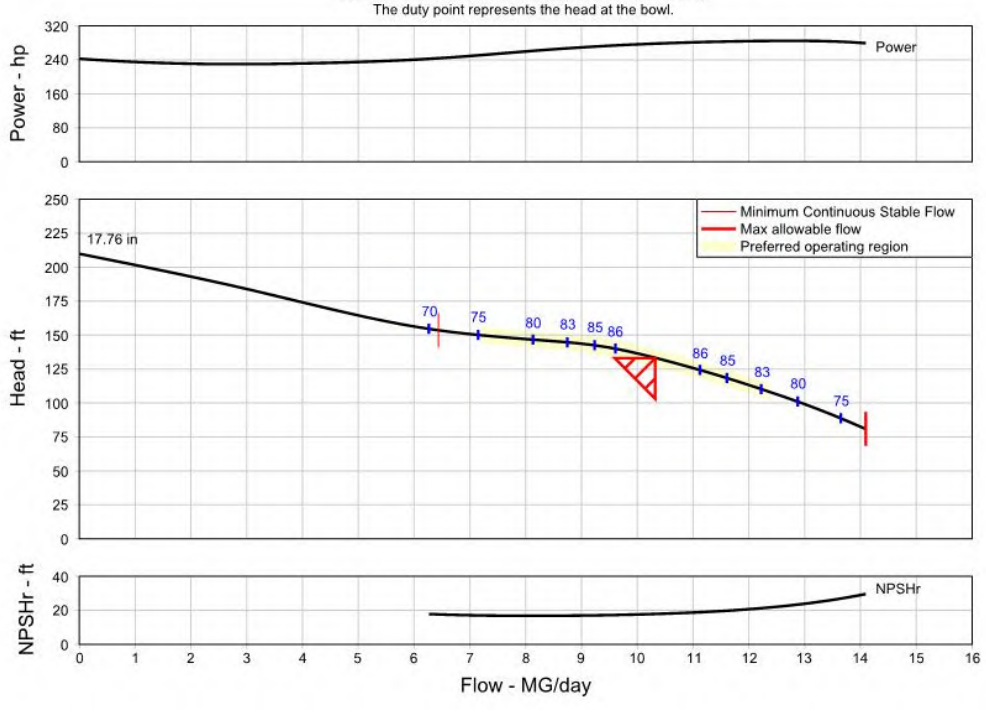

Figure 5.10 – North Platte 2070 peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 2
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 11:02 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 133.0 ft
Differential head / pressure, rated (actual)	: 133.3 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 874 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.62 / - %
NPSH required / margin required	: 17.88 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.44 MG/day
Head, maximum, rated diameter	: 209.9 ft
Head rise to shutoff (bowl / pump)	: 57.44 / - %
Flow, best eff. point (bowl / pump)	: 10.30 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 100.17 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 241 hp
Power (bowl / pump)	: 278 / - hp
Power, maximum, rated diameter	: 285 hp
Minimum recommended motor rating	: 300 hp / 224 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

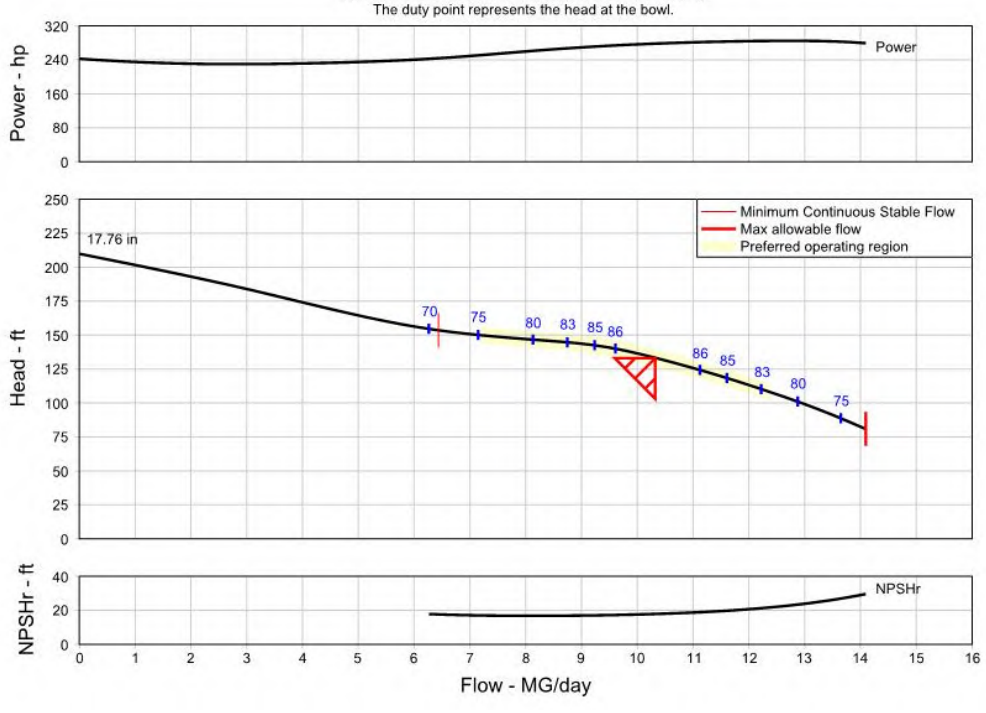

Figure 5.11 – North Platte 2070 average demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 2
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 11:02 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 133.0 ft
Differential head / pressure, rated (actual)	: 133.3 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 874 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.62 / - %
NPSH required / margin required	: 17.88 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.44 MG/day
Head, maximum, rated diameter	: 209.9 ft
Head rise to shutoff (bowl / pump)	: 57.44 / - %
Flow, best eff. point (bowl / pump)	: 10.30 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 100.17 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 241 hp
Power (bowl / pump)	: 278 / - hp
Power, maximum, rated diameter	: 285 hp
Minimum recommended motor rating	: 300 hp / 224 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

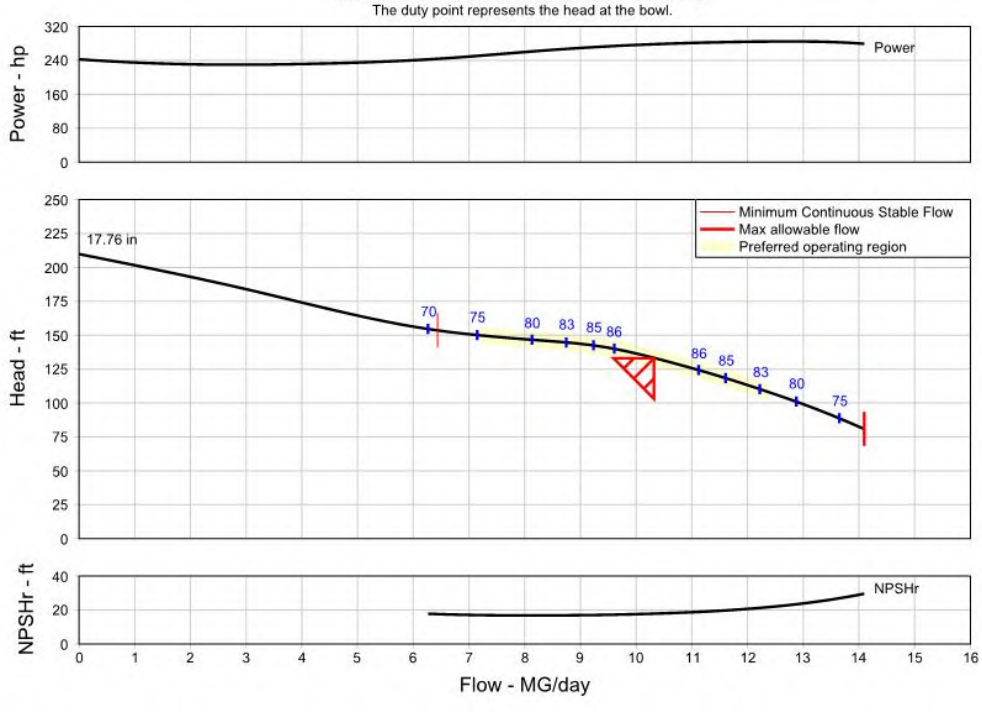

Figure 5.12 – North Platte 2020 peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 2
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 11:02 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 133.0 ft
Differential head / pressure, rated (actual)	: 133.3 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 874 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.62 / - %
NPSH required / margin required	: 17.88 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.44 MG/day
Head, maximum, rated diameter	: 209.9 ft
Head rise to shutoff (bowl / pump)	: 57.44 / - %
Flow, best eff. point (bowl / pump)	: 10.30 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 100.17 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 241 hp
Power (bowl / pump)	: 278 / - hp
Power, maximum, rated diameter	: 285 hp
Minimum recommended motor rating	: 300 hp / 224 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

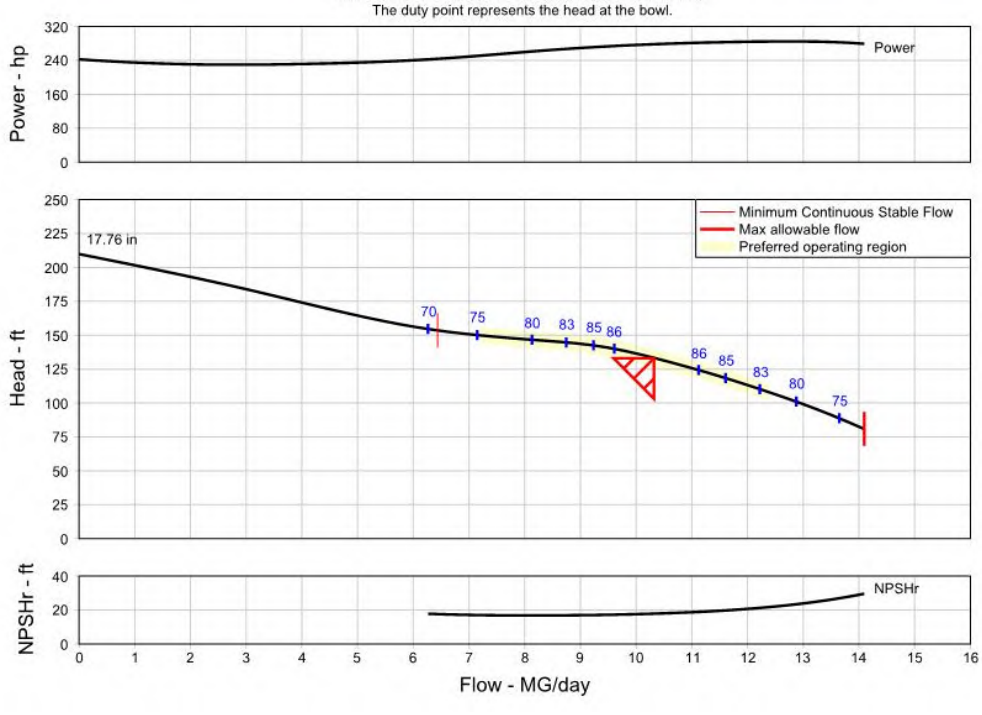

Figure 5.13 – North Platte 2020 average demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 6
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 10:58 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 369.0 ft
Differential head / pressure, rated (actual)	: 369.4 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 850 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.53 / - %
NPSH required / margin required	: 17.22 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.26 MG/day
Head, maximum, rated diameter	: 595.6 ft
Head rise to shutoff (bowl / pump)	: 61.25 / - %
Flow, best eff. point (bowl / pump)	: 10.02 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 103.00 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 668 hp
Power (bowl / pump)	: 772 / - hp
Power, maximum, rated diameter	: 787 hp
Minimum recommended motor rating	: 900 hp / 671 kW

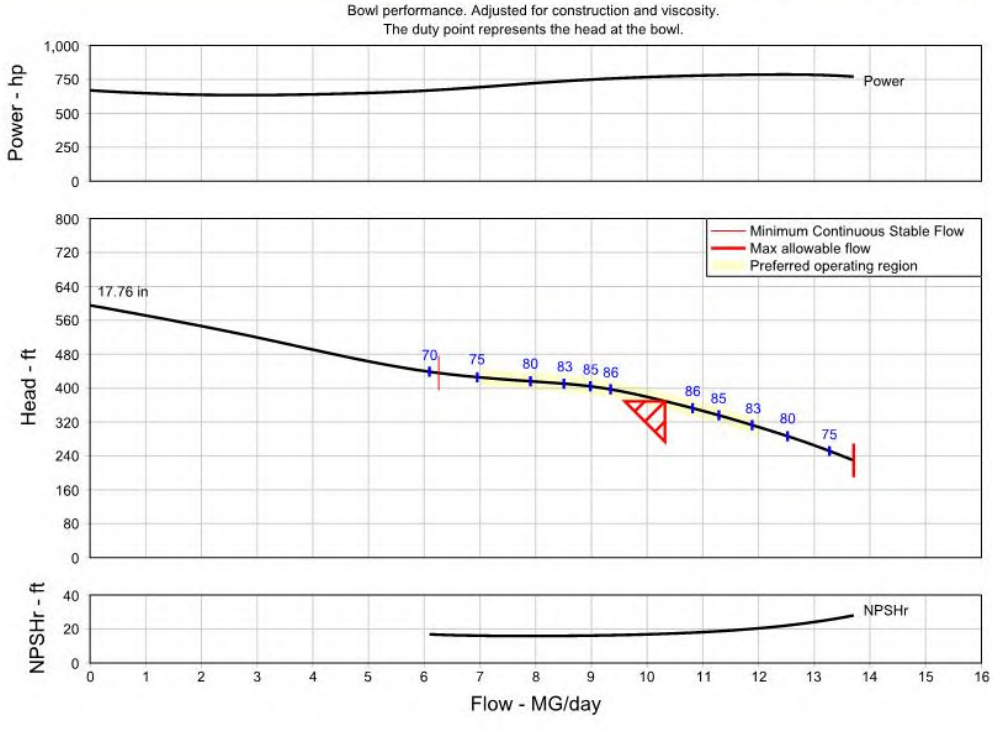

Figure 5.14 – WTP 2070 peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 6
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 10:58 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 369.0 ft
Differential head / pressure, rated (actual)	: 369.4 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 850 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.53 / - %
NPSH required / margin required	: 17.22 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.26 MG/day
Head, maximum, rated diameter	: 595.6 ft
Head rise to shutoff (bowl / pump)	: 61.25 / - %
Flow, best eff. point (bowl / pump)	: 10.02 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 103.00 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 668 hp
Power (bowl / pump)	: 772 / - hp
Power, maximum, rated diameter	: 787 hp
Minimum recommended motor rating	: 900 hp / 671 kW

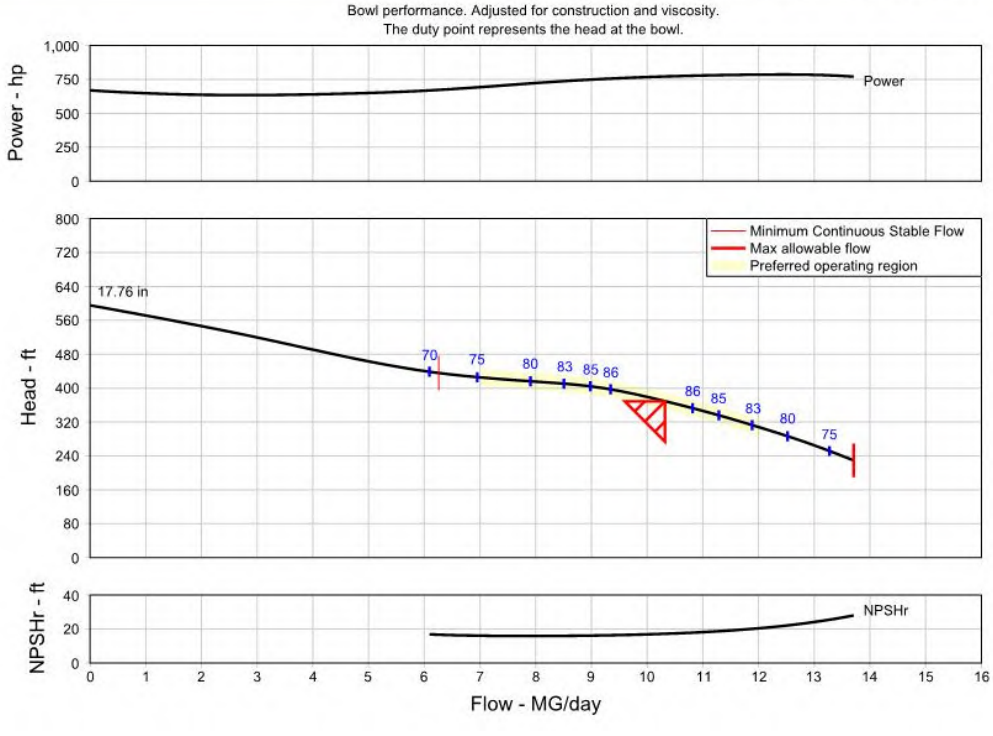

Figure 5.15 – WTP 2070 average demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 6
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 10:58 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 369.0 ft
Differential head / pressure, rated (actual)	: 369.4 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 850 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.53 / - %
NPSH required / margin required	: 17.22 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.26 MG/day
Head, maximum, rated diameter	: 595.6 ft
Head rise to shutoff (bowl / pump)	: 61.25 / - %
Flow, best eff. point (bowl / pump)	: 10.02 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 103.00 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 668 hp
Power (bowl / pump)	: 772 / - hp
Power, maximum, rated diameter	: 787 hp
Minimum recommended motor rating	: 900 hp / 671 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

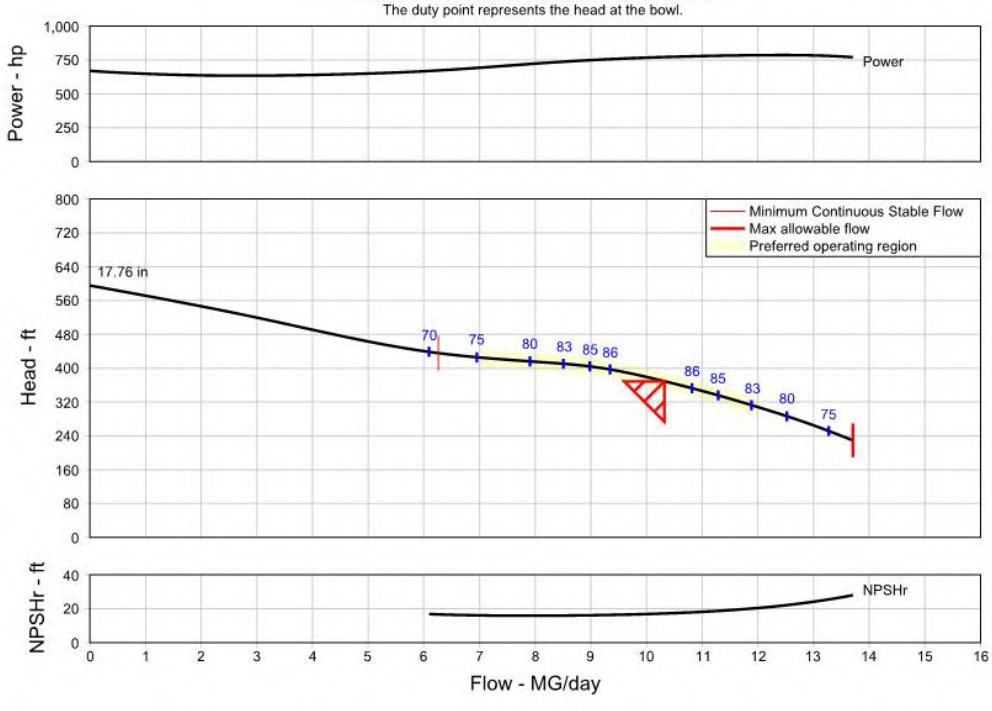

Figure 5.16 – WTP 2020 peak demand pump performance datasheet

PENTAIR

Customer :
Project name :

Pump Performance Datasheet
Encompass 2.0 - 17.3.2.0

Item number	: Default	Size	: 27M-BRZ
Service	:	Stages	: 6
Quantity	: 1	Based on curve number	: 27_TURB_3570_1200_BR Rev 140314
Quote number	:	Date last saved	: 01 Aug 2017 10:58 AM

Operating Conditions

Flow, rated	: 10.32 MG/day
Differential head / pressure, rated (requested)	: 369.0 ft
Differential head / pressure, rated (actual)	: 369.4 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 850 rpm
Impeller diameter, rated	: 17.76 in
Impeller diameter, maximum	: 17.76 in
Impeller diameter, minimum	: 14.25 in
Efficiency (bowl / pump)	: 86.53 / - %
NPSH required / margin required	: 17.22 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 61 / 165 Metric units
Minimum Continuous Stable Flow	: 6.26 MG/day
Head, maximum, rated diameter	: 595.6 ft
Head rise to shutoff (bowl / pump)	: 61.25 / - %
Flow, best eff. point (bowl / pump)	: 10.02 / - MG/day
Flow ratio, rated / BEP (bowl / pump)	: 103.00 / - %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

Material selected	: Cast iron bowl - Standard impeller material

Pressure Data

Maximum working pressure	: See the Additional Data page
Maximum allowable working pressure	: See the Additional Data page
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: See the Additional Data page

Driver & Power Data (@Max density)

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 668 hp
Power (bowl / pump)	: 772 / - hp
Power, maximum, rated diameter	: 787 hp
Minimum recommended motor rating	: 900 hp / 671 kW

Bowl performance. Adjusted for construction and viscosity.
The duty point represents the head at the bowl.

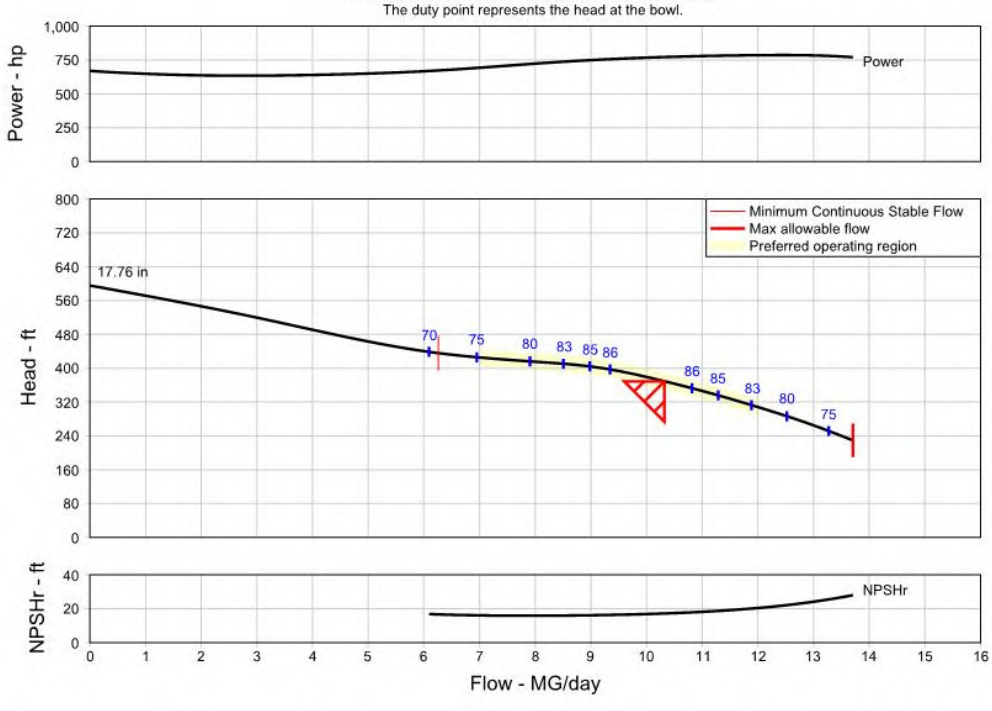

Figure 5.17 – WTP 2020 average demand pump performance datasheet

5.3 Recommended Alignment Simulation Results

Prior to performing a transient analysis, it was vital to ensure that this new alignment could meet the steady state hydraulic requirements for each demand. Much like the proposed alignment, the results for this recommended alignment indicate inadequate/negative pressures at various junctions, when using the proposed pipeline diameter configuration, during the 2070 peak demand. Results from the steady state analysis show that this alignment has the capacity to meet both the hydraulic flow and pressure requirements for each demand period/condition. In fact, pressure from this gravity flow is rather substantial between the storage basin and the first PRV, nearly reaching 250-psi for many of the demand conditions. Using this alignment, it recommended that the first PRV be moved upstream to near Fort Laramie to reduce this pressure spike and potentially leaven the pressures at the remaining PRVs. **Figure 5.18** shows the HGL and pressure propagation from this initial steady state analysis for the transmission line from the storage basin to J-1: Guernsey, Hartville. **Figure 5.19** shows steady state results from the storage basin to J-15: Bridgeport, Morrill County.

As expected, results from the transient analysis show that the two gravity fed portions of transmission line from the storage basin are not impacted whatsoever from the surge caused by pump power failure. The section of line from the North Platte River to the WTP, and from the WTP to the storage well are, however, still subject to surge. For these sections of pipeline, **Figures 5.20-5.21** display the maximum and minimum HGLs resulting from the surge for each demand period/condition. These figures are organized by proposed and recommended pipeline diameter configurations, respectively. Please note that the green line represents the physical elevation. Although surge magnitude has significantly reduced when compared to the proposed alignment, it is preferable to have surge protection equipment between the pumps and reservoirs at these locations.

5.4 Recommended Alignment Simulation with Surge Protection Results

Per the results from the recommended alignment transient analysis, surge protection was introduced just downstream of the North Platte and WTP clear well pump stations. This surge protection model initially used hydropneumatic tanks at each location, but evolved once is was realized that the tank after the WTP would need to be unrealistically large to reduce the surge differential pressure (+65,000 gallons). The 10,000-gallon tank, as specified in **Figure 5.3**, was ideal for damping and attenuating the surge resultant from the North Platte pump station. Because a hydropneumatic tank was considered infeasible on the WTP to storage basin stretch, it was replaced with a surge relief valve (SRV). Sized to match the transmission line diameter at its insertion point, and specified to relieve pressure at 165-psi. **Figures 5.22-5.23** show the alignments with the surge protection equipment in place. **Figures 5.24-5.25** display the maximum and minimum HGLs resulting from the surge using hydropneumatic tanks at both locations for each demand period/condition. These figures are organized by proposed and recommended pipeline diameter configurations, respectively **Figures 5.26-5.27** display the maximum and minimum HGLs resulting from the surge using a hydropneumatic tank and an SRV for each demand period/condition. These figures are organized by proposed and recommended pipeline diameter configurations, respectively. Please note that the green line represents the physical elevation

6.0 Summary and Conclusions

Hydraulic model transient simulation results indicate that the PAWS water transmission line as proposed in the Appraisal Investigation does not have the capacity to withstand and attenuate the occurrence of surge due to power failure at the pumps. Wenck determined

that implementing surge control equipment on this alignment is impractical and as a result has developed a recommended alternative.

The proposed alternative would locate the Water Treatment Plant and Clearwell/Storage Tank at an elevation that would not require pumping. In the event of power failure or other interruption, the storage would continue to supply the system. With this alterative the only potential for surge would be rapid opening or closing of valves to the users. This issue would be easily remedied by controlling opening and closing rates of the valves. The volume of storage would be determined by the length of power outage anticipated, the volume of storage needed to optimize operation of the water treatment plant, and reserve storage required.

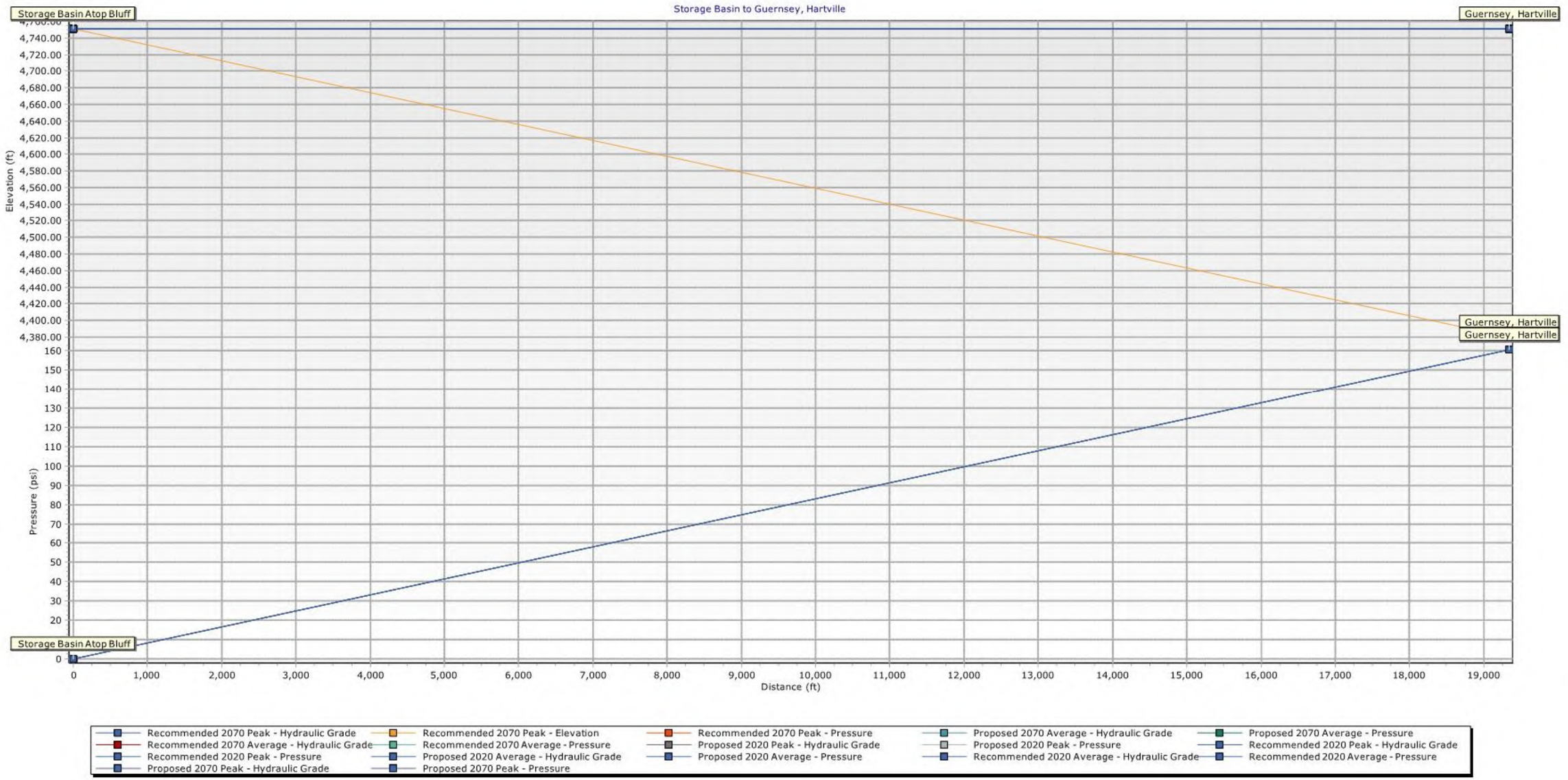

Figure 5.18 – Recommended alignment from storage well/basin to J-1: Guernsey, Hartville initial steady state HGL and pressure results

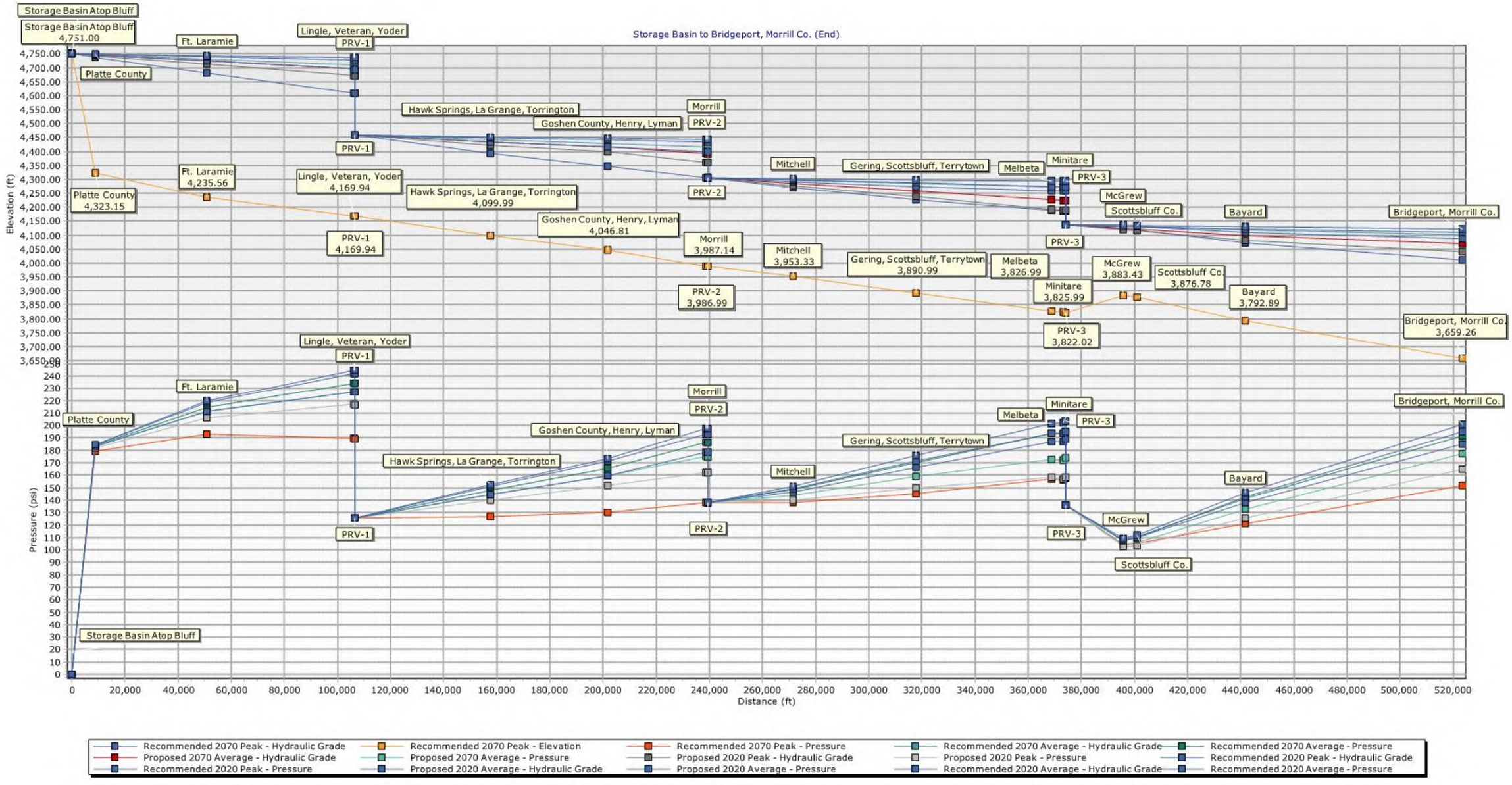

Figure 5.19 – Recommended alignment from storage well/basin to J-15: Bridgeport, Morrill Co. initial steady state HGL and pressure results

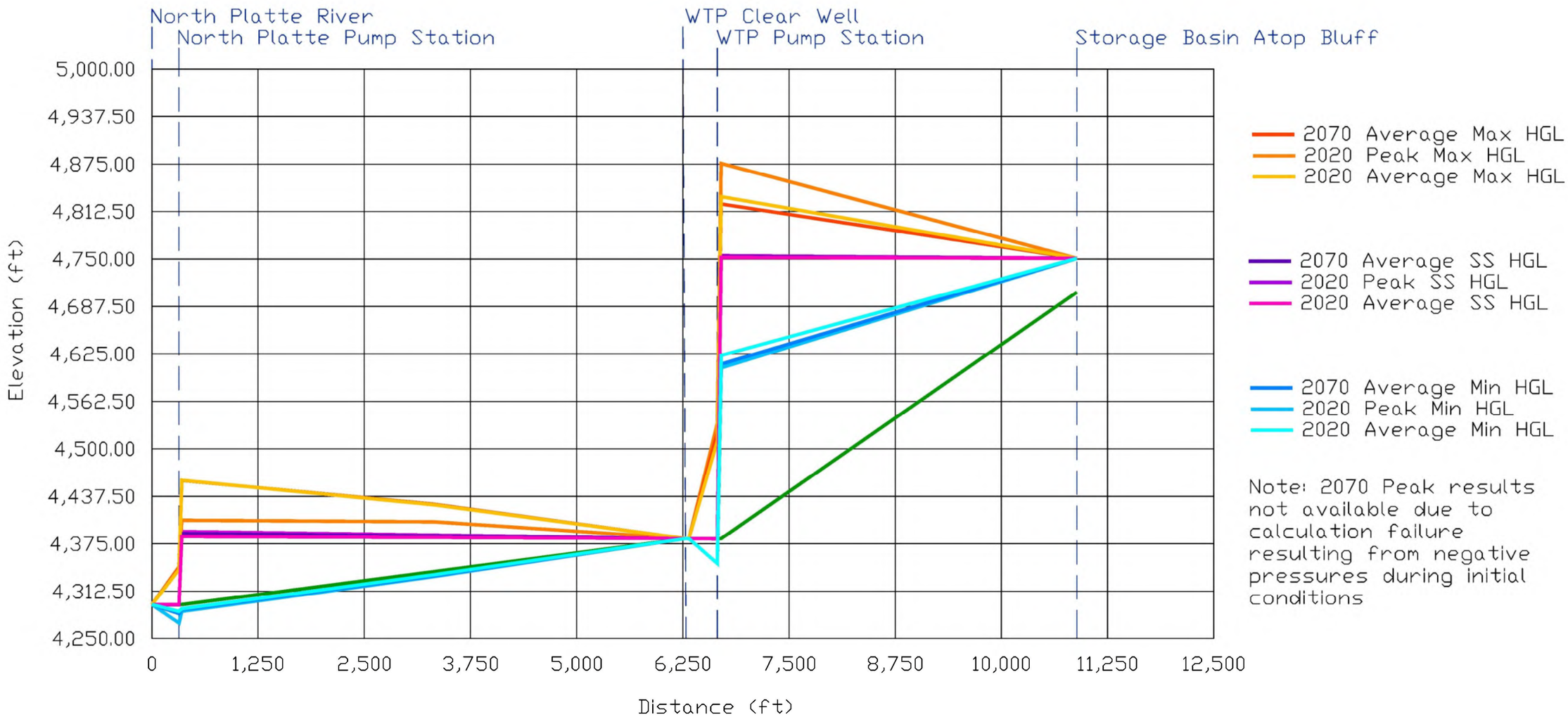

Figure 5.20 – Recommended alignment with proposed pipeline diameters: transient hydraulic grade max and min

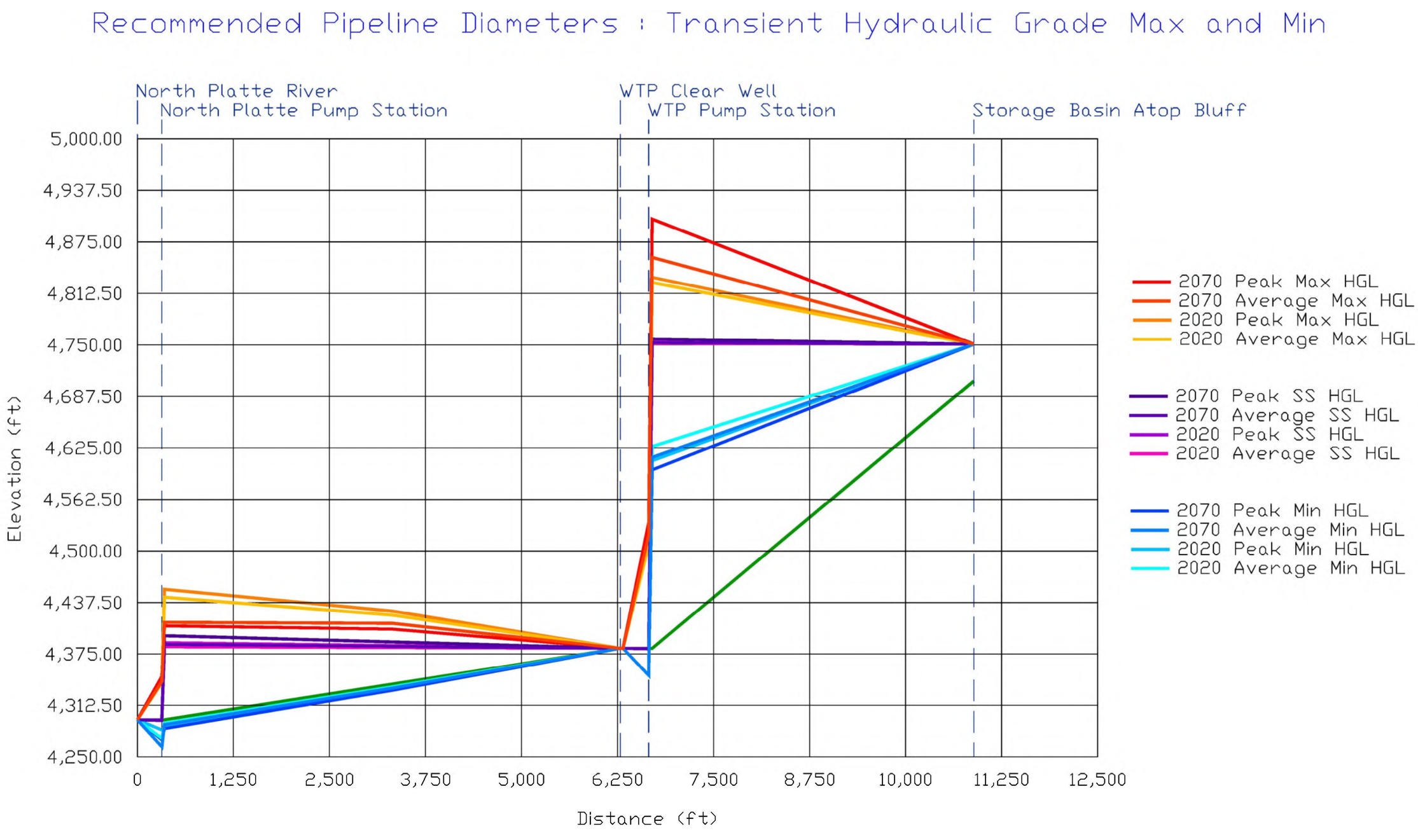

Figure 5.21 – Recommended alignment with recommended pipeline diameters: transient hydraulic grade max and min

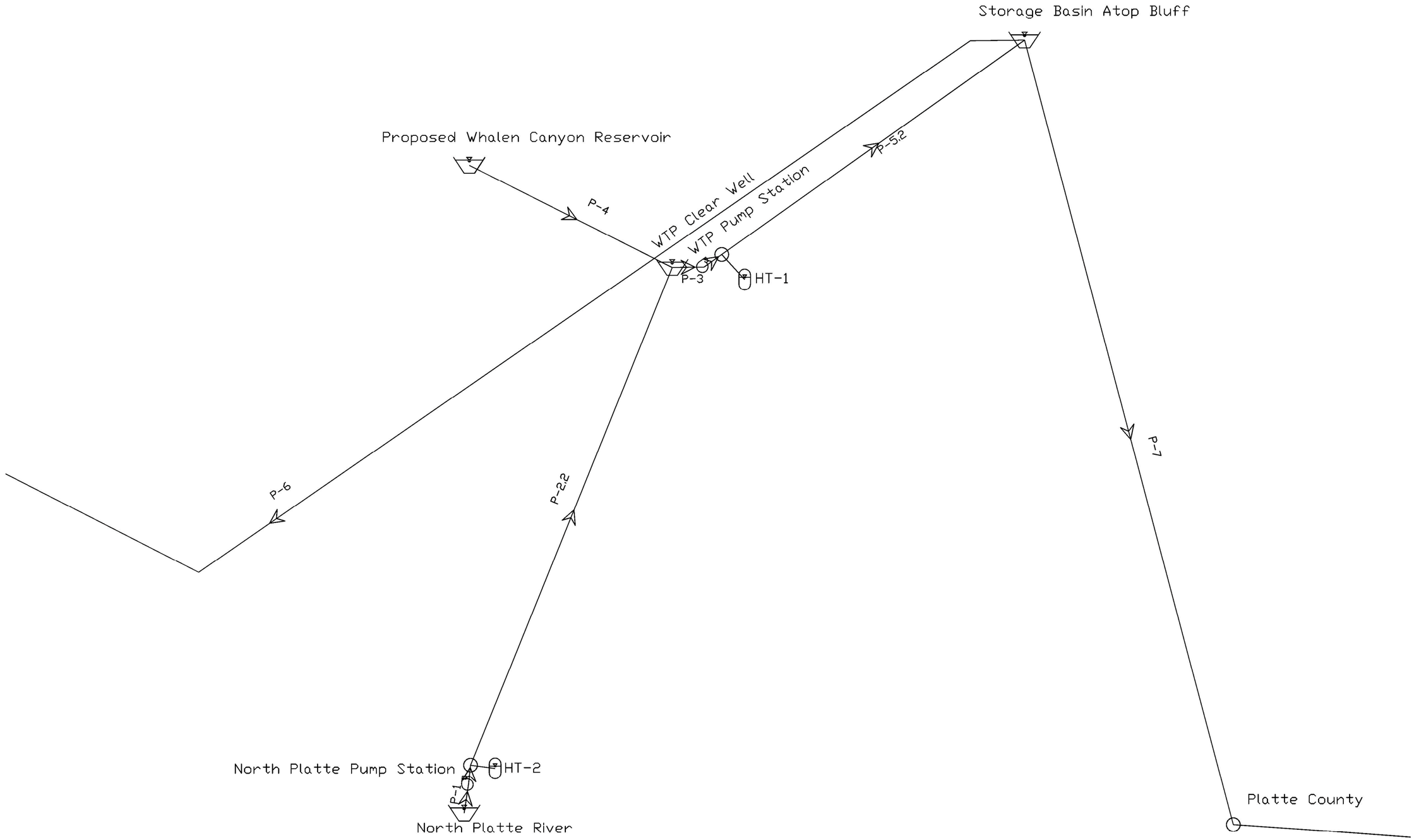

Figure 5.22 – Recommended alignment with hydro-tanks

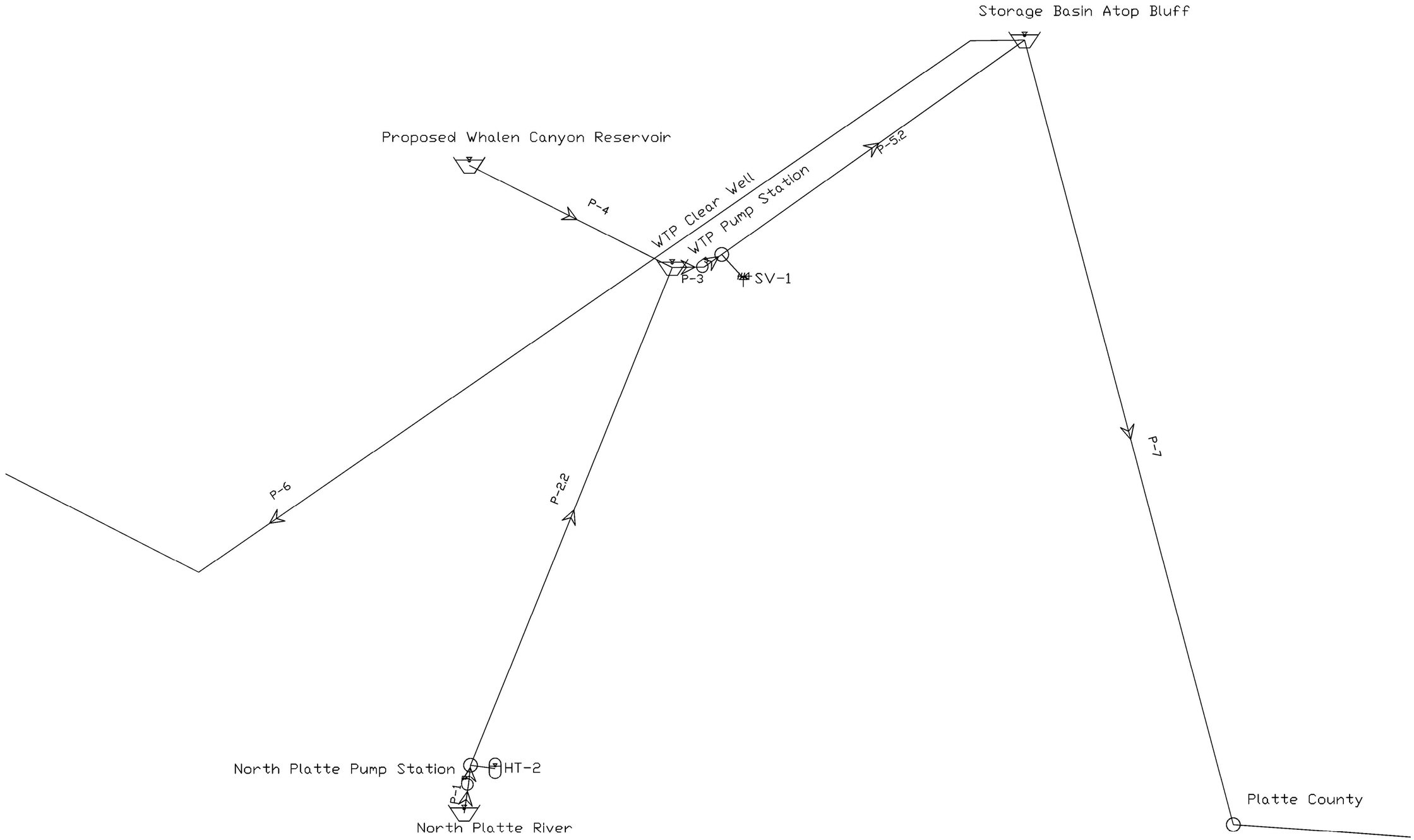

Figure 5.23 – Recommended alignment with hydro-tank and SRV

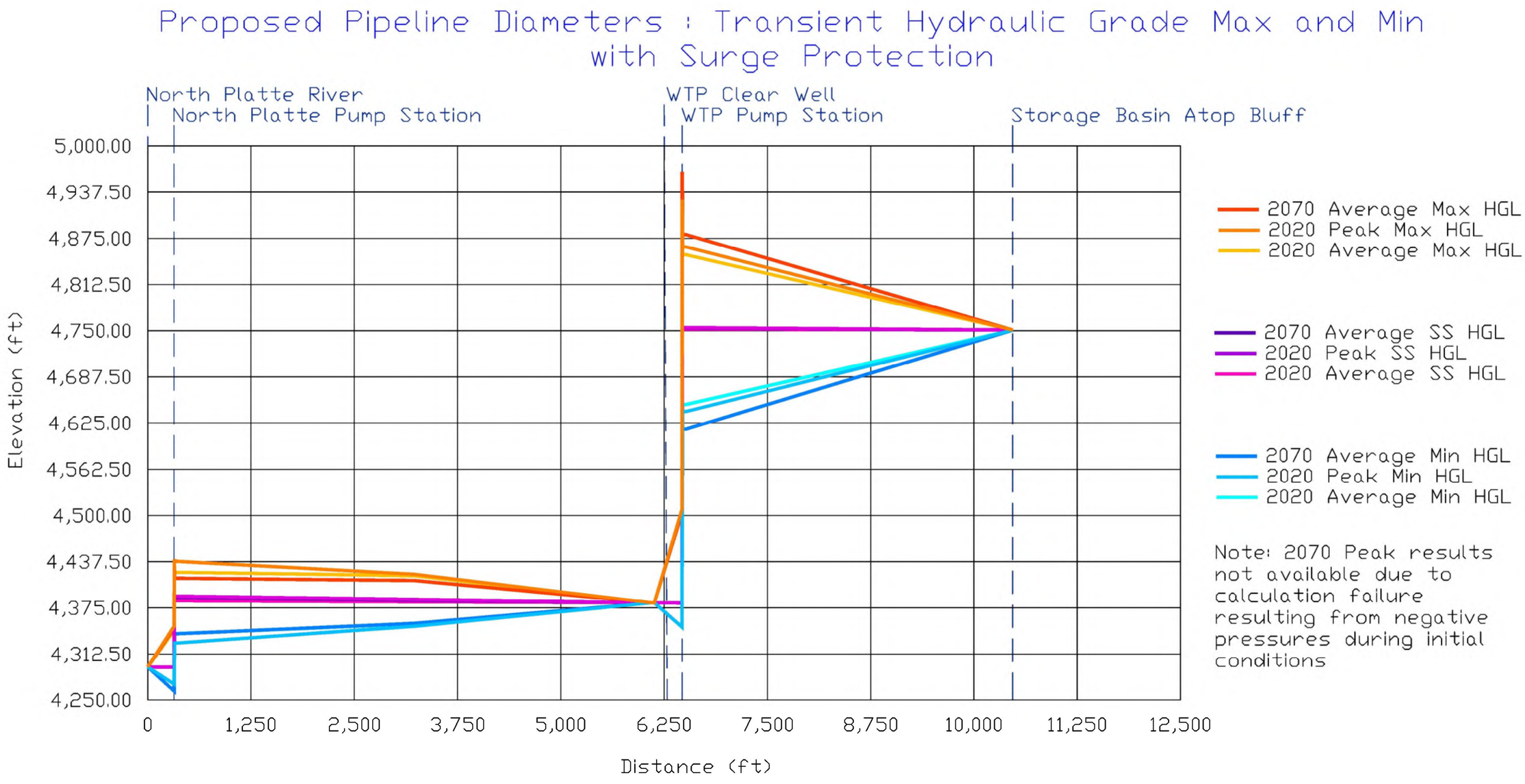

Figure 5.24 – Recommended alignment with proposed pipeline diameters: transient hydraulic grade max and min with hydro-tanks

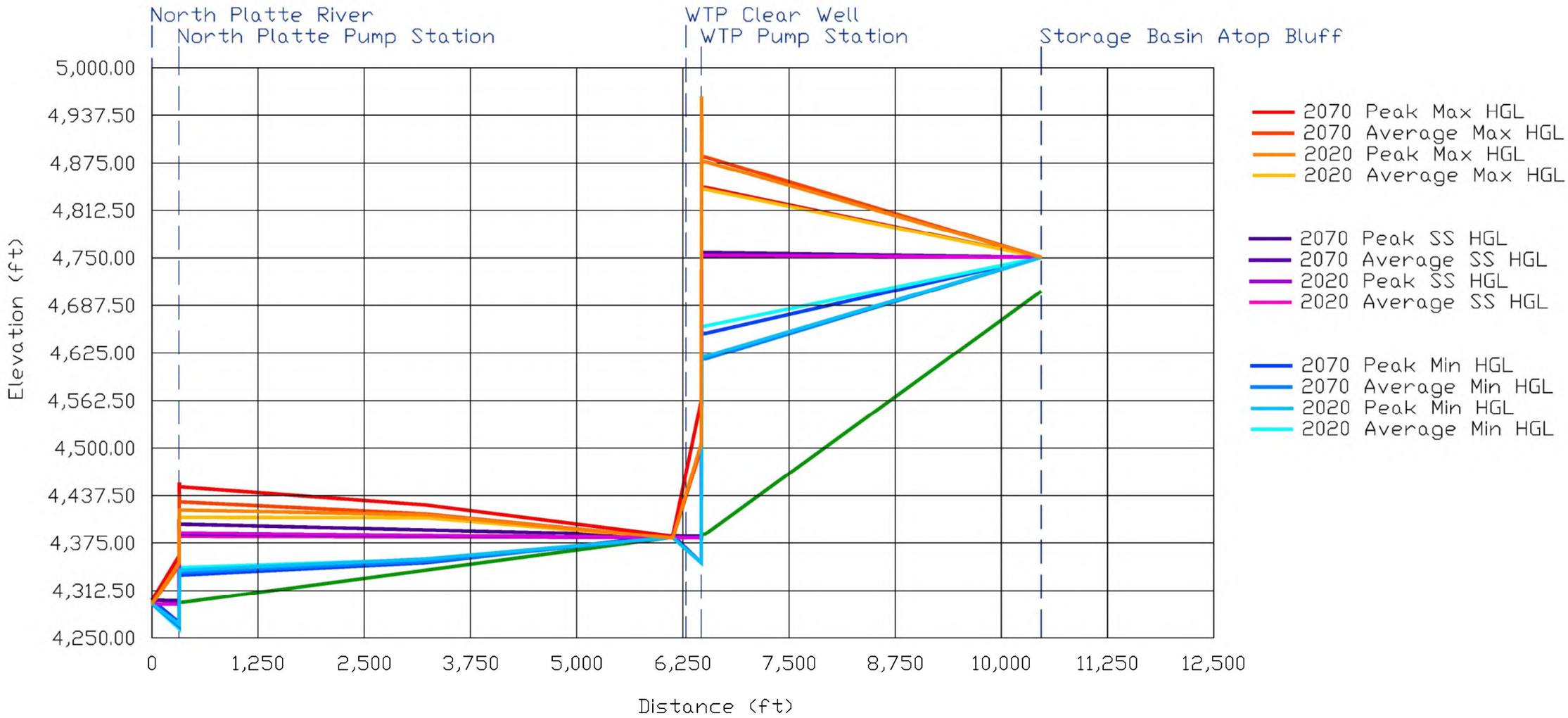

Figure 5.25 – Recommended alignment with recommended pipeline diameters: transient hydraulic grade max and min with hydro-tanks

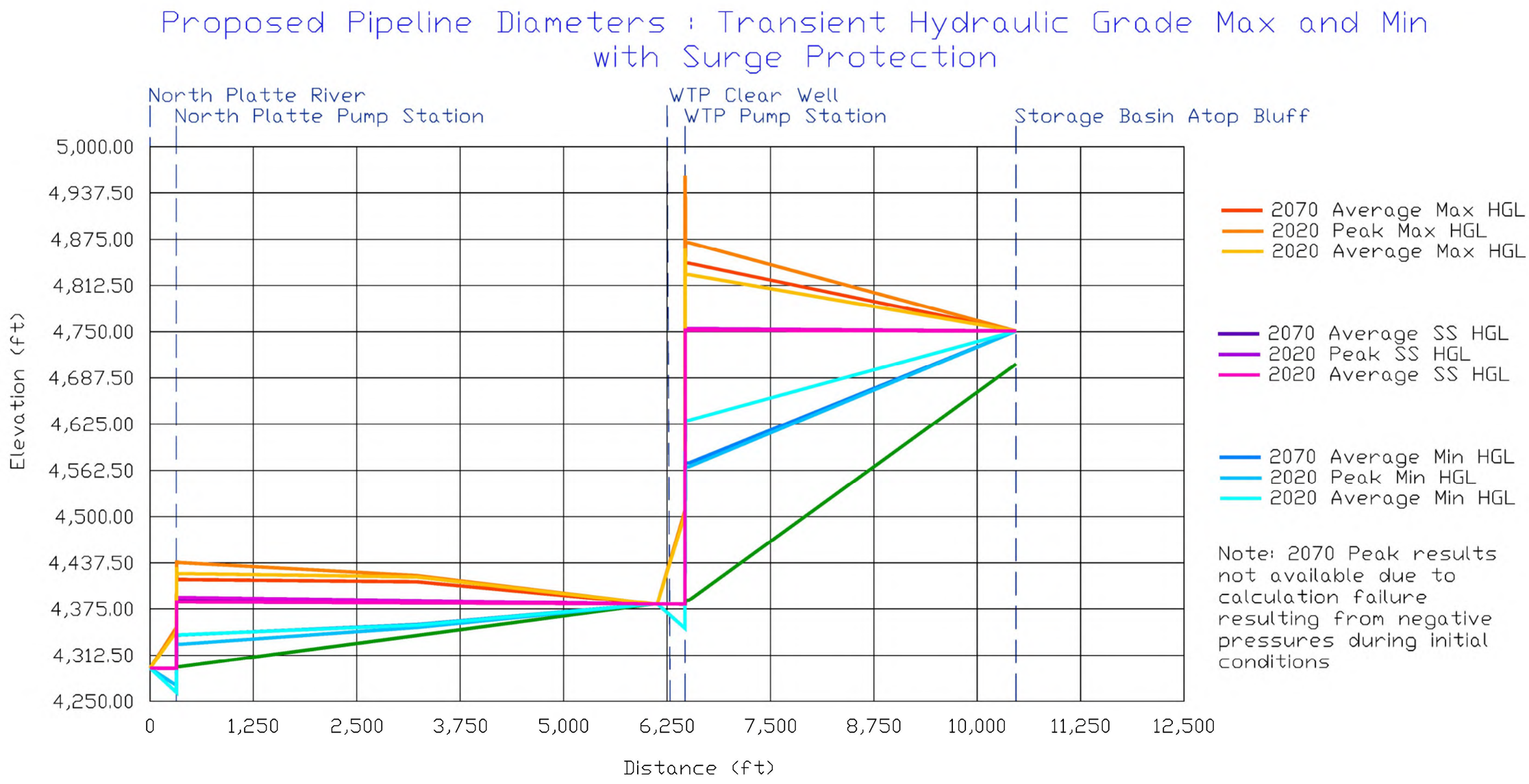

Figure 5.26 – Recommended alignment with proposed pipeline diameters: transient hydraulic grade max and min with hydro-tank and SRV

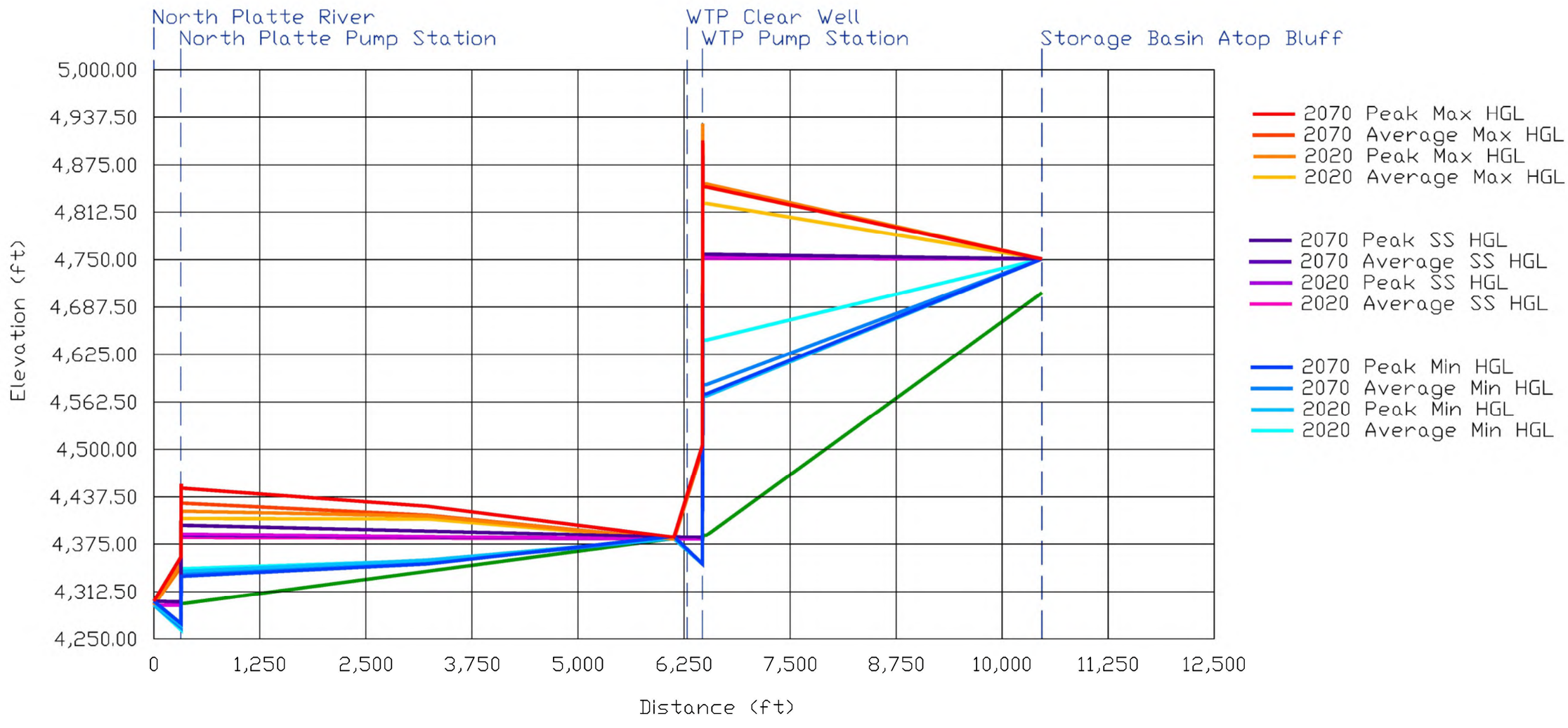

Figure 5.27 – Recommended alignment with recommended pipeline diameters: transient hydraulic grade max and min with hydro-tank and SRV

References

1 *Pipeline design for water and wastewater*. (1975). New York, N.Y.: American Society of Civil Engineers.

2 Brière, F. (2007). *Drinking-water distribution, sewage, and rainfall collection*. [Montreal]: Polytechnic International Press.

3 *Steel plate engineering data-volume 3: Welded steel pipe* revised edition-1983. (1983). Washington, D.C.: American Iron and Steel Institute, Committee of Steel Plate Producers [and] Committee of Stainless Steel Producers.

4 *Big blue PVC C.I.O.D. transmission pipe*. (2009). Los Angeles, CA: J-M Manufacturing Co., Inc.

5 Tullis, J. (2010). *Hydraulics of pipelines*. New York: Wiley.

6 Tuck, J. and Lee P. (2013) *Inverse transient analysis for classification of wall thickness variations in pipelines*. Basel, Switzerland: Sensors



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APPENDIX A8-3

REVISED HYDRAULIC MODEL RESULTS

JULY 29, 2019

DRAFT

Technical Memo

WENCK
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To: Jeff Fuller, M.C. Schaff & Associates, Inc.

From: Victor Anderson, Wenck
Randy Layton, Wenck

Date: July 29, 2019

Subject: Summary of WaterCAD Model and Results
Hydraulic Model for the Platte Valley Water Supply Transmission Line

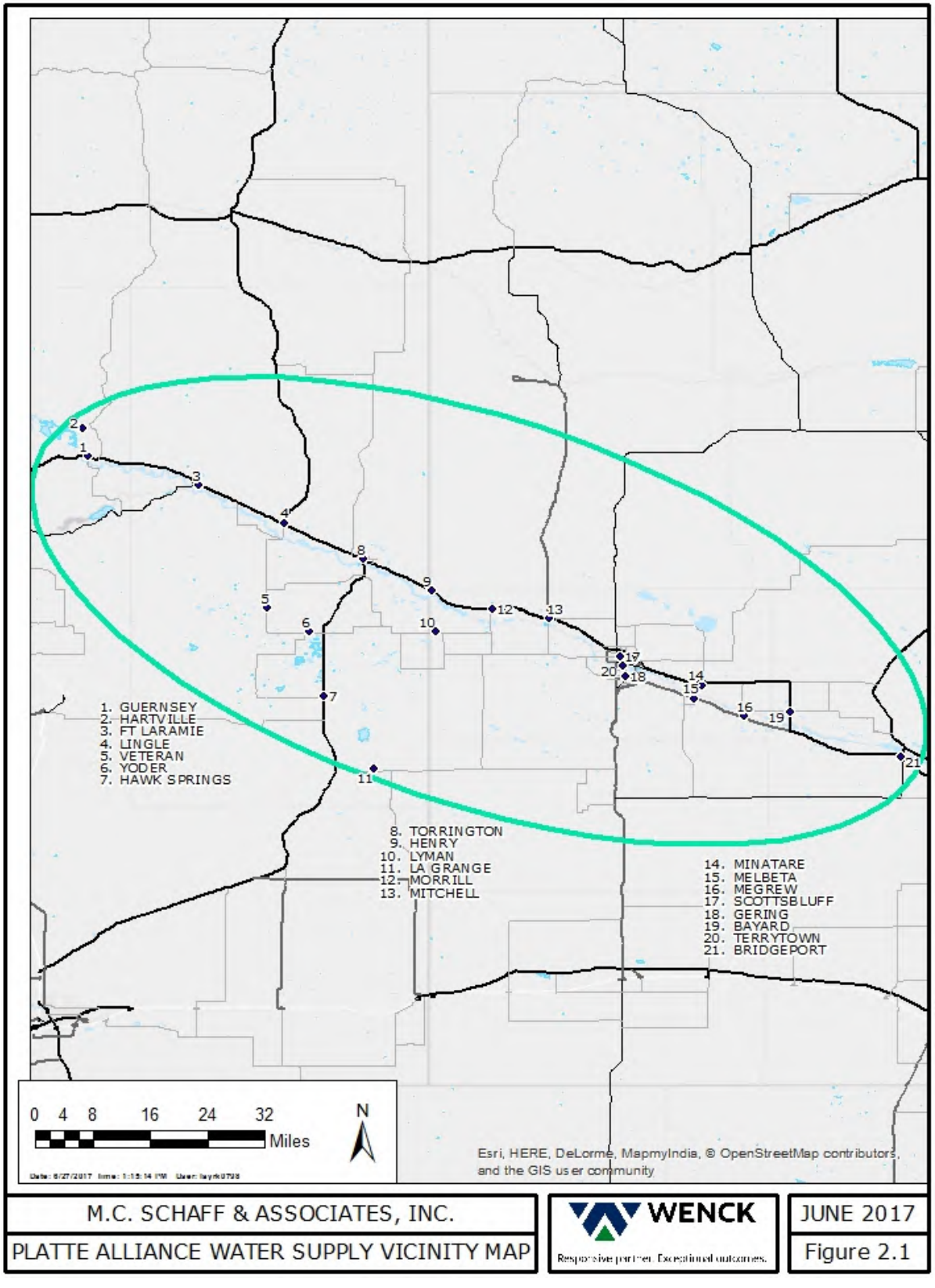
1.0 Purpose

The purpose of this technical memorandum is to present the results of the hydraulic model developed by Wenck for the proposed Platte Alliance Water Supply (PAWS) transmission pipeline. Wenck performed this analysis on behalf of M.C. Schaff and Associates, Inc., with information provided by M.C. Schaff & Associates, Inc. as described herein. The following sections describe the evaluation of the adequacy of the water transmission system's ability to meet hydraulic requirements based on current and future demands.

2.0 Background

Per the PAWS Appraisal Investigation prepared by M.C. Schaff & Associates on December 2013, rural communities in Southeast Wyoming and Western Nebraska (**Figure 2.1**) are experiencing deteriorating water quality. Currently, the communities within the PAWS area procure water through alluvial wells located near the North Platte River. The Appraisal Investigation attributes the declining water quality to a potentially greater awareness resulting from increased monitoring and testing. The Investigation also exhibits research that illustrates increasing Nitrate, Uranium, and Arsenic levels in ground water sources as a long-term derivation of the agricultural practices in this area. In accordance with the increasing water contaminant levels, individual communities are faced with the increased cost of constructing or modifying potable water treatment facilities to comply with the Environmental Protection Agency's (EPA) Safe Drinking Water Act (SDWA). To alleviate this pressure, the PAWS Appraisal Investigation recommends the construction of a single water treatment plant, and the provision of a transmission pipeline to deliver potable water from the plant to each of the PAWS communities.

In the Investigation, M.C. Schaff & Associates, Inc. identified various supply sources while considering minimal impact to surface water users. As the intent of this study was to evaluate the hydraulic conditions of the transmission pipeline, it was assumed the "unlimited" water supply initiated at the proposed Water Treatment Plant's (WTP) clear well, rather than from any of the sources identified. It is assumed that the WTP uses conventional processes and is typical of others in the region. In the model, the treated water from the clear well is pumped to the transmission pipeline initiation. Discussed herein are the parameters set for each aspect of the hydraulic model, the corresponding results, and evaluation of the results determining water transmission adequacy.



M.C. SCHAFF & ASSOCIATES, INC.	WENCK	JUNE 2017
PLATTE ALLIANCE WATER SUPPLY VICINITY MAP	Responsive partner. Exceptional outcomes.	Figure 2.1

3.0 Methods

Wenck used Bentley Systems water distribution modeling and analysis software, WaterCAD, to generate the hydraulic model for the proposed PAWS transmission line. WaterCAD is widely used as a decision support tool in the design and management of water systems infrastructure. The steady state hydraulic distribution model presented here was created using Bentley WaterCAD V8i.

4.0 Model Setup

To construct a model of the proposed water transmission pipeline and evaluate its hydraulic properties, Wenck obtained existing AutoCAD Civil 3D plan and profile drawings developed by M.C. Schaff & Associates, Inc. The drawings contained the proposed alignment and elevational profile of the pipeline with locations for initiation, service-points (for each community, county, or group of communities), PRV locations, and termination. The model alignment and profile (physical location and elevational) data for the model was derived from these drawings. The provided alignment was edited by Wenck to indicate all known hydraulic model input parameters, generally derived from the alignment itself, the profile, or information in the Appraisal Investigation (**Figure 4.1**). The drawings also contained the static and dynamic Hydraulic Grade Lines (HGLs) for the proposed pipeline. The HGLs shown on the profile were developed from the peak demand, both pressure and flow rates, of the projected 2070 population; considered the worst-case-scenario for the predicted lifespan of the pipeline. These HGLs were invaluable in the determination of each service point's minimum delivery pressure, and pump and PRV requirements as discussed in greater detail in Section 4.2 Hydraulic Components. Many of the alignment, material, and additional hydraulic constraints/properties were derived from the PAWS Appraisal Investigation.

4.1 Transmission Pipeline Alignment

The provided AutoCAD drawing and Appraisal Investigation depict the pipeline initiation in Guernsey where it extends through Fort Laramie, Lingle, Torrington, Henry, Morrill, Mitchell, Scottsbluff, Minatare, and Bayard generally following US Highway 20/26. At Bayard, the pipeline then intersects Nebraska Highway 92 and continues to Bridgeport. In the route described above, the water transmission pipeline has a total length of approximately 103 miles. Wenck established the model under the anticipation that the PAWS pipeline downstream of Guernsey will remain identical regardless of the supply source, as indicated in the Appraisal Investigation. To maintain focus on the hydraulics of the transmission pipeline, the proposed WTP was located adjacent to the initiation of the pipeline in Guernsey. The distance between initiation of the pipeline and the WTP was kept to a minimum to mitigate minor hydraulic losses and to commence the hydraulic grade at approximately the same level indicated on the provided AutoCAD profile detail. Wenck utilized the ModelBuilder attribute of WaterCAD to generate a base model from the provided AutoCAD alignment. Using this method ensured that alignment propagation: initiation, bends, lengths, service-point locations (junctions), PRV locations, and terminations remained equivalent in both magnitude and direction to that proposed (**Figure 4.2**). In **Figure 4.2**, the "J"s indicate junction points (or service-points), which represent a location along the system for which water can be discharged. The junctions indicated were transposed from the AutoCAD drawing where service-points were specified. The "P"s show interconnecting pipeline between each of the junctions.

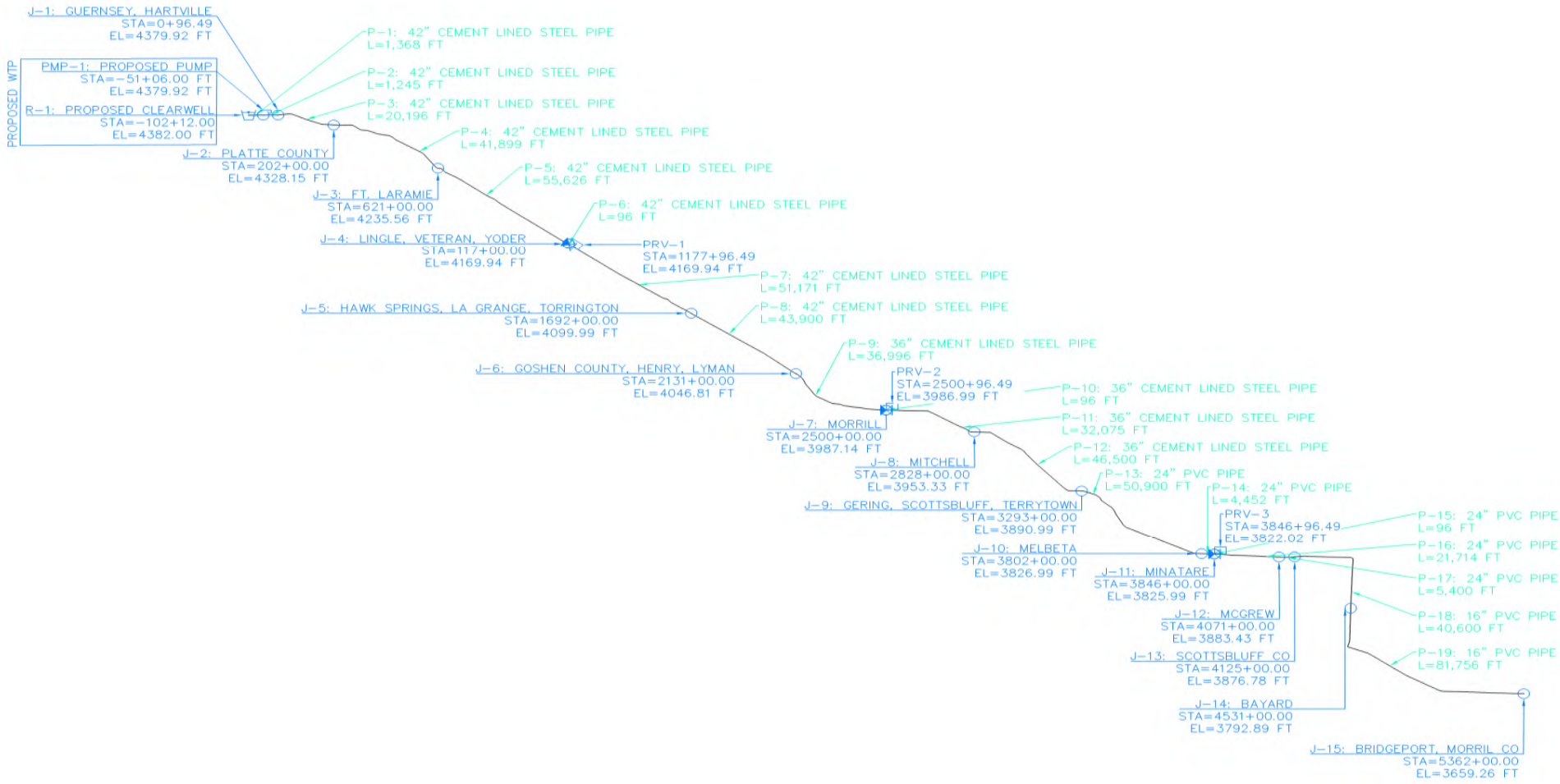


Figure 4.1 – Modified transmission pipeline alignment for hydraulic model use

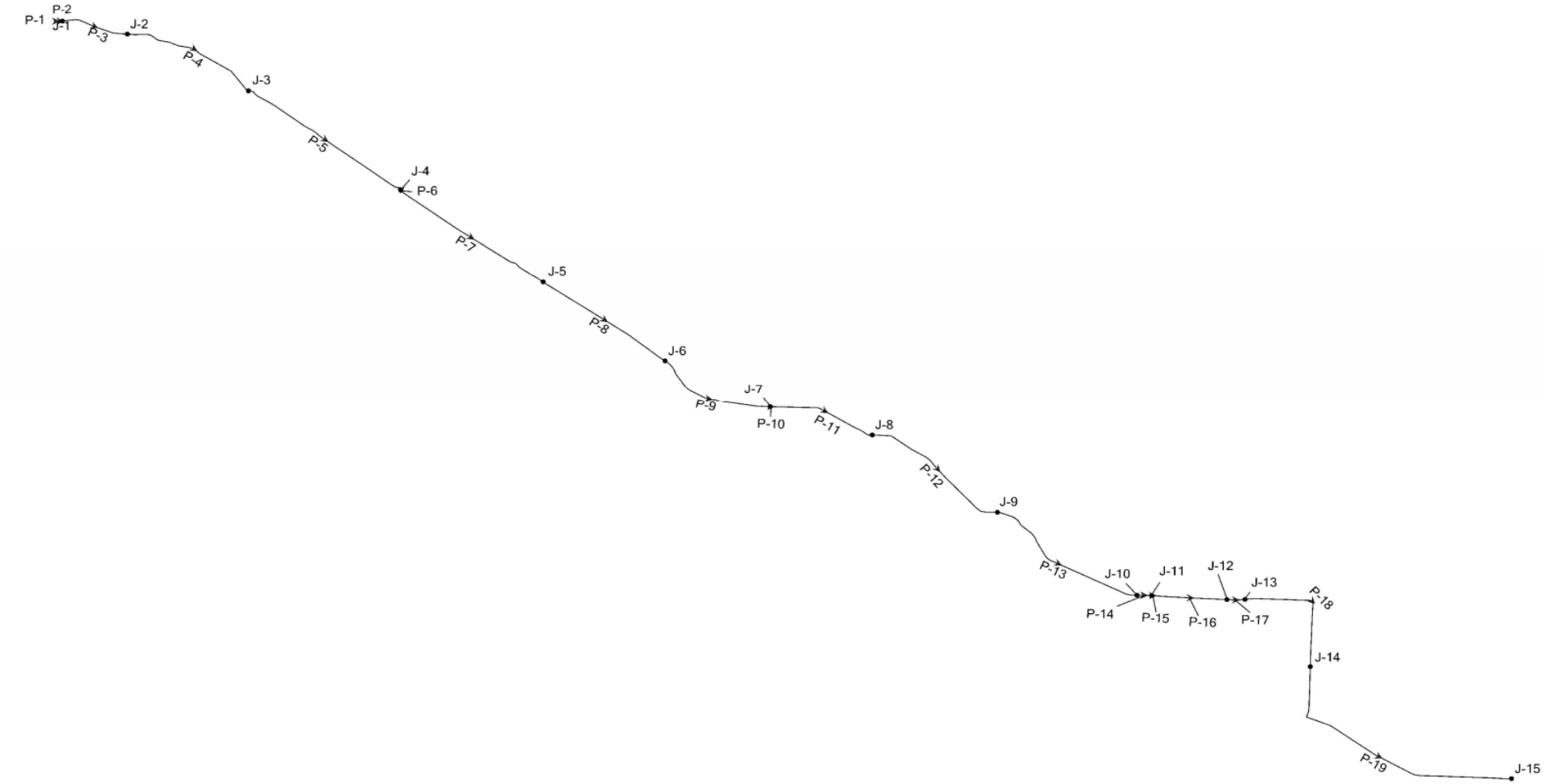


Figure 4.2 – PAWS transmission line WaterCAD model representation

4.2 Hydraulic Components

With the base model developed, additional hydraulic elements were set in place in accordance with the provided AutoCAD drawing and Appraisal Investigation. As alluded to in 4.1 Transmission Pipeline Alignment, the proposed WTP was inserted near the initiation of the pipeline. To model the WTP within WaterCAD, it was translated as a reservoir in series with a pump. WaterCAD assumes a reservoir in the model is an unlimited supply of water, for which any demand from it does not affect its hydraulic grade. The reservoir in the model is representative of the clear well of the WTP. Supply pressure losses to the clear well were considered negligible as the clear well is assumed to have an open water surface with insignificant pressure losses between it and the supply source. Schematically, the potable water from the clear well is then pumped to the transmission line to initiate water distribution. The pump design head was derived from the difference in physical elevation and the dynamic HGL at the pipeline initiation, station 0+00.00 as shown on the provided profile detail. The indicated elevation of the dynamic HGL at station 0+00.00 is 4,650.00 ft. The physical elevation at this point was interpolated through AutoCAD C3D's Profile Inquiry to be 4,379.91 ft. The difference between these elevations is the pressure demand required from the pump, which equals 270.09 ft of head or approximately 117 psi. This pressure requirement from the pump was maintained through all trials regardless of the flow delivered by the pump, as dictated by demand. Demand is discussed in greater detail in section 4.4 Demand. As the WTP is situated adjacent to the start of the transmission pipeline, physical elevations for the components that compose the WTP (reservoir and pump) were assumed to be essentially equivalent, but with slightly greater elevations, as you progress backward, to eliminate a delineation point for backflow or separation to occur.

As described above, the model uses a single pump, and at steady state operation will meet any single given demand state. Ideally, the WTP will use a series of variable speed pumps, likely often operating in unison to meet demands. It is recommended that in subsequent studies, further consideration be given to the hydraulic and sequential requirements of the WTP clear well pump station.

PRV's were transposed in the same manner that junctions were, in the same locations along the alignment as indicated on the provided profile detail (**Figure 4.3**). In **Figure 4.3** "R-1" represent the reservoir, "PMP-1" represents the pump, and "PRV" represents the three respective PRVs. PRV pressure settings were determined in the same manner that the pressure requirement from the pump was determined. Using this method, the outlet pressure setpoints for the PRV-1, PRV-2, and PRV-3 were determined to be 125.4 PSI, 137.9 PSI, and 136.2 PSI, respectively. The determined PRV pressure settings were maintained through all trials regardless of pressure at the inlet of the PRV, as dictated by demand.

The junctions and PRVs, much like the reservoir and pump, require physical elevation as inputs, a critical component to the analysis of a gravity system. Elevations for these components were applied to the model using the provided profile detail. Elevational data for all components of the model remained consistent for all evaluation trials. An important distinction to note, WaterCAD assumes a linear traverse of pipeline section between each junction point (**Figure 4.4**). This is assumed to be a viable evaluation of the pipe routing as Wenck has calculated that the maximum deviation occurring between the physical elevation and the assumed linear profile is 2.53%.

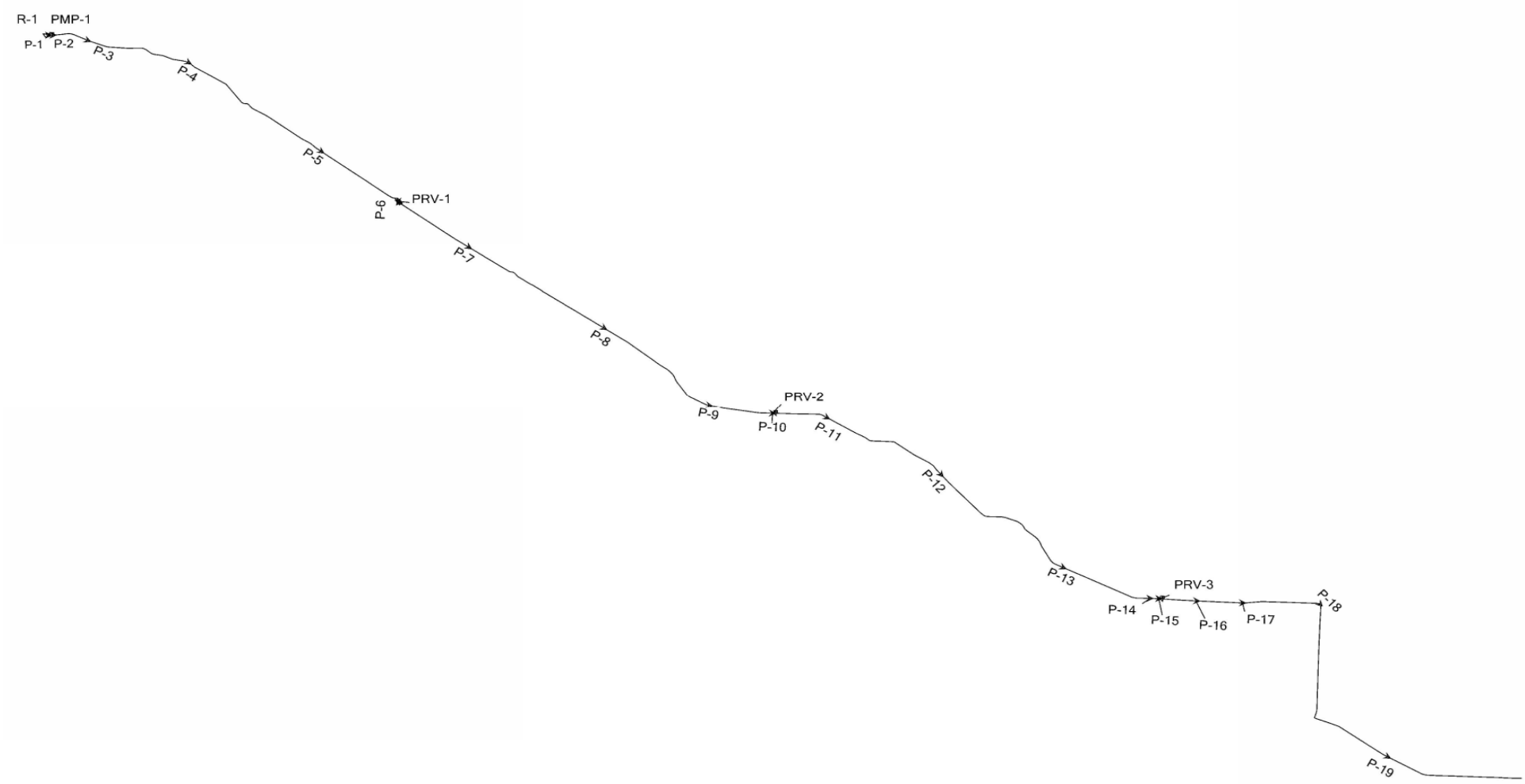


Figure 4.3 – Reservoir, pump, and PRV locations in WaterCAD model.
Note: Junctions omitted for clarity.

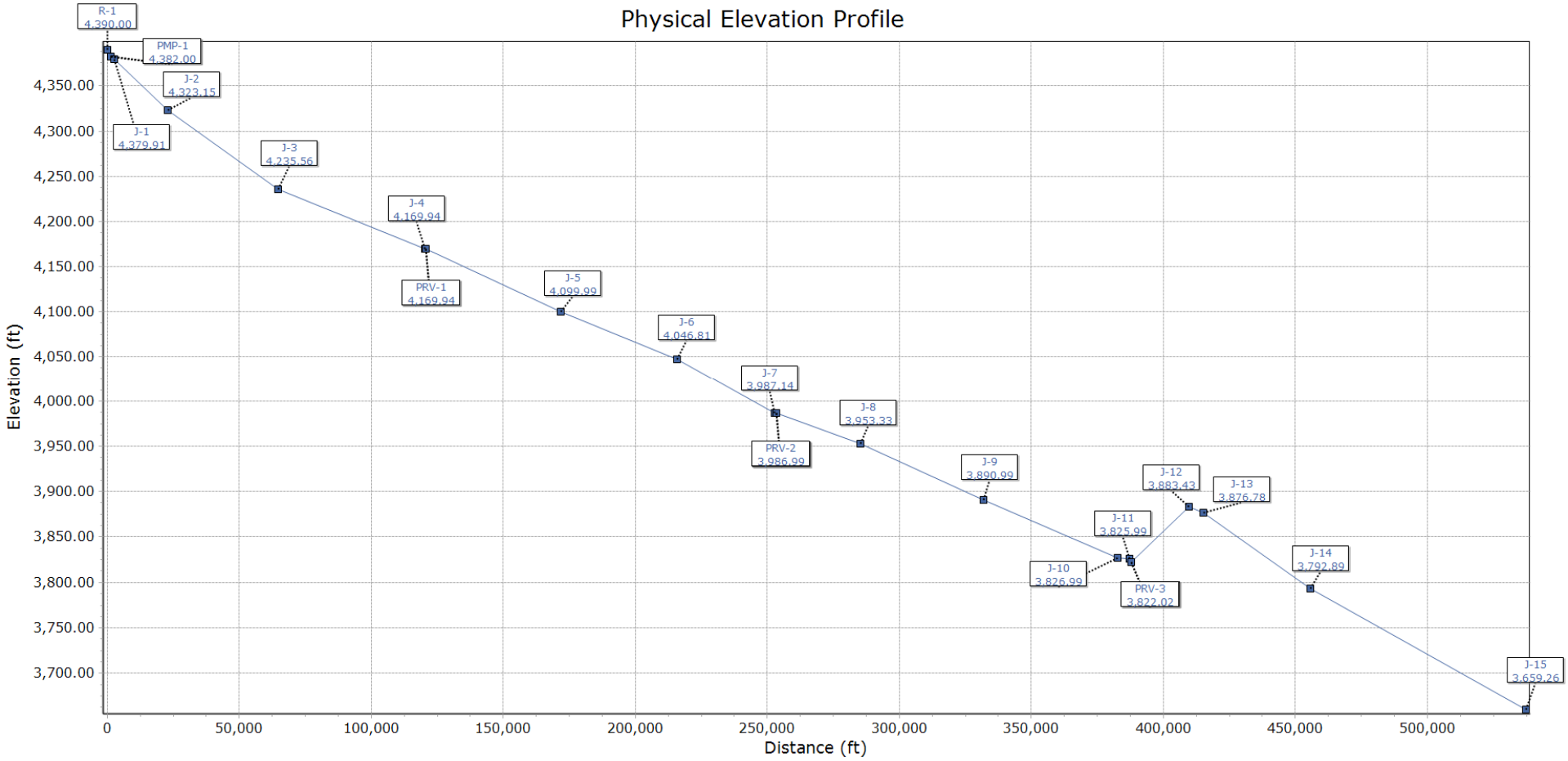


Figure 4.4 – Transmission pipeline physical elevation profile

4.3 Size and Materials

Piping is the only hydraulic element in the model for which size and material are required as inputs. The information for material of the piping was located in the Bid Item Descriptions of the Cost Estimate in the Appraisal Investigation. Here, the 42 in and 36 in diameter pipelines are identified as being a metallic material. Knowing this a steel material type was utilized for these segments of pipeline. The Bid Descriptions portion of the Appraisal Investigation also indicates that the 24 in and 16 in diameter pipes are to be PVC construction. With this, Wenck applied a PVC material type to these portions of the pipeline. In the model, application of a material type associates common properties of that material to the specified pipe or group of pipes; these properties include: Roughness Height, Young's Modulus, Poisson's Ratio, and friction coefficient based on friction loss method used. Most commonly, in WaterCAD analyses, the Hazen-Williams friction loss method utilized; this is the friction loss method used for this model. Segments of the pipeline requiring specific pipe diameters were clearly indicated in the provided alignment detail. The pipe begins with 42" diameter piping at initiation in Guernsey and through progression decreases size in a step-wise fashion. Decreases along the pipeline occur at three (3) locations: J-6: Goshen Co, Henry, Lyman, J-9: Gering, Scottsbluff, and Terrytown, and J-13: Scottsbluff Co. The piping between the clear well and the pump, and between the pump and transmission line start in Greeley use 42" diameter steel piping, as indicated in the Bid Item Descriptions. Piping composed of steel was assumed to have ½" thick cement lining for the purposes of cathodic and erosive protection.[1] Roughness for the steel sections was modified to indicated a cement lining; changing the Hazen-Williams C coefficient from 140 to 130. Hazen Williams roughness coefficients were maintained for all demand periods as it is assumed that do not change with the age of the pipe for metallic cement-lined and plastic pipes.[2] Wenck verified that the specified pipe geometries and materials were applied to the model as proposed. **Table 4.1** below summarizes the properties of each pipe in the model.

Table 4.1 – WaterCAD model pipe properties summary

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	42.00	41.00[3]	Steel	130[5]
P-2	1,245	PMP-1	J-1	42.00	41.00[3]	Steel	130[5]
P-3	20,196	J-1	J-2	42.00	41.00[3]	Steel	130[5]
P-4	41,899	J-2	J-3	42.00	41.00[3]	Steel	130[5]
P-5	55,626	J-3	J-4	42.00	41.00[3]	Steel	130[5]
P-6	308	J-4	PRV-1	42.00	41.00[3]	Steel	130[5]
P-7	51,171	PRV-1	J-5	42.00	41.00[3]	Steel	130[5]
P-8	43,900	J-5	J-6	42.00	41.00[3]	Steel	130[5]
P-9	36,996	J-6	J-7	36.00	35.00[3]	Steel	130[5]
P-10	629	J-7	PRV-2	36.00	35.00[3]	Steel	130[5]
P-11	32,075	PRV-2	J-8	36.00	35.00[3]	Steel	130[5]
P-12	46,500	J-8	J-9	36.00	35.00[3]	Steel	130[5]
P-13	50,900	J-9	J-10	24.00	22.76[4]	PVC	150[5]
P-14	4,452	J-10	J-11	24.00	22.76[4]	PVC	150[5]
P-15	734	J-11	PRV-3	24.00	22.76[4]	PVC	150[5]
P-16	21,714	PRV-3	J-12	24.00	22.76[4]	PVC	150[5]
P-17	5,400	J-12	J-13	24.00	22.76[4]	PVC	150[5]
P-18	40,600	J-13	J-14	16.00	15.35[4]	PVC	150[5]
P-19	81,756	J-14	J-15	16.00	15.35[4]	PVC	150[5]

4.4 Demand

Demand at junctions along the hydraulic model were obtained from Population and Use Projections in the Appraisal Investigation. Projected populations are estimated based on the 2010 census assuming a 1% per year population growth rate. Consumption per capita remained constant for each population projection with average consumption at 155 gallons per capita per day. And peak consumption at twice the average, 310 gallons per capita per day. Utilizing this data, average and max demand was determined at each junction (generally a community, group of communities, or county) for the projected populations of 2020 and 2070. The projected 2020 population average and peak demands were selected as they potentially represent the demand at the approximate installation and implementation period of the pipeline. The projected 2070 population average and peak demands were selected in accordance with the Appraisal Investigation's provision of a 50-year design life water treatment plant. The proposed water treatment plant will be designed initially for the average demand of the projected 2070 population, with the ability to expand the facility to meet maximum demands for said population. Evaluation of the pipeline at the peak demand of the projected 2070 population is prudent to ensure it has the hydraulic capability for transmission without modification. A total of four (4) analyses were performed using the two demand periods and two demand conditions for each period as described above. **Table 4.2** depicts the demand applied to each junction for each analysis based on the period and condition defined.

Table 4.2 – WaterCAD model junction demand inputs for each analysis

Junction	Community	Demand Condition/Period			
		Peak 2070 (MGD)	Average 2070 (MGD)	Peak 2020 (MGD)	Average 2020 (MGD)
J-1	GUERNSEY HARTVILLE	0.76	0.38	0.46	0.23
J-2	PLATTE CO	2.20	1.10	1.33	0.67
J-3	FT. LARAMIE	0.13	0.07	0.08	0.04
J-4	LINGLE VETERAN YODER	0.40	0.20	0.24	0.12
J-5	HAWK SPRINGS LA GRANGE TORRINGTON	3.43	1.72	2.08	1.04
J-6	GOSHEN CO HENRY LYMAN	3.82	1.91	2.31	1.16
J-7	MORRILL	0.53	0.27	0.32	0.16
J-8	MITCHELL	1.01	0.51	0.61	0.31
J-9	GERING SCOTTSBLUFF TERRYTOWN	13.42	6.71	8.13	4.07
J-10	MELBETA	0.08	0.04	0.05	0.02
J-11	MINATARE	0.49	0.25	0.30	0.15
J-12	MCGREW	0.06	0.03	0.04	0.02
J-13	SCOTTSBLUFF CO	4.91	2.46	2.97	1.49
J-14	BAYARD	0.62	0.31	0.38	0.19
J-15	BRIDGEPORT MORILL CO	2.22	1.11	1.34	0.67
	SUM	**34.08**	**17.04**	**20.64**	**10.34**

To account for varying demand amongst each of these trials, the required pump flow rate was altered to match each demand flow rate as indicated in **Table 4.2** above. All other

hydraulic component properties remained the same across each trial, including pressure demand from the pump.

The above summarizes the flow rate requirements of the system based on each demand period and associated condition; pressure requirements at each junction were derived from the supplied profile drawing. The pressure requirement at each junction was interpolated in the same manner the pressure rise and drop from the pump and PRV's was determined. The pressure requirements at each junction are summarized in **Table 4.3**. Evaluation of the transmission line's adequacy was partially determined in its ability to meet or exceed these pressure requirements at each demand period and condition.

Table 4.3 – Pressure requirement at each junction

Junction	Community	HGL (FT)	Elevation (FT)	Desired Pressure (PSI)
J-1	GUERNSEY HARTVILLE	4650.00	4,379.91	117.09
J-2	PLATTE CO	4611.40	4,323.15	124.96
J-3	FT. LARAMIE	4540.87	4,235.56	132.36
J-4	LINGLE VETERAN YODER	4459.10	4,169.94	125.36
J-5	HAWK-SPRINGS LA GRANGE TORRINGTON	4386.65	4,099.99	124.27
J-6	GOSHEN CO HENRY LYMAN	4337.01	4,046.81	125.81
J-7	MORRILL	4305.20	3,987.14	137.89
J-8	MITCHELL	4247.79	3,953.33	127.66
J-9	GERING SCOTTSBLUFF TERRYTOWN	4172.96	3,890.99	122.24
J-10	MELBETA	4139.10	3,826.99	135.31
J-11	MINATARE	4136.22	3,825.99	134.49
J-12	MCGREW	4123.08	3,883.43	103.89
J-13	SCOTTSBLUFF CO	4119.97	3,876.78	105.43
J-14	BAYARD	4076.11	3,792.89	122.78
J-15	BRIDGEPORT MORILL CO	3882.30	3,659.26	96.69

5.0 Model Results

The model results show that the proposed PAWS transmission pipeline is inadequate in water distribution for the peak pressure and flow demands of the projected 2070 population. At this demand period and condition, the pipeline is unable to meet the pressure requirement, as show in **Table 4.3**, at junctions J-3 thru J-15. Similarly, the proposed pipeline in unable to meet the pressure requirements of junctions J-12 and J-13 for the peak demand of the projected 2020 population. **Figures 5.1-5.8** show plans and corresponding model results indicating hydraulic quantities for each component at each of the demand periods/conditions.
As demands were not met with the transmission pipeline as proposed, Wenck made consideration for meeting these demands by modifying the pipeline size; namely, the diameters of the composing pipes. Wenck performed an iterative analysis, entering various

plausible pipe diameters for each pipe, maintaining pipe size change locations, to optimize between meeting demand and minimizing material expenditure. **Table 5.1** expresses the optimized, recommended, pipe diameters from this procedure.

Table 5.1 – Optimized/recommended transmission line pipe properties

Label	Length (ft)	Start Node	Stop Node	Nominal Diameter (in)	Actual Inside Diameter (in)	Material	Hazen-Williams C
P-1	1,368	R-1	PMP-1	45.00	44.00	Steel	130
P-2	1,245	PMP-1	J-1	45.00	44.00	Steel	130
P-3	20,196	J-1	J-2	45.00	44.00	Steel	130
P-4	41,899	J-2	J-3	45.00	44.00	Steel	130
P-5	55,626	J-3	J-4	45.00	44.00	Steel	130
P-6	308	J-4	PRV-1	45.00	44.00	Steel	130
P-7	51,171	PRV-1	J-5	45.00	44.00	Steel	130
P-8	43,900	J-5	J-6	45.00	44.00	Steel	130
P-9	36,996	J-6	J-7	42.00	41.00	Steel	130
P-10	629	J-7	PRV-2	42.00	41.00	Steel	130
P-11	32,075	PRV-2	J-8	42.00	41.00	Steel	130
P-12	46,500	J-8	J-9	42.00	41.00	Steel	130
P-13	50,900	J-9	J-10	30.00	28.77	PVC	150
P-14	4,452	J-10	J-11	30.00	28.77	PVC	150
P-15	734	J-11	PRV-3	30.00	28.77	PVC	150
P-16	21,714	PRV-3	J-12	30.00	28.77	PVC	150
P-17	5,400	J-12	J-13	30.00	28.77	PVC	150
P-18	40,600	J-13	J-14	18.00	17.27	PVC	150
P-19	81,756	J-14	J-15	18.00	17.27	PVC	150

Figures 5.7-5.8 display the resulting hydraulic quantities of the model for each demand period/condition using the pipe geometries shown in **Table 5.1**. The recommended pipe sizes ensure that minimum pressure requirements at each service point is met for each demand period/condition without exceeding the maximum pressure of 225 PSI, as indicated in the Appraisal Investigation.

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.60 MGD, HARTVILLE 0.16 MGD
HGL=4655.00 FT
EL=4379.91 FT
P=119.0 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4657.79 FT
EL=4382.00 FT
Q=34.08 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=5.75 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=5.75 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=33.32 MGD
V=5.62 FT/S

J-2: PLATTE COUNTY 2.20 MGD
HGL=4611.68 FT
EL=4323.15 FT
P=124.8 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=31.12 MGD
V=5.25 FT/S

P-5: 42" CEMENT LINED STEEL PIPE
Q=30.99 MGD
V=5.23 FT/S

J-3: FT. LARAMIE 0.13 MGD
HGL=4532.47 FT
EL=4235.56 FT
P=128.5 PSI

P-6: 42" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=5.16 FT/S

J-4: LINGLE 0.28 MGD, VETERAN 0.03 MGD, YODER 0.09 MGD
HGL=4428.13 FT
EL=4169.94 FT
P=111.7 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=111.5 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=5.16 FT/S

J-5: HAWK SPRINGS 0.04 MGD, LA GRANGE 0.19 MGD, TORRINGTON 3.20 MGD
HGL=4333.86 FT
EL=4099.99 FT
P=101.2 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=27.16 MGD
V=4.58 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=23.34 MGD
V=5.40 FT/S

J-6: GOSHEN COUNTY 3.50 MGD, HENRY 0.09 MGD, LYMAN 0.23 MGD
HGL=4269.37 FT
EL=4046.81 FT
P=96.3 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=83.2 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=5.28 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=5.28 FT/S

P-12: 36" CEMENT LINED STEEL PIPE
Q=21.80 MGD
V=5.05 FT/S

J-7: MORRILL 0.53 MGD
HGL=4180.64 FT
EL=3987.14 FT
P=83.7 PSI

J-8: MITCHELL 1.01 MGD
HGL=4105.48 FT
EL=3953.33 FT
P=65.8 PSI

P-13: 24" PVC PIPE
Q=8.38 MGD
V=4.59 FT/S

P-14: 24" PVC PIPE
Q=8.30 MGD
V=4.55 FT/S

J-9: GERING 4.36 MGD, SCOTTSBLUFF 8.38 MGD, TERRYTOWN 0.68 MGD
HGL=4007.21 FT
EL=3890.99 FT
P=50.3 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=25.8 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=7.81 MGD
V=4.28 FT/S

P-16: 24" PVC PIPE
Q=7.81 MGD
V=4.28 FT/S

P-17: 24" PVC PIPE
Q=7.75 MGD
V=4.24 FT/S

J-10: MELBETA 0.08 MGD
HGL=3892.92 FT
EL=3826.99 FT
P=28.5 PSI

J-11: MINATARE 0.49 MGD
HGL=3883.10 FT
EL=3825.99 FT
P=24.7 PSI

P-18: 16" PVC PIPE
Q=2.84 MGD
V=3.42 FT/S

J-12: MCGREW 0.06 MGD
HGL=3838.87 FT
EL=3883.43 FT
P=-19.3 PSI

J-13: SCOTTSBLUFF CO 4.91 MGD
HGL=3828.38 FT
EL=3876.78 FT
P=-20.9 PSI

P-19: 16" PVC PIPE
Q=2.22 MGD
V=2.67 FT/S

J-14: BAYARD 0.62 MGD
HGL=3744.67 FT
EL=3792.89 FT
P=-20.9 PSI

J-15: BRIDGEPORT 0.80 MGD, MORRIL CO 1.42 MGD
HGL=3637.85 FT
EL=3659.26 FT
P=-9.3 PSI

N

PROJECT NUMBER: B6391-0001
FILE NAME: 2070 PEAK PROPOSED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

REV	DESCRIPTION OF REVISION	BY	DATE
1	PRELIMINARY DESIGN	RKL	7/17

6.50 MI 3.25 MI 0 3.25 MI 6.50 MI

WENCK ASSOCIATES
WENCK ASSOCIATES, INC.
1904 EAST 15th STREET
FAX: (307) 634-7851

WARNING
DRAWING IS NOT TO SCALE IF THIS BAR DOES NOT MEASURE ½"

DESIGNED	
DRAWN	RKL
PEER REVIEWED	VEA
PROJECT MANAGER	VEA
DATE	7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2070 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.1

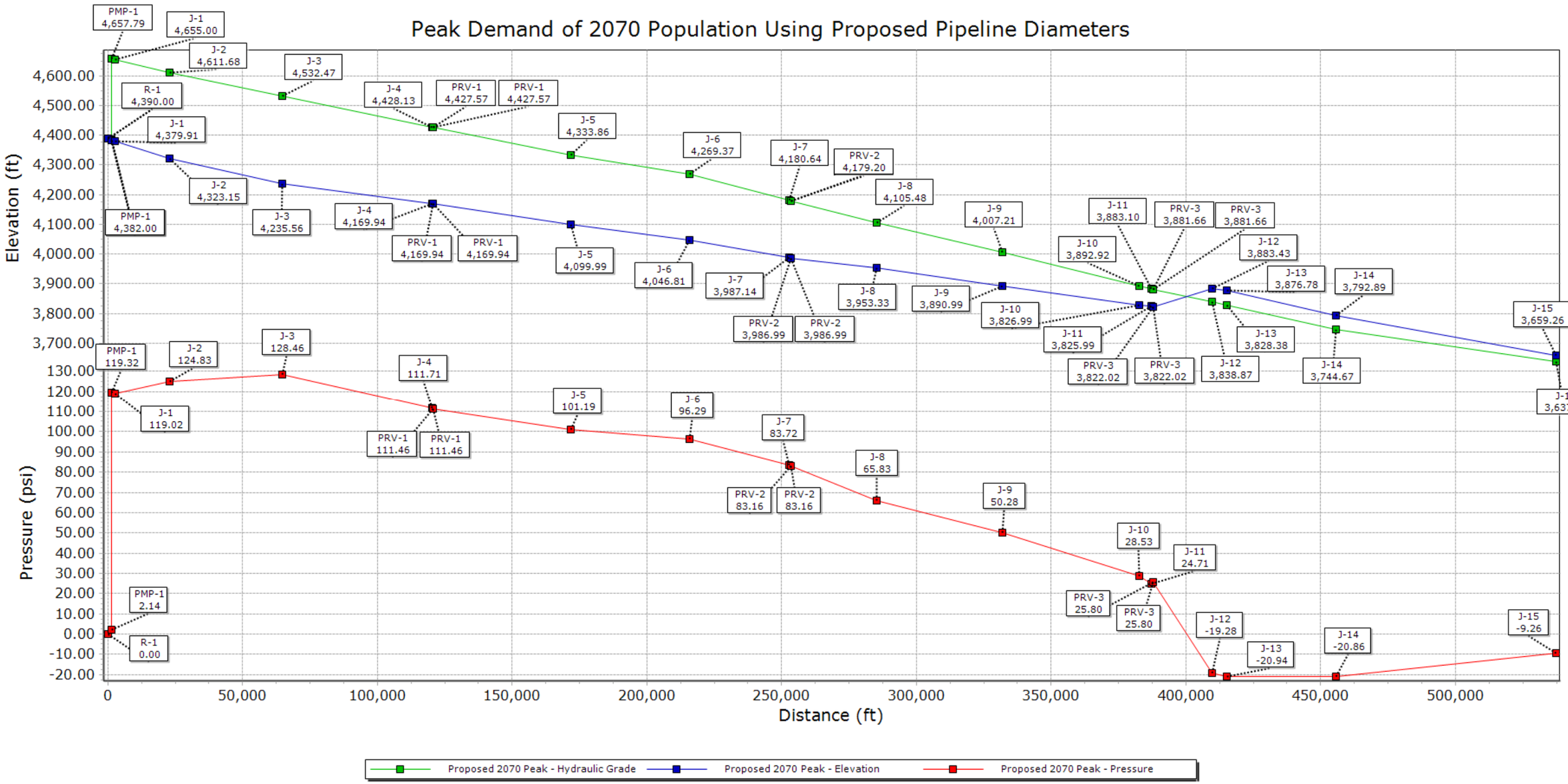


Figure 5.2 – Hydraulic model results for peak demand of projected 2070 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.30 MGD, HARTVILLE 0.08 MGD
HGL=4673.84 FT
EL=4379.92 FT
P=127.2 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4674.61 FT
EL=4382.00 FT
Q=17.04 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.88 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.88 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=16.66 MGD
V=2.81 FT/S

J-2: PLATTE COUNTY 1.10 MGD
HGL=4661.83 FT
EL=4328.15 FT
P=146.5 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=15.56 MGD
V=2.63 FT/S

J-3: FT. LARAMIE 0.07 MGD
HGL=4639.89 FT
EL=4235.56 FT
P=174.9 PSI

P-5: 42" CEMENT LINED STEEL PIPE
Q=15.50 MGD
V=2.61 FT/S

P-6: 42" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.58 FT/S

J-4: LINGLE 0.14 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4610.99 FT
EL=4169.94 FT
P=190.8 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.58 FT/S

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.10 MGD, TORRINGTON 1.60 MGD
HGL=4433.93 FT
EL=4099.99 FT
P=144.5 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=13.58 MGD
V=2.29 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=11.67 MGD
V=2.70 FT/S

J-6: GOSHEN COUNTY 1.75 MGD, HENRY 0.05 MGD, LYMAN 0.12 MGD
HGL=4416.06 FT
EL=4046.81 FT
P=159.8 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=2.64 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=2.64 FT/S

J-7: MORRILL 0.27 MGD
HGL=4391.48 FT
EL=3987.14 FT
P=174.9 PSI

P-12: 36" CEMENT LINED STEEL PIPE
Q=10.90 MGD
V=2.52 FT/S

J-8: MITCHELL 0.51 MGD
HGL=4285.42 FT
EL=3953.33 FT
P=143.7 PSI

P-13: 24" PVC PIPE
Q=4.19 MGD
V=2.29 FT/S

P-14: 24" PVC PIPE
Q=4.15 MGD
V=2.27 FT/S

J-9: GERING 2.18 MGD, SCOTTSBLUFF 4.19 MGD, TERRYTOWN 0.34 MGD
HGL=4258.20 FT
EL=3890.99 FT
P=158.9 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=3.90 MGD
V=2.14 FT/S

J-10: MELBETA 0.04 MGD
HGL=4226.54 FT
EL=3826.99 FT
P=172.9 PSI

P-16: 24" PVC PIPE
Q=3.90 MGD
V=2.14 FT/S

J-11: MINATARE 0.25 MGD
HGL=4223.82 FT
EL=3825.99 FT
P=172.1 PSI

P-17: 24" PVC PIPE
Q=3.87 MGD
V=2.12 FT/S

J-12: MCGREW 0.03 MGD
HGL=4125.08 FT
EL=3883.43 FT
P=104.6 PSI

P-18: 16" PVC PIPE
Q=1.42 MGD
V=1.71 FT/S

J-13: SCOTTSBLUFF CO 2.46 MGD
HGL=4122.18 FT
EL=3876.78 FT
P=106.2 PSI

P-19: 216" PVC PIPE
Q=1.11 MGD
V=1.34 FT/S

J-14: BAYARD 0.31 MGD
HGL=4098.99 FT
EL=3792.89 FT
P=132.4 PSI

J-15: BRIDGEPORT 0.40 MGD, MORRIL CO 0.71 MGD
HGL=4069.40 FT
EL=3659.26 FT
P=177.4 PSI

N

6.50 MI 3.25 MI 0 3.25 MI 6.50 MI

REV	DESCRIPTION OF REVISION	BY	DATE
1	PRELIMINARY DESIGN	RKL	7/17

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DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2070 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 7

PROJECT NUMBER: B6391-0001
FILE NAME: 2070 AVERAGE PROPOSED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

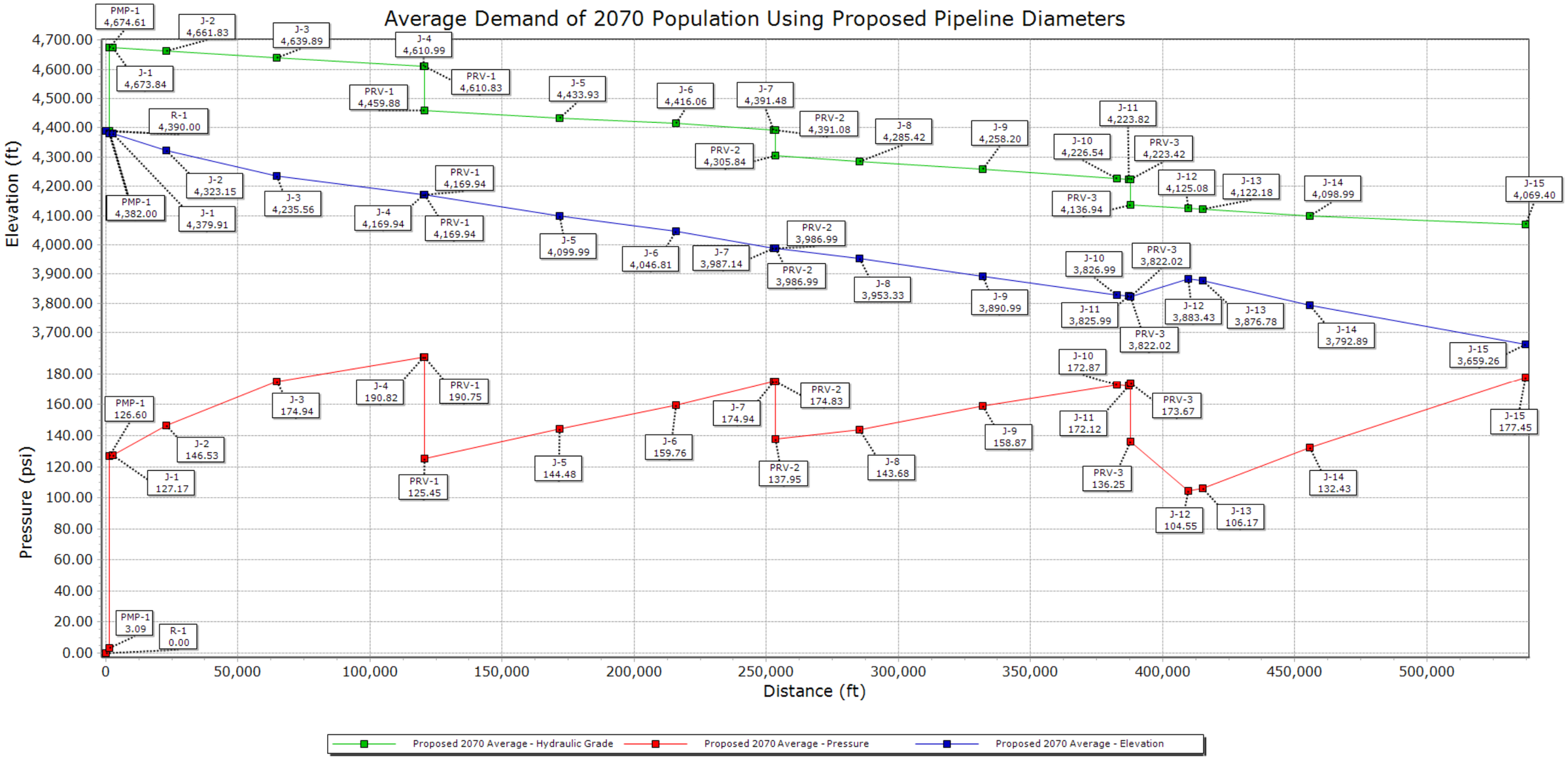
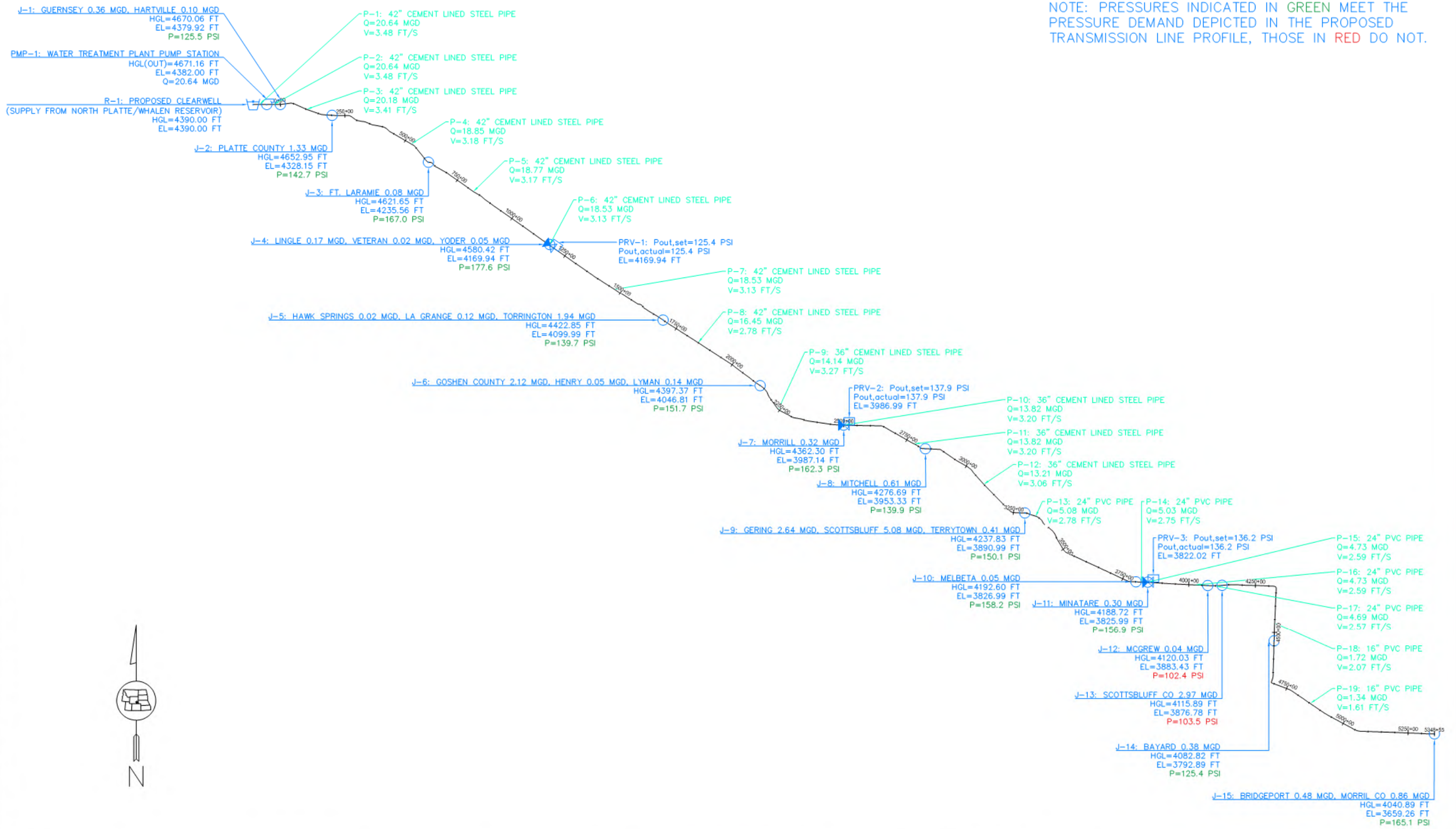


Figure 5.4 – Hydraulic model results for average demand of projected 2070 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.



1	PRELIMINARY DESIGN	RKL	7/17	
REV	DESCRIPTION OF REVISION	BY	DATE	

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PROJECT MANAGER VEA
DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2020 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.7

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 PEAK PROPOSED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

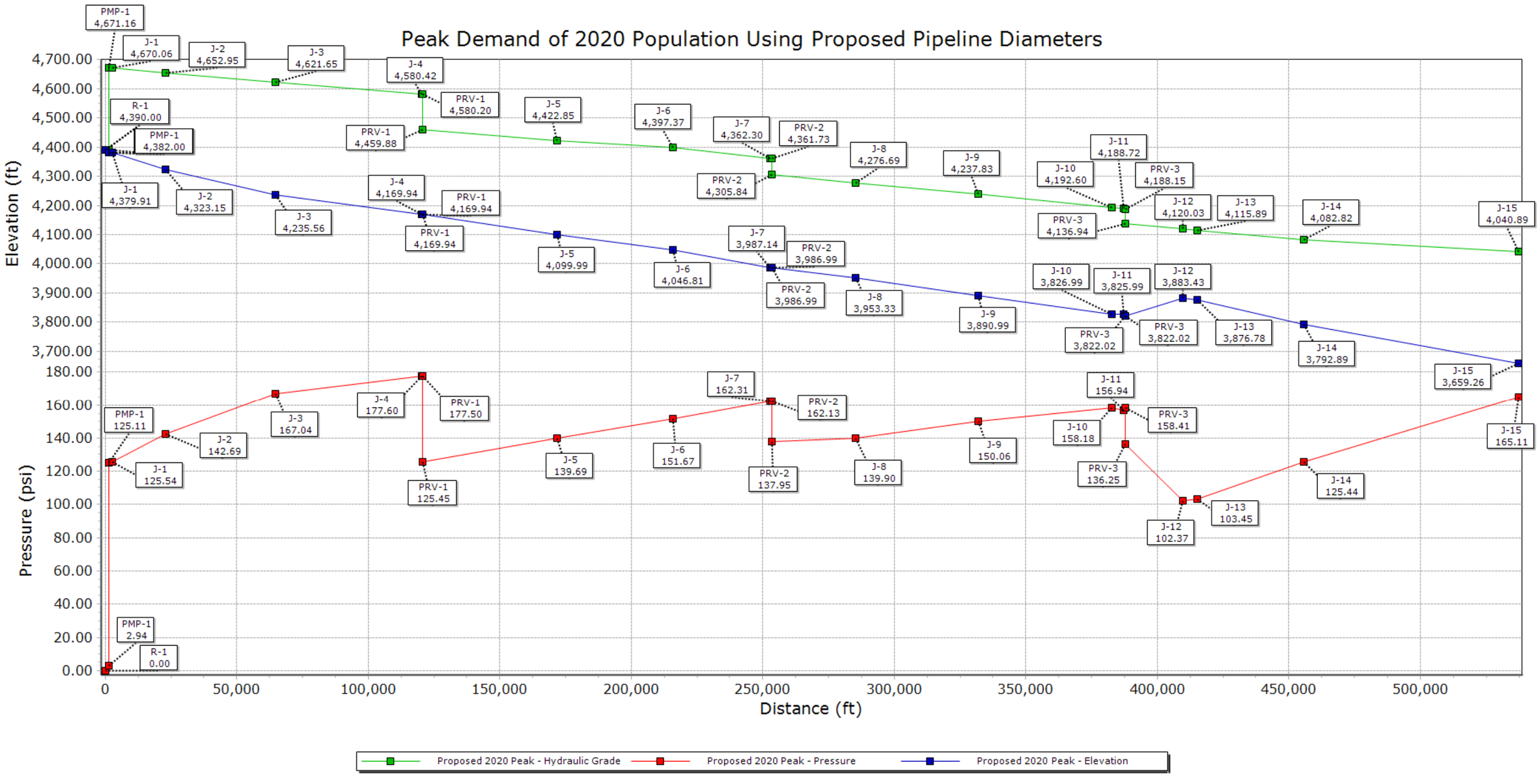

Figure 5.6 – Hydraulic model results for peak demand of projected 2020 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.18 MGD, HARTVILLE 0.05 MGD
HGL=4660.21 FT
EL=4379.92 FT
P=121.3 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4660.51 FT
EL=4382.00 FT
Q=10.34 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 42" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.74 FT/S

P-2: 42" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.74 FT/S

P-3: 42" CEMENT LINED STEEL PIPE
Q=10.11 MGD
V=1.71 FT/S

J-2: PLATTE COUNTY 0.67 MGD
HGL=4655.45 FT
EL=4328.15 FT
P=143.8 PSI

P-4: 42" CEMENT LINED STEEL PIPE
Q=9.44 MGD
V=1.59 FT/S

J-3: FT. LARAMIE 0.04 MGD
HGL=4646.75 FT
EL=4235.56 FT
P=177.9 PSI

P-5: 42" CEMENT LINED STEEL PIPE
Q=9.40 MGD
V=1.59 FT/S

P-6: 42" CEMENT LINED STEEL PIPE
Q=9.28 MGD
V=1.57 FT/S

J-4: LINGLE 0.08 MGD, VETERAN 0.01 MGD, YODER 0.03 MGD
HGL=4636.30 FT
EL=4169.94 FT
P=201.3 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

P-7: 42" CEMENT LINED STEEL PIPE
Q=9.25 MGD
V=1.57 FT/S

J-5: HAWK SPRINGS 0.01 MGD, LA GRANGE 0.06 MGD, TORRINGTON 0.97 MGD
HGL=4449.59 FT
EL=4099.99 FT
P=151.3 PSI

P-8: 42" CEMENT LINED STEEL PIPE
Q=8.24 MGD
V=1.39 FT/S

P-9: 36" CEMENT LINED STEEL PIPE
Q=7.08 MGD
V=1.64 FT/S

J-6: GOSHEN COUNTY 1.06 MGD, HENRY 0.03 MGD, LYMAN 0.07 MGD
HGL=4442.51 FT
EL=4046.81 FT
P=171.2 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

P-10: 36" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.60 FT/S

P-11: 36" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.60 FT/S

P-12: 36" CEMENT LINED STEEL PIPE
Q=6.61 MGD
V=1.53 FT/S

J-7: MORRILL 0.16 MGD
HGL=4432.77 FT
EL=3987.14 FT
P=192.8 PSI

J-8: MITCHELL 0.31 MGD
HGL=4297.74 FT
EL=3953.33 FT
P=149.0 PSI

P-13: 24" PVC PIPE
Q=2.54 MGD
V=1.39 FT/S

P-14: 24" PVC PIPE
Q=2.52 MGD
V=1.38 FT/S

J-9: GERING 1.32 MGD, SCOTTSBLUFF 2.54 MGD, TERRYTOWN 0.21 MGD
HGL=4286.96 FT
EL=3890.99 FT
P=171.3 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

P-15: 24" PVC PIPE
Q=2.37 MGD
V=1.30 FT/S

P-16: 24" PVC PIPE
Q=2.37 MGD
V=1.30 FT/S

P-17: 24" PVC PIPE
Q=2.35 MGD
V=1.29 FT/S

J-10: MELBETA 0.02 MGD
HGL=4274.43 FT
EL=3826.99 FT
P=193.6 PSI

J-11: MINATARE 0.15 MGD
HGL=4273.35 FT
EL=3825.99 FT
P=193.6 PSI

J-12: MCGREW 0.02 MGD
HGL=4132.23 FT
EL=3883.43 FT
P=107.6 PSI

P-18: 16" PVC PIPE
Q=0.86 MGD
V=1.04 FT/S

J-13: SCOTTSBLUFF CO 1.49 MGD
HGL=4131.08 FT
EL=3876.78 FT
P=110.0 PSI

P-19: 16" PVC PIPE
Q=0.67 MGD
V=0.81 FT/S

J-14: BAYARD 0.19 MGD
HGL=4121.92 FT
EL=3792.89 FT
P=142.4 PSI

J-15: BRIDGEPORT 0.24 MGD, MORRIL CO 0.43 MGD
HGL=4110.31 FT
EL=3659.26 FT
P=195.1 PSI

N

6.50 MI 3.25 MI 0 3.25 MI 6.50 MI

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2020 POPULATION USING PROPOSED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.1

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 AVERAGE PROPOSED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

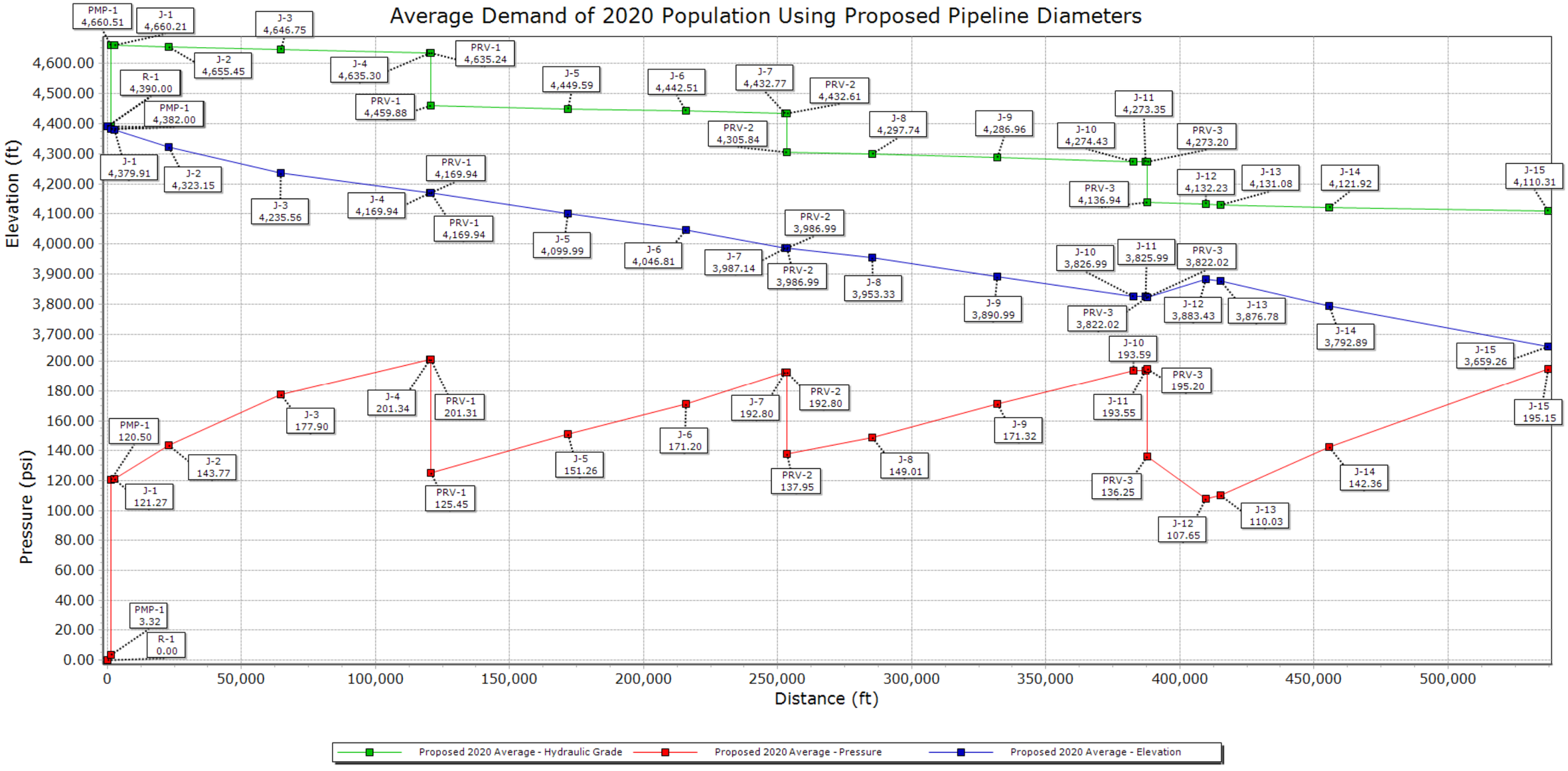

Figure 5.8 – Hydraulic model results for average demand of projected 2020 population using proposed pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.60 MGD, HARTVILLE 0.16 MGD
HGL=4656.71 FT
EL=4379.91 FT
P=119.8 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4658.68 FT
EL=4382.00 FT
Q=34.08 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=4.99 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=34.08 MGD
V=4.99 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=33.32 MGD
V=4.88 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=31.12 MGD
V=4.56 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=30.99 MGD
V=4.54 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=4.48 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=30.59 MGD
V=4.48 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=27.16 MGD
V=3.98 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=23.34 MGD
V=3.94 FT/S

P-10: 42" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=3.85 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=22.81 MGD
V=3.85 FT/S

P-12: 42" CEMENT LINED STEEL PIPE
Q=21.80 MGD
V=3.68 FT/S

P-13: 30" PVC PIPE
Q=8.38 MGD
V=2.87 FT/S

P-14: 30" PVC PIPE
Q=8.30 MGD
V=2.84 FT/S

P-15: 30" PVC PIPE
Q=7.81 MGD
V=2.68 FT/S

P-16: 30" PVC PIPE
Q=7.81 MGD
V=2.68 FT/S

P-17: 30" PVC PIPE
Q=7.75 MGD
V=2.66 FT/S

P-18: 18" PVC PIPE
Q=2.84 MGD
V=2.72 FT/S

P-19: 18" PVC PIPE
Q=2.22 MGD
V=2.13 FT/S

J-2: PLATTE COUNTY 2.20 MGD
HGL=4625.99 FT
EL=4323.15 FT
P=131.0 PSI

J-3: FT. LARAMIE 0.13 MGD
HGL=4569.84 FT
EL=4235.56 FT
P=144.6 PSI

J-4: LINGLE 0.28 MGD, VETERAN 0.03 MGD, YODER 0.09 MGD
HGL=4495.87 FT
EL=4169.94 FT
P=141.0 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.04 MGD, LA GRANGE 0.19 MGD, TORRINGTON 3.20 MGD
HGL=4393.45 FT
EL=4099.99 FT
P=127.0 PSI

J-6: GOSHEN COUNTY 3.50 MGD, HENRY 0.09 MGD, LYMAN 0.23 MGD
HGL=4347.773 FT
EL=4046.81 FT
P=130.2 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.53 MGD
HGL=4306.68 FT
EL=3987.14 FT
P=138.2 PSI

J-8: MITCHELL 1.01 MGD
HGL=4271.738 FT
EL=3953.33 FT
P=137.8 PSI

J-9: GERING 4.36 MGD, SCOTTSBLUFF 8.38 MGD, TERRYTOWN 0.68 MGD
HGL=4226.26 FT
EL=3890.99 FT
P=145.1 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.08 MGD
HGL=4189.76 FT
EL=3826.99 FT
P=157.0 PSI

J-11: MINATARE 0.49 MGD
HGL=4186.63 FT
EL=3825.99 FT
P=156.0 PSI

J-12: MCGREW 0.06 MGD
HGL=4123.27 FT
EL=3883.43 FT
P=103.8 PSI

J-13: SCOTTSBLUFF CO 4.91 MGD
HGL=4119.92 FT
EL=3876.78 FT
P=105.4 PSI

J-14: BAYARD 0.62 MGD
HGL=4071.83 FT
EL=3792.89 FT
P=122.7 PSI

J-15: BRIDGEPORT 0.80 MGD, MORRIL CO 1.42 MGD
HGL=4010.47 FT
EL=3659.26 FT
P=152.0 PSI

N

6.50 MI 3.25 MI 0 3.25 MI 6.50 MI

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DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2070 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 7.9

PROJECT NUMBER: B6391-0001
FILE NAME: 2070 PEAK RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

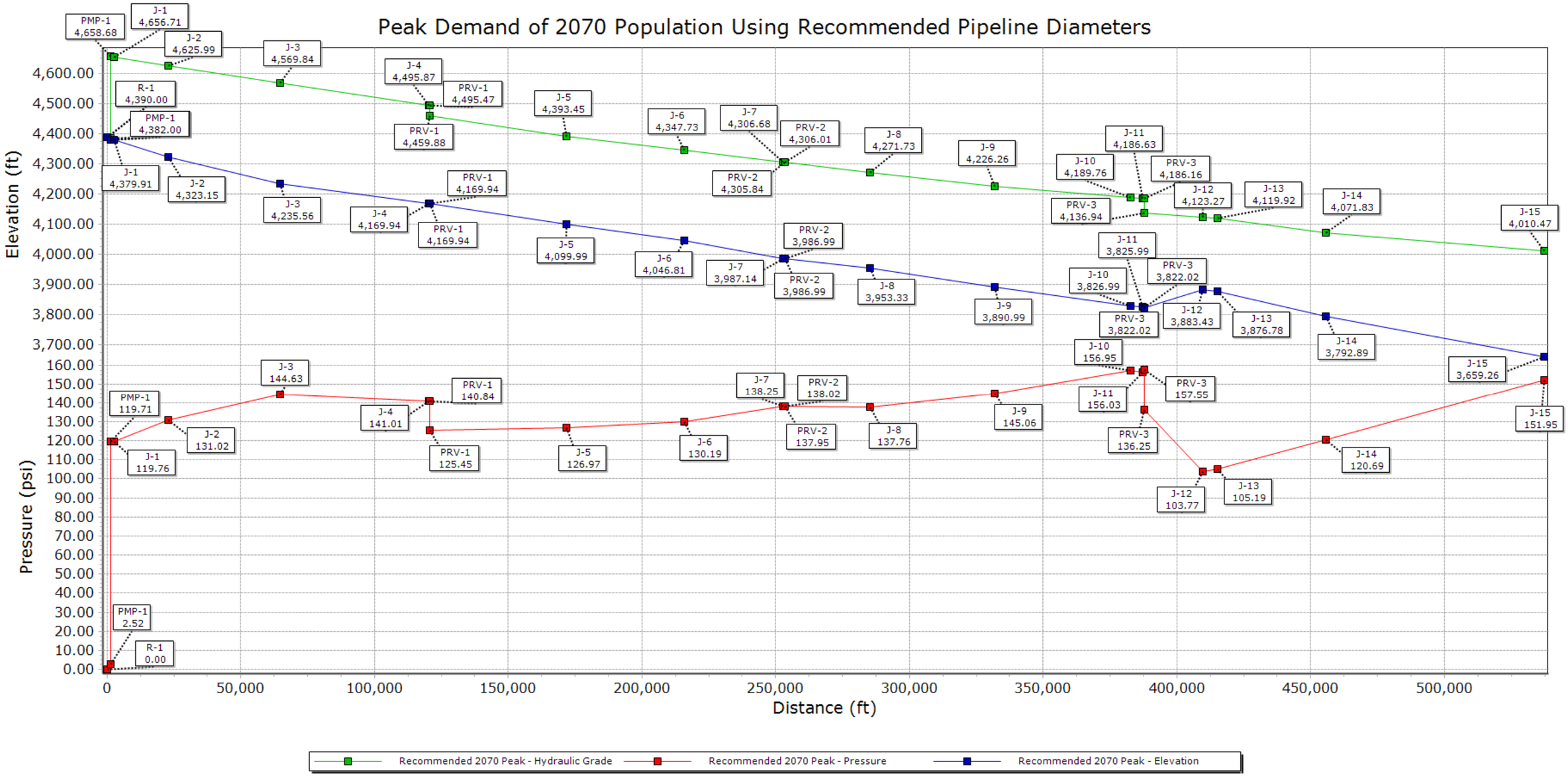

Figure 5.10 – Hydraulic model results for peak demand of projected 2070 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.30 MGD, HARTVILLE 0.08 MGD
HGL=4674.31 FT
EL=4379.92 FT
P=127.4 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4674.85 FT
EL=4382.00 FT
Q=17.04 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.50 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=17.04 MGD
V=2.50 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=16.66 MGD
V=2.44 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=15.56 MGD
V=2.28 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=15.50 MGD
V=2.27 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.24 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=15.30 MGD
V=2.24 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=13.58 MGD
V=1.99 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=11.67 MGD
V=1.97 FT/S

P-10: 42" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=1.92 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=11.40 MGD
V=1.92 FT/S

P-12: 42" CEMENT LINED STEEL PIPE
Q=10.90 MGD
V=1.84 FT/S

P-13: 30" PVC PIPE
Q=4.19 MGD
V=1.44 FT/S

P-14: 30" PVC PIPE
Q=4.15 MGD
V=1.42 FT/S

P-15: 30" PVC PIPE
Q=3.90 MGD
V=1.34 FT/S

P-16: 30" PVC PIPE
Q=3.90 MGD
V=1.34 FT/S

P-17: 30" PVC PIPE
Q=3.87 MGD
V=1.33 FT/S

P-18: 18" PVC PIPE
Q=1.42 MGD
V=1.36 FT/S

P-19: 18" PVC PIPE
Q=1.11 MGD
V=1.06 FT/S

J-2: PLATTE COUNTY 1.10 MGD
HGL=4665.80 FT
EL=4328.15 FT
P=148.2 PSI

J-3: FT. LARAMIE 0.07 MGD
HGL=4650.24 FT
EL=4235.56 FT
P=179.4 PSI

J-4: LINGLE 0.14 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4629.75 FT
EL=4169.94 FT
P=198.9 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.10 MGD, TORRINGTON 1.60 MGD
HGL=4441.48 FT
EL=4099.99 FT
P=147.7 PSI

J-6: GOSHEN COUNTY 1.75 MGD, HENRY 0.05 MGD, LYMAN 0.12 MGD
HGL=4428.82 FT
EL=4046.81 FT
P=165.3 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.27 MGD
HGL=4417.44 FT
EL=3987.14 FT
P=186.2 PSI

J-8: MITCHELL 0.51 MGD
HGL=4296.39 FT
EL=3953.33 FT
P=148.4 PSI

J-9: GERING 2.18 MGD, SCOTTSBLUFF 4.19 MGD, TERRYTOWN 0.34 MGD
HGL=4283.79 FT
EL=3890.99 FT
P=169.9 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.04 MGD
HGL=4273.68 FT
EL=3826.99 FT
P=193.3 PSI

J-11: MINATARE 0.25 MGD
HGL=4272.81 FT
EL=3825.99 FT
P=193.3 PSI

J-12: MCGREW 0.03 MGD
HGL=4133.15 FT
EL=3883.43 FT
P=108.0 PSI

J-13: SCOTTSBLUFF CO 2.46 MGD
HGL=4132.22 FT
EL=3876.78 FT
P=110.5 PSI

J-14: BAYARD 0.31 MGD
HGL=4118.90 FT
EL=3792.89 FT
P=141.0 PSI

J-15: BRIDGEPORT 0.40 MGD, MORRIL CO 0.71 MGD
HGL=4101.90 FT
EL=3659.26 FT
P=191.5 PSI

N

REV	DESCRIPTION OF REVISION	BY	DATE
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PROJECT MANAGER	VEA
DATE	7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2070 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER	1
PROJECT NUMBER	B6391-001
PAGE NUMBER	FIGURE 5.1

PROJECT NUMBER: B6391-0001
FILE NAME: 2070 AVERAGE RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

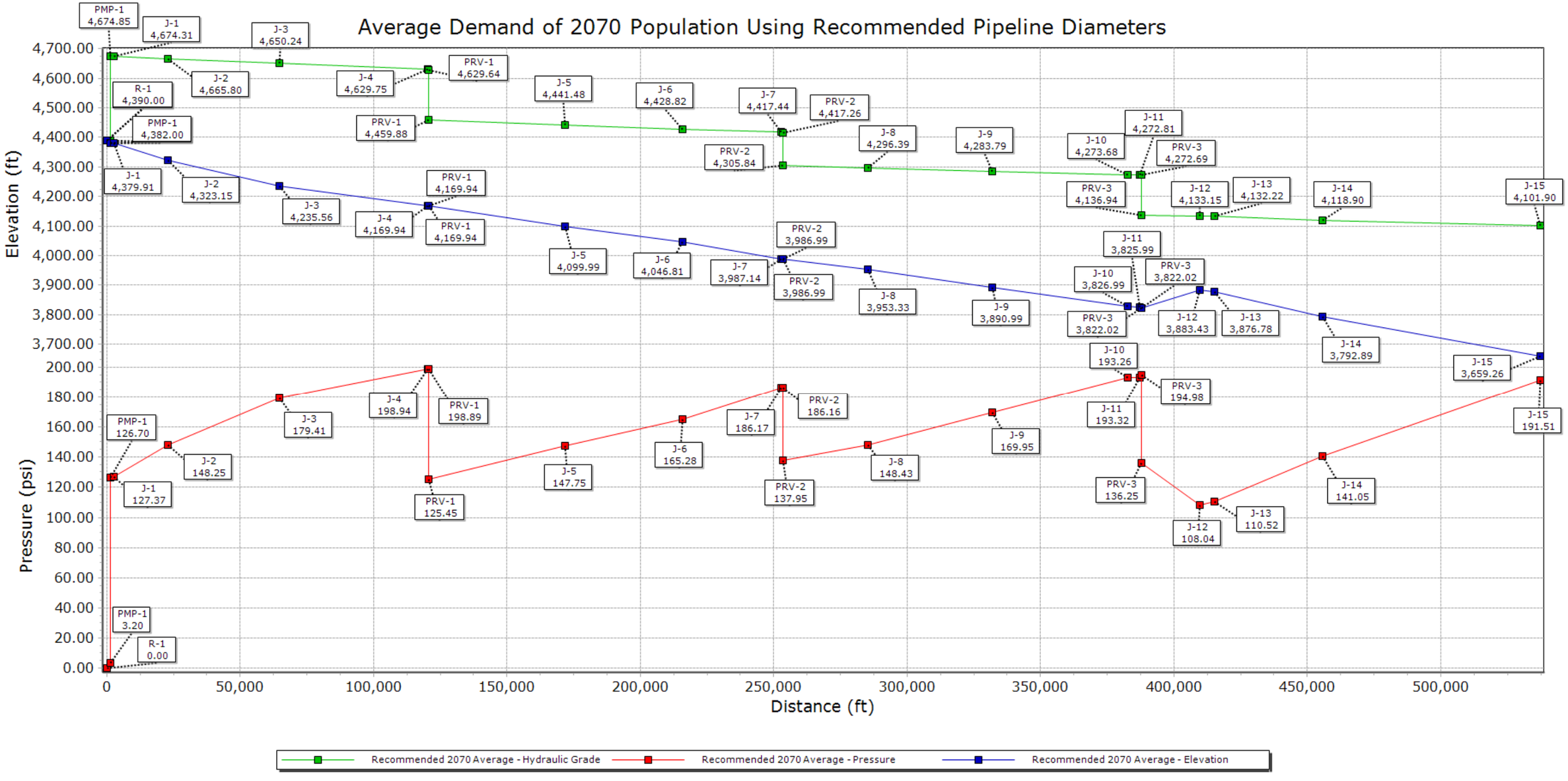

Figure 5.12 – Hydraulic model results for average demand of projected 2070 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.36 MGD, HARTVILLE 0.10 MGD
HGL=4670.73 FT
EL=4379.92 FT
P=125.8 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4671.51 FT
EL=4382.00 FT
Q=20.64 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.02 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=20.64 MGD
V=3.02 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=20.18 MGD
V=2.96 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=18.85 MGD
V=2.76 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=18.77 MGD
V=2.75 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=2.72 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=18.53 MGD
V=2.72 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=16.45 MGD
V=2.41 FT/S

P-9: 40" CEMENT LINED STEEL PIPE
Q=14.14 MGD
V=2.39 FT/S

P-10: 40" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=2.33 FT/S

P-11: 40" CEMENT LINED STEEL PIPE
Q=13.82 MGD
V=2.33 FT/S

P-12: 40" CEMENT LINED STEEL PIPE
Q=13.21 MGD
V=2.23 FT/S

P-13: 30" PVC PIPE
Q=5.08 MGD
V=1.74 FT/S

P-14: 30" PVC PIPE
Q=5.03 MGD
V=1.72 FT/S

P-15: 30" PVC PIPE
Q=4.73 MGD
V=1.62 FT/S

P-16: 30" PVC PIPE
Q=4.73 MGD
V=1.62 FT/S

P-17: 30" PVC PIPE
Q=4.69 MGD
V=1.61 FT/S

P-18: 18" PVC PIPE
Q=1.72 MGD
V=1.65 FT/S

P-19: 18" PVC PIPE
Q=1.34 MGD
V=1.28 FT/S

J-2: PLATTE COUNTY 1.33 MGD
HGL=4658.60 FT
EL=4328.15 FT
P=145.1 PSI

J-3: FT. LARAMIE 0.08 MGD
HGL=4636.41 FT
EL=4235.56 FT
P=173.4 PSI

J-4: LINGLE 0.17 MGD, VETERAN 0.02 MGD, YODER 0.05 MGD
HGL=4607.18 FT
EL=4169.94 FT
P=189.2 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.02 MGD, LA GRANGE 0.12 MGD, TORRINGTON 1.94 MGD
HGL=4433.63 FT
EL=4099.99 FT
P=144.4 PSI

J-6: GOSHEN COUNTY 2.12 MGD, HENRY 0.05 MGD, LYMAN 0.14 MGD
HGL=4415.56 FT
EL=4046.81 FT
P=159.5 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.32 MGD
HGL=4399.34 FT
EL=3987.14 FT
P=178.3 PSI

J-8: MITCHELL 0.61 MGD
HGL=4292.35 FT
EL=3953.33 FT
P=146.7 PSI

J-9: GERING 2.64 MGD, SCOTTSBLUFF 5.08 MGD, TERRYTOWN 0.41 MGD
HGL=4274.37 FT
EL=3890.99 FT
P=165.9 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.05 MGD
HGL=4259.93 FT
EL=3826.99 FT
P=187.3 PSI

J-11: MINATARE 0.30 MGD
HGL=4258.69 FT
EL=3825.99 FT
P=187.2 PSI

J-12: MCGREW 0.04 MGD
HGL=4131.54 FT
EL=3883.43 FT
P=107.3 PSI

J-13: SCOTTSBLUFF CO 2.97 MGD
HGL=4130.21 FT
EL=3876.78 FT
P=109.6 PSI

J-14: BAYARD 0.38 MGD
HGL=4111.22 FT
EL=3792.89 FT
P=137.7 PSI

J-15: BRIDGEPORT 0.48 MGD, MORRIL CO 0.86 MGD
HGL=4087.13 FT
EL=3659.26 FT
P=185.1 PSI

N

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DRAWN RKL
CHECKED/REVIEWED VEA
PROJECT MANAGER VEA
DATE 7/17

PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR PEAK DEMAND OF PROJECTED 2020 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.2

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 PEAK RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

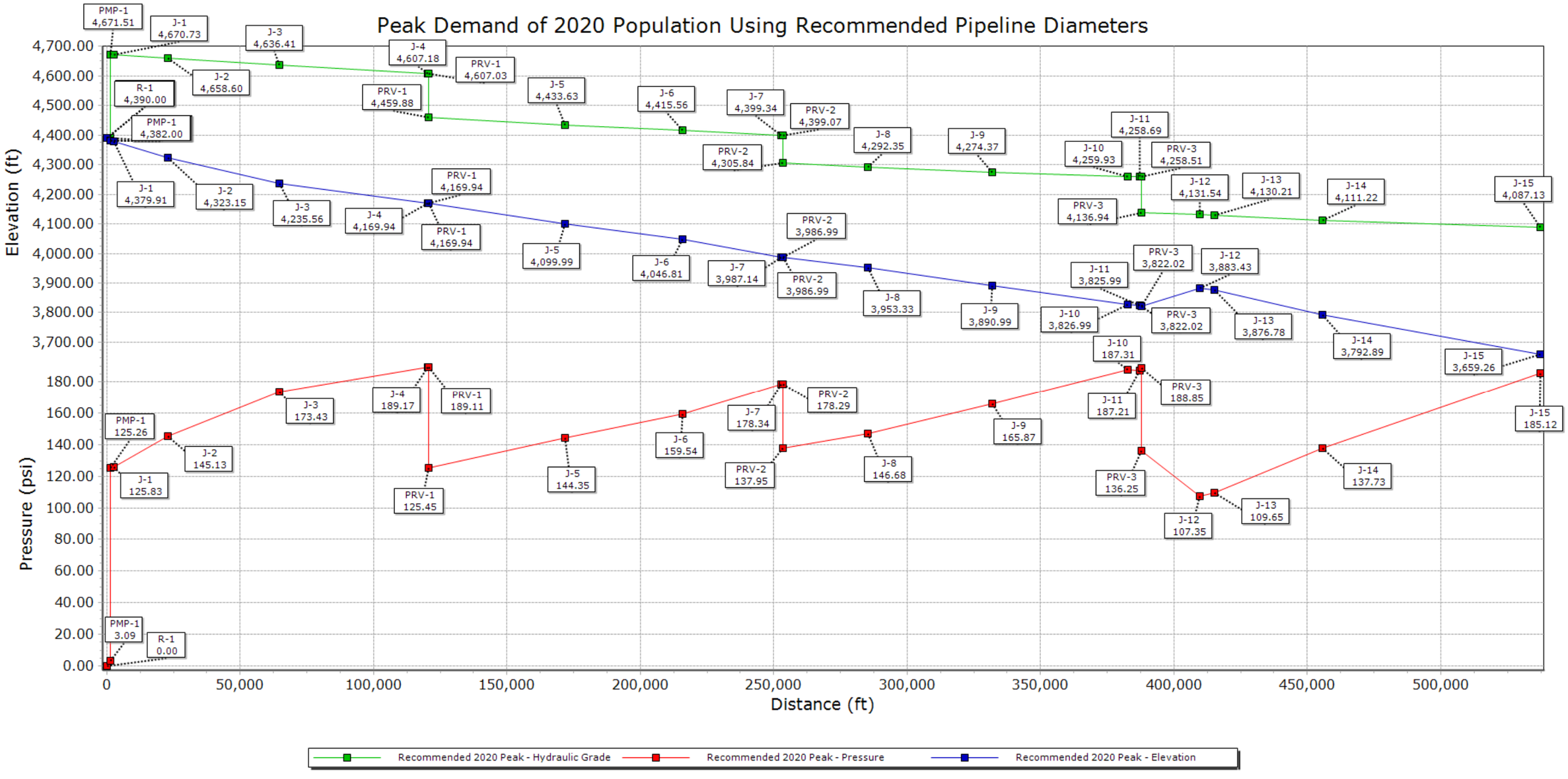

Figure 5.14 – Hydraulic model results for peak demand of projected 2020 population using recommended pipeline diameters

NOTE: PRESSURES INDICATED IN GREEN MEET THE PRESSURE DEMAND DEPICTED IN THE PROPOSED TRANSMISSION LINE PROFILE, THOSE IN RED DO NOT.

J-1: GUERNSEY 0.18 MGD, HARTVILLE 0.05 MGD
HGL=4660.40 FT
EL=4379.92 FT
P=121.4 PSI

PMP-1: WATER TREATMENT PLANT PUMP STATION
HGL(OUT)=4660.61 FT
EL=4382.00 FT
Q=10.34 MGD

R-1: PROPOSED CLEARWELL
(SUPPLY FROM NORTH PLATTE/WHALEN RESERVOIR)
HGL=4390.00 FT
EL=4390.00 FT

P-1: 45" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.52 FT/S

P-2: 45" CEMENT LINED STEEL PIPE
Q=10.34 MGD
V=1.52 FT/S

P-3: 45" CEMENT LINED STEEL PIPE
Q=10.11 MGD
V=1.48 FT/S

P-4: 45" CEMENT LINED STEEL PIPE
Q=9.44 MGD
V=1.38 FT/S

P-5: 45" CEMENT LINED STEEL PIPE
Q=9.40 MGD
V=1.38 FT/S

P-6: 45" CEMENT LINED STEEL PIPE
Q=9.28 MGD
V=1.36 FT/S

P-7: 45" CEMENT LINED STEEL PIPE
Q=9.25 MGD
V=1.36 FT/S

P-8: 45" CEMENT LINED STEEL PIPE
Q=8.24 MGD
V=1.21 FT/S

P-9: 42" CEMENT LINED STEEL PIPE
Q=7.08 MGD
V=1.19 FT/S

P-10: 42" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.17 FT/S

P-11: 42" CEMENT LINED STEEL PIPE
Q=6.92 MGD
V=1.17 FT/S

P-12: 42" CEMENT LINED STEEL PIPE
Q=6.61 MGD
V=1.12 FT/S

P-13: 30" PVC PIPE
Q=2.54 MGD
V=0.87 FT/S

P-14: 30" PVC PIPE
Q=2.52 MGD
V=0.86 FT/S

P-15: 30" PVC PIPE
Q=2.37 MGD
V=0.81 FT/S

P-16: 30" PVC PIPE
Q=2.37 MGD
V=0.81 FT/S

P-17: 30" PVC PIPE
Q=2.35 MGD
V=0.81 FT/S

P-18: 18" PVC PIPE
Q=0.86 MGD
V=0.82 FT/S

P-19: 18" PVC PIPE
Q=0.67 MGD
V=0.64 FT/S

J-2: PLATTE COUNTY 0.67 MGD
HGL=4657.02 FT
EL=4328.15 FT
P=144.5 PSI

J-3: FT. LARAMIE 0.04 MGD
HGL=4650.86 FT
EL=4235.56 FT
P=179.7 PSI

J-4: LINGLE 0.08 MGD, VETERAN 0.01 MGD, YODER 0.03 MGD
HGL=4642.74 FT
EL=4169.94 FT
P=204.6 PSI

PRV-1: Pout,set=125.4 PSI
Pout,actual=125.4 PSI
EL=4169.94 FT

J-5: HAWK SPRINGS 0.01 MGD, LA GRANGE 0.06 MGD, TORRINGTON 0.97 MGD
HGL=4452.59 FT
EL=4099.99 FT
P=152.6 PSI

J-6: GOSHEN COUNTY 1.06 MGD, HENRY 0.03 MGD, LYMAN 0.07 MGD
HGL=4447.57 FT
EL=4046.81 FT
P=173.4 PSI

PRV-2: Pout,set=137.9 PSI
Pout,actual=137.9 PSI
EL=3986.99 FT

J-7: MORRILL 0.16 MGD
HGL=4443.06 FT
EL=3987.14 FT
P=197.3 PSI

J-8: MITCHELL 0.31 MGD
HGL=4302.09 FT
EL=3953.33 FT
P=150.9 PSI

J-9: GERING 1.32 MGD, SCOTTSBLUFF 2.54 MGD, TERRYTOWN 0.21 MGD
HGL=4297.10 FT
EL=3890.99 FT
P=175.7 PSI

PRV-3: Pout,set=136.2 PSI
Pout,actual=136.2 PSI
EL=3822.02 FT

J-10: MELBETA 0.02 MGD
HGL=4293.10 FT
EL=3826.99 FT
P=201.7 PSI

J-11: MINATARE 0.15 MGD
HGL=4292.76 FT
EL=3825.99 FT
P=201.9 PSI

J-12: MCGREW 0.02 MGD
HGL=4135.43 FT
EL=3883.43 FT
P=109.0 PSI

J-13: SCOTTSBLUFF CO 1.49 MGD
HGL=4135.07 FT
EL=3876.78 FT
P=111.7 PSI

J-14: BAYARD 0.19 MGD
HGL=4129.80 FT
EL=3792.89 FT
P=145.8 PSI

J-15: BRIDGEPORT 0.24 MGD, MORRIL CO 0.43 MGD
HGL=4123.13 FT
EL=3659.26 FT
P=200.7 PSI

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PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY

HYDRAULIC MODEL: HYDRAULIC QUANTITIES PLAN FOR AVERAGE DEMAND OF PROJECTED 2020 POPULATION USING RECOMMENDED PIPELINE DIAMETERS

REVISION NUMBER 1
PROJECT NUMBER B6391-001
PAGE NUMBER FIGURE 5.1

PROJECT NUMBER: B6391-0001
FILE NAME: 2020 AVERAGE RECOMMENDED.DWG
PROJECT NAME: PLATTE ALLIANCE WATER SUPPLY, LEVEL II STUDY
CLIENT NAME: M.C. SCHAFF AND ASSOCIATES, INC.
SEND QUESTIONS TO: VICTOR ANDERSON, P.E.
PHONE NUMBER: (307) 634-7848

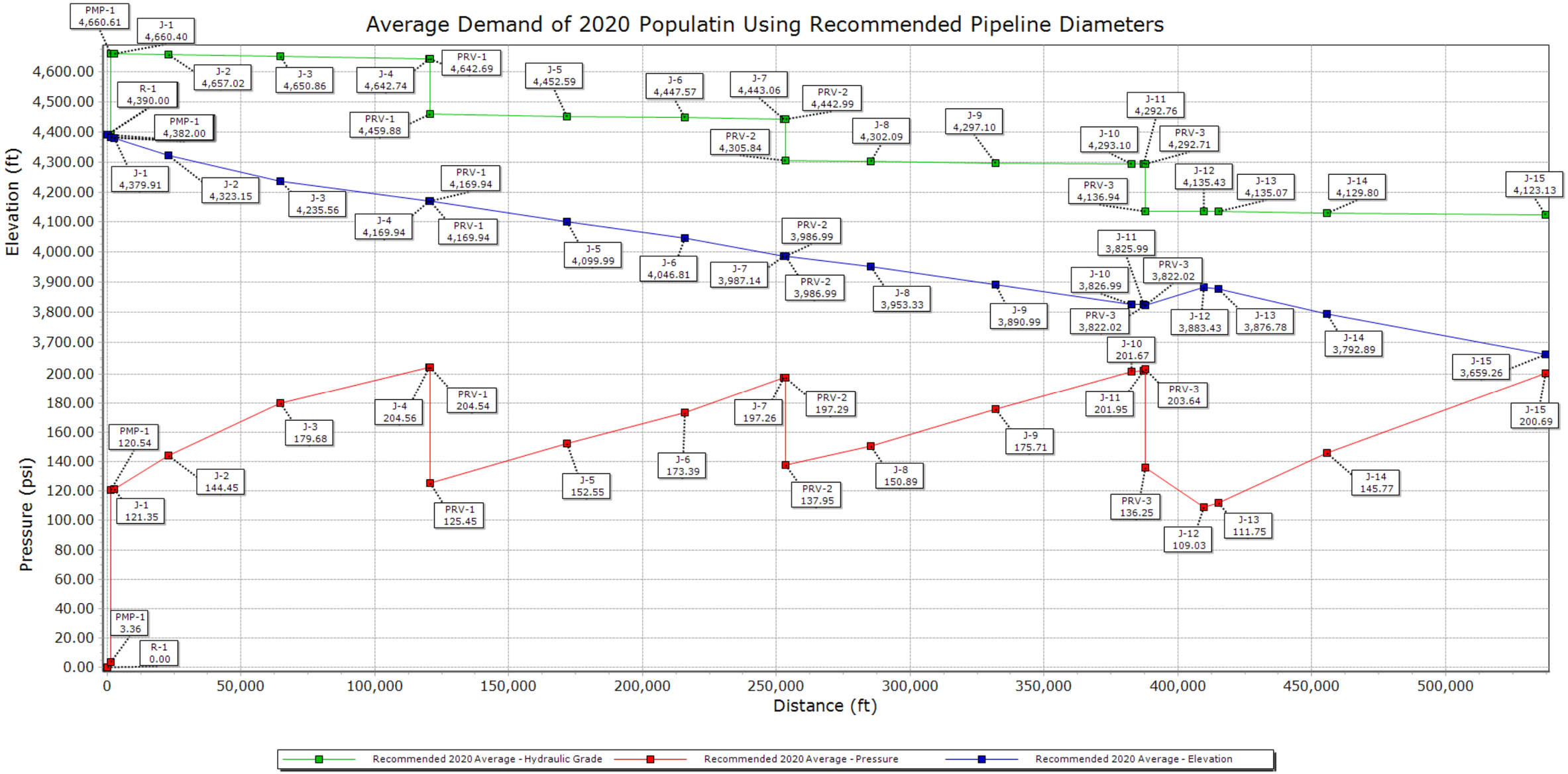

Figure 5.16 – Hydraulic model results for average demand of projected 2020 population using recommended pipeline diameters

6.0 Summary and Conclusions

Hydraulic model results indicate that the PAWS water transmission line as proposed in the Appraisal Investigations does not meet the requirements of the peak demands for the projected 2020 and 2070 populations. Using the hydraulic model, Wenck performed iterative analyses to determine the optimum pipeline geometries for meeting these demands. In these iterative analyses, the only parameter modified was the diameter of composing pipes of the transmission line. Upon review of the results of the recommended model, it is suggested that the piping for all portions of the transmission line be selected with pressure ratings in exceedance, with an appropriate factor of safety (FOS), of any corresponding pressures shown in the recommended model results.

References

1 *Pipeline design for water and wastewater*. (1975). New York, N.Y.: American Society of Civil Engineers.

2 Brière, F. (2007). *Drinking-water distribution, sewage, and rainfall collection*. [Montreal]: Polytechnic International Press.

3 *Steel plate engineering data-volume 3: Welded steel pipe* revised edition-1983. (1983). Washington, D.C.: American Iron and Steel Institute, Committee of Steel Plate Producers [and] Committee of Stainless Steel Producers.

4 *Big blue PVC C.I.O.D. transmission pipe*. (2009). Los Angeles, CA: J-M Manufacturing Co., Inc.

5 Tullis, J. (2010). *Hydraulics of pipelines*. New York: Wiley.



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DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A9

DRAFT

APPENDIX A9-1

GOVERNANCE MEMORANDUM; SIMMONS OLSEN LAW FIRM, P.C.; 01/30/17

DRAFT

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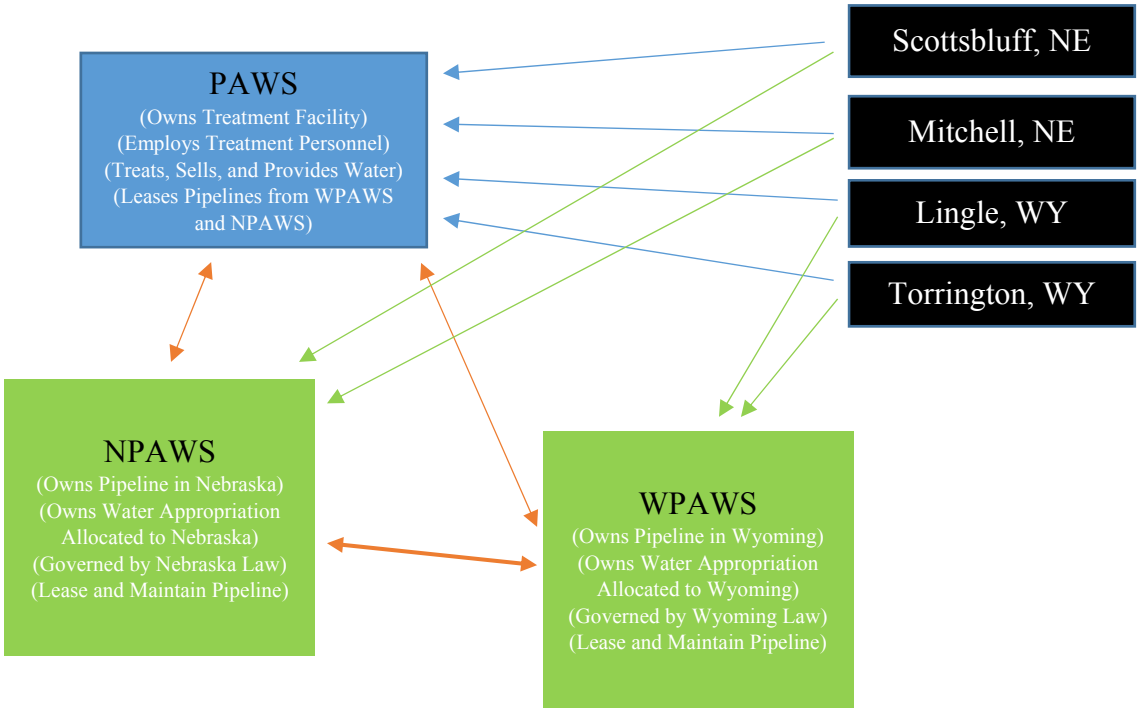
Please Direct All
Correspondence to
Scottsbluff Office

Governance Memorandum

To: PAWS Advisory Group
From: Simmons Olsen Law Firm, P.C.
Date: 1/30/17

We recommend the membership and governance of PAWS take the form of multi-layered, interlocal joint powers associations, composed of member municipalities or rural domestic-water districts in Nebraska and Wyoming. Both the statutes of Wyoming (Wyo. Rev. Stat. § 16-1-101) and Nebraska (Neb. Rev. Stat. § 13-804) allow the creation of agencies or associations through the joint effort of two or more governmental entities within the state or outside of the state, by an agreement of the entities. The multi-layered, interlocal joint powers associations would take the following structure (assuming, for the sake of illustrative simplicity, only four municipalities):



PAWS is the overarching management and water treatment association, of which all members are municipalities or rural domestic-water districts that purchase water from PAWS, regardless of the state in which those municipalities and rural domestic-water districts are located. The ability to create this association exists in both states. Specifically, in Wyoming, Wyo. Stat. Ann. § 16-1-101 states: "In exercising, performing, or carrying out any power, privilege, authority, duty or function legally vested in any one or more of them by Wyoming law, the state of Wyoming, and any one or more of its counties, municipal corporations, school districts, special districts, public institutions, agencies, boards, commissions and political subdivisions, and any officer or legal representative of any one or more of them, **may cooperate with and assist each other, and like entities or authorities of other states**." (Emphasis added). And in Nebraska, Neb. Rev. Stat. § 13-804 includes the following language: "Any power or powers, privileges, or authority exercised or capable of exercise by a public agency of this state may be exercised and enjoyed jointly with any other public agency of this state **and jointly with any public agency of any other state or of the United States to the extent that laws of such other state or of the United States permit such joint exercise or enjoyment**." (Emphasis added).

Generally, in Nebraska, this is known as an "interlocal agreement" under the Interlocal Cooperation Act, and an interlocal agreement in Nebraska can have the effect of creating the association as a separate entity altogether. *Neb. Rev. Stat.* § 13-804.[1] A separate entity created by interlocal agreement is capable of exercising all powers and authorities of the underlying municipalities or government subdivisions, including the power to amend bylaws without recurring approval of the members, the power to sue, or the power to issue bonds payable from the revenue of projects (rather than payable from general taxing authority). *Neb. Rev. Stat.* §§ 13-804, 13-808. The separate entity is governed by the control of the members within the entity according to the terms of the interlocal agreement, but a joint board may be made responsible for the administration of the association (if set forth in the interlocal agreement and bylaws). *Neb. Rev. Stat.* § 13-804. In Wyoming, the statutes are highly compatible. Such an agreement is known in Wyoming as a "joint powers agreement" under the Joint Powers Act, but the enabling details are the same. The joint powers agreement can also have the effect of creating the association as a separate entity not otherwise created by the Wyoming legislature. *Wyo. Stat. Ann.* § 16-1-105(b). A separate entity created by a joint powers agreement is capable of exercising all powers and authorities of the underlying municipalities or government subdivisions, including the power to sue, or the power to issue bonds payable from the revenue of projects (rather than payable from general taxing authority). *Wyo. Stat. Ann.* §§ 16-1-104, 16-1-105, 16-1-107. The separate entity is governed by the control of the members within the entity according to the terms of the joint powers agreement, but a joint board also may be made responsible for the administration of the association (if set forth in the interlocal agreement and bylaws). *Wyo. Stat. Ann.* §§ 16-1-106.

PAWS would be the association that owns and operates the water treatment facility. PAWS would be a spate entity, would maintain a staff, and would sell water to the members according to

[1] Panhandle Mental Health Center (d/b/a Panhandle Health Group), for instance, is a separate governmental entity created by an interlocal agreement of eleven Nebraska counties, and not otherwise created by any act or statute of the Nebraska legislature.

the rates that would cover the costs of treating and providing water. PAWS would not own the pipelines (for reasons discussed below), but would have agreements in place to lease the pipelines from the respective state associations. PAWS would monitor the water appropriations accorded to each municipality or state-level association, and would supply water in accordance with those appropriations. PAWS would provide the regulatory and rate-study services, if necessary, as well as other services desired and capable of being provided. PAWS would supply water at the entry-point of each municipalities' or rural domestic-water districts' proprietary system.

Below (or perhaps in conjunction with) PAWS would be WPAWS and NPAWS. WPAWS (or whatever name is chosen) is a similar association, but the members are municipalities and rural domestic-water districts who are a part of PAWS but are located only in Wyoming. Again, by virtue of the above-quoted statutes, the municipalities and rural domestic-water districts located in Wyoming would have the ability to form WPAWS. WPAWS would own the pipeline located in Wyoming, as well as any water appropriations that are allocated for use in Wyoming. WPAWS would maintain its pipeline. WPAWS would lease its pipeline to PAWS, in exchange for a rental fee that presumably would be used as a sinking fund for the Wyoming pipeline.

Likewise NPAWS, (or whatever name is chosen) is the counterpart to WPAWS and a similar association to PAWS, except that it would be of members who are a part of PAWS and located only in Nebraska. By virtue of the above-quoted statutes, the municipalities and rural domestic-water districts located in Nebraska would have the ability to form NPAWS. NPAWS would own the pipeline located in Nebraska, as well as any water appropriations that are allocated for use in Nebraska. NPAWS would maintain its pipeline. NPAWS would lease its pipeline to PAWS, in exchange for a rental fee that presumably would be used as a sinking fund for the Nebraska pipeline.

This multi-layered structure is recommended for several reasons. First, if the power of eminent domain should be needed, it is questionable whether Nebraska governmental entities have the power to condemn land in Wyoming, and vice versa. A state, or a state agency or subdivision, can only condemn land within its jurisdiction. While the applicable interlocal joint powers statutes do give interlocal joint power associations the ability to exercise any right or privilege held by any one member, the power of eminent domain is strictly construed and must be exercised only by those governmental subdivisions to which the power has been specifically delegated by their legislature, or delegated by implied necessity. *Heppe v.* State, 162 Neb. 403 (1956); *L.U. Sheep Co. v. Bd. of Cnty. Commissioners of Cnty. of Hot Springs*, 790 P.2d 663 (Wyo. 1990). It is questionable whether an interlocal joint power association could exercise eminent domain across state lines, when that association was never specifically delegated the power of eminent domain by either state. Thus, it is best-practice of have the state-level associations own the pipeline for purposes of eminent domain and construction rights-of-way.

Second, in the same manner, separate ownership of the pipeline would minimize the extent to which Nebraska municipalities subsidize Wyoming municipalities' water. Presumably all members of PAWS would pay the same water rate (calculated according to PAWS' operational

costs), but more Nebraska members and more Nebraska water need would exist than Wyoming members and Wyoming water need. Yet, a substantial portion of the project would be located in Wyoming. Nebraska members—as a unit—would thereby pay a larger proportion of costs than Wyoming members—again, as a unit. Therefore, the rental rate to lease the respective pipeline could fluctuate according to the actual length of pipe within each state, or possibly the actual rate of use for each pipeline, consequently reducing the subsidization created by a uniform water rate.

Third, since less Wyoming municipalities would be members of PAWS, providing for WPAWS allows for a higher level of autonomy and political balance. Any rightful dissatisfaction from the voting interests of PAWS would be mitigated by the existence and property rights of WPAWS. Surely, the agreements between NPAWS and WPAWS (represented by the orange, two-way arrow between NPAWS and WPAWS in the diagram above), and the lease agreements with PAWS (represented by the orange, two-way arrows to PAWS in the diagram above) would contractually obligate each state to joint and mutual cooperation and would lessen the shut-down risk of organizational strife, but a lease agreement is only a contract. Breach of contractual obligations does not present the same level of risk to the continuity of operations that would be presented if the PAWS governance is unable to function simply due to a frozen voting block or lack of quorum. A better approach would be to address the difference, if it should arise, through the manner in which WPAWS or NPAWS is treated by the overarching PAWS association.

Fourth, if water appropriations will come from or affect the existing stream flow under the North Platte River Supreme Court Decree (applicable to, amongst other uses, the use of stream flow from Guernsey Reservoir to the Nebraska border), then the Decree (that already allocates the stream flow between the states—25% to Wyoming and 75% to Nebraska) may not need to be amended. Under the Decree, each state is accorded the discretion to allocate its percentage of stream flow awarded, presumably according to the appropriation rights of its resident-appropriators. It appears possible at this point to simply use the current stream flow allocations by incorporating the domestic use requirement of PAWS into each states' awarded allocation of stream flow. That is, it is possible for Wyoming would determine if the need required by the members of WPAWS could be simply incorporated into its 25% allocation of stream flow, and it is possible Nebraska would determine if the need required by the members of NPAWS could be simply incorporated into its 75% allocation of stream flow. Doing so would prevent the need to modify the Decree, as each state would simply allocate or reallocate the rights it currently has. And certainly having one interstate association own all of the water appropriations for PAWS would create a significant wrinkle in the current jurisprudence of the Decree, as historically there has been an equitable division presenting a clear dichotomy of *Wyoming use* and *Nebraska use*. It would be difficult to separate the water rights of PAWS between the states if one single interstate association owned all of the appropriations. Or, at the very least, in the case of dissolution of PAWS, equitable allocation of water would be less cumbersome if water rights are separated between NPAWS and WPAWS.

Certainly further issues are presented by this structure which will need to be discussed. For instance, how will the potential funding agencies interact with the structure, and who are the

applicants for funding—particularly with regard to the pipeline? Likewise, if PAWS should dissolve, what are the rights of NPAWS members with respect to the water treatment facility, since WPAWS would unilaterally control flow to the members of NPAWS? Is operational funding sustainable through water rates, and if not, how are membership dues apportioned amongst the members? Under what states' law is PAWS governed?

Notwithstanding those questions, the controlling governmental documents of PAWS, WPAWS, and NPAWS would be the interlocal joint powers agreements and the respective bylaws. These would be supplemented with agreements (contracts) between NPAWS and WPAWS, as well as lease and delegation agreements between PAWS and NPAWS or WPAWS. In particular, the bylaws of each association would contain the thrust of the governance obligations, rights, and procedures of each separate association. With a relatively limited number of members, it would not be terribly unmanageable to have each member simply serve as a director of the spate entity that is the PAWS association, although an executive committee amongst the members would be elected. Each member (i.e., municipality or rural domestic-water district) is able to appoint one person or official to act and vote on behalf of that member. The same is said for NPAWS and WPAWS.

For a subsequent municipality or rural domestic-water district to become a member of PAWS, or of the respective WPAWS or NPAWS, a municipality or rural domestic-water district must agree to enter into the applicable interlocal agreements and agree to abide by the bylaws of the entities, as those bylaws may be amended.[2]

A similar governmental structure exists successfully with this model. Nebraska Municipal Power Pool ("NMPP") is an association of municipalities and governmental subdivisions in a six-state area, mainly in Nebraska but substantially in Colorado and Iowa as well. NMPP is a service provider (not a wholesaler or retailer) for electricity and natural gas, and provides services such as rate studies, consultation, energy audits, regulatory assistance, etc. The members of NMPP are likewise members of either MEAN (a multi-state interlocal association producing and selling electricity), NPGA (a multi-state interlocal association selling natural gas wholesale in an economy of scale for the members), or ACE (a multi-state interlocal association selling natural gas at retail on an economy of scale for members). Thus, a member of NMPP is not necessarily a member of MEAN, but a member of MEAN is always a member of NMPP. NMPP has offered and we will receive all of their governing documents for review and use as templates, if desired.

Other structures were considered, but appear to be less desirable. A one-entity structure was considered, in which every member of PAWS would simply form one entity that owns, operates, and sells water as one unit. For the reasons discussed above, that structure is not advisable. For instance, the Lewis & Clark Regional Water System, which involves the states of South Dakota, Minnesota and Iowa, uses this type of structure through the formation of a non-

[2] Certainly, for subsequent members, water allocations would be the first and foremost concern. It is advisable to get all interested members in discussions at the beginning, so that additional water allocations (which may not be available) would not need to be located in the future.

profit corporation with status from the IRS as a 501(c)(4) entity. This system cannot exercise eminent domain in Minnesota, since Minnesota has not granted the system the power of eminent domain. This system also does not have to be concerned with allocation of surface water appropriations, as it delivers and treats ground water. The Southern Black Hills Water System was examined as well, but for many of the same reasons as the Lewis & Clark Regional Water System, its structure is not advisable. The League Association of Risk Management (self-funded, pooled risk management and insurance) was examined. That entity is organized as one interlocal association of Nebraska political subdivisions, and each member simply pays premiums for insurance coverage. That entity, however, does not have the asset ownership concerns, nor the interstate interaction. Thus, again, examples of a single interlocal association structure were available, but not applicable or particularly advisable.

Questions and concerns can be discussed further as the suggested structure begins to take shape.

Very truly yours,

Howard P. Olsen, Jr.
Adam A. Hoesing
SIMMONS OLSEN LAW FIRM, P.C.
1502 Second Avenue
Scottsbluff, NE 69361
(308) 632-3811

APPENDIX A9-2

RESOLUTION NO. 17-06-03; CITY OF SCOTTSBLUFF

JUNE 19, 2017

DRAFT

RESOLUTION No. 17-06-03

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

W I T N E S S E T H

WHEREAS, the City Council of the City of Scottsbluff, Nebraska recognizes that communities in the North Platte River Basin in western Nebraska and southeast Wyoming are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognizes that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council is aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognizes that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Council recognizes that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understands that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF SCOTTSBLUFF, NEBRASKA, that the Council hereby reiterates their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Council hereby expresses their full support for the formation of Governance for a regional water system and their intent to participate in the process and system, and hereby encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 19th day of June, 2017.

Randy Meininger, Mayor
City of Scottsbluff, Nebraska

Attest: Cynthia A. Dickinson
Cindy Dickinson, CMC
City Clerk

City of Scottsbluff, Nebraska CORPORATE SEAL Incorporated June 10, 1919

APPENDIX A9-3

RESOLUTION NO. 2017-12; CITY OF TORRINGTON

OCTOBER 17, 2017

DRAFT

CITY OF TORRINGTON

RESOLUTION NO. 2017-12

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

WITNESSETH

WHEREAS, the City Council of the City of Torrington, Wyoming recognizes that communities in the North Platte River Basin in western Nebraska and southeast Wyoming are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognizes that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council is aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognizes that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to offset the long term cost increases impacting individual communities;

WHEREAS, the Council recognizes that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understands that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF TORRINGTON, WYOMING, that the Council hereby reiterates their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Council hereby expresses their full support for the formation of Governance for a regional water system and their intent to participate in the process and system, subject to their financial ability to join the regional water system once the costs are determined and hereby encourages participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 17th day of October, 2017.

Michael E. Varney, Mayor

Michael Varney, Mayor
City of Torrington, Wyoming

Attest: Lynette Strecker

Lynette Strecker, Clerk/Treasurer
City of Torrington, Wyoming

APPENDIX A9-4

RESOLUTION NO. 2018-11; CITY OF MITCHELL

FEBRUARY 6, 2018

DRAFT

RESOLUTION No. 2018-11

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

WITNESSETH

WHEREAS, the City Council of Mitchell, Nebraska recognize that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognize that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council are aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognize that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Council recognize that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understand that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF MITCHELL, NEBRASKA, that the Council hereby reiterate their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and whole-heartedly encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 6th day of February, 2018.

Brian Taylor, Mayor
City of Mitchell

Attest: _____
Jeffery Sprock, City Administrator

APPENDIX A9-5

RESOLUTION NO. 2108-02; CITY OF BRIDGEPORT

FEBRUARY 8, 2018

DRAFT

RESOLUTION 2018-02

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

WHEREAS, the City Council of Bridgeport, Nebraska recognizes that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognizes that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council is aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognizes that the best long-term solution for potable water supply in the basin is a regional system approach, and that centralized water treatment will assist to off-set the long-term cost increases impacting individual communities;

WHEREAS, the Council recognizes that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, and potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve quality issues on their own at a higher cost; and

WHEREAS, the Council understands that a regional system will require the formation of an organization to operate the system.

NOW THEREFORE, THE MAYOR AND CITY COUNCIL OF THE CITY OF BRIDGEPORT, NEBRASKA, HEREBY RESOLVES that the Council hereby reiterate its support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and wholeheartedly encourage participation from all eligible communities in the Basin.

PASSED AND APPROVED THIS 8th DAY OF FEBRUARY 2018.

(ATTEST)

J.W. Berg, Mayor
City of Bridgeport

Doretta J. Huck, City Clerk/Treasurer
City of Bridgeport

APPENDIX A9-6

RESOLUTION NO. 2/21/18; VILLAGE OF LYMAN

FEBRUARY 21, 2018

DRAFT

RESOLUTION No. 2/21/18 (2)

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

W I T N E S S E T H

WHEREAS, the Village of Lyman, Nebraska recognize that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognize that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council are aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognize that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Council recognize that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understand that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE Village of Lyman **, NEBRASKA**, that the Council hereby reiterate their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and whole-heartedly encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 21 day of Feb., 2018.

Larry Sanchez
, Mayor
City/Village of Lyman

Attest: Kim Robb

APPENDIX A9-7

RESOLUTION NO. 2018-012; TOWN OF GUERNSEY

JUNE 5, 2018

DRAFT

RESOLUTION No. 2018-012

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

WITNESSETH

WHEREAS, the Town Council of the Town of Guernsey, Wyoming recognizes that communities in the North Platte River Basin in western Nebraska and southeast Wyoming are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognizes that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council is aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognizes that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to offset the long term cost increases impacting individual communities;

WHEREAS, the Council recognizes that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understands that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE TOWN OF GUERNSEY, WYOMING, that the Council hereby expresses their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Council hereby expresses their full support for the formation of Governance for a regional water system and their intent to participate in the process and system, and hereby encourages participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 5th day of June, 2018.

Edward Delgado, Mayor
Town of Guernsey, Wyoming

Attest:
Kate Farmer, Clerk/Treasurer
Town of Guernsey, Wyoming

APPENDIX A9-8

RESOLUTION NO. 18-4; CITY OF TERRYTOWN

JULY 5, 2018

DRAFT

RESOLUTION No. 18-4

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

W I T N E S S E T H

WHEREAS, the City Council of Terrytown, Nebraska recognize that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognize that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council are aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognize that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Council recognize that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understand that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF TERRYTOWN, NEBRASKA, that the Council hereby reiterate their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and whole-heartedly encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 5TH DAY OF JULY, 2018.

Kent Greenwalt

Kent Greenwalt, Mayor
City of Terrytown

Attest: Tammy Leeling

Tammy Leeling, Terrytown City Clerk

APPENDIX A9-9

RESOLUTION NO. 18-12; VILLAGE OF MORRILL

AUGUST 7, 2018

DRAFT

RESOLUTION No. 18-12

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

WITNESSETH

WHEREAS, the Board of Trustee of Morrill, Nebraska recognize that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Board recognize that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Board are aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Board recognize that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Board recognize that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Board understand that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE VILLAGE OF MORRILL, NEBRASKA, that the Board hereby reiterate their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and whole-heartedly encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 7 day of August, 2018.

Tony Schuler, Board Chairman
Village of Morrill

Attest: Janine K Schmidt
Janine Schmidt, Village Clerk/Treasurer

APPENDIX A9-10

RESOLUTION # 916; CITY OF BAYARD

AUGUST 14, 2018

DRAFT

RESOLUTION # 916

A RESOLUTION SUPPORTING THE WYOMING WATER DEVELOPMENT COMMISSION LEVEL II STUDY OF THE PLATTE ALLIANCE WATER SUPPLY (PAWS) PROJECT AND THE FORMATION OF GOVERNANCE FOR A REGIONAL WATER SYSTEM.

W I T N E S S E T H

WHEREAS, the City Council of Bayard, Nebraska recognize that communities in the North Platte River Basin in southeast Wyoming and western Nebraska are experiencing deteriorating water quality and it is becoming increasingly difficult and costly to meet public water quality standards;

WHEREAS, the Council recognize that this trend toward a lack of dependable water quality, if allowed to persist, will limit the ability of the region to sustain current and future growth and economic vitality;

WHEREAS, the Council are aware that in addition to the deteriorating water quality, through the National Safe Water Drinking Act the Environmental Protection Agency (EPA) is requiring monitoring of additional water quality constituents and placing limits on the levels of these constituents in public water systems that will continue to increase the cost of public water supplies;

WHEREAS, the Council recognize that the best long-term solution for potable water supply in the Basin is a regional system approach, and that centralized water treatment will assist to off-set the long term cost increases impacting individual communities;

WHEREAS, the Council recognize that a regional solution to domestic water supply will include an upstream water source(s), upstream water treatment, a potable water pipeline, and the wholesale selling of water to each community in lieu of each community attempting to solve the quality issues on their own at a higher cost; and

WHEREAS, the Council understand that a regional system will require the formation of an organization to operate the system.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF BAYARD, NEBRASKA, that the Council hereby reiterate their support for completion of the Level II Study of the Platte Alliance Water Supply (PAWS) Project, and the Commissioners hereby express their full support for the formation of Governance for a regional water system, and whole-heartedly encourage participation from all eligible communities in the Basin.

PASSED, APPROVED AND ADOPTED THIS 14 day of August, 2018.

CITY OF BAYARD CORPORATE SEAL NEBRASKA

Michelle Coolidge

Michelle Coolidge, Mayor
City of Bayard

Attest: _____
Jennifer Tressler, Bayard City Clerk

City of BAYARD

CERTIFICATION

I, Jennifer Tressler, City Clerk of the City of Bayard, Nebraska, hereby certify that the attached and foregoing Resolution is a true and accurate copy of the Resolutions adopted by the Bayard City Council in a meeting conducted on August 14th, 2018.

City Clerk

City of Bayard, PO Box 160, Nebraska

APPENDIX A9-11

NEBRASKA PLATTE ALLIANCE WATER SUPPLY INTERLOCAL AGREEMENT

FEBRUARY 7, 2019

DRAFT

NEBRASKA PLATTE ALLIANCE WATER SUPPLY
INTERLOCAL AGREEMENT

This Interlocal Agreement (the "Agreement") is made by and between those public agencies forming or joining the Agreement, as set forth below, pursuant to the Nebraska Interlocal Cooperation Act, Neb. Rev. Stat. § 13-801 *et seq.*

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A. Recitals

1. This Agreement is formed by the "Members" set forth in Schedule A to the Agreement, under the Nebraska Interlocal Cooperation Act, Neb. Rev. Stat. § 13-801 *et seq*. The Members are Nebraska municipalities, each with existing sources of potable water and municipal water distribution systems at the time of this Agreement.

2. The Members enter into this Agreement for the Purposes set forth below. The Members are experiencing or anticipate deteriorating water quality in their sources of potable water, and desire to form this Agreement under the terms and conditions below.

B. Purpose

1. The Members are Nebraska municipalities or Nebraska governmental subdivisions. Each has or had a source of potable water for the residents served by the Member and a water distribution system with which to deliver potable water to the residents. Historically, the sources of the Members' potable water have been ground water through the ownership and use of groundwater wells within or near each Member's corporate limits or service area (the "Groundwater Wells"). The Members have experienced and anticipate experiencing poor water quality of the potable water pumped from the Groundwater Wells, due primarily to the presence of arsenic, uranium, and nitrates above the federally and state regulated limits.

2. Several Members have constructed or considered construction of a drinking water treatment facility to treat and remove (or lower) the levels of arsenic, uranium, nitrates, and other regulated contaminates before delivery of drinking water to residents. In many cases, the construction and operation of a water treatment facility has been cost-prohibitive, and when constructed the cost of construction and operation has been burdensome and highly inefficient for the Member. Several Members have installed new Groundwater Wells, in lieu of constructing and operating a water treatment facility, but have likewise experienced poor water quality in new Groundwater Wells. All Members have closely monitored their Groundwater Wells, and many have mixed potable water from separate Groundwater Well sources when needed to maintain adequate supply without significant treatment.

3. Wherefore, the Members desire to enter into this Agreement for the purpose of securing and planning for the management of a potable water source from the surface water, stream flow, and storage reservoirs of the North Platte river. Water from the North Platte river shall be stored and treated at one common source, and then distributed to the Members of this Agreement for their municipal water supply.

C. Members

1. The municipalities and governmental entities listed on Schedule A of this Agreement shall be considered the "Members" of this Agreement. Each Member shall appoint one representative, and one alternative representative, to serve on the "Initial Committee" (as defined below). The alternate representative may represent the Member at the Initial Committee if the representative is unable or unavailable to do so.

2. Following the formation of this Agreement, the Members may include one or more future Nebraska municipalities or governmental entities as additional members of this Agreement, as may be desired by such future member and the Members.

i. Acceptance of additional members shall occur by a majority vote of the representatives present at a regular or special meeting of the "Initial Committee" (as defined below), and by duly authorized resolution or action of an additional member's governing bodies adopting this Agreement.

ii. After the inclusion of additional members to this Agreement, the included Members shall share in the same rights, powers, obligations, and authorities of all Members provided for in this Agreement, but inclusion shall be subject to all terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii below.

iii. The Initial Committee shall have the right to determine and set any terms, conditions, stipulations, requirements, requests, or capital contributions determined necessary for the inclusion of additional members to this Agreement. The inclusion of any additional member shall not be effective until the performance or satisfaction of any such terms, conditions, stipulations, requirements, requests, or capital contributions.

iv. The addition of any new Member shall be memorialized in writing by an amendment to this Agreement or written action of the Initial Committee.

3. Representatives and alternative representatives of the Members may be duly elected officials of each respective entity, but need not be. A Member may appoint whomever it desires as its representative or alternate representative, so long as all representatives and alternative representatives are residents or constituents of the Member municipality or governmental entity at all times during such representation.

4. No municipality or governmental entity shall be required to be a Member in order to purchase water supply from the project, although other barriers to future growth beyond the Members may exist, such as lack of water supply, location within another river basin, cost of extending services, etc.

D. Duration

This Agreement shall be effective upon the final approval of all Members set forth in Schedule A. The duration of this Agreement shall be perpetual. Provided, however, this Agreement may be amended by the Members at any time for any reason, including for the formation of a separate entity corporate and politic and a separate "Board of Directors" (as defined below).

E. Separate Entity

This Agreement, as presented and adopted initially, shall not create or establish a separate legal entity. After amendment of the Agreement as set forth in paragraph F below, it is intended that the Agreement (as amended) will create and establish a separate corporate and politic entity of the state of Nebraska.

F. Governance

1. After adoption of this Agreement, administration of the Agreement shall be the responsibility of the "Initial Committee" as follows:

i. The Initial Committee shall be composed of one representative from each Member.

ii. The Initial Committee shall have the following powers:

a. Make recommendations to Members regarding study, participation, analysis, funding, and development of the purposes and facilities contemplated by this Agreement.

b. Corresponding with and providing direction to all consultants and project managers for this Agreement.

c. Supervising the progress and decisions made towards completing the goals of the purposes and facilities contemplated by this Agreement.

d. Administering the terms and conditions of this Agreement.

e. Authorizing new members to this Agreement, and setting any terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii above.

f. Administering the powers granted to the Initial Committee by this Agreement.

g. Directing and overseeing the timing, terms, and approach towards amending this Agreement for the creation of a separate corporate and politic entity of the state of Nebraska, as set forth in paragraph F.3 below.

h. Adopting bylaws of the Initial Committee and electing officers of the Initial Committee.

i. Recommending an adopted annual budget to the Members and setting forth requested expenditures of the Members for the projects under this Agreement.

j. Electing representatives from the Initial Committee to participate in a multi-state governance system for the operation of the projects contemplated by this Agreement.

k. Keeping the Members advised as to the progress of the Purposes of this Agreement and make official reports of such progress to the Members, as desired.

2. The Members reserve the following duties and responsibilities under this Agreement to themselves:

i. Terminating this Agreement or withdrawing as a Member to this Agreement.

ii. Enforcing other parties' obligations to this Agreement.

iii. Adopting an annual budget for this Agreement and approving expenditures of Members under this Agreement before the creation of a separate corporate and politic entity of the state of Nebraska, as set forth in paragraph F.3 below.

iv. Amending this Agreement.

3. At the time when it is determined expedient or necessary to form a separate corporate and politic entity of the state of Nebraska, pursuant to Neb. Rev. Stat. § 13-804, the Members agree that this Agreement shall be amended to do so. Thereafter, the governance of this Agreement shall be placed in a Board of Directors, intended to be composed of one representative from each then-

current Member, subject to the terms and conditions of the amended agreement. At that time, each then-current Member to this Agreement shall have the opportunity to become a member of the amended agreement, with equal rights, powers, obligations, and authorities of the other members of the amended agreement at that time.

4. Each representative (and alternative representative) of the Initial Committee shall serve terms of two years, provided that at least half of the representatives of the Initial Committee shall serve a first term of one year, so that at least half of the representatives of the Initial Committee have staggered terms that overlap. If a representative shall resign or be unable to complete the length of his or her appointed term, the alternative representative may complete the remainder of the term, or the Member may appoint another representative to complete the remainder of the term. Notwithstanding the foregoing, a representative shall serve on the Initial Committee until his or her successor is appointed by the Member.

5. Representatives shall serve their Members on the Initial Committee without compensation but shall be entitled to reimbursement of travel costs and expenses incurred in fulfilling their service and duties on the Initial Committee.

6. No representative shall be personally liable for any debts, liabilities, or contracts of the Members or the Initial Committee.

G. Meetings

1. The Initial Committee shall set and hold the first organizational meeting, at the latest, during the first month following the month in which all the Members in Schedule A adopt and approve this Agreement. At the first organization meeting, the representatives of the Initial Committee shall:

i. Elect amongst themselves a president, secretary, and treasurer. The president shall preside over all meetings of the Initial Committee, and shall act as the head of the Initial Committee. The secretary shall publish all meetings of the initial committee, record proceedings and activities, and publish all meeting minutes. The treasurer shall be charged with all financings of the Initial Committee and all Member financial obligations under this Agreement. In the absence of the president, the secretary shall fulfill the president's duties.

ii. Set the fiscal year of the Initial Committee and the date of the annual organizational meeting of the Initial Committee, which may or may not be less than one year following the first organization meeting.

iii. Agree to serve temporary terms until the first annual organization meeting of the Initial Committee, at which time term lengths of the representatives shall be decided according to paragraph F.4 above.

iv. Select the frequency of future meetings before the first annual organizational meeting, which frequency shall be no less than quarterly.

2. A majority of the representatives (or alternative representatives) serving on the Initial Committee shall constitute a quorum of the Initial Committee. An alternative representative may not count towards a quorum or participate in voting during a meeting unless the representative of the Member is unable or unwilling to attend. All actions of the Initial Committee shall require an affirmative vote of the majority of the quorum present.

3. All representatives and alternate representatives shall be provided notice of all meeting times, dates, and locations, no later than five business days before any meeting. The contact information provided by the representatives and alternative representatives shall be considered the preferred method of contact unless representatives or alternative representatives informs the Initial Committee otherwise. All notices provided by U.S. mail shall be considered provided when notice is deposited with the U.S postal service.

H. Assets and Operations

1. The Members shall jointly cooperate and shall jointly have the authority to acquire, hold and dispose of real property and personal property needed for the joint operation of this Agreement. All funds deposited with the Initial Committee shall be jointly held by the Members according to their contribution and shall be held in trust by the Initial Committee to accomplish the purposes of the contribution. Bids or quotes for purchases or services otherwise required by Nebraska law shall be submitted through the Initial Committee for recommendation and approval by the Members. Once approved by the Members, all contributions shall be made as agreed upon by the Members and paid by each Member's budgetary and claim process.

2. After the formation of a separate corporate and politic entity of the state of Nebraska under paragraph F.3 above, it is intended that all real property and personal property shall be transferred to the Board of Directors and held by the separate corporate and politic entity under the terms and conditions of the amended agreement. At that time, the Board of Directors shall have the power and authority to bind the separate corporate and politic entity in all matters.

3. No Member shall be obligated or liable for any liabilities, claims, contributions, or expenses unless approved by the governing body of the Member, either through adoption of a budget proposed by the Initial Committee or the approval of a specific liability, claim, contribution, or expense. Members shall, however, be obligated and liable for all liabilities, claims, contributions, or expenses approved by the governing body of the Member in that manner.

I. Funding and Liabilities

To provide adequate financial support for the Purposes of this Agreement, each Member may be requested to approve funding of the Initial Committee in amounts proposed by the Initial Committee. Each Member shall be expected to contribute funding if the proposal of the Initial Committee is approved by that Member. The failure to approve any contribution may subject the Member to withdrawal under paragraph J below.

J. Dissolution, Termination and Withdrawal

1. Any Member may voluntarily terminate their participation in this Agreement before the first annual meeting, provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the first annual meeting. Following the first annual meeting, any Member may voluntarily terminate their participation in this Agreement, provided that termination shall not be effective until the end of the fiscal year in which termination occurs, and further provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the end of such fiscal year. No termination by a Member shall relieve the Member of any financial liability approved by the governing body of the Member before the effective date of termination.

2. If a Member fails to approve a funding contribution duly proposed at a meeting of the Initial Committee and approved by the governing bodies of two thirds (2/3) of the Members, the Initial Committee may authorize the Member's involuntary withdrawal, provided the Member is given notice of the Initial Committee's intent to force a withdrawal and thirty days in which to reconsider the proposed funding contribution. In the case of involuntarily withdrawal under this subparagraph, the Member shall cease to become a Member of this Agreement and shall not have the rights, powers, obligations, and authorities of a Member. Any funding contribution previously provided by the Member to the Initial Committee before involuntary withdrawal shall not be reimbursed to the Member and shall remain with the Initial Committee.

3. At any time that there is only one Member that has not voluntarily terminated participation or been involuntarily withdrawn from participation in this Agreement, as provided for above, this Agreement shall be considered dissolved. In the event of a dissolution of this Agreement, after the payment of all liabilities previously approved by the Members, the Initial Committee shall distribute any remaining assets and funds held by the Initial Committee back to the Members according to their contributions. Nothing in this Agreement shall prevent the complete dissolution of this Agreement by the consent of all Members.

4. If this Agreement is amended by the consent of less than all Members, the Members that are not parties to the amendment shall be considered to have voluntarily terminated their participation in this Agreement at the end of that current fiscal year, as provided for in paragraph J.1 above.

K. Miscellaneous

1. The provisions of this Agreement shall be severable. If any of the provisions of this Agreement, or the application of any provision to any person, entity or circumstances, are held to be invalid, such invalidity shall not affect other provisions of or applications of this Agreement which can be given affect without the invalid provision or applications.

2. This Agreement shall be binding upon the parties and their successors in interest.

3. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall be and constitute one in the same instrument.

4. This Agreement shall be construed in accordance with and governed by the laws of the State of Nebraska.

5. The Members agree to execute all future documents and instruments and take any future action necessity to consummate the purposes and intent of this Agreement.

[SIGNATURE PAGE FOLLOWS]

[SIGNATURE PAGE]

The City of Scottsbluff, Nebraska

Mayor

Date: 10-4-18

The City of Bridgeport, Nebraska

Mayor

Date: 10-11-18

The City of Bayard, Nebraska

Mayor

Date: 11/13/18

The City of Mitchell, Nebraska

Mayor

Date: 2-7-19

The City of Terrytown Nebraska

Mayor

Date: 11/1/2018

The Village of Morrill, Nebraska

Chairperson

Date: 10-9-18

[SCHEDULE A]

The City of Scottsbluff, Nebraska

The City of Bridgeport, Nebraska

The City of Bayard, Nebraska

The City of Mitchell, Nebraska

The City of Terrytown, Nebraska

The Village of Morrill, Nebraska

APPENDIX A9-12

WPAWS JPAGT_GUERNSEY.2019 0417

DRAFT

WYOMING PLATTE ALLIANCE WATER SUPPLY
JOINT POWERS AGREEMENT

This Joint Powers Agreement (the "Agreement") is made by and between those public agencies forming or joining the Agreement, as set forth below, pursuant to the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.*

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A. Recitals

1. This Agreement is formed by the "Members" set forth in Schedule A to the Agreement, under the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.* The Members are Wyoming municipalities separate political subdivisions, each with existing sources of potable water and municipal water distribution systems at the time of this Agreement.

2. The Members enter into this Agreement for the Purposes set forth below. The Members are experiencing or anticipate deteriorating water quality in their sources of potable water, and desire to form this Agreement under the terms and conditions below.

B. Purpose

1. The Members are Wyoming municipalities or Wyoming governmental subdivisions. Each has or had a source of potable water for the residents served by the Member and a water distribution system with which to deliver potable water to the residents. Historically, the sources of the Members' potable water have been ground water through the ownership and use of groundwater wells within or near each Member's corporate limits or service area (the "Groundwater Wells"). The Members have experienced and anticipate experiencing poor water quality of the potable water pumped from the Groundwater Wells, due primarily to the presence of arsenic, uranium, and nitrates above the federally and state regulated limits.

2. Several Members have constructed or considered construction of a drinking water treatment facility to treat and remove (or lower) the levels of arsenic, uranium, nitrates, and other regulated contaminates before delivery of drinking water to residents. In many cases, the construction and operation of a water treatment facility has been cost-prohibitive, and when constructed the cost of construction and operation has been burdensome and highly inefficient for the Member. Several Members have installed new Groundwater Wells, in lieu of constructing and operating a water treatment facility, but have likewise experienced poor water quality in new Groundwater Wells. All Members have closely monitored their Groundwater Wells, and many have mixed potable water from separate Groundwater Well sources when needed to maintain adequate supply without significant treatment.

3. Wherefore, the Members desire to enter into this Agreement under Wyo. Stat. Ann. § 16-1-104(c)(i) for the purpose of securing and planning for the management of a potable water source from the surface water, stream flow, and storage reservoirs of the North Platte river. Water from the North Platte river shall be stored and treated at one common source, and then distributed to the Members of this Agreement for their municipal water supply.

C. Members

1. The municipalities and governmental entities listed on Schedule A of this Agreement shall be considered the "Members" of this Agreement. Each Member shall appoint one representative, and one alternative representative, to serve on the "Initial Committee" (as defined below). The alternate representative may represent the Member at the Initial Committee if the representative is unable or unavailable to do so.

2. Following the formation of this Agreement, the Members may include one or more future Wyoming municipalities or governmental entities as additional members of this Agreement, as may be desired by such future member and the Members.

i. Acceptance of additional members shall occur by a majority vote of the representatives present at a regular or special meeting of the "Initial Committee" (as defined below), and by duly authorized resolution or action of an additional member's governing bodies adopting this Agreement.

ii. After the inclusion of additional members to this Agreement, the included Members shall share in the same rights, powers, obligations, and authorities of all Members provided for in this Agreement, but inclusion shall be subject to all terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii below.

iii. The Initial Committee shall have the right to determine and set any terms, conditions, stipulations, requirements, requests, or capital contributions determined necessary for the inclusion of additional members to this Agreement. The inclusion of any additional member shall not be effective until the performance or satisfaction of any such terms, conditions, stipulations, requirements, requests, or capital contributions, and the approval of any amendment to the Agreement by the State of Wyoming Attorney General.

iv. The addition of any new Member shall be memorialized in writing by an amendment to this Agreement or written action of the Initial Committee.

3. Representatives and alternative representatives of the Members may be duly elected officials of each respective entity, but need not be. A Member may appoint whomever it desires as its representative or alternate representative, so long as all representatives and alternative representatives are residents and qualified electors of the Member municipality or governmental entity at all times during such representation.

4. No municipality or governmental entity shall be required to be a Member in order to purchase water supply from the project, although other barriers to future growth beyond the Members may exist, such as lack of water supply, location within another river basin, cost of extending services, etc.

D. Duration

This Agreement shall be effective upon the final approval of all Members set forth in Schedule A, and approval by the State of Wyoming Attorney General. The duration of this Agreement shall be perpetual. Provided, however, this Agreement may be amended by the Members at any time for any reason, including for the formation of a separate entity corporate and politic and a separate "Joint Powers Board" (as defined below).

E. Separate Entity

This Agreement, as presented and adopted initially, shall not create or establish a separate legal entity. After amendment of the Agreement as set forth in paragraph F below, it is intended that the Agreement (as amended) will create and establish a separate legal entity of the state of Wyoming.

F. Governance

1. After adoption of this Agreement, administration of the Agreement shall be the responsibility of the "Initial Committee" as follows:

i. The Initial Committee shall be composed of one representative from each Member.

ii. The Initial Committee shall have the following powers:

a. Make recommendations to Members regarding study, participation, analysis, funding, and development of the purposes and facilities contemplated by this Agreement.

b. Corresponding with and providing direction to all consultants and project managers for this Agreement.

c. Supervising the progress and decisions made towards completing the goals of the purposes and facilities contemplated by this Agreement.

d. Administering the terms and conditions of this Agreement.

e. Authorizing new members to this Agreement, and setting any terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii above.

f. Administering the powers granted to the Initial Committee by this Agreement.

g. Directing and overseeing the timing, terms, and approach towards amending this Agreement for the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

h. Adopting bylaws of the Initial Committee and electing officers of the Initial Committee.

i. Recommending an adopted annual budget to the Members and setting forth requested expenditures of the Members for the projects under this Agreement.

j. Electing representatives from the Initial Committee to participate in a multi-state governance system for the operation of the projects contemplated by this Agreement.

k. Keeping the Members advised as to the progress of the Purposes of this Agreement and make official reports of such progress to the Members, as desired.

2. The Members reserve the following duties and responsibilities under this Agreement to themselves:

i. Terminating this Agreement or withdrawing as a Member to this Agreement.

ii. Enforcing other parties' obligations to this Agreement.

iii. Adopting an annual budget for this Agreement and approving expenditures of Members under this Agreement before the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

iv. Amending this Agreement.

3. At the time when it is determined expedient or necessary to form a separate legal entity of the state of Wyoming, pursuant to Wyo. Stat. Ann. § 16-1-106, the Members agree that this Agreement shall be amended to do so and the amendment submitted to the State of Wyoming Attorney General for approval. Thereafter, the governance of this Agreement shall be placed in a

Joint Powers Board, intended to be composed of one representative from each then-current Member, subject to the terms and conditions of the amended agreement. At that time, each then-current Member to this Agreement shall have the opportunity to become a member of the amended agreement, with equal rights, powers, obligations, and authorities of the other members of the amended agreement at that time.

4. Each representative (and alternative representative) of the Initial Committee shall serve terms of two years, provided that at least half of the representatives of the Initial Committee shall serve a first term of one year, so that at least half of the representatives of the Initial Committee have staggered terms that overlap. If a representative shall resign or be unable to complete the length of his or her appointed term, the alternative representative may complete the remainder of the term, or the Member may appoint another representative to complete the remainder of the term. Notwithstanding the foregoing, a representative shall serve on the Initial Committee until his or her successor is appointed by the Member.

5. Representatives shall serve their Members on the Initial Committee without compensation but shall be entitled to reimbursement of travel costs and expenses incurred in fulfilling their service and duties on the Initial Committee.

6. No representative shall be personally liable for any debts, liabilities, or contracts of the Members or the Initial Committee.

G. Meetings

1. The Initial Committee shall set and hold the first organizational meeting, at the latest, during the first month following the month in which all the Members in Schedule A adopt and approve this Agreement. At the first organization meeting, the representatives of the Initial Committee shall:

i. Elect amongst themselves a chairman, vice-chairman, secretary, and treasurer. The chairman shall preside over all meetings of the Initial Committee, and shall act as the head of the Initial Committee. The secretary shall publish all meetings of the initial committee, record proceedings and activities, and publish all meeting minutes. The treasurer shall be charged with all financings of the Initial Committee and all Member financial obligations under this Agreement. In the absence of the chairman, the vice-chairman shall fulfill the president's duties.

ii. Set the fiscal year of the Initial Committee and the date of the annual organizational meeting of the Initial Committee, which may or may not be less than one year following the first organization meeting.

iii. Agree to serve temporary terms until the first annual organization meeting of the Initial Committee, at which time term lengths of the representatives shall be decided according to paragraph F.4 above.

iv. Select the frequency of future meetings before the first annual organizational meeting, which frequency shall be no less than quarterly.

2. A majority of the representatives (or alternative representatives) serving on the Initial Committee shall constitute a quorum of the Initial Committee. An alternative representative may not count towards a quorum or participate in voting during a meeting unless the representative of the Member is unable or unwilling to attend. All actions of the Initial Committee shall require an affirmative vote of the majority of the quorum present.

3. All representatives and alternate representatives shall be provided notice of all meeting times, dates, and locations, no later than five business days before any meeting. The contact information provided by the representatives and alternative representatives shall be considered the preferred method of contact unless representatives or alternative representatives informs the Initial Committee otherwise. All notices provided by U.S. mail shall be considered provided when notice is deposited with the U.S postal service.

H. Assets and Operations

1. The Members shall jointly cooperate and shall jointly have the authority to acquire, hold and dispose of real property and personal property needed for the joint operation of this Agreement. All funds deposited with the Initial Committee shall be jointly held by the Members in percentages according to their contributions, and shall be held in trust by the Initial Committee to accomplish the purposes of the contributions. Bids or quotes for purchases or services otherwise required by Wyoming law shall be submitted through the Initial Committee for recommendation and approval by the Members. Once approved by the Members, all contributions shall be made as agreed upon by the Members and paid by each Member's budgetary and claim process.

2. After the formation of a separate legal entity of the State of Wyoming under paragraph F.3 above, it is intended that all real property and personal property shall be transferred to the Joint Powers Board and held by the separate corporate and politic entity under the terms and conditions of the amended agreement. At that time, the Joint Powers Board shall have the power and authority to bind the separate corporate and politic entity in all matters.

3. No Member shall be obligated or liable for any liabilities, claims, contributions, or expenses unless approved by the governing body of the Member, either through adoption of a budget proposed by the Initial Committee or the approval of a specific liability, claim, contribution, or expense. Members shall, however, be obligated and liable for all liabilities, claims, contributions, or expenses approved by the governing body of the Member in that manner.

I. Funding and Liabilities

To provide adequate financial support for the Purposes of this Agreement, each Member may be requested to approve funding of the Initial Committee in amounts proposed by the Initial Committee. Each Member shall be expected to contribute funding if the proposal of the Initial Committee is approved by that Member. The failure to approve any contribution may subject the Member to withdrawal under paragraph J below. After the formation of a separate legal entity

under paragraph F.3 above, no contribution requests shall violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

J. Dissolution, Termination and Withdrawal

1. Any Member may voluntarily terminate their participation in this Agreement before the first annual meeting, provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the first annual meeting. Following the first annual meeting, any Member may voluntarily terminate their participation in this Agreement, provided that termination shall not be effective until the end of the fiscal year in which termination occurs, and further provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the end of such fiscal year. No termination by a Member shall relieve the Member of any financial liability approved by the governing body of the Member before the effective date of termination.

2. If a Member fails to approve a funding contribution duly proposed at a meeting of the Initial Committee and approved by the governing bodies of two thirds (2/3) of the Members, the Initial Committee may authorize the Member's involuntary withdrawal at the end of that current fiscal year, provided the Member is given notice of the Initial Committee's intent to force a withdrawal and thirty days in which to reconsider the proposed funding contribution. In the case of involuntarily withdrawal under this subparagraph, the Member shall cease to become a Member of this Agreement and shall not have the rights, powers, obligations, and authorities of a Member. Any funding contribution previously provided by the Member to the Initial Committee before involuntary withdrawal shall not be reimbursed to the Member and shall remain with the Initial Committee.

3. At any time that there is only one Member that has not voluntarily terminated participation or been involuntarily withdrawn from participation in this Agreement, as provided for above, this Agreement shall be considered dissolved. In the event of a dissolution of this Agreement, after the payment of all liabilities previously approved by the Members, the Initial Committee shall distribute any remaining assets and funds held by the Initial Committee back to the Members according to their contributions. Nothing in this Agreement shall prevent the complete dissolution of this Agreement by the consent of all Members.

4. If this Agreement is amended by the consent of less than all Members, the Members that are not parties to the amendment shall be considered to have voluntarily terminated their participation in this Agreement at the end of that current fiscal year, as provided for in paragraph J.1 above.

K. Miscellaneous

1. The provisions of this Agreement shall be severable. If any of the provisions of this Agreement, or the application of any provision to any person, entity or circumstances, are held to be invalid, such invalidity shall not affect other provisions of or applications of this Agreement which can be given affect without the invalid provision or applications.

2. This Agreement shall be binding upon the parties and their successors in interest.

3. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall be and constitute one in the same instrument.

4. This Agreement shall be construed in accordance with and governed by the laws of the State of Wyoming.

5. The Members agree to execute all future documents and instruments and take any future action necessity to consummate the purposes and intent of this Agreement.

6. This Agreement, and any amendments, shall be filed with the keeper of records of each Member.

7. Nothing in this Agreement, or any amendments, shall be construed to violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

[SIGNATURE PAGE FOLLOWS]

[SIGNATURE PAGE]

The City of Torrington, Wyoming

_____
Mayor

Date: _____

[Rural Water Districts, Signatory TBD]

The Town of Guernsey, Wyoming

_____
Mayor

Date: 17 Apr. 2019

Approved by:

_____
Peter K. Michael

State of Wyoming
Attorney General

[SCHEDULE A]

City of Torrington, Wyoming

Goshen County, Wyoming Rural Water Districts (Membership Structure TBD)

The Town of Guernsey, Wyoming

APPENDIX A9-13

WPAWS JPAGT_TORRINGTON.2019 0107

DRAFT

WYOMING PLATTE ALLIANCE WATER SUPPLY
JOINT POWERS AGREEMENT

This Joint Powers Agreement (the "Agreement") is made by and between those public agencies forming or joining the Agreement, as set forth below, pursuant to the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.*

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A. Recitals

1. This Agreement is formed by the "Members" set forth in Schedule A to the Agreement, under the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.* The Members are Wyoming municipalities separate political subdivisions, each with existing sources of potable water and municipal water distribution systems at the time of this Agreement.

2. The Members enter into this Agreement for the Purposes set forth below. The Members are experiencing or anticipate deteriorating water quality in their sources of potable water, and desire to form this Agreement under the terms and conditions below.

B. Purpose

1. The Members are Wyoming municipalities or Wyoming governmental subdivisions. Each has or had a source of potable water for the residents served by the Member and a water distribution system with which to deliver potable water to the residents. Historically, the sources of the Members' potable water have been ground water through the ownership and use of groundwater wells within or near each Member's corporate limits or service area (the "Groundwater Wells"). The Members have experienced and anticipate experiencing poor water quality of the potable water pumped from the Groundwater Wells, due primarily to the presence of arsenic, uranium, and nitrates above the federally and state regulated limits.

2. Several Members have constructed or considered construction of a drinking water treatment facility to treat and remove (or lower) the levels of arsenic, uranium, nitrates, and other regulated contaminates before delivery of drinking water to residents. In many cases, the construction and operation of a water treatment facility has been cost-prohibitive, and when constructed the cost of construction and operation has been burdensome and highly inefficient for the Member. Several Members have installed new Groundwater Wells, in lieu of constructing and operating a water treatment facility, but have likewise experienced poor water quality in new Groundwater Wells. All Members have closely monitored their Groundwater Wells, and many have mixed potable water from separate Groundwater Well sources when needed to maintain adequate supply without significant treatment.

3. Wherefore, the Members desire to enter into this Agreement under Wyo. Stat. Ann. § 16-1-104(c)(i) for the purpose of securing and planning for the management of a potable water source from the surface water, stream flow, and storage reservoirs of the North Platte river. Water from the North Platte river shall be stored and treated at one common source, and then distributed to the Members of this Agreement for their municipal water supply.

C. Members

1. The municipalities and governmental entities listed on Schedule A of this Agreement shall be considered the "Members" of this Agreement. Each Member shall appoint one representative, and one alternative representative, to serve on the "Initial Committee" (as defined below). The alternate representative may represent the Member at the Initial Committee if the representative is unable or unavailable to do so.

2. Following the formation of this Agreement, the Members may include one or more future Wyoming municipalities or governmental entities as additional members of this Agreement, as may be desired by such future member and the Members.

i. Acceptance of additional members shall occur by a majority vote of the representatives present at a regular or special meeting of the "Initial Committee" (as defined below), and by duly authorized resolution or action of an additional member's governing bodies adopting this Agreement.

ii. After the inclusion of additional members to this Agreement, the included Members shall share in the same rights, powers, obligations, and authorities of all Members provided for in this Agreement, but inclusion shall be subject to all terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii below.

iii. The Initial Committee shall have the right to determine and set any terms, conditions, stipulations, requirements, requests, or capital contributions determined necessary for the inclusion of additional members to this Agreement. The inclusion of any additional member shall not be effective until the performance or satisfaction of any such terms, conditions, stipulations, requirements, requests, or capital contributions, and the approval of any amendment to the Agreement by the State of Wyoming Attorney General.

iv. The addition of any new Member shall be memorialized in writing by an amendment to this Agreement or written action of the Initial Committee.

3. Representatives and alternative representatives of the Members may be duly elected officials of each respective entity, but need not be. A Member may appoint whomever it desires as its representative or alternate representative, so long as all representatives and alternative representatives are residents and qualified electors of the Member municipality or governmental entity at all times during such representation.

4. No municipality or governmental entity shall be required to be a Member in order to purchase water supply from the project, although other barriers to future growth beyond the Members may exist, such as lack of water supply, location within another river basin, cost of extending services, etc.

D. Duration

This Agreement shall be effective upon the final approval of all Members set forth in Schedule A, and approval by the State of Wyoming Attorney General. The duration of this Agreement shall be perpetual. Provided, however, this Agreement may be amended by the Members at any time for any reason, including for the formation of a separate entity corporate and politic and a separate "Joint Powers Board" (as defined below).

E. Separate Entity

This Agreement, as presented and adopted initially, shall not create or establish a separate legal entity. After amendment of the Agreement as set forth in paragraph F below, it is intended that the Agreement (as amended) will create and establish a separate legal entity of the state of Wyoming.

F. Governance

1. After adoption of this Agreement, administration of the Agreement shall be the responsibility of the "Initial Committee" as follows:

i. The Initial Committee shall be composed of one representative from each Member.

ii. The Initial Committee shall have the following powers:

a. Make recommendations to Members regarding study, participation, analysis, funding, and development of the purposes and facilities contemplated by this Agreement.

b. Corresponding with and providing direction to all consultants and project managers for this Agreement.

c. Supervising the progress and decisions made towards completing the goals of the purposes and facilities contemplated by this Agreement.

d. Administering the terms and conditions of this Agreement.

e. Authorizing new members to this Agreement, and setting any terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii above.

f. Administering the powers granted to the Initial Committee by this Agreement.

g. Directing and overseeing the timing, terms, and approach towards amending this Agreement for the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

h. Adopting bylaws of the Initial Committee and electing officers of the Initial Committee.

i. Recommending an adopted annual budget to the Members and setting forth requested expenditures of the Members for the projects under this Agreement.

j. Electing representatives from the Initial Committee to participate in a multi-state governance system for the operation of the projects contemplated by this Agreement.

k. Keeping the Members advised as to the progress of the Purposes of this Agreement and make official reports of such progress to the Members, as desired.

2. The Members reserve the following duties and responsibilities under this Agreement to themselves:

i. Terminating this Agreement or withdrawing as a Member to this Agreement.

ii. Enforcing other parties' obligations to this Agreement.

iii. Adopting an annual budget for this Agreement and approving expenditures of Members under this Agreement before the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

iv. Amending this Agreement.

3. At the time when it is determined expedient or necessary to form a separate legal entity of the state of Wyoming, pursuant to Wyo. Stat. Ann. § 16-1-106, the Members agree that this Agreement shall be amended to do so and the amendment submitted to the State of Wyoming Attorney General for approval. Thereafter, the governance of this Agreement shall be placed in a

Joint Powers Board, intended to be composed of one representative from each then-current Member, subject to the terms and conditions of the amended agreement. At that time, each then-current Member to this Agreement shall have the opportunity to become a member of the amended agreement, with equal rights, powers, obligations, and authorities of the other members of the amended agreement at that time.

4. Each representative (and alternative representative) of the Initial Committee shall serve terms of two years, provided that at least half of the representatives of the Initial Committee shall serve a first term of one year, so that at least half of the representatives of the Initial Committee have staggered terms that overlap. If a representative shall resign or be unable to complete the length of his or her appointed term, the alternative representative may complete the remainder of the term, or the Member may appoint another representative to complete the remainder of the term. Notwithstanding the foregoing, a representative shall serve on the Initial Committee until his or her successor is appointed by the Member.

5. Representatives shall serve their Members on the Initial Committee without compensation but shall be entitled to reimbursement of travel costs and expenses incurred in fulfilling their service and duties on the Initial Committee.

6. No representative shall be personally liable for any debts, liabilities, or contracts of the Members or the Initial Committee.

G. Meetings

1. The Initial Committee shall set and hold the first organizational meeting, at the latest, during the first month following the month in which all the Members in Schedule A adopt and approve this Agreement. At the first organization meeting, the representatives of the Initial Committee shall:

i. Elect amongst themselves a chairman, vice-chairman, secretary, and treasurer. The chairman shall preside over all meetings of the Initial Committee, and shall act as the head of the Initial Committee. The secretary shall publish all meetings of the initial committee, record proceedings and activities, and publish all meeting minutes. The treasurer shall be charged with all financings of the Initial Committee and all Member financial obligations under this Agreement. In the absence of the chairman, the vice-chairman shall fulfill the president's duties.

ii. Set the fiscal year of the Initial Committee and the date of the annual organizational meeting of the Initial Committee, which may or may not be less than one year following the first organization meeting.

iii. Agree to serve temporary terms until the first annual organization meeting of the Initial Committee, at which time term lengths of the representatives shall be decided according to paragraph F.4 above.

iv. Select the frequency of future meetings before the first annual organizational meeting, which frequency shall be no less than quarterly.

2. A majority of the representatives (or alternative representatives) serving on the Initial Committee shall constitute a quorum of the Initial Committee. An alternative representative may not count towards a quorum or participate in voting during a meeting unless the representative of the Member is unable or unwilling to attend. All actions of the Initial Committee shall require an affirmative vote of the majority of the quorum present.

3. All representatives and alternate representatives shall be provided notice of all meeting times, dates, and locations, no later than five business days before any meeting. The contact information provided by the representatives and alternative representatives shall be considered the preferred method of contact unless representatives or alternative representatives informs the Initial Committee otherwise. All notices provided by U.S. mail shall be considered provided when notice is deposited with the U.S postal service.

H. Assets and Operations

1. The Members shall jointly cooperate and shall jointly have the authority to acquire, hold and dispose of real property and personal property needed for the joint operation of this Agreement. All funds deposited with the Initial Committee shall be jointly held by the Members in percentages according to their contributions, and shall be held in trust by the Initial Committee to accomplish the purposes of the contributions. Bids or quotes for purchases or services otherwise required by Wyoming law shall be submitted through the Initial Committee for recommendation and approval by the Members. Once approved by the Members, all contributions shall be made as agreed upon by the Members and paid by each Member's budgetary and claim process.

2. After the formation of a form a separate legal entity of the State of Wyoming under paragraph F.3 above, it is intended that all real property and personal property shall be transferred to the Joint Powers Board and held by the separate corporate and politic entity under the terms and conditions of the amended agreement. At that time, the Joint Powers Board shall have the power and authority to bind the separate corporate and politic entity in all matters.

3. No Member shall be obligated or liable for any liabilities, claims, contributions, or expenses unless approved by the governing body of the Member, either through adoption of a budget proposed by the Initial Committee or the approval of a specific liability, claim, contribution, or expense. Members shall, however, be obligated and liable for all liabilities, claims, contributions, or expenses approved by the governing body of the Member in that manner.

I. Funding and Liabilities

To provide adequate financial support for the Purposes of this Agreement, each Member may be requested to approve funding of the Initial Committee in amounts proposed by the Initial Committee. Each Member shall be expected to contribute funding if the proposal of the Initial Committee is approved by that Member. The failure to approve any contribution may subject the Member to withdrawal under paragraph J below. After the formation of a separate legal entity

under paragraph F.3 above, no contribution requests shall violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

J. Dissolution, Termination and Withdrawal

1. Any Member may voluntarily terminate their participation in this Agreement before the first annual meeting, provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the first annual meeting. Following the first annual meeting, any Member may voluntarily terminate their participation in this Agreement, provided that termination shall not be effective until the end of the fiscal year in which termination occurs, and further provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the end of such fiscal year. No termination by a Member shall relieve the Member of any financial liability approved by the governing body of the Member before the effective date of termination.

2. If a Member fails to approve a funding contribution duly proposed at a meeting of the Initial Committee and approved by the governing bodies of two thirds (2/3) of the Members, the Initial Committee may authorize the Member's involuntary withdrawal at the end of that current fiscal year, provided the Member is given notice of the Initial Committee's intent to force a withdrawal and thirty days in which to reconsider the proposed funding contribution. In the case of involuntarily withdrawal under this subparagraph, the Member shall cease to become a Member of this Agreement and shall not have the rights, powers, obligations, and authorities of a Member. Any funding contribution previously provided by the Member to the Initial Committee before involuntary withdrawal shall not be reimbursed to the Member and shall remain with the Initial Committee.

3. At any time that there is only one Member that has not voluntarily terminated participation or been involuntarily withdrawn from participation in this Agreement, as provided for above, this Agreement shall be considered dissolved. In the event of a dissolution of this Agreement, after the payment of all liabilities previously approved by the Members, the Initial Committee shall distribute any remaining assets and funds held by the Initial Committee back to the Members according to their contributions. Nothing in this Agreement shall prevent the complete dissolution of this Agreement by the consent of all Members.

4. If this Agreement is amended by the consent of less than all Members, the Members that are not parties to the amendment shall be considered to have voluntarily terminated their participation in this Agreement at the end of that current fiscal year, as provided for in paragraph J.1 above.

K. Miscellaneous

1. The provisions of this Agreement shall be severable. If any of the provisions of this Agreement, or the application of any provision to any person, entity or circumstances, are held to be invalid, such invalidity shall not affect other provisions of or applications of this Agreement which can be given affect without the invalid provision or applications.

2. This Agreement shall be binding upon the parties and their successors in interest.

3. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall be and constitute one in the same instrument.

4. This Agreement shall be construed in accordance with and governed by the laws of the State of Wyoming.

5. The Members agree to execute all future documents and instruments and take any future action necessity to consummate the purposes and intent of this Agreement.

6. This Agreement, and any amendments, shall be filed with the keeper of records of each Member.

7. Nothing in this Agreement, or any amendments, shall be construed to violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

[SIGNATURE PAGE FOLLOWS]

[SIGNATURE PAGE]

The City of Torrington, Wyoming

Randy L Adams
Mayor

Date: 1-1-19

[Rural Water Districts, Signatory TBD]

The Town of Guernsey, Wyoming

_____
Mayor

Date: _____

Approved by:

_____
Peter K. Michael

State of Wyoming
Attorney General

[SCHEDULE A]

City of Torrington, Wyoming

Goshen County, Wyoming Rural Water Districts (Membership Structure TBD)

The Town of Guernsey, Wyoming

APPENDIX A9-14

WPAWS JPAGT_FORT LARAMIE.2019 0725

DRAFT

WYOMING PLATTE ALLIANCE WATER SUPPLY
JOINT POWERS AGREEMENT

This Joint Powers Agreement (the "Agreement") is made by and between those public agencies forming or joining the Agreement, as set forth below, pursuant to the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.*

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A. Recitals

1. This Agreement is formed by the "Members" set forth in Schedule A to the Agreement, under the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.* The Members are Wyoming municipalities separate political subdivisions, each with existing sources of potable water and municipal water distribution systems at the time of this Agreement.

2. The Members enter into this Agreement for the Purposes set forth below. The Members are experiencing or anticipate deteriorating water quality in their sources of potable water, and desire to form this Agreement under the terms and conditions below.

B. Purpose

1. The Members are Wyoming municipalities or Wyoming governmental subdivisions. Each has or had a source of potable water for the residents served by the Member and a water distribution system with which to deliver potable water to the residents. Historically, the sources of the Members' potable water have been ground water through the ownership and use of groundwater wells within or near each Member's corporate limits or service area (the "Groundwater Wells"). The Members have experienced and anticipate experiencing poor water quality of the potable water pumped from the Groundwater Wells, due primarily to the presence of arsenic, uranium, and nitrates above the federally and state regulated limits.

2. Several Members have constructed or considered construction of a drinking water treatment facility to treat and remove (or lower) the levels of arsenic, uranium, nitrates, and other regulated contaminates before delivery of drinking water to residents. In many cases, the construction and operation of a water treatment facility has been cost-prohibitive, and when constructed the cost of construction and operation has been burdensome and highly inefficient for the Member. Several Members have installed new Groundwater Wells, in lieu of constructing and operating a water treatment facility, but have likewise experienced poor water quality in new Groundwater Wells. All Members have closely monitored their Groundwater Wells, and many have mixed potable water from separate Groundwater Well sources when needed to maintain adequate supply without significant treatment.

3. Wherefore, the Members desire to enter into this Agreement under Wyo. Stat. Ann. § 16-1-104(c)(i) for the purpose of securing and planning for the management of a potable water source from the surface water, stream flow, and storage reservoirs of the North Platte river. Water from the North Platte river shall be stored and treated at one common source, and then distributed to the Members of this Agreement for their municipal water supply.

C. Members

1. The municipalities and governmental entities listed on Schedule A of this Agreement shall be considered the "Members" of this Agreement. Each Member shall appoint one representative, and one alternative representative, to serve on the "Initial Committee" (as defined below). The alternate representative may represent the Member at the Initial Committee if the representative is unable or unavailable to do so.

2. Following the formation of this Agreement, the Members may include one or more future Wyoming municipalities or governmental entities as additional members of this Agreement, as may be desired by such future member and the Members.

i. Acceptance of additional members shall occur by a majority vote of the representatives present at a regular or special meeting of the "Initial Committee" (as defined below), and by duly authorized resolution or action of an additional member's governing bodies adopting this Agreement.

ii. After the inclusion of additional members to this Agreement, the included Members shall share in the same rights, powers, obligations, and authorities of all Members provided for in this Agreement, but inclusion shall be subject to all terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii below.

iii. The Initial Committee shall have the right to determine and set any terms, conditions, stipulations, requirements, requests, or capital contributions determined necessary for the inclusion of additional members to this Agreement. The inclusion of any additional member shall not be effective until the performance or satisfaction of any such terms, conditions, stipulations, requirements, requests, or capital contributions, and

the approval of any amendment to the Agreement by the State of Wyoming Attorney General.

iv. The addition of any new Member shall be memorialized in writing by an amendment to this Agreement or written action of the Initial Committee.

3. Representatives and alternative representatives of the Members may be duly elected officials of each respective entity, but need not be. A Member may appoint whomever it desires as its representative or alternate representative, so long as all representatives and alternative representatives are residents and qualified electors of the Member municipality or governmental entity at all times during such representation.

4. No municipality or governmental entity shall be required to be a Member in order to purchase water supply from the project, although other barriers to future growth beyond the Members may exist, such as lack of water supply, location within another river basin, cost of extending services, etc.

D. Duration

This Agreement shall be effective upon the final approval of all Members set forth in Schedule A, and approval by the State of Wyoming Attorney General. The duration of this Agreement shall be perpetual. Provided, however, this Agreement may be amended by the Members at any time for any reason, including for the formation of a separate entity corporate and politic and a separate "Joint Powers Board" (as defined below).

E. Separate Entity

This Agreement, as presented and adopted initially, shall not create or establish a separate legal entity. After amendment of the Agreement as set forth in paragraph F below, it is intended that the Agreement (as amended) will create and establish a separate legal entity of the state of Wyoming.

F. Governance

1. After adoption of this Agreement, administration of the Agreement shall be the responsibility of the "Initial Committee" as follows:

i. The Initial Committee shall be composed of one representative from each Member.

ii. The Initial Committee shall have the following powers:

a. Make recommendations to Members regarding study, participation, analysis, funding, and development of the purposes and facilities contemplated by this Agreement.

b. Corresponding with and providing direction to all consultants and project managers for this Agreement.

c. Supervising the progress and decisions made towards completing the goals of the purposes and facilities contemplated by this Agreement.

d. Administering the terms and conditions of this Agreement.

e. Authorizing new members to this Agreement, and setting any terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii above.

f. Administering the powers granted to the Initial Committee by this Agreement.

g. Directing and overseeing the timing, terms, and approach towards amending this Agreement for the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

h. Adopting bylaws of the Initial Committee and electing officers of the Initial Committee.

i. Recommending an adopted annual budget to the Members and setting forth requested expenditures of the Members for the projects under this Agreement.

j. Electing representatives from the Initial Committee to participate in a multi-state governance system for the operation of the projects contemplated by this Agreement.

k. Keeping the Members advised as to the progress of the Purposes of this Agreement and make official reports of such progress to the Members, as desired.

2. The Members reserve the following duties and responsibilities under this Agreement to themselves:

i. Terminating this Agreement or withdrawing as a Member to this Agreement.

ii. Enforcing other parties' obligations to this Agreement.

iii. Adopting an annual budget for this Agreement and approving expenditures of Members under this Agreement before the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

iv. Amending this Agreement.

3. At the time when it is determined expedient or necessary to form a separate legal entity of the state of Wyoming, pursuant to Wyo. Stat. Ann. § 16-1-106, the Members agree that this Agreement shall be amended to do so and the amendment submitted to the State of Wyoming

Attorney General for approval. Thereafter, the governance of this Agreement shall be placed in a Joint Powers Board, intended to be composed of one representative from each then-current Member, subject to the terms and conditions of the amended agreement. At that time, each then-current Member to this Agreement shall have the opportunity to become a member of the amended agreement, with equal rights, powers, obligations, and authorities of the other members of the amended agreement at that time.

4. Each representative (and alternative representative) of the Initial Committee shall serve terms of two years, provided that at least half of the representatives of the Initial Committee shall serve a first term of one year, so that at least half of the representatives of the Initial Committee have staggered terms that overlap. If a representative shall resign or be unable to complete the length of his or her appointed term, the alternative representative may complete the remainder of the term, or the Member may appoint another representative to complete the remainder of the term. Notwithstanding the foregoing, a representative shall serve on the Initial Committee until his or her successor is appointed by the Member.

5. Representatives shall serve their Members on the Initial Committee without compensation but shall be entitled to reimbursement of travel costs and expenses incurred in fulfilling their service and duties on the Initial Committee.

6. No representative shall be personally liable for any debts, liabilities, or contracts of the Members or the Initial Committee.

G. Meetings

1. The Initial Committee shall set and hold the first organizational meeting, at the latest, during the first month following the month in which all the Members in Schedule A adopt and approve this Agreement. At the first organization meeting, the representatives of the Initial Committee shall:

i. Elect amongst themselves a chairman, vice-chairman, secretary, and treasurer. The chairman shall preside over all meetings of the Initial Committee, and shall act as the head of the Initial Committee. The secretary shall publish all meetings of the initial committee, record proceedings and activities, and publish all meeting minutes. The treasurer shall be charged with all financings of the Initial Committee and all Member financial obligations under this Agreement. In the absence of the chairman, the vice-chairman shall fulfill the president's duties.

ii. Set the fiscal year of the Initial Committee and the date of the annual organizational meeting of the Initial Committee, which may or may not be less than one year following the first organization meeting.

iii. Agree to serve temporary terms until the first annual organization meeting of the Initial Committee, at which time term lengths of the representatives shall be decided according to paragraph F.4 above.

iv. Select the frequency of future meetings before the first annual organizational meeting, which frequency shall be no less than quarterly.

2. A majority of the representatives (or alternative representatives) serving on the Initial Committee shall constitute a quorum of the Initial Committee. An alternative representative may not count towards a quorum or participate in voting during a meeting unless the representative of the Member is unable or unwilling to attend. All actions of the Initial Committee shall require an affirmative vote of the majority of the quorum present.

3. All representatives and alternate representatives shall be provided notice of all meeting times, dates, and locations, no later than five business days before any meeting. The contact information provided by the representatives and alternative representatives shall be considered the preferred method of contact unless representatives or alternative representatives informs the Initial Committee otherwise. All notices provided by U.S. mail shall be considered provided when notice is deposited with the U.S postal service.

H. Assets and Operations

1. The Members shall jointly cooperate and shall jointly have the authority to acquire, hold and dispose of real property and personal property needed for the joint operation of this Agreement. All funds deposited with the Initial Committee shall be jointly held by the Members in percentages according to their contributions, and shall be held in trust by the Initial Committee to accomplish the purposes of the contributions. Bids or quotes for purchases or services otherwise required by Wyoming law shall be submitted through the Initial Committee for recommendation and approval by the Members. Once approved by the Members, all contributions shall be made as agreed upon by the Members and paid by each Member's budgetary and claim process.

2. After the formation of a separate legal entity of the State of Wyoming under paragraph F.3 above, it is intended that all real property and personal property shall be transferred to the Joint Powers Board and held by the separate corporate and politic entity under the terms and conditions of the amended agreement. At that time, the Joint Powers Board shall have the power and authority to bind the separate corporate and politic entity in all matters.

3. No Member shall be obligated or liable for any liabilities, claims, contributions, or expenses unless approved by the governing body of the Member, either through adoption of a budget proposed by the Initial Committee or the approval of a specific liability, claim, contribution, or expense. Members shall, however, be obligated and liable for all liabilities, claims, contributions, or expenses approved by the governing body of the Member in that manner.

I. Funding and Liabilities

To provide adequate financial support for the Purposes of this Agreement, each Member may be requested to approve funding of the Initial Committee in amounts proposed by the Initial Committee. Each Member shall be expected to contribute funding if the proposal of the Initial Committee is approved by that Member. The failure to approve any contribution may subject the Member to withdrawal under paragraph J below. After the formation of a separate legal entity

under paragraph F.3 above, no contribution requests shall violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

J. Dissolution, Termination and Withdrawal

1. Any Member may voluntarily terminate their participation in this Agreement before the first annual meeting, provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the first annual meeting. Following the first annual meeting, any Member may voluntarily terminate their participation in this Agreement, provided that termination shall not be effective until the end of the fiscal year in which termination occurs, and further provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the end of such fiscal year. No termination by a Member shall relieve the Member of any financial liability approved by the governing body of the Member before the effective date of termination.

2. If a Member fails to approve a funding contribution duly proposed at a meeting of the Initial Committee and approved by the governing bodies of two thirds (2/3) of the Members, the Initial Committee may authorize the Member's involuntary withdrawal at the end of that current fiscal year, provided the Member is given notice of the Initial Committee's intent to force a withdrawal and thirty days in which to reconsider the proposed funding contribution. In the case of involuntarily withdrawal under this subparagraph, the Member shall cease to become a Member of this Agreement and shall not have the rights, powers, obligations, and authorities of a Member. Any funding contribution previously provided by the Member to the Initial Committee before involuntary withdrawal shall not be reimbursed to the Member and shall remain with the Initial Committee.

3. At any time that there is only one Member that has not voluntarily terminated participation or been involuntarily withdrawn from participation in this Agreement, as provided for above, this Agreement shall be considered dissolved. In the event of a dissolution of this Agreement, after the payment of all liabilities previously approved by the Members, the Initial Committee shall distribute any remaining assets and funds held by the Initial Committee back to the Members according to their contributions. Nothing in this Agreement shall prevent the complete dissolution of this Agreement by the consent of all Members.

4. If this Agreement is amended by the consent of less than all Members, the Members that are not parties to the amendment shall be considered to have voluntarily terminated their participation in this Agreement at the end of that current fiscal year, as provided for in paragraph J.1 above.

K. Miscellaneous

1. The provisions of this Agreement shall be severable. If any of the provisions of this Agreement, or the application of any provision to any person, entity or circumstances, are held to be invalid, such invalidity shall not affect other provisions of or applications of this Agreement which can be given affect without the invalid provision or applications.

2. This Agreement shall be binding upon the parties and their successors in interest.

3. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall be and constitute one in the same instrument.

4. This Agreement shall be construed in accordance with and governed by the laws of the State of Wyoming.

5. The Members agree to execute all future documents and instruments and take any future action necessity to consummate the purposes and intent of this Agreement.

6. This Agreement, and any amendments, shall be filed with the keeper of records of each Member.

7. Nothing in this Agreement, or any amendments, shall be construed to violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

[Signature Page Follows]

The Town of Fort Laramie, Wyoming

Joyce E Evans
Mayor

Date: 7/25/19

Approved by:

_____

State of Wyoming
Attorney General

[Schedule A]

City of Torrington, Wyoming

Goshen County, Wyoming Rural Water Districts (Membership Structure TBD)

The Town of Guernsey, Wyoming

The Town of Lingle, Wyoming

The Town of Fort Laramie, Wyoming

APPENDIX A9-15

AGREEMENT STONECREEK HOMEOWNER'S ASSOCIATION

MAY 15, 2019

DRAFT

WYOMING PLATTE ALLIANCE WATER SUPPLY
JOINT POWERS AGREEMENT

This Joint Powers Agreement (the "Agreement") is made by and between those public agencies forming or joining the Agreement, as set forth below, pursuant to the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.*

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A. Recitals

1. This Agreement is formed by the "Members" set forth in Schedule A to the Agreement, under the Wyoming Joint Powers Act, Wyo. Stat. Ann. § 16-1-102 *et seq.* The Members are Wyoming municipalities separate political subdivisions, each with existing sources of potable water and municipal water distribution systems at the time of this Agreement.

2. The Members enter into this Agreement for the Purposes set forth below. The Members are experiencing or anticipate deteriorating water quality in their sources of potable water, and desire to form this Agreement under the terms and conditions below.

B. Purpose

1. The Members are Wyoming municipalities or Wyoming governmental subdivisions. Each has or had a source of potable water for the residents served by the Member and a water distribution system with which to deliver potable water to the residents. Historically, the sources of the Members' potable water have been ground water through the ownership and use of groundwater wells within or near each Member's corporate limits or service area (the "Groundwater Wells"). The Members have experienced and anticipate experiencing poor water quality of the potable water pumped from the Groundwater Wells, due primarily to the presence of arsenic, uranium, and nitrates above the federally and state regulated limits.

2. Several Members have constructed or considered construction of a drinking water treatment facility to treat and remove (or lower) the levels of arsenic, uranium, nitrates, and other regulated contaminates before delivery of drinking water to residents. In many cases, the construction and operation of a water treatment facility has been cost-prohibitive, and when constructed the cost of construction and operation has been burdensome and highly inefficient for the Member. Several Members have installed new Groundwater Wells, in lieu of constructing and operating a water treatment facility, but have likewise experienced poor water quality in new Groundwater Wells. All Members have closely monitored their Groundwater Wells, and many have mixed potable water from separate Groundwater Well sources when needed to maintain adequate supply without significant treatment.

3. Wherefore, the Members desire to enter into this Agreement under Wyo. Stat. Ann. § 16-1-104(c)(i) for the purpose of securing and planning for the management of a potable water source from the surface water, stream flow, and storage reservoirs of the North Platte river. Water from the North Platte river shall be stored and treated at one common source, and then distributed to the Members of this Agreement for their municipal water supply.

C. Members

1. The municipalities and governmental entities listed on Schedule A of this Agreement shall be considered the "Members" of this Agreement. Each Member shall appoint one representative, and one alternative representative, to serve on the "Initial Committee" (as defined below). The alternate representative may represent the Member at the Initial Committee if the representative is unable or unavailable to do so.

2. Following the formation of this Agreement, the Members may include one or more future Wyoming municipalities or governmental entities as additional members of this Agreement, as may be desired by such future member and the Members.

i. Acceptance of additional members shall occur by a majority vote of the representatives present at a regular or special meeting of the "Initial Committee" (as defined below), and by duly authorized resolution or action of an additional member's governing bodies adopting this Agreement.

ii. After the inclusion of additional members to this Agreement, the included Members shall share in the same rights, powers, obligations, and authorities of all Members provided for in this Agreement, but inclusion shall be subject to all terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii below.

iii. The Initial Committee shall have the right to determine and set any terms, conditions, stipulations, requirements, requests, or capital contributions determined necessary for the inclusion of additional members to this Agreement. The inclusion of any additional member shall not be effective until the performance or satisfaction of any such terms, conditions, stipulations, requirements, requests, or capital contributions, and

the approval of any amendment to the Agreement by the State of Wyoming Attorney General.

iv. The addition of any new Member shall be memorialized in writing by an amendment to this Agreement or written action of the Initial Committee.

3. Representatives and alternative representatives of the Members may be duly elected officials of each respective entity, but need not be. A Member may appoint whomever it desires as its representative or alternate representative, so long as all representatives and alternative representatives are residents and qualified electors of the Member municipality or governmental entity at all times during such representation.

4. No municipality or governmental entity shall be required to be a Member in order to purchase water supply from the project, although other barriers to future growth beyond the Members may exist, such as lack of water supply, location within another river basin, cost of extending services, etc.

D. Duration

This Agreement shall be effective upon the final approval of all Members set forth in Schedule A, and approval by the State of Wyoming Attorney General. The duration of this Agreement shall be perpetual. Provided, however, this Agreement may be amended by the Members at any time for any reason, including for the formation of a separate entity corporate and politic and a separate "Joint Powers Board" (as defined below).

E. Separate Entity

This Agreement, as presented and adopted initially, shall not create or establish a separate legal entity. After amendment of the Agreement as set forth in paragraph F below, it is intended that the Agreement (as amended) will create and establish a separate legal entity of the state of Wyoming.

F. Governance

1. After adoption of this Agreement, administration of the Agreement shall be the responsibility of the "Initial Committee" as follows:

i. The Initial Committee shall be composed of one representative from each Member.

ii. The Initial Committee shall have the following powers:

a. Make recommendations to Members regarding study, participation, analysis, funding, and development of the purposes and facilities contemplated by this Agreement.

b. Corresponding with and providing direction to all consultants and project managers for this Agreement.

c. Supervising the progress and decisions made towards completing the goals of the purposes and facilities contemplated by this Agreement.

d. Administering the terms and conditions of this Agreement.

e. Authorizing new members to this Agreement, and setting any terms, conditions, stipulations, requirements, requests, or capital contributions set forth in paragraph C.2.iii above.

f. Administering the powers granted to the Initial Committee by this Agreement.

g. Directing and overseeing the timing, terms, and approach towards amending this Agreement for the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

h. Adopting bylaws of the Initial Committee and electing officers of the Initial Committee.

i. Recommending an adopted annual budget to the Members and setting forth requested expenditures of the Members for the projects under this Agreement.

j. Electing representatives from the Initial Committee to participate in a multi-state governance system for the operation of the projects contemplated by this Agreement.

k. Keeping the Members advised as to the progress of the Purposes of this Agreement and make official reports of such progress to the Members, as desired.

2. The Members reserve the following duties and responsibilities under this Agreement to themselves:

i. Terminating this Agreement or withdrawing as a Member to this Agreement.

ii. Enforcing other parties' obligations to this Agreement.

iii. Adopting an annual budget for this Agreement and approving expenditures of Members under this Agreement before the creation of a separate legal entity of the state of Wyoming, as set forth in paragraph F.3 below.

iv. Amending this Agreement.

3. At the time when it is determined expedient or necessary to form a separate legal entity of the state of Wyoming, pursuant to Wyo. Stat. Ann. § 16-1-106, the Members agree that this Agreement shall be amended to do so and the amendment submitted to the State of Wyoming

Attorney General for approval. Thereafter, the governance of this Agreement shall be placed in a Joint Powers Board, intended to be composed of one representative from each then-current Member, subject to the terms and conditions of the amended agreement. At that time, each then-current Member to this Agreement shall have the opportunity to become a member of the amended agreement, with equal rights, powers, obligations, and authorities of the other members of the amended agreement at that time.

4. Each representative (and alternative representative) of the Initial Committee shall serve terms of two years, provided that at least half of the representatives of the Initial Committee shall serve a first term of one year, so that at least half of the representatives of the Initial Committee have staggered terms that overlap. If a representative shall resign or be unable to complete the length of his or her appointed term, the alternative representative may complete the remainder of the term, or the Member may appoint another representative to complete the remainder of the term. Notwithstanding the foregoing, a representative shall serve on the Initial Committee until his or her successor is appointed by the Member.

5. Representatives shall serve their Members on the Initial Committee without compensation but shall be entitled to reimbursement of travel costs and expenses incurred in fulfilling their service and duties on the Initial Committee.

6. No representative shall be personally liable for any debts, liabilities, or contracts of the Members or the Initial Committee.

G. Meetings

1. The Initial Committee shall set and hold the first organizational meeting, at the latest, during the first month following the month in which all the Members in Schedule A adopt and approve this Agreement. At the first organization meeting, the representatives of the Initial Committee shall:

i. Elect amongst themselves a chairman, vice-chairman, secretary, and treasurer. The chairman shall preside over all meetings of the Initial Committee, and shall act as the head of the Initial Committee. The secretary shall publish all meetings of the initial committee, record proceedings and activities, and publish all meeting minutes. The treasurer shall be charged with all financings of the Initial Committee and all Member financial obligations under this Agreement. In the absence of the chairman, the vice-chairman shall fulfill the president's duties.

ii. Set the fiscal year of the Initial Committee and the date of the annual organizational meeting of the Initial Committee, which may or may not be less than one year following the first organization meeting.

iii. Agree to serve temporary terms until the first annual organization meeting of the Initial Committee, at which time term lengths of the representatives shall be decided according to paragraph F.4 above.

iv. Select the frequency of future meetings before the first annual organizational meeting, which frequency shall be no less than quarterly.

2. A majority of the representatives (or alternative representatives) serving on the Initial Committee shall constitute a quorum of the Initial Committee. An alternative representative may not count towards a quorum or participate in voting during a meeting unless the representative of the Member is unable or unwilling to attend. All actions of the Initial Committee shall require an affirmative vote of the majority of the quorum present.

3. All representatives and alternate representatives shall be provided notice of all meeting times, dates, and locations, no later than five business days before any meeting. The contact information provided by the representatives and alternative representatives shall be considered the preferred method of contact unless representatives or alternative representatives informs the Initial Committee otherwise. All notices provided by U.S. mail shall be considered provided when notice is deposited with the U.S postal service.

H. Assets and Operations

1. The Members shall jointly cooperate and shall jointly have the authority to acquire, hold and dispose of real property and personal property needed for the joint operation of this Agreement. All funds deposited with the Initial Committee shall be jointly held by the Members in percentages according to their contributions, and shall be held in trust by the Initial Committee to accomplish the purposes of the contributions. Bids or quotes for purchases or services otherwise required by Wyoming law shall be submitted through the Initial Committee for recommendation and approval by the Members. Once approved by the Members, all contributions shall be made as agreed upon by the Members and paid by each Member's budgetary and claim process.

2. After the formation of a separate legal entity of the State of Wyoming under paragraph F.3 above, it is intended that all real property and personal property shall be transferred to the Joint Powers Board and held by the separate corporate and politic entity under the terms and conditions of the amended agreement. At that time, the Joint Powers Board shall have the power and authority to bind the separate corporate and politic entity in all matters.

3. No Member shall be obligated or liable for any liabilities, claims, contributions, or expenses unless approved by the governing body of the Member, either through adoption of a budget proposed by the Initial Committee or the approval of a specific liability, claim, contribution, or expense. Members shall, however, be obligated and liable for all liabilities, claims, contributions, or expenses approved by the governing body of the Member in that manner.

I. Funding and Liabilities

To provide adequate financial support for the Purposes of this Agreement, each Member may be requested to approve funding of the Initial Committee in amounts proposed by the Initial Committee. Each Member shall be expected to contribute funding if the proposal of the Initial Committee is approved by that Member. The failure to approve any contribution may subject the Member to withdrawal under paragraph J below. After the formation of a separate legal entity

under paragraph F.3 above, no contribution requests shall violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

J. Dissolution, Termination and Withdrawal

1. Any Member may voluntarily terminate their participation in this Agreement before the first annual meeting, provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the first annual meeting. Following the first annual meeting, any Member may voluntarily terminate their participation in this Agreement, provided that termination shall not be effective until the end of the fiscal year in which termination occurs, and further provided that written notice of such termination must be delivered to the Initial Committee not less than ninety days before the end of such fiscal year. No termination by a Member shall relieve the Member of any financial liability approved by the governing body of the Member before the effective date of termination.

2. If a Member fails to approve a funding contribution duly proposed at a meeting of the Initial Committee and approved by the governing bodies of two thirds (2/3) of the Members, the Initial Committee may authorize the Member's involuntary withdrawal at the end of that current fiscal year, provided the Member is given notice of the Initial Committee's intent to force a withdrawal and thirty days in which to reconsider the proposed funding contribution. In the case of involuntarily withdrawal under this subparagraph, the Member shall cease to become a Member of this Agreement and shall not have the rights, powers, obligations, and authorities of a Member. Any funding contribution previously provided by the Member to the Initial Committee before involuntary withdrawal shall not be reimbursed to the Member and shall remain with the Initial Committee.

3. At any time that there is only one Member that has not voluntarily terminated participation or been involuntarily withdrawn from participation in this Agreement, as provided for above, this Agreement shall be considered dissolved. In the event of a dissolution of this Agreement, after the payment of all liabilities previously approved by the Members, the Initial Committee shall distribute any remaining assets and funds held by the Initial Committee back to the Members according to their contributions. Nothing in this Agreement shall prevent the complete dissolution of this Agreement by the consent of all Members.

4. If this Agreement is amended by the consent of less than all Members, the Members that are not parties to the amendment shall be considered to have voluntarily terminated their participation in this Agreement at the end of that current fiscal year, as provided for in paragraph J.1 above.

K. Miscellaneous

1. The provisions of this Agreement shall be severable. If any of the provisions of this Agreement, or the application of any provision to any person, entity or circumstances, are held to be invalid, such invalidity shall not affect other provisions of or applications of this Agreement which can be given affect without the invalid provision or applications.

2. This Agreement shall be binding upon the parties and their successors in interest.

3. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall be and constitute one in the same instrument.

4. This Agreement shall be construed in accordance with and governed by the laws of the State of Wyoming.

5. The Members agree to execute all future documents and instruments and take any future action necessity to consummate the purposes and intent of this Agreement.

6. This Agreement, and any amendments, shall be filed with the keeper of records of each Member.

7. Nothing in this Agreement, or any amendments, shall be construed to violate the prohibitions and limits on local assessments provided in Wyo. Stat. Ann. § 16-1-108.

[Signature Page Follows]

Rural Water Districts:

Stonecreek Homeowners Association
District

Signature

Scott A. Acusia

President
Title

Date: 5-15-19

[Schedule A]

City of Torrington, Wyoming

Goshen County, Wyoming Rural Water Districts (Membership Structure TBD)

The Town of Guernsey, Wyoming

The Town of Lingle, Wyoming

The Town of Fort Laramie, Wyoming

APPENDIX A9-16

PAWS GOVERNANCE MEETINGS ATTENDANCE LISTS AND MEETING NOTES

DRAFT

PAWS
PLATTE ALLIANCE WATER SUPPLY

PAWS Governance Meeting Attendance 8/29/2018

Name:	Location/Community:
Janine Schmidt	Village of Morrill
Jeff Harkins	City of Torrington
Allan Thomas	Village of Lyman
Jack Berg	City of Bridgeport
Joyce Evans	Town of Fort Laramie
Tammy Leeling	City of Terrytown
Kent Greenwalt	City of Terrytown
Michelle Coolidge	City of Bayard
Nathan Johnson	City of Scottsbluff
Brandi McCaslin	Scottsbluff
Jeff Sprock	City of Mitchell
Carl Rupp	Goshen County Commissioners, Torrington
Tom Hayden	Nebraska DNR
Wayne Kautz	City of Bridgeport
Michael Beyer	City of Bridgeport
Michelle Christopher	Wyoming Association of Rural Water Systems
Kevin Boyce	WWDO
Barry Lawrence	WWDO
Randy Meininger	City of Scottsbluff
Tom Feeser	Torrington
Dave Schaff	M.C. Schaff & Associates
Michael Olsen	M.C. Schaff & Associates
Bob Juve	M.C. Schaff & Associates
Jeff Fuller	M.C. Schaff & Associates
Clint Schaff	M.C. Schaff & Associates

Michael Olsen

From: Jennifer Walker
Sent: Friday, October 5, 2018 12:10 PM
To: Brenda Lilley; Carolyn Nelson; Dan Coolidge; Doretta Huck; Glen Schleve; J.W. (Jack) Berg; Jeffrey G.Spock; Karla Fiscus; Kathleen Welfl; Keitha Green; Kent Greenwalt; Kim Robb; Lane Danielzuk; Michelle Coolidge; Nathan Johnson; Pat Heath; Randy Meininger; Ronda D.Conn; Samantha Jackson; Starr Lehl; Tom Case; Tony Kaufman; Wayne Kautz; William Boyer; Edward Delgado; George Siglin; Jeff Harkins; Joyce Evans; Kate Farmer; Matt Allred; Mike Montgomery; Sarah Cowan; Tom Feeser; Tom Troxel
Cc: Adam Hoesing; Bob Juve (rdjandedj@hotmail.com); Carl Rupp; Dave Schaff; Jeff Fassett; Jeff Fuller; John Lawson; Kevin Boyce; Michael Olsen; Mike Purcell; Pat Tyrrell; Reed Armijo; Victor Anderson
Subject: Platte Alliance Water Supply - we have organized a site visit to the Shoshoni Municipal Pipeline

Governance Group:

Thank you all for taking time out of your busy schedules to be public servants. Our project team knows the time commitment and dedication it takes to be community leaders such as yourselves and we appreciate the opportunity to work with all of you.

As you know, our second Governance Organizational meeting was held last Wednesday, September 26th in Torrington, WY. The purpose of this meeting was to be available to all entities that may have had questions on the drafted agreements that establish an Interlocal in Nebraska and a Joint Powers Board in Wyoming (same agreement, two different names based on each state's statutes). Also at this meeting, extra time was dedicated to continuing our efforts to help educate all of you on this very important project.

As a result, we are asking that each representative take these draft documents to their respective entity's for signature in the month of October. By doing this, we will have the opportunity to continue our efforts on the applications of both securing waters as well as funding opportunities as they arise in the near future. Remember, by signing this agreement, it does not obligate anyone to any type of funding, nor does it tie any community to this project for eternity. The purpose of the agreement is to formalize your community's interest in learning more about the project and allows each community the opportunity to provide input on how this proposed project will be developed and managed. If at any time after signing this initial agreement, a community feels this project will not fit their needs, they have the ability to step away at no cost.

To better educate the Governance Board representatives on the possibilities PAWS will provide, we have organized a site visit to the Shoshoni Municipal Pipeline located in Cody, Wyoming. This trip will provide you with insight on an operating system that the PAWS system will replicate. You will see hands-on, the operation of the treatment plant, take out structure at Buffalo Bill Reservoir as well as provide you the opportunity to ask questions to the communities involved. Although everyone is welcome to attend the tour, there will be a limited number of seats available on a charter flight from Scottsbluff directly to Cody. If you are available to provide your own transportation, please let us know as well so that we can accommodate you on the tour and for the lunch provided. Please contact the project team as soon as possible if you are interested.

Tour details:

Date: **October 30th, 2018**
Departure: **8:30 am** Western Nebraska Regional Airport
Arrival: Yellowstone Reginal Airport 9:30 am

Departure: Yellowstone Regional Airport 4:30 pm
Arrival: Western Nebraska Regional Airport 5:30 pm

As we solidify the agenda for the day, we will provide that information to the attendees.
Thank you again for being part of the development of this exciting project. We look forward to working with all of you.

Thank you,

Jennifer Walker

PAWS
PLATTE ALLIANCE WATER SUPPLY
This is a long term water quality issue not a water quantity issue



OCTOBER | 2018

Tour Guide

SHOSHONE MUNICIPAL PIPELINE

FLIGHT ITINERARY

DEPART	BFF	8:30	AM (MT)
ARRIVE	WYS	9:30	AM (MT)
DEPART	WYS	4:30	PM (MT)
ARRIVE	BFF	5:30	PM (MT)

ATTENDEES:

1.	Wayne Kautz	City of Bridgeport	NE
2.	Michelle Coolidge	City of Bayard	NE
3.	Scott Schaver	City of Scottsbluff	NE
4.	Jordan Colwell	City of Scottsbluff	NE
5.	Allan Thomas	Village of Lyman	NE
6.	Kent Greenwald	City of Terrytown	NE
7.	Randy Adams	City of Torrington	WY
8.	Mike Montgomery	Town of Guernsey	WY

PAWS
PLATTE ALLIANCE WATER SUPPLY

ITINERARY

Date: October 30th, 2018

Departure:	8:30 am	Western Nebraska Regional Airport
Arrival:	9:30 am	Yellowstone Regional Airport
	9:30 am	Drive to Shoshone Municipal Pipeline
	9:45am	Breakfast Burritos
	10:00am	Discuss & walk water treatment plant
	12:00pm	Lunch at the Irma Hotel Cody
	2:00pm	Tour of the Intake house
Departure:	4:30 pm	Yellowstone Regional Airport
Arrival:	5:30 pm	Western Nebraska Regional Airport

PAWS
PLATTE ALLIANCE WATER SUPPLY







Shoshone Municipal Pipeline

50 Agua Via...P.O. Box 488, Cody, WY 82414
307.527.6492 http://www.shoshonemunicipalpipeline.org/

Raw Water Pipeline:
The Raw Water Pipeline is 3.5 miles long with 36” diameter steel pipe.
The Shoshone Municipal Pipeline facilities operate by gravity, no pumping is required under normal operating conditions.

Treated Water Pipeline:
The Treated Water Pipeline is 68 miles long with steel pipe ranging from 36” diameter down to 16” and PVC pipe ranging from 10” diameter down to 8” diameter.
In each of the municipalities Shoshone Municipal Pipeline owns the Service Connection Building which is the connection between our transmission lines and their distribution systems. The same is true for the Northwest Rural Water District, only Northwest Rural Water District owns the Service Connection Buildings.

PAWS
PLATTE ALLIANCE WATER SUPPLY



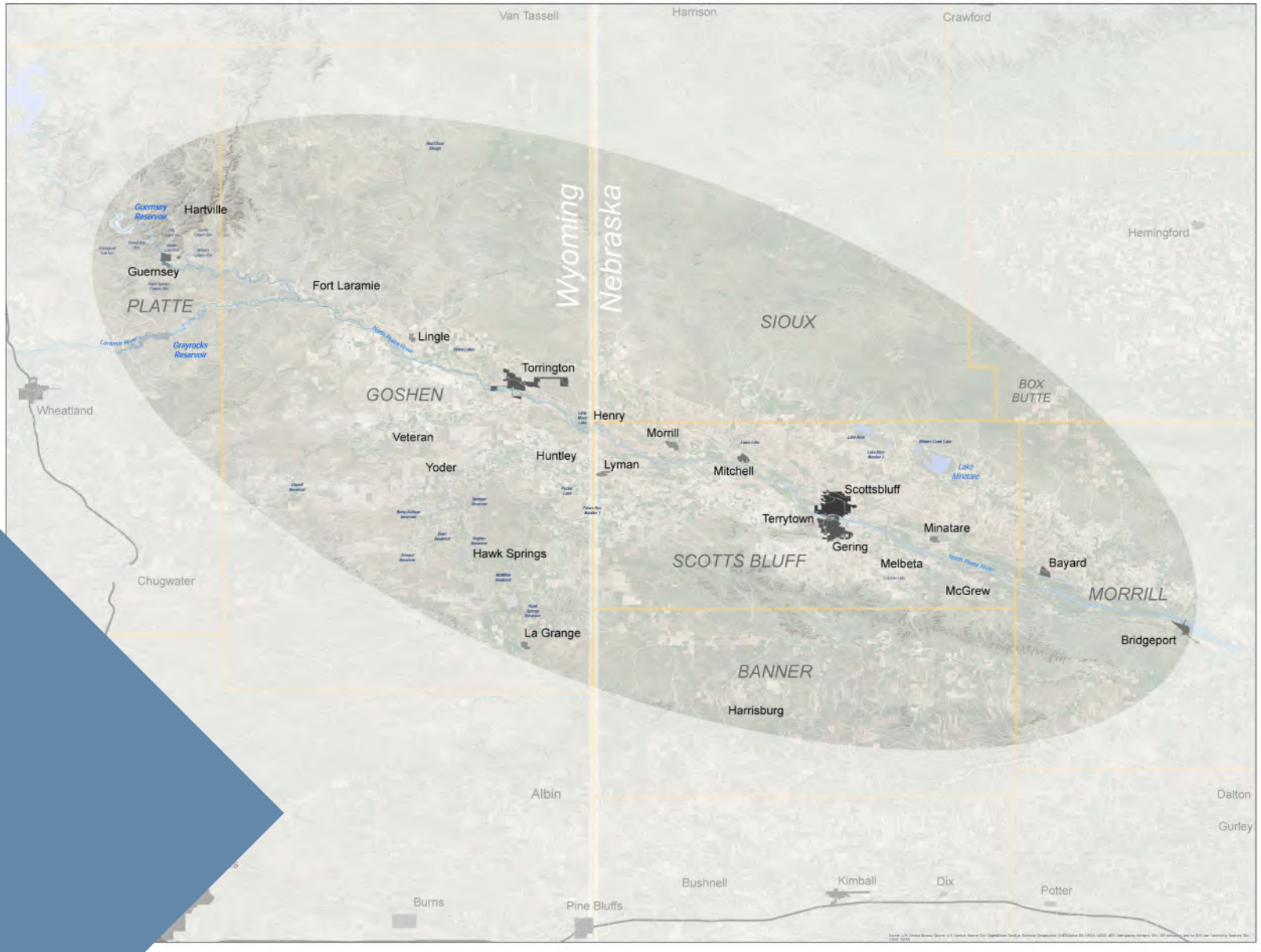
SMP

Shoshone Municipal Pipeline

Shoshone Municipal Pipeline is pleased to have delivered just over twenty-eight billion gallons of potable water to the municipalities of Cody, Powell, Byron, Lovell, Deaver, and Frannie and to the Northwest Rural Water District service areas in the twenty-six years that we have been operating. Water deliveries in 2017 were 1,192,393,000 gallons. All of the water has been of higher quality than is required under the standards set forth by the 1996 amendments to the Safe Drinking Water Act and updated annually by the United States Environmental Protection Agency.

PAWS

PLATTE ALLIANCE WATER SUPPLY



WYOMING:

Direct flow right

- Would be junior right
- Would get called nearly every irrigation season

Wyoming Account in Glendo Storage water

- Wyoming water and would not impact the Decree

NEBRASKA:

Storage Right in Glendo

- Working with USBR and USBR contractor to obtain a storage water
- Nebraska water and would not impact the Decree

PAWS
PLATTE ALLIANCE WATER SUPPLY

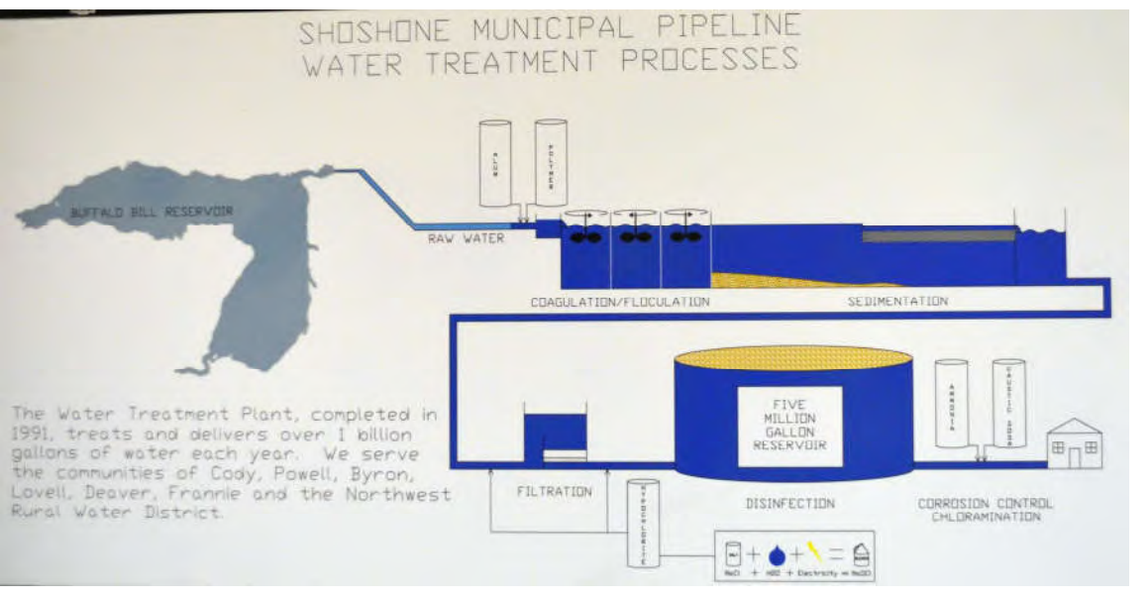
NOTES

PAWS

PLATTE ALLIANCE WATER SUPPLY

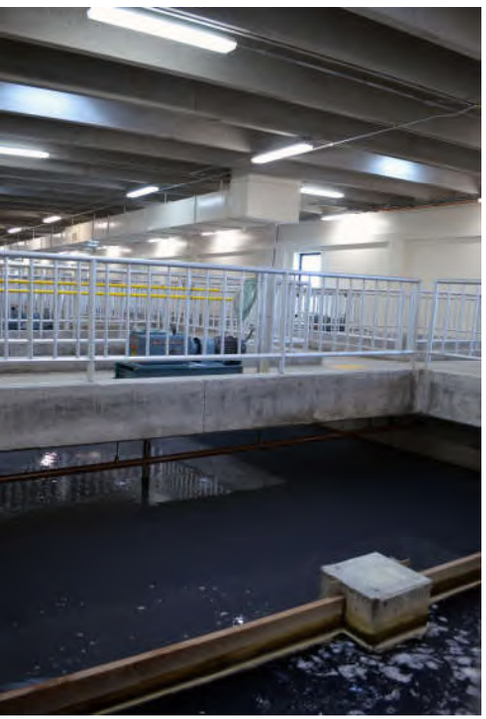


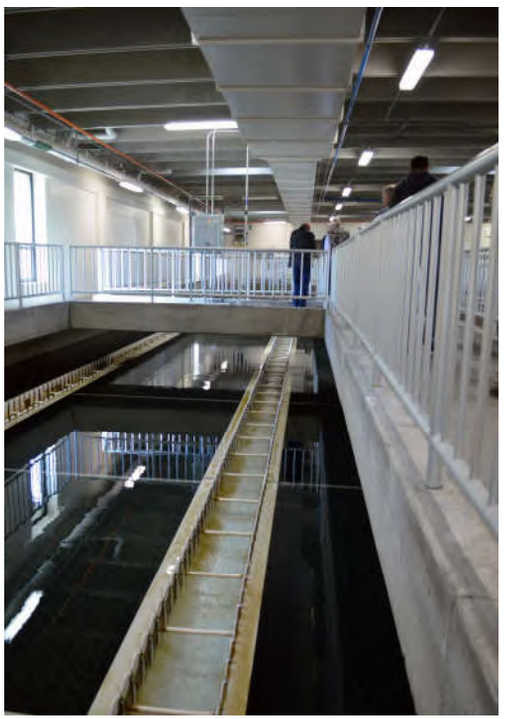




Shoshone Municipal Pipeline Water Treatment Plant Tour

PAWS
PLATTE ALLIANCE WATER SUPPLY
Shoshone Municipal Pipeline Water Treatment Plant Tour

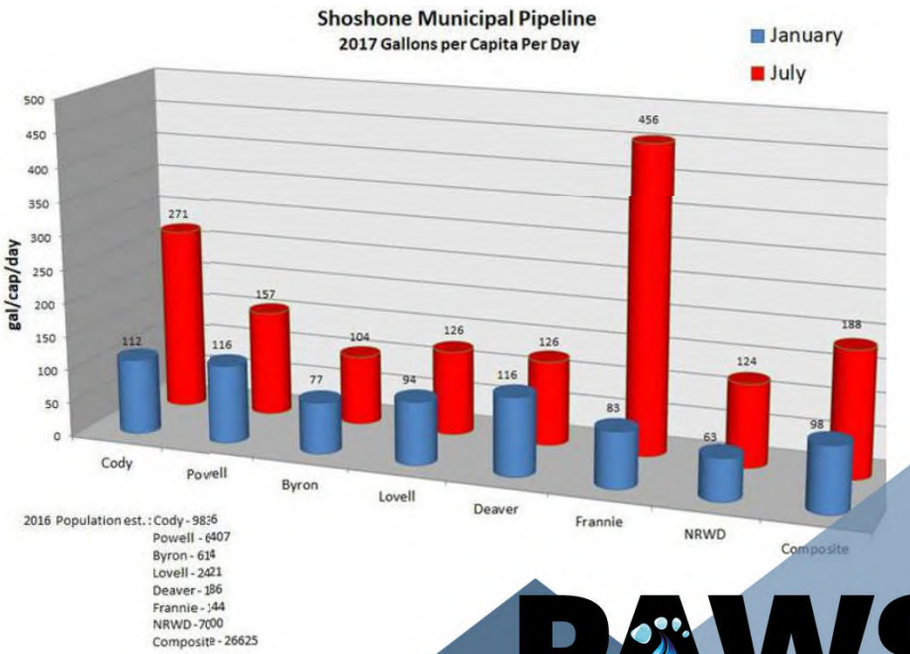






Treated Water Pipeline:

The Treated Water Pipeline is 68 miles long with steel pipe ranging from 36" diameter down to 16" and PVC pipe ranging from 10" diameter down to 8" diameter.



PAWS

PLATTE ALLIANCE WATER SUPPLY

Shoshone Municipal Pipeline Water Treatment Plant Tour











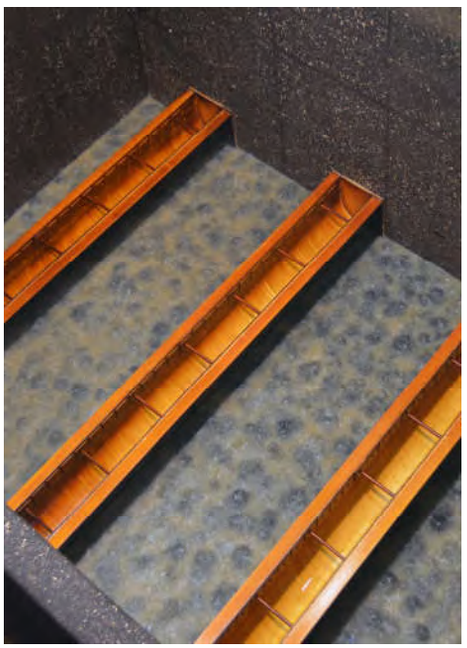


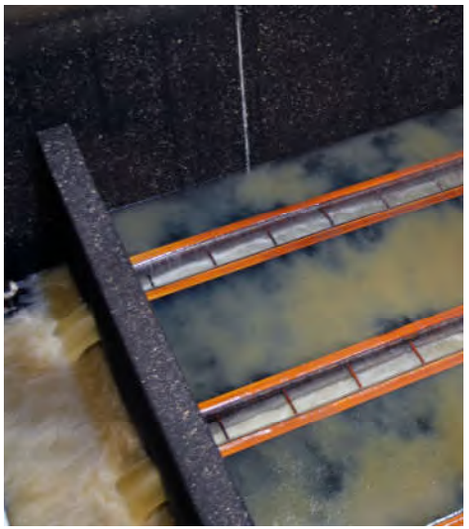
PAWS

PLATTE ALLIANCE WATER SUPPLY

Shoshone Municipal Pipeline Water Treatment Plant Tour











PAWS

PLATTE ALLIANCE WATER SUPPLY

Shoshone Municipal Pipeline Water Treatment Plant Tour












PAWS
PLATTE ALLIANCE WATER SUPPLY
Shoshone Municipal Pipeline Water Treatment Plant Tour

Attended November PAWS Meeting: Tom Hayden, Nathan Green, Michael Olsen, M.C. Schaff, Jeff Fuller, Jack Berg, Bob Juve, Carl Rupp, Mike Beyer, Dennis Strauch, Kent Greenwalt, Nathan Johnson, Tony Schuler, Adam Hoesing, Jen Walker, Randy Adams, Dave Schaff, Kevin Boyce, Scott Schaver, Mike Montgomary, Terry Shaub.

When: Wednesday, November 14, 2018, 3:00 p.m. to 5:00 p.m.
Where: Gering Civic Center
Agenda:

3:00 pm – 3:20 pm Meeting kick off - PAWS Advisory Group members

3:20 pm – 3:40 pm Shoshone Water Treatment Plant tour – Attendees

- See attachment

3:40 pm – 4:00 pm Open Discussion around PAWS project vs Shoshone – Group

- Comments regarding the Shoshone facility- Pristine facility, impressive and financially makes sense for our communities.
- Could we use a turbine flow? That merits further consideration for possibility of power generation at the pressure reducing stations.
- Cost production Shoshone vs PAWS? Shoshone rough cost 100 million, appraisal cost investigation, hydraulic study and with the distance it is roughly stated at 300 million due to inflation and cost of equipment/piping
- PAWS has a rough estimate of 20 more miles of pipe than Shoshone
- A town wanting to tap in at a later time will need to pay to become a user
- General discussion of potential, net to be determined, methods for assuring no net impact for Nebraska water.
- General note that when the question was asked regarding water availability the response was that while the water has not been secured it is available.

4:00pm – 4:20pm Resolutions

- Signed: Morrill, Bridgeport, Terrytown, Scottsbluff, Bayard (approved and will soon sign)
- Reminder any communities that need a presentation regarding the project, the PAWS group would be happy to present to newly elected officials.

4:20 pm – 4:45 pm Discussion around appointing an NE Chairman & WY Chairman

- Reminder please appoint someone to the PAWS committee for those that have had changes in elections.
- As we move forward with the meetings, we would like to solidify the NE Governance group and WY Governance group and then appoint a chairman of each group.
- Reminder please feel free to send newly elected officials to the PAWS website for information as well http://www.platteallianceswatersupply.com/

4:45pm - 5:00pm Next Steps

- December meeting was discussed, but the majority agreed to not meet in December due to election changes.
- Discussed starting in January meetings will be once a month every third Wednesday 3pm-5pm
- May's meeting goal is to discuss the draft report

Meeting Notes
Platte Alliance Water Supply (PAWS)

Governance Committee Meeting – 1/16/2019

Agenda

1. Sign-In – Jeff Harkins, Tom Troxel, and Randy Adams – City of Torrington; Mike Beyer and Charlie Brown – City of Bridgeport; Scott Shaver and Nathan Green – City of Scottsbluff; Kent Greenwalt – City of Terrytown; John Berge – North Platte NRD; Cody Cox – Goshen County Commissioners; Victor Anderson – Wenck; Shianne Shaver; Adam Hoesing – Simmons Olsen; Kevin Boyce – WWDO; Dave Schaff, M.C. Schaff, Bob Juve, and Michael Olsen – M.C. Schaff & Associates.

2. Discussion on the Interlocal and JPB Agreements
   - Scottsbluff, Bridgeport, Bayard, Terrytown and Morrill have all signed the Agreements in Nebraska.
   - Waiting on Gering, Lyman, Henry, and Mitchell to take to their Councils/Boards.
   - Torrington signed the Agreement on the 7th.
   - Waiting on Lingle, Fort Laramie, and Guernsey to take to their Councils/Boards.
   - We need these done, at the latest, in the March Council/Board meetings.

3. Discussion around appointing a Nebraska and Wyoming Chairperson
   - It was decided that this should take place after everyone has signed the Agreements.

4. Discussion on Project Concepts
   - The Team are looking at three alignments from Glendo
     - Along the River
       - Less pipe
       - Railroad issues
       - Grade Change issues
     - South of River
       - More pipe
       - Private land issues
       - Less grade change, but will probably require pumping
     - On Bench north of River
       - Most pipe
       - Mostly owned by the National Guard
       - Will require pumping
   - Sizing of Pipelines and Water Treatment Plant
     - Without the signed Agreements, the Team may have to size everything assuming that everyone will be participating on the project or size it with just the communities that have signed the Agreements on/or before their March meetings.
   - Water Quality

- Uranium mapping shows that the concentrations increase the closer the source wells are to the River.
- Seasonal and yearly fluctuations in Nitrates are typical in the groundwater.
- Arsenic is spotty in the alluvium, and is difficult to see any trends in.
- Ion Exchange can treat Nitrates and Uranium, but produces a chloride latent waste stream that is becoming more and more of an issue with regulatory agencies.
- For the Glendo source water; the treatment will be conventional water treatment (similar to SMP) along with iron adjustment.

5. Next Steps

- Get the Agreements signed by as many communities that want to participate
- Next meeting will be in February; probably the third Wednesday.

NEBRASKA PLATTE ALLIANCE WATER SUPPLY
February 6, 2019

The first organizational meeting of the Nebraska Platte Alliance Water Supply Interlocal Agreement (the "NPAWS Group") was held on February 6, 2019 at 3:00 p.m. at 902 Winter Creek Drive, Scottsbluff, NE 69361.

Present were NPAWS representatives Mike Beyer and Wayne Kautz of Bridgeport, Nebraska, Sam Jackson of Bayard, Nebraska, Tony Schuler of Morrill, Nebraska, Perry Mader of Mitchell, Nebraska, Kent Greenwalt of Terrytown, Nebraska, Scott Shaver and Nathan Green of Scottsbluff, Nebraska, Adam Hoesing of Simmons Olsen Law Firm, P.C., L.L.O., and Mike Olson and Bob Juve of M.C. Schaff & Associates, Inc.

The meeting was called to order.

It was moved by Schuler and seconded by Kautz to nominate Scott Shaver as President of the NPAWS Group. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt, and Shaver. Voting no: None. Next it was moved by Mader and seconded by Kautz to nominate Sam Jackson as Secretary of the NPAWS Group. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt and Shaver. Voting no: None. Finally, it was moved by Jackson and seconded by Shaver to nominate John A. Schuler as Treasurer of the NPAWS Group. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt and Shaver. Voting no: None.

Next it was moved by President Shaver, seconded by Secretary Jackson that the fiscal year of the NPAWS Group be from October 1 through September 30 of each year. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt, and Shaver. Voting no: None.

Next it was moved by President Shaver and seconded by Treasurer Schuler to conduct the first organizational meeting of the NPAWS Group on the third Wednesday of January 2020. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt, and Shaver. Voting no: None.

Next it was moved by Treasurer Schuler and seconded by President Shaver to meet no less than monthly until the first organizational meeting in January 2020, and to meet more often as needed. The next quarterly meeting will be in March 2019. Voting yes: Kautz, Jackson, Schuler, Mader, Greenwalt, and Shaver. Voting no: None.

A suggestion was made by Mr. Hoesing to prepare a letter to Central Nebraska Public Power and Irrigation District, to be signed by President Shaver, to outline questions over several outstanding matters, those questions being as follows:

1. What are the annual deliveries to the Central Nebraska Public Power and Irrigation District for the last 30 years, compared to the amount that may have been requested by Central Nebraska Public Power and Irrigation District.

2. What will be determined as necessary in order to fulfill demands of downstream users currently being fulfilled through supplemental storage from the Glendo contract.

3. What is the carry-over of storm water per year for the last 30 years for Central Nebraska Public Power and Irrigation District contract in the Glendo unit.

4. What information may be needed or required by Central Nebraska Public Power and Irrigation District at this time from the NPAWS Group to facilitate further discussion.

Discussion was then had regarding a strategy to approach Gering, Nebraska, Lyman, Nebraska, and Henry, Nebraska from current members of the NPAWS Group, in order to facilitate further discussion and study as to whether the Platte Alliance Water Supply project may be feasible and desired.

The meeting was then adjourned at 4:35 p.m.

_____

Sam Jackson, Secretary

Michael Olsen

From: Michael Olsen
Sent: Wednesday, March 13, 2019 8:55 AM
To: 'samantha.jackson@cityofbayard.net'; Dan Coolidge (city.utilities@cityofbayard.net); 'cbrowne@rodaklaw.com'; 'Dori Huck'; 'Wayne Kautz'; 'mayorkaufman@gering.org'; 'ldanielzuk@gering.org'; Pat Heath (pheath@gering.org); 'blilley@gering.org'; 'greenkeitha@yahoo.com'; 'Allan Thomas'; Kim Robb (volyman@prairieweb.com); 'mcgrewvillage@vistabeam.com'; Carolyn Nelson (cnelson@cityofminatare.com); 'jharms@cityofminatare.com'; Perry Mader; 'janine@villageofmorrill.com'; 'tschulertrk@gmail.com'; 'Scott Shaver'; 'ngreen@scottsbluff.org'; 'slehl@scottsbluff.org'; Tammy Leeling (cityofterrytown@cityoftt.com); 'jevans@townofftlaramie.org'; 'mayor@townofguernseywy.us'; 'Mike Montgomery'; 'lingletown@hotmail.com'; 'tom@cottonwoodconstruction.com'; 'jharkins@torringtonwy.gov'; 'tomtroxel@torringtonwy.gov'; 'radams@torringtonwy.gov'; 'pam.adams56@gmail.com'
Cc: Nathan Johnson (njohnson@scottsbluff.org); ccox@goshencounty.org; Kevin Boyce (kevin.boyce@wyo.gov); Dave Schaff; Bob Juve; Jeff Fuller; 'Adam Hoesing'; Jeff Fassett (jeff.fassett@nebraska.gov); John Lawson (jlawsonh2o@gmail.com); Pat Tyrrell (patrick.tyrrell@wyo.gov); Reed Armijo (rarmijo@jorgensenassociates.com); Victor Anderson (vanderson@wenck.com); Mike Purcell (mkpurcell737@gmail.com)
Subject: March PAWS Governance Meeting

All,

Our next PAWS Governance committee meeting will be Wednesday, March 20th from 3-5 P.M. at the Platte Valley Bank Community Room in Torrington, Wyoming.

At this meeting we touch on the signed Inter-local/Joint Powers Board Agreements, establishment of the Wyoming Joint Powers Board organizational structure, establishment of the overall PAWS group and the preliminary organizational structure, and discussions in regards to strategy to approach communities that have not signed the Inter-local/Joint Powers Board Agreements in both states. In addition, the PAWS Consultant group will be providing responses to questions/concerns that have risen in regards to the PAWS Project as a whole.

The Joint Powers Board Agreement is on the agenda for Guernsey's March 19th Council Meeting, so we plan on being able to formalize the Wyoming JPB at this meeting.

Your attendance in these Governance Meetings is vital to the forward movement of this project. Please RSVP to me at molsen@mcschaff.com.

When: Wednesday, March 20, 2019, 3:00 P.M. to 5:00 P.M.
Where: Platte Valley Bank-Torrington, 2201 Main Street, Torrington, WY 82240

Michael Olsen, PE

PAWS
PLATTE ALLIANCE WATER SUPPLY

This is a long term water quality issue not a water quantity issue

PAWS
PLATTE ALLIANCE WATER SUPPLY

PAWS Governance Meeting Attendance 3/20/2019

Name:	Location/Community:
Bob Juve	M.C. Schaff & Associates
Wayne Kautz	City of Bridgeport
Tom Hayden	Nebraska DNR
Kevin Boyce	WWDO
Michael Olsen	M.C. Schaff & Associates
Dave Schaff	M.C. Schaff & Associates
Tom Troxel	City of Torrington
Kent Greenwalt	City of Terrytown
Randy L. Adams	City of Torrington
Jeff Fuller	M.C. Schaff & Associates
Adam Hoesing	Simmons Olsen
Charlie Brown	City of Bridgeport

PLATTE ALLIANCE WATER SUPPLY (PAWS)
A region wide municipal rural water supply project

WPAWS Meeting 5/14/19

Date:	Tuesday, May 14, 2019
Place and Time:	City of Torrington Offices, 3-4PM
Participants:	Mayor Randy Adams, City of Torrington
	Tom Troxel, City of Torrington
	Mike Montgomery, City of Guernsey
	Bob Juve, M.C. Schaff & Associates
	Adam Hoesing, Simmons Olsen
	Michael Olsen, M.C. Schaff & Associates

This meeting was held to update the two communities (Torrington and Guernsey) in regards to the formation of the WPAWS Joint Powers Board (JPB). The items that need to be established by the communities that have signed the WPAWS in order to formalize the JPB are the following:

1. Elect/Set Officers (President, Secretary, Treasurer, and Vice President)
    a. These Officers can be combined into one position, especially since there are only two communities currently involved in the JPB.
2. Set a Fiscal Year for the JPB.
3. Set temporary terms of service for the appointed members.
    a. We recommend temporary terms be set until the end of the year. The hope is at that point we will be able to more formalize the JPB.

Mike M. mentioned that he would rather have an elected official make the decision regarding these items, and understandably asked to delay these decisions until the Mayor could join him. In addition, Mike M. asked that the Mayor's personal email be added to the Governance Meeting emails: n.paustian@hotmail.com.

Bob mentioned that he may be presenting to the Lingle Board next Wednesday (5/22/19) and back to Ft. Laramie at their June meeting. Mayor Adams mentioned that he and Jeff Fuller had attended the May meeting for Ft. Laramie and felt that they may have been a little overwhelmed with the amount of information presented to them.

The group discussed the concerns that the WPAWS may have with the overarching PAWS Board. It was discussed that the WPAWS would want to see equal representation on the overarching PAWS Board, and Adam felt comfortable conveying that to the rest of the communities at the Governance Meeting on the 22nd.

The meeting was concluded with Mike M. saying that he would report back to his Mayor and that we would reconvine this group at a later date to, hopefully formalize the WPAWS JPB at that time.

Meeting Notes
Platte Alliance Water Supply (PAWS)

Governance Committee Meeting – 5/22/2019

Agenda

1. Sign-In – Mike Beyer and Wayne Kautz – City of Bridgeport; Tom Hayden – NE DNR; Perry Mader – City of Mitchell; Scott Shaver and Nathan Green – City of Scottsbluff; Kent Greenwalt – City of Terrytown; Adam Hoesing – Simmons Olsen; Kevin Boyce – WWDO; Dave Schaff, Jeff Fuller, and Michael Olsen – M.C. Schaff & Associates.

2. Discussion on the Wyoming PAWS Governance Committee Meeting
   a. Took place on May 14th at the City of Torrington Office
      Torrington and Guernsey have signed the Agreement, however, Mike Montgomery mentioned that he would rather have an elected official make the decision regarding the items of setting up the JPB, in terms of officers, fiscal year, and appointment lengths.

      Fort Laramie will have the Agreement on their June 8th Council meeting for discussion and possible action.

3. Preliminary discussion on the overarching PAWS Organization's Structure
   - Discussion was had that Torrington and Guernsey may be able to participate with the NPAWS on their own accord.
   - Ultimately, they decided to keep NPAWS and WPAWS separate at this time and wait to see if Fort Laramie signed the agreement in June.
   - Wyoming would like to see two members represented on the overarching board and/or equal representation.
   - The question arose if the appointed members to the overarching board would have to be someone from NPAWS and WPAWS or if they could be anyone? Adam said he didn't think there would be a requirement on that and NPAWS and WPAWS could appoint who they wanted, but he would look into that further.
   - Another question was if they would be able to have a 5th person appointed to the overarching board for tie breaking votes. Adam mentioned that would be good and they would have to think about how they would want to appoint that person so that one state wouldn't be appointing three members.

4. Discussion about what the duties of the overarching PAWS Organization, WPAWS, and NPAWS representatives as the project moves forward and what they will ultimately be once the project is completed.
   - Agendas from previous SMP meetings were given out to show the types of agenda items are on a typical Regional Water System Board meeting.

5. Provide an update on the status of the Level II Study.
    - July 31st is when the Draft Report is due to WWDO and the City of Scottsbluff
    - Gering has sent an email to the Project Team saying that they will not be taking the Agreement to Council, so the Team is proceeding with the Study under the assumption that Gering will not be participating.
    - June 19th is tentatively the next Governance Meeting.

Michael Olsen

From: Michael Olsen
Sent: Thursday, June 13, 2019 12:10 PM
To: 'samantha.jackson@cityofbayard.net'; 'Dan Coolidge (city.utilities@cityofbayard.net)'; 'cbrowne@rodaklaw.com'; 'Dori Huck'; 'Wayne Kautz'; Perry Mader; 'janine@villageofmorrill.com'; 'tschulertrk@gmail.com'; 'Scott Shaver'; 'ngreen@scottsbluff.org'; 'slehl@scottsbluff.org'; Tammy Leeling (cityofterrytown@cityoftt.com); 'jevans@townofftlaramie.org'; 'mayor@townofguernseywy.us'; 'kate@townofguernseywy.us'; 'Mike Montgomery'; 'tom@cottonwoodconstruction.com'; 'jharkins@torringtonwy.gov'; 'ttroxel@torringtonwy.gov'; 'radams@torringtonwy.gov'; 'pam.adams56@gmail.com'; 'n.paustian@hotmail.com'; 'tom@cottonwoodconstruction.com'; 'cfproductions@woh.rr.com'; 'kcraft@townofftlaramie.org'; kgb2@embarqmail.com
Cc: 'Nathan Johnson (njohnson@scottsbluff.org)'; 'ccox@goshencounty.org'; 'Kevin Boyce (kevin.boyce@wyo.gov)'; Dave Schaff; 'Bob Juve'; 'Jeff Fuller'; 'Adam Hoesing'; 'Jeff Fassett (jeff.fassett@nebraska.gov)'; 'John Lawson (jlawsonh2o@gmail.com)'; Rick Deuell (rick.deuell@wyo.gov); 'Reed Armijo (rarmijo@jorgensenassociates.com)'; 'Victor Anderson (vanderson@wenck.com)'
Subject: PAWS Governance Meeting - June

Everyone,

As a reminder, our next PAWS Governance committee meeting will be next Wednesday, June 19th from 3-5 P.M. at the **City of Torrington Offices in the Conestoga Room**.

As an update, Ft. Laramie did sign the PAWS Joint Powers Board Agreement last night.

It is very important that every community have their Primary and/or Secondary Representative (that has the ability to vote for the community) at this meeting so that we can finalize the Wyoming PAWS Joint Powers Board and have input in the overarching PAWS Organization. If the Primary and Secondary Representative from any of the communities cannot make it, please get back to me as soon as possible so that we can work through that.

The Agenda for tomorrow will include:

1. Establish Wyoming PAWS Governance Committee Meeting,
2. Continue with the establishment of the overarching PAWS Organization's structure,
3. Discuss the PAWS Demands and Population growth projections,
4. Update on Nebraska's water source,
5. Update on Level II Study.

Thanks,
Michael Olsen, PE

PAWS
PLATTE ALLIANCE WATER SUPPLY
This is a long term water quality issue not a water quantity issue

PAWS
PLATTE ALLIANCE WATER SUPPLY

PAWS Governance Meeting Attendance 6/19/2019

Name:	Location/Community:
Tom Hayden	Nebraska DNR
Wayne Kautz	City of Bridgeport
Charlie Brown	City of Bridgeport
Mike Beyer	City of Bridgeport
Randy L. Adams	City of Torrington
Joyce Evans	Town of Fort Laramie
Tom Troxel	City of Torrington
Jeff Harkins	City of Torrington
Bob Juve	M.C. Schaff & Associates
Adam Hoesing	Simmons Olsen
Sam Jackson	City of Bayard
Perry Mader	City of Mitchell
Kevin Boyce	WWDO
Nathan Green	City of Scottsbluff
Jeff Fuller	M.C. Schaff & Associates
Michael Olsen	M.C. Schaff & Associates
Dave Schaff	M.C. Schaff & Associates

APPENDIX A9-17

PAWS_MINUTES-REJECT-LINGLE .2019 0514

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LEGAL PUB
LINGLE GUIDE
May 14, 2019

STATE OF WYOMING)
COUNTY OF GOSHEN)
TOWN OF LINGLE)

The Regular Meeting of the Lingle Town Council convened at 7:00 pm, May 8, 2019 with Mayor Siglin leading the Pledge of Allegiance. Upon roll call, the following were present, constituting a quorum:

	Mayor:	George Siglin
	Council Member:	Steve Edwardson
		Paula Newcomb
		Joe Welte
		Greg Asa
There were also present:	Clerk/Treasurer:	Richard Reyes
	Town Supervisor:	Larry Haeffelin
	Police Chief:	Endra Moen
	Town Attorney:	Greg Knudsen
	Pool Manager:	Brandi Hill
	Fire Chief:	Kasey Bangerter
	LVFD Secretary/Treasurer:	Tabitha Lambert

Mayor Siglin welcomed all to the meeting and thanked them for being present. Mayor Siglin asked for additions to the agenda: PAWS discussion, WAM Ballot, and Health Insurance to New Business and a Council Executive Session.

CM Newcomb moved to approve the agenda with additions. CM Welte voiced the second and the motion carried.

CM Welte moved to approve the minutes of the April 17, 2019 Regular Council Meeting CM Newcomb voiced the second and the motion carried. CM Asa abstained.

CM Edwardson moved to pay April 2019 bills in the amount of $226,989.12. CM Newcomb voiced the second and the motion carried.

PUBLIC COMMENT: Lindy Ellis with assistance from Landen and Hayden Willey requested that a free library be installed at the park. Following discussion the Council approved the request. Ellis' will build the library unit and TS Haeffelin will attach it to the Pool building.

Kate Farmer inquired about the installation of a swimming pool lift. Following discussion it was decided that the current lift be used this summer and possible funding for a portable lift be explored at a future date.

LAW ENFORCEMENT: PC Moen reported 33 incidents. The scheduled Crisis Drill was cancelled, Unified Crime Report will need updating and PC Moen is responsible for that update.

LVFD: FC Bangerter reported 6 incidents since the last report. The Easter egg hunt was successful. The Fire Truck Ride for students will be May 20th. 2020 is the 100th anniversary of the LVFD plans are in progress for a celebration. FC Bangerter introduced Tabitha Lambert as the new Secretary/Treasurer.

POOL: PM Hill reported all lifeguards are hired. A grant for a portable lift will be submitted to the Community Healthcare Foundation, pool preparation and maintenance has begun, the elementary school will be using the pool 5/29, Junior High and High School will be using the pool 5/24, she suggested various summer

community events, Thursday movie night in the park will take place during the summer, Lifeguard training will take place in June, PM Hill will attend CPO training in Casper 5/14 &5/15.

LEGAL ITEMS: TA Knudsen reported that cases are moving forward and nothing else to report.

ADMINISTRATION: CT Reyes reported that he has completed updates on the ordinances. Is utilizing the BMS accounting software. The Community Confidence Report is complete and ready for submission and the report is available at Town Hall for public review. The Wyoming Business Council drawdown for the Community Center will be submitted by weeks end.

MAINTENANCE: TS Haeffelin discussed pool opening with Brandi, requested replacement of mowing tractor used at the lagoon & landfill. Council approved the replacement.

UNFINISHED BUSINESS: Following Council discussion CM Newcomb moved to accept Great Gardens bid for the Main Street flower pots. CM Welte voiced the second and the motion carried. Council reviewed TDS franchise ordinance and decided to increase residential and commercial garbage rates effective July 1, 2019 by ordinance. Residents will receive a notice of rate increase on the June billing.

ORDINANCES: FIRST READING OF ORD. #340 AN ORDINANCE RENEWING A NON-EXCLUSIVE FRANCHISE TO ***TDS COLLECTION SERVICE INC.***, A WYOMING CORPORATION, T0 OPERATE A TRASH AND GARBAGE COLLECTION SYSTEM IN THE TOWN OF LINGLE, WYOMING: DEFINING TERMS: SETTING FORTH THE TERMS AND CONDITIONS OF THE GRANT; PROVIDING FOR COMPANY RULES, RATES, FRANCHISE FEES; TERMINATION AND PENALTIES FOR VIOLATION. Mayor Siglin called for a motion to approve Ordinance #340. CM Newcomb moved to approve the first reading of Ordinance #340. CM Welte voiced the second and the motion carried.

FIRST READING OF ORD. #342 AN ORDINANCE RESCINDING AND REPLACING ORDINANCE 195, ARTICLE 7, SECTION 1-710. Mayor Siglin called for a motion to approve Ordinance #342. CM Welte moved to approve the first reading of Ordinance #342. CM Edwardson voiced the second and the motion carried.

FIRST READING OF ORD. #343 AN ORDINANCE PROVIDING FOR THE ANNUAL APPROPRIATION FOR THE TOWN OF LINGLE FOR THE FISCAL YEAR JULY 1, 2019 TO JUNE 30, 2020. Mayor Siglin called for a motion to approve Ordinance #343. CM Edwardson moved to approve the first reading of Ordinance #343. CM Newcomb voiced the second and the motion carried.

NEW BUSINESS: Mayor Siglin called for a motion to approve him as the voting delegate at the WAM summer convention. CM Newcomb moved to approve Mayor Siglin as the voting delegate. CM Asa voiced the second and the motion passed. Mayor Siglin informed the Council of a 3.7% increase for employee health insurance and no increase in dental or vision. The Platte Alliance Water System was discussed and the Council declined to participate at this time.

COUNCIL ITEMS: Under Personnel Changes CM Newcomb proposed employee sick leave accrue at four hours per pay period. Following discussion it was tabled. CM Newcomb proposed a personal day be added for each employee. Following discussion, CM Newcomb moved that a personal day be added to the Personnel Policy and Procedure and each employee receive one personal day annually. CM Welte voiced the second and motion carried with 3 ayes and 2 nays.

Mayor Siglin advised at 8:39 pm he was recessing the regular meeting so Council could go into Executive Session. Executive Session began at 8:42 pm and ended at 8:57 pm. Personnel issues were discussed. Regular session reconvened at 8:58 pm.

With no further action to be taken Mayor Siglin adjourned the regular meeting at 9:06 pm.

SEAL:

TOWN OF LINGLE, WYOMING CORPORATE SEAL

ATTEST:

CT Richard Reyes

Mayor George Siglin

APPENDIX A9-18

CORRESPONDENCE EMAIL - GERING

MAY 16, 2019

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Correspondence on May 16th, 2019:

Nathan,

Mayor Kaufman is not available next week at all. The meeting would have to take place after May 29th. I don't know that a face to face meeting with you and Mayor Gonzales would change our perspective on the PAWS project. The consensus of our legislative body is to not be involved with the PAWS project in any capacity. There are no plans to pass a resolution or bring before the City Council the interlocal agreement regarding the PAWS project. It would be premature to make any commitment to a system we do not feel will benefit the City of Gering or its citizens.

Thank you,
Lane Danielzuk
City Administrator
City of Gering

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A10

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APPENDIX A10-

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A11

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APPENDIX A11-1

PAWS RAW WATER SUPPLY - RESERVOIRS AND PIPELINE

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Feb '18

Jorgensen Portion/Work – PAWS Level II

Transmission and Storage Overview

A part of the PAWS project includes exploring alternative methods and routes of conveying water from a storage location to the transmission line connection southeast of Guernsey Wyoming. One of these methods includes tapping into Glendo Reservoir and running a transmission line over 20 miles into Guernsey. Two potential routes were identified during this analysis of the project and cost opinions were developed for both.

Another means of storing and conveying water involves the creation of a storage reservoir to be filled during the winter months that would serve as the source of water for downstream users. Multiple dam sites were identified at potential reservoir areas and separately evaluated using metrics including storage capacity, accessibility, conveyance from source and property ownership among others. The reservoirs were assigned a score in each metric category to evaluate them. A site visit was also conducted in order to visit each proposed reservoir site and further refine the reservoir site feasibility. Using these metrics and knowledge gained from onsite observations, the selections were narrowed down to the two best options for which cost estimates were compiled. These include the Whalen Canyon Reservoir and Warm Springs Canyon Reservoir.

Within each option for storage and transmission, several items were evaluated to identify suitable and non-suitable locations. A general overview of the geology was reviewed with respect to the transmission lines as well as the most suitable storage locations. Both potential transmission line routes and storage reservoir locations were evaluated with respect to geological challenges and a matrix of other factors. The matrix of factors include items such as potential accessibility, property ownership, environmental and cultural issues.

Glendo Reservoir to Guernsey WY Transmission Line

The transmission line intake from Glendo Reservoir is proposed to be in the vicinity of the intake for the existing hydraulic power plant. A booster pump station is required to pump water over the hill approximately 165 feet above the water surface of Glendo Reservoir. The water pressure will be elevated at this location such that no additional booster pumps will be needed throughout the rest of the transmission line.

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Transmission Line Alignment No. 1 proceeds west along Glendo Park Road crossing the train tracks, and then following them south along the river for approximately 18 miles before diverging onto Skyline Drive. This route avoids the railroad tunnels. The waterline then realigns parallel to the train tracks after 2 miles and crosses the North Platte at the northwest edge of Guernsey. From there the line follows the tracks to the south end of town where it turns down US HWY 26 for the last half mile to the transmission connection point identified in the PAWS Appraisal Study (near the Guernsey cemetery). Alignment No. 1 is approximately 24.0 miles in length from the reservoir intake to the transmission connection where a water treatment plant could be located. This alignment has certain constructability challenges as it follows the railroad for much of its length in a tight canyon along the river. This alignment does contain a relatively gradual decrease in grade along the length of its run with only a couple significant elevation changes.

Transmission Alignment No. 2 utilizes the same intake location as Alignment No. 1 but takes a more direct route towards the railroad from the Glendo Reservoir Embankment. As the transmission line proceeds south, it stays west of the railroad and farther above the canyon floor. The route proceeds cross country along two-track roadways for approximately 20 miles until meeting back up with the railroad before crossing the North Platte into Guernsey. This alignment continues north and east of the railroad making its way the final two miles to the connection point of the transmission line. This route includes a much more construction friendly alignment with less crossings and railroad right of way impacts. This alignment does include more significant elevation changes and will likely require very high pressure rated pipe to withstand the corresponding pressure fluctuations. Alignment No. 2 is approximately 22.8 miles in length from the reservoir intake to the transmission connection where a water treatment plant could be located.

The transmission line intake from Glendo Reservoir that is proposed includes many appurtenances and design components that need to be further defined/designed in order to conduct a full cost opinion. The Glendo outlet works would need to be constructed to provide the required amount of water volume and keep any unwanted particulates out. The large 42” transmission line would include butterfly valves for isolation at the booster pump station and at the water treatment plant. Manway access points are needed for maintenance and repair at one mile intervals throughout the length of the pipe run. Air releases are to be employed at high points and blow off assemblies at low points. At river, railroad, and major roadway crossings, 60” bored steel casing would be utilized to minimize impacts of the construction to existing infrastructure and to avoid operational interruptions. Alignment No. 1 has a significant amount of cutoff wall estimated to help with groundwater management as a large portion of the alignment is near the river. As both alignments

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pass through long stretches of private lands, acquisition of rights-of-way will be key for the project implementation. These bid items have been assembled along with other associated project costs to form a preliminary cost opinion. Costs were largely derived from bid tabulations of jobs of similar size and scope currently under construction in Wyoming.

The two proposed transmission line alignments pass through a number of geologic units due to their length. The transmission line alignments are found on the Preliminary Digital Surficial Geologic Map of the Torrington 30'X60' Quadrangle, Goshen and Platte Counties published by Hallberg, et al, in 1999. The geologic map indicates the landscape around at the project site is blanketed by aeolian and alluvial deposits with scattered deposits of residuum (i.e. weathered bedrock). The alluvial and aeolian deposits range from majority clay deposits to boulders and cobbles. The residuum deposits tend to comprised of bedrock formations that have been heavily weathered at the surface, becoming more intact with depth. Though geologic structure such as faults and folds are not shown in the Preliminary Digital Surficial Geologic Map, several faults and folds are known to exist in the area of Glendo Reservoir, Guernsey Reservoir and the town of Guernsey (i.e. along the two proposed alignments.). These faults are considered to have been active prior to the beginning of the Quaternary period (i.e. 1.6 million years ago) and are currently considered old and inactive by the United State Geological Survey (USGS).

Whalen Canyon Reservoir

Whalen Canyon Reservoir has been identified as one of two viable options for a new storage reservoir. Whalen Canyon is within a privately owned piece of land north east of Guernsey. The area lends itself to provide a large amount of water storage with a relatively small earthen dam. The site is capable of meeting the projected storage to accommodate the required water demands.

Construction of the reservoir would entail an earthen dam located strategically in the canyon between natural topographical features. The identified dam is estimated to be 1335' in length, 50 in height and 30' wide at the crest with 3:1 slopes. Water would be pumped from the North Platte approximately 1.6 miles immediately south of Whalen Canyon Reservoir Dam to the storage reservoir. This would require a river intake structure and associated pumping station. The reservoir would be filled in the winter months as outlined in the PAWS Appraisal Investigation. The water line filling the reservoir would be a 16" diameter line running to the reservoir from the river intake through the pump station. A water treatment plant would be located just downstream of the dam embankment. A 42" transmission line would run from the reservoir to the water treatment plant, and then through another pumping station to transmit water to the connection point due south of

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the proposed reservoir. This run would be approximately 1.3 miles long. With the transmission line connection being directly south of Whalen Canyon Reservoir, Guernsey would need a separate line to provide water to its municipal system along with a booster pump station. This line is estimated to be a 16" line running approximately 1.8 miles from the transmission connection point to the Guernsey cemetery.

The Whalen Canyon reservoir dam includes considerable foundation excavation and preparation, embankment fill, rip-rap, spillways, inlet/outlet works and the purchase of land to accommodate the reservoir. Dam costs were referenced using other WWDC reservoir and dam study cost estimates taking into account site specific considerations.

The transmission line from Whalen Canyon reservoir to the connection point includes many appurtenances and design components that need to be determined/designed in order to conduct a full cost opinion. The large 42" transmission line would include butterfly valves for isolation at the booster pump station and at the water treatment plant. Manway access points are needed for maintenance and repair at one mile intervals throughout the pipe run. Air releases are to be placed at high points and blow off assemblies at low points. At the railroad and US 26 Highway crossings, 60" bored steel casing would be utilized to minimize impacts of the construction on existing infrastructure and operational interruptions. As the alignment passes through long stretches of private lands, aquisition of ROW will be key for the project to get off of the ground. These bid items have been assembled along with other associated project costs to form a preliminary cost opinion. Costs were largely derived from bid tabulations of jobs of similar size and scope currently under construction in Wyoming.

The proposed location for the Whalen Canyon reservoir is found on the Geologic Map of the Guernsey Quadrangle, Platte and Goshen Counties, Wyoming by Harris, et al, published in 2005. The map shows the location of surface deposits, as well as bedrock units, and geologic structures (i.e. faults and folds). The map indicates the proposed reservoir is mainly located on quaternary aged silty loess (Q_{sl}), with the outer extremities encountering quaternary aged gravel deposits (Q_g) as well as outcrops of the Miocene aged Arikaree Formation (T_a). Loess is an aeolian (i.e. windblown) silt that has varying amounts of fine sand and clay content. Loess is also known to exhibit substantial hydro-collapse when inundated under load. The thickness of the loess deposits may vary from inches to over 30 feet thick, with the thickest deposits expected to be found in the low-lying valleys. The mapped gravel deposits are an alluvial deposit (i.e. water laid) placed by the ancestral North Platte River and are known to contain clasts ranging in size from boulders to

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pebbles with interbedded layers of sand. The gravels may reach thicknesses is excess of 150 feet thick. The Arkaree formations is mainly made up of a gray tuffaceous sandstone mixed with occasional limestone deposits. Specific laboratory tests are needed in order to better classify the site-specific site soils. The north western portion of the nearby Guernsey Reservoir appears to lie above similar geologic deposits consisting of loess and gravels at the surface, underlain by a deposition of the Arkaree Formation. Several pre-Quaternary aged thrust faults are mapped in the area of the project site, though they are considered old and inactive by the USGS.

Warm Springs Reservoir

Warm Springs Reservoir was identified as the other viable storage reservoir option in the PAWS Appraisal Report. Warm Spring Reservoir is within a parcel of land owned by the Wyoming Military Department (military) and is located southwest of Guernsey Wyoming. The ownership of this parcel is advantageous in that if the military would allow the reservoir, there is a single public entity to work with rather than several land owners. This is provided that the military department allows the reservoir to be developed on their. This area also lends itself to provide a large amount of water storage with a relatively small earthen dam. The location is also advantageous as it is in very close proximity to the North Platte River and the transmission connection line.

The Warm Springs Reservoir would include parallel inlet and outlet lines in a configuration similar to that of Whalen Canyon Reservoir. The inlet line would include an intake in the North Platte River with a booster pump station pumping water up the 16” line approximately 115 feet to fill the reservoir during the winter months and at other times if needed. As water is demanded, an outlet works in the Warm Springs reservoir will convey water to a water treatment plant just downstream of the dam and then through a booster pump station into a 42” line that has a connection near the Guernsey Cemetery. The 42” line from the reservoir will parallel the inlet line until it reaches the river and then head east to South Guernsey Road. From there, the line will proceed north to US Hwy 26, and then east along US 26 to the connection point. The length of this line will be approximately 3.5 miles. A booster pump is required on this line as well to push water to the connection point on the northeast side of Guernsey. This alignment was chosen as the most direct route outside of the Military Department Base and airport. A much shorter alignment could be utilized if these lands could be crossed. Initial discussions with the Military Department suggest that a water line through the main base and airport area would likely not be permissible. Further discussion is needed to determine the feasibility of crossing these lands.

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Construction of the reservoir would entail an earthen dam located strategically in the canyon between natural topographical features. The identified dam is estimated to be 1050' in length, 50 in height and 30' wide at the crest with 3:1 slopes. Water would be pumped from the North Platte approximately 0.8 miles to the storage reservoir. This would require a river intake structure and associated pumping station. The reservoir would be filled in the winter months as outlined in the PAWS Appraisal Investigation. This reservoir fill line would be a 16" diameter line running to the reservoir from the river intake through the pump station and into Warm Springs Reservoir.

The transmission line from Warm Springs reservoir to the connection point includes many appurtenances and design components that need to be determined/designed in order to conduct a full cost opinion. The large 42" transmission line would include butterfly valves for isolation at the booster pump station and at the water treatment plant. Manway access points are needed for maintenance and repair at one mile intervals throughout length of the pipe run. Air releases are to be included at high points and blow off assemblies at low points. At the river, railroad and US 26 Highway crossings, 60" bored steel casing would be utilized to minimize impacts of the construction to existing infrastructure. The alignment passes through private lands and public roads. Acquisition of rights-of-way will be key for the project implementation. These bid items have been assembled along with other associated project costs to form a preliminary cost opinion. Costs were largely derived from bid tabulations of jobs of similar size and scope currently under construction in Wyoming.

The proposed location for the Warm Springs reservoir is found on the Geologic Map of the Guernsey Reservoir Quadrangle, Platte County, Wyoming by Harris, et al, published in 2006. The map shows the location of surface deposits, bedrock units, and geologic structures (i.e. faults and folds). The map indicates the proposed reservoir is located on the same three geologic units as the Whalen canyon reservoir: quaternary aged silty loess (Q_{sl}), quaternary aged gravel deposits (Q_g) as well as outcrops of the Miocene aged Arikaree Formation (T_a). A fourth geologic unit that was not identified near the Whalen canyon reservoir but is located at proposed Warm Springs Reservoir is quaternary aged alluvial deposits (Q_{al}) primarily made up of gravel, sand and clay placed along the North Platte River and smaller intermittent streams. Soil thickness and physical characteristics of the loess, gravel deposits, and Arikaree formations are assumed to be the same as the Whalen canyon reservoir. Specific laboratory tests are needed in order to better classify the site-specific site soils. It is also assumed the underlying geologic deposits (i.e. bedrock) are similar to those that lie beneath the Guernsey Reservoir. Several pre-Quaternary aged thrust faults are mapped in the area of the project site, though they are considered old and inactive by the USGS.

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PAWS Reservoir Storage						
Reservoir	Storage Capacity (AC-FT)	Max Water Depth (ft)	Embankment Length (FT)	Surface Area (AC)	Max Water Elev. (ft)	Existing ground Elev. (ft)
Cottonwood	9190	48	2990	477	4568	4520
Whalen Canyon	5369	50	1335	285	4440	4390
Warm Springs 70' Dam	4543	70	1260	175	4450	4380
Warm Springs Canyon	3142	50	950	102	4430	4380
Cold Spring	2186	50	1450	107	4650	4600
Cottonwood Creek	2045	50	1790	123	4620	4570
Sawmill Canyon	1754	50	1770	83	4520	4470
Emigrant Trail	705	41	510	46	4553	4503
Newel Bay	634	48	1880	126	4448	4400
Stokes Siding	612	50	600	30	4470	4420
Middle Lake	346	48	1020	20	4508	4460
Sparks Canyon	167	48	910	10	4755	4707
Fish Canyon	120	48	890	7	4601	4553

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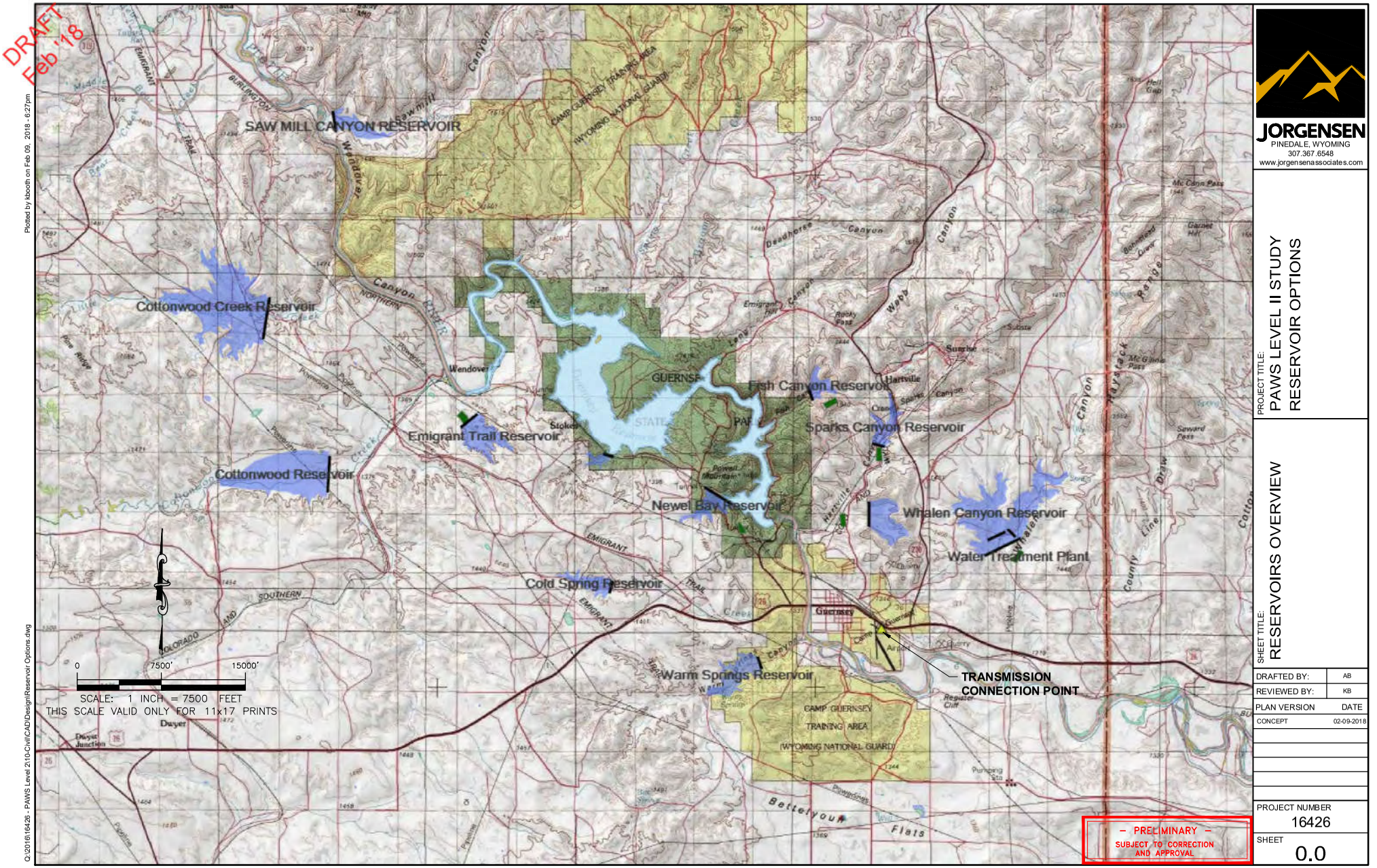
PAWS Storage Reservoir Comparison										
Reservoir Location	*Storage Capacity	Accessibility	Water Treatment Site	Conveyance from Source	Power Availability	Geotechnical Conditions	Property Ownership	Env. Constraints	Cultural Resources	Total Score
Whalen Canyon	5	3	5	4	3	4	1	4	3	42
Warm Springs Canyon	3	4	4	4	5	4	3	3	3	39
Cottonwood	5	3	4	2	5	N/A	1	2	2	34
Stokes Siding	1	4	4	5	4	N/A	4	3	3	30
Newel Bay	1	4	4	5	4	N/A	4	2	3	29
Sawmill Canyon	2	2	4	5	3	N/A	2	2	3	27
Emigrant Trail	1	5	3	4	5	N/A	1	2	2	25
Cold Spring	2	4	3	2	4	N/A	2	2	2	25
Middle Lake	1	4	4	3	4	N/A	2	2	3	25
Sparks Canyon	1	5	4	2	5	N/A	1	2	2	24
Cottonwood Creek	2	3	3	3	5	N/A	1	1	1	23
Fish Canyon	1	2	2	3	3	N/A	3	2	3	21

Note: Rating scale is from 1-5, 5 being the best rating in a category and 1 being the worst
***Storage capacity weighted at 3x other metrics**
N/A = Not Analyzed



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PROJECT TITLE:
PAWS LEVEL II STUDY
RESERVOIR OPTIONS

SHEET TITLE:
RESERVOIRS OVERVIEW

DRAFTED BY:	AB
REVIEWED BY:	KB

PLAN VERSION	DATE
CONCEPT	02-09-2018

PROJECT NUMBER
16426

SHEET
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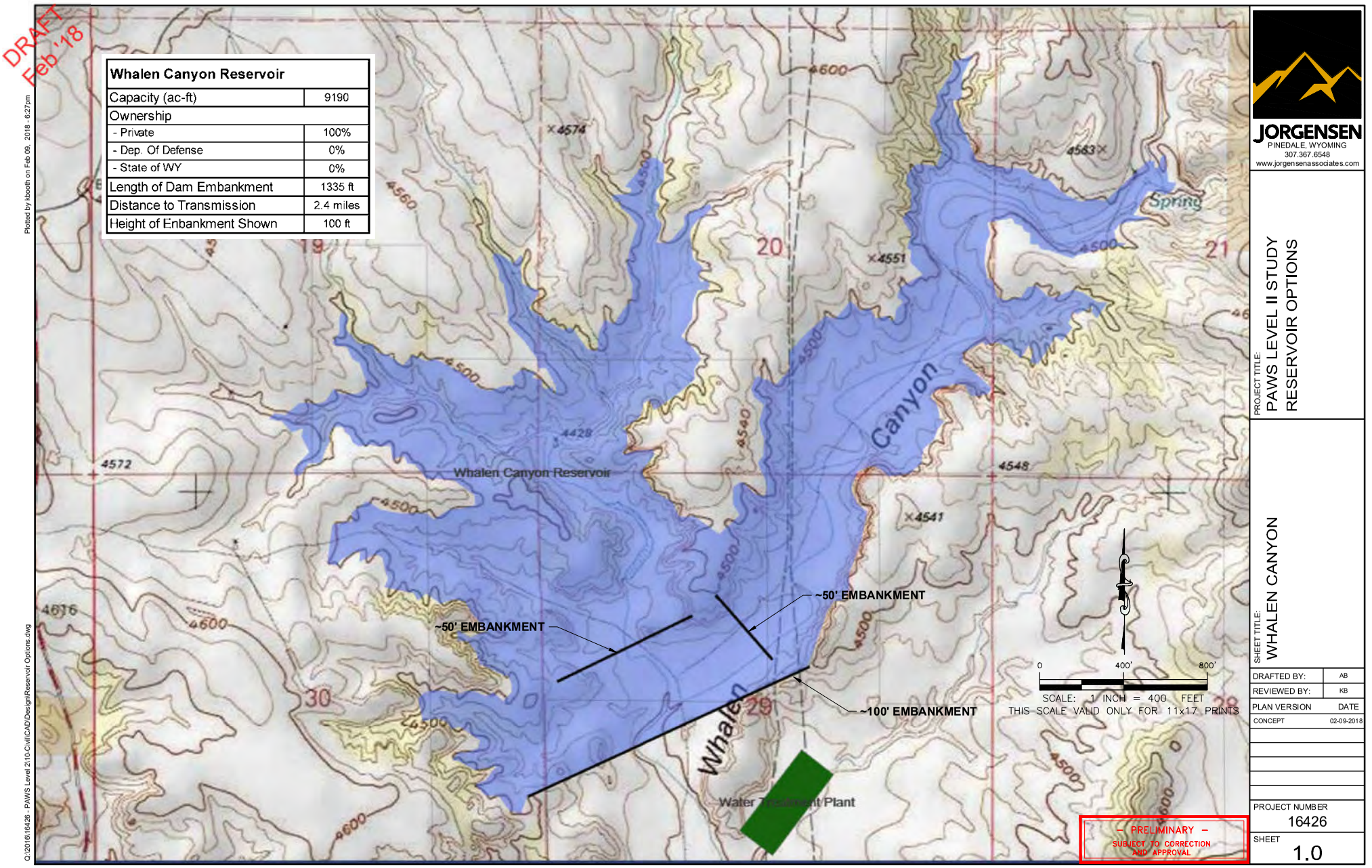
Scottsbluff Regular Meeting - 8/5/2019 Page 731 / 913



Whalen Canyon Reservoir	
Capacity (ac-ft)	9190
Ownership	
- Private	100%
- Dep. Of Defense	0%
- State of WY	0%
Length of Dam Embankment	1335 ft
Distance to Transmission	2.4 miles
Height of Enbankment Shown	100 ft

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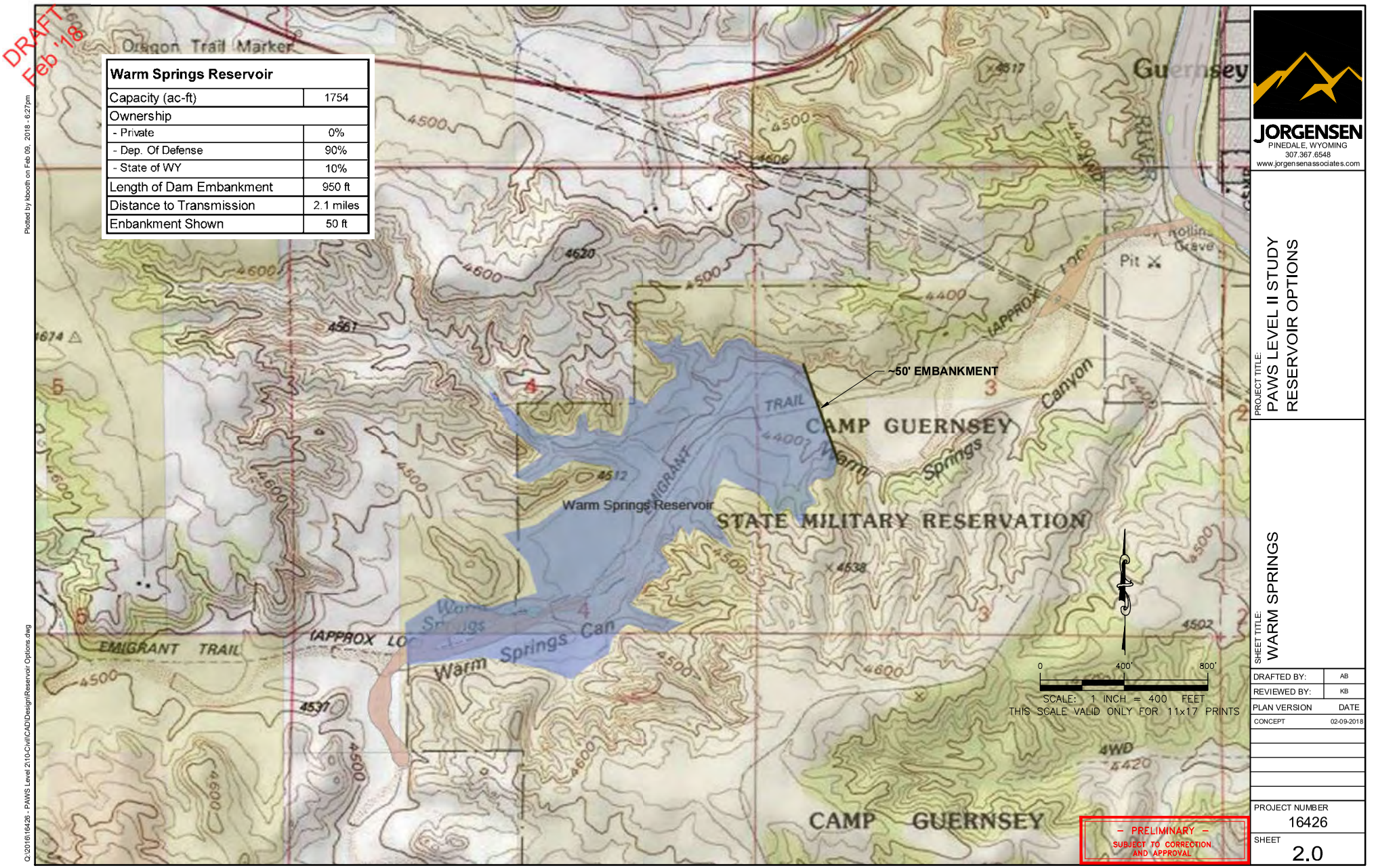

Warm Springs Reservoir	
Capacity (ac-ft)	1754
Ownership	
- Private	0%
- Dep. Of Defense	90%
- State of WY	10%
Length of Dam Embankment	950 ft
Distance to Transmission	2.1 miles
Enbankment Shown	50 ft

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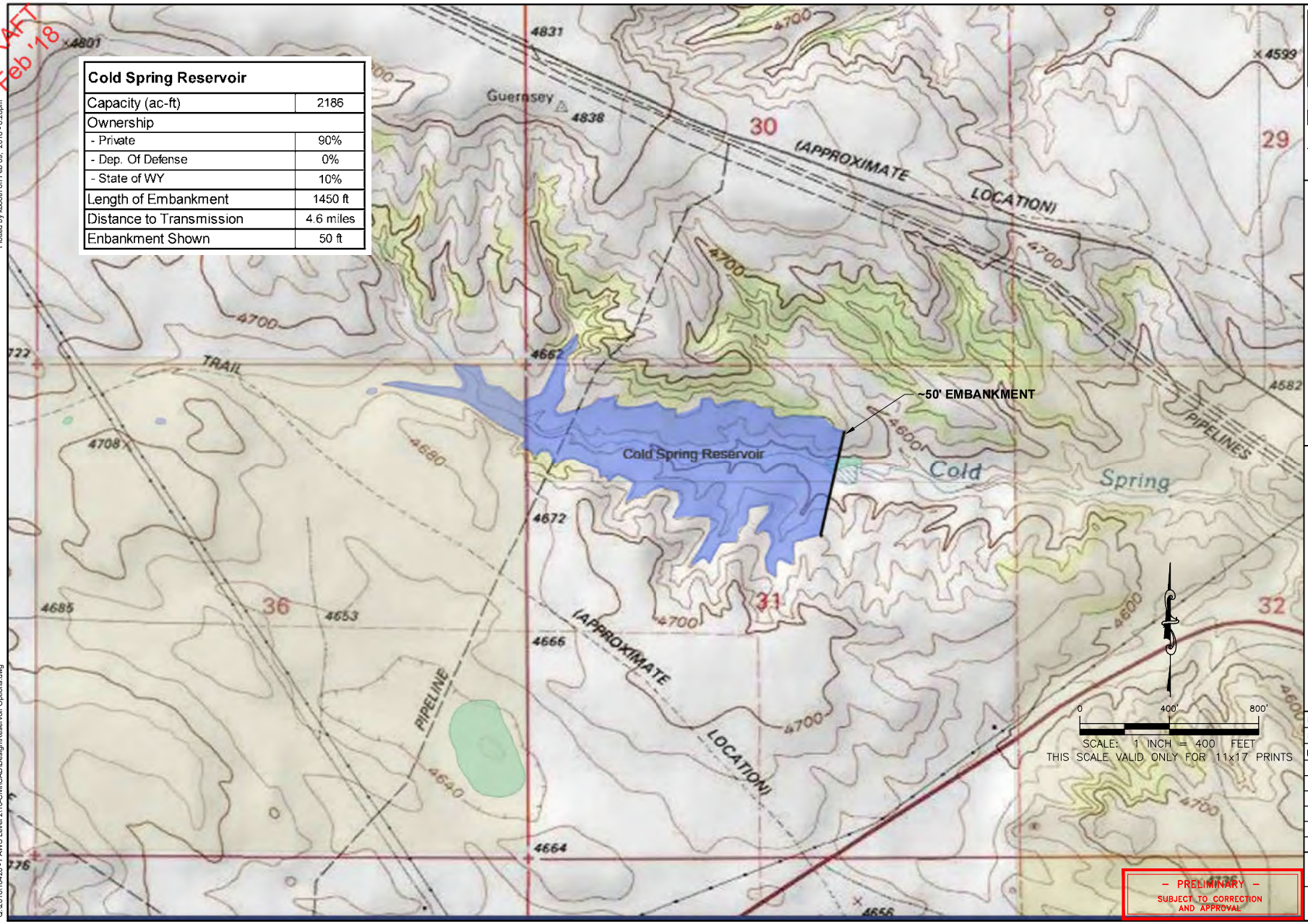
Cold Spring Reservoir	
Capacity (ac-ft)	2186
Ownership	
- Private	90%
- Dep. Of Defense	0%
- State of WY	10%
Length of Embankment	1450 ft
Distance to Transmission	4.6 miles
Enbankment Shown	50 ft



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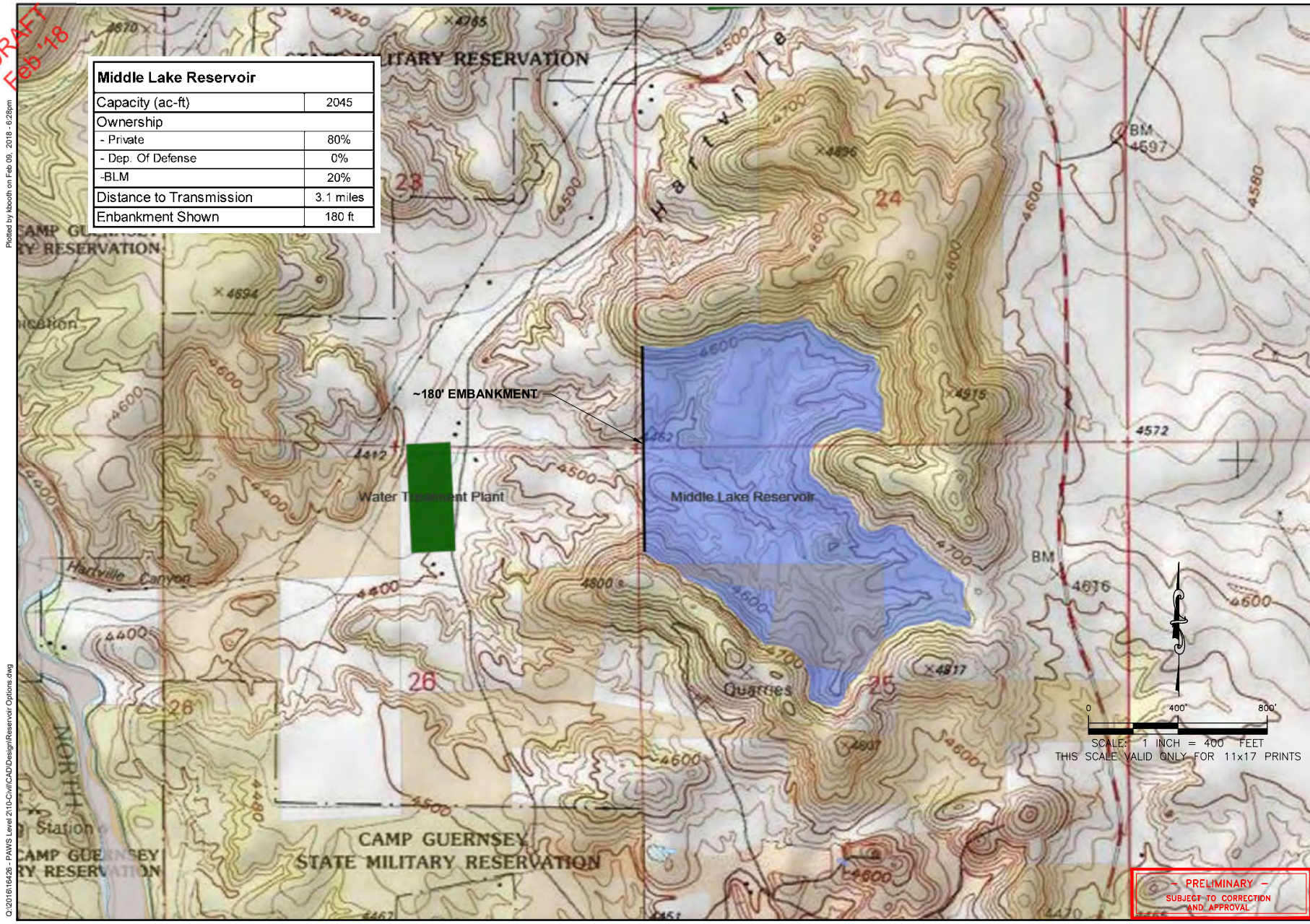
Middle Lake Reservoir	
Capacity (ac-ft)	2045
Ownership	
- Private	80%
- Dep. Of Defense	0%
-BLM	20%
Distance to Transmission	3.1 miles
Enbankment Shown	180 ft



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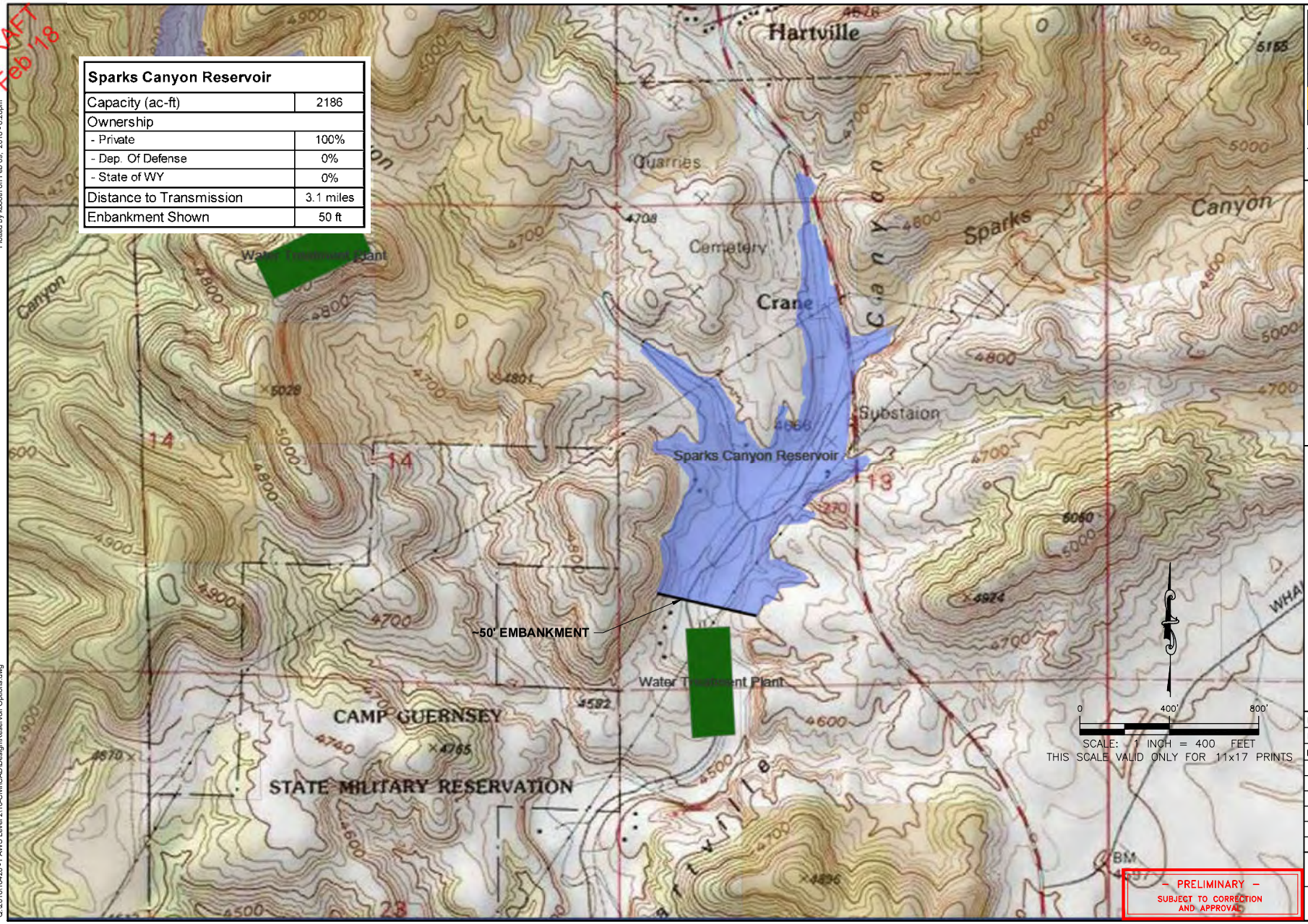
Sparks Canyon Reservoir	
Capacity (ac-ft)	2186
Ownership	
- Private	100%
- Dep. Of Defense	0%
- State of WY	0%
Distance to Transmission	3.1 miles
Enbankment Shown	50 ft



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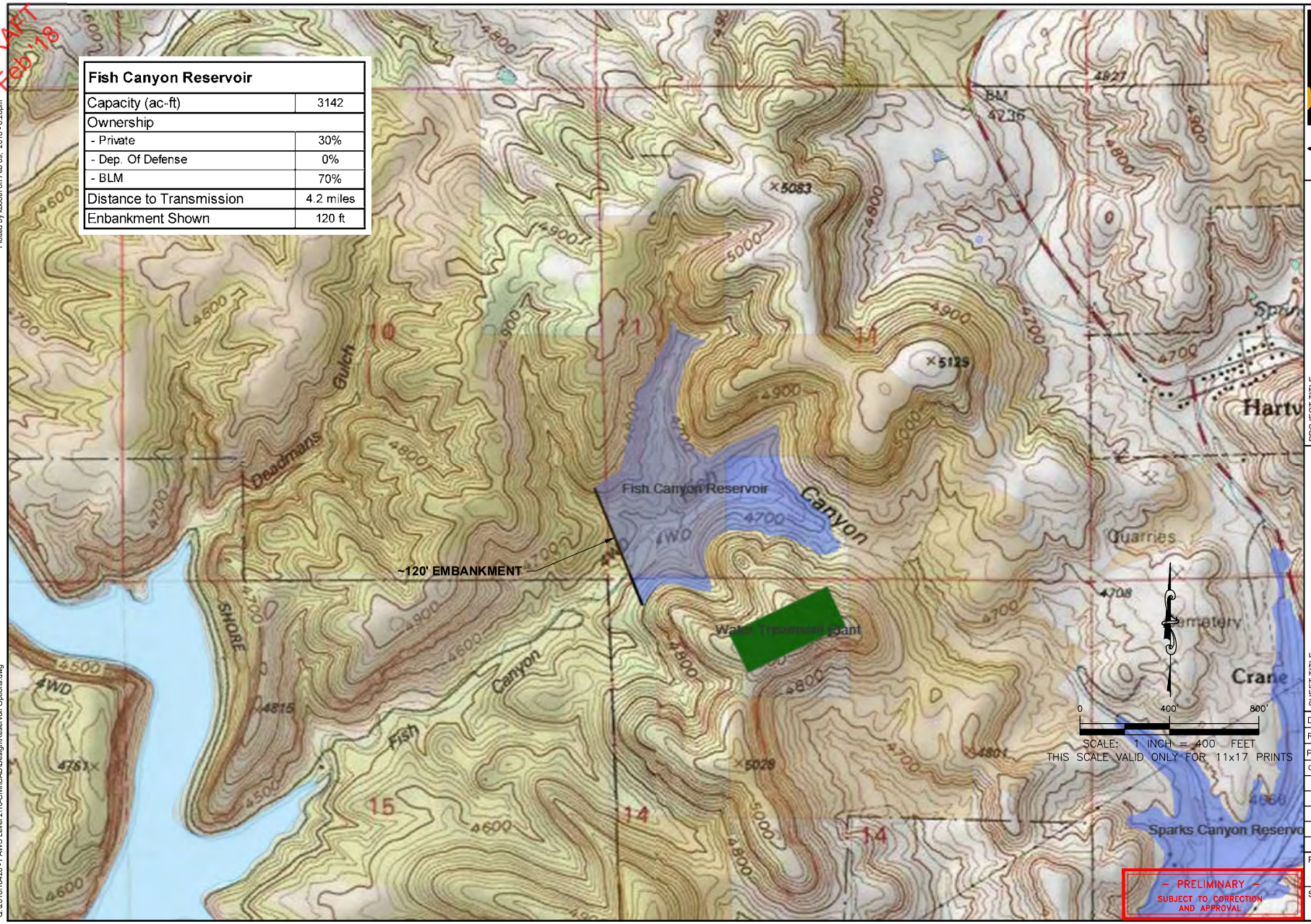
Fish Canyon Reservoir	
Capacity (ac-ft)	3142
Ownership	
- Private	30%
- Dep. Of Defense	0%
- BLM	70%
Distance to Transmission	4.2 miles
Enbankment Shown	120 ft



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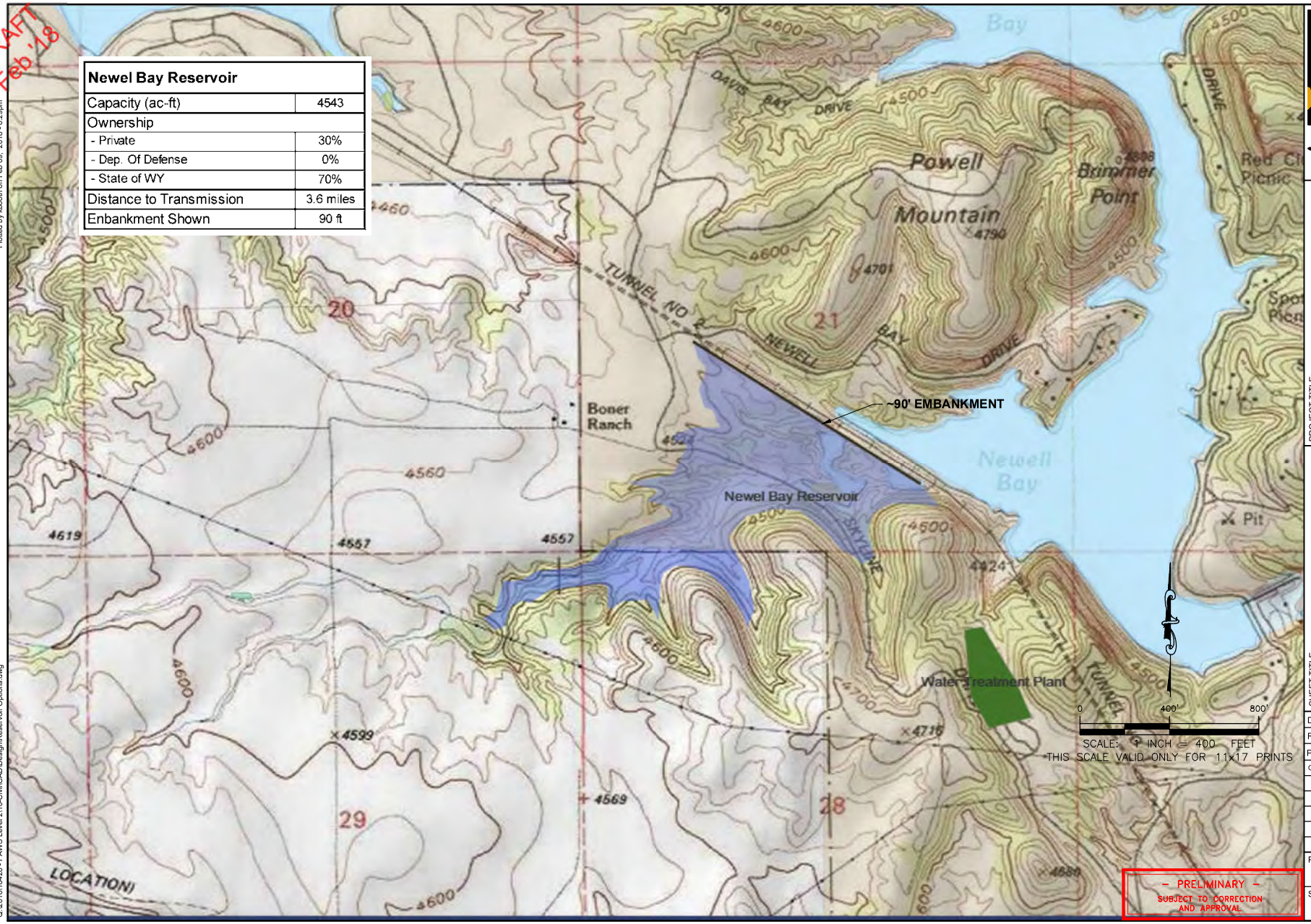
Newel Bay Reservoir	
Capacity (ac-ft)	4543
Ownership	
- Private	30%
- Dep. Of Defense	0%
- State of WY	70%
Distance to Transmission	3.6 miles
Enbankment Shown	90 ft



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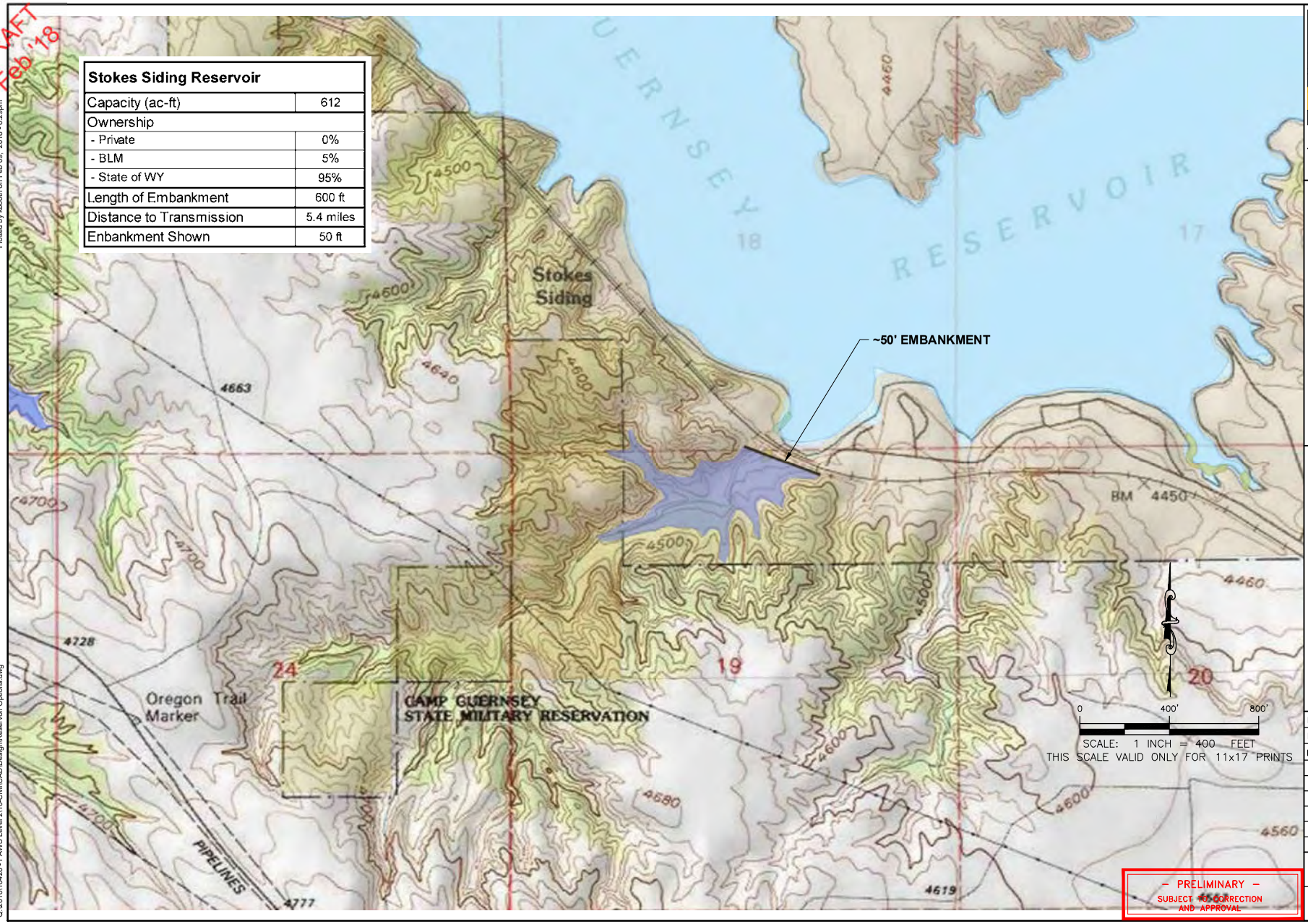
Stokes Siding Reservoir	
Capacity (ac-ft)	612
Ownership	
- Private	0%
- BLM	5%
- State of WY	95%
Length of Embankment	600 ft
Distance to Transmission	5.4 miles
Enbankment Shown	50 ft



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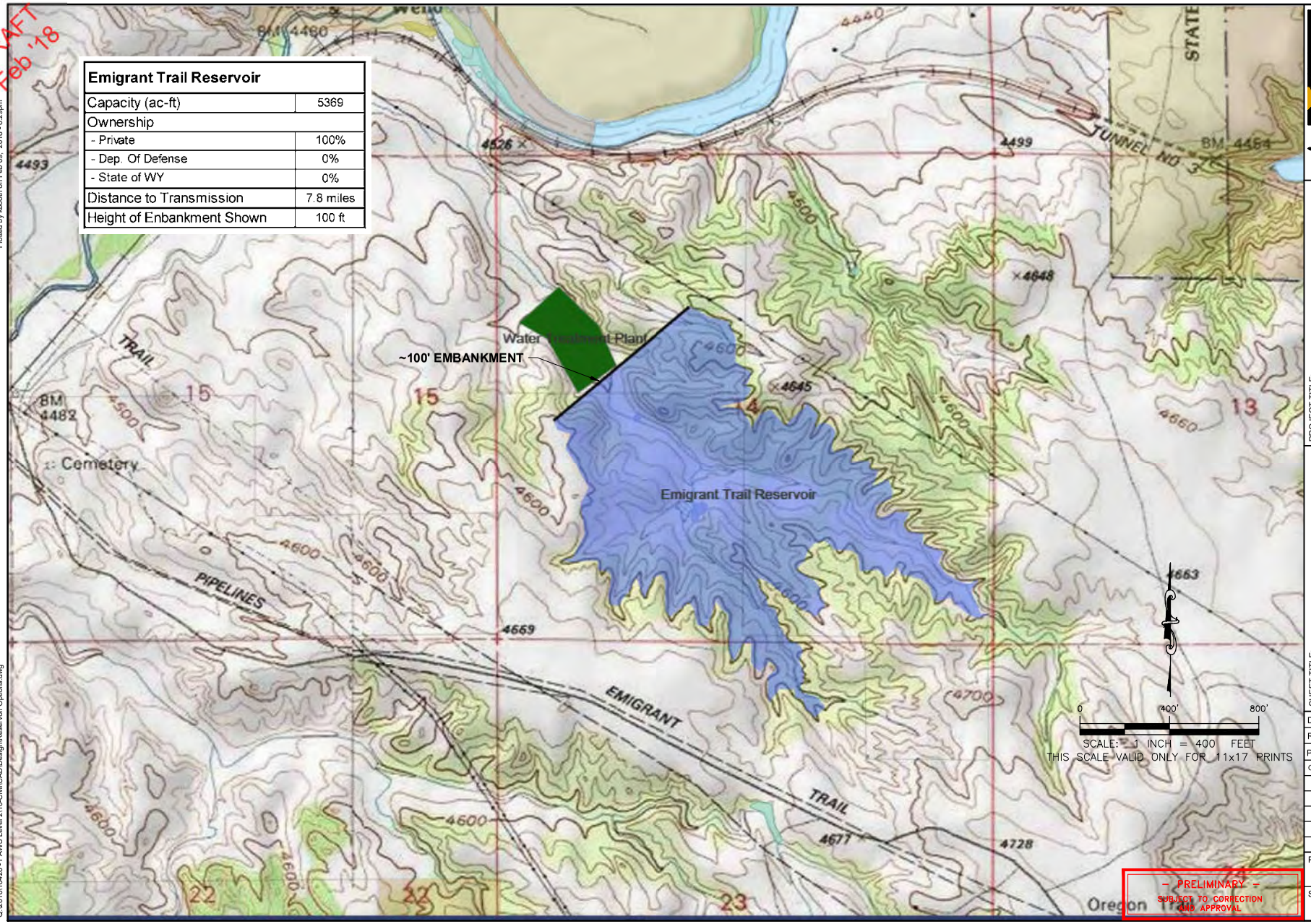
Emigrant Trail Reservoir	
Capacity (ac-ft)	5369
Ownership	
- Private	100%
- Dep. Of Defense	0%
- State of WY	0%
Distance to Transmission	7.8 miles
Height of Enbankment Shown	100 ft



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EMIGRANT TRAIL

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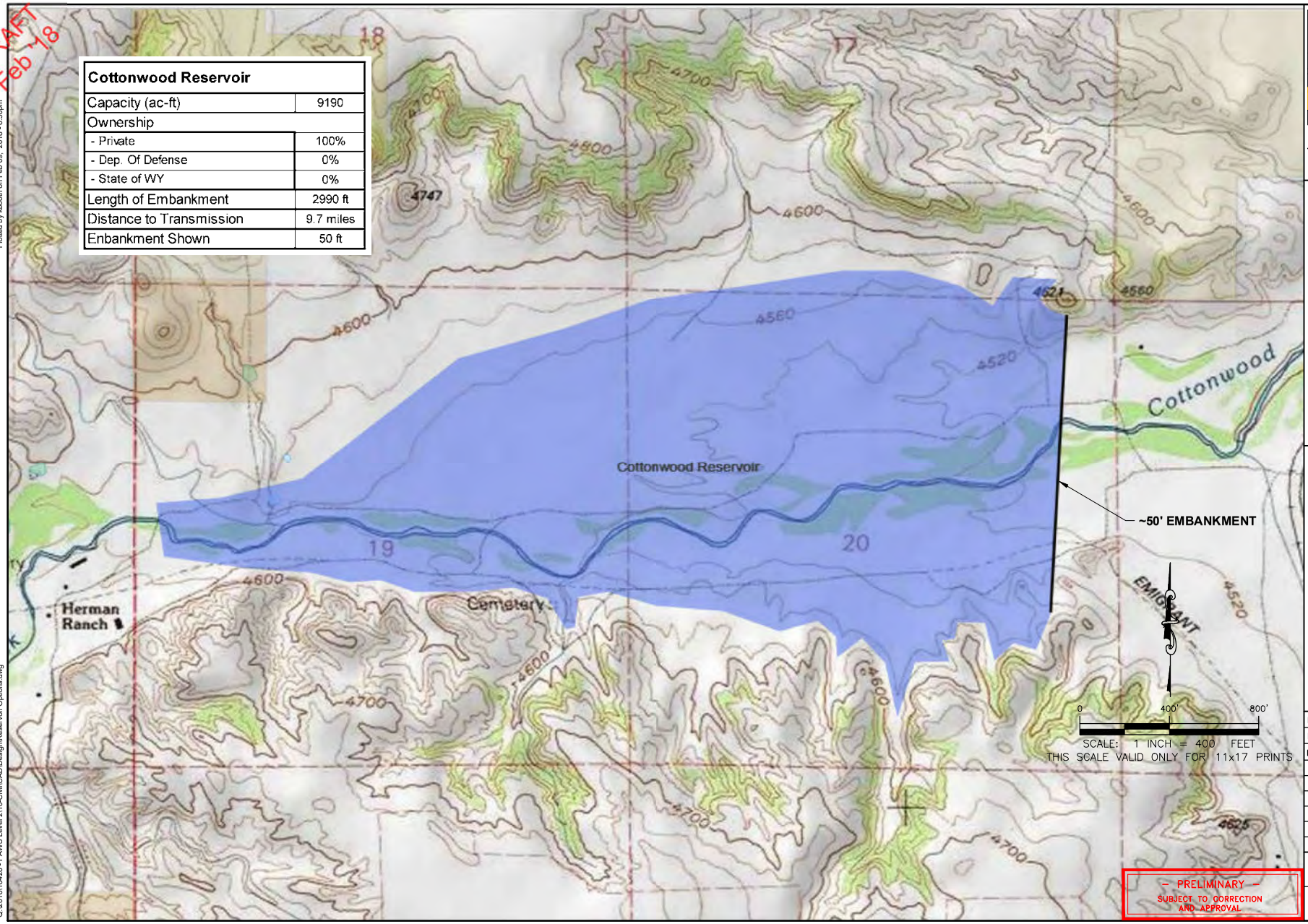
Cottonwood Reservoir	
Capacity (ac-ft)	9190
Ownership	
- Private	100%
- Dep. Of Defense	0%
- State of WY	0%
Length of Embankment	2990 ft
Distance to Transmission	9.7 miles
Enbankment Shown	50 ft



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SHEET TITLE:
COTTONWOOD

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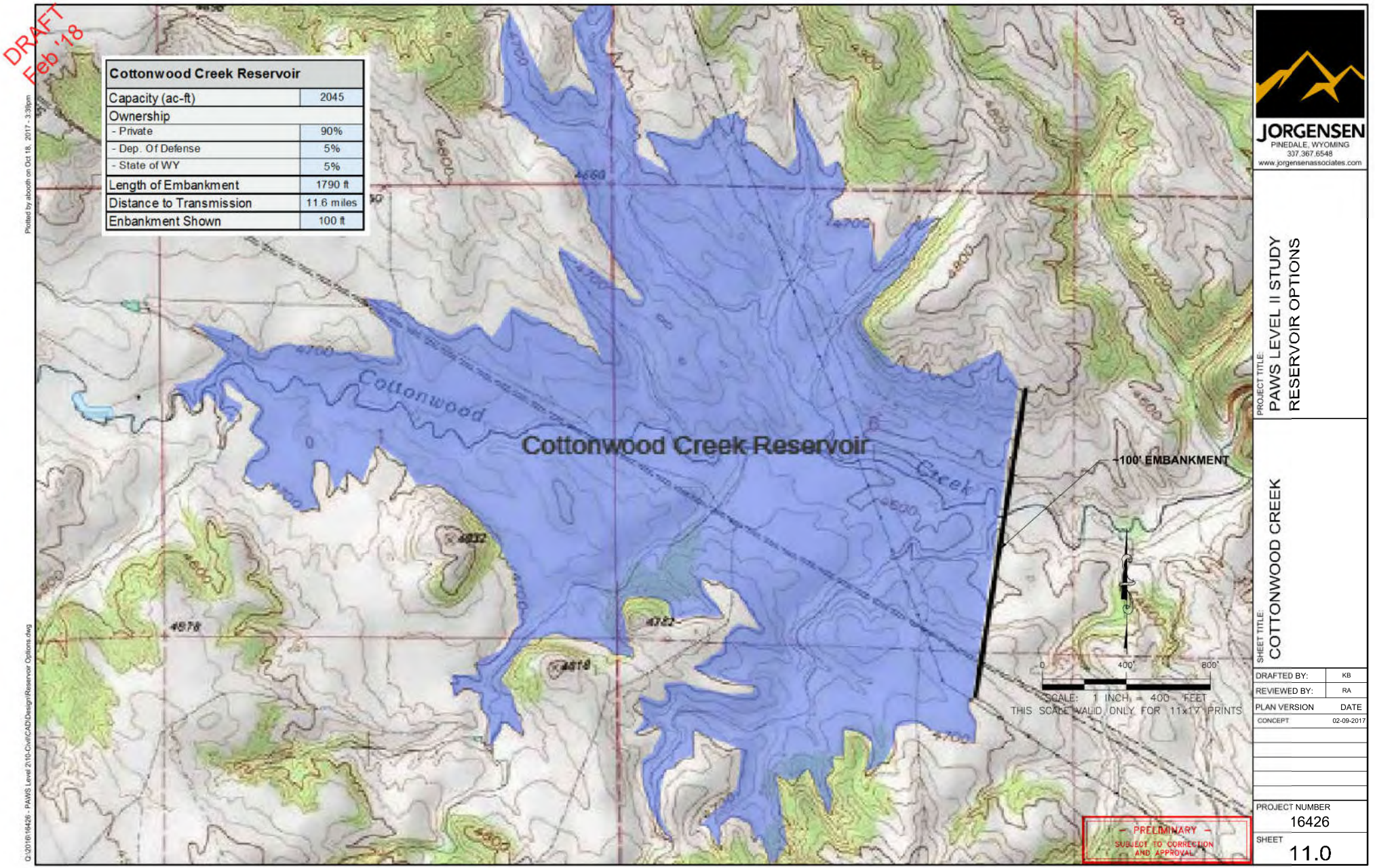
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Cottonwood Creek Reservoir
Capacity (ac-ft) 2045
Ownership
- Private 90%
- Dep. Of Defense 5%
- State of WY 5%
Length of Embankment 1790 ft
Distance to Transmission 11.6 miles
Enbankment Shown 100 ft
Cottonwood Creek Reservoir
Cottonwood Creek
~100' EMBANKMENT
0 400' 800'
SCALE: 1 INCH = 400 FEET
THIS SCALE VALID ONLY FOR 11x17 PRINTS
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SHEET TITLE:
COTTONWOOD CREEK
DRAFTED BY: KB
REVIEWED BY: RA
PLAN VERSION DATE
CONCEPT 02-09-2017
PROJECT NUMBER
16426
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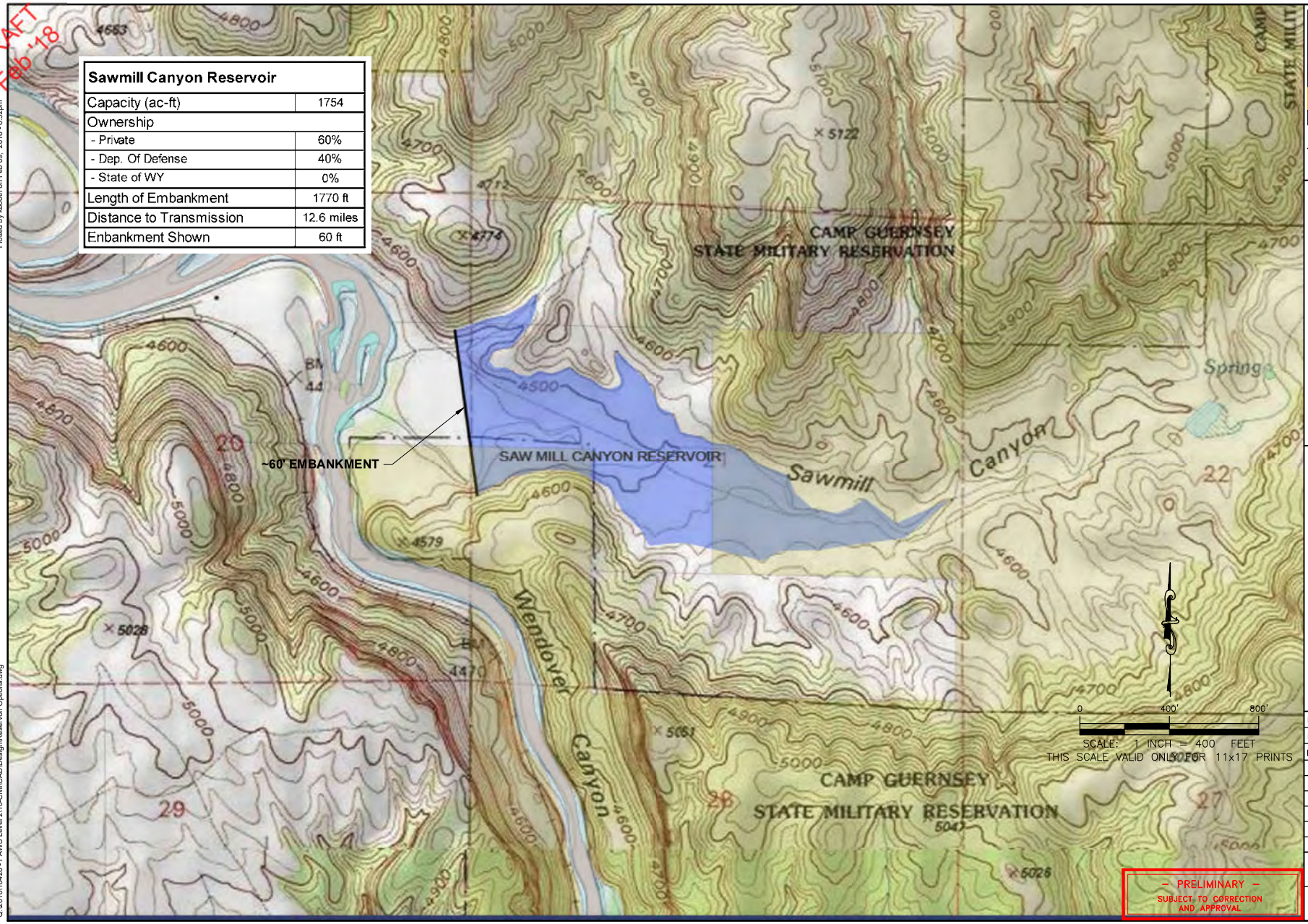
Sawmill Canyon Reservoir	
Capacity (ac-ft)	1754
Ownership	
- Private	60%
- Dep. Of Defense	40%
- State of WY	0%
Length of Embankment	1770 ft
Distance to Transmission	12.6 miles
Enbankment Shown	60 ft



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SHEET TITLE: SAWMILL CANYON

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RESERVOIR OPTIONS
SHEET TITLE:
WHALEN CANYON
RESERVOIR
DRAFTED BY: AB
REVIEWED BY: KB
PLAN VERSION DATE
CONCEPT 01-09-2018
PROJECT NUMBER
16426
SHEET
1.0
SCALE: 1 INCH = 2000 FEET
THIS SCALE VALID ONLY FOR 11x17 PRINTS
0
2000
4000
WHALEN RESERVOIR
5,369 ACRE-FT
8,300' L.F. 16" WHALEN RESERVOIR SUPPLY LINE
6,800' L.F. 42" TRANSMISSION LINE
SUPPLY LINE INTAKE
U.S. HWY 26
50' DAM EMBANKMENT
1,335 L.F. IN LENGTH
17 MGD WATER TREATMENT PLANT
CONNECTION TO
MAIN TRANSMISSION LINE
NORTH PLATTE RIVER
9,500' L.F. 12" TRANSMISSION LINE
RAILROAD
HARTVILLE HWY
CONNECTION TO
GUERNSEY DISTRIBUTION
GUERNSEY, WY
DRAFT
Feb '18
Plotted by abarraza on Jan 09, 2018 - 10:14am
O:\2016\16426 - PAWS Level 2\10-Civil\CAD\Design\Site Overview\Whalen Canyon OVERVIEW WITH WATER LINES.dwg

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RESERVOIR OPTIONS
SHEET TITLE:
WARM SPRINGS
RESERVOIR
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REVIEWED BY: KB
PLAN VERSION DATE
CONCEPT 01-09-2018
PROJECT NUMBER
16426
SHEET
2.0
SCALE: 1 INCH = 2000 FEET
THIS SCALE VALID ONLY FOR 11x17 PRINTS
0
2000
4000
U.S. HWY 26
CONNECTION TO
MAIN TRANSMISSION LINE
RAILROAD
HARTVILLE HWY
NORTH PLATTE RIVER
S WYOMING AVE
GUERNSEY, WY
U.S. HWY 26
SUPPLY LINE INTAKE
4,300' L.F. 16" WARM SPRINGS
RESERVOIR SUPPLY LINE
18,500' L.F. 42" TRANSMISSION LINE
17 MGD WATER TREATMENT PLANT
50' DAM EMBANKMENT
950 L.F. LENGTH
WARM SPRINGS RESERVOIR
3,142 ACRE-FT
DRAFT
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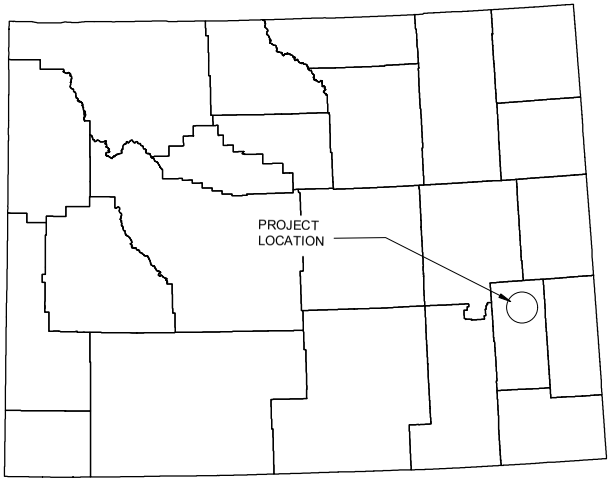
APPENDIX A11-2

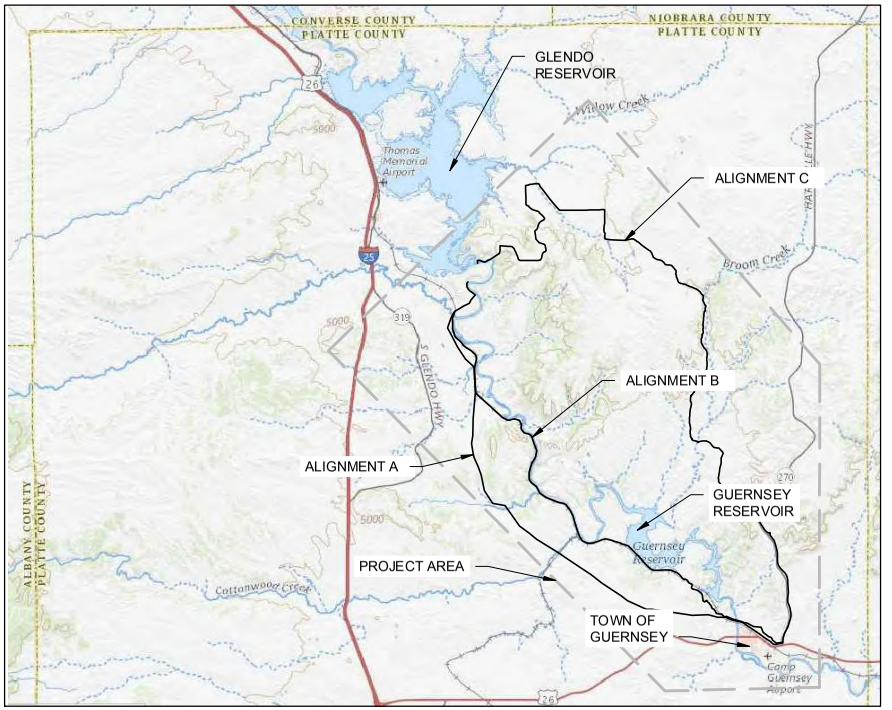
PAWS RAW WATER SUPPLY – DRAFT ALIGNMENTS A-B-C

DRAFT



STATE OF WYOMING MAP

NOT TO SCALE



VICINITY MAP
NOT TO SCALE

LOCATED WITHIN

PLATTE COUNTY, WYOMING

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

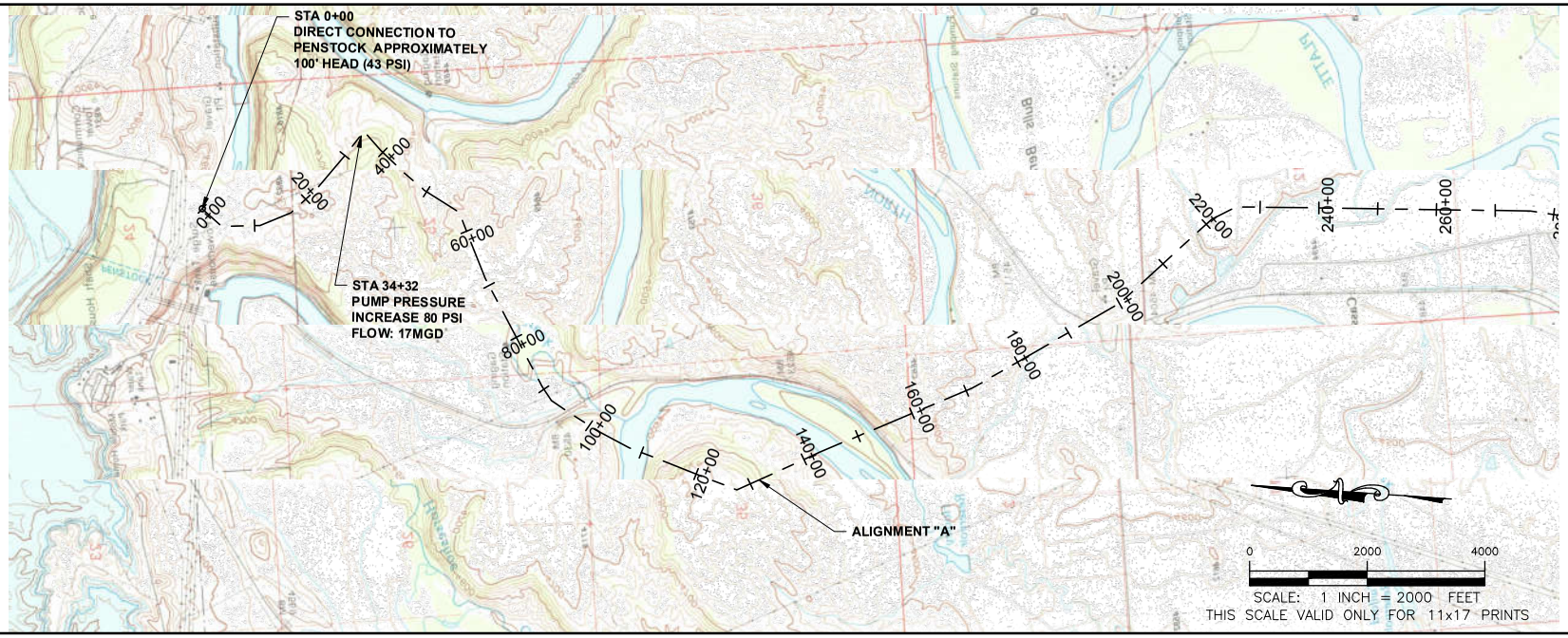
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

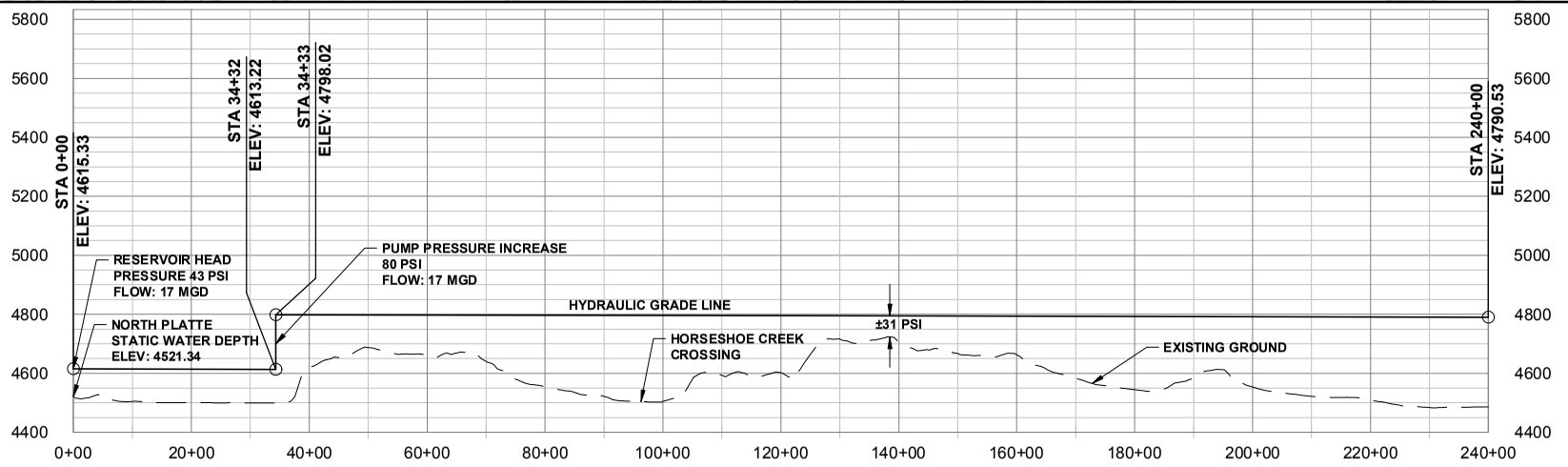
SHEET TITLE:
LOCATION MAP

DRAFTED BY:	
REVIEWED BY:	
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
COVER





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ALIGNMENT A
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
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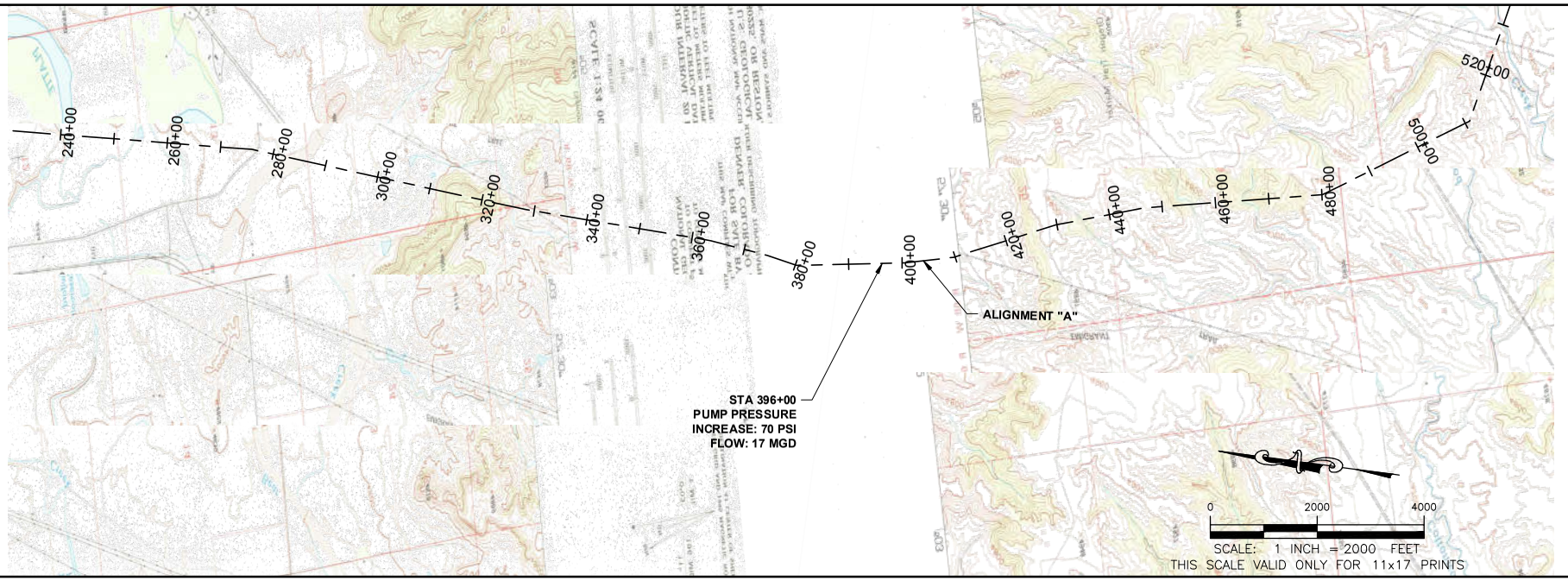
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

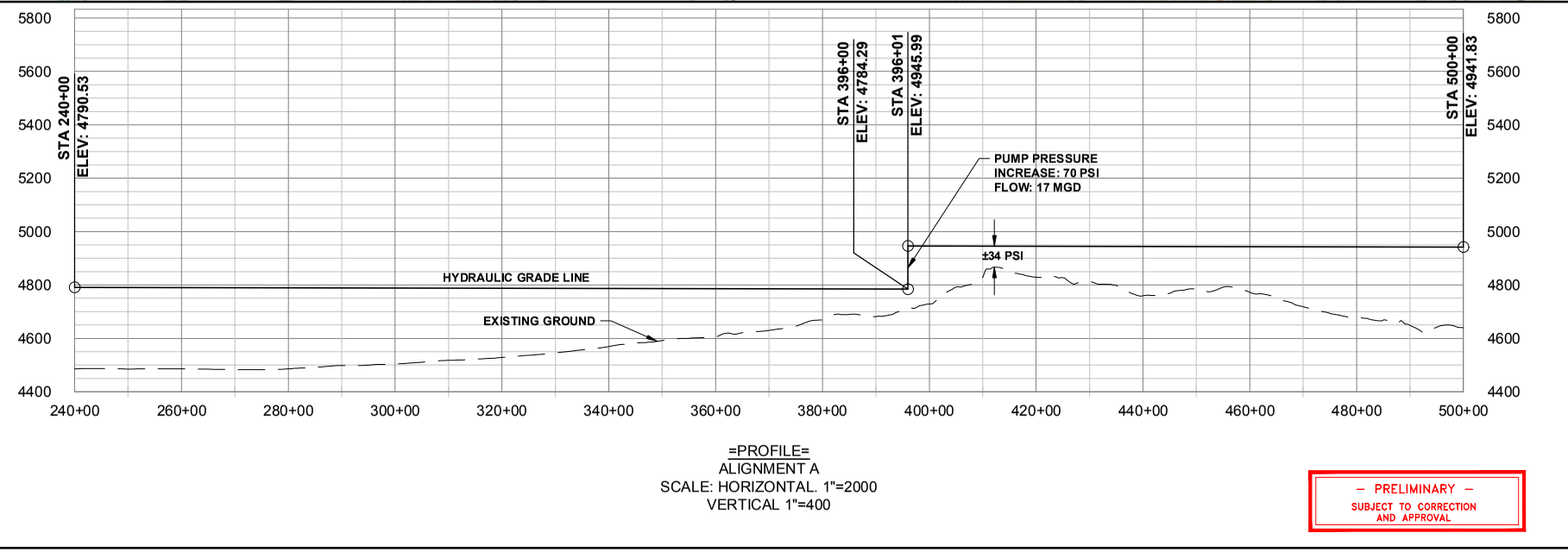
SHEET TITLE:
ALIGNMENT A STA 0+00 TO 240+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
A1





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ALIGNMENT A
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
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307.733.5150
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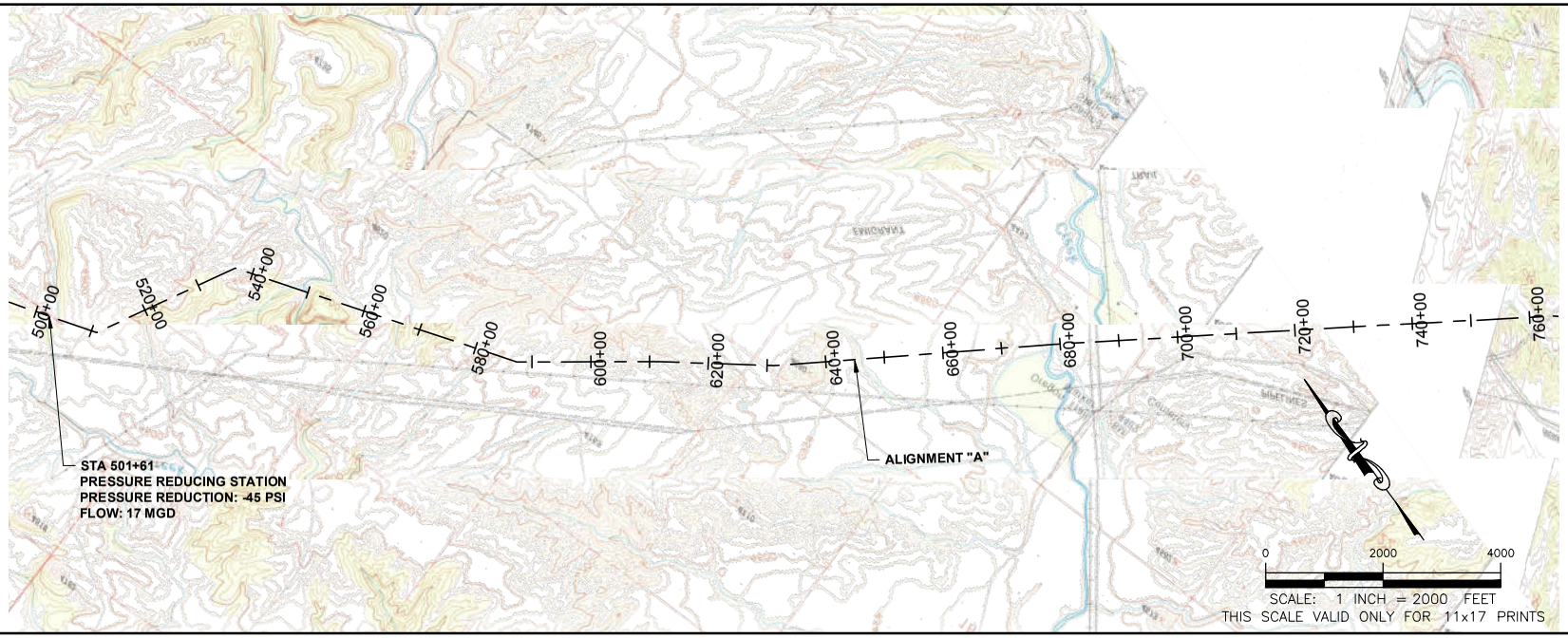
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

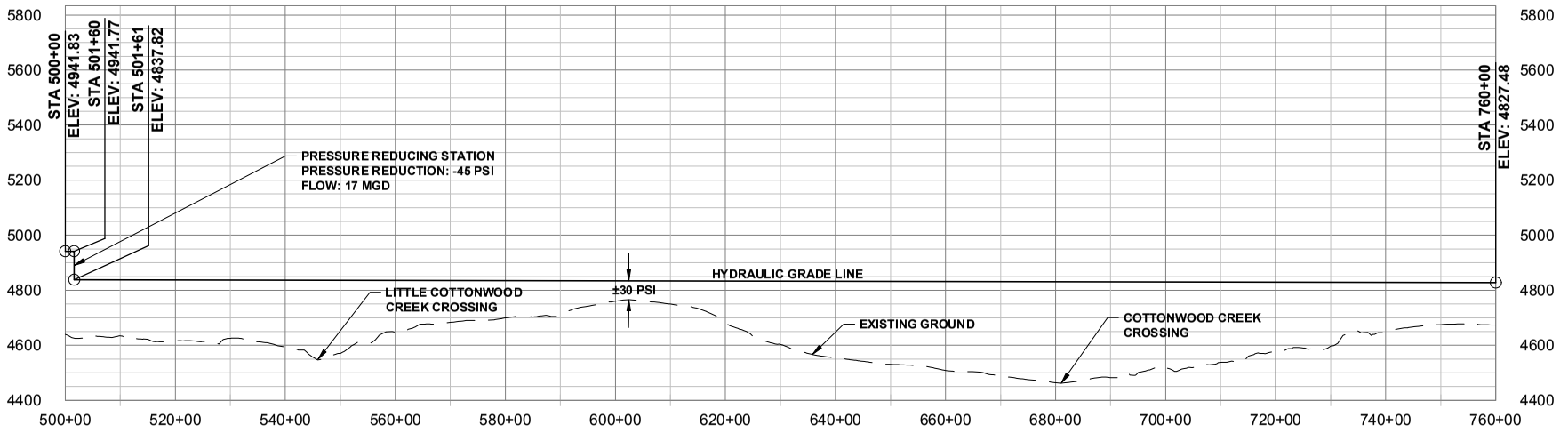
SHEET TITLE:
ALIGNMENT A STA 240+00 TO STA 500+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
A2





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ALIGNMENT A
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
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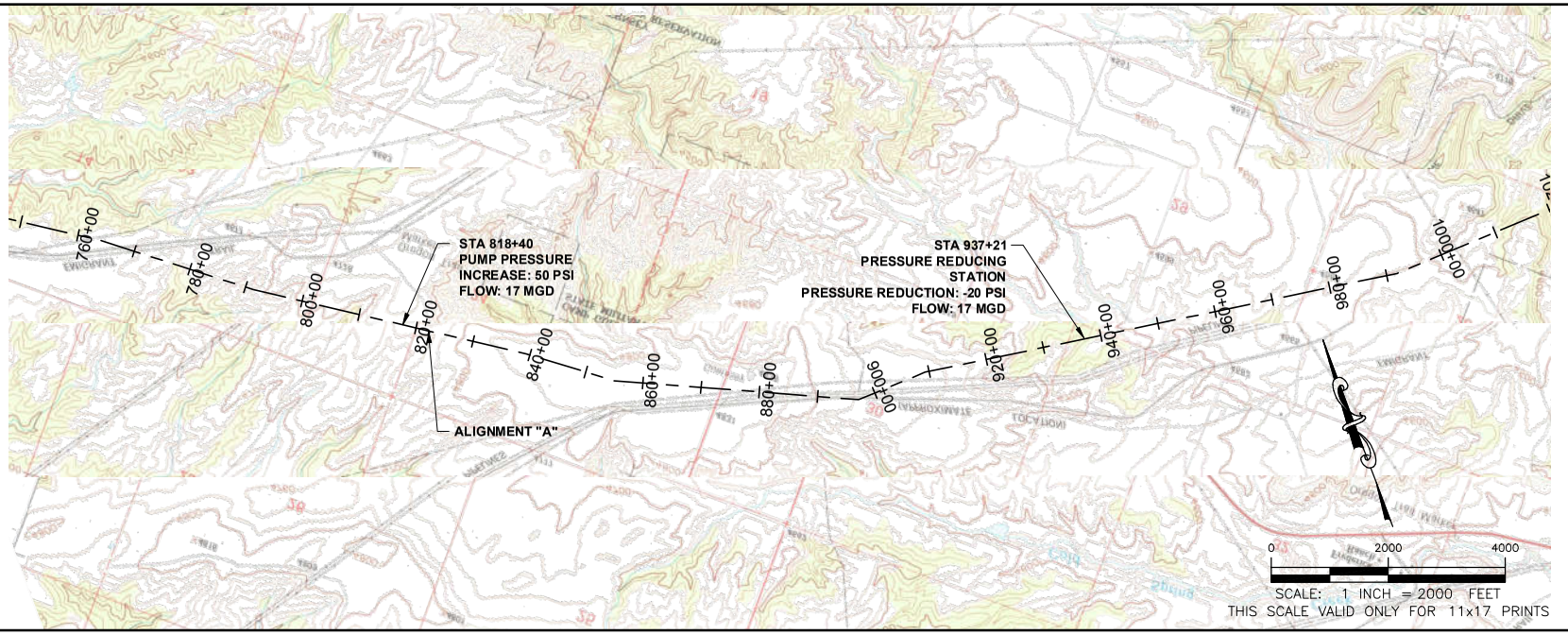
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

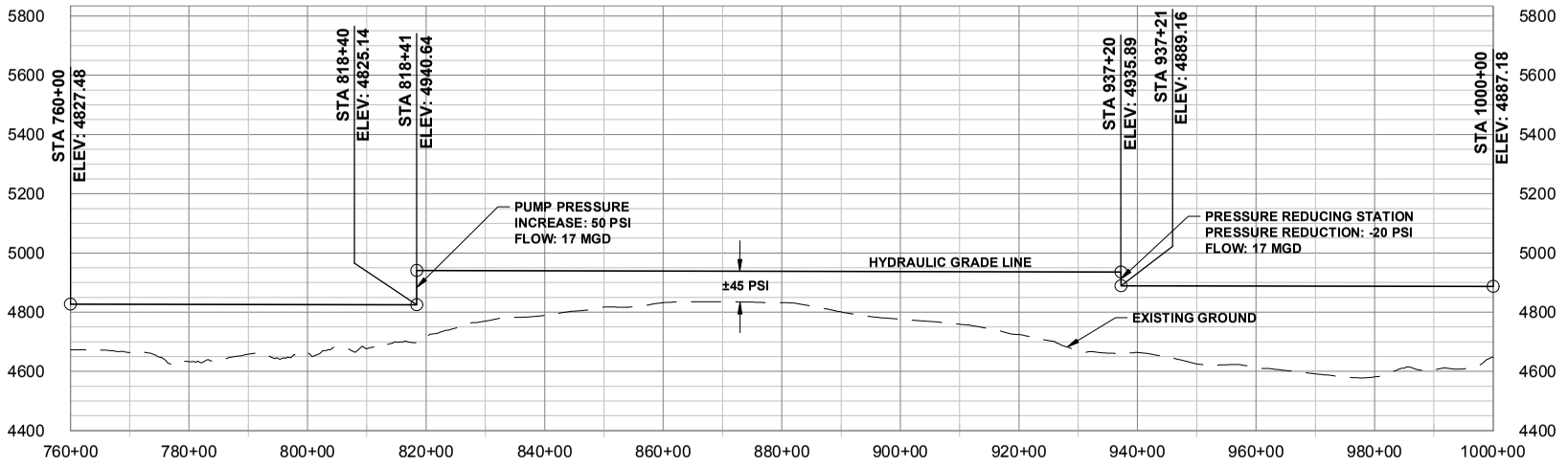
SHEET TITLE:
ALIGNMENT A STA 500+00 TO STA 760+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
A3





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ALIGNMENT A
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

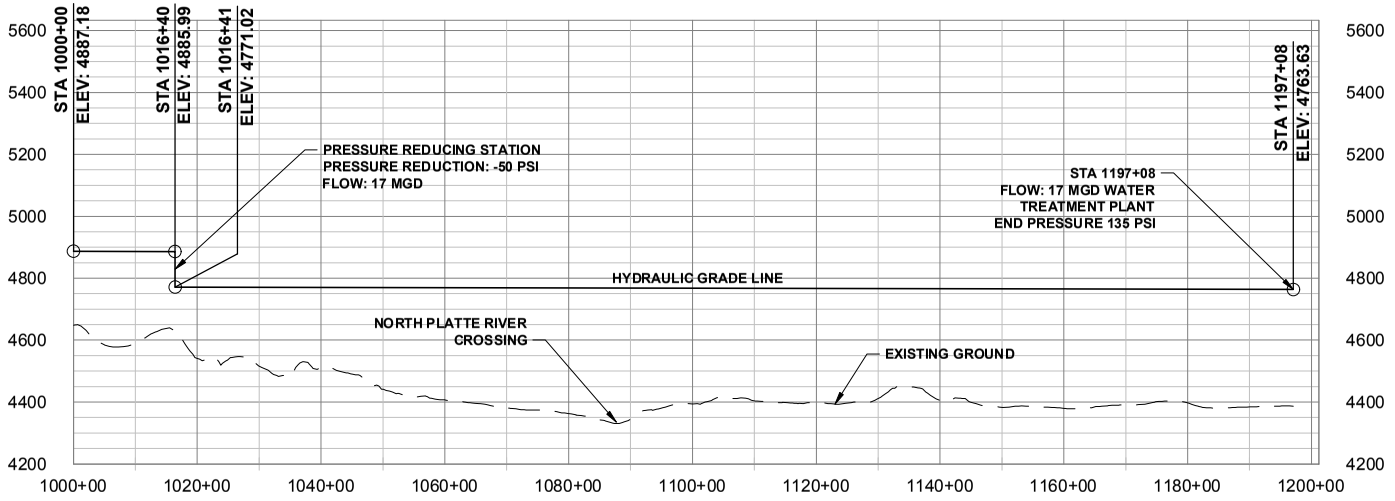
SHEET TITLE:
ALIGNMENT A STA 760+00 TO 1000+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
A4





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ALIGNMENT A
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

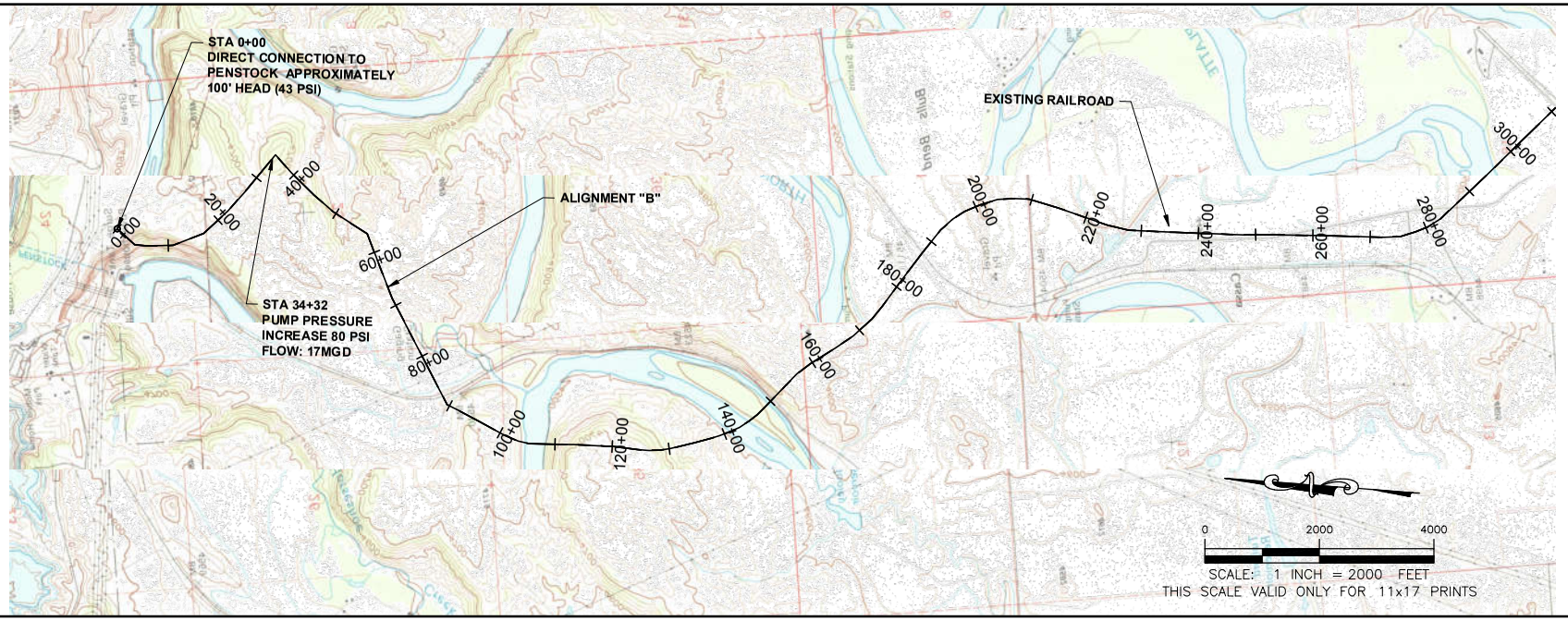
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

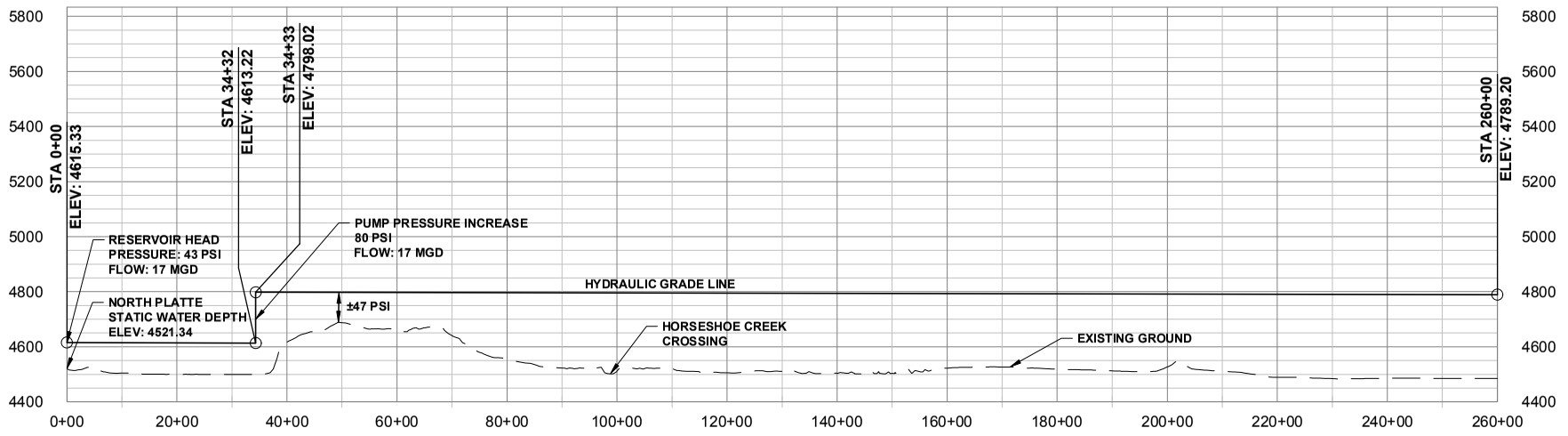
SHEET TITLE:
ALIGNMENT A STA 1000+00 TO 1197+08

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
A5





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ALIGNMENT B
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
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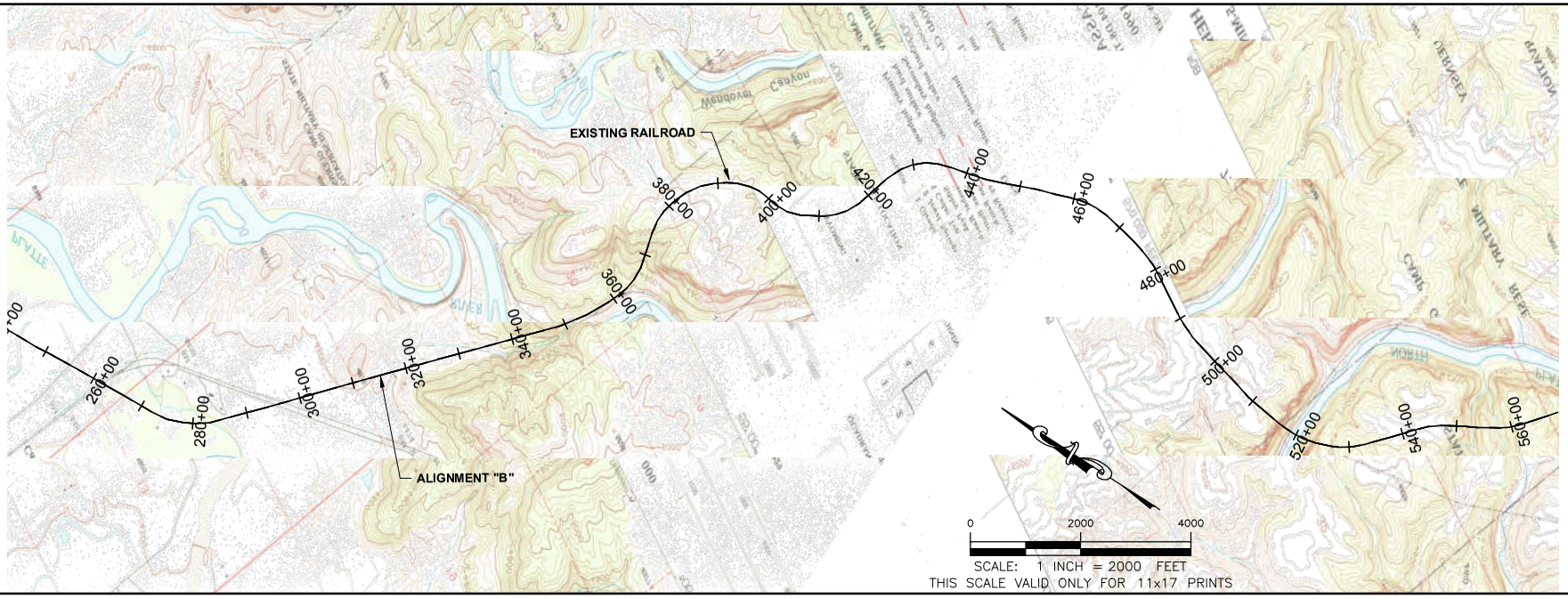
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

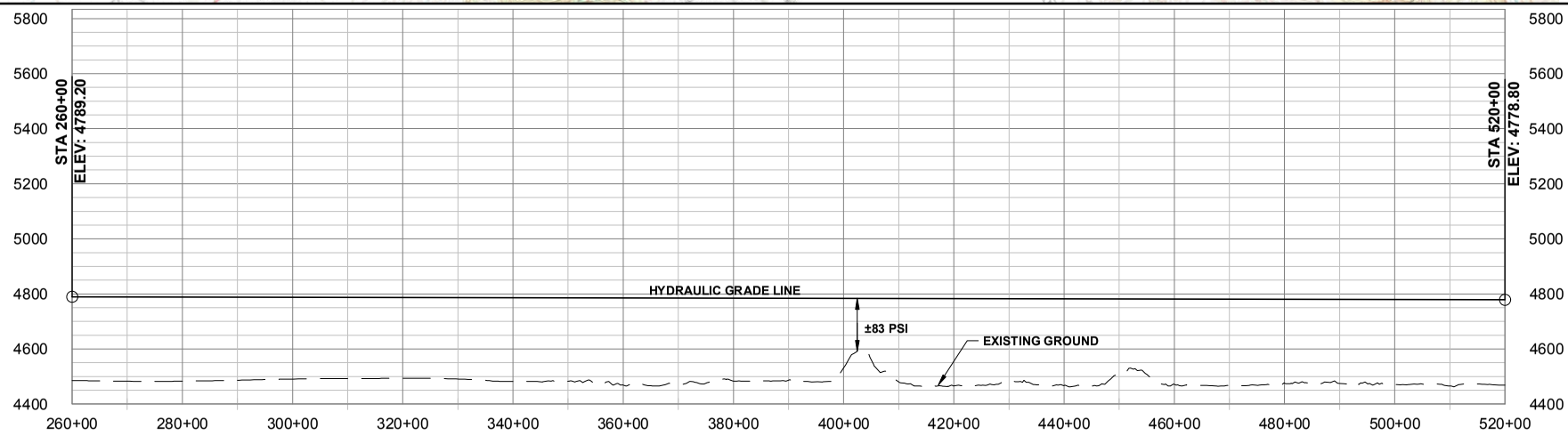
SHEET TITLE:
ALIGNMENT B STA 0+00 TO STA 260+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
B1





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ALIGNMENT B
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
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307.733.5150
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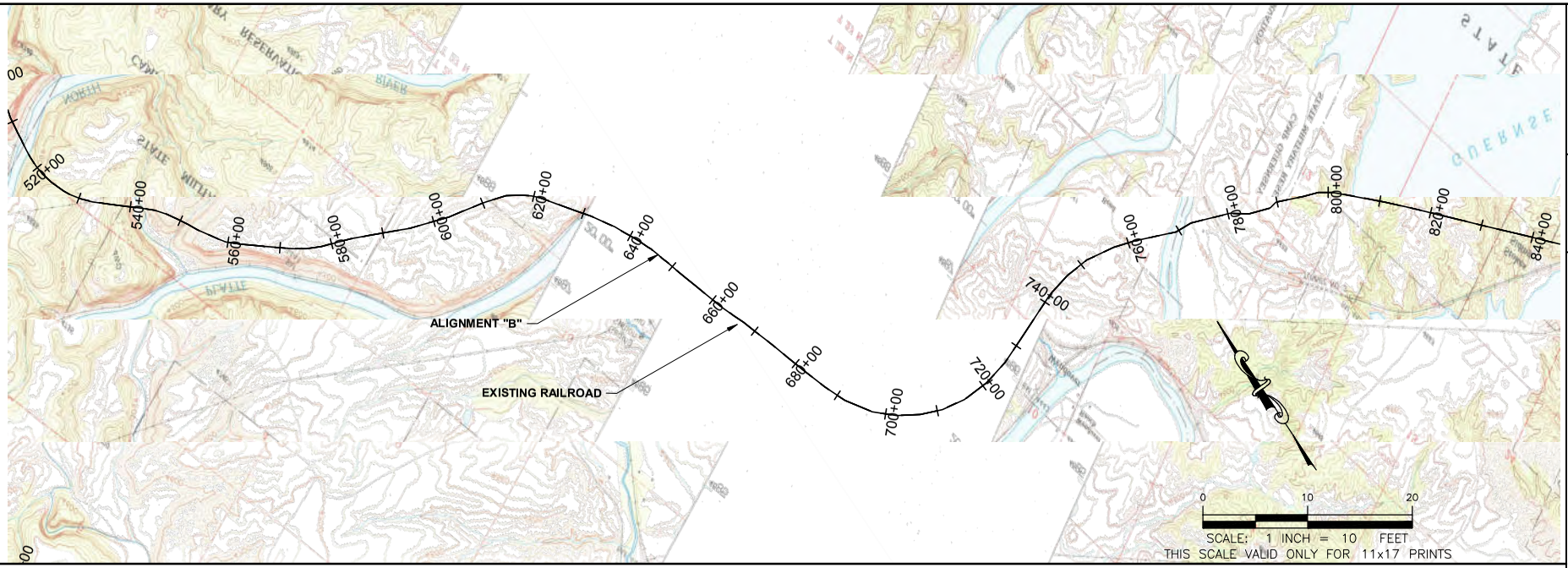
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

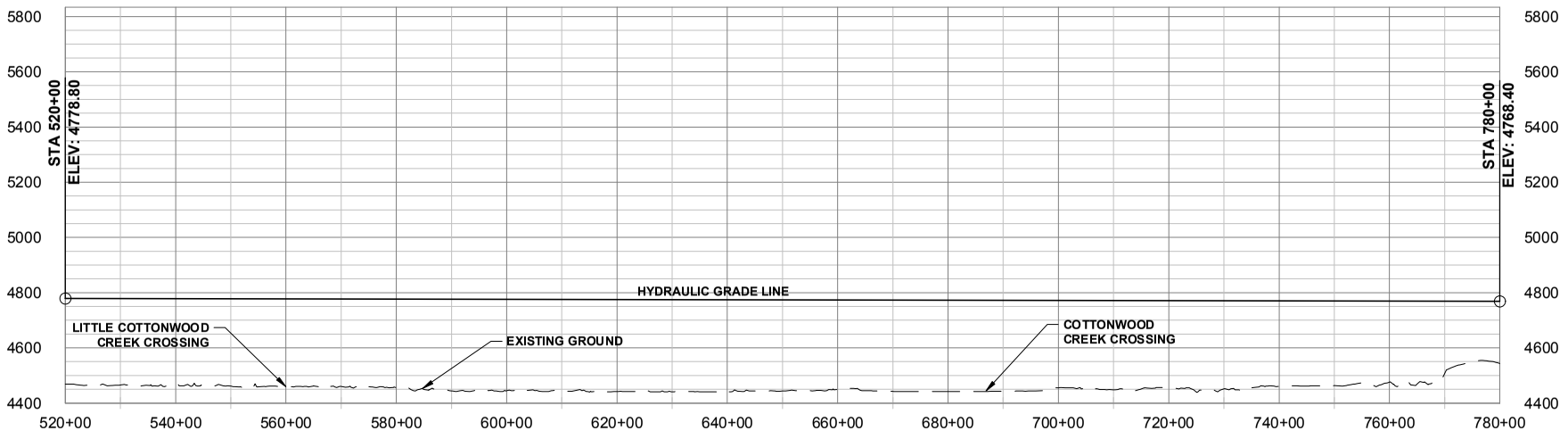
SHEET TITLE:
ALIGNMENT B STA 260+00 TO STA 520+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
B2





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ALIGNMENT B
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

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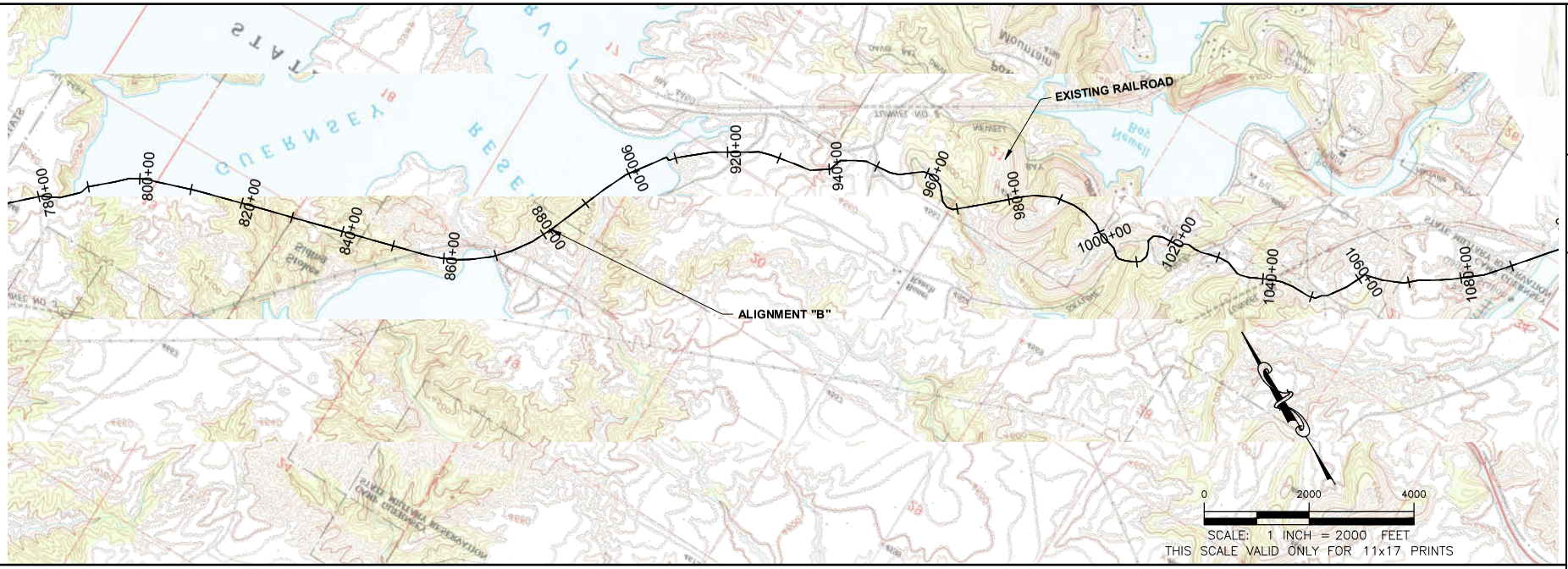
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

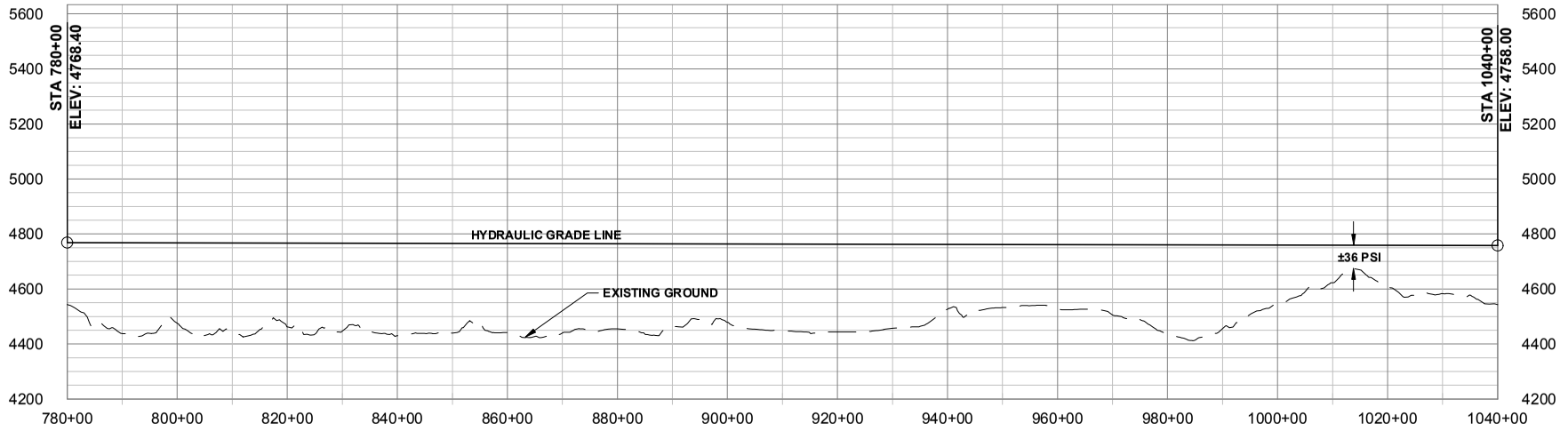
SHEET TITLE:
ALIGNMENT B STA 520+00 TO STA 780+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
B3





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ALIGNMENT B
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
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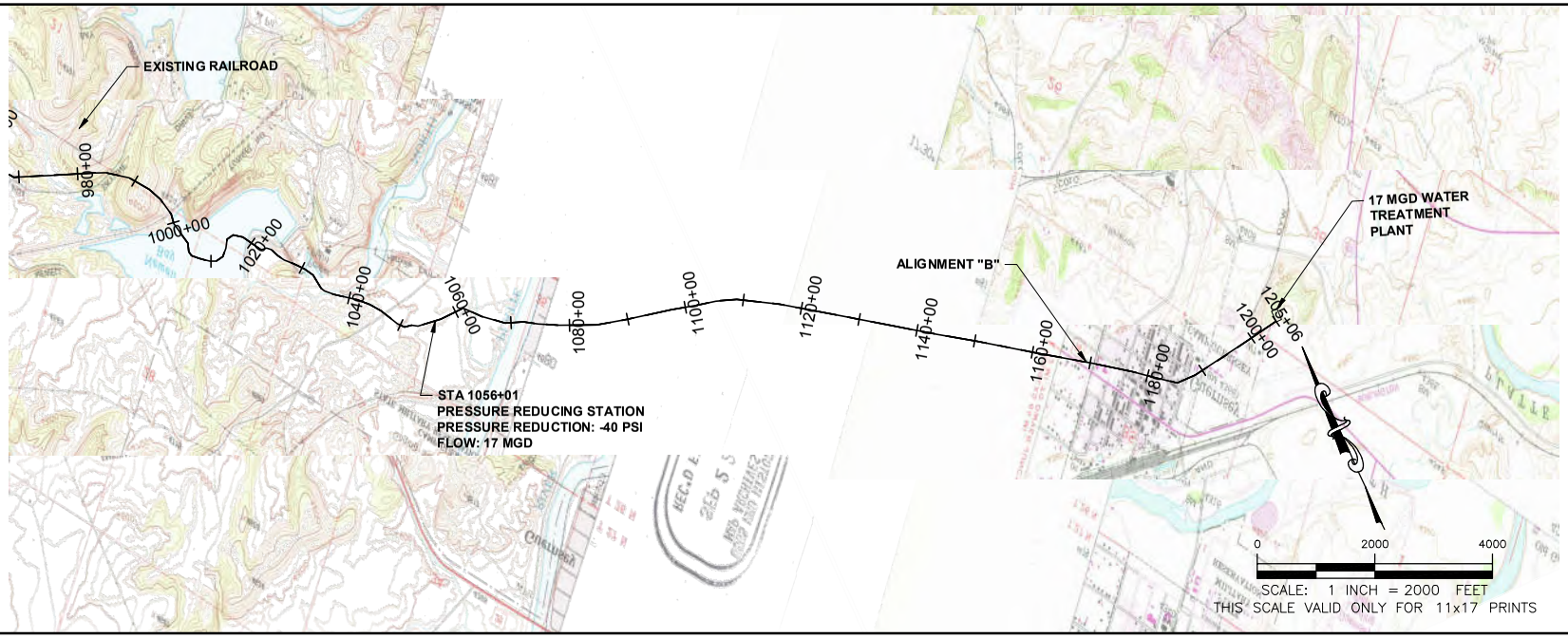
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

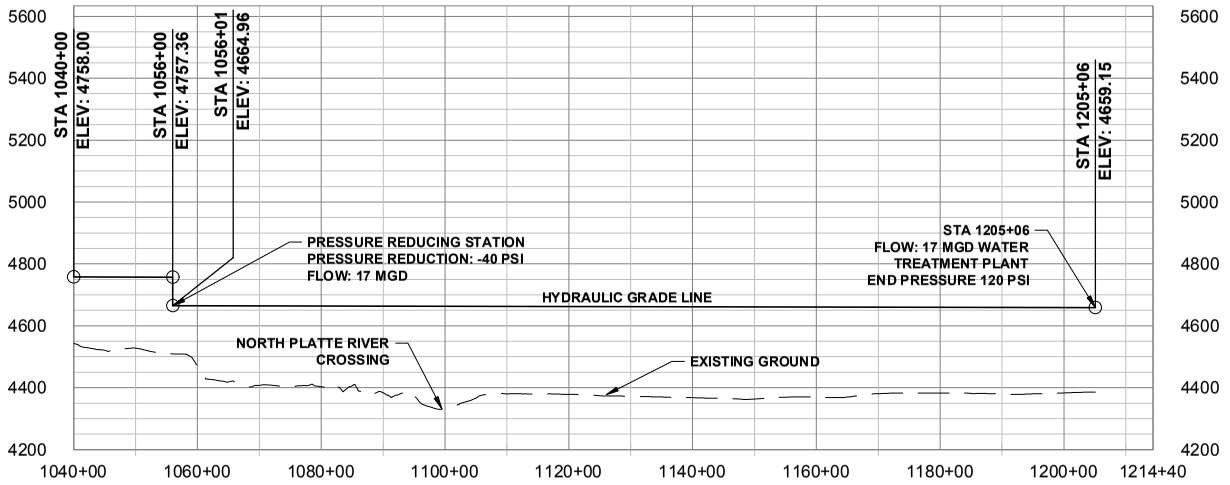
SHEET TITLE:
ALIGNMENT B STA 780+00 TO 1040+00

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
B4





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ALIGNMENT B
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

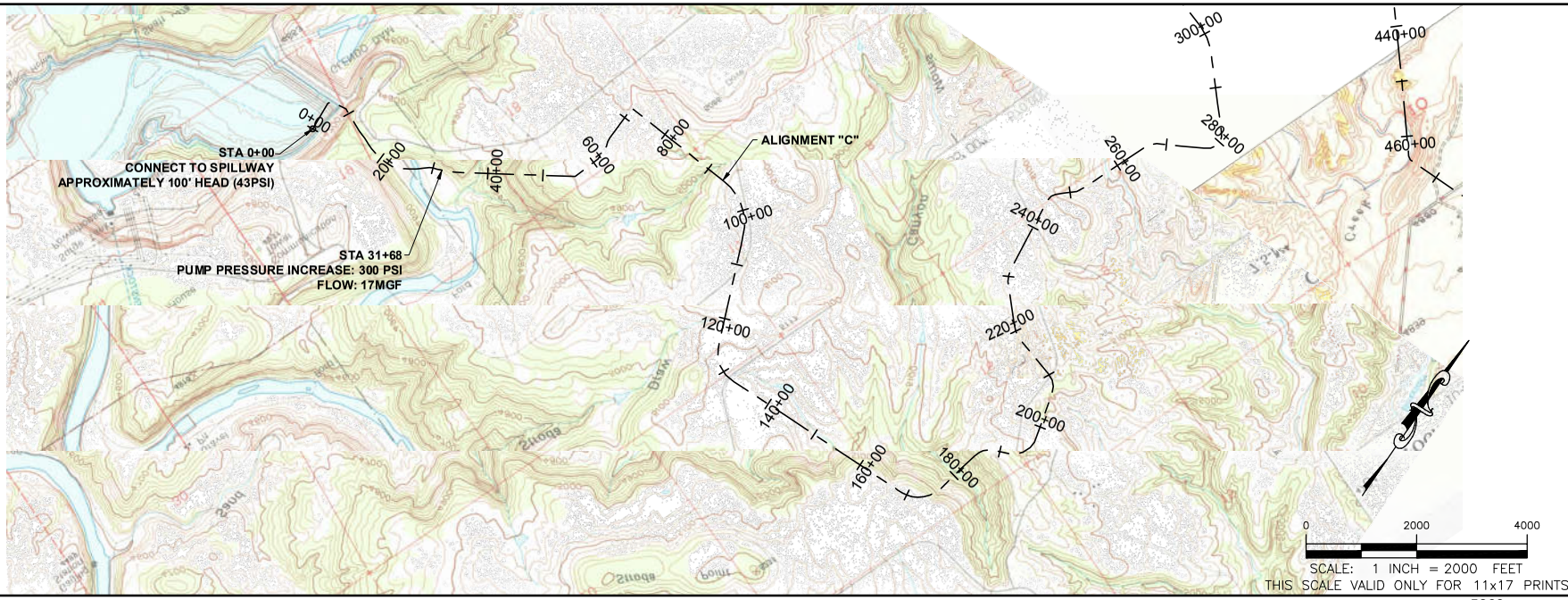
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

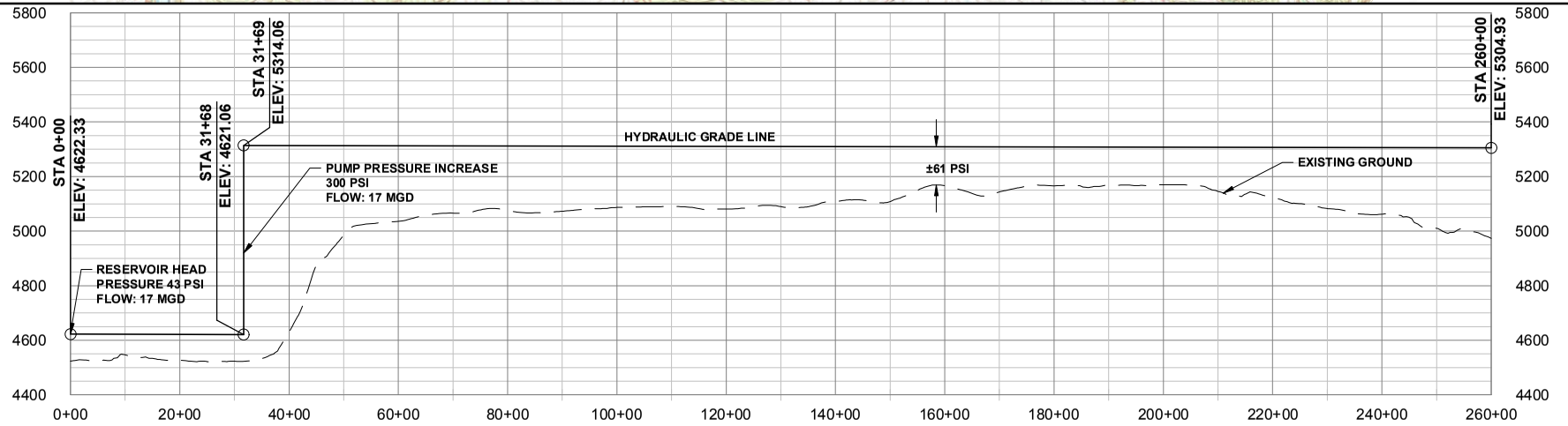
SHEET TITLE:
ALIGNMENT B 1040+00 TO 1205+06

DRAFTED BY:	DSD
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	02-06-19

PROJECT NUMBER
16426

SHEET
B5





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

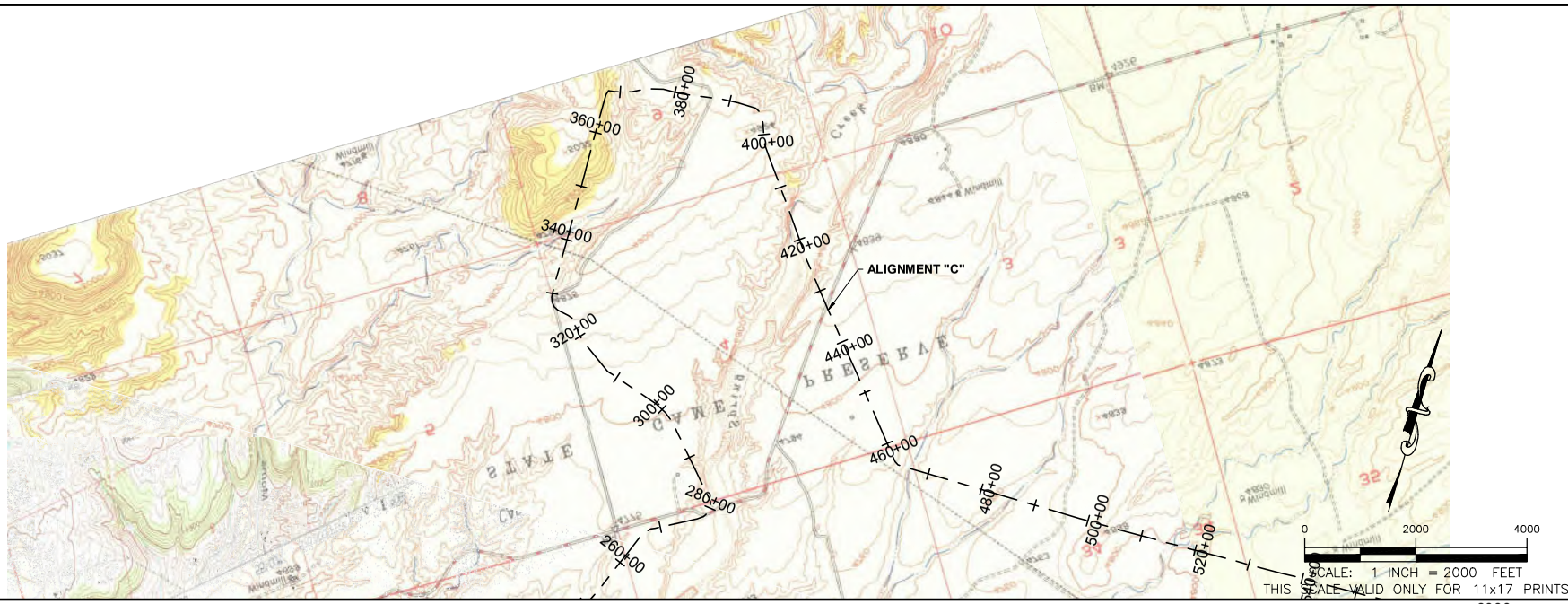
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

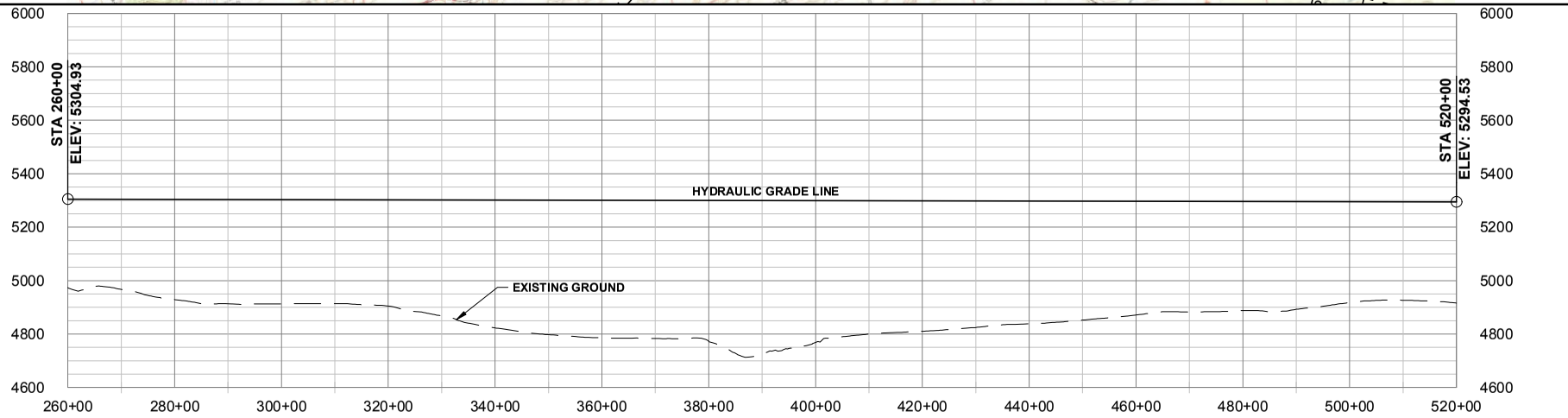
SHEET TITLE:
ALIGNMENT C 0+00 TO 260+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C1





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
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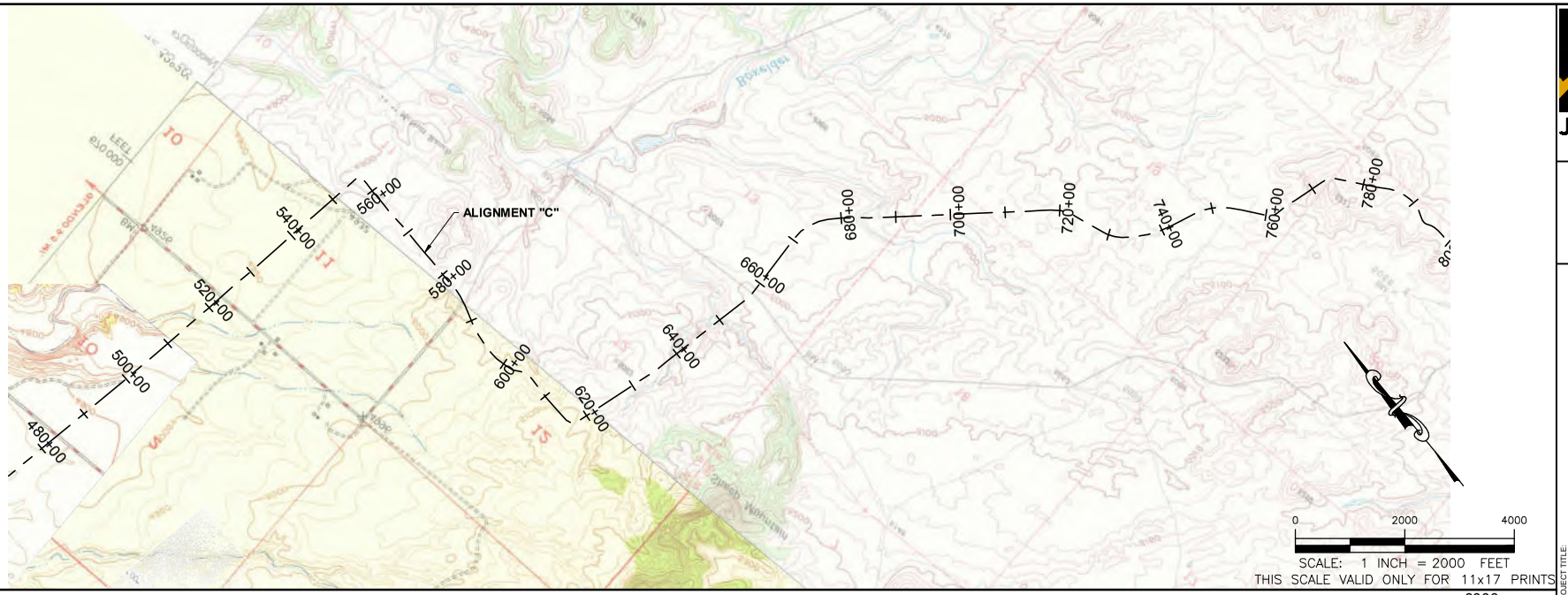
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

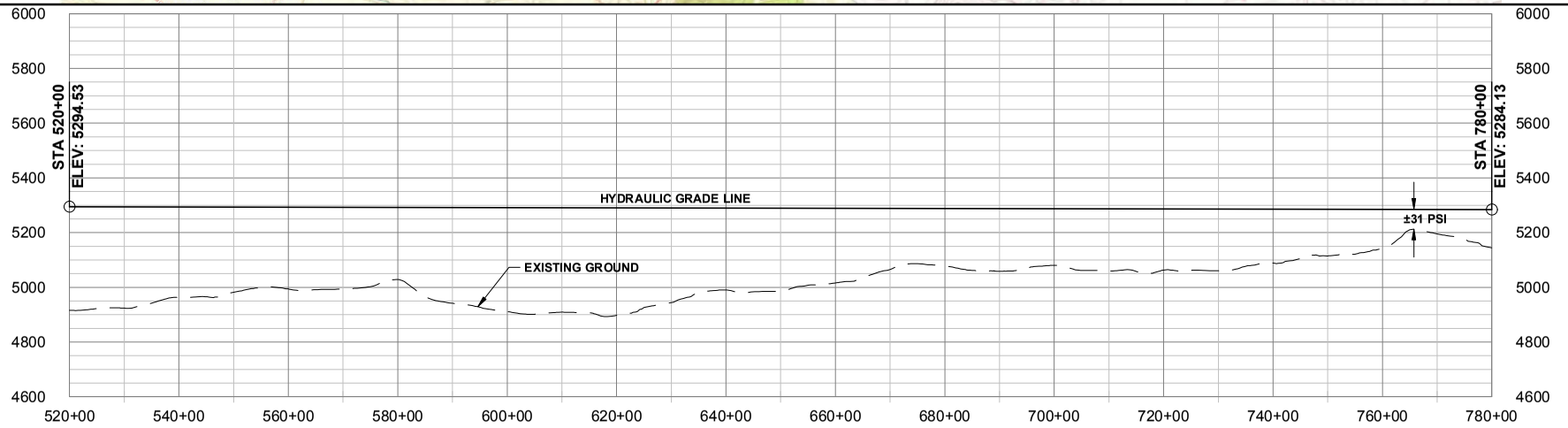
SHEET TITLE:
ALIGNMENT C 260+00 TO 520+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C2





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

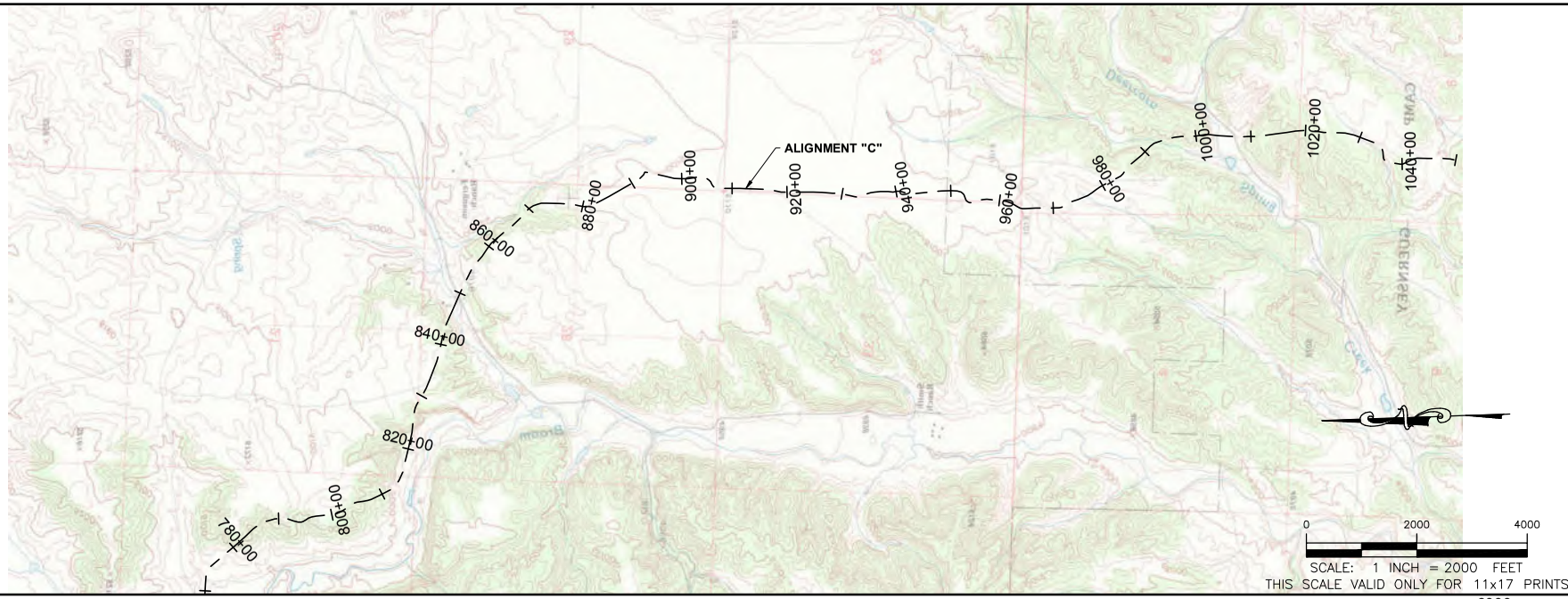
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

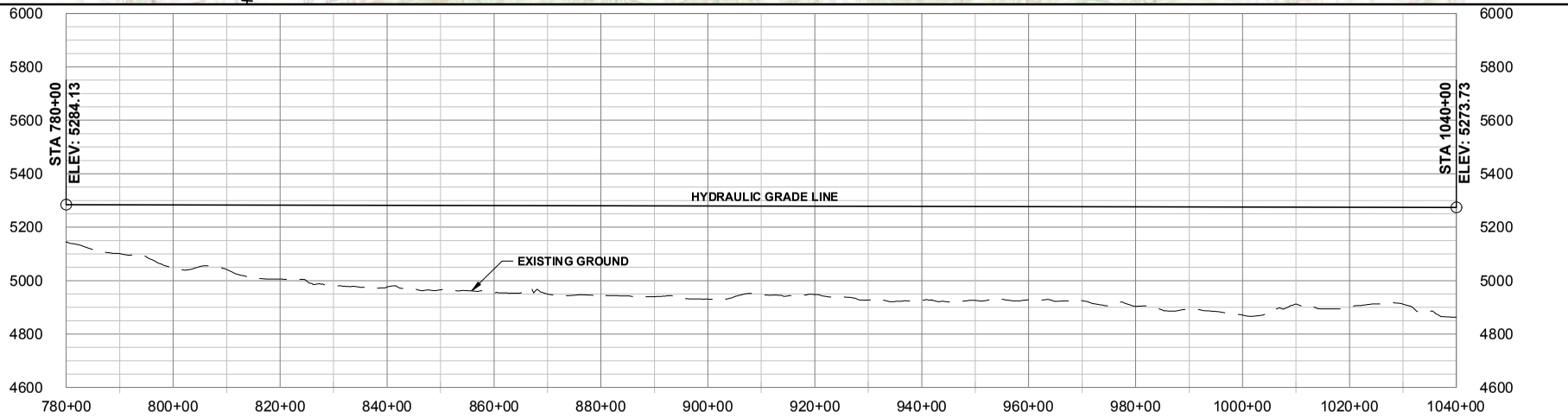
SHEET TITLE:
ALIGNMENT C 520+00 TO 780+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C3





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ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

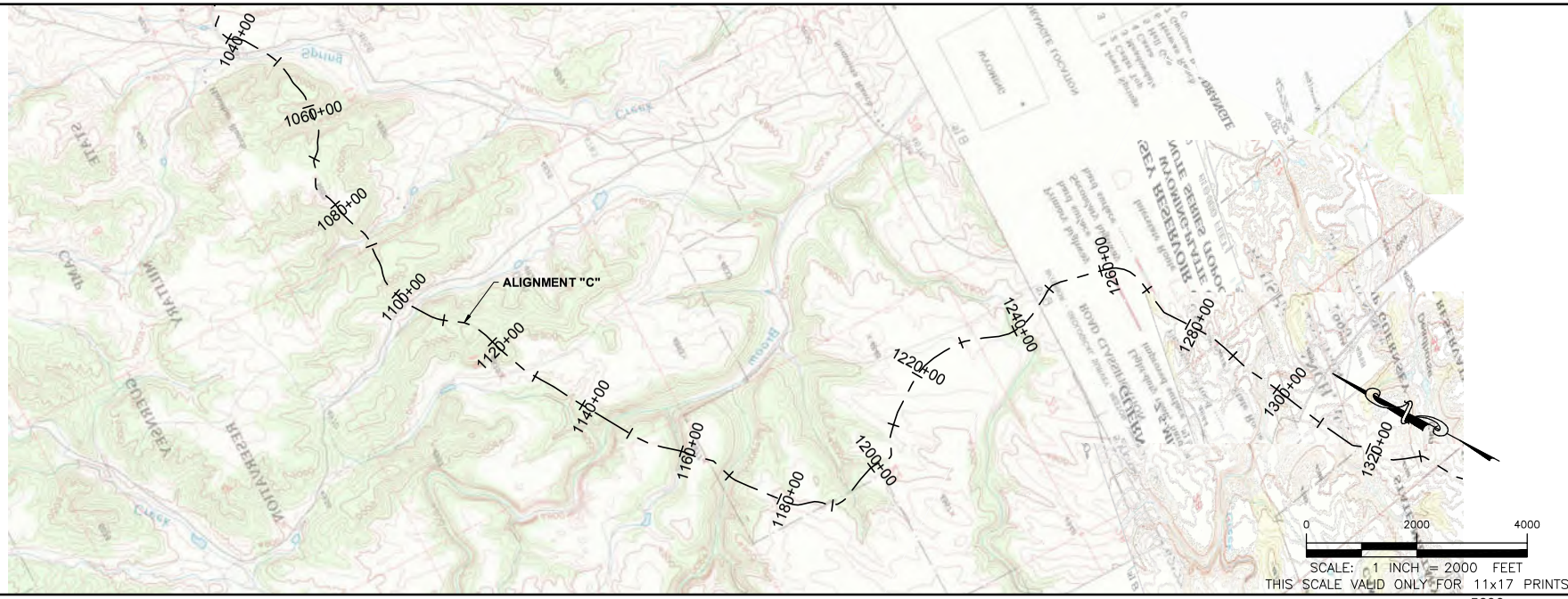
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

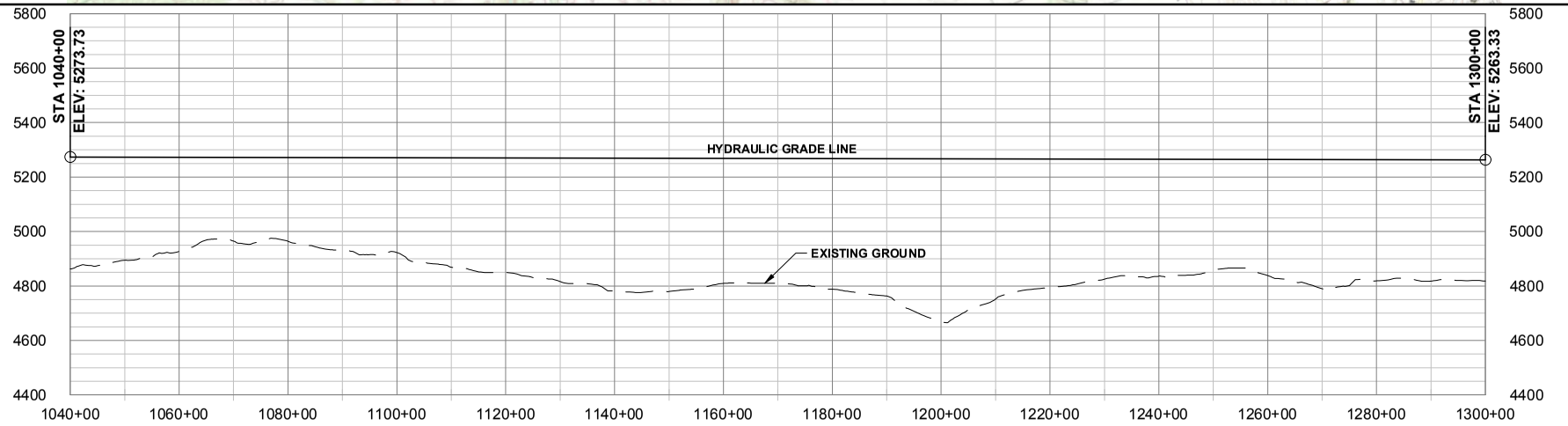
SHEET TITLE:
ALIGNMENT C 780+00 TO 1040+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C4





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
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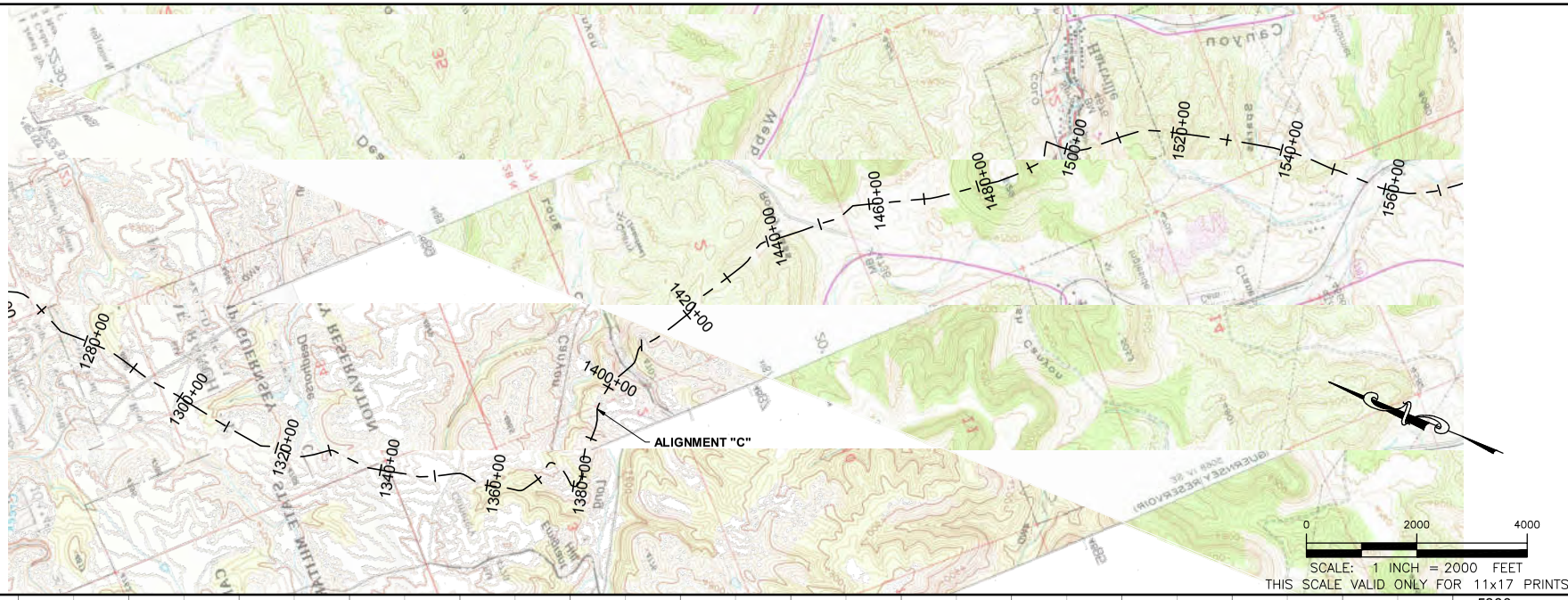
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

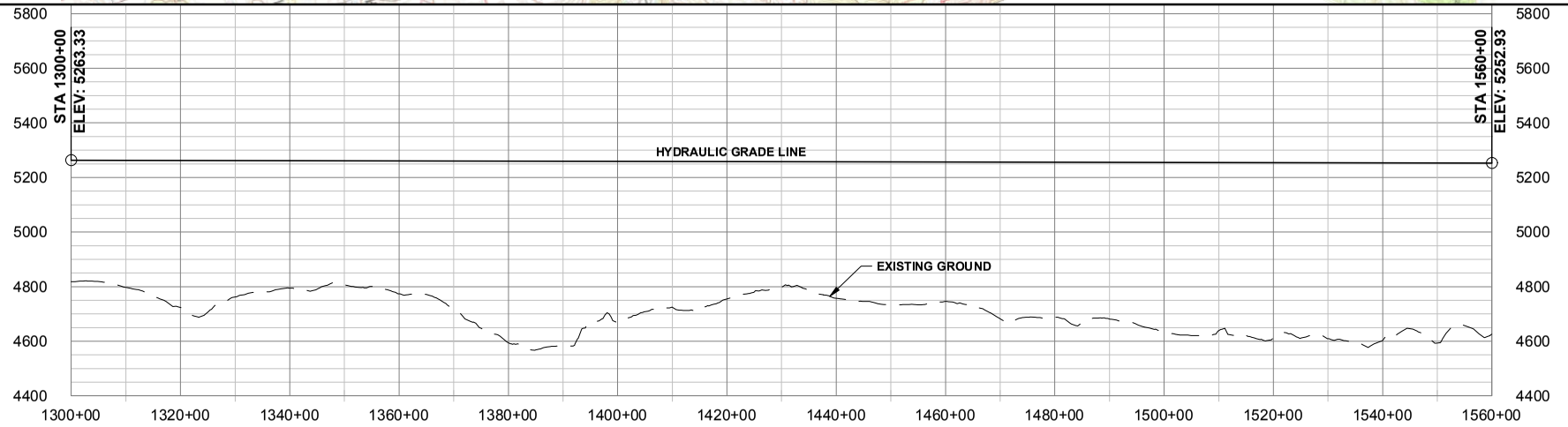
SHEET TITLE:
ALIGNMENT C 1040+00 TO 1300+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C5





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

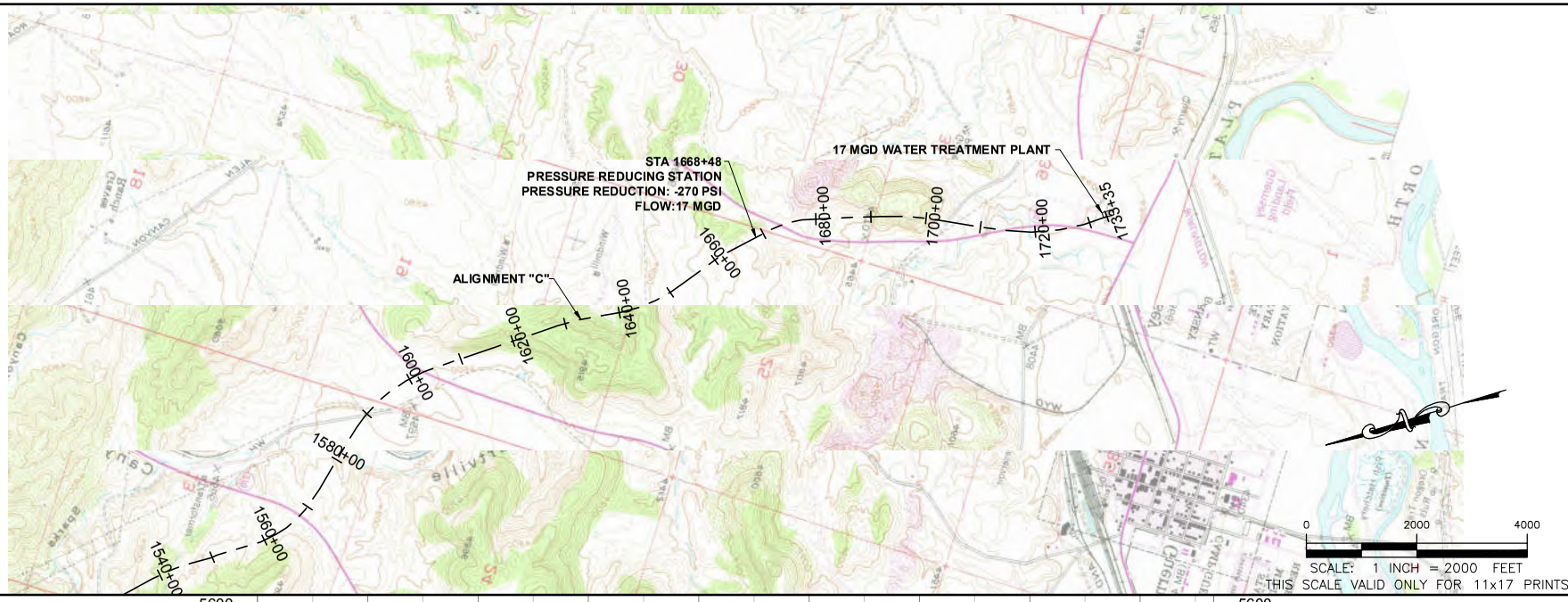
PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

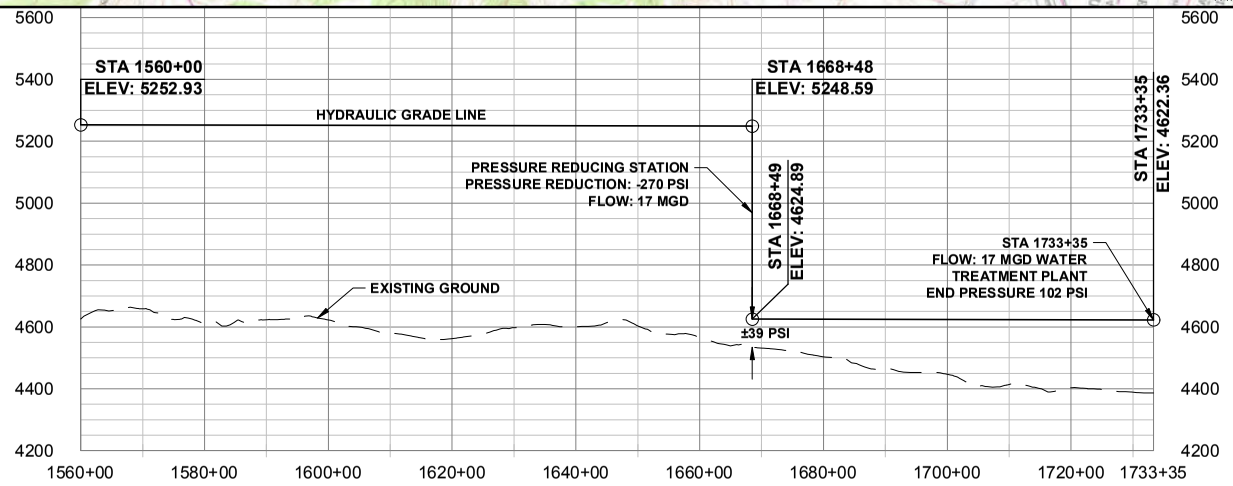
SHEET TITLE:
ALIGNMENT C 1300+00 TO 1560+00

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

PROJECT NUMBER
16426

SHEET
C6





=PROFILE=
ALIGNMENT C
SCALE: HORIZONTAL. 1"=2000
VERTICAL 1"=400

– PRELIMINARY –
SUBJECT TO CORRECTION
AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgeng.com

PROJECT TITLE:
PAWS LEVEL II STUDY
TRANSMISSION ALIGNMENTS

SHEET TITLE:
ALIGNMENT C 1560+00 TO 1733+35

DRAFTED BY:	AB
REVIEWED BY:	KB
PLAN VERSION	DATE
CONCEPT	04-22-2019

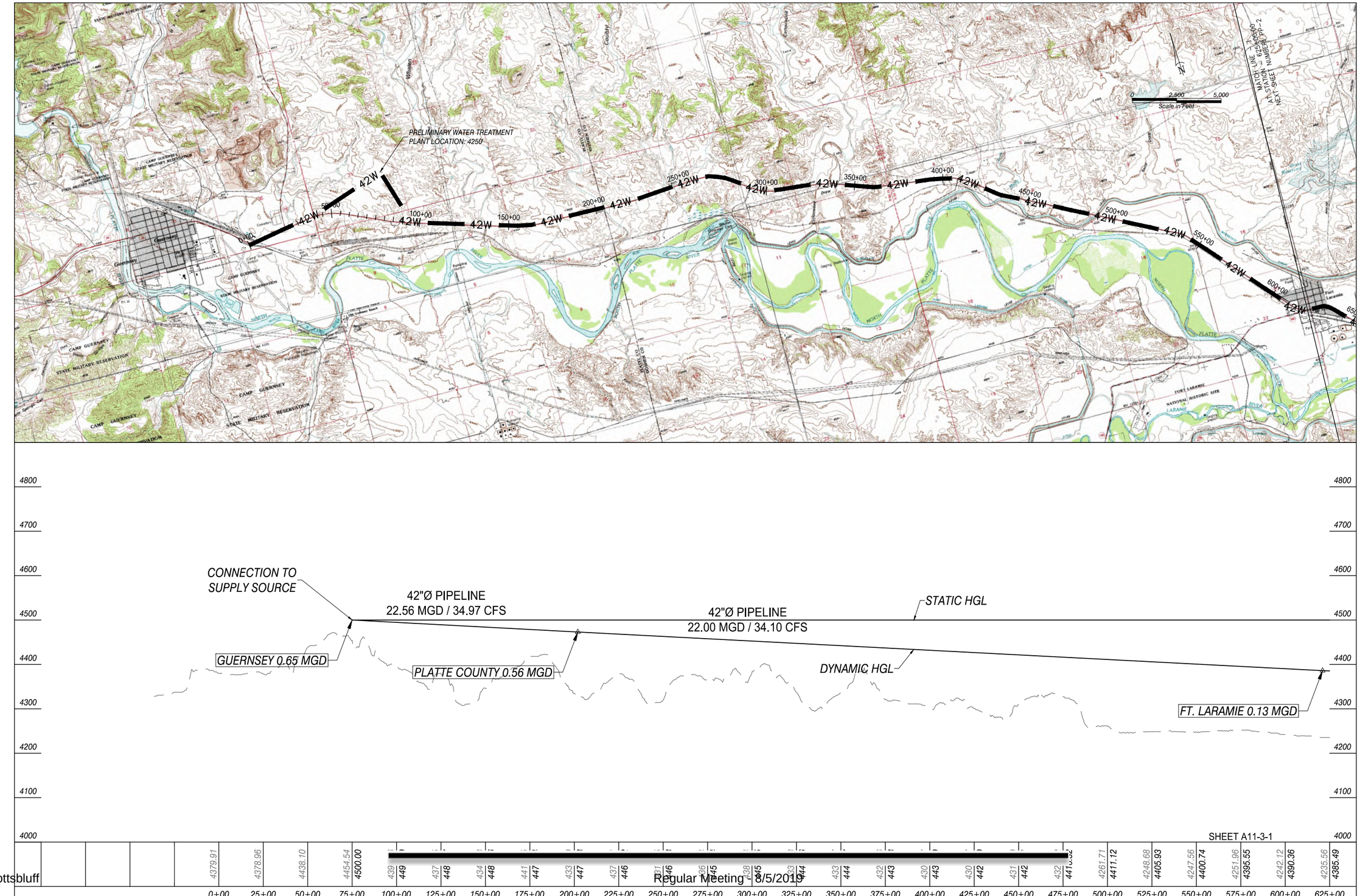
PROJECT NUMBER
16426

SHEET
C7

APPENDIX A11-3

TREATED WATER PIPELINE – DRAFT PLAN AND PROFILE

DRAFT


PRELIMINARY WATER TREATMENT
PLANT LOCATION: 4250'
42W
0+00
50+00
100+00
150+00
200+00
250+00
300+00
350+00
400+00
450+00
500+00
550+00
600+00
0 2,500 5,000
Scale in Feet
MATCH LINE - 1
AT STATION = 625+00.00
NEXT SHEET NUMBER: PP-2
CONNECTION TO
SUPPLY SOURCE
42"Ø PIPELINE
22.56 MGD / 34.97 CFS
42"Ø PIPELINE
22.00 MGD / 34.10 CFS
STATIC HGL
GUERNSEY 0.65 MGD
PLATTE COUNTY 0.56 MGD
DYNAMIC HGL
FT. LARAMIE 0.13 MGD
4800
4700
4600
4500
4400
4300
4200
4100
4000
SHEET A11-3-1
4379.91
4378.96
4438.10
4454.54
4500.00
4261.71
4411.12
4248.68
4405.93
4247.56
4400.74
4251.96
4395.55
4242.12
4390.36
4235.56
4385.49
0+00
25+00
50+00
75+00
100+00
125+00
150+00
175+00
200+00
225+00
250+00
275+00
300+00
325+00
350+00
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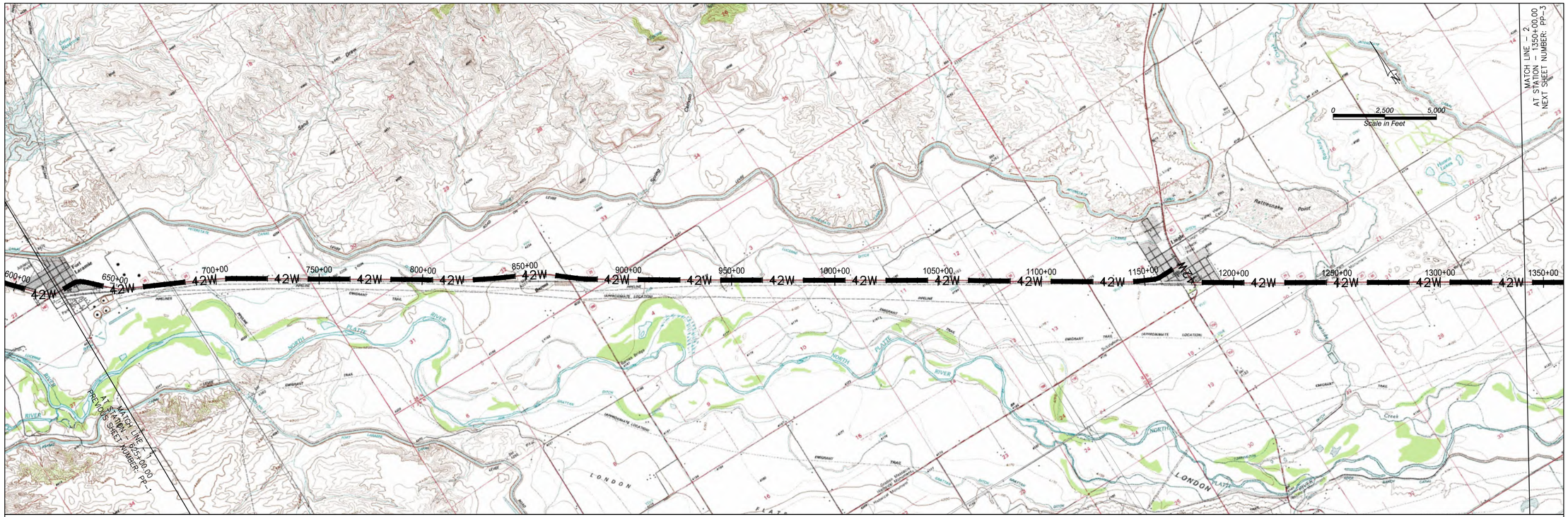
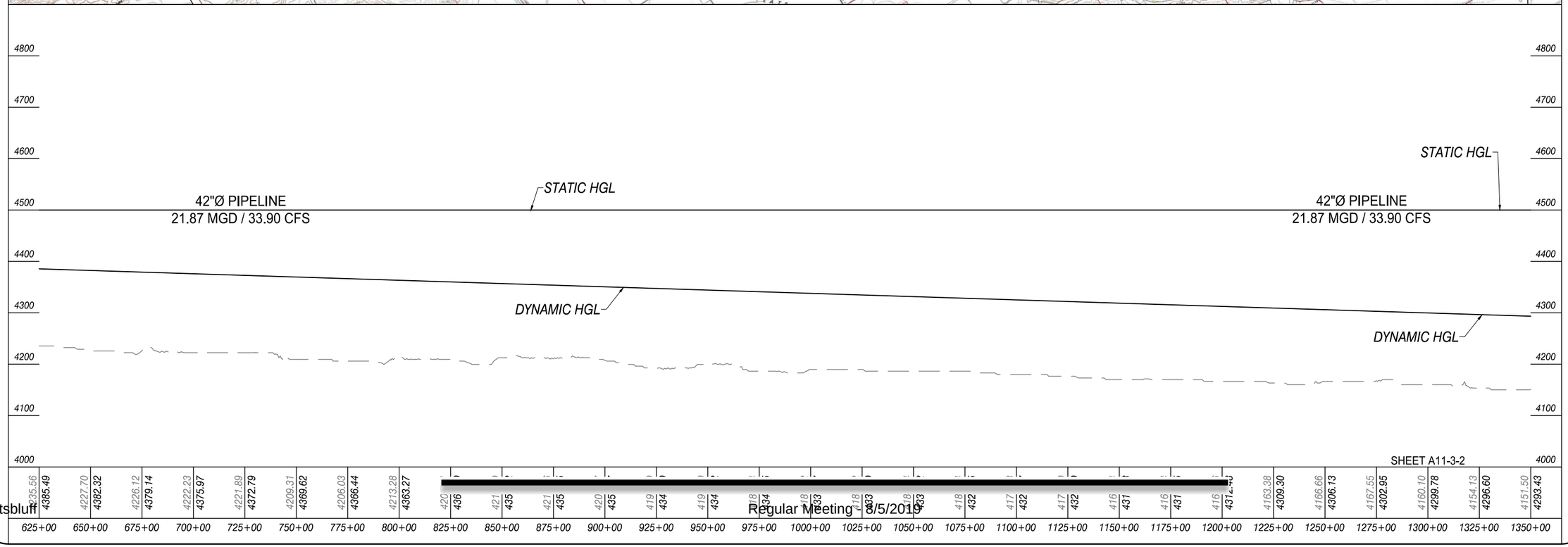
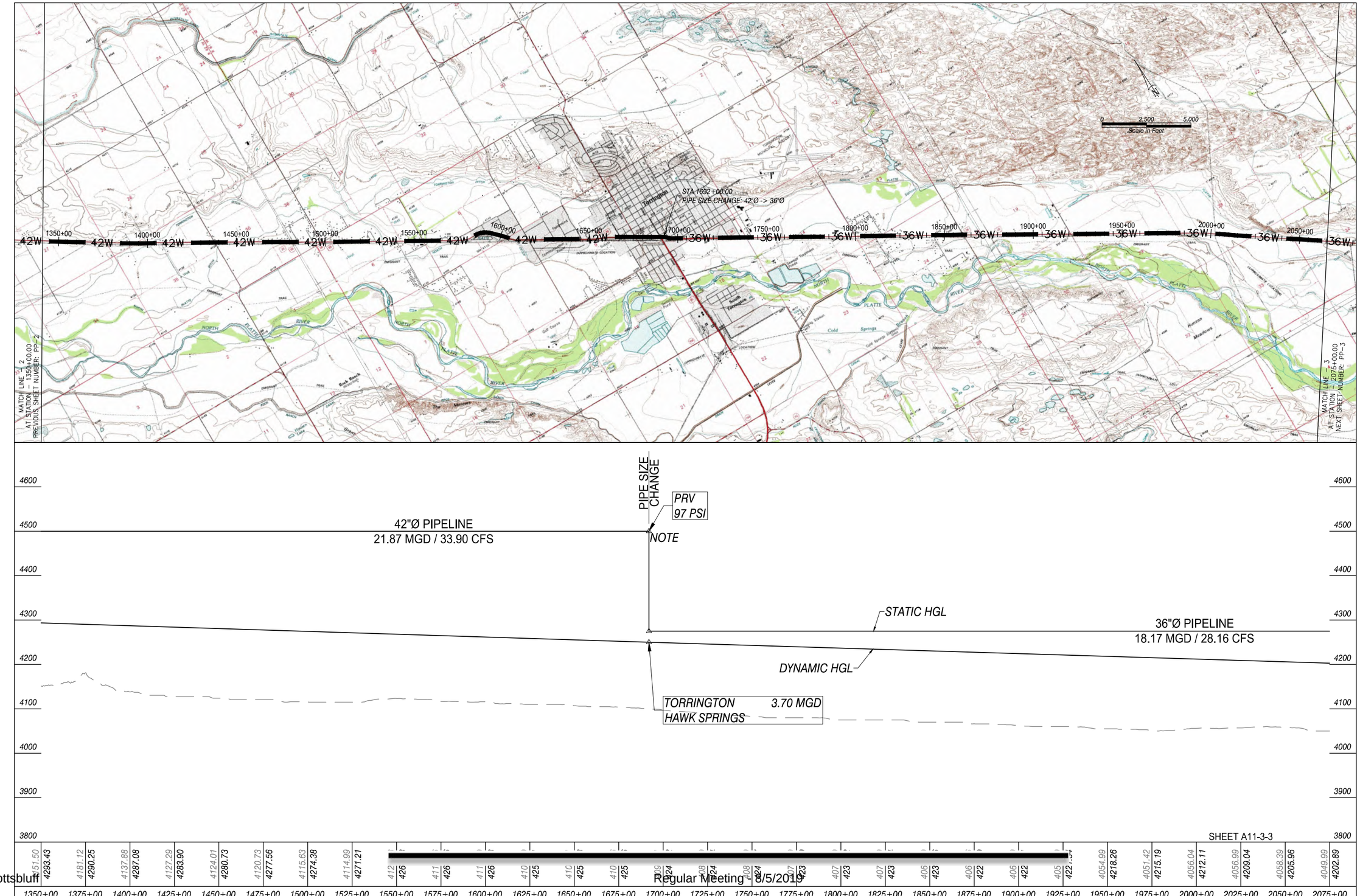
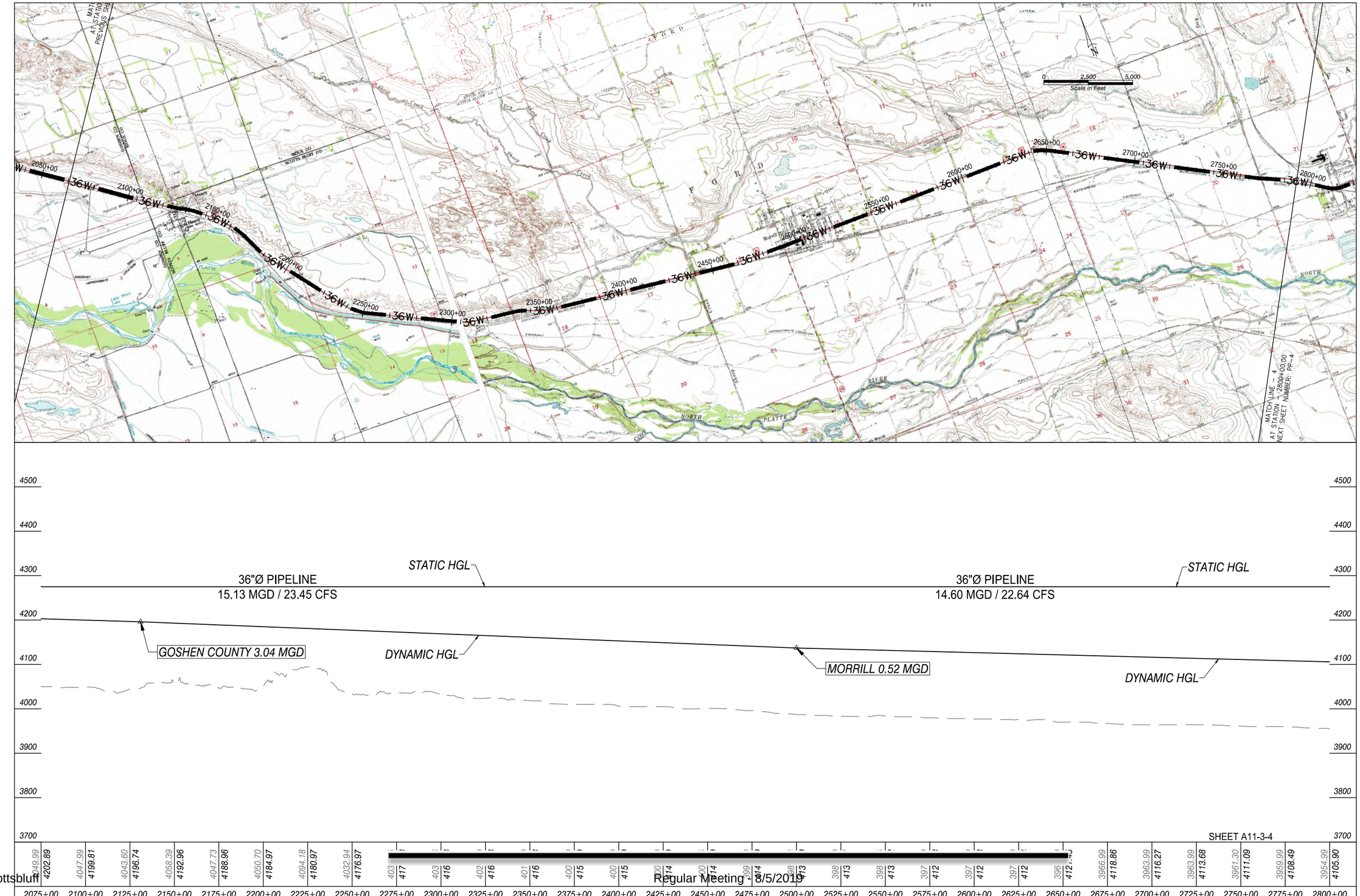
425+00
450+00
475+00
500+00
525+00
550+00
575+00
600+00
625+00


MATCH LINE - 2
AT STATION - 1350+00.00
NEXT SHEET NUMBER: PP-3
MATCH LINE - 1
AT STATION - 625+00.00
PREVIOUS SHEET NUMBER: PP-1
0
2,500
5,000
Scale in Feet
600+00
650+00
700+00
750+00
800+00
850+00
900+00
950+00
1000+00
1050+00
1100+00
1150+00
1200+00
1250+00
1300+00
1350+00
42W
NORTH PLATTE RIVER
LONDON
Rattlesnake Point

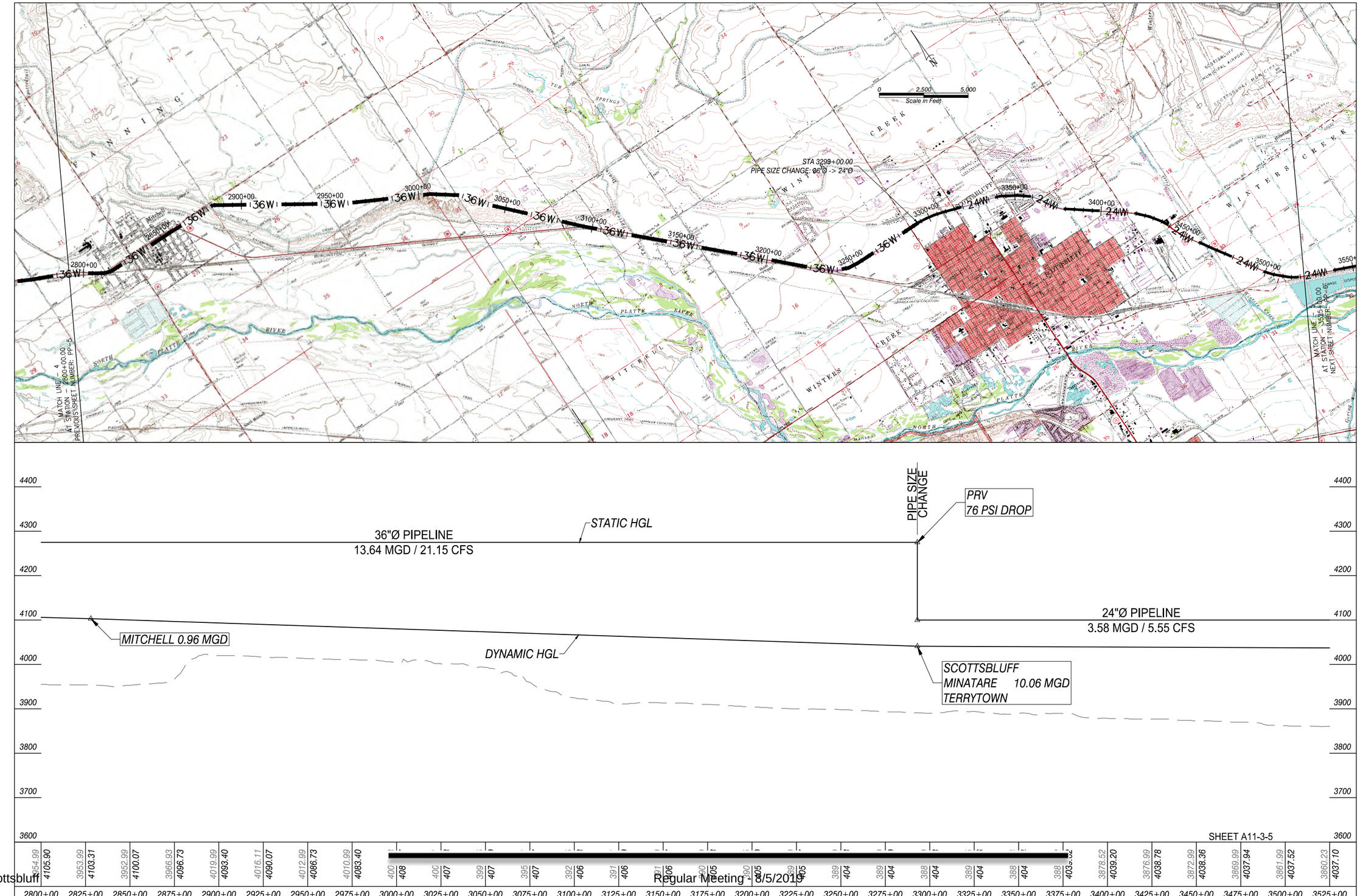

4800
4700
4600
4500
4400
4300
4200
4100
4000
42"Ø PIPELINE
21.87 MGD / 33.90 CFS
STATIC HGL
DYNAMIC HGL
42"Ø PIPELINE
21.87 MGD / 33.90 CFS
STATIC HGL
DYNAMIC HGL
SHEET A11-3-2
625+00 4385.49
650+00 4382.32
675+00 4379.14
700+00 4375.97
725+00 4372.79
750+00 4369.62
775+00 4366.44
800+00 4363.27
825+00 436
850+00 435
875+00 435
900+00 435
925+00 434
950+00 434
975+00 433
1000+00 433
1025+00 433
1050+00 433
1075+00 432
1100+00 432
1125+00 432
1150+00 431
1175+00 431
1200+00 431
1225+00 4309.30
1250+00 4306.13
1275+00 4302.95
1300+00 4299.78
1325+00 4296.60
1350+00 4293.43



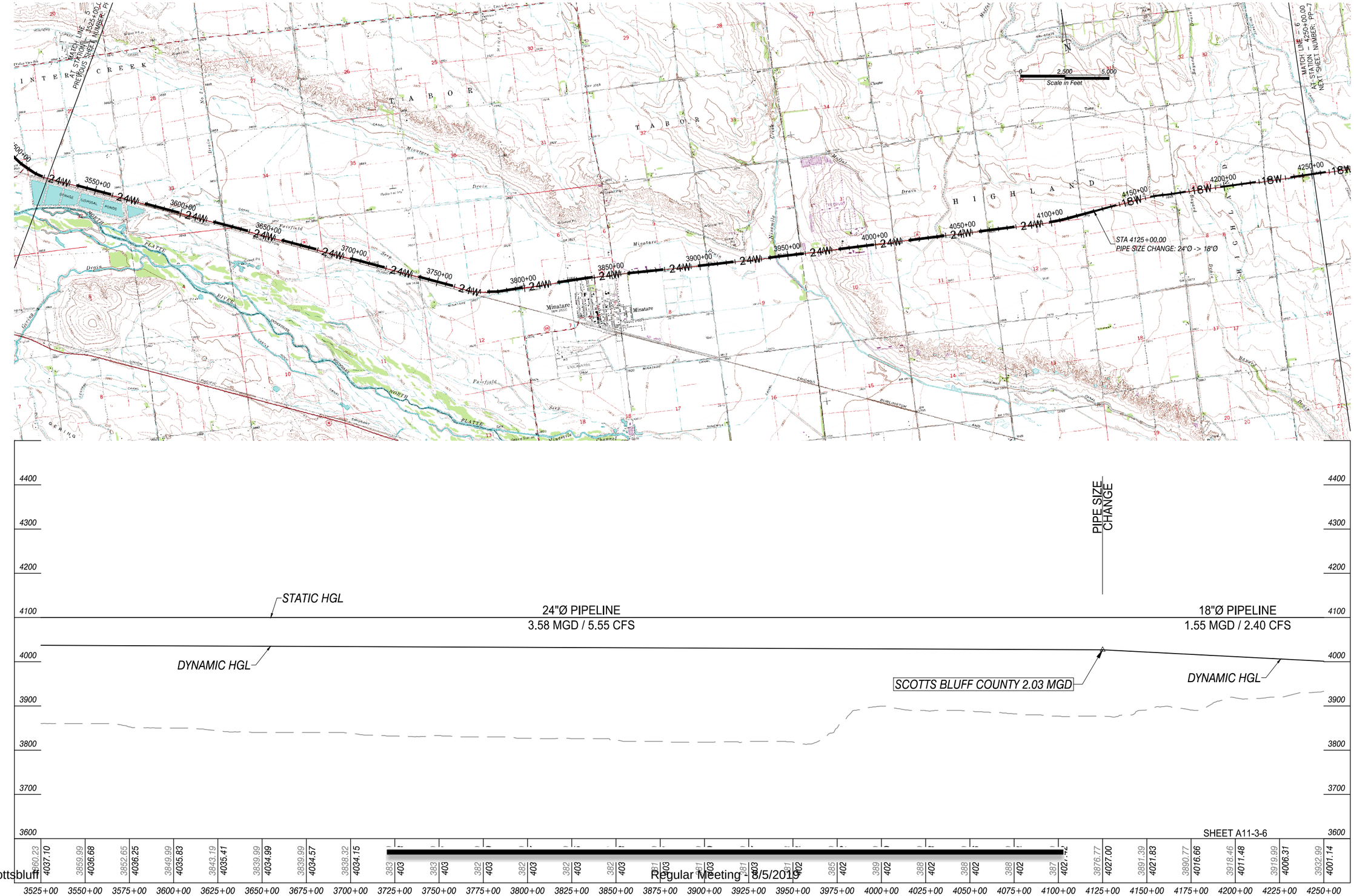
STA 1692+00.00
PIPE SIZE CHANGE: 42"Ø -> 36"Ø
Scale in Feet
MATCH LINE - 2
AT STATION - 1350+00.00
PREVIOUS SHEET NUMBER: PP-2
MATCH LINE - 3
AT STATION - 2075+00.00
NEXT SHEET NUMBER: PP-3
PIPE SIZE CHANGE
PRV
97 PSI
42"Ø PIPELINE
21.87 MGD / 33.90 CFS
NOTE
STATIC HGL
36"Ø PIPELINE
18.17 MGD / 28.16 CFS
DYNAMIC HGL
TORRINGTON 3.70 MGD
HAWK SPRINGS
SHEET A11-3-3



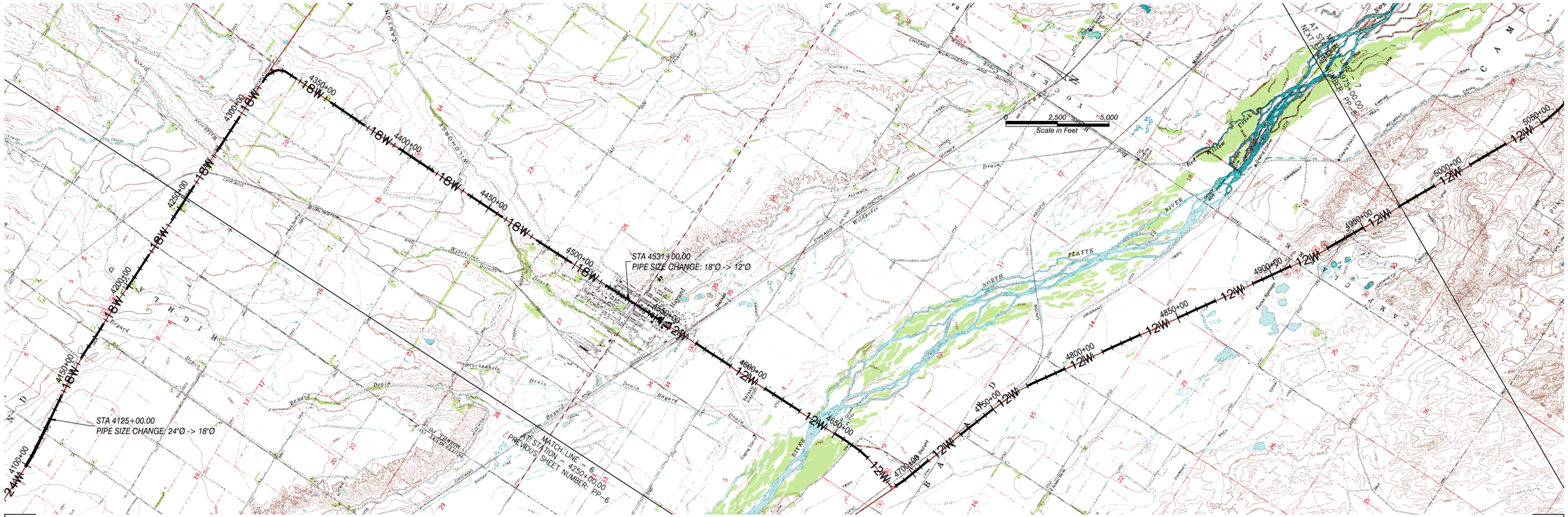
36"Ø PIPELINE
15.13 MGD / 23.45 CFS
36"Ø PIPELINE
14.60 MGD / 22.64 CFS
STATIC HGL
STATIC HGL
GOSHEN COUNTY 3.04 MGD
DYNAMIC HGL
MORRILL 0.52 MGD
DYNAMIC HGL
SHEET A11-3-4
Scale in Feet

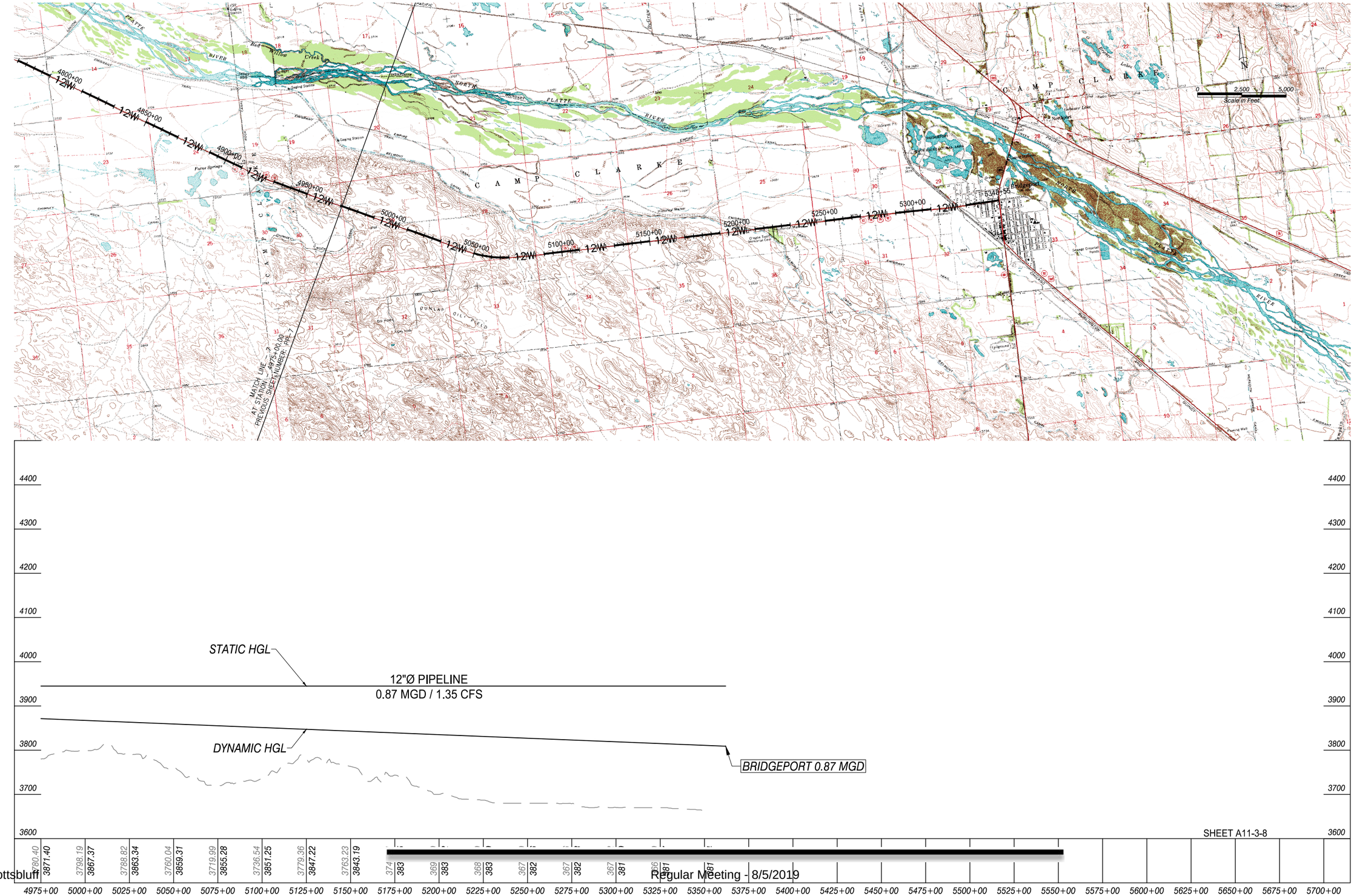


STA 3293+00.00
PIPE SIZE CHANGE: 36"Ø -> 24"Ø
0 2,500 5,000
Scale in Feet
MATCH LINE - 4
AT STATION - 2800+00.00
PREVIOUS SHEET NUMBER: PP-5
MATCH LINE - 5
AT STATION - 3525+00.00
NEXT SHEET NUMBER: PP-6
36"Ø PIPELINE
13.64 MGD / 21.15 CFS
STATIC HGL
PIPE SIZE CHANGE
PRV
76 PSI DROP
24"Ø PIPELINE
3.58 MGD / 5.55 CFS
MITCHELL 0.96 MGD
DYNAMIC HGL
SCOTTSBLUFF
MINATARE 10.06 MGD
TERRYTOWN
SHEET A11-3-5



MATCH LINE - 5
AT STATION - 3525+00.00
PREVIOUS SHEET NUMBER: PP-
MATCH LINE - 6
AT STATION - 4250+00.00
NEXT SHEET NUMBER: PP-7
0 2,500 5,000
Scale in Feet
N
INTERCREEK
TABOR
HIGHLAND
Minatare
STA 4125+00.00
PIPE SIZE CHANGE: 24"Ø -> 18"Ø
24W
18W
3550+00
3600+00
3650+00
3700+00
3750+00
3800+00
3850+00
3900+00
3950+00
4000+00
4050+00
4100+00
4150+00
4200+00
4250+00
PIPE SIZE CHANGE
STATIC HGL
24"Ø PIPELINE
3.58 MGD / 5.55 CFS
18"Ø PIPELINE
1.55 MGD / 2.40 CFS
DYNAMIC HGL
SCOTTS BLUFF COUNTY 2.03 MGD
DYNAMIC HGL
4400
4300
4200
4100
4000
3900
3800
3700
3600
SHEET A11-3-6
3525+00 3550+00 3575+00 3600+00 3625+00 3650+00 3675+00 3700+00 3725+00 3750+00 3775+00 3800+00 3825+00 3850+00 3875+00 3900+00 3925+00 3950+00 3975+00 4000+00 4025+00 4050+00 4075+00 4100+00 4125+00 4150+00 4175+00 4200+00 4225+00 4250+00


18W
12W
24W
4100+00
4150+00
4200+00
4250+00
4300+00
4350+00
4400+00
4450+00
4500+00
4550+00
4600+00
4650+00
4700+00
4750+00
4800+00
4850+00
4900+00
4950+00
5000+00
5050+00
STA 4125+00.00
PIPE SIZE CHANGE: 24"Ø -> 18"Ø
STA 4531+00.00
PIPE SIZE CHANGE: 18"Ø -> 12"Ø
MATCH LINE - 6
AT STATION 4250+00.00
PREVIOUS SHEET NUMBER: PP-6
MATCH LINE - 7
AT STATION 4700+00.00
PREVIOUS SHEET NUMBER: PP-8
0
2,500
5,000
Scale in Feet
NORTH PLATTE RIVER
PLATTE RIVER
Drain
Board'd
Fence
Wire Fence
CHICAGO BURLINGTON & QUINCY
CHICAGO BURLINGTON & QUINCY RAILROAD
Wildcat Drain
Dirt Creek Drain
Dry Creek Drain
Cedar Tree Drain
Cedar Tree Drain No. 1
Cedar Tree Drain No. 2
Cedar Tree Drain No. 3
Cedar Tree Drain No. 4
Cedar Tree Drain No. 5
Cedar Tree Drain No. 6
Cedar Tree Drain No. 7
Cedar Tree Drain No. 8
Cedar Tree Drain No.



CAMP CLARKE
NORTH PLATTE RIVER
Bridgeport
Scale in Feet
0 2,500 5,000
MATCH LINE - 7
AT STATION 4975+00.00
PREVIOUS SHEET NUMBER: PP-7
STATIC HGL
12"Ø PIPELINE
0.87 MGD / 1.35 CFS
DYNAMIC HGL
BRIDGEPORT 0.87 MGD
SHEET A11-3-8
4400
4300
4200
4100
4000
3900
3800
3700
3600
4975+00 5000+00 5025+00 5050+00 5075+00 5100+00 5125+00 5150+00 5175+00 5200+00 5225+00 5250+00 5275+00 5300+00 5325+00 5350+00 5375+00 5400+00 5425+00 5450+00 5475+00 5500+00 5525+00 5550+00 5575+00 5600+00 5625+00 5650+00 5675+00 5700+00

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A12

DRAFT

APPENDIX A12-1

DRAFT

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A13

DRAFT

APPENDIX A13-1

DRAFT

DRAFT

PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A14

DRAFT

APPENDIX A14-1

CAPACITY ASSESSMENT WORKSHEETS FOR PUBLIC WATER SYSTEMS TO DEMONSTRATE CAPACITY DEVELOPMENT

DRAFT

Capacity Assessment Worksheets for Public Water Systems to Demonstrate Capacity Development

Department of Environmental Quality
Water Quality Division
August, 1999

Notes: These capacity assessment worksheets are provided to assist facilities in meeting the requirements of Section 5(b) of Chapter 22, Capacity Development Standards for Public Water Systems, but are not part of the chapter.
Please complete all 5 tabs of this spreadsheet. Put your answers in the boxes with yellow background.
For assistance with these worksheets please call DEQ/WQD State Revolving Fund Section at (307) 777-7781.

Introduction

Wyoming State Statute W.S. 16-1-303(e) requires all new or modified community and noncommunity nontransient water systems commencing operations after October 1, 1999 to demonstrate Capacity Development. Capacity Development covers three areas:

Technical capability - the physical infrastructure of the water system, including but not limited to the source water adequacy, infrastructure adequacy, and technical knowledge. In other words, does your treatment system work the way it is supposed to? Are you providing the safest and cleanest water possible and required by law to your customers right now, and will you be able to in the future?

Managerial capability - the management structure of the water system, including but not limited to ownership accountability, staffing and organization, and effective linkages. In simpler terms, do you have a capable and trained staff? Do you have an effective management structure?

Financial capability - the financial resources of the water system, including but not limited to the revenue sufficiency, credit worthiness, and fiscal controls. Basically, does your system have a budget and enough revenue coming in to cover costs, repairs, and replacements?

If it is determined that your system does NOT have the required capability(s), the goal of this program is to move your system towards attaining the required capability(s). If you have questions concerning Capacity Development please call our office at **(307) 777-7781**, and we will be happy to help.

After Department of Environmental Quality/Water Quality Division (DEQ) receives these worksheets, we will be studying them and other information located in our files to make a determination whether or not your public water system has demonstrated Capacity Development. A final report will be available upon completion of the analysis.

Applicant:	**PAWS Joint Powers Board**
PWS Number:	
Prepared by:	**Consultant**
(include title)	
Address:	
City, State, Zip:	
Telephone:	
Date:	

The Managerial Portion of your System

This portion applies to all new or modified community and nontransient noncommunity water systems. To be completed by individuals responsible for facility management, e.g. Public Works Director, City Engineer, Council, Board, Owner, etc. Please mark (X) the appropriate box: Y*es* , *No* , or *Unknown* for each question. Please try to determine the answer to every question. ***If a question or section does not apply to your system, please write NA next to the question or section for not applicable. If additional space is needed please attach additional sheet(s) and refer to number***

Operation & Maintenance			
Operations Staff	**Yes**	**No**	**Unknown**
1. Do the persons operating your system have current water treatment plant and water distribution operator certification credentials from DEQ? ***If yes, list operators & classifications:***	**X**		
2. Do your operators receive training on an ongoing basis to keep current on new developments in the field?	**X**		
Future Operational Demands	**Yes**	**No**	**Unknown**
3. Does your water system obtain any regular or occasional technical assistance from outside sources, such as DEQ, your engineer, other utilities or organizations specifically dedicated to providing technical assistance? ***If yes, who*** :	**X**		
Management & Administration			
Who's in Charge?	**Yes**	**No**	**Unknown**
4. Is there a clear plan of organization and control for management and operation of the system? If yes please attach appropriate documentation.	**X**		
5. Are the limits of the operators' authority clearly defined?	**X**		
6. Are all the specific functional areas of operations and management assigned?	**X**		
7. Does everyone involved in operations know who is responsible for each area?	**X**		
8. Is someone responsible for scheduling work? ***If yes, who:***	**X**		
Rules and Standards	**Yes**	**No**	**Unknown**
9. Do you have rules governing new hook-ups?	**X**		
10. Do you have a water main extension policy?	**X**		
11. Do you have standard construction specifications to be followed?	**X**		
12. Do you have measures to assure cross-connection control and backflow prevention?	**X**		
13. Do you have policies or rules describing customer rights and responsibilities?	**X**		
Regulatory Compliance Program	**Yes**	**No**	**Unknown**
14. Do you have approved SDWA monitoring/reporting requirements?	**X**		
15. Do you satisfy reporting requirements?	**X**		
16. Do you know how to obtain the most recent information on regulatory requirements?	**X**		
17. Do you know how to obtain an explanation of requirements?	**X**		
18. Do you maintain bacteriological records for five years and chemical records for 10 years?	**X**		
19. Do you know what to do in the event of a violation?	**X**		
Emergencies	**Yes**	**No**	**Unknown**
20. Do you have an Emergency Response Plan? If yes, please attach.	**X**		
21. Does everyone involved in operations know what they are to do in the event of contamination from a toxic hazardous waste spill in your source water or a main break or a tank failure?	**X**		

22. Do you have a chain-of-command protocol for emergency action?	X		
23. Is someone responsible for emergency operations, for communications with regulators, for customer relations, for media relations? ***If yes, who (title):***	X		
Safety	**Yes**	**No**	**Unknown**
24. Do you have a safety program defining measures to be taken if someone is injured? If yes, please attach.	X		
25. Do operators understand the risks and safety measures involved in handling water treatment chemicals?	X		
26. Do you have written operating procedures for both routine and emergency system operations? If yes, please attach.	X		
27. Are you fully aware of Occupational Safety and Health Administration (OSHA) confined space (such as trenches/manholes) regulations?	X		
Maintenance	**Yes**	**No**	**Unknown**
28. Do you have a planned maintenance management system -- a system for scheduling routine preventive maintenance?	X		
29. Do you have a system for assuring adequate inventory of essential spare parts and back-up equipment? ***If yes, please describe:***	X		
30. Do you have relationships with contractors and equipment vendors to assure prompt priority service?	X		
31. Do you have records and data management systems for system operating and maintenance data, for regulatory compliance data, and for system management and administration?	X		
Management Capability	**Yes**	**No**	**Unknown**
32. Do you receive outside services and technical assistance you need?	X		
33. Do you have adequate legal counsel, insurance, engineering advice, technical/operations assistance and financial advice?	X		

The Financial Portion of your System

This portion applies to all new or modified community and nontransient noncommunity water systems. To be completed by individuals responsible for facility finances, e.g. public works director, city engineer, clerks, council, board, owner, etc. Please mark (X) the appropriate box: Y*es* , *No* , or *Unknown* for each question. Please try to determine the answer to every question. ***If a question or section does not apply to your system, please write NA next to question or section for not applicable.***

Financial Planning Mechanisms	**Yes**	**No**	**Unknown**
34. Do you have an annual budget?	X		
35. Do you have within the annual budget a separate reserve account for equipment replacement and/or capital improvement?	X		
36. Do you have a capital budget or capital improvement plan that projects future capital investment needs some distance (at least four years) into the future?	X		
37. Do you have a process to schedule and commit to capital projects?	X		
38. Does your long-term planning incorporate analysis of alternative strategies that might offer cost saving to customers, such as consolidation with other nearby systems or sharing of operations and management expenses with other nearby systems?	X		
Rates/Billing	**Yes**	**No**	**Unknown**
39. Do you regularly review your rates? ***How often?***	X		
40. Do you have a plan in place for periodic rate increases?	X		
41. Is the rate structure based on metered watered use? ***List water rates per 1000 gallons or attach rate schedule:***	X		
42. Do users pay a higher rate per 1000 gallons as they use more water?	X		
43. Do you have procedures for billing and collection?	X		
44. Is your billing collection rate greater than 95%?	X		
45. Do you have collection procedures for delinquent accounts?	X		
Financial Planning Mechanisms - Are they Adequate?	**Yes**	**No**	**Unknown**
46. Do you have audited financial statements?	X		
47. Does your water system presently operate at least on a break-even basis?	X		
48. Does the water system keep all the water revenues (i.e., water revenue does not support other municipal departments or unrelated activities)?	X		
49. Do you employ standardized accounting and tracking systems?	X		
50. Please describe accounting system(s), e.g. GAAP, manual book entry, software program **TO BE DETERMINED**			
51. Do you keep records to substantiate depreciation of fixed assets and accounting for reserve funds?	X		
52. Are financial management record keeping systems organized?	X		
53. Are controls exercised over expenditures?	X		
54. Are controls exercised to keep from exceeding your budget?	X		
55. Are there purchasing procedures?	X		

Financial Spreadsheet

56. Please complete the financial spreadsheet

5 YR. Projections	Last Year	Current Year	Year 2 Est.	Year 3 Est.	Year 4 Est.	Year 5 Est.
1. Beginning Cash on Hand	$0.00	$4,396,501.20	$8,793,002.40	###########	###########	###########
2. Operating revenues (see 13)	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20
3. Other receipts	$600,000.00	$600,000.00	$600,000.00	$600,000.00	$600,000.00	$600,000.00
4. Total Available Cash (1+2+3)	$6,113,401.20	###########	###########	###########	###########	###########
5. O&M and Replace. Expenses	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00
6. Debt Service	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7. Capital Improvements	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8. Other Expenses	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
9. Total Cash Paid (5+6+7+8)	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00	$1,716,900.00
10. Next Year's Begin. Cash (4-9)	$4,396,501.20	$8,793,002.40	###########	###########	###########	###########
11. Number of Customer Accounts	12	12	12	12	12	12
12. Average annual Account Charge	$459,450.10	$459,450.10	$459,450.10	$459,450.10	$459,450.10	$459,450.10
13. Operating Revenue (11X12)	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20	$5,513,401.20

The Technical Portion of your System

For existing water systems the technical capacity development assessment may be performed by completing the NEW WATER SYSTEM TECHNICAL CAPACITY WORKSHEET or by providing a copy of the most recent sanitary survey along with an action plan and schedule to address any deficiencies identified by the division in the sanitary survey.

For new water systems the "**NEW WATER SYSTEM TECHNICAL CAPACITY WORKSHEET**" needs to be completed to assess technical capacity.

NEW WATER SYSTEM TECHNICAL CAPACITY WORKSHEET

The Technical Portion of Your System-For New Water Systems

To be completed by individuals responsible for facility operation, e.g. Public works director, city engineer, council, board, owner. Please mark (X) the appropriate box: *Yes, No* , or *Unknown* for each section. Please try to determine the answer to every question. ***If a section or question does not apply to your system, please write NA next to the section or question for not applicable.***

Water Supply and Existing Demands	**Yes**	**No**	**Unknown**
57. Do you know your estimated average daily demand? Amount: **15 MGD**	X		
58.Do you know your maximum daily demand? Amount:	X		
59. Do you know the maximum amount of water you can deliver from your source? Amount:	X		
60. Is your source capacity higher than your maximum daily demand? Percentage higher or lower:	X		
61. Can you meet peak demand without pumping at peak capacity for extended periods?	X		
62. Do you have an Emergency Response Plan that will allow you to meet system demand during a drought or shortage, such as the loss of the largest source? If yes, please attach.	X		
Water Demand	**Yes**	**No**	**Unknown**
63. Do you know whether your system demands will be growing, declining or remaining stable over the next ten years? If yes, please indicate below whether growing, declining, or stable. **1% GROWTH RATE**	X		
64. Does your source have additional water available for appropriation?			X
65. If you have large commercial, industrial, or irrigation users, do you know their long-term plans and understand their needs?	X		
Purchased Water	**Yes**	**No**	**Unknown**
66. If you purchase water from another system or a wholesaler, do you know their long-term plans?	X		
67. Do you have a contract to purchase water? ***If yes, with whom?***			X
68. Do you know the terms affecting your supply during drought conditions?	X		
Competing Uses of Water	**Yes**	**No**	**Unknown**
69. Do you know who the other users are and do you understand their future plans?	X		
70. Do you fully understand your legal rights to the water?			X
71. Do you have a water right?			X
Alternative Sources	**Yes**	**No**	**Unknown**
72. Are alternative water sources possibly available to you?	X		
73. Are you knowledgeable of the characteristics and costs of using alternative sources?	X		
Water Source	**Yes**	**No**	**Unknown**

74. Do you know the depth of your well(s)? ***Depth(s):***			X
75. Do you know the geologic name of the aquifer system from which your water is drawn? ***If yes, geologic name :***			X
Treatment - Microbiological Contamination	**Yes**	**No**	**Unknown**
Is your system using surface water or ground water under the influence of surface water? **(If you checked "no" skip to next section - Ground Water Systems.)**	X		
Surface Water Systems			
Filtration Plant Condition	**Yes**	**No**	**Unknown**
76. Are repair parts available?	X		
77. Do you have redundancy (back-ups/automatic switch-overs) for all major mechanical units? If no, list units you do NOT have redundancy for:	X		
78. Do you have on-line continuous turbidimeters on each filter?	X		
79. Have you adopted a turbidity goal lower than the standard?	X		
80. Do you have the capability to add coagulant before the filter?	X		
Ground Water Systems	**Yes**	**No**	**Unknown**
81. Is your Ground Water Under the Influence of Surface Water?			
82. Is your water free from variations in turbidity and temperature after storm events?			
Well Construction and Protection	**Yes**	**No**	**Unknown**
83. Is your well(s) constructed to current Wyoming regulations?			
84. Do you have an approved wellhead/source water protection plan?			
85. Is your wellhead finished with a pitless adapter that will prevent contamination from surface water?			
Disinfection	**Yes**	**No**	**Unknown**
Do you disinfect? (if "no", skip to the Infrastructure - Pumping section)	X		
Disinfection	**Yes**	**No**	**Unknown**
86. Do you regularly inspect and maintain your disinfection/chlorination equipment?	X		
Type of Equipment:			
How often?			
Disinfectant used:			
CHLORINE			
87. Do you have back-up equipment? ***Type:***	X		
88. Do you have adequate contact time following disinfection and before the first user in the distribution system? ***Contact time:***		X	
89. Can you detect a chlorine residual at taps at the ends of the distribution system? ***Free Chlorine Residual:***			X
Disinfection By-Products			

Treatment for the Control of Disinfection By-Products	Yes	No	Unknown
90. If you treat surface water, could you adopt "enhanced coagulation" in your current plant?	X		
91. If you treat surface water, could you still meet current contact-time requirements if disinfection were not allowed before sedimentation?	X		

Infrastructure - Pumping

Condition of Pumping Equipment	Yes	No	Unknown
92. Do you routinely inspect for signs of pump/motor problems? ***How often:***	X		
93. Do you hire a qualified pump contractor to perform an inspection of all pumping equipment, identify potential problems, and perform maintenance, on an annual basis? ***Explain:***			X

Standby/Emergency Power Equipment	Yes	No	Unknown
94. Is there sufficient standby/emergency power capacity to supply 100% of the average daily demand of the system (excluding fire demand)?	X		
95. Are any existing standby/emergency power equipment, controls and switches tested or exercised routinely under load conditions, for at least 30 minutes at a time?	X		
96. Has the local electric utility been made aware of the standby/emergency power provisions made by the water system, so that it can reinforce and safeguard the electrical facilities serving the water operations?			X

Infrastructure - Storage

Storage Capacity	Yes	No	Unknown
97. Does the system have sufficient gravity-flow (non-pumped) or emergency generator-supported pumping capability to ensure adequate distribution storage to provide safe and adequate service for up to 24 hours without power? ***If no, how long:***	X		
98. Is there reserve capacity in the tank for fire protection support? ***Amount:***			X

Security Measures	Yes	No	Unknown
99. Are all openings, such as vent pipes, screened to protect against the entrance of small animals, mosquitoes, flies and other small insects?	X		
100. Is there an entry hatch to allow access for cleaning and painting of the interior of the tank?	X		
101. Is your storage tank covered?	X		
102. Is the tank and the immediate surrounding area fenced?	X		

Control Systems	Yes	No	Unknown
103. Is there a high/water level signal system to control the pumps?	X		
104. Is there an altitude valve, to preclude the tank from overflowing?	X		
105. Is there a drain valve or hydrant to allow for draining of the tank?	X		
106. Is there an approved method for draining the tank, including any required discharge permits? ***If yes, list Surface Water Discharge permit number:***	X		

Tank Maintenance	Yes	No	Unknown
107. Will the tank be inspected at least every five years by a qualified tank contractor for evidence of corrosion or pitting, leakage, and structural weakness?	X		

Infrastructure - Distribution

System Maintenance	Yes	No	Unknown
108. Will the operator routinely flush, test, and maintain the hydrants in the system? **How often:**	X		
109. Are the locations of valves in the mains and curb stops on the service lines precisely known?	X		
110. Will the system keep a log of distribution system breaks to identify weak areas in the system?	X		
111. Are locations, size, and type of mains and service lines detailed on records in a secure area?	X		
112. Will all valves be exercised and lubricated periodically?	X		
113. Will an O&M manual be developed for the systems?	X		
114. Will meter pits, pressure regulating valves, altitude valves, blow-offs, and other appurtenances be maintained on a regular basis?	X		

Water Quality in Distribution System	Yes	No	Unknown
115. Is there a program for installing and testing backflow prevention devices where potential contamination is present?	X		
116. Is there a program to eliminate "dead-ends" in the mains, where feasible?	X		

Construction Standards	Yes	No	Unknown
117. Are there suitable rights-of-way and easements provided to the water system for expansion, maintenance, and replacement of mains and services?	X		
118. Is there sufficient earth cover to protect the mains from frost damage or heavy loads, if driven over?	X		
119. Are materials of mains designed and selected to resist corrosion, electrolysis, and deterioration?	X		
120. Can you maintain adequate pressure in the distribution system under all conditions of flow?	X		
121. Are you familiar with Wyoming Water Quality Rules and Regulations Chapters 3 and 12 for construction permitting?	X		

CAPACITY DEVELOPMENT

Additional Financial Worksheets for DWSRF Loan Recipients and New Community Water Systems (CWS)
and New Non-Transient Non-Community Water Systems

SUMMARY

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
Beginning Cash on Hand	$0	$4,393,101	$8,786,202	##########	##########	##########
Add:						
Cash Receipts (worksheet 1, 5T)	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401
Less:						
Operating Expenditures (worksheet 2, 8T)	$1,720,300	$1,720,300	$1,763,308	$1,807,390	$1,852,575	$1,898,889
Debt Service (worksheet 3, 9T)	$0	$0	$0	$0	$0	$0
Capital Improvements (worksheet 4, 10T)	$0	$0	$0	$0	$0	$0
Deposits to Reserves (worksheet 5, 11T)	$0	$0	$0	$0	$0	$0
Ending Cash on Hand	$4,393,101	$8,786,202	##########	##########	##########	##########

Number of Customer Accounts	12	12	12	12	12	12
Average Annual User Charge per account	##########	##########	##########	##########	##########	##########
Coverage Ratio ((3T-8T)/9T)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Operating Ratio (1T/8T)	3.20	3.20	3.13	3.05	2.98	2.90

Applicant:
Completed by:
Date:

DIRECTIONS - ADDITIONAL FINANCIAL WORKSHEETS

SUMMARY	
Rows in top table are self-explanatory	
Note that Ending Cash on Hand equals Beginning Cash on Hand for next year.	
Number of Customer Accounts	Use most recent system data or expected increases.
Ave Annual User Charge per Customer Account	
Coverage Ratio (3T-8T)/9T	Measure of the sufficiency of net operating profit to cover the debt service requirements of the system. A bond covenant might require this to meet or exceed certain limits (e.g. 1.25).
Operating Ratio (1T/8T)	Measure of whether operating revenues are sufficient to cover OM&R expenses. An operating ratio of 1.0 is the bare minimum for a self-supporting facility. With debt service requirements, the operating ratio would have to be higher.
WORKSHEET 1 - RECEIPTS	
1. Cash Receipts:	
a. Unmetered Water Revenue	All cash received/estimated for water supplied to residential, commercial, industrial and public customers where the customer charge is not based on quantity, i.e., it's based on diameter of service pipe, room, foot of frontage or other type units.
b. Metered Water Revenue	All cash received/estimated for water supplied to residential, commercial, industrial and public customers where the charge is based on quantity of water delivered.
c. Other Water Revenue	Other cash received/estimated from sale of water, e.g., sales for irrigation, sales for resale, inter-municipal sales, advalorem taxes (OM&R portion) etc.
1T. Total Water Revenues (1a thru 1c)	Self-explanatory
2. Cash Receipts from Other Income:	
a. Connection Fees	All cash received/estimated for connection of customer service during the year.
b. Interest and Dividend Income	All cash received/estimated on interest income from securities, loans, notes, etc., whether the securities are carried as investments or included in sinking or reserve accounts.

c. Other Income	Other revenues collected/estimated during the period (e.g., disconnection or change in service fees, profit on materials billed to customers, servicing of customer lines, late payment fees, rents, sales of assets, advalorem taxes (infrastructure portion), etc.).
2T. Total Other Income (2a thru 2c)	
3T. Total Cash Revenues (1T + 2T)	Self-explanatory
4. Other Cash Receipts	
a. Transfers in/Additional Rev Needed	Includes transfers from other funds within the municipality or can be used as a "plug" figure when determining the additional cash needed to cover cash needs.
b. Loans, Grants or other Cash Injection	Includes loans or grants from financial institutions, inter-municipal loans, state or federal sources.
4T. Total Other Cash Receipts (4a thru 4b)	Self-explanatory
5T. Total Cash Receipts (3T + 4T)	Self-explanatory
WORKSHEET 2 - OPERATING EXPENDITURES	
6. Operating Expenses	Use actual amounts paid when completing the prior year. Estimate the amounts for projected years based on prior year amounts, trends and other known variables (including those related to needs identified in the self-assessment).
a. Salaries and wages	Cash expenditures made/estimated for salaries, bonuses and other consideration for work related to the O&M of the facility, including administration, and compensation for officers, directors, etc.
b. Employee Pensions and Benefits	Paid vacations, paid sick leave, health insurance, unemployment insurance, pension plan, etc.
c. Purchased Water	Amounts paid/estimated for cost of water purchased for resale.
d. Purchased Power	Amounts paid/estimated for all electrical power for the utility.
e. Fuel for Power Production	Amounts paid/estimated for fuel purchased for the production of power to operate pumps, etc.
f. Chemicals	Amounts paid/estimated for chemicals used in the treatment and distribution.
g. Materials and Supplies	Amounts paid/estimated for materials and supplies used for O&M of the PWS other than those under contractual services.
h. Contractual Services - Engineering	Amounts paid/estimated to outside engineers to perform ongoing engineering work for the facility.

i. Contractual Services - Other	Amounts paid/estimated for costs of outside accounting, legal, managerial, and other services.
j. Rental of Equipment/Real Property	Amounts paid/estimated for costs associated w/the rental of equipment, buildings and real property.
k. Transportation Expenses	Amounts paid/estimated for automobile, truck, equipment, and other vehicle use and maintenance.
l. Laboratory	Self-explanatory
m. Insurance	Amounts paid/estimated for vehicle, liability, workers' compensation and other insurance.
n. Regulatory Commission Expenses	Amounts paid/estimated for rate cases and other activities with a regulatory commission.
o. Advertising	Amounts paid/estimated for informational, instructional and other advertising.
p. Miscellaneous	Amounts paid/estimated for all expenses not included elsewhere (e.g. permit fees, training, etc.).
q. Other	
6T. Total Cash 0perating Expenses	Total of lines 6a thru 6q
7T. Total Replacement Expenditures	Amounts paid/estimated for replacement of equipment to maintain system integrity.
8T. Total OM&R Expenditures (6T + 7T)	
WORKSHEET 3 - DEBT SERVICE	
9. Debt Service	
a. Capital Lease Payments	Include cash payments made/estimated for leased/rented vehicles and equipment and capital lease payments.
b. Loan Principal Repayments	Include cash payments made/estimated for principal on all loans, including vehicle and equipment purchases on time payments.
c. Loan Interest Payments	Self-explanatory
d. Transfers Out	Include cash transfers made/estimated to funds or entities outside the PWS.
9T. Total Debt Service/Transfers Out	Total of lines 9a thru 9d
WORKSHEET 4 - CAPITAL IMPROVEMENTS	
10. Capital Purchases (specify):	Amount of cash outlays/estimates for items such as equipment, building, vehicle purchases, and leasehold improvements that were not a part of the initial design of the PWS infrastructure.

10T. Total Capital Purchases	
WORKSHEET 5 - DEPOSITS TO RESERVES	
11. Deposits to Reserves:	Do not include depreciation as a reserve unless there is actually a "depreciation" reserve that has cash set-aside for future expansion.
a. Debt Service Reserve	Funds specifically set-aside to meet debt service requirements or requirements set forth in a loan covenant/bond indenture.
b. Bond Retirement Reserve	Funds specifically set aside to retire debt as it is scheduled.
c. Capital Improvement Reserve	Funds specifically set aside to meet long-term objectives for major facility expansion, improvement and/or the construction of a new facility.
d. Replacement Reserve	Funds specifically set aside for the future replacement of equipment needed to maintain the integrity of the facility over its useful life.
e. Other	
11T. Total Deposits to Reserves	Total of lines 11a thru 11e

WORKSHEET 1 - RECEIPTS

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
1. Cash Receipts From Water Revenues:						
a. Unmetered Water Revenue	$3,620,850	$3,620,850	$3,620,850	$3,620,850	$3,620,850	$3,620,850
b. Metered Water Revenue	$1,892,551	$1,892,551	$1,892,551	$1,892,551	$1,892,551	$1,892,551
c. Other Water Revenue	$0	$0	$0	$0	$0	$0
1T. Total Water Revenues (1a thru 1c)	$5,513,401	$5,513,401	$5,513,401	$5,513,401	$5,513,401	$5,513,401
2. Cash Receipts From Other Income						
a. Connection Fees	$0	$0	$0	$0	$0	$0
b. Interest and Dividend Income	$0	$0	$0	$0	$0	$0
c. Other	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000
2T. Total Other Income (2a thru 2c)	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000
3T. Total Cash Revenues (1T + 2T)	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401
4. Other Cash Receipts						
a. Transfers in	$0	$0	$0	$0	$0	$0
b. Loans, Grants or other Cash Received	$0	$0	$0	$0	$0	$0
(please specify)	NA	NA	NA	NA	NA	NA
4T. Total Other Cash Receipts (4a + 4b)	$0	$0	$0	$0	$0	$0
5T. Total Cash Receipts (3T + 4T)	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401	$6,113,401

WORKSHEET 2 - OPERATING EXPENDITURES

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
6. Operating Expenses						
a. Salaries and wages	$365,080	$365,080	$374,207	$383,562	$393,151	$402,980
b. Employee Pensions and Benefits	$547,620	$547,620	$561,311	$575,343	$589,727	$604,470
c. Purchased Water	$0	$0	$0	$0	$0	$0
d. Purchased Power	$159,000	$159,000	$162,975	$167,049	$171,226	$175,506
e. Fuel for Power Production	$0	$0	$0	$0	$0	$0
f. Chemicals	$150,000	$150,000	$153,750	$157,594	$161,534	$165,572
g. Materials and Supplies	$16,800	$16,800	$17,220	$17,651	$18,092	$18,544
h. Contractual Services - Engineering	$48,000	$48,000	$49,200	$50,430	$51,691	$52,983
i. Contractual Services - Other	$17,000	$17,000	$17,425	$17,861	$18,307	$18,765
j. Rental of Equipment/Real Property	$90,500	$90,500	$92,763	$95,082	$97,459	$99,895
k. Transportation Expenses	$54,000	$54,000	$55,350	$56,734	$58,152	$59,606
l. Laboratory	$25,500	$25,500	$26,138	$26,791	$27,461	$28,147
m. Insurance	$52,000	$52,000	$53,300	$54,633	$55,998	$57,398
n. Regulatory Commission Expenses	$6,000	$6,000	$6,150	$6,304	$6,461	$6,623
o. Advertising	$5,000	$5,000	$5,125	$5,253	$5,384	$5,519
p. Miscellaneous	$16,800	$16,800	$17,220	$17,651	$18,092	$18,544
q. other	$25,500	$25,500	$26,138	$26,791	$27,461	$28,147
6T. Total Operating Expenses (6a thru 6p)	$1,578,800	$1,578,800	$1,618,270	$1,658,727	$1,700,195	$1,742,700
7. Replacements:						
a. Replacement Expenditures	$141,500	$141,500	$145,038	$148,663	$152,380	$156,190
(please specify)	Maintenance					
b. Other						
(please specify)						
7T. Total Replacement Expenditures	$141,500	$141,500	$145,038	$148,663	$152,380	$156,190
8T. Total OM&R Expenditures (6T+ 7T)	$1,720,300	$1,720,300	$1,763,308	$1,807,390	$1,852,575	$1,898,889

WORKSHEET 3 - DEBT SERVICE

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
9. Debt Service						
a. Capital Lease Payments						
(name, number, or description for each)						
WIFIA	$0	$0	$0	$0	$0	$0
b. Loan Principal Repayments						
(name, number, or description for each)						
WIFIA	$0	$0	$0	$0	$0	$0
c. Loan Interest Payments						
(namer, number, or description for each)						
WIFIA	$0	$0	$0	$0	$0	$0
d. Transfers Out						
9T. Total Debt Service/Transfers Out	$0	$0	$0	$0	$0	$0

WORKSHEET 4 - CAPITAL IMPROVEMENTS

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
10. Capital Improvements (briefly describe each project)						
(project description)						
All Completed as part of Initial Project	$0	$0	$0	$0	$0	$0
10T. Total Capital Improvements	$0	$0	$0	$0	$0	$0

WORKSHEET 5 - DEPOSITS TO RESERVES

Five Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected	Year 5 Projected
11. Deposits to Reserves:						
a. Debt Service Reserve						
b. Bond Retirement Reserve						
c. Capital Improvement Reserve						
d. Replacement Reserve						
e. Other						
11T. Total Deposits to Reserves (11a thru 11e)	$0	$0	$0	$0	$0	$0

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

A15

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APPENDIX A15-1

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PAWS

PLATTE ALLIANCE WATER SUPPLY

APPENDICES

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APPENDIX A16-1

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PAWS

PLATTE ALLIANCE WATER SUPPLY

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Claims1

Council to consider and take action on claims of the City.

Staff Contact: Liz Hilyard, Finance Director

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 09857 - 308 EMBROIDERY					
Fund: 111 - GENERAL					
UNIFORMS-PD	UNIFORMS & CLOTHING				20.70
				Fund 111 - GENERAL Total:	**20.70**
				Vendor 09857 - 308 EMBROIDERY Total:	**20.70**
Vendor: 00743 - 3M COMPANY					
Fund: 212 - TRANSPORTATION					
10 ROLLS WHITE PAVEMENT M...	DEPARTMENT SUPPLIES				2,008.99
				Fund 212 - TRANSPORTATION Total:	**2,008.99**
				Vendor 00743 - 3M COMPANY Total:	**2,008.99**
Vendor: 02583 - ADVANCE AUTO PARTS					
Fund: 111 - GENERAL					
DIESEL EXHAUST FLUID, CAR W...	DEPARTMENT SUPPLIES				76.29
CAR WASH SOAP	DEPARTMENT SUPPLIES				14.70
				Fund 111 - GENERAL Total:	**90.99**
Fund: 725 - CENTRAL GARAGE					
POLICE #27- HEADLAMP	EQUIPMENT MAINTENANCE				39.90
ES #802- SERP BELT AND SPARK...	EQUIPMENT MAINTENANCE				58.41
ES #802- OIL AND AIR FILTERS	EQUIPMENT MAINTENANCE				12.76
POLICE #7- OIL AND AIR FILTER	EQUIPMENT MAINTENANCE				9.10
POLICE #2- OIL FILTER	EQUIPMENT MAINTENANCE				3.15
POLICE #4- OIL FILTER	EQUIPMENT MAINTENANCE				3.15
POLICE #9- OIL FILTER	EQUIPMENT MAINTENANCE				3.15
POLICE #5- OIL FILTER	EQUIPMENT MAINTENANCE				3.15
ES STOCK - DEF	EQUIPMENT MAINTENANCE				255.00
POLICE #23- OIL AND AIR FILTER	EQUIPMENT MAINTENANCE				10.37
PARKS #303- OIL FILTER	EQUIPMENT MAINTENANCE				2.87
WATER #42- OIL FILTER	EQUIPMENT MAINTENANCE				3.37
WATER #42- OIL FILTER	EQUIPMENT MAINTENANCE				3.15
WW #938- OIL AND AIR FILTERS	EQUIPMENT MAINTENANCE				10.92
PARKS #318- OIL FILTER	EQUIPMENT MAINTENANCE				2.66
WATER #38- OIL AND AIR FILTER	EQUIPMENT MAINTENANCE				12.27
RETURNED DEF	EQUIPMENT MAINTENANCE				-413.70
RETURNED OIL FILTER	EQUIPMENT MAINTENANCE				-3.15
				Fund 725 - CENTRAL GARAGE Total:	**16.53**
				Vendor 02583 - ADVANCE AUTO PARTS Total:	**107.52**
Vendor: 05887 - ALLO COMMUNICATIONS,LLC					
Fund: 111 - GENERAL					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				237.72
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				70.55
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				34.65
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				37.65
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				160.00
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				141.09
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				327.18
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				1,146.92
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				36.11
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				423.67
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				200.23
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				10.70
				Fund 111 - GENERAL Total:	**2,826.47**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Fund: 212 - TRANSPORTATION					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				454.13
				Fund 212 - TRANSPORTATION Total:	**454.13**
Fund: 213 - CEMETERY					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				70.55
				Fund 213 - CEMETERY Total:	**70.55**
Fund: 224 - ECONOMIC DEVELOPMENT					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				69.05
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**69.05**
Fund: 621 - ENVIRONMENTAL SERVICES					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				166.28
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**166.28**
Fund: 631 - WASTEWATER					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				154.32
				Fund 631 - WASTEWATER Total:	**154.32**
Fund: 641 - WATER					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				181.09
				Fund 641 - WATER Total:	**181.09**
Fund: 661 - STORMWATER					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				35.27
				Fund 661 - STORMWATER Total:	**35.27**
Fund: 721 - GIS SERVICES					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				34.65
				Fund 721 - GIS SERVICES Total:	**34.65**
Fund: 725 - CENTRAL GARAGE					
LOCAL TELEPHONE CHARGES	PHONE & INTERNET				35.00
				Fund 725 - CENTRAL GARAGE Total:	**35.00**
				Vendor 05887 - ALLO COMMUNICATIONS,LLC Total:	**4,026.81**
Vendor: 02118 - ANITA'S GREENSCAPING INC					
Fund: 111 - GENERAL					
Cont. srvcs.	CONTRACTUAL SERVICES				252.00
Cont. srvcs.	CONTRACTUAL SERVICES				252.00
				Fund 111 - GENERAL Total:	**504.00**
				Vendor 02118 - ANITA'S GREENSCAPING INC Total:	**504.00**
Vendor: 10068 - ATLANTIC SIGNAL LLC					
Fund: 111 - GENERAL					
EQUIP MAINT-PD	EQUIPMENT MAINTENANCE				87.50
				Fund 111 - GENERAL Total:	**87.50**
				Vendor 10068 - ATLANTIC SIGNAL LLC Total:	**87.50**
Vendor: 00295 - B & H INVESTMENTS, INC					
Fund: 111 - GENERAL					
BLDG MAINT-PD	BUILDING MAINTENANCE				10.75
BLDG MAINT-PD	BUILDING MAINTENANCE				10.75
Dep. sup. -LIBRARY	DEPARTMENT SUPPLIES				50.00
BLDG MAINT-PD	BUILDING MAINTENANCE				10.75
BLDG MAINT-PD	BUILDING MAINTENANCE				10.75
Dep. sup. - LIBRARY	DEPARTMENT SUPPLIES				40.50
				Fund 111 - GENERAL Total:	**133.50**
Fund: 212 - TRANSPORTATION					
SUPP - WATER	DEPARTMENT SUPPLIES				40.00
SUPP - WATER	DEPARTMENT SUPPLIES				40.00
				Fund 212 - TRANSPORTATION Total:	**80.00**
Fund: 621 - ENVIRONMENTAL SERVICES					
BOTTLED WATER DELIVERY X 1 ...	DEPARTMENT SUPPLIES				10.00
SALT DELIVERY X 1 BAG AND UN..	DEPARTMENT SUPPLIES				32.00

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
BOTTLED WATER DELIVERY X 4 ...	DEPARTMENT SUPPLIES				32.50
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**74.50**
				Vendor 00295 - B & H INVESTMENTS, INC Total:	**288.00**
Vendor: 10067 - BIG DADDY COMPUTER SOLUTIONS					
Fund: 213 - CEMETERY					
DATABASE REPAIR	CONTRACTUAL SERVICES				270.00
				Fund 213 - CEMETERY Total:	**270.00**
				Vendor 10067 - BIG DADDY COMPUTER SOLUTIONS Total:	**270.00**
Vendor: 09716 - BLACK HILLS GAS DISTRIBUTION LLC					
Fund: 111 - GENERAL					
Monthly Energy Bill	HEATING FUEL				37.08
Monthly Energy Bill	HEATING FUEL				54.51
Monthly Energy Bill	HEATING FUEL				31.91
Monthly Energy Bill	HEATING FUEL				54.50
Monthly Energy Bill	HEATING FUEL				82.39
Monthly Energy Bill	HEATING FUEL				106.22
Monthly Energy Bill	HEATING FUEL				2,841.75
				Fund 111 - GENERAL Total:	**3,208.36**
Fund: 212 - TRANSPORTATION					
Monthly Energy Bill	HEATING FUEL				228.60
				Fund 212 - TRANSPORTATION Total:	**228.60**
Fund: 621 - ENVIRONMENTAL SERVICES					
Monthly Energy Bill	HEATING FUEL				44.33
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**44.33**
Fund: 641 - WATER					
Monthly Energy Bill	HEATING FUEL				132.78
				Fund 641 - WATER Total:	**132.78**
Fund: 725 - CENTRAL GARAGE					
Monthly Energy Bill	HEATING FUEL				31.91
				Fund 725 - CENTRAL GARAGE Total:	**31.91**
				Vendor 09716 - BLACK HILLS GAS DISTRIBUTION LLC Total:	**3,645.98**
Vendor: 00405 - BLUFFS SANITARY SUPPLY INC.					
Fund: 111 - GENERAL					
DEPT SUPP REC	DEPARTMENT SUPPLIES				77.06
DEPT SUPP REC	DEPARTMENT SUPPLIES				77.77
DEPT SUPP REC	DEPARTMENT SUPPLIES				55.52
Jan. sup.	JANITORIAL SUPPLIES				457.50
DEPT SUPP REC	DEPARTMENT SUPPLIES				118.96
Jan. sup.	JANITORIAL SUPPLIES				175.96
				Fund 111 - GENERAL Total:	**962.77**
Fund: 621 - ENVIRONMENTAL SERVICES					
BREAKROOM SUPPLIES	DEPARTMENT SUPPLIES				60.90
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**60.90**
				Vendor 00405 - BLUFFS SANITARY SUPPLY INC. Total:	**1,023.67**
Vendor: 02103 - BRODART CO					
Fund: 111 - GENERAL					
Dep. sup.	DEPARTMENT SUPPLIES				258.04
				Fund 111 - GENERAL Total:	**258.04**
				Vendor 02103 - BRODART CO Total:	**258.04**
Vendor: 00735 - CAPITAL BUSINESS SYSTEMS INC.					
Fund: 111 - GENERAL					
CONTRACTUAL-PD	CONTRACTUAL SERVICES				44.00
				Fund 111 - GENERAL Total:	**44.00**
				Vendor 00735 - CAPITAL BUSINESS SYSTEMS INC. Total:	**44.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 00055 - CARR- TRUMBULL LUMBER CO, INC.					
Fund: 212 - TRANSPORTATION					
SUPP - HEM FIR	DEPARTMENT SUPPLIES				61.98
				Fund 212 - TRANSPORTATION Total:	**61.98**
				Vendor 00055 - CARR- TRUMBULL LUMBER CO, INC. Total:	**61.98**
Vendor: 00787 - CASH WA DISTRIBUTING					
Fund: 111 - GENERAL					
CONCESSIONS	CONCESSION SUPPLIES				533.64
CONCESSION	CONCESSION SUPPLIES				589.90
				Fund 111 - GENERAL Total:	**1,123.54**
				Vendor 00787 - CASH WA DISTRIBUTING Total:	**1,123.54**
Vendor: 07911 - CELLCO PARTNERSHIP					
Fund: 111 - GENERAL					
JULY CELLULAR PHONE AND M...	CELLULAR PHONE				268.68
WIFI FOR MOBILE COMMAND	PHONE & INTERNET				44.02
CELL PHONES-PD	PHONE & INTERNET				1,136.82
				Fund 111 - GENERAL Total:	**1,449.52**
				Vendor 07911 - CELLCO PARTNERSHIP Total:	**1,449.52**
Vendor: 02396 - CITIBANK N.A.					
Fund: 111 - GENERAL					
POSTAGE-PD	POSTAGE				11.66
DEPT SUPPLIES	DEPARTMENT SUPPLIES				18.98
DEPT SUPP REC	DEPARTMENT SUPPLIES				23.98
				Fund 111 - GENERAL Total:	**54.62**
Fund: 212 - TRANSPORTATION					
OFFICE SUPPLIES - INK CARTRID...	DEPARTMENT SUPPLIES				36.47
				Fund 212 - TRANSPORTATION Total:	**36.47**
Fund: 213 - CEMETERY					
POSTAGE CEM	POSTAGE				24.93
				Fund 213 - CEMETERY Total:	**24.93**
Fund: 216 - BUSINESS IMPROVEMENT					
DEPT SUPP DS	DEPARTMENT SUPPLIES				79.99
				Fund 216 - BUSINESS IMPROVEMENT Total:	**79.99**
Fund: 224 - ECONOMIC DEVELOPMENT					
DEPT SUPPLIES	DEPARTMENT SUPPLIES				28.76
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**28.76**
Fund: 661 - STORMWATER					
DEPT SUP	DEPARTMENT SUPPLIES				135.99
DEPT SUP	DEPARTMENT SUPPLIES				262.98
				Fund 661 - STORMWATER Total:	**398.97**
				Vendor 02396 - CITIBANK N.A. Total:	**623.74**
Vendor: 05859 - CITIBANK, N.A.					
Fund: 111 - GENERAL					
DEPT SUPP PARK	DEPARTMENT SUPPLIES				79.00
				Fund 111 - GENERAL Total:	**79.00**
Fund: 212 - TRANSPORTATION					
SUPP - AIR FILTERS	DEPARTMENT SUPPLIES				23.70
				Fund 212 - TRANSPORTATION Total:	**23.70**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				66.35
				Fund 213 - CEMETERY Total:	**66.35**
				Vendor 05859 - CITIBANK, N.A. Total:	**169.05**
Vendor: 00367 - CITY OF SCB					
Fund: 111 - GENERAL					
POST/DEPT SUP/LEGAL FEES-PD	DEPARTMENT SUPPLIES				1.07

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
POST/DEPT SUP/LEGAL FEES-PD	POSTAGE				15.10
POST/DEPT SUP/LEGAL FEES-PD	LEGAL FEES				14.00
PETTY CASH	DEPARTMENT SUPPLIES				7.96
				Fund 111 - GENERAL Total:	**38.13**
Fund: 213 - CEMETERY					
PETTY CASH	DEPARTMENT SUPPLIES				1.00
				Fund 213 - CEMETERY Total:	**1.00**
Fund: 641 - WATER					
PETTY CASH	DEPARTMENT SUPPLIES				12.99
PETTY CASH	DEPARTMENT SUPPLIES				32.46
				Fund 641 - WATER Total:	**45.45**
				Vendor 00367 - CITY OF SCB Total:	**84.58**
Vendor: 01976 - CLARK PRINTING LLC					
Fund: 111 - GENERAL					
DEPT SUP	DEPARTMENT SUPPLIES				224.65
DEPT SUPP PARK	DEPARTMENT SUPPLIES				347.75
				Fund 111 - GENERAL Total:	**572.40**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				138.95
				Fund 213 - CEMETERY Total:	**138.95**
				Vendor 01976 - CLARK PRINTING LLC Total:	**711.35**
Vendor: 03010 - COLONIAL LIFE & ACCIDENT INSURANCE COMPANY					
Fund: 713 - CASH & INVESTMENT POOL					
LIFE/& ACCIDENT INS	LIFE INS EE PAYABLE				22.75
LIFE/& ACCIDENT INS	DIS INC INS EE PAYABLE				25.95
				Fund 713 - CASH & INVESTMENT POOL Total:	**48.70**
				Vendor 03010 - COLONIAL LIFE & ACCIDENT INSURANCE COMPANY Total:	**48.70**
Vendor: 00267 - CONTRACTORS MATERIALS INC.					
Fund: 212 - TRANSPORTATION					
SUPP - CONCRETE SAW BLADE	DEPARTMENT SUPPLIES				295.76
				Fund 212 - TRANSPORTATION Total:	**295.76**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				25.72
				Fund 213 - CEMETERY Total:	**25.72**
Fund: 641 - WATER					
DEPT SUP	DEPARTMENT SUPPLIES				110.30
				Fund 641 - WATER Total:	**110.30**
				Vendor 00267 - CONTRACTORS MATERIALS INC. Total:	**431.78**
Vendor: 09824 - CORE & MAIN LP					
Fund: 641 - WATER					
EQUIPMENT	EQUIPMENT				1,318.75
DEPT SUP	DEPARTMENT SUPPLIES				1,843.23
				Fund 641 - WATER Total:	**3,161.98**
				Vendor 09824 - CORE & MAIN LP Total:	**3,161.98**
Vendor: 09996 - CORNHUSKER MARRIOTT HOTEL					
Fund: 224 - ECONOMIC DEVELOPMENT					
SCHOOL & CONF	SCHOOL & CONFERENCE				216.00
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**216.00**
				Vendor 09996 - CORNHUSKER MARRIOTT HOTEL Total:	**216.00**
Vendor: 10065 - COW COUNTRY SALES & SERVICE LLC					
Fund: 213 - CEMETERY					
EQUIP MAINT CEM	EQUIPMENT				6,655.00
				Fund 213 - CEMETERY Total:	**6,655.00**
				Vendor 10065 - COW COUNTRY SALES & SERVICE LLC Total:	**6,655.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 09767 - CROELL INC					
Fund: 641 - WATER					
DEPT SUP	DEPARTMENT SUPPLIES				121.45
				Fund 641 - WATER Total:	**121.45**
				Vendor 09767 - CROELL INC Total:	**121.45**
Vendor: 07689 - CYNTHIA GREEN					
Fund: 111 - GENERAL					
DEPT SUPP	DEPARTMENT SUPPLIES				67.62
DEPT/JANIT SUPPL-PD	DEPARTMENT SUPPLIES				87.04
DEPT/JANIT SUPPL-PD	JANITORIAL SUPPLIES				23.55
DEPT/JANIT SUPPL-PD	JANITORIAL SUPPLIES				23.55
				Fund 111 - GENERAL Total:	**201.76**
				Vendor 07689 - CYNTHIA GREEN Total:	**201.76**
Vendor: 00234 - D & H ELECTRONICS INC.					
Fund: 212 - TRANSPORTATION					
FANS FOR TRAFFIC SIGNAL CON...	DEPARTMENT SUPPLIES				50.08
				Fund 212 - TRANSPORTATION Total:	**50.08**
				Vendor 00234 - D & H ELECTRONICS INC. Total:	**50.08**
Vendor: 03321 - DALE'S TIRE & RETREADING, INC.					
Fund: 111 - GENERAL					
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				74.00
				Fund 111 - GENERAL Total:	**74.00**
Fund: 212 - TRANSPORTATION					
TIRE REPAIR ON SWEEPER	EQUIPMENT MAINTENANCE				38.50
				Fund 212 - TRANSPORTATION Total:	**38.50**
Fund: 621 - ENVIRONMENTAL SERVICES					
FLEET TIRE REPAIRS	VEHICLE MAINTENANCE				1,828.09
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**1,828.09**
Fund: 631 - WASTEWATER					
EQUIP MAINT	EQUIPMENT MAINTENANCE				1,109.28
				Fund 631 - WASTEWATER Total:	**1,109.28**
				Vendor 03321 - DALE'S TIRE & RETREADING, INC. Total:	**3,049.87**
Vendor: 00404 - DAS STATE ACCOUNTING-CENTRAL FINANCE					
Fund: 111 - GENERAL					
Monthly Long Distance	PHONE & INTERNET				5.06
Monthly Long Distance	PHONE & INTERNET				5.88
Monthly Long Distance	PHONE & INTERNET				8.74
Monthly Long Distance	PHONE & INTERNET				1.80
Monthly Long Distance	PHONE & INTERNET				4.25
Monthly Long Distance	PHONE & INTERNET				10.22
Monthly Long Distance	PHONE & INTERNET				34.78
Monthly Long Distance	PHONE & INTERNET				21.67
Monthly Long Distance	PHONE & INTERNET				2.64
Monthly Long Distance	PHONE & INTERNET				3.46
LONG DISTANCE	PHONE & INTERNET				1.06
				Fund 111 - GENERAL Total:	**99.56**
Fund: 212 - TRANSPORTATION					
Monthly Long Distance	PHONE & INTERNET				6.70
				Fund 212 - TRANSPORTATION Total:	**6.70**
Fund: 213 - CEMETERY					
Monthly Long Distance	PHONE & INTERNET				3.19
				Fund 213 - CEMETERY Total:	**3.19**
Fund: 224 - ECONOMIC DEVELOPMENT					
Monthly Long Distance	PHONE & INTERNET				1.98
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**1.98**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Fund: 621 - ENVIRONMENTAL SERVICES					
Monthly Long Distance	PHONE & INTERNET				3.80
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**3.80**
Fund: 631 - WASTEWATER					
Monthly Long Distance	PHONE & INTERNET				3.57
				Fund 631 - WASTEWATER Total:	**3.57**
Fund: 641 - WATER					
Monthly Long Distance	PHONE & INTERNET				2.49
				Fund 641 - WATER Total:	**2.49**
Fund: 661 - STORMWATER					
Monthly Long Distance	PHONE & INTERNET				0.80
				Fund 661 - STORMWATER Total:	**0.80**
Fund: 721 - GIS SERVICES					
Monthly Long Distance	PHONE & INTERNET				0.97
				Fund 721 - GIS SERVICES Total:	**0.97**
Fund: 725 - CENTRAL GARAGE					
Monthly Long Distance	PHONE & INTERNET				3.03
				Fund 725 - CENTRAL GARAGE Total:	**3.03**
				Vendor 00404 - DAS STATE ACCOUNTING-CENTRAL FINANCE Total:	**126.09**
Vendor: 09692 - DOOLEY OIL INC					
Fund: 725 - CENTRAL GARAGE					
ES STOCK - ANTIFREEZE	EQUIPMENT MAINTENANCE				73.31
				Fund 725 - CENTRAL GARAGE Total:	**73.31**
				Vendor 09692 - DOOLEY OIL INC Total:	**73.31**
Vendor: 07421 - DUANE E. WOHLERS					
Fund: 621 - ENVIRONMENTAL SERVICES					
HAULING RECYCLING TO DENV...	DISPOSAL FEES				800.00
HAULING RECYCLING TO DENV...	DISPOSAL FEES				800.00
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**1,600.00**
				Vendor 07421 - DUANE E. WOHLERS Total:	**1,600.00**
Vendor: 03950 - ENERGY LABORATORIES, INC DEPT 6250					
Fund: 641 - WATER					
SAMPLES	SAMPLES				135.00
SAMPLES	SAMPLES				-135.00
SAMPLES	SAMPLES				135.00
				Fund 641 - WATER Total:	**135.00**
				Vendor 03950 - ENERGY LABORATORIES, INC DEPT 6250 Total:	**135.00**
Vendor: 09081 - ESIQUIO RIOS JR					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
				Fund 111 - GENERAL Total:	**144.00**
				Vendor 09081 - ESIQUIO RIOS JR Total:	**144.00**
Vendor: 07574 - FAT BOYS TIRE AND AUTO					
Fund: 111 - GENERAL					
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				165.00
				Fund 111 - GENERAL Total:	**165.00**
Fund: 725 - CENTRAL GARAGE					
PARKS DEPT LAWN MOWER TIRE	EQUIPMENT MAINTENANCE				83.00
CEMETERY LAWNMOWER TIRES	EQUIPMENT MAINTENANCE				44.00
				Fund 725 - CENTRAL GARAGE Total:	**127.00**
				Vendor 07574 - FAT BOYS TIRE AND AUTO Total:	**292.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 00548 - FEDERAL EXPRESS CORPORATION					
Fund: 641 - WATER					
POSTAGE	POSTAGE				67.23
				Fund 641 - WATER Total:	**67.23**
				Vendor 00548 - FEDERAL EXPRESS CORPORATION Total:	**67.23**
Vendor: 10035 - FINDAWAY WORLD LLC					
Fund: 111 - GENERAL					
A/V	AUDIOVISUAL SUPPLIES				189.98
A/V	AUDIOVISUAL SUPPLIES				101.23
				Fund 111 - GENERAL Total:	**291.21**
				Vendor 10035 - FINDAWAY WORLD LLC Total:	**291.21**
Vendor: 00794 - FLOYD'S TRUCK CENTER SCOTTSBLUFF					
Fund: 621 - ENVIRONMENTAL SERVICES					
REPAIRS TO UNIT #816	VEHICLE MAINTENANCE				379.10
REPAIRS TO UNIT #815	VEHICLE MAINTENANCE				55.06
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**434.16**
Fund: 631 - WASTEWATER					
EQUIP MAINT	EQUIPMENT MAINTENANCE				200.17
				Fund 631 - WASTEWATER Total:	**200.17**
Fund: 725 - CENTRAL GARAGE					
ES #815- FUEL FILTERS	EQUIPMENT MAINTENANCE				53.45
ES #812- FILTERS	EQUIPMENT MAINTENANCE				152.82
				Fund 725 - CENTRAL GARAGE Total:	**206.27**
				Vendor 00794 - FLOYD'S TRUCK CENTER SCOTTSBLUFF Total:	**840.60**
Vendor: 09946 - FRANCHETTI MATTHEW					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				72.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**324.00**
				Vendor 09946 - FRANCHETTI MATTHEW Total:	**324.00**
Vendor: 00060 - FRANCISCO'S BUMPER TO BUMPER INC					
Fund: 111 - GENERAL					
TOW SERVICE-PD	CONTRACTUAL SERVICES				100.00
				Fund 111 - GENERAL Total:	**100.00**
				Vendor 00060 - FRANCISCO'S BUMPER TO BUMPER INC Total:	**100.00**
Vendor: 07904 - FREMONT MOTOR SCOTTSBLUFF, LLC					
Fund: 111 - GENERAL					
VEH MAINT PARK	VEHICLE MAINTENANCE				587.33
				Fund 111 - GENERAL Total:	**587.33**
Fund: 725 - CENTRAL GARAGE					
POLICE #4- WASHER HOSE AND ...	EQUIPMENT MAINTENANCE				48.75
				Fund 725 - CENTRAL GARAGE Total:	**48.75**
				Vendor 07904 - FREMONT MOTOR SCOTTSBLUFF, LLC Total:	**636.08**
Vendor: 00887 - FYR-TEK INC					
Fund: 111 - GENERAL					
1 INCH FORESTRY NOZZLE FOR ...	DEPARTMENT SUPPLIES				85.00
				Fund 111 - GENERAL Total:	**85.00**
				Vendor 00887 - FYR-TEK INC Total:	**85.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 05600 - GALLS INC					
Fund: 111 - GENERAL					
UNIFORMS-PD	UNIFORMS & CLOTHING				354.69
UNIFORMS-PD	UNIFORMS & CLOTHING				63.94
UNIFORMS-PD	UNIFORMS & CLOTHING				18.17
UNIFORMS-PD	UNIFORMS & CLOTHING				48.95
UNIFORMS-PD	UNIFORMS & CLOTHING				28.20
UNIFORMS-PD	UNIFORMS & CLOTHING				481.84
UNIFORMS-PD	UNIFORMS & CLOTHING				44.07
				Fund 111 - GENERAL Total:	**1,039.86**
Fund: 218 - PUBLIC SAFETY					
CIP-PO-BODY ARMOR	EQUIPMENT				5,075.00
CIP-PO-BODY ARMOR	EQUIPMENT				2,875.00
				Fund 218 - PUBLIC SAFETY Total:	**7,950.00**
				Vendor 05600 - GALLS INC Total:	**8,989.86**
Vendor: 00022 - GENERAL ELECTRIC CAPITAL CORPORATION					
Fund: 111 - GENERAL					
DISH SOAP	DEPARTMENT SUPPLIES				13.96
LAUNDRY DETERGENT AND WA...	DEPARTMENT SUPPLIES				69.84
Dep. sup.	DEPARTMENT SUPPLIES				61.52
Misc.	DEPARTMENT SUPPLIES				10.59
Misc.	PROGRAMMING				37.48
CONCESSION SUPP REC	CONCESSION SUPPLIES				141.47
WATER AND OVEN MITTS	DEPARTMENT SUPPLIES				45.68
Prgrm.	PROGRAMMING				14.94
Dep. sup.	DEPARTMENT SUPPLIES				1.98
Prgrm.	PROGRAMMING				2.04
Misc.	DEPARTMENT SUPPLIES				9.14
Misc.	PROGRAMMING				9.80
				Fund 111 - GENERAL Total:	**418.44**
Fund: 215 - SPECIAL PROJECTS					
CAR SEAT GRANT-PD	DEPARTMENT SUPPLIES				48.98
CAR SEAT GRANT-PD	DEPARTMENT SUPPLIES				296.88
				Fund 215 - SPECIAL PROJECTS Total:	**345.86**
				Vendor 00022 - GENERAL ELECTRIC CAPITAL CORPORATION Total:	**764.30**
Vendor: 00602 - GENERAL TRAFFIC CONTROLS, INC					
Fund: 212 - TRANSPORTATION					
TRAFFIC SIGNAL SUPP - CONTR...	DEPARTMENT SUPPLIES				4,894.50
				Fund 212 - TRANSPORTATION Total:	**4,894.50**
				Vendor 00602 - GENERAL TRAFFIC CONTROLS, INC Total:	**4,894.50**
Vendor: 10063 - GROVE DONNA					
Fund: 111 - GENERAL					
PARK SHELTER	PARK SHELTER FEE				25.00
				Fund 111 - GENERAL Total:	**25.00**
				Vendor 10063 - GROVE DONNA Total:	**25.00**
Vendor: 04371 - HAWKINS, INC.					
Fund: 641 - WATER					
CHEMICALS	CHEMICALS				366.30
CHEMICALS	CHEMICALS				3,697.00
CHEMICALS	CHEMICALS				1,702.65
				Fund 641 - WATER Total:	**5,765.95**
				Vendor 04371 - HAWKINS, INC. Total:	**5,765.95**
Vendor: 00299 - HULLINGER GLASS & LOCKS INC.					
Fund: 111 - GENERAL					
DEPT SUPP PK	DEPARTMENT SUPPLIES				79.50
BUILD MAINT PARK	BUILDING MAINTENANCE				22.00

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
EQUIP MAINT-PD	EQUIPMENT MAINTENANCE				4.00
				Fund 111 - GENERAL Total:	**105.50**
				Vendor 00299 - HULLINGER GLASS & LOCKS INC. Total:	**105.50**
Vendor: 08793 - HYDRONIC WATER MANAGEMENT					
Fund: 111 - GENERAL					
Equip. main.	EQUIPMENT MAINTENANCE				425.00
				Fund 111 - GENERAL Total:	**425.00**
				Vendor 08793 - HYDRONIC WATER MANAGEMENT Total:	**425.00**
Vendor: 06423 - HYDROTEX PARTNERS, LTD					
Fund: 725 - CENTRAL GARAGE					
ES STOCK - PINTAC	EQUIPMENT MAINTENANCE				217.20
CENTRAL GARAGE- OIL	OIL & ANTIFREEZE				148.24
				Fund 725 - CENTRAL GARAGE Total:	**365.44**
				Vendor 06423 - HYDROTEX PARTNERS, LTD Total:	**365.44**
Vendor: 00525 - IDEAL LAUNDRY AND CLEANERS, INC.					
Fund: 111 - GENERAL					
JANIT SUPP PARK	JANITORIAL SUPPLIES				17.95
Jan. sup.	JANITORIAL SUPPLIES				89.25
JANITORIAL SUPP PK	JANITORIAL SUPPLIES				296.49
DEPT SUPP ADM	DEPARTMENT SUPPLIES				52.79
JANIT SUPP PARK	JANITORIAL SUPPLIES				70.16
Jan. sup.	JANITORIAL SUPPLIES				89.25
DEPT SUPP ADM	DEPARTMENT SUPPLIES				52.79
				Fund 111 - GENERAL Total:	**668.68**
Fund: 212 - TRANSPORTATION					
SUPP - MATS, TOWELS	DEPARTMENT SUPPLIES				31.99
SUPP - MATS, TOWELS	DEPARTMENT SUPPLIES				31.99
SUPP - MATS, TOWELS	DEPARTMENT SUPPLIES				31.99
				Fund 212 - TRANSPORTATION Total:	**95.97**
Fund: 621 - ENVIRONMENTAL SERVICES					
RUGS, SHOP TOWELS, MOPS	DEPARTMENT SUPPLIES				99.97
MOPS, RUGS, SHOP TOWELS	DEPARTMENT SUPPLIES				99.97
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**199.94**
Fund: 631 - WASTEWATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				21.35
				Fund 631 - WASTEWATER Total:	**21.35**
Fund: 641 - WATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				21.36
				Fund 641 - WATER Total:	**21.36**
Fund: 725 - CENTRAL GARAGE					
CENTRAL GARAGE- RUGS, SHOP...	DEPARTMENT SUPPLIES				33.24
CENTRAL GARAGE- RUGS, SHOP...	UNIFORMS & CLOTHING				8.96
CENTRAL GARAGE- RUGS, SHOP...	DEPARTMENT SUPPLIES				33.24
CENTRAL GARAGE- RUGS, SHOP...	UNIFORMS & CLOTHING				8.96
CENTRAL GARAGE- RUGS, SHOP...	DEPARTMENT SUPPLIES				33.24
CENTRAL GARAGE- RUGS, SHOP...	UNIFORMS & CLOTHING				8.96
				Fund 725 - CENTRAL GARAGE Total:	**126.60**
				Vendor 00525 - IDEAL LAUNDRY AND CLEANERS, INC. Total:	**1,133.90**
Vendor: 00937 - INDEPENDENT PLUMBING AND HEATING, INC					
Fund: 111 - GENERAL					
GROUND MAINT PK	GROUNDS MAINTENANCE				18.75
GROUND MAINT PK	GROUNDS MAINTENANCE				6.25
BLDG MAINT PK	BUILDING MAINTENANCE				20.22
GROUND MAINT PK	GROUNDS MAINTENANCE				17.64
EQUIP MAINT PK	GROUNDS MAINTENANCE				13.15
BLDG MAINT PARK	BUILDING MAINTENANCE				29.33

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
GROUND MAINT PARK	GROUNDS MAINTENANCE				6.40
BLDG MAINT PARK	BUILDING MAINTENANCE				151.50
GROUND MAINT PARK	GROUNDS MAINTENANCE				20.02
				Fund 111 - GENERAL Total:	**283.26**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				19.79
DEPT SUPP CEM	DEPARTMENT SUPPLIES				2.81
DEPT SUPP CEM	DEPARTMENT SUPPLIES				85.77
				Fund 213 - CEMETERY Total:	**108.37**
				Vendor 00937 - INDEPENDENT PLUMBING AND HEATING, INC Total:	**391.63**
Vendor: 02578 - INFINITY CONSTRUCTION, INC.					
Fund: 212 - TRANSPORTATION					
42ND STREET - AVE I TO 5TH AVE STREET PROJECTS					119,518.55
				Fund 212 - TRANSPORTATION Total:	**119,518.55**
				Vendor 02578 - INFINITY CONSTRUCTION, INC. Total:	**119,518.55**
Vendor: 09291 - INGRAM LIBRARY SERVICES INC					
Fund: 111 - GENERAL					
Bks.	BOOKS				269.88
Bks.	BOOKS				193.09
				Fund 111 - GENERAL Total:	**462.97**
Fund: 223 - KENO					
Bks.	DEPARTMENT SUPPLIES				118.15
Bks.	DEPARTMENT SUPPLIES				168.32
				Fund 223 - KENO Total:	**286.47**
				Vendor 09291 - INGRAM LIBRARY SERVICES INC Total:	**749.44**
Vendor: 08154 - INTERNAL REVENUE SERVICE					
Fund: 713 - CASH & INVESTMENT POOL					
WITHHOLDINGS	MEDICARE W/H EE PAYABLE				3,978.31
WITHHOLDINGS	MEDICARE W/H EE PAYABLE				3,978.31
WITHHOLDINGS	FICA W/H EE PAYABLE				14,724.83
WITHHOLDINGS	FICA W/H EE PAYABLE				14,724.83
WITHHOLDINGS	FED W/H EE PAYABLE				21,585.15
WITHHOLDINGS	MEDICARE W/H EE PAYABLE				3,806.76
WITHHOLDINGS	MEDICARE W/H EE PAYABLE				3,806.76
WITHHOLDINGS	FICA W/H EE PAYABLE				14,097.02
WITHHOLDINGS	FICA W/H EE PAYABLE				14,097.02
WITHHOLDINGS	FED W/H EE PAYABLE				20,610.47
				Fund 713 - CASH & INVESTMENT POOL Total:	**115,409.46**
				Vendor 08154 - INTERNAL REVENUE SERVICE Total:	**115,409.46**
Vendor: 05196 - INTERNATIONAL CODE COUNCIL, INC.					
Fund: 111 - GENERAL					
DEPT SUPP DS	DEPARTMENT SUPPLIES				470.00
DEPT SUPP DS	DEPARTMENT SUPPLIES				67.80
				Fund 111 - GENERAL Total:	**537.80**
				Vendor 05196 - INTERNATIONAL CODE COUNCIL, INC. Total:	**537.80**
Vendor: 08525 - INTRALINKS, INC					
Fund: 111 - GENERAL					
CONTRACT SERVICES - LIBRARY -..	CONTRACTUAL SERVICES				3,527.50
DEPT SUPPLIES	DEPARTMENT SUPPLIES				238.00
NEW PROJECTOR SETUP - COU...	DEPARTMENT SUPPLIES				577.90
				Fund 111 - GENERAL Total:	**4,343.40**
Fund: 212 - TRANSPORTATION					
NEW PROJECTOR SETUP - COU...	DEPARTMENT SUPPLIES				577.90
				Fund 212 - TRANSPORTATION Total:	**577.90**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Fund: 621 - ENVIRONMENTAL SERVICES					
NEW PROJECTOR SETUP - COU...	DEPARTMENT SUPPLIES				577.90
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**577.90**
Fund: 631 - WASTEWATER					
NEW PROJECTOR SETUP - COU...	DEPARTMENT SUPPLIES				577.89
				Fund 631 - WASTEWATER Total:	**577.89**
Fund: 641 - WATER					
NEW PROJECTOR SETUP - COU...	DEPARTMENT SUPPLIES				577.89
				Fund 641 - WATER Total:	**577.89**
				Vendor 08525 - INTRALINKS, INC Total:	**6,654.98**
Vendor: 05696 - INVENTIVE WIRELESS OF NE, LLC					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				57.95
				Fund 111 - GENERAL Total:	**57.95**
				Vendor 05696 - INVENTIVE WIRELESS OF NE, LLC Total:	**57.95**
Vendor: 06264 - J & A TRAFFIC PRODUCTS, LLC					
Fund: 212 - TRANSPORTATION					
TRAFFIC SUPP - CONES	DEPARTMENT SUPPLIES				788.40
				Fund 212 - TRANSPORTATION Total:	**788.40**
				Vendor 06264 - J & A TRAFFIC PRODUCTS, LLC Total:	**788.40**
Vendor: 00192 - J G ELLIOTT CO.INC.					
Fund: 111 - GENERAL					
NOTARY BOND - J.HESSLER	DEPARTMENT SUPPLIES				70.00
				Fund 111 - GENERAL Total:	**70.00**
				Vendor 00192 - J G ELLIOTT CO.INC. Total:	**70.00**
Vendor: 06131 - JOHN DEERE FINANCIAL					
Fund: 111 - GENERAL					
DEPT SUPP PK	DEPARTMENT SUPPLIES				10.99
INVEST SUPPL-PD	INVESTIGATIVE EXPENSES				76.94
DEPT SUPP PK	DEPARTMENT SUPPLIES				14.99
				Fund 111 - GENERAL Total:	**102.92**
Fund: 212 - TRANSPORTATION					
SUPP - TRIMMER LINE	DEPARTMENT SUPPLIES				27.99
				Fund 212 - TRANSPORTATION Total:	**27.99**
Fund: 213 - CEMETERY					
EQUIP MAINT CEM	EQUIPMENT MAINTENANCE				18.99
				Fund 213 - CEMETERY Total:	**18.99**
Fund: 631 - WASTEWATER					
DEPT SUP	DEPARTMENT SUPPLIES				25.13
DEPT SUP	DEPARTMENT SUPPLIES				8.78
				Fund 631 - WASTEWATER Total:	**33.91**
				Vendor 06131 - JOHN DEERE FINANCIAL Total:	**183.81**
Vendor: 08067 - JOHN DEERE FINANCIAL					
Fund: 111 - GENERAL					
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				31.64
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				-31.64
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				29.99
DEPT SUPP PK	DEPARTMENT SUPPLIES				66.96
				Fund 111 - GENERAL Total:	**96.95**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				127.49
				Fund 213 - CEMETERY Total:	**127.49**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Fund: 631 - WASTEWATER					
DEPT SUP	DEPARTMENT SUPPLIES				12.99
				Fund 631 - WASTEWATER Total:	**12.99**
Fund: 641 - WATER					
DEPT SUP	DEPARTMENT SUPPLIES				66.41
EQUIP MAINT	EQUIPMENT MAINTENANCE				126.59
				Fund 641 - WATER Total:	**193.00**
				Vendor 08067 - JOHN DEERE FINANCIAL Total:	**430.43**
Vendor: 09474 - JOHN DEERE FINANCIAL					
Fund: 111 - GENERAL					
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				1.78
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				10.40
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				6.97
				Fund 111 - GENERAL Total:	**19.15**
Fund: 725 - CENTRAL GARAGE					
PARKS #395- OIL FILTER	EQUIPMENT MAINTENANCE				43.27
				Fund 725 - CENTRAL GARAGE Total:	**43.27**
				Vendor 09474 - JOHN DEERE FINANCIAL Total:	**62.42**
Vendor: 10038 - JOHNSON EARL					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				1,000.00
				Fund 111 - GENERAL Total:	**1,000.00**
				Vendor 10038 - JOHNSON EARL Total:	**1,000.00**
Vendor: 07177 - JUSTIN HOUSTOUN					
Fund: 111 - GENERAL					
PER DIEM FOR LEADERSHIP CLA...	SCHOOL & CONFERENCE				91.00
				Fund 111 - GENERAL Total:	**91.00**
				Vendor 07177 - JUSTIN HOUSTOUN Total:	**91.00**
Vendor: 09825 - KEMBEL JARED					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				18.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**198.00**
				Vendor 09825 - KEMBEL JARED Total:	**198.00**
Vendor: 09371 - KIRK BERNHARDT					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
CONTRACTUAL	CONTRACTUAL SERVICES				18.00
CONTRACTUAL	CONTRACTUAL SERVICES				72.00
CONTRACTUAL	CONTRACTUAL SERVICES				900.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**1,152.00**
				Vendor 09371 - KIRK BERNHARDT Total:	**1,152.00**
Vendor: 09747 - KNOW HOW LLC					
Fund: 111 - GENERAL					
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				39.20
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				20.34
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				-18.86
				Fund 111 - GENERAL Total:	**40.68**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				18.34
EQUIP MAINT CEM	EQUIPMENT MAINTENANCE				46.27
				Fund 213 - CEMETERY Total:	**64.61**
Fund: 621 - ENVIRONMENTAL SERVICES					
DRILL BITS & BELT FOR BRUSH ...	EQUIPMENT MAINTENANCE				63.10
HEADLAMP FOR UNIT #818	VEHICLE MAINTENANCE				9.05
GRINDING WHEELS FOR COMP...	DEPARTMENT SUPPLIES				12.94
PINTLE HOOK FOR COMPOST F...	DEPARTMENT SUPPLIES				89.97
PINTLE RECEIVER, ADAPTER & P...	DEPARTMENT SUPPLIES				73.27
CABIN AIR FILTER	VEHICLE MAINTENANCE				61.08
GREASE CAP FOR COMPOST FAC..	DEPARTMENT SUPPLIES				7.26
HORNET & WASP SPRAY	DEPARTMENT SUPPLIES				25.32
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**341.99**
Fund: 631 - WASTEWATER					
EQUIP MAINT	EQUIPMENT MAINTENANCE				3.16
EQUIP MAINT	EQUIPMENT MAINTENANCE				2.86
				Fund 631 - WASTEWATER Total:	**6.02**
Fund: 725 - CENTRAL GARAGE					
ES #802- ELECTRICAL CONNECT...	EQUIPMENT MAINTENANCE				12.74
POLICE #6- IDLER PULLEY	EQUIPMENT MAINTENANCE				70.27
POLICE #6- BELT TENSIONER AS...	EQUIPMENT MAINTENANCE				64.00
TRANS #4042- CABIN AIR FILTER	EQUIPMENT MAINTENANCE				10.18
TRANS SAW- ROPE AND HANDLE	EQUIPMENT MAINTENANCE				6.88
POLICE #6- HEADLAMP	EQUIPMENT MAINTENANCE				18.31
ES #829- FUEL & AIR FILTERS	EQUIPMENT MAINTENANCE				74.80
ES #820- WORK LIGHTS	EQUIPMENT MAINTENANCE				23.66
PARKS #326- BATTERY	EQUIPMENT MAINTENANCE				99.95
TRANS #439- BATTERY	EQUIPMENT MAINTENANCE				38.29
PARKS #319- HOSE	EQUIPMENT MAINTENANCE				11.09
ES #815- MUD FLAP	EQUIPMENT MAINTENANCE				9.71
PARKS #318- ROTORS & PADS	EQUIPMENT MAINTENANCE				129.46
PARKS #318- DUST CAP, BEARI...	EQUIPMENT MAINTENANCE				56.52
PARKS #318- OIL SEAL	EQUIPMENT MAINTENANCE				24.74
PARKS #318- BEARINGS	EQUIPMENT MAINTENANCE				5.89
ES #812- AIR FILTER	EQUIPMENT MAINTENANCE				60.52
CENTRAL GARAGE- HOG RING P...	DEPARTMENT SUPPLIES				39.66
RETURNED PULLEY	EQUIPMENT MAINTENANCE				-20.71
RETURNED STARTER HANDLE	EQUIPMENT MAINTENANCE				-3.02
				Fund 725 - CENTRAL GARAGE Total:	**732.94**
				Vendor 09747 - KNOW HOW LLC Total:	**1,186.24**
Vendor: 08407 - LANDAUER, INC					
Fund: 111 - GENERAL					
EQUIP MAINT-PD	EQUIPMENT MAINTENANCE				161.40
				Fund 111 - GENERAL Total:	**161.40**
				Vendor 08407 - LANDAUER, INC Total:	**161.40**
Vendor: 03941 - LAWSON PRODUCTS, INC					
Fund: 111 - GENERAL					
DEPT SUPP PK	DEPARTMENT SUPPLIES				92.70
				Fund 111 - GENERAL Total:	**92.70**
				Vendor 03941 - LAWSON PRODUCTS, INC Total:	**92.70**
Vendor: 04892 - LEAGUE ASSOCIATION OF RISK MANAGEMENT					
Fund: 631 - WASTEWATER					
VEHICLE INS. - ENDORSEMENT ...	VEHICLE INSURANCE				293.36
				Fund 631 - WASTEWATER Total:	**293.36**
				Vendor 04892 - LEAGUE ASSOCIATION OF RISK MANAGEMENT Total:	**293.36**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 00300 - LEAGUE OF NEBRASKA MUNICIPALITIES					
Fund: 111 - GENERAL					
2019 ANNUAL CONF. REGISTRA...	SCHOOL & CONFERENCE				351.00
				Fund 111 - GENERAL Total:	**351.00**
				Vendor 00300 - LEAGUE OF NEBRASKA MUNICIPALITIES Total:	**351.00**
Vendor: 10066 - LINCOLN COUNTY SHERIFF					
Fund: 111 - GENERAL					
LEGAL FEES-PD	LEGAL FEES				21.05
				Fund 111 - GENERAL Total:	**21.05**
				Vendor 10066 - LINCOLN COUNTY SHERIFF Total:	**21.05**
Vendor: 00242 - M.C. SCHAFF & ASSOCIATES, INC					
Fund: 212 - TRANSPORTATION					
PROF SERVICES - 42ND ST, AVE I...	STREET PROJECTS				16,063.83
				Fund 212 - TRANSPORTATION Total:	**16,063.83**
Fund: 631 - WASTEWATER					
PROF SERVICES - 42ND ST, AVE I...	ENGINEERING/DESIGN				2,658.84
				Fund 631 - WASTEWATER Total:	**2,658.84**
Fund: 661 - STORMWATER					
PROF SERVICES - 42ND ST, AVE I...	ENGINEERING/DESIGN				3,434.33
				Fund 661 - STORMWATER Total:	**3,434.33**
				Vendor 00242 - M.C. SCHAFF & ASSOCIATES, INC Total:	**22,157.00**
Vendor: 07838 - MAILFINANCE INC					
Fund: 111 - GENERAL					
Cont. srvcs.	CONTRACTUAL SERVICES				366.00
				Fund 111 - GENERAL Total:	**366.00**
				Vendor 07838 - MAILFINANCE INC Total:	**366.00**
Vendor: 05099 - MARKETING CONSULTANTS					
Fund: 111 - GENERAL					
PROGRAMMING	PROGRAMMING				544.00
				Fund 111 - GENERAL Total:	**544.00**
				Vendor 05099 - MARKETING CONSULTANTS Total:	**544.00**
Vendor: 06530 - M-B CO, INC					
Fund: 725 - CENTRAL GARAGE					
TRANS #449- REGULATORS	EQUIPMENT MAINTENANCE				257.87
				Fund 725 - CENTRAL GARAGE Total:	**257.87**
				Vendor 06530 - M-B CO, INC Total:	**257.87**
Vendor: 07628 - MENARDS, INC					
Fund: 111 - GENERAL					
DEPT SUPP PK	DEPARTMENT SUPPLIES				27.95
DEPT SUPP PK	DEPARTMENT SUPPLIES				24.99
SPRINGS TO REPAIR RECLINERS	DEPARTMENT SUPPLIES				9.87
DEPT SUPP REC	DEPARTMENT SUPPLIES				67.48
DEPT SUPP REC	DEPARTMENT SUPPLIES				142.22
GROUND MAINT PK	GROUNDS MAINTENANCE				37.54
DEPT SUPP PK	DEPARTMENT SUPPLIES				27.96
DEPT SUPP	DEPARTMENT SUPPLIES				71.00
DEPT SUPP PK	DEPARTMENT SUPPLIES				14.97
BLDG MAINT PARK	BUILDING MAINTENANCE				15.13
DEPT SUPP PARK	DEPARTMENT SUPPLIES				32.15
DEPT SUPP PARK	DEPARTMENT SUPPLIES				16.44
DEPT SUPP PARK	DEPARTMENT SUPPLIES				3.99
SPRING SNAPS FOR FLAG AT CIT...	DEPARTMENT SUPPLIES				3.78
				Fund 111 - GENERAL Total:	**495.47**
Fund: 212 - TRANSPORTATION					
SUPP - AIR FILTERS, DEGREASER	DEPARTMENT SUPPLIES				89.20

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
SUPP - CONDUIT, CPLR, ADPTR	DEPARTMENT SUPPLIES				22.95
SUPP - CLEANER, HEX, CPLR	DEPARTMENT SUPPLIES				26.01
SUPP - CONDUIT, CLAMP, GR R...	DEPARTMENT SUPPLIES				15.40
SUPP - SILICONE	DEPARTMENT SUPPLIES				5.28
SUPP - ELBOW, DOWNSPOUT	DEPARTMENT SUPPLIES				16.10
				Fund 212 - TRANSPORTATION Total:	**174.94**
Fund: 621 - ENVIRONMENTAL SERVICES					
SAW BLADES FOR COMPOST FA...	DEPARTMENT SUPPLIES				29.83
CRACK FILLER, BREAK ROOM S...	DEPARTMENT SUPPLIES				6.86
WORK LIGHT AND RESPIRATORS	DEPARTMENT SUPPLIES				79.96
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**116.65**
Fund: 631 - WASTEWATER					
DEPT SUP	DEPARTMENT SUPPLIES				7.98
EQUIP MAINT	EQUIPMENT MAINTENANCE				5.88
EQUIP MAINT	EQUIPMENT MAINTENANCE				11.77
DEPT SUP	DEPARTMENT SUPPLIES				87.99
DEPT SUP	DEPARTMENT SUPPLIES				32.87
				Fund 631 - WASTEWATER Total:	**146.49**
Fund: 641 - WATER					
DEPT SUP	DEPARTMENT SUPPLIES				88.14
				Fund 641 - WATER Total:	**88.14**
				Vendor 07628 - MENARDS, INC Total:	**1,021.69**
Vendor: 07253 - MICHAEL B KEMBEL					
Fund: 111 - GENERAL					
BLDG MAINT-PD	BUILDING MAINTENANCE				882.91
BLDG MAINT-PD	BUILDING MAINTENANCE				176.59
				Fund 111 - GENERAL Total:	**1,059.50**
				Vendor 07253 - MICHAEL B KEMBEL Total:	**1,059.50**
Vendor: 10057 - MICHAEL BEEBE					
Fund: 631 - WASTEWATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				195.84
				Fund 631 - WASTEWATER Total:	**195.84**
Fund: 641 - WATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				195.84
				Fund 641 - WATER Total:	**195.84**
				Vendor 10057 - MICHAEL BEEBE Total:	**391.68**
Vendor: 00705 - MIDLANDS NEWSPAPERS, INC					
Fund: 111 - GENERAL					
LEGAL NOTICES	LEGAL PUBLICATIONS				12.98
LEGAL NOTICE	LEGAL PUBLICATIONS				21.00
				Fund 111 - GENERAL Total:	**33.98**
				Vendor 00705 - MIDLANDS NEWSPAPERS, INC Total:	**33.98**
Vendor: 09784 - MIKESELL L JO					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				400.00
				Fund 111 - GENERAL Total:	**400.00**
				Vendor 09784 - MIKESELL L JO Total:	**400.00**
Vendor: 00278 - MONUMENT CAR WASH INC					
Fund: 641 - WATER					
VEH MAINT	VEHICLE MAINTENANCE				7.15
				Fund 641 - WATER Total:	**7.15**
				Vendor 00278 - MONUMENT CAR WASH INC Total:	**7.15**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 10059 - MPH INDUSTRIES INC					
Fund: 218 - PUBLIC SAFETY					
CIP-PO-PATROL CARS	EQUIPMENT				1,755.96
				Fund 218 - PUBLIC SAFETY Total:	**1,755.96**
				Vendor 10059 - MPH INDUSTRIES INC Total:	**1,755.96**
Vendor: 04082 - NE CHILD SUPPORT PAYMENT CENTER					
Fund: 713 - CASH & INVESTMENT POOL					
NE CHILD SUPPORT PYBLE	CHILD SUPPORT EE PAY				1,163.10
				Fund 713 - CASH & INVESTMENT POOL Total:	**1,163.10**
				Vendor 04082 - NE CHILD SUPPORT PAYMENT CENTER Total:	**1,163.10**
Vendor: 08083 - NE COLORADO CELLULAR, INC					
Fund: 631 - WASTEWATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				16.41
				Fund 631 - WASTEWATER Total:	**16.41**
Fund: 641 - WATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				59.23
				Fund 641 - WATER Total:	**59.23**
				Vendor 08083 - NE COLORADO CELLULAR, INC Total:	**75.64**
Vendor: 00797 - NE DEPT OF REVENUE					
Fund: 111 - GENERAL					
LODGING TAX	LEGAL FEES				491.11
SALES TAX	SALES TAX PAYABLE				2,425.36
				Fund 111 - GENERAL Total:	**2,916.47**
Fund: 641 - WATER					
SALES TAX	SALES TAX PAYABLE				12,601.95
SALES TAX	SALES TAX PAYABLE				9,377.35
				Fund 641 - WATER Total:	**21,979.30**
Fund: 661 - STORMWATER					
SALES TAX	SALES TAX PAYABLE				587.48
				Fund 661 - STORMWATER Total:	**587.48**
				Vendor 00797 - NE DEPT OF REVENUE Total:	**25,483.25**
Vendor: 01156 - NE LIBRARY COMMISSION					
Fund: 111 - GENERAL					
Sbscrp.	SUBSCRIPTIONS				1,488.30
				Fund 111 - GENERAL Total:	**1,488.30**
				Vendor 01156 - NE LIBRARY COMMISSION Total:	**1,488.30**
Vendor: 05373 - NEBRASKA SAFETY & FIRE EQUIPEMENT INC.					
Fund: 111 - GENERAL					
EQUIP MAINT-PD	EQUIPMENT MAINTENANCE				30.00
				Fund 111 - GENERAL Total:	**30.00**
				Vendor 05373 - NEBRASKA SAFETY & FIRE EQUIPEMENT INC. Total:	**30.00**
Vendor: 00402 - NEBRASKA MACHINERY CO					
Fund: 621 - ENVIRONMENTAL SERVICES					
ALTERNATOR FOR UNIT #830	EQUIPMENT MAINTENANCE				422.96
SPRING FOR UNIT #830	EQUIPMENT MAINTENANCE				62.54
RETURNED ALTERNATOR - CORE	EQUIPMENT MAINTENANCE				-211.48
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**274.02**
Fund: 725 - CENTRAL GARAGE					
TRANS #477- SEAL O RINGS	EQUIPMENT MAINTENANCE				1.86
TRANS #477- HOSE	EQUIPMENT MAINTENANCE				92.11
				Fund 725 - CENTRAL GARAGE Total:	**93.97**
				Vendor 00402 - NEBRASKA MACHINERY CO Total:	**367.99**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 00578 - NEBRASKA PUBLIC POWER DISTRICT					
Fund: 631 - WASTEWATER					
ELECTRICITY	ELECTRIC POWER				181.82
ELECTRICITY	ELECTRIC POWER				14,452.78
				Fund 631 - WASTEWATER Total:	**14,634.60**
Fund: 641 - WATER					
ELECTRICITY	ELECTRIC POWER				3,385.91
ELECTRICITY	ELECTRIC POWER				6,633.39
				Fund 641 - WATER Total:	**10,019.30**
				Vendor 00578 - NEBRASKA PUBLIC POWER DISTRICT Total:	**24,653.90**
Vendor: 00632 - NEBRASKA RURAL RADIO ASSOCIATION					
Fund: 661 - STORMWATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				100.00
CONTRACTUAL SVC	CONTRACTUAL SERVICES				225.00
				Fund 661 - STORMWATER Total:	**325.00**
				Vendor 00632 - NEBRASKA RURAL RADIO ASSOCIATION Total:	**325.00**
Vendor: 04198 - NEBRASKALAND TIRE, INC					
Fund: 725 - CENTRAL GARAGE					
POLICE #4- TIRES	EQUIPMENT MAINTENANCE				588.00
				Fund 725 - CENTRAL GARAGE Total:	**588.00**
				Vendor 04198 - NEBRASKALAND TIRE, INC Total:	**588.00**
Vendor: 09487 - NEWMAN, TIMOTHY					
Fund: 111 - GENERAL					
TRAVEL FOR PLANNING MEETI...	SCHOOL & CONFERENCE				120.00
				Fund 111 - GENERAL Total:	**120.00**
				Vendor 09487 - NEWMAN, TIMOTHY Total:	**120.00**
Vendor: 00139 - NORTHWEST PIPE FITTINGS, INC. OF SCOTTSBLUFF					
Fund: 111 - GENERAL					
BLDG MAINT PARK	BUILDING MAINTENANCE				310.44
GROUND MAINT PK	GROUNDS MAINTENANCE				8.82
DEPT SUPP PK	DEPARTMENT SUPPLIES				11.97
GROUND MAINT PK	GROUNDS MAINTENANCE				49.80
GROUND MAINT PARK	GROUNDS MAINTENANCE				41.86
GROUND MAINT PARK	GROUNDS MAINTENANCE				70.92
				Fund 111 - GENERAL Total:	**493.81**
				Vendor 00139 - NORTHWEST PIPE FITTINGS, INC. OF SCOTTSBLUFF Total:	**493.81**
Vendor: 10050 - O'KEEFE ELEVATOR COMPANY INC					
Fund: 111 - GENERAL					
Equip. main.	EQUIPMENT MAINTENANCE				817.50
				Fund 111 - GENERAL Total:	**817.50**
				Vendor 10050 - O'KEEFE ELEVATOR COMPANY INC Total:	**817.50**
Vendor: 00285 - OREGON TRAIL PLUMBING, HEATING & COOLING INC					
Fund: 111 - GENERAL					
BLDG MAINT ADM	BUILDING MAINTENANCE				8,324.00
				Fund 111 - GENERAL Total:	**8,324.00**
				Vendor 00285 - OREGON TRAIL PLUMBING, HEATING & COOLING INC Total:	**8,324.00**
Vendor: 03039 - PANHANDLE COLLECTIONS INC					
Fund: 713 - CASH & INVESTMENT POOL					
WAGE ATTACHMENT	WAGE ATTACHMENT EE PAY				194.92
				Fund 713 - CASH & INVESTMENT POOL Total:	**194.92**
				Vendor 03039 - PANHANDLE COLLECTIONS INC Total:	**194.92**
Vendor: 00550 - PANHANDLE COOPERATIVE ASSOCIATION					
Fund: 111 - GENERAL					
GASOLINE-PD	DEPARTMENT SUPPLIES				193.00
GASOLINE-PD	GASOLINE				4,245.54

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
FUEL	GASOLINE				54.50
				Fund 111 - GENERAL Total:	**4,493.04**
				Vendor 00550 - PANHANDLE COOPERATIVE ASSOCIATION Total:	**4,493.04**
Vendor: 00487 - PANHANDLE ENVIRONMENTAL SERVICES INC					
Fund: 631 - WASTEWATER					
CONTRACTUAL SVC	CONTRACTUAL SERVICES				173.00
CONTRACTUAL SVC	CONTRACTUAL SERVICES				93.00
				Fund 631 - WASTEWATER Total:	**266.00**
Fund: 641 - WATER					
SAMPLES	SAMPLES				80.00
SAMPLES	SAMPLES				80.00
SAMPLES	SAMPLES				80.00
				Fund 641 - WATER Total:	**240.00**
				Vendor 00487 - PANHANDLE ENVIRONMENTAL SERVICES INC Total:	**506.00**
Vendor: 00017 - PANHANDLE HUMANE SOCIETY					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				5,174.59
				Fund 111 - GENERAL Total:	**5,174.59**
				Vendor 00017 - PANHANDLE HUMANE SOCIETY Total:	**5,174.59**
Vendor: 09936 - PANHANDLE PARTNERSHIP FOR HEALTH & HUMAN SERVICES					
Fund: 224 - ECONOMIC DEVELOPMENT					
2019 MEMBERSHIP DUES	MEMBERSHIPS				100.00
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**100.00**
				Vendor 09936 - PANHANDLE PARTNERSHIP FOR HEALTH & HUMAN SERVICES Total:	**100.00**
Vendor: 00620 - PATTLEN ENTERPRISE, INC					
Fund: 111 - GENERAL					
GROUND MAINT PK	GROUNDS MAINTENANCE				43.80
				Fund 111 - GENERAL Total:	**43.80**
				Vendor 00620 - PATTLEN ENTERPRISE, INC Total:	**43.80**
Vendor: 09087 - PAUL MENDOZA					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				18.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**162.00**
				Vendor 09087 - PAUL MENDOZA Total:	**162.00**
Vendor: 04494 - PAUL REED CONSTRUCTION & SUPPLY, INC					
Fund: 111 - GENERAL					
GROUND MAINT PK	GROUNDS MAINTENANCE				480.64
				Fund 111 - GENERAL Total:	**480.64**
				Vendor 04494 - PAUL REED CONSTRUCTION & SUPPLY, INC Total:	**480.64**
Vendor: 01060 - PEPSI COLA OF WESTERN NEBRASKA, LLC					
Fund: 111 - GENERAL					
CONCESSION	CONCESSION SUPPLIES				78.90
CONCESSION	CONCESSION SUPPLIES				267.60
CONCESSION	CONCESSION SUPPLIES				51.80
CONCESSION	CONCESSION SUPPLIES				95.20
				Fund 111 - GENERAL Total:	**493.50**
				Vendor 01060 - PEPSI COLA OF WESTERN NEBRASKA, LLC Total:	**493.50**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 01276 - PLATTE VALLEY BANK					
Fund: 713 - CASH & INVESTMENT POOL					
HEALTH SAVINGS ACCOUNT	HSA EE PAYABLE				9,874.26
				Fund 713 - CASH & INVESTMENT POOL Total:	**9,874.26**
				Vendor 01276 - PLATTE VALLEY BANK Total:	**9,874.26**
Vendor: 00272 - POSTMASTER					
Fund: 621 - ENVIRONMENTAL SERVICES					
Postage	POSTAGE				104.19
Postage	POSTAGE				87.51
Postage	POSTAGE				118.12
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**309.82**
Fund: 631 - WASTEWATER					
Postage	POSTAGE				104.19
Postage	POSTAGE				87.52
Postage	POSTAGE				118.12
				Fund 631 - WASTEWATER Total:	**309.83**
Fund: 641 - WATER					
Postage	POSTAGE				104.20
Postage	POSTAGE				87.52
Postage	POSTAGE				118.11
				Fund 641 - WATER Total:	**309.83**
				Vendor 00272 - POSTMASTER Total:	**929.48**
Vendor: 00796 - POWERPLAN					
Fund: 725 - CENTRAL GARAGE					
TRANS #453- KNOB	EQUIPMENT MAINTENANCE				187.19
ES #829- OIL FILTER	EQUIPMENT MAINTENANCE				19.49
				Fund 725 - CENTRAL GARAGE Total:	**206.68**
				Vendor 00796 - POWERPLAN Total:	**206.68**
Vendor: 01920 - PRAISE WINDOWS INC					
Fund: 111 - GENERAL					
Bldg. main.	BUILDING MAINTENANCE				465.00
				Fund 111 - GENERAL Total:	**465.00**
				Vendor 01920 - PRAISE WINDOWS INC Total:	**465.00**
Vendor: 00266 - QUILL CORPORATION					
Fund: 111 - GENERAL					
DEPT SUPPL-PD	DEPARTMENT SUPPLIES				90.47
DEPT SUPPL-PD	DEPARTMENT SUPPLIES				90.47
DEPT SUPPL-PD	DEPARTMENT SUPPLIES				44.49
DEPT SUPPL-PD	DEPARTMENT SUPPLIES				44.50
DEPT SUPP ADM	DEPARTMENT SUPPLIES				134.96
				Fund 111 - GENERAL Total:	**404.89**
				Vendor 00266 - QUILL CORPORATION Total:	**404.89**
Vendor: 01502 - REAMS SPRINKLER SUPPLY CO.					
Fund: 111 - GENERAL					
GROUND MAINT PK	GROUNDS MAINTENANCE				562.78
				Fund 111 - GENERAL Total:	**562.78**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				199.29
DEPT SUPP CEM	DEPARTMENT SUPPLIES				634.64
				Fund 213 - CEMETERY Total:	**833.93**
				Vendor 01502 - REAMS SPRINKLER SUPPLY CO. Total:	**1,396.71**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 04576 - REGANIS AUTO CENTER, INC					
Fund: 725 - CENTRAL GARAGE					
POLICE #6- COOLING FAN & M...	EQUIPMENT MAINTENANCE				416.68
				Fund 725 - CENTRAL GARAGE Total:	**416.68**
				Vendor 04576 - REGANIS AUTO CENTER, INC Total:	**416.68**
Vendor: 04089 - REGIONAL CARE INC					
Fund: 812 - HEALTH INSURANCE					
FLEX FUNDING	FLEXIBLE BENFT EXPENSES				449.10
CLAIMS	CLAIMS EXPENSE				32,649.56
HEALTH INS. PREMIUM - AUGU...	PREMIUM EXPENSE				32,358.05
CLAIMS	CLAIMS EXPENSE				54,436.02
FLEX FUNDING	FLEXIBLE BENFT EXPENSES				2,298.00
CLAIMS	CLAIMS EXPENSE				49,343.07
				Fund 812 - HEALTH INSURANCE Total:	**171,533.80**
				Vendor 04089 - REGIONAL CARE INC Total:	**171,533.80**
Vendor: 00364 - REGIONAL WEST MEDICAL CENTER					
Fund: 111 - GENERAL					
EMS SUPPLIES- AMBU BAG, CO...	DEPARTMENT SUPPLIES				99.14
				Fund 111 - GENERAL Total:	**99.14**
				Vendor 00364 - REGIONAL WEST MEDICAL CENTER Total:	**99.14**
Vendor: 03067 - RICHARD CELLI					
Fund: 111 - GENERAL					
BATTERY FOR DIVE RESCUE JET ...	EQUIPMENT MAINTENANCE				120.95
SERVICE UTV AFTER SEARCH A...	EQUIPMENT MAINTENANCE				231.74
REFUND TAX FROM UTV SERVICE	EQUIPMENT MAINTENANCE				-14.99
				Fund 111 - GENERAL Total:	**337.70**
				Vendor 03067 - RICHARD CELLI Total:	**337.70**
Vendor: 09519 - RICHARD P CASTILLO					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**108.00**
				Vendor 09519 - RICHARD P CASTILLO Total:	**108.00**
Vendor: 09973 - ROD CLAUSE					
Fund: 224 - ECONOMIC DEVELOPMENT					
LB 840 GRANT FUNDS	ECONOMIC DEVELOPMENT				280.70
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**280.70**
				Vendor 09973 - ROD CLAUSE Total:	**280.70**
Vendor: 10041 - RODRIGUEZ JOSE R					
Fund: 111 - GENERAL					
TOW SERVICE-PD	CONTRACTUAL SERVICES				150.00
TOW SERVICE-PD	CONTRACTUAL SERVICES				89.00
TOW SERVICE-PD	CONTRACTUAL SERVICES				150.00
				Fund 111 - GENERAL Total:	**389.00**
				Vendor 10041 - RODRIGUEZ JOSE R Total:	**389.00**
Vendor: 00366 - ROOSEVELT PUBLIC POWER DISTRICT					
Fund: 641 - WATER					
ELECTRICY	ELECTRIC POWER				2,776.75
				Fund 641 - WATER Total:	**2,776.75**
				Vendor 00366 - ROOSEVELT PUBLIC POWER DISTRICT Total:	**2,776.75**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 09997 - RURAL HEALTH DEVELOPMENT, INC.					
Fund: 224 - ECONOMIC DEVELOPMENT					
ECONOMIC DEV	ECONOMIC DEVELOPMENT				6,383.33
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**6,383.33**
				Vendor 09997 - RURAL HEALTH DEVELOPMENT, INC. Total:	**6,383.33**
Vendor: 00026 - S M E C					
Fund: 713 - CASH & INVESTMENT POOL					
EMPLOYEE DEDUCTION	SMEC EE PAYABLE				276.50
				Fund 713 - CASH & INVESTMENT POOL Total:	**276.50**
				Vendor 00026 - S M E C Total:	**276.50**
Vendor: 00257 - SANDBERG IMPLEMENT, INC					
Fund: 111 - GENERAL					
EQUIP MAINT PK	EQUIPMENT MAINTENANCE				6.66
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				109.18
EQUIP MAINT PARK	EQUIPMENT MAINTENANCE				37.50
				Fund 111 - GENERAL Total:	**153.34**
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				355.13
				Fund 213 - CEMETERY Total:	**355.13**
				Vendor 00257 - SANDBERG IMPLEMENT, INC Total:	**508.47**
Vendor: 02531 - SCB FIREFIGHTERS UNION LOCAL 1454					
Fund: 713 - CASH & INVESTMENT POOL					
FIRE EE DUES	FIRE UNION DUES EE PAY				225.00
				Fund 713 - CASH & INVESTMENT POOL Total:	**225.00**
				Vendor 02531 - SCB FIREFIGHTERS UNION LOCAL 1454 Total:	**225.00**
Vendor: 06112 - SCHANK HOLDINGS INC					
Fund: 111 - GENERAL					
Bldg. main.	BUILDING MAINTENANCE				136.00
				Fund 111 - GENERAL Total:	**136.00**
				Vendor 06112 - SCHANK HOLDINGS INC Total:	**136.00**
Vendor: 10029 - SCHOLASTIC LIBRARY PUBLISHING					
Fund: 211 - REGIONAL LIBRARY					
Bks	BOOKS				177.85
				Fund 211 - REGIONAL LIBRARY Total:	**177.85**
Fund: 223 - KENO					
Bks.	DEPARTMENT SUPPLIES				486.70
				Fund 223 - KENO Total:	**486.70**
				Vendor 10029 - SCHOLASTIC LIBRARY PUBLISHING Total:	**664.55**
Vendor: 10042 - SCOTT AARON					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				18.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**234.00**
				Vendor 10042 - SCOTT AARON Total:	**234.00**
Vendor: 00852 - SCOTTS BLUFF COUNTY COURT					
Fund: 111 - GENERAL					
LEGAL FEES-PD	LEGAL FEES				512.75
				Fund 111 - GENERAL Total:	**512.75**
				Vendor 00852 - SCOTTS BLUFF COUNTY COURT Total:	**512.75**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 09847 - SCOTTS BLUFF COUNTY PUBLIC TRANSIT					
Fund: 223 - KENO					
CONTRACTUAL	CONTRACTUAL SERVICES				3,736.00
				Fund 223 - KENO Total:	**3,736.00**
				Vendor 09847 - SCOTTS BLUFF COUNTY PUBLIC TRANSIT Total:	**3,736.00**
Vendor: 00273 - SCOTTSBLUFF POLICE OFFICERS ASSOCIATION					
Fund: 713 - CASH & INVESTMENT POOL					
POLICE EE DUES	POL UNION DUES EE PAY				576.00
				Fund 713 - CASH & INVESTMENT POOL Total:	**576.00**
				Vendor 00273 - SCOTTSBLUFF POLICE OFFICERS ASSOCIATION Total:	**576.00**
Vendor: 00684 - SHERIFF'S OFFICE					
Fund: 111 - GENERAL					
LEGAL FEES-PD	LEGAL FEES				12.66
LEGAL FEES-PD	LEGAL FEES				21.66
LEGAL FEES-PD	LEGAL FEES				25.32
				Fund 111 - GENERAL Total:	**59.64**
				Vendor 00684 - SHERIFF'S OFFICE Total:	**59.64**
Vendor: 00021 - SIMMONS OLSEN LAW FIRM, P.C.					
Fund: 111 - GENERAL					
CONTRACTUAL-PD	CONTRACTUAL SERVICES				4,167.18
CONTRACTUAL	CONTRACTUAL SERVICES				6,264.61
CONTRACTUAL	CONTRACTUAL SERVICES				567.00
CONTRACTUAL	CONTRACTUAL SERVICES				175.50
CONTRACTUAL	CONTRACTUAL SERVICES				864.00
				Fund 111 - GENERAL Total:	**12,038.29**
Fund: 224 - ECONOMIC DEVELOPMENT					
CONTRACTUAL	CONTRACTUAL SERVICES				35.00
CONTRACTUAL	CONTRACTUAL SERVICES				1,662.50
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**1,697.50**
Fund: 621 - ENVIRONMENTAL SERVICES					
CONTRACTUAL	CONTRACTUAL SERVICES				648.00
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**648.00**
				Vendor 00021 - SIMMONS OLSEN LAW FIRM, P.C. Total:	**14,383.79**
Vendor: 01031 - SIMON CONTRACTORS					
Fund: 111 - GENERAL					
GROUND MAINT PARK	GROUNDS MAINTENANCE				98.10
				Fund 111 - GENERAL Total:	**98.10**
Fund: 212 - TRANSPORTATION					
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				463.25
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				860.25
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				388.50
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				299.75
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				693.75
RECYCLED ROAD GRAVEL	STREET REPAIR SUPPLIES				212.75
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				654.00
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				490.50
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				1,387.50
CONCRETE FOR STREET REPAIR	STREET MAINTENANCE				1,165.50
RECYCLED BASE GRAVEL	STREET REPAIR SUPPLIES				371.22
				Fund 212 - TRANSPORTATION Total:	**6,986.97**
				Vendor 01031 - SIMON CONTRACTORS Total:	**7,085.07**
Vendor: 00513 - SNELL SERVICES INC.					
Fund: 111 - GENERAL					
Bldg. main.	BUILDING MAINTENANCE				145.00
DEPT SUPP ADM	DEPARTMENT SUPPLIES				40.00

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Equip. main.	EQUIPMENT MAINTENANCE				75.00
				Fund 111 - GENERAL Total:	**260.00**
Fund: 213 - CEMETERY					
ELEC MAINT CEM	ELECTRICAL MAINTENANCE				187.50
				Fund 213 - CEMETERY Total:	**187.50**
				Vendor 00513 - SNELL SERVICES INC. Total:	**447.50**
Vendor: 09772 - SONNY'S TOWING					
Fund: 111 - GENERAL					
TOW SERVICE-PD	CONTRACTUAL SERVICES				95.00
TOW SERVICE-PD	CONTRACTUAL SERVICES				210.00
				Fund 111 - GENERAL Total:	**305.00**
				Vendor 09772 - SONNY'S TOWING Total:	**305.00**
Vendor: 09663 - SOUNDSLEEPER SECURITY INC.					
Fund: 111 - GENERAL					
CONTRACTUAL-PD	CONTRACTUAL SERVICES				14.95
				Fund 111 - GENERAL Total:	**14.95**
				Vendor 09663 - SOUNDSLEEPER SECURITY INC. Total:	**14.95**
Vendor: 09880 - SOUTHERN UNIFORM EQUIPMENT					
Fund: 111 - GENERAL					
UNIFORM SHIRTS, BELTS, AND T…	UNIFORMS & CLOTHING				524.72
				Fund 111 - GENERAL Total:	**524.72**
				Vendor 09880 - SOUTHERN UNIFORM EQUIPMENT Total:	**524.72**
Vendor: 09821 - STARR LEHL					
Fund: 224 - ECONOMIC DEVELOPMENT					
REIMBURSEMENT - NATL WEST…	SCHOOL & CONFERENCE				250.00
EXPENSE - GOVERNOR'S ED SU…	SCHOOL & CONFERENCE				46.16
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**296.16**
				Vendor 09821 - STARR LEHL Total:	**296.16**
Vendor: 00054 - STATE HEALTH LAB					
Fund: 641 - WATER					
SAMPLES	SAMPLES				355.00
				Fund 641 - WATER Total:	**355.00**
				Vendor 00054 - STATE HEALTH LAB Total:	**355.00**
Vendor: 01235 - STATE OF NE.					
Fund: 111 - GENERAL					
CONTRACTUAL-PD	CONTRACTUAL SERVICES				105.00
CONTRACTUAL-PD	CONTRACTUAL SERVICES				105.00
CONTRACTUAL-PD	CONTRACTUAL SERVICES				105.00
				Fund 111 - GENERAL Total:	**315.00**
				Vendor 01235 - STATE OF NE. Total:	**315.00**
Vendor: 09928 - STRICKER MARTIN					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				72.00
				Fund 111 - GENERAL Total:	**72.00**
				Vendor 09928 - STRICKER MARTIN Total:	**72.00**
Vendor: 09346 - SUHOR INDUSTRIES, INC.					
Fund: 213 - CEMETERY					
DEPT SUPP CEM	DEPARTMENT SUPPLIES				110.00
				Fund 213 - CEMETERY Total:	**110.00**
				Vendor 09346 - SUHOR INDUSTRIES, INC. Total:	**110.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 01325 - THE PEAVEY CORP					
Fund: 111 - GENERAL					
INVEST SUPPL-PD	INVESTIGATIVE EXPENSES				128.40
				Fund 111 - GENERAL Total:	**128.40**
				Vendor 01325 - THE PEAVEY CORP Total:	**128.40**
Vendor: 10064 - THOMASON VICKY					
Fund: 641 - WATER					
DEPT SUP	DEPARTMENT SUPPLIES				106.99
				Fund 641 - WATER Total:	**106.99**
				Vendor 10064 - THOMASON VICKY Total:	**106.99**
Vendor: 08821 - TYLER TECHNOLOGIES, INC					
Fund: 621 - ENVIRONMENTAL SERVICES					
UB ONLINE FEE (8/1/19 - 8/31/...	CONTRACTUAL SERVICES				116.00
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**116.00**
Fund: 631 - WASTEWATER					
UB ONLINE FEE (8/1/19 - 8/31/...	CONTRACTUAL SERVICES				116.00
				Fund 631 - WASTEWATER Total:	**116.00**
Fund: 641 - WATER					
UB ONLINE FEE (8/1/19 - 8/31/...	CONTRACTUAL SERVICES				116.00
				Fund 641 - WATER Total:	**116.00**
				Vendor 08821 - TYLER TECHNOLOGIES, INC Total:	**348.00**
Vendor: 09865 - UNION BANK & TRUST					
Fund: 713 - CASH & INVESTMENT POOL					
RETIREMENT	REGULAR RETIRE EE PAY				8,055.23
RETIREMENT	REGULAR RETIRE EE PAY				7,313.33
RETIREMENT	DEFERRED COMP EE PAY				2,385.50
RETIREMENT	DEFERRED COMP EE PAY				590.00
RETIREMENT	RETIRE FIRE EE PAYABLE				4,668.87
RETIREMENT	RETIRE FIRE EE PAYABLE				2,499.47
RETIREMENT	RETIRE POLICE EE PAY				5,481.39
RETIREMENT	RETIRE POLICE EE PAY				5,134.04
				Fund 713 - CASH & INVESTMENT POOL Total:	**36,127.83**
				Vendor 09865 - UNION BANK & TRUST Total:	**36,127.83**
Vendor: 00195 - UNITED STATES WELDING, INC					
Fund: 621 - ENVIRONMENTAL SERVICES					
WELDING WIRE	DEPARTMENT SUPPLIES				92.80
WELDING WIRE	DEPARTMENT SUPPLIES				115.00
RETURNED WRONG WELDING ...	DEPARTMENT SUPPLIES				-92.80
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**115.00**
				Vendor 00195 - UNITED STATES WELDING, INC Total:	**115.00**
Vendor: 08828 - US BANK					
Fund: 111 - GENERAL					
INK FOR PRINTER FIRE PREVENT...	DEPARTMENT SUPPLIES				97.17
2019 ICMA ANNUAL CONF.REGI...	SCHOOL & CONFERENCE				915.00
AIR FARE - ICMA CONFERENCE ...	SCHOOL & CONFERENCE				394.96
AIRFARE - N.JOHNSON ICMA C...	SCHOOL & CONFERENCE				131.70
GAS FOR TRAVEL TO DIVE CLASS..	GASOLINE				23.96
INK FOR MOBILE PRINTER FIRE ...	DEPARTMENT SUPPLIES				40.99
Dep. sup.	DEPARTMENT SUPPLIES				19.98
DEPT SUPPL-PD	DEPARTMENT SUPPLIES				59.34
GAS FOR TRAVEL TO DIVE CLASS..	GASOLINE				35.18
GAS FOR TRAVEL TO DIVE CLASS..	GASOLINE				32.29
HOTEL FOR DIVE CLASS- HOBBS	SCHOOL & CONFERENCE				203.40
GASOLINE-PD	GASOLINE				24.75
LOG ME IN SUBSCRIPTION (JOH...	DEPARTMENT SUPPLIES				374.49
LPS LUBRICANT FOR KNOX BOX...	DEPARTMENT SUPPLIES				29.21

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
UNIFORM HATS	UNIFORMS & CLOTHING				500.20
Dep. sup.	DEPARTMENT SUPPLIES				32.98
CERTIFIED LETTER FOR FIRE CO...	POSTAGE				13.70
RUBBER STRAPS FOR NOZZLE B...	DEPARTMENT SUPPLIES				28.95
REGISTRATION FOR NE IAAI CO...	SCHOOL & CONFERENCE				250.00
Dep. sup.	DEPARTMENT SUPPLIES				50.98
SPECIAL EVENT	SPECIAL EVENTS				25.00
HOTEL RESERVATIONS.COM DI...	SCHOOL & CONFERENCE				175.89
HOTEL RESERVATIONS.COM DI...	SCHOOL & CONFERENCE				14.99
DEPT SUPP REC	DEPARTMENT SUPPLIES				46.38
HOTEL FOR RESCUE DIVER CLAS...	SCHOOL & CONFERENCE				149.32
GASOLINE-PD	GASOLINE				32.14
GASOLINE-PD	GASOLINE				26.00
SCHOOL & CONF DS	SCHOOL & CONFERENCE				807.00
PROGRAMMING	PROGRAMMING				437.75
DEPT SUPP REC	DEPARTMENT SUPPLIES				-132.50
HOTEL RESERVATIONS.COM CR...	SCHOOL & CONFERENCE				-175.89
				Fund 111 - GENERAL Total:	**4,665.31**
Fund: 212 - TRANSPORTATION					
MEMBERSHIP RENEWAL FOR T...	MEMBERSHIPS				100.00
				Fund 212 - TRANSPORTATION Total:	**100.00**
Fund: 224 - ECONOMIC DEVELOPMENT					
SCHOOL & CONF STARR	SCHOOL & CONFERENCE				35.00
SCHOOL & CONF STARR	SCHOOL & CONFERENCE				22.50
SCHOOL & CONF STARR	SCHOOL & CONFERENCE				38.81
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**96.31**
Fund: 621 - ENVIRONMENTAL SERVICES					
PARTS FOR COMPOST FACILITY...	EQUIPMENT MAINTENANCE				175.65
RETURNED WRONG PARTS	EQUIPMENT MAINTENANCE				-81.90
				Fund 621 - ENVIRONMENTAL SERVICES Total:	**93.75**
Fund: 631 - WASTEWATER					
SCHOOLS & CONF	SCHOOL & CONFERENCE				269.98
				Fund 631 - WASTEWATER Total:	**269.98**
Fund: 661 - STORMWATER					
POSTAGE	POSTAGE				18.45
CONTRACTUAL SVC	CONTRACTUAL SERVICES				4.99
				Fund 661 - STORMWATER Total:	**23.44**
				Vendor 08828 - US BANK Total:	**5,248.79**
Vendor: 00110 - VOGEL WEST, INC					
Fund: 212 - TRANSPORTATION					
HOSE FOR PRESSURE WASHER	EQUIPMENT MAINTENANCE				39.94
HOSE FOR PRESSURE WASHER	EQUIPMENT MAINTENANCE				9.84
				Fund 212 - TRANSPORTATION Total:	**49.78**
				Vendor 00110 - VOGEL WEST, INC Total:	**49.78**
Vendor: 06089 - WESTERN COOPERATIVE COMPANY					
Fund: 111 - GENERAL					
DEPT SUPP PK	DEPARTMENT SUPPLIES				74.36
GROUNT MAINT PK	GROUNDS MAINTENANCE				158.50
GROUND MAINT PK	GROUNDS MAINTENANCE				107.17
				Fund 111 - GENERAL Total:	**340.03**
				Vendor 06089 - WESTERN COOPERATIVE COMPANY Total:	**340.03**
Vendor: 09967 - WESTERN NE TOURISM COALITION					
Fund: 224 - ECONOMIC DEVELOPMENT					
2019-2020 WNTC MEMBERSHIP...	MEMBERSHIPS				100.00
				Fund 224 - ECONOMIC DEVELOPMENT Total:	**100.00**
				Vendor 09967 - WESTERN NE TOURISM COALITION Total:	**100.00**

Description (Payable)	Account Name	(None)	(None)	(None)	Amount
Vendor: 09706 - WESTERN NEBRASKA ENVIRONMENTAL SERVICES					
Fund: 631 - WASTEWATER					
EQUIP MAINT	EQUIPMENT MAINTENANCE				191.93
EQUIP MAINT	EQUIPMENT MAINTENANCE				16.64
				Fund 631 - WASTEWATER Total:	**208.57**
				Vendor 09706 - WESTERN NEBRASKA ENVIRONMENTAL SERVICES Total:	**208.57**
Vendor: 08672 - WILLIAM F SHAMMEL					
Fund: 111 - GENERAL					
TOW SERVICE-PD	CONTRACTUAL SERVICES				326.80
				Fund 111 - GENERAL Total:	**326.80**
				Vendor 08672 - WILLIAM F SHAMMEL Total:	**326.80**
Vendor: 10039 - WILSON ZACHARIAH					
Fund: 111 - GENERAL					
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
CONTRACTUAL	CONTRACTUAL SERVICES				54.00
CONTRACTUAL	CONTRACTUAL SERVICES				36.00
				Fund 111 - GENERAL Total:	**126.00**
				Vendor 10039 - WILSON ZACHARIAH Total:	**126.00**
Vendor: 03709 - WYOMING CHILD SUPPORT ENFORCEMENT					
Fund: 713 - CASH & INVESTMENT POOL					
CHILD SUPPORT	CHILD SUPPORT EE PAY				738.08
				Fund 713 - CASH & INVESTMENT POOL Total:	**738.08**
				Vendor 03709 - WYOMING CHILD SUPPORT ENFORCEMENT Total:	**738.08**
Vendor: 07239 - WYOMING FIRST AID & SAFETY SUPPLY, LLC					
Fund: 212 - TRANSPORTATION					
FIRST AID KIT SUPPLIES	DEPARTMENT SUPPLIES				143.65
				Fund 212 - TRANSPORTATION Total:	**143.65**
Fund: 725 - CENTRAL GARAGE					
CENTRAL GARAGE- FIRST AID KI...	DEPARTMENT SUPPLIES				19.87
				Fund 725 - CENTRAL GARAGE Total:	**19.87**
				Vendor 07239 - WYOMING FIRST AID & SAFETY SUPPLY, LLC Total:	**163.52**
Vendor: 09750 - WYOMING WATER DEVELOPMENT OFF					
Fund: 641 - WATER					
PAWS FEASIBILITY STUDY	CONTRACTUAL SERVICES				2,485.00
				Fund 641 - WATER Total:	**2,485.00**
				Vendor 09750 - WYOMING WATER DEVELOPMENT OFF Total:	**2,485.00**
				Grand Total:	**683,658.00**

Report Summary

Fund Summary

Fund	Expense Amount	Payment Amount
111 - GENERAL	75,903.55	2,916.47
211 - REGIONAL LIBRARY	177.85	0.00
212 - TRANSPORTATION	152,707.39	0.00
213 - CEMETERY	9,061.71	0.00
215 - SPECIAL PROJECTS	345.86	0.00
216 - BUSINESS IMPROVEMENT	79.99	0.00
218 - PUBLIC SAFETY	9,705.96	0.00
223 - KENO	4,509.17	0.00
224 - ECONOMIC DEVELOPMENT	9,269.79	0.00
621 - ENVIRONMENTAL SERVICES	7,005.13	309.82
631 - WASTEWATER	21,235.42	309.83
641 - WATER	49,254.50	22,289.13
661 - STORMWATER	4,805.29	587.48
713 - CASH & INVESTMENT POOL	164,633.85	164,633.85
721 - GIS SERVICES	35.62	0.00
725 - CENTRAL GARAGE	3,393.12	0.00
812 - HEALTH INSURANCE	171,533.80	139,175.75
Grand Total:	**683,658.00**	**330,222.33**

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
111-21311	SALES TAX PAYABLE	2,425.36	2,425.36
111-42206-171	PARK SHELTER FEE	25.00	0.00
111-52111-111	DEPARTMENT SUPPLIES	348.16	0.00
111-52111-112	DEPARTMENT SUPPLIES	7.96	0.00
111-52111-114	DEPARTMENT SUPPLIES	393.47	0.00
111-52111-116	DEPARTMENT SUPPLIES	815.90	0.00
111-52111-121	DEPARTMENT SUPPLIES	762.45	0.00
111-52111-141	DEPARTMENT SUPPLIES	749.54	0.00
111-52111-142	DEPARTMENT SUPPLIES	475.42	0.00
111-52111-151	DEPARTMENT SUPPLIES	605.71	0.00
111-52111-171	DEPARTMENT SUPPLIES	997.67	0.00
111-52111-172	DEPARTMENT SUPPLIES	476.87	0.00
111-52114-172	CONCESSION SUPPLIES	1,758.51	0.00
111-52121-141	JANITORIAL SUPPLIES	23.55	0.00
111-52121-142	JANITORIAL SUPPLIES	23.55	0.00
111-52121-151	JANITORIAL SUPPLIES	811.96	0.00
111-52121-171	JANITORIAL SUPPLIES	384.60	0.00
111-52134-172	SPECIAL EVENTS	25.00	0.00
111-52163-142	INVESTIGATIVE EXPENSES	205.34	0.00
111-52181-141	UNIFORMS & CLOTHING	1,024.92	0.00
111-52181-142	UNIFORMS & CLOTHING	1,060.56	0.00
111-52221-151	AUDIOVISUAL SUPPLIES	291.21	0.00
111-52222-151	BOOKS	462.97	0.00
111-52223-143	PROGRAMMING	981.75	0.00
111-52223-151	PROGRAMMING	64.26	0.00
111-52225-151	SUBSCRIPTIONS	1,488.30	0.00
111-52411-141	POSTAGE	13.70	0.00
111-52411-142	POSTAGE	26.76	0.00
111-52511-141	GASOLINE	91.43	0.00
111-52511-142	GASOLINE	4,328.43	0.00
111-52511-143	GASOLINE	54.50	0.00
111-53111-114	CONTRACTUAL SERVICES	7,871.11	0.00
111-53111-116	CONTRACTUAL SERVICES	3,527.50	0.00
111-53111-142	CONTRACTUAL SERVICES	10,836.52	0.00
111-53111-151	CONTRACTUAL SERVICES	870.00	0.00
111-53111-171	CONTRACTUAL SERVICES	1,057.95	0.00

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
111-53111-172	CONTRACTUAL SERVICES	2,920.00	0.00
111-53161-143	LEGAL PUBLICATIONS	33.98	0.00
111-53211-142	LEGAL FEES	607.44	0.00
111-53211-171	LEGAL FEES	491.11	491.11
111-53421-111	BUILDING MAINTENANCE	8,324.00	0.00
111-53421-141	BUILDING MAINTENANCE	904.41	0.00
111-53421-142	BUILDING MAINTENANCE	198.09	0.00
111-53421-151	BUILDING MAINTENANCE	746.00	0.00
111-53421-171	BUILDING MAINTENANCE	548.62	0.00
111-53441-141	EQUIPMENT MAINTENAN...	337.70	0.00
111-53441-142	EQUIPMENT MAINTENAN...	282.90	0.00
111-53441-151	EQUIPMENT MAINTENAN...	1,317.50	0.00
111-53441-171	EQUIPMENT MAINTENAN...	482.16	0.00
111-53451-171	VEHICLE MAINTENANCE	587.33	0.00
111-53471-171	GROUNDS MAINTENANCE	1,742.14	0.00
111-53521-111	HEATING FUEL	37.08	0.00
111-53521-141	HEATING FUEL	54.51	0.00
111-53521-142	HEATING FUEL	86.41	0.00
111-53521-151	HEATING FUEL	82.39	0.00
111-53521-171	HEATING FUEL	106.22	0.00
111-53521-172	HEATING FUEL	2,841.75	0.00
111-53561-111	PHONE & INTERNET	242.78	0.00
111-53561-112	PHONE & INTERNET	76.43	0.00
111-53561-114	PHONE & INTERNET	43.39	0.00
111-53561-115	PHONE & INTERNET	39.45	0.00
111-53561-116	PHONE & INTERNET	160.00	0.00
111-53561-121	PHONE & INTERNET	145.34	0.00
111-53561-141	PHONE & INTERNET	337.40	0.00
111-53561-142	PHONE & INTERNET	2,318.52	0.00
111-53561-143	PHONE & INTERNET	81.19	0.00
111-53561-151	PHONE & INTERNET	445.34	0.00
111-53561-171	PHONE & INTERNET	202.87	0.00
111-53561-172	PHONE & INTERNET	14.16	0.00
111-53571-141	CELLULAR PHONE	268.68	0.00
111-53711-114	SCHOOL & CONFERENCE	1,792.66	0.00
111-53711-121	SCHOOL & CONFERENCE	807.00	0.00
111-53711-141	SCHOOL & CONFERENCE	708.71	0.00
111-53711-143	SCHOOL & CONFERENCE	120.00	0.00
211-52222-151	BOOKS	177.85	0.00
212-52111-212	DEPARTMENT SUPPLIES	9,260.33	0.00
212-52171-212	STREET REPAIR SUPPLIES	583.97	0.00
212-52311-212	MEMBERSHIPS	100.00	0.00
212-53441-212	EQUIPMENT MAINTENAN...	88.28	0.00
212-53491-212	STREET MAINTENANCE	6,403.00	0.00
212-53521-212	HEATING FUEL	228.60	0.00
212-53561-212	PHONE & INTERNET	460.83	0.00
212-54322-212	STREET PROJECTS	135,582.38	0.00
213-52111-213	DEPARTMENT SUPPLIES	1,785.28	0.00
213-52411-213	POSTAGE	24.93	0.00
213-53111-213	CONTRACTUAL SERVICES	270.00	0.00
213-53431-213	ELECTRICAL MAINTENAN...	187.50	0.00
213-53441-213	EQUIPMENT MAINTENAN...	65.26	0.00
213-53561-213	PHONE & INTERNET	73.74	0.00
213-54411-213	EQUIPMENT	6,655.00	0.00
215-52111-142	DEPARTMENT SUPPLIES	345.86	0.00
216-52111-121	DEPARTMENT SUPPLIES	79.99	0.00
218-54411-142	EQUIPMENT	9,705.96	0.00
223-52111-113	DEPARTMENT SUPPLIES	773.17	0.00

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
223-53111-113	CONTRACTUAL SERVICES	3,736.00	0.00
224-52111-113	DEPARTMENT SUPPLIES	28.76	0.00
224-52311-114	MEMBERSHIPS	200.00	0.00
224-53111-114	CONTRACTUAL SERVICES	1,697.50	0.00
224-53561-113	PHONE & INTERNET	71.03	0.00
224-53711-113	SCHOOL & CONFERENCE	608.47	0.00
224-59111-114	ECONOMIC DEVELOPME…	6,664.03	0.00
621-52111-621	DEPARTMENT SUPPLIES	1,353.65	0.00
621-52411-621	POSTAGE	309.82	309.82
621-53111-621	CONTRACTUAL SERVICES	764.00	0.00
621-53193-621	DISPOSAL FEES	1,600.00	0.00
621-53441-621	EQUIPMENT MAINTENAN…	430.87	0.00
621-53451-621	VEHICLE MAINTENANCE	2,332.38	0.00
621-53521-621	HEATING FUEL	44.33	0.00
621-53561-621	PHONE & INTERNET	170.08	0.00
631-52111-631	DEPARTMENT SUPPLIES	753.63	0.00
631-52411-631	POSTAGE	309.83	309.83
631-53111-631	CONTRACTUAL SERVICES	615.60	0.00
631-53441-631	EQUIPMENT MAINTENAN…	1,541.69	0.00
631-53531-631	ELECTRIC POWER	14,634.60	0.00
631-53561-631	PHONE & INTERNET	157.89	0.00
631-53711-631	SCHOOL & CONFERENCE	269.98	0.00
631-53841-631	VEHICLE INSURANCE	293.36	0.00
631-54212-631	ENGINEERING/DESIGN	2,658.84	0.00
641-21311	SALES TAX PAYABLE	21,979.30	21,979.30
641-52111-641	DEPARTMENT SUPPLIES	2,959.86	0.00
641-52117-641	SAMPLES	730.00	0.00
641-52411-641	POSTAGE	377.06	309.83
641-52611-641	CHEMICALS	5,765.95	0.00
641-53111-641	CONTRACTUAL SERVICES	2,877.43	0.00
641-53441-641	EQUIPMENT MAINTENAN…	126.59	0.00
641-53451-641	VEHICLE MAINTENANCE	7.15	0.00
641-53521-641	HEATING FUEL	132.78	0.00
641-53531-641	ELECTRIC POWER	12,796.05	0.00
641-53561-641	PHONE & INTERNET	183.58	0.00
641-54411-641	EQUIPMENT	1,318.75	0.00
661-21311	SALES TAX PAYABLE	587.48	587.48
661-52111-661	DEPARTMENT SUPPLIES	398.97	0.00
661-52411-661	POSTAGE	18.45	0.00
661-53111-661	CONTRACTUAL SERVICES	329.99	0.00
661-53561-661	PHONE & INTERNET	36.07	0.00
661-54212-661	ENGINEERING/DESIGN	3,434.33	0.00
713-21512	MEDICARE W/H EE PAYAB…	15,570.14	15,570.14
713-21513	FICA W/H EE PAYABLE	57,643.70	57,643.70
713-21514	FED W/H EE PAYABLE	42,195.62	42,195.62
713-21517	POL UNION DUES EE PAY	576.00	576.00
713-21518	FIRE UNION DUES EE PAY	225.00	225.00
713-21523	LIFE INS EE PAYABLE	22.75	22.75
713-21524	SMEC EE PAYABLE	276.50	276.50
713-21527	WAGE ATTACHMENT EE …	194.92	194.92
713-21528	REGULAR RETIRE EE PAY	15,368.56	15,368.56
713-21529	DEFERRED COMP EE PAY	2,975.50	2,975.50
713-21531	RETIRE FIRE EE PAYABLE	7,168.34	7,168.34
713-21533	RETIRE POLICE EE PAY	10,615.43	10,615.43
713-21534	DIS INC INS EE PAYABLE	25.95	25.95
713-21539	CHILD SUPPORT EE PAY	1,901.18	1,901.18
713-21541	HSA EE PAYABLE	9,874.26	9,874.26
721-53561-721	PHONE & INTERNET	35.62	0.00

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
725-52111-725	DEPARTMENT SUPPLIES	159.25	0.00
725-52181-725	UNIFORMS & CLOTHING	26.88	0.00
725-52531-725	OIL & ANTIFREEZE	148.24	0.00
725-53441-725	EQUIPMENT MAINTENAN...	2,988.81	0.00
725-53521-725	HEATING FUEL	31.91	0.00
725-53561-725	PHONE & INTERNET	38.03	0.00
812-53861-112	PREMIUM EXPENSE	32,358.05	0.00
812-53862-112	CLAIMS EXPENSE	136,428.65	136,428.65
812-53863-112	FLEXIBLE BENFT EXPENSES	2,747.10	2,747.10
	Grand Total:	**683,658.00**	**330,222.33**

Project Account Summary

Project Account Key		Expense Amount	Payment Amount
None		682,478.86	330,222.33
2117753471		49.80	0.00
2122852111		345.86	0.00
6002052111		398.97	0.00
6002052411		18.45	0.00
6002053111		329.99	0.00
6002053561		36.07	0.00
	Grand Total:	**683,658.00**	**330,222.33**

UTILITY REFUNDS 8-5-19

Account #	Status	Contact	Service Address	Refund Amount
045-1103-02	Inactive	BILL EDWARDS	1508 14TH AVE SCOTTSBLUFF NE 69361	16.74
005-4802-02	Inactive	PHS LAND & CATTLE	2107 AVE C SCOTTSBLUFF NE 69361	5.24
040-3859-02	Inactive	OPEN DOOR COUNSELIN	2122 BROADWAY SCOTTSBLUFF NE 69361	22.75
005-2438-04	Inactive	DASH MARKETING LLC	211 W 26TH ST SCOTTSBLUFF NE 69361	45.29
070-5946-04	Inactive	MOREHEAD KREATIONS	2302 FRONTAGE RD 56 SCOTTSBLUFF NE 69361	15.92
045-1096-04	Inactive	RAWNDA PIERCE	1210 E 19TH ST SCOTTSBLUFF NE 69361	11.24
040-1258-05	Inactive	MONIQUE ROJAS	1022 AVE Q SCOTTSBLUFF NE 69361	20.61
7				$137.79

City of Scottsbluff, Nebraska
Monday, August 5, 2019
Regular Meeting

Item SBYC1

(informational only):

Staff Contact:

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Resolut.1

Council to consider an Ordinance updating Cable Television Systems including Franchise Procedures and guidelines for Rights-of-Way.

Staff Contact: Nathan Johnson, City Manager

11-5-1. Purpose.

The purpose of this Article is to:

~~1.~~ (a) establish a local policy concerning cable television;
~~2.~~ (b) establish Franchise procedures and standards which encourage the growth and development of Cable Systems which assure that Cable Systems are responsive to the needs and interests of the City;
~~3.~~ (c) establish guidelines for the exercise of local authority with respect to the regulation of Cable Systems;
~~4.~~ (d) establish an orderly process for Franchise renewal which protects Cable Operators against unfair denials of renewal where an Operator's past performance and proposal for future performance meet the standards set by the FCC and this Article;
~~5.~~ (e) promote competition in cable communications and minimize unnecessary regulations that would impose undue burdens on Cable Systems;
~~6. create a set of regulations, standards and procedures for Cable Operators;~~
~~7. create a comprehensive customer service and consumer protection policy for Cable Operators;~~
~~8.~~ (f) provide for access and inspection of a Cable ~~Operator's books and~~Operator's records in order to monitor compliance with local, State and Federal laws, and any ~~f~~Franchise agreement;
~~9.~~ (g) enforce customer service standards;
(h) provide a construction and installation policy for a Cable Operator's system;
~~10~~ (i) provide for the health, safety and welfare of the citizens of the City in light of the Cable Operator's construction, operation and maintenance;
~~11.~~ (j) provide for emergency override capability, so that citizens of the City may be warned of a potential, imminent, or actual Emergency situation that exists in the area;
~~12.~~ (k) create a procedure for collecting and monitoring Franchise Fees; and
~~13~~ (l) create a default and revocation procedure for Cable Operators.

11-5-2. Definitions.

As used in this Article or in any Franchise issued pursuant to this Article, the following terms shall have the following definitions:
~~Text Was Moved From Here: +~~

(a) "Affiliate" means another person or Entity who owns or controls, is owned or controlled by, or is under common ownership or control with, the person or Entity.
~~3. "Applicant"~~

(b) "Applicant" means a person or Entity submitting an application or proposal to the City for a Franchise to operate a Cable System under the terms and conditions of this Article and any State or Federal regulations.

~~4. "Auxiliary~~(c) "Auxiliary Equipment~~"~~" means equipment supplied by a Cable Operator which enhances or assists in the reception or provision of Cable Service.

~~5. "Basic~~(d) "Basic Cable Service~~"~~" means any Service Tier which includes the retransmission of local television broadcast signals~~, the PEG Channels, and any other signals required by Federal Law or the FCC.~~

~~6. "Cable Act"~~

(e) "Cable Act" means the Cable Communications Policy Act of 198~~2~~4, as amended, which is codified as 47 U.S.C. ~~§521~~§§ 521, et seq., or ~~corresponding legislation in any future Federal communications legislation.~~

~~7. Except as otherwise~~any future federal legislation concerning the subject matter provided for in ~~this Article, "Cable~~the Cable Act.

(f) "Cable Operator~~"~~" means any person or Entity which:

~~a.~~ (1) provides Cable Service over a Cable System and directly or through one or more affiliates owns a significant interest in that Cable System; or

~~b.~~ (2) otherwise controls or is responsible for, through any arrangement, the management and operation of a Cable System.

~~8. Unless otherwise defined in the Cable Act, "Cable Service" means: a.~~

(g) "Cable Service" means:

(1) the one-way transmission to Subscribers of: (i) Video Programming or (ii) Other Programming Service; and

~~b.~~ (2) Subscriber interaction, if any, which is required for the selection or use of Video Programming or Other Programming Service.

~~9. "Cable~~(h) "Cable System~~"~~" means a facility consisting of a set of closed transmission paths and associated signal generation, reception and control equipment that is designed to provide Cable Service which includes ~~v~~Video ~~p~~Programming, and which is provided to multiple Subscribers within the ~~Community~~City; provided, however, this shall not include:

~~a.~~

(1) a facility that serves only to retransmit the television signals of 1 or more television broadcast stations;

~~b.~~ (2) a facility that serves Subscribers without using any Public Way;

~~c.~~ (3) a facility of a common carrier which is subject~~-~~, in whole or in part, to the provisions of title II of the Cable Act, except that the facility shall be considered a Cable System (other than for purposes of § 621(c) of the Cable Act) to the extent the facility is used in the transmission of ~~v~~Video ~~p~~Programming directly to Subscribers;

~~d. any facilities of any electric utility used solely for operating its electric utility systems; or~~

~~e.~~ unless the extent of such use is solely to provide interactive on-demand services. 3

(4) an open video system that complies with § 653 of the Cable Act.

(5) any system exempted under the Cable Act.

~~10. "Channel"~~(i) "Channel" means a portion of the electromagnetic frequency spectrum which is used in a Cable System and which is capable of delivering a television channel ~~(as defined by the FCC); provided, however, if the definition of Channel is modified by Federal law or the FCC, then such revised definition shall apply.~~

~~11. "Charge"~~

(j) "Charge" means a one-time or non-regularly occurring cost paid by the Subscriber, and which is associated with the installation, maintenance, service or repair of the Cable Service.

~~12. "Community"~~

Text Moved Here 1

~~1. "City"~~(k) "City" means the City of Scottsbluff, Nebraska and includes any areas annexed to the City after this date. ~~"Council"~~"Council" means the City Council of the City of Scottsbluff. ~~"Mayor"~~"Mayor" means the Mayor of the City of Scottsbluff. ~~"City~~"City Manager~~"~~" means the City Manager of the City of Scottsbluff.

~~2 "Affiliate" means another person or entity~~End Of Moved Text

~~1~~

(l) "Community" shall mean the geographic area within the municipal limits of Gering, Nebraska, Terrytown, Nebraska and Scottsbluff~~, and Terrytown~~, Nebraska and any portions of Scotts Bluff County, Nebraska, which are served by a Cable System serving any portion of those municipalities.

~~13. "Converter" means any device, separate and apart from a Subscriber's receiver, that is necessary for a Subscriber to view or otherwise use signals delivered by a Cable System.~~

~~14. "Emergency"~~ or county.

(m) "Emergency" means an imminent, impending, or actual natural or humanly induced situation where the health, safety or welfare of all, or a representative portion, of the residents of the City is threatened. An Emergency (by illustration) may include a snowstorm, flood, tornado, severe thunderstorm, hazardous waste infiltration, petroleum, munitions or nuclear explosion, or aircraft crash.

~~15. "Easement"~~(n) "Easement" means and shall include any public easement or other compatible use created by dedication or by other means, to the City for public utility or other purposes including cable television. ~~"Easement"~~"Easement" shall include a private easement used for the provision of Cable Service.

~~16. "Entity"~~

(o) "Entity" shall mean a partnership, joint venture, corporation, limited liability company or such other form of conducting business authorized by State law.

~~17. "FCC"~~(p) "FCC" means the Federal Communications Commission or any successor governmental entity.

~~18. "Franchise"~~(q) "Franchise" means the authorization issued by the City which authorizes ~~the construction and operation of a Cable System.~~

~~19. "Franchise Fee"~~a non-exclusive right to construct, operate and maintain a Cable System within the City.

(r) "Franchise Fee" includes any tax, fee, or assessment of any kind imposed by the City on a Cable Operator or Subscriber, or both, solely because of their status as such. ~~"Franchise~~"Franchise Fee~~"~~" does not include: ~~a.~~

(1) any tax, fee, or assessment of general applicability (including any such tax, fee, or assessment imposed on both utilities and Cable Operators or their services but not including a tax fee, or assessment which is unduly discriminatory against Cable Operators or Subscribers); ~~b.~~

~~C~~(2) Agreed upon capital costs ~~which are required by a Franchise to be~~ incurred by the Cable Operator for PEG, or governmental access facilities; ~~c.~~

(3) requirements or charges incidental to the awarding or enforcing of a Franchise, including payments for bonds, security funds, letters of credit, insurance, indemnification, penalties or liquidated damages; or

~~d.~~

(4) any fee imposed under ~~title 17, United States Code.~~

~~20. "Gross Revenue" means:~~

~~a. all revenues~~the copyright laws of the United States.

(s) "Gross Revenue" means any revenue, as determined in accordance with generally accepted accounting principles, received by a Cable Operator from the operation of a Cable System ~~attributable to Subscribers within the City including but not limited to revenues received from Subscriber Rates, Service Tiers, installations, and the sale or lease of Auxiliary Equipment ("Subscriber Revenues"); and~~

~~b. any and all compensation in whatever form (except as exempted by this definition or otherwise by law), exchange or otherwise derived from all Cable Services, cable operations, and Cable Service related activities within the City including but not limited to revenues received from advertising, rebates or commissions received from services carried or provided on the Cable System, or commercial access ("Non-Subscriber Revenues").~~

within the City. Gross Revenue does not, however, mean (i) any taxes, fees or assessments ~~of general applicability~~ collected by a Cable Operator from ~~imposed and/or assessed collected by law on~~ Subscribers for pass-through to a government agency (including sales taxes, Franchise Fees or FCC user fees); (ii) unrecovered bad debt or bona fide credits, refunds and deposits paid to Subscribers; ~~and~~ (~~ii~~iii) revenues from activities exempted under the Cable Act or by the FCC, and (iv) PEG Channel Support recovered from Subscribers.

~~21. "Other~~(t) "Other Programming Service~~"~~" means information that a Cable Operator makes available to all Subscribers generally.

~~22. "PEG~~(u) "PEG Channel~~"~~" means a public, educational or governmental Channel which is carried on a Cable System.

~~23. "Permit"~~(v) "Permit" means a written authorization issued to a Cable Operator by the City, other than a Franchise.

~~24. "Public~~(w) "Public Way~~"~~" means any public street, public place, public Easement or ~~right-of-~~right-of-way dedicated to the public use.

~~25. "Rate" means the periodic price paid by a Subscriber in order to receive Cable Service.~~

~~26. "Reporting~~

(x) "Reporting Quarter~~"~~" shall mean a Cable Operator~~'~~'s fiscal quarter as reported to the City. If a Cable Operator does not report to or notify the City concerning the dates of its fiscal quarters, then the ~~"Reporting~~"Reporting Quarters~~"~~" for a Cable Operator shall be considered to be the periods ending on the last day of March, June, September and December of each calendar year.

~~27. "Service Tier"~~

(y) "School" shall mean any K-12 school operated within the City by any public school system.

(z) "Service Tier" means a category of Cable Service or Other Services provided by a Cable Operator, and for which a separate ~~R~~rate is charged.

~~28. "State"~~(aa) "State" means the State of Nebraska. 5

~~29. "Subscriber"~~(bb) "Subscriber" means a person lawfully receiving Cable Service delivered by a Cable Operator.

~~30. "User" means a person or organization utilizing a Cable System and/or its equipment for purposes of production and/or transmission.~~

~~31. "Video~~

(cc) "Video Programming~~"~~" means programming provided by, or generally considered comparable to programming provided by, a television broadcast station.

~~11-5-3.~~

(dd) "Video Programming Provider" means a provider of Video Programming which is authorized by the City or applicable law to utilize the Public Way to provide video programming to residents of the City.

It is intended that the definitions of any of the terms which are also defined in the Cable Act be consistent with the corresponding Cable Act definitions. In the event that it is determined that any of the above definitions are inconsistent with the Cable Act, then the definitions contained in the Cable Act shall control.

11-5-3 Administration; delegation of powers and authority.

Unless prohibited by Federal or State law, the Council may delegate its powers and authorities with respect to a Cable Operator to one or more duly authorized representatives of the City, including the Mayor, the City Manager, a Cable Advisory Committee or an outside consultant; provided, however, the Council may never delegate its power to franchise or to revoke a ~~f~~Franchise to another person.

11-5-4~~.~~ Cable ~~o~~Operator; applicability.

Unless exempted entirely or in part from this Article or any of its provisions~~;~~ or granted relief by the Council from any of its provisions, then this Article shall be applicable to all Cable Operators.

~~**11-5-5. Same; exemptions.** In recognition of the inherent technological differences between various types of providers of~~

11-5-5 Video Programming~~, and taking into account legal, financial, operational and maintenance considerations, the following providers~~; exemptions.

A provider of Video Programming ~~are exempted from complying with this Article: 1. a person or Entity which provides Cable Service to fewer than 50 Subscribers; or 2. a person or Entity which provides Cable Service to, or in conjunction with operating one hotel, motel, time-share facility, or recreational vehicle park (but not including service to a mobile home or manufactured home park), and which does not use any Public Way; or 3. a person or Entity which does not cross a Public Way in providing Cable Service to Subscribers; or 4. a person or Entity which is exempted from this Article as a result of an applicable judicial ruling.~~

shall not be considered as a Cable Operator and subject to this Article if the provider does not use or cross any Public Way. An exempted person or Entity remains exempted only as long as it meets ~~one or more of the specifications of this section. In addition, the extent of the exemption is only for this Article~~the above criteria. An exempted person or Entity is, however, expected to

abide by, and comply with, any other applicable City, County, State and Federal laws and regulations, including any applicable Federal or State consumer protection or consumer service laws and regulations.

11-5-6. Same; request for relief by non-exempt cCable oOperator.

Any Cable Operator may file a written petition, at any time, with the City requesting relief from one or more provisions of this Article. The relief requested may specifically include the delay in implementation (as to the petitioning Cable Operator only) of one or more provisions of this Article. In order to receive any relief from one or more of the provisions of this Article, a Cable Operator must satisfactorily demonstrate to the Council that at least one of the following facts exist: 1.

(a) the provision and/or requirement is expressly prohibited by Federal law, the FCC or State law; or 2.

(b) that the provision in question materially affects, and is in conflict with an expressed right that is specifically noted in an existing Franchise agreement (but only for the term of the existing Franchise); or 3.

(c) that the imposition of the provisions and/or requirements will create an undue economic hardship on the Cable Operator so as to imperil or eliminate the Cable Operator's ability to provide Cable Service to a majority of current Subscribers.

4. (d) As an alternative to requesting relief, a Cable Operator may petition for clarification as to the precise intent and effect that one or more provisions or sections of this Article has on the petitioning Cable Operator.

The Council may charge the petitioning Cable Operator with the actual costs for processing the petition, including any costs incurred by outside consultants who are retained by the City to review a Cable Operator's petition; provided, however, such costs shall not exceed the total amount that the City may charge to a Cable Operator considering the Federal limit on Franchise Fees.

If the Council grants relief to a Cable Operator, then the Franchise agreement shall be amended to reflect the extent of the relief.

11-5-7. Noncompliance not excused for failure to enforce. A Cable Operator shall not be excused from complying with any of the requirements of this Article by any failure of the City on any one or more occasions to seek, or insist upon compliance with this Article.

11-5-8. Compliance with law. Any Cable Operator, its assignee, or transferee shall be subject to, and expected to comply with: 1. all ordinances in effect within the City including this

~~Article, to the extent that the Cable Operator has not received exemption or relief.~~
~~2. all Federal and State Laws, and all rules and regulation issued by all applicable regulatory agencies.~~
~~3. all lawful exercise of the City's police power.~~

~~Nothing contained in this section shall prevent a Cable Operator from exercising any, and all, of its administrative and legal rights as to the constitutionality, applicability, and enforceability of this Article or any later amendments.~~

~~11-5-9.~~

11-5-7 **Inconsistencies with fFederal or sState lLaw.**

If any provision or section of this Article is inconsistent with any provision or section of a Federal or State rule, regulation, or law, then the Federal or State rule, regulation, or law shall control.

~~**11-5-10. Retained rights and authorities. Subject to preemption by the FCC or any other Federal or State governmental entity or agency, the City retains the authority for: 1. the regulation of any Cable System within the geographical limits of the City, and within the limits prescribed by applicable law; 2. the award and grant of a Franchise subsequent to review of an application or proposal by the Council; 3. subject to the provisions of this Article entitled "Compliance with Law" and any relief or exemption granted with respect to those provisions, the amendment or repeal of all or part of this Article; and 4. the amendment of a Franchise by mutual agreement of the Council and the holder of the Franchise.**~~
~~**5. the regulation of Rates and Charges as permitted by law.**~~
~~**6. the enforcement of all laws and regulations relating to cable customer service practices and consumer protection.**~~

~~**11-5-11. Notices.**~~
11-5-8 Notices.

Each Franchise shall designate the City's and the Cable Operator's contact person to receive notices, filings, reports, records, documents and other correspondence. All notices shall be delivered to each party's contact person either by personal service with signed receipt of delivery, certified or registered mail, return receipt requested, or by recognized overnight delivery service with receipt verification. All other filings, reports, records, documents, and other correspondence may be delivered by any permissible means including, but not limited to: Ppersonal service, overnight mail, email or facsimile. Delivery shall be deemed to have occurred at the time of receipt.

~~**11-5-12.**~~
11-5-9 Indemnity.

Each Cable Operator shall defend, indemnify, and hold harmless the City, its officials, authorized agents and employees from any and all penalty, damage, or loss arising out of claims, suits, demands, causes of action, or award of damages which might be claimed now or in the future, which arise out of, or are caused by, the construction, erection, location, products performance, operation, maintenance, repair, installation, replacement, removal or restoration of the Cable System within the City by a negligent act or omission of the Cable Operator, its 7 authorized agents or employees, contractors, or authorized representatives; provided, however, the Cable Operator shall not be obligated to indemnify the City for any penalty, damage or loss resulting from the willful misconduct or negligence of the City or from any use of the Cable System by the City (to include the use of PEG channels). Reasonable attorney's fees, consultant's fees, expert witness fees and other expenses of litigation are included, except as set forth in subsection (d) below, as those costs which may be recovered by the City. With respect to any request for indemnification made to a Cable Operator by the City: ~~1.~~

(a) The City shall give the Cable Operator written notice of its obligation to indemnify the City at least 10 calendar days prior to the deadline for responding to the claim or action, and if no such deadline exists, within 30 days of receipt of written notification of a claim or action.

~~2.~~ (b) The Cable Operator shall then have the right to defend, settle or compromise any such claims at the Cable Operator's expense and with the assistance of counsel of the Cable Operator's choice. The City shall provide reasonable cooperation in connection with the defense subject to the Cable Operator's obligation to reimburse the City for actual out-of-pocket expenses incurred by the City as the result of a request by the Cable Operator.

~~3.~~ (c) If the Cable Operator fails to defend a claim within a reasonable time, the City shall be entitled to assume the defense and the Cable Operator shall be bound by the results and shall be liable to the City for the damages incurred by the City to include the costs referred to above as recoverable by the City.

~~4.~~ (d) If a Cable Operator obtains counsel for the City, and/or its officials, agents and employees, then any one of them shall have the right to approve counsel, which approval shall not be unreasonably withheld. The City, its officials, agents and employees shall have the right to retain counsel of their own at their own expense.

11-5-1~~3. Liability i~~0 Insurance.

A Cable Operator shall secure and maintain, for as long as it provides Cable Service, insurance coverage (the ~~"Insurance"~~"Insurance") ~~as follows: 1. The coverage shall provide for~~in at least the following limits:

~~General~~ Workers' Compensation — Statutory Limits

Commercial General Liability~~:~~ — $2,000,000 per occurrence~~;~~ ~~$2,000,000 aggregate.~~

~~,~~ Combined Single Liability (C.S.L.) $2,000,000 General Aggregate

Auto Liability including coverage on all owned and non-owned hired autos — $1,000,000 per occurrence C.S.L.

Umbrella Liability~~:~~ — $~~2~~1,000,000 ~~aggregate~~ per occurrence C.S.L.

~~2.~~ (a) The Insurance shall specifically include the City ~~and its officials, agents, and employees as~~as an additional insureds with respect to any liability arising out of the Cable Operator~~'~~'s performance.

~~3.~~ (b) The Insurance shall be issued by one or more companies licensed to do business in the State.

~~4.~~ (c) The Insurance shall contain an endorsement obligating the insurance company to furnish the City with ~~at least 30 days~~reasonable written ~~notice in~~ advance notice of the cancellation of the insurance.

~~5.~~ (d) Before a Cable Operator provides Cable Service, the Cable Operator shall deliver the policies or certificates representing the Insurance to the City. Renewal or replacement policies or certificates shall be delivered to the City prior to the expiration of the then existing Insurance.

~~6. If the State permits a Cable Operator to self-insure, then the Cable Operator may exercise its right and self-insure as long as the minimal insurance amounts outlined in this section are met and maintained.~~

~~**11-5-14. Performance bond.**~~

11-5-11 Performance Bond.

A Cable Operator shall comply with the following bonding requirements:

~~1. A performance or security bond in an amount of at least $50,000 executed by a surety licensed to do business in the State shall be delivered to the City. The purpose of the performance bond is to ensure performance of any requirements imposed by this Article and any applicable Franchise. The purpose is also to guarantee that should the Cable Operator not fulfill any obligations imposed by this Article or a Franchise held by the Cable Operator, then the surety will make whole (to the extent of the policy) any monetary losses incurred by the City.~~

~~2.~~

(a) A construction/completion bond shall be furnished prior to the time that a Cable Operator commences a construction, upgrade, rebuild, or repair/maintenance project that has a capital construction cost or outlay exceeding $50,000 in value where the construction takes place in one or more Easements or in the Public Way; provided, however, the following shall not be considered in determining whether a project exceeds $50,000: (i) ~~the~~ the cost attributable to any portion of the construction that utilizes aerial facilities consisting of existing poles owned by the Cable Operator or other utilities, or (ii) ~~construction~~ construction within a new subdivision where the construction of facilities is coordinated with the developer of the subdivision. The amount of the bond shall equal at least 90% of the projected capital construction cost or outlay, but shall not exceed $250,000. The construction/completion bond shall remain in force at all times until one year after completion of construction as determined by the City, unless relief is granted, or a reduction schedule is detailed in an agreement between the City and the Cable Operator.

~~3.~~

(b) Any construction/completion bond shall specifically guarantee that a Cable Operator will timely abide by its construction, upgrade, rebuild, or repair/maintenance schedule for the Cable System and/or any time table for technical and service improvements or additions to the Cable System as may be committed to, or agreed upon, from time to time by the City and the Cable Operator.

~~4.~~

(c) If the City draws on a bond as a result of a Cable Operator's failure to timely discharge its obligations, or failure to construct and activate the Cable System, or failure to complete a Cable System upgrade or rebuild or repair/ maintenance project, then the Cable Operator shall replenish the bond within 30 days to the level required in this section.

~~5.~~

(d) The Council may authorize a Cable Operator to substitute a Cash Deposit, Letter of Credit, or a Guaranty of another person or Entity for any of the bonds provided for in this section; provided, however, the person or Entity providing a Letter of Credit or Guaranty, and the form of the Letter of Credit or Guaranty, shall be subject to the approval of the City Council in its sole discretion.

11-5-15. 2 Furnishing of ~~reports.~~Reports.

(a) A Cable Operator's schedule of charges for regular Subscriber service, its policy regarding the processing of Subscriber complaints, delinquent Subscriber disconnect and reconnect procedures and any other terms and conditions adopted as the Cable Operator's policy in connection with its Subscribers shall be filed with the City upon request.

(b) Upon written request of the City, a Cable Operator shall furnish, at no cost to the City, copies

of any or all non-confidential filings with the FCC and the United States Copyright Office within 30 days of the request.

11-5-16. Books and r3 Records.

A Cable Operator shall keep complete and accurate books of accounts and records concerning the business and operations of the Cable System. In addition: 1.

(a) The City by its authorized representatives shall have the right, on reasonable advance written notice, to review at the Cable Operator's local office all records pertaining to a Cable Operator's cable operations with respect to the City which are necessary to the enforcement of this Article or theas are reasonably necessary to determine a Cable Operator's compliance with the Franchise. Such notice shall specifically reference the section(s) of the Franchise or the Cable Ordinance for which the review is requested. The Cable Operator's Franchise. Any review, unless mutually agreed upon or judicially ordered, should occur within the Cable Operator's regular office hours. Operator agrees that it will furnish the information requested electronically or make it available for the City's review, to the City within 30 days of the request.

(b) Non-revenue financial records will only be requested in the aggregate on a summary prepared by the Cable Operator.

(c) The City acknowledges the sensitivity of thesea Cable Operator's records; and will request this information only on as needed basis; and will treat this information as confidential and proprietary to the fullest extent allowed by law. The Cable Operator shall not be required to produce any records in violation of the Cable Act or any other applicable law. Until otherwise ordered by a court or agency of competent jurisdiction, the City agrees that, to the extent permitted by State and federal law, it shall deny access to any of a Cable Operator's records marked confidential to any person.

2. (d) The City shall have the right to hire, at its own expense, an independent certified public accountant, or other business or financial expert, to review the books and records of a Cable Operator pertaining to revenue information.

3. A false entry in the books and/or records of a Cable Operator of a material and substantial fact shall constitute a material violation of this Article. Erroneous entries shall not constitute a material violation if made in good faith.

4.

(e) If after a review or audit of a Cable Operator's records, it is discovered that the Cable Operator has underpaid the City by an amount that exceeds the greater of (i) $500 $2500, or (ii) 3% of the total amount paid for any Reporting Quarter, then the City may require the Cable Operator to reimburse the City for the actual cost of the audit, in addition to the amount of underpayment.

~~**11-5-17. Local office; office hours; telephone availability.** In order to facilitate the needs of Subscribers, a~~10
underpayment; provided, however, no such reimbursement shall be required if the reason for the underpayment is due to the annexation of additional areas into the City, for which notification of the annexation was not provided to a Cable Operator.

(f) A cable Operator shall not be required to maintain any records for Franchise compliance purposes longer than 4 years, except for written service complaints, which shall be kept for 1 year.

(g) A Cable Operator shall maintain a ~~customer service office which is easily accessible to Subscribers, and is located within the Community. The customer service office should have an adequate and knowledgeable staff in order to handle the vast majority of Subscriber service inquiries, including but not limited to billing inquires, refunds, service outages, equipment service and repair, payment of bills and other Charges, and inquiries from disabled or physically impaired Subscribers. In addition:~~

~~1. The Cable Operator will maintain a local, toll-free telephone access line which will be available to its Subscribers 24 hours a day, seven days a week.~~

~~a. Trained company representatives will be available to respond to Subscriber telephone inquiries during normal business hours which must include some evening or weekend hours.~~

~~b. After normal business hours, the access line may be answered by a service or an automated response system, including an answering machine. Inquiries received after normal business hours must be responded to by a trained company representative on the next business day.~~

~~2. Under normal operating conditions, telephone answer time by a customer representative, including wait time, shall not exceed 30 seconds when the connection is made. If the call needs to be transferred, transfer time shall not exceed 30 seconds. These standards shall be met no less than 90 percent of the time under normal operating conditions, measured on a quarterly basis.~~

~~3. A Cable Operator will not be required to acquire equipment or perform surveys to measure compliance with the telephone answering standards above unless an historical record of complaints indicates a clear failure to comply.~~

~~4. Under normal operating conditions, the Subscriber will receive a busy signal less than 3 percent of the time.~~

~~The customer service office shall be open during regular hours as published to Subscribers.~~

~~**11-5-18. Installations, outages, and service calls.** Under normal operating conditions, each of the following four standards will be met no less than 95 percent of the time measured on a quarterly basis.~~

~~1. Standard installations will be performed within 7 business days after an order has been placed. "Standard" installations are those that are located up to 125 feet from the existing distribution system.~~

~~2. Excluding conditions beyond its control, a Cable Operator will begin working on "service interruptions" promptly and in no event later than 24 hours after the interruption becomes~~

known. A Cable Operator must begin actions to correct other service problems the next business day after notification of the service problem. Once begun, a Cable Operator shall diligently pursue the necessary repairs.

3. The "appointment window" alternatives for installations, service calls, and other installation activities will be either a specific time or, at maximum, a four-hour time block during normal business hours. A Cable Operator may schedule service calls and other installation activities outside of normal business hours for the express convenience of a Subscriber.

4. Except for conditions beyond its control, a Cable Operator may not cancel an appointment with a Subscriber after the close of business on the business day prior to the scheduled appointment.

5. If a Cable Operator representative is running late for an appointment with a Subscriber and will not be able to keep the appointment as scheduled, the Subscriber will be contacted. The appointment will be rescheduled, as necessary, at a time which is convenient for the Subscriber.

11-5-19. Notifications to subscribers.full and complete set of plans, records and strand maps showing the location of the Cable System.

11-5-14 Customer Service.

A Cable Operator shall comply with the following customer service requirements:

(a) A Cable Operator shall comply with the customer service standards as provided for in the FCC Regulations, as may be amended from time to time. This Section shall be considered as notice to Cable Operators of the City's election to enforce those standards.

(b) A Cable Operator shall (i) maintain a customer service facility within the boundaries of the City staffed by customer service representatives that have the capacity to accept payment, adjust bills, respond to repair, installation, reconnection, disconnection, or other service calls; distribute or receive converter boxes, remote control units, or other equipment related to the provision of cable or video service; or (ii) provide written information to Subscribers as follows: 1. Subscribers will be notified of any changes in Rates, programming services or Channel positions as soon as possible in writing. Notice must be given to Subscribers a minimum of 30 days in advance of such changes if the change is within the control of the Cable Operator. In addition,customers with bill payment facilities through retail, financial, or other commercial institutions located within the boundaries of the City; or (iii) provide an address, toll-free telephone number or electronic address to accept bill payments and correspondence, and provide secure collection boxes for the receipt of bill payments and the return of equipment, provided that if a Cable Operator provides secure collection boxes, it shall provide a printed receipt when items are deposited; or (iv) provide an address, toll-free telephone number or electronic address to accept bill payments and correspondence, and provide a method for customers to return equipment to the Cable Operator shall notify subscribers 30 days in advance of any significant changes in the other information required by Section 76.1602 of the FCC Rules; 2. In addition to the requirement of subparagraph (1), a Cable Operator shall give 30 days advance written notice to both Subscribers and the City before implementing any change in Rate or

Charge. Such notice shall state the precise amount of any change. When the change involves the addition or deletion of Channels, each Channel added or deleted must be separately identified. For purposes of the carriage of digital broadcast signals, the operator need only identify for Subscribers, the television signal added and not whether that signal may be mutiplexed during certain dayparts; 3. A Cable Operator shall provide written notice to a Subscriber of any increase in the price to be charged for Basic Cable Service or associated equipment at least 30 days before any proposed increase is effective. The notice should include the name and address of the City; 4. To the extent a Cable Operator is required to provide notice of Cable Service and Rate changes to Subscribers, the Cable Operator may provide such notice using any reasonable written means; 5. Notwithstanding any other provision of the FCC Rules, a Cable Operator shall not be required to provide prior notice of any change in Rate or Charge that is the result of a regulatory fee, Franchise Fee, or any other fee, tax, assessment, or charge of any kind imposed by any Federal agency, State, or the City on the transaction between a Cable Operator and a Subscriber.

11-5-20. Billing practices. Bills will be clear, concise and understandable. Bills must be fully itemized, with itemizations including, but not limited to basic, tiered and premium service Charges and equipment Charges. Bills will also clearly delineate all activity during the billing period, including optional Charges, rebates and credits.

1. In case of a billing dispute, the Cable Operator must respond to a written complaint from a Subscriber within 30 days.
2. Refund checks will be issued promptly, but no later than either: a. the Subscriber's next billing cycle following resolution of the request or 30 days, whichever is earlier, or b. the return of the equipment supplied by the Cable Operator if service is terminated.
3. Credits for service will be issued no later than the Subscriber's next billing cycle following the determination that a credit is warranted.

11-5-21. Billing credit or refunds for service outages, interruptions, or unsolicited service.at no cost to the customer.

(c) A Cable Operator shall provide a Subscriber with a credit or rebate where the Subscriber's entire Cable Service suffers a service outage or interruption exceeding eight hours in duration beyond the time that the Subscriber notified the Cable Operator of the outage. The credit for purposes of determining the amount of the credit or rebate, shall be deemed to be equivalent to or the same as a twenty-four hour service outage. No credit or rebate shall be required where the outage was due to matters beyond the reasonable control of the Cable Operator. In addition:

1. For notifications by a Subscriber after hours, these credit refund requirements shall only apply if three Subscribers have provided notice in a given area.
2. In the case of a regional or area outage, all affected Subscribers shall be due a credit or refund if the Cable Operator is able to reasonably determine the Subscribers affected. If the Cable Operator is not able to reasonably determine the Subscribers affected by a regional or area outage, a credit or refund shall be given to all Subscribers affected by the outage who make a claim for credit or refund within 30 days of the outage.
3. In the case of a Charge for unsolicited service, a Cable Operator shall provide a

~~Subscriber with an adjustment or billing credit on the next available billing statement, and the Subscriber shall not be considered delinquent for failure to pay a Charge for unsolicited service; provided, however, no such adjustment shall be made where the service was not authorized by the Cable Operator.~~

~~**11-5-22. Special service requirements.**~~maintain a toll-free telephone number and a phone service operated such that complaints and requests for repairs or adjustments may be received at any time.

(d) A Cable Operator shall comply with all Federal and State laws and regulations concerning special service requirements for disabled, sight or hearing impaired or ambulatory impaired Subscribers.

(e) A Cable Operator shall furnish each Subscriber at the time service is installed, written instructions that clearly set forth information concerning the procedures for making inquiries or complaints, including the Cable Operator's name, address and local or toll-free telephone number. To the extent required by applicable law, a Cable Operator shall give the City 30 days' prior notice of any rate increases, channel lineup or other substantive service changes. 11

(f) A Cable Operator shall abide by any, and all, Subscriber privacy rules or regulations under Federal or State law.

~~11-5-23.~~ 11-5-15 Preferential or dDiscriminatory pPractices Prohibited.

A Cable Operator shall not deny Cable Service, deny access, or otherwise discriminate, nor subject any person to prejudice or disadvantage on the basis of age, race, creed, color, sex, national origin, handicap, or religious affiliation ~~or location of residence~~. Cable Operators shall not deny Cable Service, or the extension of Cable Service, to any group of potential residential cable Subscribers because of the income of the residents of the local area in which such group resides. The provisions of this section shall not, however, prohibit a Cable Operator from:

~~1.~~

(a) offering ~~a~~bulk rate discounts or promotion~~al or incentive discount Rate or Charge.~~

~~2.~~ s.

(b) denying service based on location of residence, if that residence is outside the parameters for line extension, or standard installations, as provided for in this Article or the Cable Operator's Franchise.

~~3. making agreements or entering into Cable Service agreements with multiple dwelling unit owners, including hotel, motel, and mobile park owners, to provide Cable Service under a bulk billing or other type of arrangement.~~

~~**11-5-24. Service inquiry logs.** In order to assist the City in assessing the resolution of Subscriber service requests, inquiries and complaints, a Cable Operator shall be required to keep and maintain service logs, subject to any limitations imposed by State or Federal law (including any Subscriber privacy limitations). At a minimum, the service inquiry logs should contain the date and time of the initial receipt of a service request, inquiry or complaint, together with the date and time of the initial response, the nature of the matter, and the precise action taken by a Cable Operator in order to resolve the matter. In addition to any other right of inspection that the City may possess, it shall have the right to review and inspect a compilation of the logs. The City shall not have the right of review or inspection for any logs or any information contained within the logs that are otherwise protected by State or Federal law.~~

~~**11-5-25. Restoration of a subscriber's property.** At any time a Cable Operator disturbs the property of a Subscriber, the Cable Operator shall ensure that the Subscriber's property is returned, replaced and/or restored to a substantially similar condition as that in existence prior to the disturbance by the Cable Operator. The costs associated with both the disturbance and the return, replacement and/or restoration shall be borne by the Cable Operator. The requirements imposed upon the Cable Operator extend to any subcontractor or independent contractor employed by the Cable Operator.~~

~~**11-5-26. Voluntary disconnection and downgrades.** A Subscriber may at any time request that a particular Service Tier or the entire Cable Service be disconnected. In addition, where different levels of service are offered by a Cable Operator, a Subscriber may request a downgrade from a particular level of service to a less comprehensive or less expensive level of service. Disconnections or downgrades shall be effective as per the Cable Operator's policies, to include any applicable charges for the change in service. Any refund due a Subscriber after downgrade or disconnection (both for non-payment and voluntary) shall be made within 45 days after the downgrade or disconnection.~~

~~**11-5-27. Protection of subscriber privacy.** A Cable Operator shall abide by any, and all, Subscriber privacy rules or regulations of the Federal or State governments.~~

~~**11-5-28. Use of public ways.**~~

11-5-16 Construction and Use of Public Ways.

All facilities of a Cable Operator shall be located, installed and maintained so as not to endanger or unnecessarily interfere with usual and customary use, traffic and travel upon Public Ways and Easements, and according to any Public Way or Easement use standards established by the City. In addition: ~~1.~~

(a) A Cable Operator shall construct, operate, maintain and repair its Cable System in compliance with all current technical codes adopted by the City, the State and the FCC, as are customary to the cable television industry. To the extent that these are inconsistent with other provisions of a Franchise, or State or local law, then the more stringent shall govern in order to protect the public health, safety and welfare.

(b) A Cable Operator shall obtain all required Permits from the City before commencing any work requiring a Permit, including the opening or disturbance of any Public Way.

~~2.~~ (c) All facilities of a Cable Operator shall be installed and located as to cause minimum interference with the rights and reasonable convenience of property owners and at all times shall be kept and maintained in a safe, adequate and substantial condition, and in good order and repair. The Cable Operator shall, at all times, employ ordinary care and use commonly accepted methods and devices for preventing failures and accidents which are likely to cause damage, injuries, or nuisances to the public, to include barricades, flags, lights or other devices as are reasonably required for public safety.

~~3.~~ (d) A Cable Operator shall use existing poles, conduits and other facilities whenever possible, and shall not construct or install any new, different, or additional poles, conduits, or other facilities on Public Ways without obtaining all Permits required by the City. Any poles or other fixtures placed in any public way by the Cable Operator shall be placed in such a manner as not to interfere with the usual travel on such public way.

~~4.~~ (e) The Cable Operator shall, at its own expense, restore any damage or disturbance caused to the Public Way as a result of its operation, construction, or maintenance of the Cable System to a condition reasonably comparable to the condition of the Public Way immediately prior to such damage or disturbance.

~~5.~~ (f) If a Cable Operator's system creates a hazardous or unsafe condition or an unreasonable interference with property, then the Cable Operator shall at its own expense voluntarily, or upon request of the City, remove or move, as appropriate, that part of the system that creates the hazardous condition.

~~6.~~ (g) A Cable Operator shall not place equipment where it will interfere with the rights of property owners or with other public utility services or any other service facility that benefits the City or its residents' health, safety or welfare.

~~7.~~ (h) A Cable Operator shall, at its expense, protect Public Ways and Easements, and support or temporarily disconnect or relocate in the same Public Way, any property of the Cable Operator when necessitated by reason of: traffic conditions, public safety, a street closing, street construction or resurfacing, change or establishment of a street grade, installations of other City utility services, or any improvement, construction or repair related to health, safety or welfare. Except in case of Emergency, the City shall provide at least 10 days written notice to the Cable Operator of the need for a relocation or temporary disconnection. In addition, the City shall have the right to remove any of the Cable Operator's facilities in the event of Emergency, and no charge shall be made by the Cable Operator to the City for restoration and repair, unless such acts amount to gross negligence by the City.

~~8.~~

(i) If the City elects to alter or change the grade of any Public Ways, the Cable Operator upon reasonable notice from the City, shall relocate any portions of its Cable System impacted by the

City's Public Way alterations, at the Cable Operator's expense.

(j) A Cable Operator shall, at the request of any person holding a ~~building moving Permit, temporarily remove, raise or lower the cable wires to allow the moving of the building. The expense of temporary removal shall be~~lawful permit issued by the City, protect, support, raise, lower, temporarily disconnect, relocate in or remove from the Street as necessary any property of the Cable Operator, provided that the expense of doing so is paid by the person ~~requesting it~~making the request and the Cable Operator is given reasonable advance written notice to prepare for such changes. The Cable Operator may require such payment in advance. ~~The affected Cable Operator shall be given not~~For purposes of this subsection, "reasonable advance written notice" shall be no less than 10 business days ~~notice of a contemplated move to arrange for temporary wire changes.~~

~~9.~~ in the event of a temporary relocation and no less than 120 days for a permanent relocation.

(k) A Cable Operator shall have the authority to trim trees in the Public Way at its own expense as may be necessary to protect its wires and facilities.

~~10. The City shall have the right to make additional use, for any public purpose, of any poles or conduits controlled or maintained exclusively by or for the Cable Operator in any street or right of way, provided the use by the City does not interfere with the Cable Operator's use. The City shall indemnify and hold the Cable Operator harmless from all claims, demands, causes of action, suits, actions, proceedings, damages, costs or liabilities of every kind whatsoever arising out of the City's such use of the Cable Operator's poles or conduits.~~

~~11.~~

(l) In those areas of the City where transmission or distribution of both telephone and power companies are underground or are later placed underground, a Cable Operator's feeder and s Subscriber drops shall also be placed underground. To the extent reasonably possible, a Cable Operator shall coordinate the joint use of facilities with the telephone and power companies.

~~11-5-29. Construction standards.~~ Subscriber drops shall be buried within a reasonable time period, subject to weather conditions.

11-5-17 Technical Standards.

A Cable Operator shall comply with any rules and regulations of the FCC concerning technical operation, signal quality, consumer electronics equipment compatibility and performance monitoring.

11-5-18 Emergency Alert System.

A Cable Operator shall ~~construct, operate, maintain and repair its Cable System in compliance with all current technical codes adopted by the City, the State and the FCC, as are customary to the cable television industry. Methods of construction, installation or maintenance and repair of any Cable System shall comply with the most current editions of the National Electrical Safety~~

~~Code, and the National Electric Code, as affects the construction, installation and maintenance of electrical supply and communications line and attachments and supports. To the extent that these are inconsistent with other provisions of a Franchise, or State or local law, then the more stringent shall govern in order to protect the public health, safety and welfare.~~

~~**11-5-30. System expansion.** Each Franchise may provide for a build-out and density standard under which the~~comply with all applicable federal statutes, rules and regulations with respect to Emergency Alert Systems.

11-5-19 Service Area and Expansion.

Cable Service shall be provided as follows:

(a) A Cable Operator shall ~~extend~~make Cable Service ~~within the City~~distributed over its Cable System available, at a charge which does not exceed the Cable Operator's normal rate for standard installations, ~~so long as the installation is~~to every residence within any area within the City where there is a minimum density of at least 30 residences per lineal strand mile of cable as measured from the Cable Operator's closest trunk line or distribution cable that is actively delivering Cable Service as of the date of such request for service; provided, however, (i) such installation shall be financially and technically feasible~~. The Cable Operator may extend service to Subscribers which do not meet the density standard if the Subscriber(s) are willing to pay or share the capital costs of expanding the Cable System along with~~, (ii) the Cable ~~Operator's normal rate for standard installations.~~

~~**11-5-31. Emergency alert system; standby power.** In order that Subscribers may be alerted in the event of an impending, imminent or actual Emergency, and in addition to the Federal emergency alert standards~~Operator shall have legal access to the Subscriber's location, and (iii) the Subscriber shall be within 125' of the Cable Operator's existing distribution system.

(b) Notwithstanding the above, a Cable Operator shall ~~ensure that its system is designed to permit the override of the audio portion of all Channels by authorized personnel at the Central Communications Center operated by Scotts Bluff County. In addition, a Cable Operator shall:~~

~~1. maintain all Channel video blanking ability to facilitate the needs of hearing and sight-impaired Subscribers; 2. test the Subscriber override system at the request of the Central Communications Center which shall not be more frequent than once a month; and~~

~~3. cooperate with the City on the use and operation of the emergency override system.~~

~~**11-5-32. Franchise required.**~~ have the right, but not the obligation, to extend the Cable System into any other area of the City and to make Cable Service available to residential subscribers or to businesses, upon such terms and conditions as determined by the Cable Operator.

11-5-20 Franchise.

No person or Entity, other than the City, shall be permitted to construct, operate or maintain a Cable System where any part of the Cable System's facilities to occupy or cross Public Ways

without first having entered into a Franchise. With respect to all Franchises:

~~1.~~ (a) The City may award one or more non-exclusive Franchises; provided, however, anytime (i) a Franchise is issued, (ii) the City otherwise grants a permit to a Video Programming Provider, which contains terms that are more favorable to a particular Cable Operator or Video Programming Provider, or (iii) the City constructs, operates, or maintains its own Cable System within the City limits, then the City shall, within 30 days of a written request from another Cable Operator or Video Programming Provider, modify that Cable Operator's Franchise or Video Programming Provider authorization to insure that the obligations applicable to any one Cable Operator or Video Programming Provider are no more burdensome than those imposed on one or more competing Cable Operators or Video Programming Providers or the City's own Cable System. If the City fails to make modifications consistent with this requirement, the requesting Cable Operator's Franchise or Video Programming Provider's authorization shall be deemed so modified 30 days after the initial written request.

~~2.~~ (b) An Applicant shall be selected as part of a public proceeding and hearing which affords due process to both the City and the Cable Operator. If the Applicant is selected as a Cable Operator, then the Applicant will enter into a Franchise agreement with the City.

~~3.~~ (c) Unless prohibited by law, the City reserves the right to construct, operate or maintain its own Cable System within the City limits. ~~The City shall not be required to submit a proposal for, or receive, a Franchise in order to do so.~~

~~**11-5-33. Franchise agreement.**~~, provided the city shall regulate all Cable Operators, Video Programming Providers, and its own Cable System in a competitively neutral and nondiscriminatory manner.

(d) If the Council awards a Franchise to an Applicant ~~in all or part of the City~~, or approves a proposal for renewal of a Franchise, then a Franchise agreement shall be ~~entered into~~signed. A newly franchised Cable Operator may not lay any cable until the Franchise agreement is executed by the Cable Operator and the City. At a minimum, a Franchise agreement shall contain provisions for the following:

(1) the term or duration of the Franchise;

(2) an agreement to comply with this Article;

(3) any applicable construction, upgrade or rebuild schedule; and

(4) any applicable build-out and density standard.

~~**11-5-34. Extent of grant of franchise.**~~(e) Upon entering into a Franchise, a Cable Operator may construct, install, maintain, operate, repair, replace, remove, or restore a Cable System within the City. In so doing:

(1.) The Cable Operator may utilize the Public Ways and those Easements dedicated to the public use.

(2.) The Cable Operator shall be responsible for obtaining its own Easements for private property and pole attachment agreements with other utilities.

~~11-5-35.~~

~~Franchise term and renewal.~~

(f) The term of a Franchise may be for a period not to exceed 10 years from the date that a Franchise, or a Franchise renewal, is approved by the Council. Proceedings for the renewal of a Franchise shall be governed by the applicable provisions of the Cable Act.

~~**11-5-36. Franchise application. The City may develop rules and regulations with respect to the submission and processing of applications for a Franchise. The rules and regulations shall primarily be aimed at determining the legal, financial, technical and character qualifications of the applicant.**~~

~~**11-5-37. Franchise fees.**~~

11-5-21 Franchise Fees.

Each Cable Operator shall pay to the City a Franchise Fee equal to ~~4%~~5% of the Gross Revenues of the Cable Operator. The City reserves the right at any time, upon 90 days' notice to all Cable Operators, to amend this section so as to increase the Franchise Fee to the maximum rate allowable under Federal law, in the event that the maximum rate is increased. It is intended that the Franchise Fees will promote the health, safety and welfare of the citizens of the City. Accordingly, the Franchise Fee shall be deposited into the general revenues of the City, unless otherwise specified.

~~1.~~ (a) The Franchise Fees may be passed through to Subscribers as a line item on Subscriber bills or otherwise, consistent with Federal law.

~~2.~~ (b) Within 45 days after the end of each Reporting Quarter, a Cable Operator shall file with the City a detailed financial and revenue report showing the Gross Revenues received by the Cable Operator for operations within the City during the proceeding Reporting Quarter. ~~The report shall be in a form approved by the City.~~ The report shall include Gross Revenue from all sources upon which a Franchise Fee is payable~~, directly or indirectly derived from the operation of the Cable System, or the provision of any Cable Service by or to the Cable System~~. Gross Revenue may be reported in the aggregate by general service type or source.

~~3.~~ (c) In the event that payment is not made within 60 days after the end of a Reporting Quarter, then the Cable Operator may be declared in default of the Franchise, and the City may take action against the Cable Operator as authorized in this Article.

~~4.~~ (d) The acceptance of any payment shall not be construed as a release of, or an accord or satisfaction of, any claim that the City might have for further or additional sums payable

under the terms of this Article, or for any other performance or obligation of a Cable Operator.

~~5.~~ (e) Payments of compensation made by a Cable Operator to the City pursuant to this Article shall be considered in addition to any and all taxes of general applicability owed to the City by the Cable Operator that are not included as Franchise Fee under Federal law.

~~6.~~ (f) A Franchise Fee shall not be payable on any Gross Revenue source(s) which are excluded by Federal law.

~~11-5-38.~~

11-5-22 Assignment of fFranchise.

A Cable Operator~~'~~'s Franchise may not be assigned in whole or in part without the City~~'~~'s prior written approval. For purposes of this paragraph, ~~"Assigned"~~"Assigned" or ~~"Assignment"~~"Assignment" shall mean the transfer, sale, or any other form of assignment of a Cable System, to include any transaction or action which effectively or actually changes ownership from one person or Entity to another to include the transfer of 50% or more of the ownership interest of an Entity or the parent of an Entity. Any attempted Assignment without prior written approval shall constitute a default in the Franchise. A proposed Assignment shall be subject to the following:

~~1.~~

(a) At least 120 days before a proposed Assignment is scheduled to become effective, the Cable Operator shall make a written request to the Council for the City~~'~~'s approval of the proposed Assignment. ~~2.~~

(b) The City will not unreasonably withhold its consent to an Assignment. However, in making its determination, the Council ~~may~~shall consider the ~~following criteria:~~

~~a.~~ legal, financial and technical qualifications of the proposed assignee;~~b. financial ability and stability of the proposed assignee;~~

~~c. the experience of the proposed assignee which may include conducting an investigation of the proposed assignee's service record in other communities;~~

~~d. legal integrity of the proposed assignee or transferee;~~

~~e. if requested by the Council, submittals from the proposed assignee concerning any changes it intends to make in the operation and maintenance of the present Cable System;~~

~~f. the corporate connection, if any, between the Cable Operator and the proposed assignee;~~

~~g. the economic viability or non-viability of the Cable System in the future, based upon certain factors including the impact of the purchase price on the City and/or the proposed assignee; and~~

~~h. any other aspect of the proposed assignee's background which could affect the health, safety and welfare of the citizenry of the City as it relates to the operation of the Cable System.~~

~~3.~~

(c) Nothing in this section shall restrict the City from considering ~~other criteria, and in particular, any~~ criteria established under State or Federal law, rule or regulation.

~~4.~~ (d) Before an Assignment is approved by the City, the proposed assignee shall sign a statement indicating that it has read, understands, and intends to abide by any existing Franchise agreement.

~~5.~~ (e) The City may include certain amendment(s) to the Franchise or this Article as a condition to the Assignment; provided, however, any such amendment(s) shall either (i) be by mutual agreement between the City and the proposed assignee, or (ii) shall not have a material adverse effect on the rights and obligations of the Cable Operator under the Franchise.

~~6.~~ (f) In the event of any approved Assignment, the assignee shall assume all obligations and liabilities of the former Cable Operator.

~~7.~~ (g) The City's consent to an Assignment shall not relieve the former Cable Operator of its liability under the Franchise agreement until the Assignment actually takes place unless specifically relieved by Federal or State law or by the Council at the time an Assignment is approved. In the event of an Assignment, the former Cable Operator shall remain liable for any Franchise Fees incurred as of the time that the Assignment is effective for the period governed by the applicable statute of limitations.

~~8.~~ (h) If the Cable Operator has provided the City with all information as required by this section or the FCC in a timely manner, and the City has not taken action on the Cable Operator's request for transfer within 120 days after receiving such request, consent by the City shall be deemed given.

Consent shall not be required for an Assignment to a wholly-owned subsidiary Entity of a Cable Operator or the current parent Entity of a Cable Operator, whether the ownership is direct or indirect, such as through other wholly-owned intermediate subsidiaries. In addition, consent shall not be required for the granting of a security interest in the Cable Operator's system including its Franchise. However, if the holder of the security interest repossesses, forecloses or takes other action concerning its collateral, it shall dispose of the Cable System within a reasonable period of time and the disposition by the holder of the security interest shall be considered an Assignment subject to the provisions of this section.

~~11-5-39.~~

11-5-23 Educational and ~~g~~Governmental ~~a~~Access.

To the extent permitted by law, and in order to fulfill a public, educational and governmental access policy that will facilitate the long range needs of the ~~Community~~City, each Cable Operator shall 17
provide at its own expense ~~PEG Channels as follows: 1. Two twenty-four hour per day educational Channels shall be provided within the Community, one for the use of the City of~~

~~Scottsbluff schools and one for the City of Gering schools.~~

~~2. One twenty-four hour per day PEG Channel shall be provided within the Community for use by various governmental subdivisions. If at any time, 90% of the total time allocated for this PEG Channel is consistently used 5 days a week for a period of 6 months, then the~~one PEG Channel under the control of the City. The following shall apply to the PEG Channel:

(a) The City is solely responsible for the content it provides over the PEG Channel. The Cable Operator shall ~~provide an~~not exercise any editorial control over any programming of the PEG Channel and shall also not be subject to any civil or criminal liability for any programs carried on the PEG Channel.

(b) The PEG Channel may be placed on any tier of service available to all Subscribers, including the digital tier. The City shall provide programming on the PEG Channel to occupy 70% of the hours between 11a.m. and 11p.m. for any twelve consecutive week period. In the event that the above the programming levels are not maintained or if the City does not adequately use the channel, the Cable Operator reserves the right to have the channel returned to the Cable Operator for the Cable Operator's use. If at any later time, which must be at least one year from the return of the PEG Channel to the Cable Operator, the City desires to utilize the PEG Channel, it may notify the Cable Operator of its desire to do so, and the PEG Channel shall be made available to the City within 30 days of the request. The above programming requirements shall apply with respect to continuance of the PEG Channel by the City.

(c) If the City is utilizing the PEG Channel and is also using any of the following locations for signal input, signal input locations shall be provided at City Hall. Only those signal input locations actually being used shall be required.

(d) Cable Operators may interconnect their cable systems for the purpose of sharing PEG access programming, provided that the Cable Operators are able to reach agreement for the interconnection. Nothing in this paragraph should be construed as requiring a Cable Operator to add additional PEG ~~Channel. The use of this additional Channel may be reviewed every 6 months at the request of the Cable Operator. If after any 6 month period, the combined use of the original and added PEG Channel has dropped so that if the two Channels were combined, the usage would not justify more than one Channel under this subsection, the requirement for the additional PEG Channel shall cease until the criteria for the additional PEG Channel is met once again.~~

~~3. A Cable Operator shall provide up to six hours of technical assistance within a calendar year for each school or political subdivision without charge. Additional technical assistance shall be provided at the Cable Operator's cost.~~

~~The provision of PEG Channels shall include the installation of one modulator per each governmental User of a PEG Channel. Installation shall be considered as complete when the governmental User's system is operational.~~

~~**11-5-40. Public service.**~~ Channels.

11-5-24 Public Service.

A Cable Operator shall furnish, upon request, ~~one outlet for each public school building, municipal office building, public library, fire station, police station and courthouse which is passed by the Cable Operator's Cable System. Basic Cable Service and the next additional Service Tier shall be provided at no charge. An initial connection will be made at no charge with additional connections to be made for the cost of time and materials only. If necessary for a television with a standard digital tuner to receive the service level provided at no charge, then one Converter shall be provided for each such television within these~~and subject to applicable law, one outlet for public buildings~~, up to~~ as identified in a ~~maximum of five Converters per building~~Cable Operator's Franchise. With respect to this service: ~~1.~~

(a) The Cable Service provided pursuant to this section shall not be used for commercial purposes and shall not generally be available for public viewing. The City shall take reasonable precautions to prevent any use of the Cable System that results in the inappropriate use or any loss or damage to the Cable System.

~~2.~~ (b) The City shall hold the Cable Operator harmless from any and all liability or claims arising out of the provision and use of Cable Service to City buildings.

~~3. The Cable Operator shall not be required to provide an outlet to any such building where a standard drop of more than 125 feet is required, unless the City or building owner/occupant agrees to pay the incremental cost of any necessary extension or installation.~~

~~**11-5-41. Technical standards.** A Cable Operator shall comply with any rules and regulations of the FCC concerning technical operation, signal quality and consumer electronics equipment compatibility. Unless a Cable Operator can demonstrate that it is both technologically and economically unfeasible, programming services shall be delivered by the use of addressable technology allowing Cable Service levels to be changed without the expense (either to the Operator or a Subscriber) of a separate trip or call.~~

~~**11-5-42. Default.**~~ 18

11-5-25 Default.

When a Cable Operator violates a provision of this Article, or acts so as to compromise the ~~or~~ legal, financial or technical integrity and/or stability of the Cable System or the Cable Operator itself, in either case, to a degree that the interests of the Subscribers ~~and Users~~ are negatively affected, then a Cable Operator shall be considered in default of this Article.

~~1.~~ (a) Examples of a default shall include, but are not limited to: bankruptcy (except for a reorganization as long as the Cable Operator is in compliance with an approved plan or other court order), insolvency, failure to pay taxes or Franchise Fees, failure to receive written City approval for an Assignment, or failure to substantially abide by the terms and conditions of the Franchise agreement or this Article~~.~~ to include the failure to operate its Cable System. Provided:

(1) It is not the City's intention to subject a Cable Operator to penalties, fines, forfeitures or revocation of a Franchise for violations where the violation was a good faith error that resulted in no or minimal negative impact on the Subscribers within the City, or where strict performance would result in practical difficulties and hardship to a Cable Operator which outweighs the benefit to be derived by the City and/or Subscribers.

(2) Events in the nature of force majeure or conditions which cannot be corrected because they are matters reasonably beyond the ~~immediate control~~ability of the affected Cable Operator to anticipate and control shall not be considered a default. This provision includes, but is not limited to, severe or unusual weather conditions, fire, flood, or other acts of God, strikes, work delays caused by failure of utility providers to service, maintain or monitor their utility poles to which a Cable Operator's Cable System is attached, as well as unavailability of materials and/or qualified labor to perform the work necessary; provided, however, such noncompliance shall only be excused for as long as the Cable Operator is reasonably pursuing compliance.

~~2.~~ (b) In the event that a default occurs, the City shall provide written notice of the default to the affected Cable Operator. The notice of default shall specify the violation(s).

~~3.~~

(c) The Cable Operator shall have 30 days from the receipt of the written notice to bring itself into compliance so that it is no longer in default of its Franchise or this Article, as the case may be; provided, however, if by the nature of default, the default cannot be cured within this 30 day period, the Cable Operator shall initiate reasonable steps to remedy the default and notify the City of the steps being taken and the projected date that they will be completed.

~~4.~~ (d) If the Cable Operator fails to cure its default within the time period provided for above, the matter shall be set for public hearing before the Council to be held within 75 days after the notice of default was mailed to the Cable Operator. Written notice of the time and place of the public hearing shall be sent to the Cable Operator at least ~~15~~20 days prior to the date of the hearing.

~~5.~~ (e) At the hearing, the Cable Operator shall have an opportunity to state its position on the

matter, present evidence and question witnesses. If the Cable Operator fails to attend the hearing where a continuance of the hearing has not been granted by the Council, then the Cable Operator may be declared in default of the Franchise agreement.

~~6.~~ (f) If the default has not been resolved by the time of or as a result of the hearing, the Council may, after the public hearing, direct the Cable Operator to take corrective action within a specified period of time, or may declare the Cable Operator in default of the Franchise agreement, and revoke or terminate the Franchise. The Council's action shall be delivered to the Cable Operator in writing within 15 days of the Council's action.

~~7.~~ (g) If the Council directs corrective action to be taken and the Cable Operator does not rectify the default within the time specified, then the Council may without further notice declare the Cable Operator to be in default and revoke or terminate the Franchise.

~~8.~~ (h) If the Cable Operator fails to comply with any determination by the Council, which determination is not stayed or overturned by order of an appropriate court, then the City shall have any and all remedies available to it by law, provided the Cable Operator may continue to operate the Cable System until all legal appeals procedures have been exhausted.

~~**11-5-43. Federal legislation, rules and regulations; franchise subject to amendment.**~~

11-5-26 Removal of Cable System.

(a) In the event of termination or forfeiture of the a Franchise Agreement or abandonment of a Cable Operator's Cable System, the City may require the Cable Operator to remove all or any portion of its Cable System from all Public Ways; provided, however, that the Cable Operator will not be required to remove those portions of its Cable System required to provide telecommunications services or other non-cable service to the extent that the Cable Operator lawfully provides telecommunications services or other non-cable service over the Cable System.

(b) If a Cable Operator has failed to commence removal of its Cable System, or such part as designated by the City, within 120 days after written demand for removal is given, or if the Cable Operator has failed to complete such removal within twelve months after written demand for removal is given, the City may apply funds secured by the Franchise agreement toward removal.

11-5-27 Federal Legislation, Rules and Regulations; Franchise Subject to Amendment.

In addition to any requirements contained within this Article, all Cable Operators shall be expected to comply with all applicable provisions of the Cable Act and all other federal laws directed at controlling or regulating Cable Operators, and any rules and regulations issued pursuant to those laws. In addition, any Franchise issued pursuant to this Article shall be subject to amendment by mutual agreement of the parties to incorporate any applicable Federal legislation, rules or regulations which become effective after the date of the Franchise.

~~**11-5-44.**~~

11-5-28 **Inter-Governmental eCooperation.**

In the event that a Cable System serves areas outside the jurisdiction of the City (to include the Community), then the various jurisdictions or governmental subdivisions shall have the right to enter into one or more agreements concerning the matters covered by this Article. By way of example, it is contemplated that the members of the Community may enter into one or more agreements to assist them in regulating ~~Cable Operators~~administering Franchises . These agreements may include, but shall not be limited to, the following general areas:

1. Allocation of the total Franchise Fee collected from the Cable System between the various governmental subdivisions.

2. The Review and evaluation of (i) proposals to provide Cable Television Service, or (ii) requests for renewal of existing Franchises.

3. Evaluations of a Cable Operator's performance.

4. PEG Channel use.

~~Except as may be prohibited by law, a Cable Operator shall honor any agreements entered into pursuant to this section.~~

~~11-5-45.~~

11-5-29 **Tampering and unauthorized reception of certain signals.**

No person shall intercept or receive, or assist in intercepting or receiving, any communications service offered over a Cable System, unless specifically authorized to do so by a Cable Operator, or as may otherwise be specifically authorized by law.

~~1.~~ (a) For purposes of this section, the term ~~"assist"~~"assist in intercepting or receiving~~"~~" shall include the manufacture or distribution of equipment intended by the manufacturer or distributor for the unauthorized reception of Cable Service.

~~2.~~ (b) Without securing permission from a Cable Operator, or making payment to a Cable Operator, then no person shall be authorized to make any connection with any part of a Cable System for the purpose of receiving or intercepting, or assisting others to receive or intercept any Cable Service provided lawfully by a Cable Operator.

~~3.~~ (c) No person shall be authorized to willfully tamper with, remove or damage any facilities used for the distribution of Cable Service.

~~4.~~ (d) Any violation of this section ~~is a Class I violation.~~

~~**11-5-46. Severability.**~~ shall constitute a misdemeanor and upon conviction shall be subject to a fine of up to $100. Each day that the violation continues shall be considered a separate offense.

11-5-30 Severability.

The provisions of this Article will be deemed severable, and if any provision of this Article is held illegal, void, or invalid under applicable law, that provision may be changed to the extent reasonably necessary to make the provision legal, valid and binding. If any provision of this Article is held illegal, void or invalid in its entirety, the remaining provisions of this Article will not be affected.

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF SCOTTSBLUFF, NEBRASKA, AMENDING THE MUNICIPAL CODE BY AMENDING CHAPTER 11, ARTICLE 5, DEALING WITH CABLE TELEVISION SYSTEMS AND THE ISSUANCE OF FRANCHISES TO OPERATORS OF CABLE TELEVISION SYSTEMS, ALLOWING FOR THE USE OF RIGHTS-OF-WAY FOR CABLE TELEVISION SYSTEMS, AND REPEALING PRIOR PROVISIONS OF THE MUNICIPAL CODE WHICH ARE INCONSISTENT WITH THIS ORDINANCE, PROVIDING FOR PUBLICATION IN PAMPHLET FORM AND PROVIDING FOR AN EFFECTIVE DATE.

BE IT ORDAINED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF SCOTTSBLUFF, NEBRASKA:

Section 1. Chapter 11 of the Scottsbluff Municipal Code is amended by revising a new Article 5 Cable Television, as follows:

"11-5-1 Purpose.

The purpose of this Article is to:

(a) establish a local policy concerning cable television;

(b) establish Franchise procedures and standards which encourage the growth and development of Cable Systems which assure that Cable Systems are responsive to the needs and interests of the City;

(c) establish guidelines for the exercise of local authority with respect to the regulation of Cable Systems;

(d) establish an orderly process for Franchise renewal which protects Cable Operators against unfair denials of renewal where an Operator's past performance and proposal for future performance meet the standards set by the FCC and this Article;

(e) promote competition in cable communications and minimize unnecessary regulations that would impose undue burdens on Cable Systems;

(f) provide for access and inspection of a Cable Operator's records in order to monitor compliance with local, State and Federal laws, and any Franchise agreement;

(g) enforce customer service standards;

(h) provide a construction and installation policy for a Cable Operator's system;

(i) provide for the health, safety and welfare of the citizens of the City in light of the Cable Operator's construction, operation and maintenance;

(j) provide for emergency override capability, so that citizens of the City may be warned of a potential, imminent, or actual Emergency situation that exists in the area;

(k) create a procedure for collecting and monitoring Franchise Fees; and

(l) create a default and revocation procedure for Cable Operators.

11-5-2 Definitions.

As used in this Article or in any Franchise issued pursuant to this Article, the following terms shall have the following definitions:

(a) "Affiliate" means another person or Entity who owns or controls, is owned or controlled by, or is under common ownership or control with, the person or Entity.

(b) "Applicant" means a person or Entity submitting an application or proposal to the City for a Franchise to operate a Cable System under the terms and conditions of this Article and any State or Federal regulations.

(c) "Auxiliary Equipment" means equipment supplied by a Cable Operator which enhances or assists in the reception or provision of Cable Service.

(d) "Basic Cable Service" means any Service Tier which includes the retransmission of local television broadcast signals.

(e) "Cable Act" means the Cable Communications Policy Act of 1984, as amended, which is codified as 47 U.S.C. §§ 521, et. seq., or any future federal legislation concerning the subject matter provided for in the Cable Act.

(f) "Cable Operator" means any person or Entity which:

(1) provides Cable Service over a Cable System and directly or through one or more affiliates owns a significant interest in that Cable System; or

(2) otherwise controls or is responsible for, through any arrangement, the management and operation of a Cable System.

(g) "Cable Service" means:

(1) the one-way transmission to Subscribers of: (i)Video Programming or (ii) Other Programming Service; and

(2) Subscriber interaction, if any, which is required for the selection or use of Video Programming or Other Programming Service.

(h) "Cable System" means a facility consisting of a set of closed transmission paths and associated signal generation, reception and control equipment that is designed to provide Cable Service which includes Video Programming, and which is provided to multiple Subscribers within the City; provided, however, this shall not include:

(1) a facility that serves only to retransmit the television signals of 1 or more television broadcast stations;

(2) a facility that serves Subscribers without using any Public Way;

(3) a facility of a common carrier which is subject, in whole or in part, to the provisions of title II of the Cable Act, except that the facility shall be considered a Cable System (other than for purposes of § 621(c) of the Cable Act) to the extent the facility is used in the transmission of Video Programming directly to Subscribers; unless the extent of such use is solely to provide interactive on-demand services.

(4) an open video system that complies with § 653 of the Cable Act.

(5) any system exempted under the Cable Act.

(i) "Channel" means a portion of the electromagnetic frequency spectrum which is used in a Cable System and which is capable of delivering a television channel.

(j) "Charge" means a one-time or non-regularly occurring cost paid by the Subscriber, and which is associated with the installation, maintenance, service or repair of the Cable Service.

(k) "City" means the City of Scottsbluff, Nebraska and includes any areas annexed to the City after this date. "Council" means the City Council of the City of Scottsbluff. "Mayor" means the Mayor of the City of Scottsbluff. "City Manager" means the City Manager of the City of Scottsbluff.

(l) "Community" shall mean the geographic area within the municipal limits of Gering, Nebraska, Terrytown, Nebraska and Scottsbluff, Nebraska and any portions of Scotts Bluff County, Nebraska, which are served by a Cable System serving any portion of those municipalities or county.

(m) "Emergency" means an imminent, impending, or actual natural or humanly induced situation where the health, safety or welfare of all, or a representative portion, of the residents of the City is threatened. An Emergency (by illustration) may include a snowstorm, flood, tornado, severe thunderstorm, hazardous waste infiltration, petroleum, munitions or nuclear explosion, or aircraft crash.

(n) "Easement" means and shall include any public easement or other compatible use created by dedication or by other means, to the City for public utility or other purposes including cable television. "Easement" shall include a private easement used for the provision of Cable Service.

(o) "Entity" shall mean a partnership, joint venture, corporation, limited liability company or such other form of conducting business authorized by State law.

(p) "FCC" means the Federal Communications Commission or any successor governmental entity.

(q) "Franchise" means the authorization issued by the City which authorizes a non-exclusive right to construct, operate and maintain a Cable System within the City.

(r) "Franchise Fee" includes any tax, fee, or assessment of any kind imposed by the City on a Cable Operator or Subscriber, or both, solely because of their status as such. "Franchise Fee" does not include:

(1) any tax, fee, or assessment of general applicability (including any such tax, fee, or assessment imposed on both utilities and Cable Operators or their services but not including a tax fee, or assessment which is unduly discriminatory against Cable Operators or Subscribers);

(2) Agreed upon capital costs incurred by the Cable Operator for PEG, or governmental access facilities;

(3) requirements or charges incidental to the awarding or enforcing of a Franchise, including payments for bonds, security funds, letters of credit, insurance, indemnification, penalties or liquidated damages; or

(4) any fee imposed under the copyright laws of the United States.

(s) "Gross Revenue" means any revenue, as determined in accordance with generally accepted accounting principles, received by a Cable Operator from the operation of a Cable System within the City. Gross Revenue does not, however, mean (i) any taxes, fees or assessments collected by a Cable Operator from Subscribers for pass-through to a government agency (including sales taxes, Franchise Fees or FCC user fees); (ii) unrecovered bad debt or bona fide credits, refunds and deposits paid to Subscribers; (iii) revenues from activities exempted under the Cable Act or by the FCC, and (iv) PEG Channel Support recovered from Subscribers.

(t) "Other Programming Service" means information that a Cable Operator makes available to all Subscribers generally.

(u) "PEG Channel" means a public, educational or governmental Channel which is carried on a Cable System.

(v) "Permit" means a written authorization issued to a Cable Operator by the City, other than a Franchise.

(w) "Public Way" means any public street, public place, public Easement or right-of-way dedicated to the public use.

(x) "Reporting Quarter" shall mean a Cable Operator's fiscal quarter as reported to the City. If a Cable Operator does not report to or notify the City concerning the dates of its fiscal quarters, then the "Reporting Quarters" for a Cable Operator shall be considered to be the periods ending on the last day of March, June, September and December of each calendar year.

(y) "School" shall mean any K-12 school operated within the City by any public school system.

(z) "Service Tier" means a category of Cable Service or Other Services provided by a Cable Operator, and for which a separate rate is charged.

(aa) "State" means the State of Nebraska.

(bb) "Subscriber" means a person lawfully receiving Cable Service delivered by a Cable Operator.

(cc) "Video Programming" means programming provided by, or generally considered comparable to programming provided by, a television broadcast station.

(dd) "Video Programming Provider" means a provider of Video Programming which is authorized by the City or applicable law to utilize the Public Way to provide video programming to residents of the City.

It is intended that the definitions of any of the terms which are also defined in the Cable Act be consistent with the corresponding Cable Act definitions. In the event that it is determined that any of the above definitions are inconsistent with the Cable Act, then the definitions contained in the Cable Act shall control.

11-5-3 Administration; delegation of powers and authority.

Unless prohibited by Federal or State law, the Council may delegate its powers and authorities with respect to a Cable Operator to one or more duly authorized representatives of the City, including the Mayor, the City Manager, a Cable Advisory Committee or an outside consultant; provided, however, the Council may never delegate its power to franchise or to revoke a Franchise to another person.

11-5-4 Cable Operator; applicability.

Unless exempted entirely or in part from this Article or any of its provisions or granted relief by the Council from any of its provisions, then this Article shall be applicable to all Cable Operators.

11-5-5 Video Programming; exemptions.

A provider of Video Programming shall not be considered as a Cable Operator and subject to this Article if the provider does not use or cross any Public Way. An exempted person or Entity remains exempted only as long as it meets the above criteria. An exempted person or Entity is, however, expected to abide by, and comply with, any other applicable City, County, State and Federal laws and regulations, including any applicable Federal or State consumer protection or consumer service laws and regulations.

11-5-6 Same; request for relief by Cable Operator.

Any Cable Operator may file a written petition, at any time, with the City requesting relief from one or more provisions of this Article. The relief requested may specifically include the delay in implementation (as to the petitioning Cable Operator only) of one or more provisions of this Article. In order to receive any relief from one or more of the provisions of this Article, a Cable Operator must satisfactorily demonstrate to the Council that at least one of the following facts exist:

(a) the provision and/or requirement is expressly prohibited by Federal law, the FCC or State law; or

(b) that the provision in question materially affects, and is in conflict with an expressed right that is specifically noted in an existing Franchise agreement (but only for the term of the existing Franchise); or

(c) that the imposition of the provisions and/or requirements will create an undue economic hardship on the Cable Operator so as to imperil or eliminate the Cable Operator's ability to provide Cable Service to a majority of current Subscribers.

(d) As an alternative to requesting relief, a Cable Operator may petition for clarification as to the precise intent and effect that one or more provisions or sections of this Article has on the petitioning Cable Operator.

If the Council grants relief to a Cable Operator, then the Franchise agreement shall be amended to reflect the extent of the relief.

11-5-7 Inconsistencies with Federal or State Law.

If any provision or section of this Article is inconsistent with any provision or section of a Federal or State rule, regulation, or law, then the Federal or State rule, regulation, or law shall control.

11-5-8 Notices.

Each Franchise shall designate the City's and the Cable Operator's contact person to receive notices, filings, reports, records, documents and other correspondence. All notices shall be delivered to each party's contact person either by personal service with signed receipt of delivery, certified or registered mail, return receipt requested, or by recognized overnight delivery service with receipt verification. All other filings, reports, records, documents, and other correspondence may be delivered by any permissible means including, but not limited to: personal service, overnight mail, email or facsimile. Delivery shall be deemed to have occurred at the time of receipt.

11-5-9 Indemnity.

Each Cable Operator shall defend, indemnify, and hold harmless the City, its officials, authorized agents and employees from any and all penalty, damage, or loss arising out of claims, suits, demands, causes of action, or award of damages which might be claimed now or in the future, which arise out of, or are caused by, the construction, erection, location, products performance, operation, maintenance, repair, installation, replacement, removal or restoration of the Cable System within the City by a negligent act or omission of the Cable Operator, its authorized agents or employees, contractors, or authorized representatives; provided, however, the Cable Operator shall not be obligated to indemnify the City for any penalty, damage or loss resulting from the willful misconduct or negligence of the City or from any use of the Cable System by the City (to include the use of PEG channels). Reasonable attorney's fees, consultant's fees, expert witness fees and other expenses of litigation are included, except as set forth in subsection (d) below, as those costs which may be recovered by the City. With respect to any request for indemnification made to a Cable Operator by the City:

(a) The City shall give the Cable Operator written notice of its obligation to indemnify the City at least 10 calendar days prior to the deadline for responding to the claim or action, and if no such deadline exists, within 30 days of receipt of written notification of a claim or action.

(b) The Cable Operator shall then have the right to defend, settle or compromise any such claims at the Cable Operator's expense and with the assistance of counsel of the Cable Operator's choice. The City shall provide reasonable cooperation in connection with the defense subject to the Cable Operator's obligation to reimburse the City for actual out-of-pocket expenses incurred by the City as the result of a request by the Cable Operator.

(c) If the Cable Operator fails to defend a claim within a reasonable time, the City shall be entitled to assume the defense and the Cable Operator shall be bound by the results and shall be liable to the City for the damages incurred by the City to include the costs referred to above as recoverable by the City.

(d) If a Cable Operator obtains counsel for the City, and/or its officials, agents and employees, then any one of them shall have the right to approve counsel, which approval

shall not be unreasonably withheld. The City, its officials, agents and employees shall have the right to retain counsel of their own at their own expense.

11-5-10 Insurance.

A Cable Operator shall secure and maintain, for as long as it provides Cable Service, insurance coverage (the "Insurance") in at least the following limits:

Workers' Compensation	Statutory Limits
Commercial General Liability	$2,000,000 per occurrence, Combined Single Liability (C.S.L.) $2,000,000 General Aggregate
Auto Liability including coverage on all owned and non-owned hired autos	$1,000,000 per occurrence C.S.L.
Umbrella Liability	$1,000,000 per occurrence C.S.L.

(a) The Insurance shall specifically include the City as an additional insureds with respect to any liability arising out of the Cable Operator's performance.

(b) The Insurance shall be issued by one or more companies licensed to do business in the State.

(c) The Insurance shall contain an endorsement obligating the insurance company to furnish the City with reasonable written advance notice of the cancellation of the insurance.

(d) Before a Cable Operator provides Cable Service, the Cable Operator shall deliver the policies or certificates representing the Insurance to the City. Renewal or replacement policies or certificates shall be delivered to the City prior to the expiration of the then existing Insurance.

11-5-11 Performance Bond.

A Cable Operator shall comply with the following bonding requirements:

(a) A construction/completion bond shall be furnished prior to the time that a Cable Operator commences a construction, upgrade, rebuild, or repair/maintenance project that has a capital construction cost or outlay exceeding $50,000 in value where the construction takes place in one or more Easements or in the Public Way; provided, however, the following shall not be considered in determining whether a project exceeds $50,000: (i) the cost attributable to any portion of the construction that utilizes aerial facilities consisting of existing poles owned by the Cable Operator or other utilities, or (ii) construction within a new subdivision where the construction of facilities is coordinated with the developer of the subdivision. The amount of the bond shall equal at least 90% of the projected capital construction cost or outlay, but shall

not exceed $250,000. The construction/completion bond shall remain in force at all times until one year after completion of construction as determined by the City, unless relief is granted, or a reduction schedule is detailed in an agreement between the City and the Cable Operator.

(b) Any construction/completion bond shall specifically guarantee that a Cable Operator will timely abide by its construction, upgrade, rebuild, or repair/maintenance schedule for the Cable System and/or any time table for technical and service improvements or additions to the Cable System as may be committed to, or agreed upon, from time to time by the City and the Cable Operator.

(c) If the City draws on a bond as a result of a Cable Operator's failure to timely discharge its obligations, or failure to construct and activate the Cable System, or failure to complete a Cable System upgrade or rebuild or repair/ maintenance project, then the Cable Operator shall replenish the bond within 30 days to the level required in this section.

(d) The Council may authorize a Cable Operator to substitute a Cash Deposit, Letter of Credit, or a Guaranty of another person or Entity for any of the bonds provided for in this section; provided, however, the person or Entity providing a Letter of Credit or Guaranty, and the form of the Letter of Credit or Guaranty, shall be subject to the approval of the City Council in its sole discretion.

11-5-12 Furnishing of Reports.

(a) A Cable Operator's schedule of charges for regular Subscriber service, its policy regarding the processing of Subscriber complaints, delinquent Subscriber disconnect and reconnect procedures and any other terms and conditions adopted as the Cable Operator's policy in connection with its Subscribers shall be filed with the City upon request.

(b) Upon written request of the City, a Cable Operator shall furnish, at no cost to the City, copies of any or all non-confidential filings with the FCC and the United States Copyright Office within 30 days of the request.

11-5-13 Records.

A Cable Operator shall keep complete and accurate records concerning the business and operations of the Cable System. In addition:

(a) The City by its authorized representatives shall have the right, on reasonable advance written notice, to review all records pertaining to a Cable Operator's cable operations with respect to the City as are reasonably necessary to determine a Cable Operator's compliance with the Franchise. Such notice shall specifically reference the section(s) of the Franchise or the Cable Ordinance for which the review is requested. The Cable Operator agrees that it will furnish the information requested electronically or make it available for the City's review, to the City within 30 days of the request.

(b) Non-revenue financial records will only be requested in the aggregate on a summary prepared by the Cable Operator.

(c) The City acknowledges the sensitivity of a Cable Operator's records and will request this information only on as needed basis and will treat this information as confidential and proprietary to the fullest extent allowed by law. The Cable Operator shall not be required to produce any records in violation of the Cable Act or any other applicable law. Until otherwise ordered by a court or agency of competent jurisdiction, the City agrees that, to the extent permitted by State and federal law, it shall deny access to any of a Cable Operator's records marked confidential to any person.

(d) The City shall have the right to hire, at its own expense, an independent certified public accountant, or other business or financial expert, to review the records of a Cable Operator pertaining to revenue information.

(e) If after a review or audit of a Cable Operator's records, it is discovered that the Cable Operator has underpaid the City by an amount that exceeds the greater of (i) $2500, or (ii) 3% of the total amount paid for any Reporting Quarter, then the City may require the Cable Operator to reimburse the City for the actual cost of the audit, in addition to the amount of underpayment; provided, however, no such reimbursement shall be required if the reason for the underpayment is due to the annexation of additional areas into the City, for which notification of the annexation was not provided to a Cable Operator.

(f) A cable Operator shall not be required to maintain any records for Franchise compliance purposes longer than 4 years, except for written service complaints, which shall be kept for 1 year.

(g) A Cable Operator shall maintain a full and complete set of plans, records and strand maps showing the location of the Cable System.

11-5-14 Customer Service.

A Cable Operator shall comply with the following customer service requirements:

(a) A Cable Operator shall comply with the customer service standards as provided for in the FCC Regulations, as may be amended from time to time. This Section shall be considered as notice to Cable Operators of the City's election to enforce those standards.

(b) A Cable Operator shall (i) maintain a customer service facility within the boundaries of the City staffed by customer service representatives that have the capacity to accept payment, adjust bills, respond to repair, installation, reconnection, disconnection, or other service calls; distribute or receive converter boxes, remote control units, or other equipment related to the provision of cable or video service; or (ii) provide customers with bill payment facilities through retail, financial, or other commercial institutions located within the boundaries of the City; or (iii) provide an address, toll-free telephone number or electronic address to accept bill payments and correspondence, and provide secure collection boxes for the receipt of bill

payments and the return of equipment, provided that if a Cable Operator provides secure collection boxes, it shall provide a printed receipt when items are deposited; or (iv) provide an address, toll-free telephone number or electronic address to accept bill payments and correspondence, and provide a method for customers to return equipment to the Cable Operator at no cost to the customer.

(c) A Cable Operator shall maintain a toll-free telephone number and a phone service operated such that complaints and requests for repairs or adjustments may be received at any time.

(d) A Cable Operator shall comply with all Federal and State laws and regulations concerning special service requirements for disabled, sight or hearing impaired or ambulatory impaired Subscribers.

(e) A Cable Operator shall furnish each Subscriber at the time service is installed, written instructions that clearly set forth information concerning the procedures for making inquiries or complaints, including the Cable Operator's name, address and local or toll-free telephone number. To the extent required by applicable law, a Cable Operator shall give the City 30 days' prior notice of any rate increases, channel lineup or other substantive service changes.

(f) A Cable Operator shall abide by any, and all, Subscriber privacy rules or regulations under Federal or State law.

11-5-15 Preferential or Discriminatory Practices Prohibited.

A Cable Operator shall not deny Cable Service, deny access, or otherwise discriminate, nor subject any person to prejudice or disadvantage on the basis of age, race, creed, color, sex, national origin, handicap, or religious affiliation. Cable Operators shall not deny Cable Service, or the extension of Cable Service, to any group of potential residential cable Subscribers because of the income of the residents of the local area in which such group resides. The provisions of this section shall not, however, prohibit a Cable Operator from:

(a) offering bulk rate discounts or promotions.

(b) denying service based on location of residence, if that residence is outside the parameters for line extension, or standard installations, as provided for in this Article or the Cable Operator's Franchise.

11-5-16 Construction and Use of Public Ways.

All facilities of a Cable Operator shall be located, installed and maintained so as not to endanger or unnecessarily interfere with usual and customary use, traffic and travel upon Public Ways and Easements, and according to any Public Way or Easement use standards established by the City. In addition:

(a) A Cable Operator shall construct, operate, maintain and repair its Cable System in compliance with all current technical codes adopted by the City, the State and the FCC, as are customary to the cable television industry. To the extent that these are inconsistent with other provisions of a Franchise, or State or local law, then the more stringent shall govern in order to protect the public health, safety and welfare.

(b) A Cable Operator shall obtain all required Permits from the City before commencing any work requiring a Permit, including the opening or disturbance of any Public Way.

(c) All facilities of a Cable Operator shall be installed and located as to cause minimum interference with the rights and reasonable convenience of property owners and at all times shall be kept and maintained in a safe, adequate and substantial condition, and in good order and repair. The Cable Operator shall, at all times, employ ordinary care and use commonly accepted methods and devices for preventing failures and accidents which are likely to cause damage, injuries, or nuisances to the public, to include barricades, flags, lights or other devices as are reasonably required for public safety.

(d) A Cable Operator shall use existing poles, conduits and other facilities whenever possible, and shall not construct or install any new, different, or additional poles, conduits, or other facilities on Public Ways without obtaining all Permits required by the City. Any poles or other fixtures placed in any public way by the Cable Operator shall be placed in such a manner as not to interfere with the usual travel on such public way.

(e) The Cable Operator shall, at its own expense, restore any damage or disturbance caused to the Public Way as a result of its operation, construction, or maintenance of the Cable System to a condition reasonably comparable to the condition of the Public Way immediately prior to such damage or disturbance.

(f) If a Cable Operator's system creates a hazardous or unsafe condition or an unreasonable interference with property, then the Cable Operator shall at its own expense voluntarily, or upon request of the City, remove or move, as appropriate, that part of the system that creates the hazardous condition.

(g) A Cable Operator shall not place equipment where it will interfere with the rights of property owners or with other public utility services or any other service facility that benefits the City or its residents' health, safety or welfare.

(h) A Cable Operator shall, at its expense, protect Public Ways and Easements, and support or temporarily disconnect or relocate in the same Public Way, any property of the Cable Operator when necessitated by reason of: traffic conditions, public safety, a street closing, street construction or resurfacing, change or establishment of a street grade, installations of other City utility services, or any improvement, construction or repair related to health, safety or welfare. Except in case of Emergency, the City shall provide at least 10 days written notice to the Cable Operator of the need for a relocation or temporary disconnection. In addition, the City shall have the right to remove any of the Cable Operator's facilities in the

event of Emergency, and no charge shall be made by the Cable Operator to the City for restoration and repair, unless such acts amount to gross negligence by the City.

(i) If the City elects to alter or change the grade of any Public Ways, the Cable Operator upon reasonable notice from the City, shall relocate any portions of its Cable System impacted by the City's Public Way alterations, at the Cable Operator's expense.

(j) A Cable Operator shall, at the request of any person holding a lawful permit issued by the City, protect, support, raise, lower, temporarily disconnect, relocate in or remove from the Street as necessary any property of the Cable Operator, provided that the expense of doing so is paid by the person making the request and the Cable Operator is given reasonable advance written notice to prepare for such changes. The Cable Operator may require such payment in advance. For purposes of this subsection, "reasonable advance written notice" shall be no less than 10 business days in the event of a temporary relocation and no less than 120 days for a permanent relocation.

(k) A Cable Operator shall have the authority to trim trees in the Public Way at its own expense as may be necessary to protect its wires and facilities.

(l) In those areas of the City where transmission or distribution of both telephone and power companies are underground or are later placed underground, a Cable Operator's feeder and Subscriber drops shall also be placed underground. To the extent reasonably possible, a Cable Operator shall coordinate the joint use of facilities with the telephone and power companies. Subscriber drops shall be buried within a reasonable time period, subject to weather conditions.

11-5-17 Technical Standards.

A Cable Operator shall comply with any rules and regulations of the FCC concerning technical operation, signal quality, consumer electronics equipment compatibility and performance monitoring.

11-5-18 Emergency Alert System.

A Cable Operator shall comply with all applicable federal statutes, rules and regulations with respect to Emergency Alert Systems.

11-5-19 Service Area and Expansion.

Cable Service shall be provided as follows:

(a) A Cable Operator shall make Cable Service distributed over its Cable System available, at a charge which does not exceed the Cable Operator's normal rate for standard installations, to every residence within any area within the City where there is a minimum density of at least 30 residences per lineal strand mile of cable as measured from the Cable Operator's closest trunk line or distribution cable that is actively delivering Cable Service as of the date of such

request for service; provided, however, (i) such installation shall be financially and technically feasible, (ii) the Cable Operator shall have legal access to the Subscriber's location, and (iii) the Subscriber shall be within 125' of the Cable Operator's existing distribution system.

(b) Notwithstanding the above, a Cable Operator shall have the right, but not the obligation, to extend the Cable System into any other area of the City and to make Cable Service available to residential subscribers or to businesses, upon such terms and conditions as determined by the Cable Operator.

11-5-20 Franchise.

No person or Entity, other than the City, shall be permitted to construct, operate or maintain a Cable System where any part of the Cable System's facilities to occupy or cross Public Ways without first having entered into a Franchise. With respect to all Franchises:

(a) The City may award one or more non-exclusive Franchises; provided, however, anytime (i) a Franchise is issued, (ii) the City otherwise grants a permit to a Video Programming Provider, which contains terms that are more favorable to a particular Cable Operator or Video Programming Provider, or (iii) the City constructs, operates, or maintains its own Cable System within the City limits, then the City shall, within 30 days of a written request from another Cable Operator or Video Programming Provider, modify that Cable Operator's Franchise or Video Programming Provider authorization to insure that the obligations applicable to any one Cable Operator or Video Programming Provider are no more burdensome than those imposed on one or more competing Cable Operators or Video Programming Providers or the City's own Cable System. If the City fails to make modifications consistent with this requirement, the requesting Cable Operator's Franchise or Video Programming Provider's authorization shall be deemed so modified 30 days after the initial written request.

(b) An Applicant shall be selected as part of a public proceeding and hearing which affords due process to both the City and the Cable Operator. If the Applicant is selected as a Cable Operator, then the Applicant will enter into a Franchise agreement with the City.

(c) Unless prohibited by law, the City reserves the right to construct, operate or maintain its own Cable System within the City limits, provided the city shall regulate all Cable Operators, Video Programming Providers, and its own Cable System in a competitively neutral and nondiscriminatory manner.

(d) If the Council awards a Franchise to an Applicant, or approves a proposal for renewal of a Franchise, then a Franchise agreement shall be signed. A newly franchised Cable Operator may not lay any cable until the Franchise agreement is executed by the Cable Operator and the City. At a minimum, a Franchise agreement shall contain provisions for the following:

(1) the term or duration of the Franchise;

(2) an agreement to comply with this Article;

(3) any applicable construction, upgrade or rebuild schedule; and

(4) any applicable build-out and density standard.

(e) Upon entering into a Franchise, a Cable Operator may construct, install, maintain, operate, repair, replace, remove, or restore a Cable System within the City. In so doing:

(1) The Cable Operator may utilize the Public Ways and those Easements dedicated to the public use.

(2) The Cable Operator shall be responsible for obtaining its own Easements for private property and pole attachment agreements with other utilities.

(f) The term of a Franchise may be for a period not to exceed 10 years from the date that a Franchise, or a Franchise renewal, is approved by the Council. Proceedings for the renewal of a Franchise shall be governed by the applicable provisions of the Cable Act.

11-5-21 Franchise Fees.

Each Cable Operator shall pay to the City a Franchise Fee equal to 5% of the Gross Revenues of the Cable Operator. The City reserves the right at any time, upon 90 days' notice to all Cable Operators, to amend this section so as to increase the Franchise Fee to the maximum rate allowable under Federal law, in the event that the maximum rate is increased. It is intended that the Franchise Fees will promote the health, safety and welfare of the citizens of the City. Accordingly, the Franchise Fee shall be deposited into the general revenues of the City, unless otherwise specified.

(a) The Franchise Fees may be passed through to Subscribers as a line item on Subscriber bills or otherwise, consistent with Federal law.

(b) Within 45 days after the end of each Reporting Quarter, a Cable Operator shall file with the City a detailed financial and revenue report showing the Gross Revenues received by the Cable Operator for operations within the City during the proceeding Reporting Quarter. The report shall include Gross Revenue from all sources upon which a Franchise Fee is payable. Gross Revenue may be reported in the aggregate by general service type or source.

(c) In the event that payment is not made within 60 days after the end of a Reporting Quarter, then the Cable Operator may be declared in default of the Franchise, and the City may take action against the Cable Operator as authorized in this Article.

(d) The acceptance of any payment shall not be construed as a release of, or an accord or satisfaction of, any claim that the City might have for further or additional sums payable under the terms of this Article, or for any other performance or obligation of a Cable Operator.

(e) Payments of compensation made by a Cable Operator to the City pursuant to this Article shall be considered in addition to any and all taxes of general applicability owed to the City by the Cable Operator that are not included as Franchise Fee under Federal law.

(f) A Franchise Fee shall not be payable on any Gross Revenue source(s) which are excluded by Federal law.

11-5-22 Assignment of Franchise.

A Cable Operator's Franchise may not be assigned in whole or in part without the City's prior written approval. For purposes of this paragraph, "Assigned" or "Assignment" shall mean the transfer, sale, or any other form of assignment of a Cable System, to include any transaction or action which effectively or actually changes ownership from one person or Entity to another to include the transfer of 50% or more of the ownership interest of an Entity or the parent of an Entity. Any attempted Assignment without prior written approval shall constitute a default in the Franchise. A proposed Assignment shall be subject to the following:

(a) At least 120 days before a proposed Assignment is scheduled to become effective, the Cable Operator shall make a written request to the Council for the City's approval of the proposed Assignment.

(b) The City will not unreasonably withhold its consent to an Assignment. However, in making its determination, the Council shall consider the legal, financial and technical qualifications of the proposed assignee.

(c) Nothing in this section shall restrict the City from considering criteria established under State or Federal law, rule or regulation.

(d) Before an Assignment is approved by the City, the proposed assignee shall sign a statement indicating that it has read, understands, and intends to abide by any existing Franchise agreement.

(e) The City may include certain amendment(s) to the Franchise or this Article as a condition to the Assignment; provided, however, any such amendment(s) shall either (i) be by mutual agreement between the City and the proposed assignee, or (ii) shall not have a material adverse effect on the rights and obligations of the Cable Operator under the Franchise.

(f) In the event of any approved Assignment, the assignee shall assume all obligations and liabilities of the former Cable Operator.

(g) The City's consent to an Assignment shall not relieve the former Cable Operator of its liability under the Franchise agreement until the Assignment actually takes place unless specifically relieved by Federal or State law or by the Council at the time an Assignment is approved. In the event of an Assignment, the former Cable Operator shall remain liable for any Franchise Fees incurred as of the time that the Assignment is effective for the period governed by the applicable statute of limitations.

(h) If the Cable Operator has provided the City with all information as required by this section or the FCC in a timely manner, and the City has not taken action on the Cable Operator's request for transfer within 120 days after receiving such request, consent by the City shall be deemed given.

Consent shall not be required for an Assignment to a wholly-owned subsidiary Entity of a Cable Operator or the current parent Entity of a Cable Operator, whether the ownership is direct or indirect, such as through other wholly-owned intermediate subsidiaries. In addition, consent shall not be required for the granting of a security interest in the Cable Operator's system including its Franchise. However, if the holder of the security interest repossesses, forecloses or takes other action concerning its collateral, it shall dispose of the Cable System within a reasonable period of time and the disposition by the holder of the security interest shall be considered an Assignment subject to the provisions of this section.

11-5-23 Educational and Governmental Access.

To the extent permitted by law, and in order to fulfill a public, educational and governmental access policy that will facilitate the long range needs of the City, each Cable Operator shall provide at its own expense one PEG Channel under the control of the City. The following shall apply to the PEG Channel:

(a) The City is solely responsible for the content it provides over the PEG Channel. The Cable Operator shall not exercise any editorial control over any programming of the PEG Channel and shall also not be subject to any civil or criminal liability for any programs carried on the PEG Channel.

(b) The PEG Channel may be placed on any tier of service available to all Subscribers, including the digital tier. The City shall provide programming on the PEG Channel to occupy 70% of the hours between 11a.m. and 11p.m. for any twelve consecutive week period. In the event that the above the programming levels are not maintained or if the City does not adequately use the channel, the Cable Operator reserves the right to have the channel returned to the Cable Operator for the Cable Operator's use. If at any later time, which must be at least one year from the return of the PEG Channel to the Cable Operator, the City desires to utilize the PEG Channel, it may notify the Cable Operator of its desire to do so, and the PEG Channel shall be made available to the City within 30 days of the request. The above programming requirements shall apply with respect to continuance of the PEG Channel by the City.

(c) If the City is utilizing the PEG Channel and is also using any of the following locations for signal input, signal input locations shall be provided at City Hall. Only those signal input locations actually being used shall be required.

(d) Cable Operators may interconnect their cable systems for the purpose of sharing PEG access programming, provided that the Cable Operators are able to reach agreement for the

interconnection. Nothing in this paragraph should be construed as requiring a Cable Operator to add additional PEG Channels.

11-5-24 Public Service.

A Cable Operator shall furnish, upon request, and subject to applicable law, one outlet for public buildings as identified in a Cable Operator's Franchise. With respect to this service:

(a) The Cable Service provided pursuant to this section shall not be used for commercial purposes and shall not generally be available for public viewing. The City shall take reasonable precautions to prevent any use of the Cable System that results in the inappropriate use or any loss or damage to the Cable System.

(b) The City shall hold the Cable Operator harmless from any and all liability or claims arising out of the provision and use of Cable Service to City buildings.

11-5-25 Default.

When a Cable Operator violates a provision of this Article, or acts so as to compromise the legal, financial or technical integrity and/or stability of the Cable System or the Cable Operator itself, in either case, to a degree that the interests of the Subscribers are negatively affected, then a Cable Operator shall be considered in default of this Article.

(a) Examples of a default shall include, but are not limited to: bankruptcy (except for a reorganization as long as the Cable Operator is in compliance with an approved plan or other court order), insolvency, failure to pay taxes or Franchise Fees, failure to receive written City approval for an Assignment, or failure to substantially abide by the terms and conditions of the Franchise agreement or this Article, to include the failure to operate its Cable System. Provided:

(1) It is not the City's intention to subject a Cable Operator to penalties, fines, forfeitures or revocation of a Franchise for violations where the violation was a good faith error that resulted in no or minimal negative impact on the Subscribers within the City, or where strict performance would result in practical difficulties and hardship to a Cable Operator which outweighs the benefit to be derived by the City and/or Subscribers.

(2) Events in the nature of force majeure or conditions which cannot be corrected because they are matters reasonably beyond the ability of the affected Cable Operator to anticipate and control shall not be considered a default. This provision includes, but is not limited to, severe or unusual weather conditions, fire, flood, or other acts of God, strikes, work delays caused by failure of utility providers to service, maintain or monitor their utility poles to which a Cable Operator's Cable System is attached, as well as unavailability of materials and/or qualified labor to perform the work necessary; provided, however, such noncompliance shall only be excused for as long as the Cable Operator is reasonably pursuing compliance.

(b) In the event that a default occurs, the City shall provide written notice of the default to the affected Cable Operator. The notice of default shall specify the violation(s).

(c) The Cable Operator shall have 30 days from the receipt of the written notice to bring itself into compliance so that it is no longer in default of its Franchise or this Article, as the case may be; provided, however, if by the nature of default, the default cannot be cured within this 30 day period, the Cable Operator shall initiate reasonable steps to remedy the default and notify the City of the steps being taken and the projected date that they will be completed.

(d) If the Cable Operator fails to cure its default within the time period provided for above, the matter shall be set for public hearing before the Council to be held within 75 days after the notice of default was mailed to the Cable Operator. Written notice of the time and place of the public hearing shall be sent to the Cable Operator at least 20 days prior to the date of the hearing.

(e) At the hearing, the Cable Operator shall have an opportunity to state its position on the matter, present evidence and question witnesses. If the Cable Operator fails to attend the hearing where a continuance of the hearing has not been granted by the Council, then the Cable Operator may be declared in default of the Franchise agreement.

(f) If the default has not been resolved by the time of or as a result of the hearing, the Council may, after the public hearing, direct the Cable Operator to take corrective action within a specified period of time, or may declare the Cable Operator in default of the Franchise agreement, and revoke or terminate the Franchise. The Council's action shall be delivered to the Cable Operator in writing within 15 days of the Council's action.

(g) If the Council directs corrective action to be taken and the Cable Operator does not rectify the default within the time specified, then the Council may without further notice declare the Cable Operator to be in default and revoke or terminate the Franchise.

(h) If the Cable Operator fails to comply with any determination by the Council, which determination is not stayed or overturned by order of an appropriate court, then the City shall have any and all remedies available to it by law, provided the Cable Operator may continue to operate the Cable System until all legal appeals procedures have been exhausted.

11-5-26 Removal of Cable System.

(a) In the event of termination or forfeiture of the a Franchise Agreement or abandonment of a Cable Operator's Cable System, the City may require the Cable Operator to remove all or any portion of its Cable System from all Public Ways; provided, however, that the Cable Operator will not be required to remove those portions of its Cable System required to provide telecommunications services or other non-cable service to the extent that the Cable Operator lawfully provides telecommunications services or other non-cable service over the Cable System.

(b) If a Cable Operator has failed to commence removal of its Cable System, or such part as designated by the City, within 120 days after written demand for removal is given, or if the Cable Operator has failed to complete such removal within twelve months after written demand for removal is given, the City may apply funds secured by the Franchise agreement toward removal.

11-5-27 Federal Legislation, Rules and Regulations; Franchise Subject to Amendment.

In addition to any requirements contained within this Article, all Cable Operators shall be expected to comply with all applicable provisions of the Cable Act and all other federal laws directed at controlling or regulating Cable Operators, and any rules and regulations issued pursuant to those laws. In addition, any Franchise issued pursuant to this Article shall be subject to amendment by mutual agreement of the parties to incorporate any applicable Federal legislation, rules or regulations which become effective after the date of the Franchise.

11-5-28 Inter-Governmental Cooperation.

In the event that a Cable System serves areas outside the jurisdiction of the City (to include the Community), then the various jurisdictions or governmental subdivisions shall have the right to enter into one or more agreements concerning the matters covered by this Article. By way of example, it is contemplated that the members of the Community may enter into one or more agreements to assist them in regulating administering Franchises. These agreements may include, but shall not be limited to, the following general areas:

1. Allocation of the total Franchise Fee collected from the Cable System between the various governmental subdivisions.
2. The Review and evaluation of (i) proposals to provide Cable Television Service, or (ii) requests for renewal of existing Franchises.
3. Evaluations of a Cable Operator's performance.
4. PEG Channel use.

11-5-29 Tampering and unauthorized reception of certain signals.

No person shall intercept or receive, or assist in intercepting or receiving, any communications service offered over a Cable System, unless specifically authorized to do so by a Cable Operator, or as may otherwise be specifically authorized by law.

(a) For purposes of this section, the term "assist in intercepting or receiving" shall include the manufacture or distribution of equipment intended by the manufacturer or distributor for the unauthorized reception of Cable Service.

(b) Without securing permission from a Cable Operator, or making payment to a Cable Operator, then no person shall be authorized to make any connection with any part of a Cable System for the purpose of receiving or intercepting or assisting others to receive or intercept any Cable Service provided lawfully by a Cable Operator.

(c) No person shall be authorized to willfully tamper with, remove or damage any facilities used for the distribution of Cable Service.

(d) Any violation of this section shall constitute a misdemeanor and upon conviction shall be subject to a fine of up to $100. Each day that the violation continues shall be considered a separate offense.

11-5-30 Severability.

The provisions of this Article will be deemed severable, and if any provision of this Article is held illegal, void, or invalid under applicable law, that provision may be changed to the extent reasonably necessary to make the provision legal, valid and binding. If any provision of this Article is held illegal, void or invalid in its entirety, the remaining provisions of this Article will not be affected."

Section 2. All ordinances or parts of ordinances passed and approved prior to passage, approval and publication of this ordinance in conflict herewith are now repealed.

Section 3. This Ordinance shall be published in pamphlet form and shall be effective upon its passage and approval.

PASSED AND APPROVED on _____.

_____
Mayor

ATTEST:

_____
City Clerk (Seal)

Approved by:

_____
City Attorney

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Resolut.2

Council to discuss and consider action on a Resolution extending the date for written notice of termination in participation in the League Association of Risk Management (LARM) and consider the contribution credits for multi-year commitments.

Staff Contact: Nathan Johnson, City Manager

LEAGUE ASSOCIATION of RISK MANAGEMENT

1919 S. 40th, Ste 212
Lincoln, NE 68506
Phone: (402) 742-2601
Fax: (402) 476-4089
www.larmpool.org

July 19, 2019

Dear LARM Member,

Attached, please find your Renewal Coverage Proposal for the 2019-20 Pool Year. This proposal is itemized by line of coverage to represent your specific limits, deductibles, annualized contributions and to outline LARM's contribution credit options available for the new term.

As always, LARM continues to seek certainty on upcoming Member commitments to allow us to accurately forecast our financial position. Requiring all Members to make annual elections by means of the Renewal Resolution affords us the fiscal confidence to structure a more stable program year-over-year. In return, LARM is able to translate this financial benefit to our Members in the form of corresponding contribution credits. Because predictability is strongest when estimates have future value, completing a new resolution each year delivers the best opportunity for this objective. In addition, members are able to elect a Renewal Resolution at the three (3) year commitment at each new Pool Year, by doing so, they are able to receive the maximum 5% contribution credit available on an annual basis.

An important note regarding processing your annual Renewal Resolution if you are a Member that desires to competitively bid your coverage every three (3) years, or in the next three (3) years:

- If you already have a three (3) year Renewal Resolution at the 5% discount;
  - Execute a two (2) year Renewal Resolution at the 4% discount at the upcoming.
- If you already have a two (2) year Renewal Resolution at the 4% discount;
  - Execute a one (1) year Renewal Resolution for either the 2% or 0% discount.
- If you already have a one (1) year renewal Resolution, you must provide written notice of termination in accordance with the necessary days identified in the Renewal Resolution prior to the desired termination date.

An important note if you do not execute/return a Renewal Resolution for the new Pool Year:

- You will automatically drop to the next lower commitment/contribution credit for that Pool Year (for example: If you were at a three (3) year commitment and do not execute/return a Renewal Resolution for the new Pool Year, you will automatically drop to a two (2) year commitment).

The enclosed Renewal Resolution form for the new term is made available for your use in designating the annual selection for the 2019-20 Pool Year. Once you have elected your contribution credit option, please authorize the Renewal Resolution and return to LARM to the address provided on the form. In order that LARM is able to issue process invoices as quickly as possible and prior to inception of the 2019-20 Pool Year, LARM requests that the fully executed Renewal Resolution be received no later than **August 30, 2019**. Once the Renewal Resolution has been received by LARM, complete renewal packet materials (invoices, coverage documents, auto ID cards, etc.) will be prepared and delivered to you. We are happy to review and discuss any questions or concerns you may have regarding this important process; therefore, we encourage you to contact your agent or LARM customer Service if you need assistance.

Finally, the information presented in this communication packet does not include any potential mono-line insurance placements that are not part of the formal LARM Property, General Liability or Workers' Compensation coverages (such as Bonds, Special Events Coverage, Liquor Liability, etc.) Renewal details for such policies will continue to be provided under separate cover according to their respective effective dates. In addition, please be advised that your proposal may not reflect and endorsements recently processed, and bear in mind, that your final invoice amount may vary from the renewal packet based on such services that require contribution adjustment over the next several weeks.

As always, the LARM Board and staff are very pleased that your community will continue to support LARM as we move into our 24th year of unparalleled commitment to serving our Members. On behalf of each of us, I thank you for making our partnership a mutual success.

Sincerely,
LEAGUE ASSOCIATION OF RISK MANAGEMENT

Tracy Juranek
Customer Service Specialist

LEAGUE ASSOCIATION of RISK MANAGEMENT

1919 S. 40th, Ste 212
Lincoln, NE 68506
Phone: (402) 742-2601
Fax: (402) 476-4089
www.larmpool.org

Important Postscript: **As a LARM member, if the municipality or agency decides to voluntarily terminate its participation in LARM, the member must provide WRITTEN NOTICE to the Director of the Nebraska Department of Insurance and all other LARM members at least NINETY days prior to the desired termination date. The member's decision to terminate participation in LARM is subject to the approval of the Director of the Nebraska Department of Insurance.**

Proposal For : City of Scottsbluff
Effective Date: 10/01/2019

COVERAGE	LIMITS AND APPLICABLE DEDUCTIBLES	CONTRIBUTION
Workers' Compensation	Statutory Limits $500,000 Employers Liability	$212,989
General Liability	$5,000,000/$5,000,000 Per Occurrence/Aggregate $0 Deductible	$104,810
Errors & Omissions	$5,000,000/$5,000,000 Per Occurrence/Aggregate $2,500 Deductible	$22,596
Law Enforcement Liability	$5,000,000/$5,000,000 Per Occurrence/Aggregate $2,500 Deductible	$27,325
Auto Liability	$5,000,000 Combined Single Limit $0 Deductible	$23,183
Auto Physical Damage	107 Vehicle(s) $ Varies on Deductible	$105,777
Commercial Property	$59,734,401 $1,000 Deductible	$194,029
TOTAL ANNUAL CONTRIBUTION:		$690,709

Contribution Credit Options

	180 Day Notice, 3 Year Commitment	180 Day Notice, 2 Year Commitment	180 Day Notice Only	90 Day Notice, 3 Year Commitment	90 Day Notice, 2 Year Commitment	90 Day Notice Only
Commitment Discount :	5%	4%	2%	2%	1%	0%
Property & Liability :	$453,833.14	$458,610.33	$468,164.71	$468,164.71	$472,941.90	$477,719.09
Workers' Compensation :	$202,339.95	$204,469.85	$208,729.64	$208,729.64	$210,859.53	$212,989.42
Total Contributions :	$656,173.09	$663,080.17	$676,894.34	$676,894.34	$683,801.43	$690,708.51

League Association of Risk Management
2019-20 Renewal Resolution

RESOLUTION NO. _____

WHEREAS, The City of Scottsbluff is a member of the League Association of Risk Management (LARM);

WHEREAS, section 8.10 of the Interlocal Agreement for the Establishment and Operation of the League Association of Risk Management provides that a member may voluntarily terminate its participation in LARM by written notice of termination given to LARM and the Nebraska Director of Insurance at least 90 days prior to the desired termination given to and that members may agree to extend the required termination notice beyond 90 days in order to realize reduced excess coverage costs, stability of contribution rates and efficiency in operation of LARM; and

WHEREAS, the Board of Directors of LARM has adopted a plan to provide contribution credits in consideration of certain agreements by members of LARM as provided in the attached letter.

BE IT RESOLVED that the governing body of The City of Scottsbluff, Nebraska, in consideration of the contribution credits provided under the LARM Board's plan, agrees to:

● Provide written notice of termination at least 180 days prior to the desired termination date, which date shall be no sooner than September 30, 2022. (**180 day and 3 year commitment; 5% discount**)

○ Provide written notice of termination at least 180 days prior to the desired termination date, which date shall be no sooner than September 30, 2021. (**180 day and 2 year commitment; 4% discount**)

○ Provide written notice of termination at least 180 days prior to the desired termination date, which date shall be no sooner than September 30, 2020. (**180 day notice only; 2% discount**)

○ Provide written notice of termination at least 90 days prior to the desired termination date, which date shall be no sooner than September 30, 2022. (**90 day notice and 3 year commitment only; 2% discount**)

○ Provide written notice of termination at least 90 days prior to the desired termination date, which date shall be no sooner than September 30, 2021. (**2 year commitment only; 1%**)

○ Provide written notice of termination at least 90 days prior to the desired termination date, which date shall be no sooner than September 30, 2020. (**90 day Notice only**)

Adopted this _____ day of _____, _____.

Signature: _____

Title: _____

ATTEST: _____

Title: _____

Please email (customerservice@LARMpool.org) or fax (402.476.4089) the completed resolution to LARM.

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Reports1

Council to discuss and consider action on a press release to be sent out in conjunction with the cities of Scottsbluff and Gering to identify new candidate locations for the future construction of a regional landfill to serve Western Nebraska.

Staff Contact: Mark Bohl, Public Works Director

Agenda Statement

Item No.

For Meeting of: August 5, 2019

AGENDA TITLE: Consideration and approve press release to be sent out in conjunction with the cities of Scottsbluff and Gering to identify new candidate locations for the future construction of a regional landfill to serve Western Nebraska.

SUBMITTED BY: Mark Bohl, Director of Public Works

PRESENTATION BY: Nathan Johnson, City Manager

SUMMARY EXPLANATION: The Gering Landfill is expected to reach capacity by 2026. The cities of Scottsbluff and Gering selected Trihydro Corportation as the engineering firm to support the cities through incremental phases of this project, including site selection.

BOARD/COMMISSION RECOMMENDATION:

STAFF RECOMMENDATION: Authorize press release to be sent out immediately to identify new site location and incremental phases for regional landfill; contact person is Travis Evans, P.E. with Trihydro Corportation.

EXHIBITS

Resolution ☐ Ordinance ☐ Contract ☐ Minutes ☐ Plan/Map ☐

Other (specify) **X Press release**

Notification List: Yes ☐ No ☐ Further Instructions ☐

APPROVAL FOR SUBMITTAL: _____
City Manager

FOR IMMEDIATE RELEASE

Contact: Travis Evans, P.E., Trihydro Corporation
Phone: (307) 745-7474
Email: tevans@trihydro.com

Gering and Scottsbluff Seek Property for New Landfill Construction

July 2019 – The Cities of Gering and Scottsbluff (Cities) are working to identify new candidate locations for the construction of a future regional landfill to serve Western Nebraska. The Cities plan to construct a new landfill as a replacement for the current Gering Landfill, which is expected to reach its permitted capacity by 2026. Identifying and selecting a suitable site location is key to propelling the project forward.

The Cities are looking to identify a land parcel located within a 45-mile radius of the Cities. The site should comply with the Nebraska Department of Environmental Quality's Location Standards for new landfill construction including such key considerations as distance buffers from state or federal highways (1,000 feet) and airports (at least 5,000 feet depending on airport type) among others. In addition, the ideal site would be within a mile of a county road with three-phase power accessibility, without residences, surface water, groundwater wells, or irrigation facilities in close proximity.

The Cities selected Trihydro Corporation (Trihydro) as the engineering firm to support the development of the landfill. Trihydro is tasked with supporting the Cities through incremental phases of this project including assistance with the on-going site selection process. The goal of the siting process is to identify a landfill site which will best serve the residents of Western Nebraska for at least 100 years and be protective of human health and the environment. During the permitting process, a comprehensive subsurface investigation will be conducted to confirm depth to groundwater, groundwater quality and to characterize the subsurface geology. The data collected during the subsurface investigation will be used to design an engineered containment system (ECS) which meets or exceeds regulatory requirements and protects groundwater.

It is important to identify candidate sites as soon as possible to ensure that our communities have a local cost-effective disposal option in place by the time the existing landfill closes. Interested landowners are encouraged to notify the Cities of potential property for consideration by contacting **Travis Evans, P.E., Trihydro, at (307) 745-7474 or tevans@trihydro.com.**

City of Scottsbluff, Nebraska

Monday, August 5, 2019

Regular Meeting

Item Reports2

Council discussion and instruction to staff regarding outlying items of the 2019/2020 FY Budget.

Staff Contact: Nathan Johnson, City Manager

Regular Meeting
April 29, 2019

The Scottsbluff City Council met in a regular meeting on April 29, 2019 at 6:00 p.m. in the Council Chambers of City Hall, 2525 Circle Drive, Scottsbluff. A notice of the meeting had been published on April 26, 2019, in the Star Herald, a newspaper published and of general circulation in the City. The notice stated the date, hour and place of the meeting, that the meeting would be open to the public, that anyone with a disability desiring reasonable accommodations to attend the Council meeting should contact the City Clerk's Office, and that an agenda of the meeting kept continuously current was available for public inspection at the office of the City Clerk in City Hall; provided, the City Council could modify the agenda at the meeting if it determined that an emergency so required. A similar notice, together with a copy of the agenda, also had been emailed to each council member, made available to radio stations KNEB, KMOR, KOAQ, and television stations KSTF and NBC Nebraska, and the Star Herald. The notice was also available on the city's website on April 26, 2019.

Mayor Gonzales presided and City Clerk Wright recorded the proceedings. The meeting was called to order and the Pledge of Allegiance was recited. Mayor Gonzales welcomed everyone in attendance and encouraged all citizens to participate in the council meeting asking those wishing to speak to come to the microphone and state their name and who they are representing for the record. Mayor Gonzales informed those in attendance that a copy of the Nebraska open meetings act is posted in the back of the room on the west wall for the public's review. The following Council Members were present: Raymond Gonzales, Scott Shaver, Jeanne McKerrigan, and Terry Schaub. Also present were City Manager Johnson, City Attorney Kent Hadenfeldt, Finance Director Elizabeth Hilyard, and Deputy Finance Director Chris Burbach. Absent: Nathan Green.

Mayor Gonzales asked if there were any changes to the agenda. There were none. Mayor Gonzales asked if any citizens with business not scheduled on the agenda wished to include an item providing the City Council determines the item requires emergency action. There were none.

Moved by Council Member Schaub, seconded by Council Member McKerrigan that,

a) "The minutes of the April 15, 2019 Regular Meeting be approved," "YEAS," McKerrigan, Schaub, and Gonzales. "NAYS," Shaver. Absent: Green.

Mayor Gonzales and Vice President McKerrigan read the proclamation naming May as Building Safety Month.

Regarding the proclamation naming May 12-18, 2019 as Police Week, Mayor Gonzales moved "to table the reading of the proclamation naming May 12-18, 2019 as Police Week until the May 6, 2019 meeting," seconded by Council Member Shaver. "YEAS," Schaub, Shaver, Gonzales, and McKerrigan. "NAYS," None. Absent: Green.

Mr. Johnson explained to Council as we move forward to the Budget Workshop on May 9th, there are some items to consider that pertain to Capital Projects in and outside of the General Fund. He added due to having new Council members, he would like to familiarize them with these projects to make the Budget Workshop not so time consuming and started discussion on the items.

Previously approved and budgeted items by City Council:

- Pathway Project – Mr. Johnson stated we have received a firm number for the City's share of the Pathway, which is just over 1.35 million dollars, adding eight to ten years ago money was budgeted for the project because the previous City Council did not like

debt and wanted to pay cash for projects. The budgeted money was put in a sinking fund and now has around 2 million dollars in it, explaining this is more than our share for the Pathway, freeing around $650,000.00 for other projects. Public Works Director Mark Bohl added we do have 12-15% in contingency funds built in, which is included in the 1.35 million.

- Chip Seal Project – Mr. Johnson explained every five years debt is issued to do chip seal on every residential street throughout the City. When the debt is paid off, more debt is reissued to move the project forward; saving money to keep the streets together to prohibit significant debt issuance. During discussion, Council Member Shaver asked what the cost is for chip seal. Mr. Johnson stated around 2.4 million is budgeted. Council Member Shaver suggested taking $400,000.00 from the Pathway monies that was budgeted and apply it to the chip seal project, stating that way we do not have to borrow as much, paying less interest saving money for the City. Council Member McKerrigan asked what the debt rates are, with Finance Director Hilyard stating less than two percent. Mr. Johnson reminded Council that with the chip seal, it can come from other funding sources, outside of sales tax, such as the Street Fund, stating the policy from previous City Councils was to use cash for Capital Projects, rather than for ongoing reoccurring expenses. Council Member Shaver suggested we be conservative and use $500,000.00 for other projects rather than the $650,000.00.

Mr. Johnson explained staff is seeking direction regarding the priority of the following projects. These projects are dependent on council direction and the availability of funds to complete them to determine if it is included in the FY20 budget or future budgets.

General Fund:

- Downtown Plaza – Council Member McKerrigan asked what was needed to complete the Downtown Plaza. Mr. Johnson stated the latest plan showed several million dollars' worth of work, including taking out 18th Street, putting in permeable pavers, and adding more shade structures and trees. Council Member McKerrigan asked what advantage that has. Mr. Johnson stated it attracts people to downtown, making it more vibrant and family friendly. Council Member Schaub commented property owners in the area have flooding issues when it rains; blaming the bulb outs', stating everything is blocked off and we have lost the drainage flow. He added water does back up into a few businesses within the two block radius of the Plaza and the owners are not happy. He would like to put this second, after the 23 Club in prioritization. After discussion, Council decided the Downtown Plaza is not a top priority at this time due to the estimated cost of the project.

- 23 Club – Mayor Gonzales suggested making 23 Club a priority, stating the Pathway adds to the quality of life, as does 23 Club. He went on to add this is a one-time project that has seen huge commitments from the community already. Council Member Shaver stated he recommends giving a lower amount of $500,000.00 to 23 Club, because of other expenses that could occur, with Mr. Johnson suggesting allocating the $650,000.00, bidding it out, hoping to get lower bids. Mr. Jack Baker, with Baker & Associates was present and added the highest priority items in the base bid for 23 Club would be done

first with the others coming secondary. Mr. BJ Kinsey, with 23 Club, was also present and commented, with the bidding, they hope to influence local contractors into donating labor, but they cannot do that until they go through the bid process and have a general contractor. During discussion, Council Member Schaub asked Mr. Kinsey if the softball program is a part of 23 Club, with Mr. Kinsey stating yes, but regarding the diamonds for softball, the school district owns those fields, adding 23 Club did make an agreement with the school district to use them, by paying for maintenance and upkeep. After discussion it was the recommendation from Mayor Gonzales and Council Member's McKerrigan and Schaub to allocate $600,000.00 to 23 Club.

- Westmoor Pool - Council Member McKerrigan asked how much it takes to keep Westmoor Pool running throughout the summer. City Manager Johnson stated around $200,000.00 of which $60,000.00-$80,000.00 is needed for repairs yearly. Mr. Johnson also mentioned that currently we do not have enough life guards hired to open the pool and last year due to staffing the pool was only open 59 days. Mayor Gonzales asked if we could look into putting splash pads around the community if the pool could not open. Council Member Shaver reminded Mayor Gonzales that we cannot put in splash pads due to an agreement with the Zoo, but Mr. Johnson stated that could be something the Park, Cemetery and Tree Advisory Board could look into for the future. Council Member Shaver commented he would like to see an actual pool in this community and not a pool with a lazy river. After discussion, Mr. Johnson explained the YMCA is doing a study on the future of pools in our community and prompted Council to wait until after the study comes out from the YMCA to determine any future development with Westmoor Pool or other options.

- Dog Park – Mr. Johnson asked Council what direction they want to take regarding this project, with Council Member Shaver commenting this should be a priority because it is not remotely comparable to what we are spending money on, since we are going to use an existing park. He also added we are currently waiting on feedback from the Common Grounds Dog Park Group. Council Member Schaub suggested using Northwood Park as a possible location and tying that in with the Pathway project if we have the money. Council Member Shaver suggested Terry Carpenter Park or the park by Platte Valley Bank as possible locations that might work, also. Mr. Johnson recommended asking the Park, Cemetery, and Tree Advisory Board to give feedback and also work with the Common Grounds Dog Park Group on this project. After discussion, it was the consensus of Council to have cost estimates and more information provided before deciding its priority.

- East Overland Revitalization Efforts – Council Member Shaver stated if something is done it needs to be City wide and not just concentrated on one area of town. He suggested giving Scottsbluff dollars to everyone with a City utility bill, so we can track where the money is spent to know what retail is needed in Scottsbluff. Mayor Gonzales asked about opening the program up City wide, with Mr. Johnson stating we could do that, but we would need to pull monies out of reserves for a one time expenditure. Council Member Schaub stated he does not think it would be in our best interest to do this again, he agrees

it was good for East Overland, but personally thinks this should be at the bottom of the list. Council Member McKerrigan asked if we did open this up City wide for small businesses, what would we budget for this, with Mr. Johnson stating around $100,000.00; using General Fund reserves to be able to accomplish it. After discussion, Council decided to not make this a priority.

Enterprise Funds:

- Transfer Station / Sanitation – Council Member Shaver commented a transfer station is probably not a priority due to not going a different way with our trash. Mr. Johnson stated we will need a transfer station at some point in time with the emphasis being to have the budget authority option to do this, explaining if we had a transfer station now, with our current set up, we could save money. After discussion Council agreed to budget for this item and instructed Mr. Johnson to get some preliminary designs and numbers.

- Compost Pad Cover – Mr. Johnson explained we do have years left to get the cover built, but since we have the cash, suggests doing this now due to the down economy, informing Council that a new Ordinance will be brought forward charging everyone for inbound materials due to issues with the interpretation of the current Ordinance. Council agreed with Mr. Johnson to go forward with getting the cover built.

Regarding discussion on outside contracts, Mr. Johnson explained at the last Council meeting we had a presentation from the Zoo requesting $400,000.00 each year for five years. He stated a discussion needs to be had and decisions need to be made for preliminary 10 year budget projections for the General Fund, asking the decisions be made sooner than later. During discussion, Council agreed the Zoo is great for the community and our partnership is extremely important, but the City cannot afford to continue to fund it at its current level once the contract is up.

Council Member Green entered the meeting at 7:27 p.m. and explained he does not know the appropriate action to take as being the appointed liaison of the City to the Zoo, stating we are in a stalemate, asking we offer to pay off their debt rather than making payments to them. Council Member Shaver suggested giving them the $400,000.00 they asked for, but spread it over four years. Council Member Schaub suggested looking at the $250,000.00 mark with a downward progression over the next five years, to where the Zoo starts to become self-sustaining. Council Member McKerrigan and Mayor Gonzales echoed the recommendations of offering a lessor amount and then tier down over five years. Mr. Johnson was advised by Council to take this direction during negotiations with the Zoo board.

Another outside contract brought up by Mr. Johnson was the contract with Monument Prevention Coalition. He informed Council the last alcohol compliance checks were done by the State Patrol and our Police Department and not by the Coalition. Council Member Shaver also commented it has been some time since they have made a presentation at a meeting, which is a request from Council for funding; making a recommendation that we not fund them $15,000.00/yr. any longer. Mr. Johnson stated he will bring this contract back for discussion at the budget workshop.

Under Public Comments, Mr. Dan Marshall, with the Parks, Cemetery and Tree Advisory Board expressed his appreciation to the Parks Department for their help with the Easter Egg Hunt; there were 16,000 eggs that were filled and he appreciates the support.

Under Council Reports, Council Member Shaver asked to go into closed session to discuss what is going on with negotiations with the Labor Union contracts. Legal Counsel Hadenfeldt explained Council Reports are for Council Members to discuss meetings they have gone to and negotiations cannot be talked about because that specific item is not on the agenda. He added if it is necessary to protect the public interest or one of the items, then it can go into closed session. Council Member Shaver requested that Labor Union contract negotiations be on the next agenda, with Mr. Hadenfeldt suggesting he call and talk to the City Manager. Mayor Gonzales stated on Arbor Day there was a Proclamation read and trees planted at the soccer fields; expressing his thanks to the staff and Park Board for their hard work with this project. There is a prayer Proclamation being read on Thursday, May 2nd at Gering City Hall and Cinco De Mayo festivities are this weekend at the Guadalupe Center on East Overland. Council Member Green attended the Heartland Expressway Meeting and is excited that we can take traffic off the interstate and direct them to other routes, helping us grow.

Council Member Schaub, seconded by Council Member McKerrigan made the motion, "to adjourn the meeting at 7:53 p.m.," "YEAS," Shaver, Gonzales, Schaub, McKerrigan, and Green. "NAYS," None. Absent: None.

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Mayor

Attest:

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City Clerk
"SEAL"

Special Budget Workshop Meeting
May 9, 2019

The Scottsbluff City Council met in a Special Budget Workshop Meeting on Thursday, May 9, 2019 at 8:00 a.m. in the Council Chambers of City Hall, 2525 Circle Drive, Scottsbluff, NE. A notice of the meeting had been published on May 3, 2019, in the Star Herald, a newspaper published and of general circulation in the city. The notice stated the date, hour and place of the meeting, that the meeting would be open to the public. That anyone with a disability desiring reasonable accommodation to attend the council meeting should contact the city clerk's office, and that an agenda of the meeting kept continuously current was available for public inspection at the office of the city clerk in City Hall; provided, the city council could modify the agenda at the meeting if it determined that an emergency so required. A similar notice, together with a copy of the agenda, also had been delivered to each council member, made available to radio stations KNEB, KMOR, KOAQ, and television stations KSTF and KDUH, and the Star Herald. The notice was also available on the City's website on May 3, 2019.

Mayor Raymond Gonzales presided and City Clerk Wright recorded the proceedings. Mayor Gonzales welcomed everyone in attendance and encouraged all citizens to participate in the council meeting. Mayor Gonzales informed those in attendance that a copy of the Nebraska Open Meetings Act was available for the public's review. The following Council Members were present: Raymond Gonzales, Scott Shaver, Jeanne McKerrigan, and Nathan Green. Absent: Terry Schaub. Also present were City Manager Johnson, City Attorney Kent Hadenfeldt, Finance Director Liz Hilyard, and Deputy Finance Director Chris Burbach.

Mayor Gonzales asked if there were any changes to the agenda. There were none. Mayor Gonzales asked if any citizens with business not scheduled on the agenda wished to include an item providing the City Council determines the item requires emergency action. There were none.

Moved by Council Member McKerrigan, seconded by Mayor Gonzales that,

a) "A public hearing be set for May 20, 2019 at 6:15 p.m. to consider a Class C Liquor License for B49 Operating LLC, dba The Tangled Tumbleweed, 1823 Avenue A, Scottsbluff, NE," "YEAS," McKerrigan, Shaver, Green, and Gonzales. "NAYS," None. Absent: Schaub.

Council Member Schaub entered the meeting at 8:01 a.m.

City Manager Johnson explained to Council that every year we conduct a budget work session in developing a budget for the upcoming fiscal year, informing them that this is their opportunity to weigh in on the articles presented to them on various items including projects, budgets, and cost of living increases. He also added the goal each year is to present a well-rounded budget that all five Council Members approve. Mr. Johnson then broke down funds starting with:

- General Fund – Mr. Johnson explained the revenue streams for this fund. They include sales tax, NPPD lease revenue, occupation tax (hotel tax), property tax (capped at $175,000), enterprise fund transfers in, and other revenues/charges for service (campground, Westmoor pool, softball, etc.)
    - Revenue Projections for next fiscal year - The Revenue Committee looks at City Sales tax revenues for this current fiscal year and future fiscal years as Mr. Johnson explained to Council that sales tax revenue is down around 7-8 %, but we have maintained a healthy reserve stream due to policy set by City Council.

Different Revenue sources include:

- ❖ The Franchise Fee – These are payments we receive from Charter and Allo; Allo unfortunately has been remitting their payments to the County and we need to determine how we are going to recoup those payments which amount to around $300,000. We are hoping to rectify before finalizing the budget and are projecting an increase of around $70,000 per year.
- ❖ The Hotel Occupation Tax - This is budgeted at $250,000 for the upcoming year. We are trying to resolve issues with remittance payments and hope to have this come in more frequently guaranteeing revenue for years to come.
- ❖ Other Charges for Services - This is a revenue stream which includes campground fees, recreation fees, building permits, Police services, and School SRO match.

Council Member McKerrigan asked when the City fiscal year is. Mr. Johnson stated the fiscal year is October 1st to the end of September. He also explained occupation taxes are collected by the City, whereas sales tax revenues are collected by the State; other cities have someone on staff to collect the occupation tax, but we do not have the capability to monitor and do that with our staffing. We strive for 100%, however we always have delinquencies.

- ▪ Ten Year General Fund Projections – Mr. Johnson stated we show our revenues at a 0% increase with expenditures going up 3% every year. He explained this is how we project and have conservative budgeting because you always budget expenditures against revenues, stating we need to either pull expenditures out of the general fund or find a way to increase revenues.

Council Member McKerrigan asked how Mr. Johnson recommends increasing the revenues. Mr. Johnson stated we need a well-rounded approach which includes Economic Development. Also, we need to support amenities to keep people here.

Mr. Johnson went on to explain more budget items included below:

- Health Insurance – Mr. Johnson explained we are a self-funded organization and Council last year directed to institute premiums and save roughly $100,000. He acknowledged the health insurance premiums cover about 20% of the cost amounting to about $315,000; explaining the premiums started being collected at the calendar year and we do not have the data to track since we have only been collecting the premiums for a couple months. He also stated these premiums are in line with other self-insured plans in Scotts Bluff County.

- Cost of Living Adjustment (COLA) – Mr. Johnson informed Council negotiations are still being held with the Police and Fire Unions comparing the hourly rate value. He is recommending a 2% COLA for general employees amounting to approximately $38,300.

- Outside Contracts – Mr. Johnson explained we have approximately 2.16 million in outside contracts given yearly to organizations and asked Council if they would suggest eliminating any contracts. Mayor Gonzales asked about Monument Prevention Coalition and their services, commenting the City Police Department and State Patrol did the last compliance check. Council made the decision, based on that information, to terminate the contract with Monument Prevention Coalition.

During the Outside Contract discussion, Mayor Gonzales asked if you could give an outside contract specific deliverables and have that paid through the LB840 fund. Mr. Johnson stated no, we cannot do that. Legal Counsel Hadenfeldt explained we can take funds out of the LB840 fund for the Administration of our program, but we have our own Economic Development Director now, so that is not necessary. He also commented that we can reallocate the funds that are going to LB840 back to the General Fund to pay for things that enhance the City; it would take an election to do so, but you could change the percentage of what is going to LB840 through sales tax, with ballot language, and stipulate a small percentage to the General Fund to help fund different things such as recreation activities, tourism and a Zoo.

Council Member McKerrigan exited the meeting at 9:36 a.m.

Council Member's Green and Shaver, during discussion regarding additional revenue sources for the City, brought forth an idea of rebranding which would include updating or possibly changing hosting for the City of Scottsbluff website. Their idea would be to enhance the website by having more useable information and downloadable forms to make the City have presence. Mr. Johnson explained our current website allows all of the information they are requesting, however we do not have an employee who has the time to be the website coordinator. Mayor Gonzales suggested this be made an agenda item at a future meeting showing the cost of an upgrade to include staffing.

Mayor Gonzales asked about Occupational and Sales Taxes regarding helping to fund the Zoo. He wondered if it would be more beneficial to amend the current plan and lower the percentage to LB840 rather than implementing another tax, stating then Council would be able to decide where the money would go. Mr. Johnson said with an Occupation Tax you could administratively approve through City Council Ordinance which would allow getting the $350,000.00 out of the General Fund sooner than later. Mr. Johnson stated whatever Council chose to do would be a policy decision and if you choose to amend the current plan would need to go to the vote of the people. It was decided to bring back to Council to discuss at a future meeting.

- General Fund Department CIPs - Mr. Johnson went over and answered questions regarding the budgeted CIP items for each department. There has been around 11.7 million in Capital Expenditures spread throughout the departments.

Council Member McKerrigan reentered the meeting at 10:39 a.m.

- Streets Fund - Finance Director Hilyard explained revenue streams for this Fund. They include Hwy Allocation/Gas Tax, Property Tax, Sales Tax, STP Funds, MV Fees, and State Reimbursement (Hwy 26). She stated the City can only issue debt up to the amount of the highway allocation and Property tax generates around $550,000.00 per year, which is put into the

Street fund to service the debt, adding the Sales Tax amounts to about $300,000.00 which covers equipment purchases. She concluded STP funds are Federal Funds pushed down to the State to use for new infrastructure products, but we also have authorization to use these funds for debt service. Motor Vehicle fees are the taxes paid to the County for the annual licensing fee and include the Sales Tax when a vehicle is purchased. State reimbursement is a reimbursement for Hwy 26 for snow removal and highway maintenance. Mr. Johnson explained we are planning on issuing debt for the chip seal project this year because the previous chip seal project has been paid off.

- Enterprise Funds – Mr. Johnson went over revenues vs. expenditures with these funds which include water, wastewater, and sanitation. He explained they are requesting a 3% rate increase for the upcoming fiscal year for environmental services, water, and wastewater, with a 20% increase for stormwater. This is based on the emphasis from Council to pay cash for projects while maintaining the current system.

  - Environmental services proposed increase $.66 – monthly bill $45.11
  - Stormwater surcharge proposed increase $.25 – monthly bill $ 3.50
  - Wastewater proposed increase $.67 – monthly bill $48.98
  - Water proposed increase $.36 – monthly bill $26.71

  Total estimated bimonthly bill $1.94 $124.31

- Keno – Ms. Hilyard stated what we collect in the prior year is what we can expend in the subsequent year. She went over what was allocated and where the funds were spent, explaining next year we will budget expenditures off of revenues that are coming in now. Mr. Johnson stated Keno funds have stipulations and need to be used for community betterment purposes, primarily parks, and we have recently replaced playground equipment making it safer for the community.

Council Member Green asked if we have any way to sell advertising, such as signage, to stimulate sales tax revenue on City assets, including the soccer fields, pool, and cemetery. Mr. Johnson stated if this is something Council wanted to consider we would have to implement an Ordinance to be able to charge for this and also have a policy to identify who is eligible. After discussion, Council Member McKerrigan commented she does not think it is a good idea asking the public to help the City raise revenues.

Mayor Gonzales asked Mr. Johnson how much the City is down, with Mr. Johnson stating around $300,000.00, however, that doesn't include Fire and Police Union negotiations. Mayor Gonzales then asked about the cell phone occupation tax and how much it would generate. Mr. Johnson showed a spread sheet he received from the League of Municipalities on a survey they conducted regarding this tax in different communities and it was determined an occupation tax would generate around $200,000.00 per year if implemented at 5%. Also, Ms. Hilyard commented a cell phone tax would be collected by the cell phone company and not by City staff, which would be beneficial.

Regarding the upcoming Zoo negotiations, Council Member Shaver stated an occupation tax would not cover what the Zoo needs; this tax would not be the solution and he would not endorse it without a vote of the people. Mayor Gonzales asked Council if they would want to fund the Zoo out of the General Fund without adding an existing tax. Council Members Shaver, Green & McKerrigan stated we cannot afford to do that.

There were no comments from the public or Council Reports. Council Member McKerrigan made the motion, seconded by Council Member Schaub, "to adjourn the meeting at 12:04 p.m.," "YEAS," Green Schaub, Shaver, Gonzales, and McKerrigan. "NAYS," None. Absent: None.

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Mayor

Attest:

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City Clerk

"SEAL"