# Town of Hayden

# Water System

# Capital Improvements Plan

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Prepared by:

Civil Design Consultants, Inc.
2145 Resort Drive, Suite 100
Steamboat Springs, CO 80487
970.879.3022

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# 1 EXECUTIVE SUMMARY

This report has been prepared to provide the Town of Hayden (Town) with a capital improvement plan (CIP) for anticipated water system improvements within a 20-year planning period - through 2033. Work efforts on this capital improvement plan included an inventory of existing infrastructure followed by the identification and prioritization of capital projects, evaluation of repair versus replacement options, and estimates of project costs.

## 1.1 DEFINITION OF A CAPITAL IMPROVEMENT

The definition of a capital improvement varies among entities, with each entity delimiting their own monetary threshold for a capital expenditure. This threshold is usually defined by both a minimum initial cost and expected useful life. For the purposes of this CIP, a capital expenditure is generally assumed to cost in excess of $5,000.

## 1.2 THE CIP AS A LIVING DOCUMENT

A capital improvement plan should be a functional, dynamic document. The plan should be evaluated annually and updated to reflect changes in the Town's priorities, unexpected occurrences, and funding or other opportunities. The CIP document should benefit the Town by providing an instrument to aid in financial management, decision-making, and long-range planning. A comprehensive CIP should assist an entity in:

- Focusing attention on community needs, goals, and financial capabilities
- Building public consensus for and community awareness of projects
- Facilitating inter- and intra-governmental communication and cooperation
- Ensuring efficient use of funds and resources
- Procuring federal, state, or other grants and loans
- Fostering financial sustainability with emphasis on:
    - Maintenance of existing infrastructure
    - Long-term capital planning
    - Impact of capital funding on operating budgets and debt servicing

(GFOA, 1996) and (Department of Local Affairs, 2011)

## 1.3 PRIORITY SYSTEM

Capital improvements for the Town of Hayden have been classified as related to either the water treatment facility or to the distribution system. In each case, improvements have been prioritized according to the following schedule:

| Priority 1 | Priority 2 | Priority 3 |
|---|---|---|
| 0-5 years | 5-10 years | 10-20 years |
| 2014-2019 | 2019-2024 | 2024-2034 |

Typical evaluation criteria for prioritization include but are not limited to:

- Necessitation by state or federal legal or regulatory mandate (highest priority)
- Health and safety issues (high priority)
- Potential for revenue generation
- Environmental or aesthetic issues
- Economic development or growth issues
- Fiscal and budget impacts
- Project feasibility
- Project benefit
- Impact of deferral
- Anticipated disruption
- Prospects for inter-governmental cooperation
- Impacts to other projects

(GFOA, 1996)

Additional criteria may include:

- Issues due to significant maintenance requirements
- Projected near-term failure of equipment
- Projected end-of-service life of equipment

## 1.4 COST BASIS

Estimated project costs are based upon 2013 dollars. Where appropriate, capital improvement project cost estimates for recently completed projects (within the last five years) have been utilized. These estimates have not been adjusted for 2013 costs due to the current stability of construction costs. It is beyond the scope of this report to provide a cash flow projection or other long-term financial plan based upon revenues, expenses (including operation and maintenance of existing and proposed infrastructure), capital outlays, and debt service. It is recommended that when a cash flow projection is produced for the planning period, these estimated costs be adjusted for future-year values as warranted.

Cost estimates are preliminary budget estimates based on anticipated scopes of work and an analysis of recent available costs for comparable projects and are believed to be suitable for capital planning purposes. Estimates include 15 percent contingency. Projects requiring design services and/or bid documents include 15 percent design fees unless otherwise noted. Further analysis of existing components and alternatives as well as preliminary design efforts including hydraulic modeling, evaluation of alignments, component sizing, etc. are recommended to develop construction cost opinions for individual project planning and funding applications.

## 1.5 FUTURE GROWTH

This analysis does not include growth or development projections beyond current platted expectations, nor does it include growth-related improvements. Such improvements are anticipated to be funded by development.

## 1.6 RATE STUDY

It is recommended that the Town of Hayden perform a rate study with the assistance of a qualified consultant in conjunction with the creation of any long-term financial planning documents in order to address revenue streams.

# 2 WATER TREATMENT FACILITY IMPROVEMENTS

Capital improvements identified for the water treatment facility are listed in Appendix A, *Water Treatment Facility Improvements Summary*, and further detailed in Appendix C, *Water Treatment Facility Improvements Details*. Refer to Appendix G for the *Water Treatment Plant Site Plan*. Improvements have been further categorized as follows:

- Raw water
- Chemical feeds
- Flocculation
- Clarification
- Filtration
- Backwash settling and return
- Disinfection
- High service pump station
- Electrical and controls
- Other

# 3 DISTRIBUTION SYSTEM IMPROVEMENTS

Capital improvements identified for the distribution system are listed in Appendix B, *Distribution System Improvements Summary*, and further detailed in Appendix D, *Distribution System Improvements Details*. Refer to Appendix G for the *Water System Capital Improvement Plan* and *Airport Tank and Water System Improvements Waterline Plan*. Improvements have been further catalogued per the following list:

- Hospital Hill tank zone
- Hospital Hill tank
- Hospital Hill pump station
- Hospital Hill pumped zone (with alternatives listed separately)
- Golden Meadows pump station
- Golden Meadows zone
- Airport zone (with alternatives listed separately)
- Other

# 4 SYSTEM STORAGE

The Town of Hayden and Routt County are working collaboratively to construct a 0.5 MG storage tank at the "Seneca Hill" site adjacent to Yampa Valley Regional Airport. The tank location and size are consistent with the recommendations for initial storage needs to satisfy existing system demands as presented in the *Preliminary Engineering Report for the Airport Tank and Water System Improvements, Town of Hayden* (CDC, 2009), the *Water Distribution Storage Tank Study for the Town of Hayden* (CDC, 2009), and with the recommendation provided to Routt County by Drexel, Barrell, & Co. subsequent to the firm's *Water Storage Tank Design Report* (2012).

# 5 SYSTEM INVENTORY

Civil Design Consultants, Inc., as part of the scope of work for this CIP, updated the inventories of major water infrastructure and distribution pipe previously prepared in 2007. The updated *Major Water Infrastructure Inventory* and *Distribution Pipe Inventory* are included in Appendix E.

# 6 RECOMMENDED STUDIES AND UPDATES

Based upon our review of the Hayden's water system, we have prepared a list of studies and updates the Town should consider over the 20-year planning period (see Appendix F, *Recommended Studies and Updates*). These items are not capital improvements and are therefore not included in the CIP. These items should, however, be reviewed and prioritized by the town and the associated costs incorporated into the Town's financial planning. These studies should confirm strategies to address existing problems and allow for better construction cost estimates for CIP items; in addition, these studies will likely lead to the addition of items to the CIP.

# 7 FUNDING OPTIONS

This section details possible funding sources for the Town of Hayden for water system improvements. It should be noted that the Colorado Water and Sewer Funding Coordination Committee conducts regular meetings to identify potential funding sources for water and wastewater facilities projects. The Town of Hayden could contact the Committee regarding a Preliminary Request for Funding application and inclusion on an upcoming meeting agenda. All of the terms in this section were current as of the issue date of this report; the terms of any particular grant or loan should be verified at such time as funding options are evaluated for any capital improvement project.

## 7.1 PLANNING GRANTS

### 7.1.1 Drinking Water Revolving Fund (DWRF) Planning and Design Grants

Although Hayden has received these planning and design grants previously, the new requirements have median household income requirements which would make Hayden *ineligible*. The Planning and Design Grants are designed to assist Colorado governmental entities in their funding needs for the planning and design components of their projects. These grants may be used for Preliminary Engineering Reports; Engineering Design Documents; Energy Audits; Environmental Assessments; and Legal Fees for Special District Formation.

Qualification

- Project is on the current year project eligibility list
- Population less than 5,000

Terms

- $10,000 per governmental agency per project.
- Maximum of 18 months to undertake and complete the scope that was approved

Requirements

- Median household income (MHI) is less than 80.0% the statewide MHI (The current 80.0% MHI number is $45,165 currently American Community Survey 2006-2010).

### 7.1.2 Small System Technical and Training (SSTTA) Grant

The Safe Drinking Water Program has developed a program to establish the vision for Colorado public water system training services. Funds are also used to support technical assistance for small water systems. These grants may be used for Preliminary Engineering Reports; plans and specifications, engineering design documents; Environmental Assessments; technical, managerial, financial capacity; legal fees for Special District formation; and public education.

Qualification

- Reference the current DWRF Eligibility List
- Population less than 10,000

Terms

- Typically 4 grants for Drinking Water annually
- Maximum amount is up to $25,000

Requirements

- Drinking Water Project
- Project must be on the current year DWRF project eligibility list

### 7.1.3 Department of Local Affairs (DOLA) Administrative Grants

Qualification

- Local government
- Available for planning, preliminary engineering

Terms

- Maximum award of $25,000
- Total project cost not to exceed $100,000

Requirements

- Cash matching, 50/50

## 7.2 GRANTS AND LOANS FOR DESIGN AND CONSTRUCTION

Multiple funding options are available to fund water improvements projects; these are listed below.

### 7.2.1 Community Development Block Grant (CDBG)

The Community Development Block Grant program is a flexible program that provides communities with resources to address a wide range of unique community development needs. It is financed by the federal government and administered by DOLA.

Qualification

- Population less than 100,000
- Municipalities and counties (no special districts)
- HUD income requirements (at least 51% of population below State MHI)

Terms

- Maximum amount: $500,000
- One round each year

Requirements

- Cash-matching
- Davis-Bacon
- NEPA

### 7.2.2 Energy & Mineral Impact Assistance Fund (EIAF) Grants & Loans

The largest distribution of funds by the State Energy and Mineral Impact Assistance Program occurs in the form of discretionary grants financed through severance tax payments and federal mineral lease royalties.

Qualification

- Political subdivisions socially or economically impacted by the development, processing, or energy conversion of minerals & mineral fuels

Terms

- Water Loans
  - Maximum term 20 years
  - 5% minimum interest rate
  - Can be used to meet matching requirements for grants
- Discretionary Grants
  - Tier I: up to $200,000 with minimum 25% match
  - Tier II: $200,000-$1,000,000 with minimum 25% match

Requirements

- Demonstration of relationship to energy/minerals
- Match commitment and financial review
- Demonstration of measurable outcomes and relationship to community goals
- Preliminary Engineering Report, drawings, cost estimate, budget, attorney's TABOR decision

### 7.2.3 US Department of Agriculture (USDA) Rural Development Grants & Loans

Rural Development awards grants and loans to rural communities for construction and replacement of water, wastewater, storm sewer and solid waste facilities. Communities can receive a loan and grant combination based upon median incomes, health hazard elimination, and annual debt service charges.

Qualification

- Water /Wastewater project
- Public entities
- Population of less than 10,000

Terms

- Loans based on income
  - Maximum term 40 years or useful life of project
  - At or above State Non-Metro MHI: Market Rate (3.5%)
  - 80% - 100% State Non-Metro MHI: Intermediate Rate (2.75%)
  - Below 80% State Non-Metro MHI: Poverty Rate (2.125%)

- Grants
  - Up to 75% of eligible project costs

Requirements

- Inability to receive credit from other sources
- National Environmental Policy Act compliance required
- Preliminary Engineering Report
- Environmental Report
- Financial Statements
- Audit

### 7.2.4 Colorado Rural Water Association (CRWA) Revolving Loan Program

The Colorado Rural Water Association revolving Loan Program, established under a grant from USDA Rural Utilities Services, may provide financing to eligible utilities for pre-development costs associated with water and wastewater projects, including replacement equipment, extension of services, and small capital projects.

Qualification

- Water /Wastewater project
- County
- Population less than 10,000

Terms

- Maximum loan amount of $100,000 or 75% of project cost (whichever is less)
- Maximum repayment period of 10 years
- Interest rate of 3%

Requirements

- Financial Statements
- Audit
- Legal opinion of borrowing capability

### 7.2.5 Rural Community Assistance Corporation (RCAC) Environmental Infrastructure Loan

The Rural Community Assistance Corporation's Environmental Infrastructure Loan program helps create, improve or expand the supply of safe drinking water and waste disposal systems/facilities that serve low and moderate-income communities in the West, including Colorado.

Qualification

- Water /Wastewater project
- Public Entity
- Population less than 10,000

Terms

- Feasibility studies: up to $50,000 (unsecured)
  - 3 year max loan,
  - 5.75% interest rate
- Engineering: up to $350,000 (unsecured)
  - 3 year max loan,
  - 5.75% interest rate
- Construction: up to $1.5 million (secured)
  - Intermediate Loan
    - 20 year max
    - 5.0% interest rate
  - Long Term Loan:
    - Set terms and rate at closing (USDA guarantee)

Requirements

- Feasibility/Engineering
  - Financial Statements
  - Information on engineering firm to complete Preliminary Engineering Report
  - Legal opinion of borrowing capability
  - Information on planned permanent funding source
- Construction
  - All of the above
  - Preliminary Engineering Report
  - Permanent funding conditions and security

### 7.2.6 Private Activity Bonds

Private Activity Bonds are tax-exempt bonds that can be issued for specific purposes to encourage improvements where they are most needed. Tax-exempt private activity bond allocations are available to municipalities and counties as well as issuing authorities. These entities can in turn issue bonds or other obligations to private entities with interest exempt from federal income taxation.

Qualification

- Local county that needs additional allocation
- Water project

Terms

- Eligible cost determined by bond counsel

- Rates vary with bond market
- Governments with populations less than 27,000 do not receive a direct allocation but may receive an allocation from the statewide balance.

Requirements

- Community support
- Repayment ability
- Local economic benefit

### 7.2.7 Colorado Water Resources and Power Development Authority (CWR & PDA) Water Revenue Bonds Program

The Colorado Water Resources and Power Development Authority was created by the General Assembly to provide low-cost financing to governmental agencies in Colorado primarily to finance water and wastewater infrastructure projects. The Water Revenue Bonds program provides funds up to $500 million, without legislative review, to entities for water and wastewater projects not eligible under the Drinking Water Revolving Fund/ Water Pollution Revolving Fund programs. The Authority subsidizes the costs of the bond issuance for the program.

Qualification

- Colorado County

Terms

- Maximum loan amount of $500,000
- Interest determined by bond market conditions
- Maximum term of the useful life of the project

Requirements

- Not eligible under the Drinking Water Revolving Fund

### 7.2.8 Drinking Water Revolving Fund (DWRF)

The Drinking Water Revolving Fund is a low-interest loan program. The purpose of the DWRF program is to provide financial assistance to governmental agencies for the construction of water projects for public health and compliance purposes and to set aside funds from the capitalization grant to fund a variety of activities that are necessary to accomplish the requirements of the Safe Drinking Water Act.

Qualification

- Reference the current Project Eligibility List

Terms

- 20-year maximum loans
- Interest at 0% (principal forgiveness), 1%, 2%, or 6% (principal forgiveness and 1% disadvantaged community loans will not apply to Hayden; projects meeting Green Project Reserve qualifications could qualify for 0% loan)
- Allow approximately 18 months to loan execution

Requirements

- Project identified on DWRF eligibility list
- Complete Eligibility Assessment
- Complete Preliminary Engineering Report
- Host Public Meeting
- Complete Environmental Report (if required)
- Complete TMF Review

### 7.2.9 Colorado Water Conservation Board (CWCB) Water Supply Reserve Account

This program provides resources to implement projects and methods for meeting the state's water consumptive and non-consumptive needs. The program can grant or loan money for a broad range of eligible activities including: construction of infrastructure, feasibility studies, studies of human and environmental needs, and technical assistance for permitting or environmental compliance.

Qualification

- Public entity working on a structural water project

Terms

- Grant subject to appropriation

Requirements

- Approval of a roundtable pursuant to article 75 of title 37, C.R.S
- Approval of the CWCB utilizing the criteria and guidelines jointly developed by the IBCC and CWCB.
- Applicant description and background statement
- Scope of work
- 6 month reports
- Final report

# 8 REFERENCES

CDC – Civil Design Consultants, Inc. (March 20, 2009). *Preliminary engineering report for the airport tank and water system improvements*.

CDC – Civil Design Consultants, Inc. (May 13, 2009). *Water distribution storage tank study for the Town of Hayden*.

CDC – Civil Design Consultants, Inc. (December 16, 2009). *Water model report for the Town of Hayden*.

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GFOA (1996). "Capital improvement programming guide for smaller governments."

# 9 APPENDICES

# APPENDIX A

## WATER TREATMENT FACILITY IMPROVEMENTS

## SUMMARY

**Town of Hayden**
**Water System Capital Improvement Plan**

## Water Treatment Facility Improvements

| Item # | Improvement | Priority | Cost Estimate | Schedule of Costs: Priority 1 0-5 years (2013-2018) | Priority 2 5-10 years (2018-2023) | Priority 3 10-20 years (2023-2033) |
|---|---|---|---|---|---|---|
| Raw Water | | | | | | |
| 1.1 | Air hydroburst system for RW intake screen (infrastructure only, manual operation) | 2 | $ 15,000 | | $ 15,000 | |
| 1.2 | Automate air hydrobust system for RW intake screen | 3 | $ 20,000 | | | $ 20,000 |
| 1.3 | Repair settled floor in RWPS | 3 | $ 1,500 | | | $ 1,500 |
| 1.4 | Rebuild RW Pump #2 | 1 | $ 11,500 | $ 11,500 | | |
| 1.5 | Add a second RW Pump VFD for redundancy | 1 | $ 9,000 | $ 9,000 | | |
| 1.6 | Replace roof of RWPS | 1 | $ 3,000 | $ 3,000 | | |
| 1.7 | Replace RW flow meter | 3 | $ 6,000 | | | $ 6,000 |
| 1.8 | Replace/upgrade raw water turbidimeter | 2 | $ 8,000 | | $ 8,000 | |
| 1.9 | Replace BWR flow meter | 2 | $ 5,000 | | $ 5,000 | |
| Chemical Feeds | | | | | | |
| 2.1 | Provide isolated room for PAC chemical feed equipment | 1 | $ 30,000 | $ 30,000 | | |
| 2.2 | Raise chemical room floor and provide functional floor drain | 3 | $ 15,000 | | | $ 15,000 |
| 2.3 | Upgrade of coagulant feed pumps | 2 | $ 7,000 | | $ 7,000 | |
| 2.4 | Replace Soda Ash feeder | 1 | $ 30,000 | $ 30,000 | | |
| Flocculation | | | | | | |
| 3.1 | Repair/replace valve between Clarifier and Flocculator | 1 | $ 10,000 | $ 10,000 | | |
| 3.2 | Upgrade/replace streaming current monitor | 1 | $ 15,000 | $ 15,000 | | |
| 3.3 | Replace Flocculator VFD | 3 | $ 8,000 | | | $ 8,000 |
| 3.4 | Flash mixing improvements | 2 | $ 10,000 | | $ 10,000 | |
| Clarification | | | | | | |
| 4.1 | Replace existing Clarifier centerwell, rake, bottom steel, settling tubes and rake motor drive | 1 | $ 350,000 | $ 350,000 | | |
| 4.2 | Construct a new Clarifier in parallel | 3 | $ 800,000 | | | $ 800,000 |
| Filtration | | | | | | |
| 5.1 | Pipe gallery replacement of BWS piping for Filters 1&2 | 1 | $ 165,000 | $ 165,000 | | |
| 5.2 | Filter media replacement for Filters 1&2 (installed in 2003, replace in 2023) | 3 | $ 30,000 | | | $ 30,000 |
| 5.3 | Filter media replacement for Filters 3&4 (installed in 2005, replace in 2025) | 3 | $ 30,000 | | | $ 30,000 |
| 5.4 | Add air scour to filters | 3 | $ 105,000 | | | $ 105,000 |
| 5.5 | Upgrade combined filter effluent turbidimeter and move sampling point from HW line to filter clearwell | 1 | $ 12,000 | $ 12,000 | | |
| 5.6 | Paint filter interior walls of Filters 1&2 | 1 | $ 25,000 | $ 25,000 | | |

**Town of Hayden**
**Water System Capital Improvement Plan**

## Water Treatment Facility Improvements

| Item # | Improvement | Priority | Cost Estimate | Schedule of Costs: Priority 1 0-5 years (2013-2018) | Priority 2 5-10 years (2018-2023) | Priority 3 10-20 years (2023-2033) |
|---|---|---|---|---|---|---|
| | Backwash Settling and Return | | | | | |
| | No items identified at this time. | | | | | |
| | Disinfection | | | | | |
| 7.1 | Upgrade chlorine residual analyzer | 2 | $ 5,000 | | $ 5,000 | |
| 7.2 | Provide additional sodium hypochlorite storage | 1 | $ 2,000 | $ 2,000 | | |
| 7.3 | Replace electrolytic cells for on-site generation of NaOCl | 2 | $ 12,000 | | $ 12,000 | |
| | High Service Pump Station | | | | | |
| 8.1 | Replace finished water flow meter | 2 | $ 5,000 | | | $ 5,000 |
| 8.2 | Continuous Fluoride analyzer | 2 | $ 10,000 | | | $ 10,000 |
| | Electrical and Controls | | | | | |
| 9.1 | Em generator - Replace with larger generator to run entire WTP; relocate existing generator to WWTP | 3 | $ 170,000 | | | $ 170,000 |
| 9.2 | Surge protection and grounding improvements for WTP | 1 | $ 50,000 | $ 50,000 | | |
| 9.3 | SCADA controls improvements - annual budget of $12,000 | 1 | $ 60,000 | $ 60,000 | | |
| 9.4 | SCADA controls improvements - Remote sites RTU upgrades | 3 | $ 60,000 | | | $ 60,000 |
| 9.5 | Backup SCADA computer | 1 | $ 25,000 | $ 25,000 | | |
| | Other | | | | | |
| 10.1 | Access road improvements | 3 | $ 65,000 | | | $ 65,000 |
| 10.2 | Construct ww lift station and wastewater forcemain to Town | 3 | $ 240,000 | | | $ 240,000 |
| 10.3 | WTP capacity upgrade (dependent on development or operational duty cycle) | 20+yrs | | | | |
| 10.4 | Replace galv housewater plumbing in WTP | 2 | $ 5,000 | | $ 5,000 | |
| 10.5 | Upgrade basement lighting | 2 | $ 5,000 | | $ 5,000 | |
| | **Total** | | $ 2,430,000 | $ 797,500 | $ 67,000 | $ 1,565,500 |

n/c Not complete

# APPENDIX B

## DISTRIBUTION SYSTEM IMPROVEMENTS

## SUMMARY

**Town of Hayden**
**Water System Capital Improvement Plan**

## Distribution System Improvements

| Item # | Improvement | Priority | Cost Estimate | Schedule of Costs: Priority 1 0-5 years (2013-2018) | Priority 2 5-10 years (2018-2023) | Priority 3 10-20 years (2023-2033) |
|---|---|---|---|---|---|---|
| Hospital Hill Tank Zone | | | | | | |
| 11.1 | New parallel 12" waterline from WTP to Lincoln near Pine St. | 2 | $ 270,000 | | $ 270,000 | |
| 11.2 | Replace 8" line from HH Tank to Jackson, with loop to Chestnut | 1 | $ 105,000 | $ 105,000 | | |
| 11.3 | Replace 12" waterline from Washington to HH tank | 3 | $ 210,000 | | | $ 210,000 |
| 11.4 | Replace 12" waterline from Lincoln to Washington | 3 | $ 325,000 | | | $ 325,000 |
| 11.5 | Construct flushing station at end of long deadend waterline at Precision | 1 | $ 13,000 | $ 13,000 | | |
| 11.6 | New water main from N 2nd to N 3rd on US40 | 3 | $ 90,000 | | | $ 90,000 |
| 11.7 | Construct 8" waterline to WWTP with 2 FH, cross US40, loop to Meadow Village Trailer Park | 2 | $ 330,000 | | $ 330,000 | |
| 11.8 | Replace 8" PVC, IPS, and DIP from 3rd St south of Washington to corner at RCR 53 | 3 | $ 390,000 | | | $ 390,000 |
| 11.9 | Install service meter (Fulton) | 1 | $ 6,000 | $ 6,000 | | |
| 11.10 | Add control valve, PRV, and flow meter between HHPZ and TZ (from Crandall to Police Station) | TBD | $ 190,000 | | $ 190,000 | |
| 11.11 | Install service meters | 1 | $ 10,000 | $ 10,000 | | |
| 11.12 | Replace FH at Hospital | 1 | $ 5,000 | $ 5,000 | $ 5,000 | |
| Hospital Hill Tank | | | | | | |
| 12.1 | Interior recoating (after Airport tank is online) | 1 | $ 115,000 | $ 115,000 | | |
| 12.2 | Add tank mixing | 1 | $ 50,000 | $ 50,000 | | |
| 12.3 | Cathodic protection | 1 | $ 38,000 | $ 38,000 | | |
| Hospital Hill Pump Station | | | | | | |
| 13.1 | Controls modifications (incl in 17.1) | 1 | | | | |
| 13.2 | Replace HHPS pump #5 (jockey pump) | 3 | $ 5,000 | | | $ 5,000 |
| Hospital Hill Pumped Zone | | | | | | |
| 14.1 | Construct interconnection piping between HHPZ and GMZ | 2 | $ 650,000 | | $ 650,000 | |
| 14.2 | Replace Hospital Hill distribution piping | 3 | $ 390,000 | | | $ 390,000 |
| 14.3 | Replace 4" waterline and FH for upper Walnut | 2 | $ 95,000 | | $ 95,000 | |
| Golden Meadows Pump Station | | | | | | |
| 15.1 | Control modifications (included in 14.1) | 2 | | | | |
| 15.2 | Emergency generator - domestic and fire flow (See also item 15.2A1) | 1 | $ 80,000 | $ 80,000 | | |
| 15.3 | Replace float control valve (fill valve), move valve from confined space | 1 | $ 20,000 | $ 20,000 | | |
| 15.4 | Replace submerged discharge piping | 2 | $ 20,000 | | $ 20,000 | |
| 15.5 | Remove old GMPS structure | 2 | $ 10,000 | | $ 10,000 | |
| 15.6 | GMPS Jockey Pump Replacement | 1 | $ 7,000 | $ 7,000 | | |

**Town of Hayden**
**Water System Capital Improvement Plan**

## Distribution System Improvements

| Item # | Improvement | Priority | Cost Estimate | Schedule of Costs: Priority 1 0-5 years (2013-2018) | Priority 2 5-10 years (2018-2023) | Priority 3 10-20 years (2023-2033) |
|---|---|---|---|---|---|---|
| Golden Meadows Zone | | | | | | |
| 16.1 | Construct 0.5 MG Tank for Golden Meadows | 20+ yrs | $ 2,900,000 | | | |
| 16.2 | Replace Golden Meadows distribution piping | 20+ yrs | TBD | | | |
| Airport Zone | | | | | | |
| 17.1 | Construct 0.5 MG Airport Tank at Seneca Hill, construct south runway loop (incl items 13.1, and 17.2) | 1 | $ 2,900,000 | $ 1,000,000 | | |
| 17.2 | Boost chlorine residual at the airport (incl in 17.1) | 1 | | | | |
| 17.3 | Remove FH at Crandell / Hawthorne (RCR 37) | 2 | $ 5,000 | | $ 5,000 | |
| 17.4 | Construct bulk water station in airport zone | 2 | $ 95,000 | | $ 95,000 | |
| 17.5 | Construct second 0.5 MG Tank for YVRA Zone at Seneca Hill | 20+ yrs | $ 1,115,000 | | | |
| Other | | | | | | |
| 18.1 | (no items identified at this time) | | | | | |
| | | | $ 10,439,000 | $ 1,449,000 | $ 1,670,000 | $ 1,410,000 |

**Alternatives**

| | | | | | | |
|---|---|---|---|---|---|---|
| *If HHPZ/GMZ interconnection (item 14.1) is not installed* | | | | | | |
| 14.1.A1 | Construct parallel GMPS supply line from corner at RCR53 to GMPS | 2 | $ 90,000 | | $ 90,000 | |
| 14.1.A2 | Upgrade GMPS capacity (dependent on development) | 20+ yrs | TBD | | | |
| *Alternate to item 15.2* | | | | | | |
| 15.2.A1 | Golden Meadows pump station emergency generator - domestic only | 1 | $ 50,000 | $ 50,000 | | |
| *If Airport Tank (item 17.4) is not installed* | | | | | | |
| 17.4.A1 | Boost chlorine at HHPS | 1 | $ 65,000 | $ 65,000 | | |
| 17.4.A2 | Construct flushing station at Airport hangars | 1 | $ 13,000 | $ 13,000 | | |
| 17.4.A3 | Construct check valve on airport water line | 2 | $ 65,000 | | $ 65,000 | |
| | | Total | $ 143,000.00 | $ 78,000.00 | $ 65,000.00 | $ - |

| | |
|---|---|
| n/c | Not complete |
| Town | To be provided by Town |
| TBD | To be determined |

# APPENDIX C

## WATER TREATMENT FACILITY IMPROVEMENTS

## DETAILS

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 1.1 | Manual Air hydroburst system for RW intake screen | Raw Water |
| **Description** | | |
| Upgrade trailer-mounted air compressor to new proposed air compressor inside RWPS (manually operate 7-10 min once/week in spring) | | |
| **Priority** | **Priority Justification** | |
| 2 | Reduces operational time, improves reliability and performance of raw water intake | |
| **Cost** | **Cost Explanation** | |
| $15,000 | Equipment cost for 185 cfm air compressor, and installation | |

| Item No. | Improvement | Category |
|---|---|---|
| 1.2 | Automate air hydroburst system for RW intake screen | Raw Water |
| **Description** | | |
| Upgrade from manual operation for 7-10 min once/week in spring to automatic operation for ~ 5 min following shutdown and at every 4 hr intervals (or as set by operator) while WTF is offline in spring. | | |
| **Priority** | **Priority Justification** | |
| 2 | Reduces operational time, improves reliability and performance of raw water intake | |
| **Cost** | **Cost Explanation** | |
| $20,000 | Automated controls, and installation | |

| Item No. | Improvement | Category |
|---|---|---|
| 1.3 | Repair settled floor in RWPS | Raw Water |
| **Description** | | |
| Existing west floor in RWPS (8 ft x 10 ft) settled ~ 2" following replacement of the RW supply pipe. An attempt was made to inject grout under settled slab. However, this effort was not successful and the existing slab needs to be removed and replaced. | | |
| **Priority** | **Priority Justification** | |
| 3 | Infrastructure repair (This work should be performed after determining the recommended location of the PAC and soda ash, and if the building size is increased it would make sense to complete this with the roof replacement.) | |
| **Cost** | **Cost Explanation** | |
| $1,500 | Jackhammer existing settled floor, backfill with flowfill, pour new floor to match existing floor to east. | |

| Item No. | Improvement | Category |
|---|---|---|
| 1.4 | Rebuild RWP #2 | Raw Water |
| **Description** | | |
| Pump operation problematic since pulled coffer dam for raw water inlet reconstruction. Impeller and volute damaged by sand. | | |
| **Priority** | **Priority Justification** | |
| 1 | Infrastructure repair | |
| **Cost** | **Cost Explanation** | |
| $11,500 | Pull, send in for rebuild, reset. | |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 1.5 | Add a second RWP VFD for redundancy | Raw Water |

**Description**

Second VFD to alternate with existing VFD to extend longevity and provide redundancy.

| Priority | Priority Justification |
|---|---|
| 1 | Redundancy |
| **Cost** | **Cost Explanation** |
| $9,000 | Equipment + installation + contols to alternate VFDs. |

| Item No. | Improvement | Category |
|---|---|---|
| 1.6 | Replace roof of RWPS | Raw Water |

**Description**

Roof damage has been repaired temporarily, permanent repair needed.

| Priority | Priority Justification |
|---|---|
| 1 | Infrastructure Replacement |
| **Cost** | **Cost Explanation** |
| $3,000 | Corrugated metal roof for 28 ft x 10 ft RWPS building with 4 framed roof hatches to allow pulling RW Pumps(may be larger if necessary to accommodate air compressor for item 1.1 and PAC or alternate taste and odor treatment for item 2.1.) |

| Item No. | Improvement | Category |
|---|---|---|
| 1.7 | Replace RW flow meter | Raw Water |

**Description**

This meter is critical to WTP operation. It is exposed to sand and should be replaced at 10-15 year intervals. This meter was installed in 2002 and replaced in 2012. When replaced in future, the existing meter could be rebuilt to serve as a spare.

| Priority | Priority Justification |
|---|---|
| 3 | Infrastructure replacement |
| **Cost** | **Cost Explanation** |
| $6,000 | meter cost + installation |

| Item No. | Improvement | Category |
|---|---|---|
| 1.8 | Replace/upgrade raw water turbidimeter | Raw Water |

**Description**

RW turbidimeter installed in 2002. Useful life estimated as 10-15 years.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure Replacement |
| **Cost** | **Cost Explanation** |
| $8,000 | Instrument cost + installation |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 1.9 | Replace BWR flow meter | Backwash Settling & Return |

**Description**

Meter was installed in 2003 and has a useable life of ~ 15 years.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure replacement |

| Cost | Cost Explanation |
|---|---|
| $5,000 | meter cost + installation |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 2.1 | Provide isolated room for PAC chemical feed equipment | Chemical Feeds |

**Description**

PAC (Powdered activated carbon) is used for taste and odor control in the summer to fall. PAC is considered to be explosive and regulations require isolation. The original design plan has been to close in a portion of the mezzanine level of the chemical feed room. An alternate includes adding on to the RWPS (advised prior to floor repair - item 1.2 and roof replacement - item 1.6).

| Priority | Priority Justification |
|---|---|
| 1 | Safety, Regulatory compliance |
| **Cost** | **Cost Explanation** |
| $30,000 | Chemical feed room framing and drywall to enclose at least 8 ft x 12 ft area, including installation of double door. (Alternate cost to expand RWPS by the same 96 SF area is a similar cost and it would make sense when RWPS floor and roof repairs are made.) |

| Item No. | Improvement | Category |
|---|---|---|
| 2.2 | Raise chemical room floor and provide functional floor drain | Chemical Feeds |

**Description**

Raise lower level of Chemical feed room by 1.9 ft for flood protection and to add a functional floor drain. This work should be after moving PAC and constructing PAC improvements.

| Priority | Priority Justification |
|---|---|
| 3 | Reliability |
| **Cost** | **Cost Explanation** |
| $15,000 | Raise two mandoors, add ~16 CY of compacted fill, pour new floor (7 CY of concrete), raise light switches, and reset equipment. |

| Item No. | Improvement | Category |
|---|---|---|
| 2.3 | Upgrade of coagulant feed pumps | Chemical Feeds |

**Description**

Useable life of exising pumps is 10-15 years from installation date of 2003. Upgrade pumps to alllow greater turndown and operational range. Current chem feed rate is limited to correspond to plant production of 700 gpm. Propose peristaltic pumps to avoid priming issues.

| Priority | Priority Justification |
|---|---|
| 2 | Reliability, Operational flexibility |
| **Cost** | **Cost Explanation** |
| $7,000 | 2 alum pumps at $1000/pump + 2 CAP pumps at $1000/pump + installation + programming revisions |

| Item No. | Improvement | Category |
|---|---|---|
| 2.4 | Replace Soda Ash feeder | Chemical Feeds |

**Description**

Soda ash is added in the spring to buffer alkalinity. Soda ash feeder is old, originally installed in1984. The feeder should have a useable life of ~ 30 years. See recommended study for alternative analysis.

| Priority | Priority Justification |
|---|---|
| 1 | Infrastructure replacement |
| **Cost** | **Cost Explanation** |
| $30,000 | Equipment cost + installation |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 3.1 | Repair/replace valve between Clarifier and Flocculator | Flocculation |
| **Description** | | |
| 20" manual butterfly valve is inoperable. | | |
| **Priority** | **Priority Justification** | |
| 1 | Infrastructure replacement - to be prior to clarifier improvements. | |
| **Cost** | **Cost Explanation** | |
| $10,000 | 20 " Butterfly valve cost + installation | |

| Item No. | Improvement | Category |
|---|---|---|
| 3.2 | Upgrade/replace streaming current monitor | Flocculation |
| **Description** | | |
| Streaming current monitor paces feed of alum and is critical for WTP operation. Useful life is anticipated to be ~ 15 years. Instrument was installed in 2003. | | |
| **Priority** | **Priority Justification** | |
| 1 | Infrastructure Replacement | |
| **Cost** | **Cost Explanation** | |
| $15,000 | Instrument + Installation + Programming | |

| Item No. | Improvement | Category |
|---|---|---|
| 3.3 | Replace Flocculator VFD | Flocculation |
| **Description** | | |
| Installed in 2003. Has estimated useful life of ~ 15 years. | | |
| **Priority** | **Priority Justification** | |
| 3 | Infrastructure Replacement | |
| **Cost** | **Cost Explanation** | |
| $8,000 | VFD cost + installation + programming | |

| Item No. | Improvement | Category |
|---|---|---|
| 3.4 | Flash mixing improvements | Flocculation |
| **Description** | | |
| Flash mixer installed in 2003. Has estimated useful life of ~ 15 years. See recommended mixing optimization study. Addition of second mixer to be considered. | | |
| **Priority** | **Priority Justification** | |
| 2 | Infrastructure replacement | |
| **Cost** | **Cost Explanation** | |
| $10,000 | mixer cost + installation | |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 4.1 | Replace existing Clarifier centerwell, rake, bottom steel, settling tubes, and rake motor drive | Clarification |
| **Description**<br>The existing clarifier infrastructure is corroded and has exceeded its useful life. Replacement is recommended. | | |
| **Priority**<br>1 | **Priority Justification**<br>Infrastructure replacement | |
| **Cost**<br>$350,000 | **Cost Explanation**<br>Replacement of existing equipment by Specialty Contractor within short shutdown period. | |

| Item No. | Improvement | Category |
|---|---|---|
| 4.2 | Construct a new clarifier in parallel | Clarification |
| **Description**<br>The existing water treatment facility is limited by clarification capacity to approximately 1.7 MGD. Adding another clarifier will provide increased performance, reliability, and operational flexibility and increase plant capacity to 2.0 MGD. Different clarifier configurations could be evaluated. | | |
| **Priority**<br>2 | **Priority Justification**<br>Infrastructure replacement | |
| **Cost**<br>$800,000 | **Cost Explanation**<br>New clarifier equipment of matching capacity to exisitng within new building. | |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 5.1 | Pipe gallery replacement of BWS piping for Filters 1&2 | Filtration |

**Description**

The 10" and 12" welded steel for Filters 1&2 was installed in 1980. In recent years, this piping has experienced multiple failures causing leaks and flooding of the pipe gallery. The integrity of this piping is critical to operation since it is used 1-2 times per day.

| Priority | Priority Justification |
|---|---|
| 1 | Infrastructure replacement, Reliability |
| **Cost** | **Cost Explanation** |
| $165,000 | See Memo Re: Hayden WTF Backwash and Supply Piping Replacement prepared by CDC to Town dated 7/30/2010. Cost includes replacement of 10 and 12" welded steel piping, replacement of existing backwash rate-of-flow controller, 15% contingencies, and engineering. |

| Item No. | Improvement | Category |
|---|---|---|
| 5.2 | Filter media replacement for Filters 1&2 (installed in 2003, replace in 2023) | Filtration |

**Description**

Design life for multi-media is ~20 years. Filter tank could be painted at this time (see item 5.6).

| Priority | Priority Justification |
|---|---|
| 3 | Infrastructure replacement (coincide with items 5.3 and 5.4) |
| **Cost** | **Cost Explanation** |
| $30,000 | construction cost from 2005 + inflation factor |

| Item No. | Improvement | Category |
|---|---|---|
| 5.3 | Filter media replacement for Filters 3&4 (installed in 2005, replace in 2025) | Filtration |

**Description**

Design life for multi-media is ~20 years. Filter tank could be painted at this time, if necessary (price not included).

| Priority | Priority Justification |
|---|---|
| 3 | Infrastructure replacement (coincide with items 5.2 and 5.4) |
| **Cost** | **Cost Explanation** |
| $30,000 | construction cost from 2005 + inflation factor |

| Item No. | Improvement | Category |
|---|---|---|
| 5.4 | Addition of Air Scour to Filters | Filtration |

**Description**

Air scour capability could be added to the filters to improve the backwash efficiency and extend filter runs. This improvement needs to coincide with filter media replacement since the garnet sand will need to be changed to silica sand and nipples for air distribution will need to be welded to the underdrain blocks.

| Priority | Priority Justification |
|---|---|
| 3 | Infrastructure replacement |
| **Cost** | **Cost Explanation** |
| $105,000 | Quote from Leopold for retrofitting all 4 filters with air scour +air piping+ installation+ E/C +15% contingency + 15% engineering |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 5.5 | Upgrade combined filter effluent turbidimeter and move sampling point from HW line to filter clearwell | Filtration |

**Description**

Recent CDPHE Sanitary Survey has required the relocation of the sampling point from the housewater line (after the chlorine contact basin) to the filter clearwell prior to the chlorine contact basin. This change will require CDPHE plans review. A sampling pump could be installed in the pipe gallery to pump from the Filter clearwell to provide a sample to the turbidimeter in its existing location in the restroom. This turbidimeter (Hach 1720C) was initially installed in 1998. Parts are no longer available and it requires an upgrade to Hach 1720E.

| Priority | Priority Justification |
|---|---|
| 1 | Regulatory compliance |

| Cost | Cost Explanation |
|---|---|
| $10,000 | New turbidimeter, piping, sample pump and engineering for CDPHE plans review. |

| Item No. | Improvement | Category |
|---|---|---|
| 5.6 | Paint filter interior walls for Filters 1&2 | Filtration |

**Description**

Filters walls were previously painted and this painting is due to be redone. Repainting would be to the top of the media, while protecting the media.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure upgrade |

| Cost | Cost Explanation |
|---|---|
| $25,000 | Instrument cost + installation |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 7.1 | Upgrade chlorine residual analyzer | Disinfecton |

**Description**

This chlorine residual analyzer (Hach CL17) was initially installed in2005.  It's useable life is 10-15 years.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure upgrade |
| **Cost** | **Cost Explanation** |
| $5,000 | Instrument cost + installation |

| Item No. | Improvement | Category |
|---|---|---|
| 7.2 | Provide additional sodium hypochlorite storage | Disinfecton |

**Description**

Provide additional 550 gal sodium hypochlorite storage tank to be located in next room to provide total of 2 days operation with shutdown of onsite generation equipment at full plant capacity.  The existing storage tank has failed 3 times in 10 years and redundancy is recommended.  Reseach tank alternatives and recommend tank with improved longevity.

| Priority | Priority Justification |
|---|---|
| 1 | Redundancy, Reliability |
| **Cost** | **Cost Explanation** |
| $2,000 | $400 Tank cost  + installation and minor piping/valves |

| Item No. | Improvement | Category |
|---|---|---|
| 7.3 | Replace electrolytic cells for on-site generation of NaOCl | Disinfecton |

**Description**

Electrolytic cells to be replaced at 8 year interval.  Last replaced in 2012.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure replacement |
| **Cost** | **Cost Explanation** |
| $12,000 | per Town |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 8.1 | Replace finished water flow meter | High Service Pump Station |

**Description**

The flow meter was installed in 2003, and replaced in 2012. This meter has an estimated useable life of 15-20 years. Following replacement of flow meter, rebuild existing flow meter for use as a spare.

| Priority | Priority Justification |
|---|---|
| 3 | |

| Cost | Cost Explanation |
|---|---|
| $5,000 | meter cost + installation |

| Item No. | Improvement | Category |
|---|---|---|
| 8.2 | Continuous Fluoride Analyzer | High Service Pump Station |

**Description**

The WTF currently adds fluoride and monitors it periodically. This instrument would allow for continous recording. It could be placed in the High Service Pump Station or within the WTF and monitor the housewater quality.

| Priority | Priority Justification |
|---|---|
| 2 | For safety. |

| Cost | Cost Explanation |
|---|---|
| $10,000 | meter cost + installation |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 9.1 | Em generator - Replace with larger generator to run entire WTP; relocate existing generator to WWTP | Electrical & Controls |

**Description**
Existing emergency generator powers 2 RW Pumps, 2 FW pumps and associated electrial and contols for ~ 700 gpm production capacity. Proposed generator to increase projection capacity to 1400 gpm (2.0 MGD). Diesel or natural gas could be considered.

| Priority | Priority Justification |
|---|---|
| 3 | Capacity, Reliability |
| **Cost** | **Cost Explanation** |
| $170,000 | Relocation of exisitng (287 KVA) + New generator cost (600 KVA) + installation |

| Item No. | Improvement | Category |
|---|---|---|
| 9.2 | Surge protection and grounding improvements for WTP | Electrical & Controls |

**Description**
Electrical upgrades to provide surge and grounding protection.

| Priority | Priority Justification |
|---|---|
| 1 | Infrastructure upgrade, Reliability |
| **Cost** | **Cost Explanation** |
| $50,000 | Per 2007 CIP and confirmed by Browns Hill Engineering and Controls. |

| Item No. | Improvement | Category |
|---|---|---|
| 9.3 | SCADA controls improvements | Electrical & Controls |

**Description**
Chem feed controls to allow plant flowrate to be reduced to <700 gpm. Additional alarms for 24 hour operation, revisions to clarifier sludge valve operation, fix any controls glitches, etc.

| Priority | Priority Justification |
|---|---|
| 1 | Reliability |
| **Cost** | **Cost Explanation** |
| $60,000 | Annual budget of $12,000 for 5 years |

| Item No. | Improvement | Category |
|---|---|---|
| 9.4 | Backup SCADA computer | Electrical & Controls |

**Description**
Existing computer was replaced in 2010. This computer is critical for operations. As an alternate, a virtual backup computer (located at Browns Hill) could be used to backup programming and data, where in the event of a computer failure at the Hayden WTF, this data woudl be uploaded to a new replacement computer from Browns Hill.

| Priority | Priority Justification |
|---|---|
| 1 | Reliability |
| **Cost** | **Cost Explanation** |
| $25,000 | New backup computer and software per Browns Hill. (Alternate virtual backup through Browns Hill could be pursued at significantly less cost) |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 10.1 | Access road improvements | Water Treatment - Other |

**Description**
Place riprap on bank. Raise road with 18 inches of roadbase. The road is under water during spring runoff for high water years of the Yampa River.

| Priority | Priority Justification |
|---|---|
| 3 | Safety, Reliability |
| **Cost** | **Cost Explanation** |
| $65,000 | 200 CY Riprap, 600 CY roadbase + placement |

| Item No. | Improvement | Category |
|---|---|---|
| 10.2 | Construct wastewater forcemain to Town with lift station | Water Treatment - Other |

**Description**
To replace existing on-site septic system and also handle sludge from clarifier and flocculator.

| Priority | Priority Justification |
|---|---|
| 3 | |
| **Cost** | |
| $240,000 | 1500 LF of 4 " diameter PVC, 100 LF RR bore, with lift station |

| Item No. | Improvement | Category |
|---|---|---|
| 10.3 | WTP capacity upgrade (dependent on development) | Water Treatment - Other |

**Description**
Upgrade from 1.7 MGD to 3.0 MGD for 24 hr/day production capacity. (See 4.2 - new clarifier to increase existing capacity to 2.0 MGD).

| Priority | Priority Justification |
|---|---|
| Beyond 20 yrs | Capacity, Redundancy. Increase priority if duty cycle of 12-15 hr/day for peak production is desired. (Existing max day production 0.758 - 1.0 MGD) |
| **Cost** | **Cost Explanation** |
| TBD | Cost not included. Following determination of the type of treatment, a cost estimate could be prepared. |

| Item No. | Improvement | Category |
|---|---|---|
| 10.4 | Replace galv housewater plumbing in WTP | Water Treatment - Other |

**Description**
Old rusty galv housewater plumbing requires replacement.

| Priority | Priority Justification |
|---|---|
| 2 | Infrastructure Replacement |
| **Cost** | **Cost Explanation** |
| $5,000 | 100 LF of 2" diameter pipe |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan  Water Treatment Facility Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 10.5 | Upgrade basement lighting | Water Treatment - Other |
| **Description** | | |
| Upgrade basement lighting with new vapor-tight high output fluorescent lighting. | | |
| **Priority** | **Priority Justification** | |
| 2 | Safety, Codes | |
| **Cost** | **Cost Explanation** | |
| $5,000 | similar to recent installation at local WTP | |

# APPENDIX D

## DISTRIBUTION SYSTEM IMPROVMENTS

## DETAILS

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 11.1 | New parallel 12" waterline from WTP to Lincoln near Pine St. | Hospital Hill Tank Zone |

**Description**
The WTP has a single water line feed to town constructed in 1978. Construction of a parallel feed line from the WTP to the distribution system would provide system redundancy in the event of a failure in the existing feed line. There are no current known operational problems.

| Priority | Priority Justification |
|---|---|
| 2 | Failure of the existing feed line would likely dictate immediate water restrictions as the distribution system can only operate from the storage in the HH tank and future storage in the YVRA tank until repairs are completed. |

| Cost | Cost Basis |
|---|---|
| $270,000 | 1500 lf - 12" PVC, 100 Lf RR crossing, SCS ditch crossing, 2 tie-in connections |

| Item No. | Improvement | Category |
|---|---|---|
| 11.2 | Replace 8" line from HH Tank to Jackson, with loop to Chestnut | Hospital Hill Tank Zone |

**Description**
Add a line valve to the 8" fill/drain tank line and replace the existing 8" line to the valve on Jackson, east of Poplar. Include a line extension to existing main on Chestnut (optional). Complete distribution modeling to confirm replacement line size.

| Priority | Priority Justification |
|---|---|
| 1 | #1 replacement priority per Public Works. |

| Cost | Cost Explanation |
|---|---|
| $105,000 | 1100 lf - 8" PVC, 3 tie-in connections, 2 ditch crossings, ARV |

| Item No. | Improvement | Category |
|---|---|---|
| 11.3 | Replace 12" waterline from Washington to HH tank | Hospital Hill Tank Zone |

**Description**
The 12" DIP water line (feeding HH tank) was installed in 1978. Recent repairs have found the line in deteriorating condition due to corrosion. Replacement of the line has been included in two items, 11.3 and 11.4.

| Priority | Priority Justification |
|---|---|
| 3 | Replacement should be considered in the 10-20 yr period as the line will have been in service + 50 yrs at the end of this period. The portion of the line south of Washington may be susceptible to more rapid deterioration due to more corrosive soil conditions. The Town should monitor condition of the line to help identify specific areas of replacement and timeframe. |

| Cost | Cost Explanation |
|---|---|
| $210,000 | 850 lf - 12" PVC, 3 tie-in connections, Walker Ditch crossing, 150 lf pavement replacement |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 11.4 | Replace 12" waterline from Lincoln to Washington | Hospital Hill Tank Zone |

**Description**

See 11.3 above

| Priority | Priority Justification |
|---|---|
| 3 | See 11.3 above. This portion of line north of Washington may lie in less corrosive soil conditions and could remain serviceable beyond the 20 year planning period. |
| **Cost** | **Cost Explanation** |
| $325,000 | 750 lf 12" PVC, 4 tie-in connections, Shelton Ditch Crossing, US 40 crossing, 750 lf pavement replacement |

| Item No. | Improvement | Category |
|---|---|---|
| 11.5 | Construct flushing station at end of long dead-end waterline at Precision | Hospital Hill Tank Zone |

**Description**

The Town is currently unable to maintain consistent chlorine residuals at Precision, Dry Creek Village, Lake Village, Industrial Park and YVRA. The Town is currently manually flushing the distribution system at locations including Precision. The 8'/12" water line feeding Precision is over 5500 ft long from 6th street with limited service connections and low system demands resulting in one of the longest residency times in the system (except for the YVRA system). Installation of a flushing station would automate existing flushing operations, improve water quality and reduce maintenance time. Installation of a water main crossing at the west end of Town to connect to the Meadow Village Trailer Park system will also help reduce residence time in the system (refer to 11.7) Flushing discharge requirements need to be considered.

| Priority | Priority Justification |
|---|---|
| 1 | This is a current water quality impact and installation of a flushing station would be beneficial now due to the low system demands. The station flows could be reduced after the US loop is completed (item 11.7) and as water use west of 6th Street increases. |
| **Cost** | **Cost Explanation** |
| $13,000 | 2" water connection, flushing station, drain line. Specific location to be determined |

| Item No. | Improvement | Category |
|---|---|---|
| 11.6 | New water main from N 2nd to N 3rd on US40 | Hospital Hill Tank Zone |

**Description**

The existing water main on 2nd street is a dead end main, approximately 450 ft long. To improve system redundancy, a new water line could be extended from 2nd to 3rd Street. The least expensive connection would be on the north side of US 40. A connection on the south side of US 40 would require a bore crossing US 40 but could include an additional FH at the High / Middle School. Fire flow requirements at the school should be considered.

| Priority | Priority Justification |
|---|---|
| 3 | Because of the limited number of service connections to the line, this redundant connection is not considered a high priority. |
| **Cost** | **Cost Explanation** |
| $90,000 | 350 lf 8" PVC, 2 tie-in connections, 350 lf pavement replacement. From 2007 bid prices, added 15% (based on connection on the north side of US 40). |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 11.7 | Construct 8" waterline to WWTP with 2 FH, cross US40, loop to Meadow Village Trailer Park | Hospital Hill Tank Zone |

**Description**

The distribution system in Meadow Village Trailer Park provides less than 1000 gpm fire flow per CDC's 2009 Water Model Report. The Town currently has only a 2 " line to service the WWTP and no fire protection at the WWTP. A water line connection between the south side US 40 main and the Trailer Park would improve fire flow at the trailer park and would provide a means of extending fire service to the WWTP. This connection would also likely improve system circulation and flow in the US 40 water main and reduce residence time in the system (refer to 11.5). An alternate alignment north of the RR could also be considered. It is questionable if the alternate alignment would create enough service demand to justify the additional expense. An alternate line size of 6 in could be considered; cost difference is not expected to be significant.

| Priority | Priority Justification |
|---|---|
| 2 | Based on less than desired fire protection in the Trailer Park and at the WWTP. Improvement will also assist in improving water quality west of 6th Street. |

| Cost | Cost Explanation |
|---|---|
| $330,000 | 800 lf 8" PVC, US 40 crossing, RR crossing, 2 tie-in connections, 2 FHs, 2 water taps |

| Item No. | Improvement | Category |
|---|---|---|
| 11.8 | Replace 8" PVC, IPS, and DIP on 3rd St south of Washington to corner at RCR 53 | Hospital Hill Tank Zone |

**Description**

The existing PVC / IPS line is thought to have been installed in approximately 1975. Based on Town maintenance reports, there have been no significant recurring maintenance problems. Since the line will have been in service for over 50 years by the end of the 20 yr planning period, we suggest the Town monitor maintenance of the line. If maintenance remains low through this period the service life may be extended beyond 20 years. If maintenance increases, the Town should anticipate replacement (likely in phases).

| Priority | Priority Justification |
|---|---|
| 3 | Monitor maintenance, continued low maintenance through the study period may allow extending the service life beyond the 20 yr period. |

| Cost | Cost Explanation |
|---|---|
| $390,000 | 3350 lf 8" PVC |

| Item No. | Improvement | Category |
|---|---|---|
| 11.9 | Install service meter (Fulton) | Hospital Hill Tank Zone |

**Description**

The Fulton service is currently un-metered. The Town has budgeted to install a service meter in 2013.

| Priority | Priority Justification |
|---|---|
| 1 | Currently budgeted project in 2013. |

| Cost | Cost Explanation |
|---|---|
| $6,000 | Estimate provided by Public Works |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 11.10 | Add control valve, PRV, and flow meter between HHPZ and TZ (from Crandell to the Police Station) | Hospital Hill Tank Zone |

**Description**

The YVRA tank project will require a PRV connection between the HHPZ and HHTZ. The primary PRV is recommended at the HHPS and is included in the YVRA tank project (item 17.1). A connection has also been considered from Crandell, along Hawthorne to the Police Station. This connection would improve system redundancy and reliability and is recommended prior to future development at Hawthorne and US 40. This PRV would function as subordinate to the HHPS PRV. This PRV (in addition to the HHPS PRV) would improve fire flow at the police station (currently adequate). This PRV and connection could alternately be funded by development. This option is currently under review by the Town. as part of the Seneca Hill Tank project.

| Priority | Priority Justification |
|---|---|
| TBD | # 1 priority if installed as part of the YVRA project, #2 or #3 priority if developer funded. |

| Cost | Cost Explanation |
|---|---|
| $190,000 | Cost is in addition to item 17.1k. 950 LF 8" PVC, 2 tie-in connections, ARV vault, pavement replacement. |

| Item No. | Improvement | Category |
|---|---|---|
| 11.11 | Install service meters | Hospital Hill Tank Zone |

**Description**

There exists approximately 5 (or more) unmetered services in the Town's system. Meter installation is recommended to account for unmetered uses. New meter installations could be completed over multiple years.

| Priority | Priority Justification |
|---|---|
| 1 | Town staff to consider priority of each service. |

| Cost | Cost Explanation |
|---|---|
| $10,000 | Based on 5 installations |

| Item No. | Improvement | Category |
|---|---|---|
| 11.12 | Replace FH at Hospital | Hospital Hill Tank Zone |

**Description**

The existing FH near the hospital is partially buried. The shut off valve cannot be located. Replace FH.

| Priority | Priority Justification |
|---|---|
| 1 | To correct existing maintenance problem and improve fire flow reliability for the hospital. If FH fails, priority should be 1. |

| Cost | Cost Explanation |
|---|---|
| $5,000 | 1 FH replacement, potential FH extension, old FH removal. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 12.1 | Interior recoating (after Airport tank is online, item 17.1) | Hospital Hill Tank |

**Description**

The HH tank was last recoated in 1992. The service life for tank coatings is generally considered to be 15-20 years. Based on recent tank inspections, the Town has been advised the tank should be recoated in the next 5 years. Currently the Town has this project budgeted for 2014. This project should be completed after the Seneca Hill (YVRA) tank is on-line.

| Priority | Priority Justification |
|---|---|
| 1 | Near end of service life and recommended in tank inspection reports |
| **Cost** | **Cost Explanation** |
| $115,000 | |

| Item No. | Improvement | Category |
|---|---|---|
| 12.2 | Add tank mixing | Hospital Hill Tank |

**Description**

Tank mixing for the HH tank will be beneficial after the airport tank is in service (item 17.1) to avoid tank stratification and freezing during periods when the YVRA tank is serving Town.

| Priority | Priority Justification |
|---|---|
| 1 | Evaluate after YVRA tank is on line as YVRA tank controls may be able to provide adequate turn over. |
| **Cost** | **Cost Explanation** |
| $50,000 | |

| Item No. | Improvement | Category |
|---|---|---|
| 12.3 | Cathodic protection | Hospital Hill Tank |

**Description**

Cathodic protection for the tank was evaluated and recommended in 1992 when the tank was last recoated. Cathodic protection was not included at that time due to budget constraints. Recommend updated evaluation as part of the next tank coating project. Installation of item 11.2 may reduce the corrosion potential for the tank.

| Priority | Priority Justification |
|---|---|
| 1 | Include with tank interior recoating project (item 12.1) |
| **Cost** | **Cost Explanation** |
| $38,000 | |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 13.1 | Controls modifications (incl in Airport tank project) | Hospital Hill Pump Station |

**Description**

Control modifications to HHPS may be beneficial to current operations (additional evaluation would be required). Control modifications will be required with the YVRA tank project and are included in item 17.1. If the YVRA tank project is not completed, analysis of the HHPS control should be considered.

| Priority | Priority Justification |
|---|---|
| 1 | Part of 17.1 |

| Cost | Cost Explanation |
|---|---|
| $0 | Included in 17.1 |

| Item No. | Improvement | Category |
|---|---|---|
| 13.2 | Replace HHPS pump #5 (jockey pump) | Hospital Hill Pump Station |

**Description**

All domestic pumps have been replaced and other than the jockey pump all pumps are anticipated to provide adequate service throught the 20 year planning period. The service life for the HHPS jockey pump is approximately 10 years. The pump was last replaced prior to November of 2005. The Town has procured a spare pump for the next replacement.

| Priority | Priority Justification |
|---|---|
| 3 | The Hospital Hill Pump Zone jockey pump will see only infrequent use following completion of the YVRA tank project (item 17.1). Priority should be raised to 2 if 17.1 is not completed. Critical equipment item, next replacement anticipated in less than 10 years. |

| Cost | Cost Explanation |
|---|---|
| $5,000 | Equipment replacement and installation could also be considered a maintenance item. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 14.1 | Construct interconnection piping between HHPZ and GMZ | Hospital Hill Pumped Zone |

**Description**

The GMPS is currently the only feed to the GMZ. The pump station is supplied by a single feed line and does not include standby power. To improve system redundancy, eliminate the need for standby power, reduce reliance on the current on-demand pump station and improve overall system circulation and water quality, the HHPZ and GMZ systems could be connected. An alignment from the end of Hayden Parkway in Dry Creek Village to Hayden Parkway in Lake Village is shown, further evaluation of connection aligments should be conducted. The project could be funded or funded in part by future development of Lake Village / Golden Meadows.

| Priority | Priority Justification |
|---|---|
| 2 | Assumes a higher priority of item 15.2. If the project is development funded, priority may be dictated by development needs. |

| Cost | Cost Explanation |
|---|---|
| $650,000 | 5200 lf 12 in PVC; refer to 2009 Water Distribution Storage Tank Study for cost; includes added allowance for item 15.1. |

| Item No. | Improvement | Category |
|---|---|---|
| 14.2 | Replace Hospital Hill distribution piping | Hospital Hill Pumped Zone |

**Description**

The distribution piping in Hospital Hill ( South Pine St, Spruce St and Crandell Ave) was installed in the early 1960s and has been in service for around 50 years. We understand maintenance of the system has been increasing and anticipate system replacement may become necessary by the end of the current 20 yr planning period. 6" existing main sizes are less than standard (8" min recommended). Currently fire flow is adequate.

| Priority | Priority Justification |
|---|---|
| 3 | By the end of the 20 yr planning period the system will be approaching 70 yrs in service. Increasing maintenance requirements suggest replacement of the system is should be planned for in the 10-20 yr period. Replacement may be completed in phases. |

| Cost | Cost Explanation |
|---|---|
| $390,000 | 2850 lf 8" PVC, 2850 lf pavement replacement, min 4 FHs |

| Item No. | Improvement | Category |
|---|---|---|
| 14.3 | Replace 4" waterline and FH for upper Walnut | Hospital Hill Pumped Zone |

**Description**

See description of system in 14.2 above. Parrallel 4" and 6" lines run along Walnut with a "back yard" connection to Spruce. Existing main sizes are less than standard (8" minimum recommended), the FH at the north end of Walnut does not have an operating shut off valve. Recommend replacement of the 4" line in Walnut and FH with a new connection to Spruce. Fire flow is unknown and anticipated to be limited.

| Priority | Priority Justification |
|---|---|
| 1 | Existing FH is not operable. Project will increase the number of operable FHs in Hospital Hill and improve fire flow. |

| Cost | Cost Explanation |
|---|---|
| $95,000 | 600 lf 8" Water Main, 1 FH, 2 tie-in connections, 350 lf gravel road replacement, 250 lf pavement replacement. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 15.1 | Control Modifications | Golden Meadows Pump Station |

**Description**

Once HHPZ / GMZ interconnection is in service (item 14.1), modifications will be needed to exercise pumps and provide circulation. We anticipate the GMPS could continue to operate and provide a significant portion of the zone's water demands. Further system modeling would be necessary.

| Priority | Priority Justification |
|---|---|
| 2 | Same as interconnection piping (item 14.1) |

| Cost | Cost Explanation |
|---|---|
| $0 | Included in 14.1. |

| Item No. | Improvement | Category |
|---|---|---|
| 15.2 | Emergency generator - domestic and fire flow (See also item 15.2.A1) | Golden Meadows Pump Station |

**Description**

Assuming 14.1 (HHPZ / GMZ) interconnection) is not completed or is a lower priority. Also refer to 15.2.A1, Emergency Generator - domestic only.

| Priority | Priority Justification |
|---|---|
| 1 | Assumes a lower priority for the water line connection between the GMZ and HHPZ (item 14.1). Installation of an emergency generator should be considered a 0-5 year priority level. |

| Cost | Cost Explanation |
|---|---|
| $80,000 | For domestic and fire pumps, 150 KW generator |

| Item No. | Improvement | Category |
|---|---|---|
| 15.3 | Replace float control valve (fill valve), move valve from confined space | Golden Meadows Pump Station |

**Description**

Install a 6" CLAVAL - pressure sustaining and fill valve

| Priority | Priority Justification |
|---|---|
| 1 | Relocate valve for better maintenance access |

| Cost | Cost Explanation |
|---|---|
| $20,000 | Based on relocating piping above the operating floor with 2 floor penetrations. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 15.4 | Replace submerged discharge piping | Golden Meadows Pump Station |

**Description**

Relocate pipe above operating floor

| Priority | Priority Justification |
|---|---|
| 2 | Relocate pipe for better maintenance access |
| **Cost** | **Cost Explanation** |
| $20,000 | 32 LF 12" pipe |

| Item No. | Improvement | Category |
|---|---|---|
| 15.5 | Remove old GMPS structure | Golden Meadows Pump Station |

**Description**

Remove old GM pump station structure and abandon connections.

| Priority | Priority Justification |
|---|---|
| 2 | Reduce future maintenance |
| **Cost** | **Cost Explanation** |
| $10,000 | |

| Item No. | Improvement | Category |
|---|---|---|
| 15.6 | GMPS jockey pump replacement | Golden Meadows Pump Station |

**Description**

The service life for the HHPS jockey pump is anticipated to be 10-15 years. The pump was last replaced in 2001. The Town has a spare pump motor in stock. The remaining pumps are understood to be in good service condition and not anticipated to require replacement in the 20 year planning period, unless the interconnection is not completed and zone demands increase (resulting from development).

| Priority | Priority Justification |
|---|---|
| 1 | Critical equipment item, next replacement anticipated in the next 5 years. |
| **Cost** | **Cost Explanation** |
| $7,000 | Pump and motor replacement. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 16.1 | Construct 0.5 MG Tank for Golden Meadows | Golden Meadows Zone |

**Description**

Recommended goal identified in the 2009 Water Distribution Storage Tank Study for the Town of Hayden. Timeframe would likely be development driven. Recommend funding by development.

| Priority | Priority Justification |
|---|---|
| | Beyond 20 year study period. Anticipated funding by development. |
| **Cost** | **Cost Explanation** |
| $2,900,000 | 2009 Water Distribution Storage Tank Study |

| Item No. | Improvement | Category |
|---|---|---|
| 16.2 | Replace GM Distribution Piping | Golden Meadows Zone |

**Description**

The distribution piping on Harvest Drive, Clover Ct, Meadowbrook Ct, High Meadow Ct, etc was installed in the late 1970s. The system will be approaching 50 years in service by the end of the 20 year planning period. The system is thought to be in good operational condition with very limited maintenance problems and has exhibited good leakage test results when tested. Based on this we anticipate the effective service life of this system will extend beyond the current 20-year planning period.

| Priority | Priority Justification |
|---|---|
| | Beyond 20 year study period |
| **Cost** | **Cost Explanation** |
| | Not included |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 17.1 | Construct 0.5 MG Airport Tank at Seneca Hill, construct south runway loop (incl items 13.1 and 17.2) | Airport Zone |

**Description**

Identified by 2009 Water Distribution Storage Tank Study (CDC) and 2012 Water Storage Tank Design Report (Drexel, Barrell & Co.). To improve water quality (reducing system detention times), stabilize pressure variations, increase fire flow, provide storage and supply redundancy to the airport service area.

| Priority | Priority Justification |
|---|---|
| 1 | Currently high priority project for the Town of Hayden and Routt County. Refer to 2009 Water Distribution Storage Tank Study for priority justification. |
| **Cost** | **Cost Explanation** |
| $2,900,000 | 2009 Water Distribution Storage Tank Study, cost updated following Drexel Barrell 10/31/12 report. Town's costs are assumed to be $1.0M. (Design in progress.) |

| Item No. | Improvement | Category |
|---|---|---|
| 17.2 | Boost chlorine residual at the airport (incl in item 17.1) | Airport Zone |

**Description**

Refer to 2009 Preliminary Engineering Report for the Airport Tank and Water System Improvements.

| Priority | Priority Justification |
|---|---|
| 1 | See item 17.1 |
| **Cost** | **Cost Explanation** |
| $0 | See item 17.1 |

| Item No. | Improvement | Category |
|---|---|---|
| 17.3 | Remove FH at Crandell / Hawthorne (RCR 37) | Airport Zone |

**Description**

Remove existing high pressure FH at the low point of the airport supply line and replace with a FH on the HH tank zone system to reduce risk of operating a high pressure hydrant and to reduce potential of draining airport supply line.

| Priority | Priority Justification |
|---|---|
| 2 | Maintenance issue as use of FH creates problems due to high pressures. Need to verify if replacement with a FH in the HH tank zone is recommended. |
| **Cost** | **Cost Explanation** |
| $5,000 | Remove and abandon existing FH. Replacement would be additional. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 17.4 | Construct bulk water station in airport zone | Airport Zone |

**Description**

Public Works has identified a potential future water use demand for a bulk water station in the airport service area. Such a station would increase system demand in the airport service area and improve system circulation. Project could be user-funded.

| Priority | Priority Justification |
|---|---|
| 2 | Use dependent |

| Cost | Cost Explanation |
|---|---|
| $95,000 | Bid prices for similar installation. |

| Item No. | Improvement | Category |
|---|---|---|
| 17.5 | Construct second 0.5 MG Tank for YVRA Zone at Seneca Hill | Airport Zone |

**Description**

To meet future development demands

| Priority | Priority Justification |
|---|---|
| | Beyond 20 year study period. Anticipate funded by development |

| Cost | Cost Explanation |
|---|---|
| $1,150,000 | Refer to 2009 Water Distribution and Storage Tank Study. Recommend updating cost after completion of 0.5 MG YVRA tank (item 17.1) |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 14.1.A.1 | Construct parallel GMPS supply line from corner at RCR53 to GMPS | Alternatives |

**Description**

This item would provide supply redundancy to the Golden Meadows Pump Station and should be considered if item 14.1 (HHPZ / GMZ interconnection) is not constructed.

| Priority | Priority Justification |
|---|---|
| 2 | Recommended if item 14.1 is not completed |
| **Cost** | **Cost Explanation** |
| $90,000 | 700 lf 8" PVC |

| Item No. | Improvement | Category |
|---|---|---|
| 14.1.A2 | Upgrade GMPS capacity (dependent on development) | Alternatives |

**Description**

In the event the HHPZ/GMZ interconnection (item 14.1) is not completed, buildout of existing platted lots may put the pump station near capacity. Further analysis is necessary to determine current reserve capacity of the pump station.

| Priority | Priority Justification |
|---|---|
| 3 | Beyond 20 year study period. |
| **Cost** | **Cost Explanation** |
| | Anticipate funding by development. |

| Item No. | Improvement | Category |
|---|---|---|
| 15.2.A1 | GMPS Emergency Generator - domestic only | Alternatives |

**Description**

GMPS does not have emergency power. Per staff, power interruptions occur 3-4 times per year. Typical interruptions are less than 30 minutes. Water service and fire protection are unavailable to Golden Meadows service users at these times. Options to provide system redundancy include a water line connection between the GMZ and HHPZ systems (item 14.1) or installation of an emergency generator. Options for an emergency generator include sizing the emergency generator for domestic only (no fire protection) or sizing to also provide fire protection pumping. The cost option presented is for an adequately sized emergency generator for domestic pumping only.

| Priority | Priority Justification |
|---|---|
| 1 | Alternate to 15.2. |
| **Cost** | **Cost Explanation** |
| $50,000 | For essential domestice pump services, 60KW generator. |

# TOWN OF HAYDEN

## Water System Capital Improvement Plan — Distribution System Improvements

| Item No. | Improvement | Category |
|---|---|---|
| 17.4.A1 | Boost chlorine at HHPS | Alternatives |

**Description**
In the event the YVRA tank is not constructed (item 17.1), chlorine could be boosted at the HHPS for the airport service area (in addition to a flushing station).

| Priority | Priority Justification |
|---|---|
| 1 | Currently unable to maintain chlorine residual in the airport service area |
| **Cost** | **Cost Explanation** |
| $65,000 | |

| Item No. | Improvement | Category |
|---|---|---|
| 17.4.A2 | Construct flushing station at Airport | Alternatives |

**Description**
In the event the YVRA tank is not constructed (item 17.1), a flushing station could be installed in the airport service area (location to be determined) to allow 10,000-15,000 gal/day wasting to reduce

| Priority | Priority Justification |
|---|---|
| 1 | To reduce residence time and improve water quality |
| **Cost** | **Cost Explanation** |
| $13,000 | Refer to item 11.5 |

| Item No. | Improvement | Category |
|---|---|---|
| 17.4.A3 | Construct check valve on airport water line | Alternatives |

**Description**
In the event the YVRA tank is not constructed (item 17.1), a check valve should be considered on the airport supply line at its lowest point to reduce transient surge impacts.

| Priority | Priority Justification |
|---|---|
| 2 | Operational improvement |
| **Cost** | **Cost Explanation** |
| $65,000 | |

# APPENDIX E

## MAJOR WATER INFRASTRUCTURE INVENTORY

## &

## DISTRIBUTION PIPE INVENTORY

# Town of Hayden
# Major Water Infrastructure Inventory

| Description | Capacity | Date Installed | Condition |
|---|---|---|---|
| Water Treatment Facility | 1.7 - 2.0 MGD | 2005 | 2005 Doubled capacity, Added Filters 3&4, added PAC feeder, added emergency generator |
| Hospital Hill Storage Tank | 1.0 MG | 1978 | Second tank needed on system. Sites include Airport - Seneca Hill and Golden Meadows. HH Tank repainted in 1992. |
| Hospital Hill Pump Station | Jockey/Domestic/HS | 1990 | Emergency Generator 1990 |
| Jockey Pump - 1 ea. | 80 GPM @ 210 TDH | 2006? | Design pt.- 1 pump - 80 gpm @ 210 TDH |
| Domestic Pumps - 2 ea. (both w/ VFDs) | 200-800gpm @ 300 TDH | 2008 | Design pt.2 pumps - 100-400 gpm @ 350 TDH |
| High Service Pumps - 2 ea. (one w/ VFD) | 2500 GPM @ 340 TDH | 1990 | Design pt.- 2 pumps - 1250 gpm @ 340 TDH, Added VFD to one High Service pump in 2008 to allow flows from 450 to 1250 gpm |
| Crandell Industrial Park PRV Vault | 15-2300 GPM | 2005 | 8" X 2" PRV STATION |
| Air Release valve vaults 3 ea. | NA | 1990 | At high points along 12" main from town to YVRA. |
| Chl. Residual Analyzer at YVRA | NA | 1990 | Not in use. Secure area. Insufficient chlorine residual to read. |
| Pressure Release Valve Vault at YVRA | 800-1800 GPM | 2004 | 4" Pressure Relief, to release surges in dead end system. |
| Golden Meadows Pump Station | 1600 GPM@252TDH | ~1985 | Needs an Emergency Generator |
| 2002 upgraded GMPS pumps and controls | 1600 GPM@252TDH | 2002 | Pumps upgraded, 3 new pumps w/VFD's replacing old pumps. |
| Potable Water Fill Station at Routt County Fairgrounds | NA | ~1985 | Key Guard system, 50 keys |

| **Town of Hayden**<br>**Water Distribution Pipe Inventory** | Pressure Zones: | | | TZ=TANK ZONE<br>HHZ = HOSPITAL HILL ZONE | | AZ=AIRPORT ZONE<br>GMZ = GOLDEN MEADOWS ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Zone or Area** | **Pipe Dia.** | **Length Feet** | **Year** | **Pipe Material** | **GV** | **FH** | **FH GV** | **FH Lateral** | **Notes and Condition of pipeline** |
| WFF SITE | TZ | 6" | 200 | 2002 | DIP | 2 | 1 | 1 | INC | HOUSE WATER AND FH LATERAL |
| WFF SITE | TZ | 12" | 152 | 2002 | DIP | 1 | 0 | NA | NA | |
| WFF TO WALNUT | TZ | 12" | 1808 | 1978 | DIP | 1 | 0 | NA | NA | GV to GV |
| WALNUT | TZ | 12" | 90 | 1978 | DIP | 1 | 0 | NA | NA | GV to GV |
| LINCOLN toJEFFERSON ON WALNUT | TZ | 12" | 410 | 1978 | DIP | 1 | 1 | 1 | 20 | GV to GV |
| JEFFERSON to -WASH ON WALNUT | TZ | 12" | 320 | 1978 | DIP | 1 | 1 | 1 | 60 | GV to GV |
| WASH TO TANK SITE | TZ | 12" | 860 | 1978 | DIP | 2 | 0 | NA | NA | GV to GV |
| HHPS SITE INLET | TZ | 12" | 145 | 1990 | DIP | 2 | 0 | NA | NA | HHPS SITE |
| HHPS SITE OUTLET | AZ | 12" | 175 | 1990 | DIP | 1 | 0 | NA | NA | HHPS SITE |
| CRANDELL | AZ | 12" | 3310 | 1990 | DIP | 2 | 5 | 5 | 156 | GV to GV |
| CRANDELL STUBS FOR V.V. | AZ | 8" | 61 | 1990 | DIP | 3 | 0 | NA | NA | STUBS for future |
| PEABODY COAL PROPERTY | AZ | 12" | 1260 | 1990 | DIP poly | 1 | 0 | NA | NA | GV @ RR FENCE TO GV @YVRA FENCE |
| AIRPORT PROPERTY | AZ | 12" | 4020 | 1990 | DIP poly | 3 | 0 | NA | NA | GV @YVRA FENCE TO 90 NORTH, 2 CAV'S & TEE |
| TERMINAL | AZ | 12" | 1600 | 1990 | DIP poly | 2 | 0 | NA | NA | TO TEE AT TERMINAL |
| FBO HANGER - GALAXY | AZ | 8" | 200 | 1990 | DIP poly | 0 | 2 | 2 | 40 | **PROBLEM - BUILDING ADDITION BUILT OVER WATER MAIN** |
| | | | | | | | | | | ONE FLUSH FIRE HYDRANT ON RAMP AT GALAXY |
| ADMIN. BLDG. | AZ | 8" | 150 | 1990 | DIP poly | 0 | 1 | 1 | 28 | |
| ADMIN. BLDG. | AZ | 12" | 500 | 2005 | DIP poly | 1 | 3 | 3 | 60 | |
| ADMIN. BLDG., | AZ | 12" | 200 | 1990 | DIP poly | 0 | 1 | 1 | 42 | |
| ADMIN. BLDG. SERVICE | AZ | 6" | 60 | 1990 | DIP poly | 1 | 0 | NA | NA | |
| NEW TERMINAL | AZ | 12" | 1000 | 2005 | DIP poly | 1 | 2 | 2 | 70 | |
| NEW TERMINAL | AZ | 8" | 400 | 2005 | DIP poly | 0 | 1 | 1 | NA | TO SINGLE FLUSH FIRE HYDRANT ON RAMP |
| FBO DRIVE ENTRANCE | AZ | 6" | NA | 2005 | DIP poly | NA | 1 | 1 | 170 | Fire Hydrant Lateral |
| YVRA LS | AZ | 8" | 300 | 1992 | DIP poly | 1 | 1 | 1 | 20 | Fire Hydrant Lateral |

| **Town of Hayden**<br>**Water Distribution Pipe Inventory** | Pressure Zones: | | | TZ=TANK ZONE<br>HHZ = HOSPITAL HILL ZONE | | AZ=AIRPORT ZONE<br>GMZ = GOLDEN MEADOWS ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Zone or Area** | **Pipe Dia.** | **Length Feet** | **Year** | **Pipe Material** | **GV** | **FH** | **FH GV** | **FH Lateral** | **Notes and Condition of pipeline** |
| GADA HANGER AREA MAIN | AZ | 12" | 5800 | 2004 | DIP poly | 9 | 5 | 5 | 175 | 5 FLUSH FIRE HYDRANTS ALONG TAXI WAY. |
| GADA HANGERS | AZ | 8" | 300 | 2005 | DIP poly | 1 | 2 | 2 | 40 | |
| AARF MAIN | AZ | 8" | 4800 | 2002 | DIP poly | 5 | 2 | 2 | 40 | 1 FLUSH FIRE HYDRANT AT END OF RUNWAY |
| AARF SERVICE to Building | AZ | 4" | 100 | 90'S | DIP poly | 1 | 0 | NA | NA | |
| AIRPORT GARAGES | AZ | 8" | 1200 | 2007 | DIP poly | 1 | 3 | 3 | 60 | |
| LINCOLN AVE WEST | TZ | 12" | 1480 | 1990 | DIP | 3 | 1 | 1 | 20 | WALNUT TO 3RD ST |
| LINCOLN AVE WEST | TZ | 12" | 1200 | 1997 | DIP poly | 2 | 0 | NA | NA | 3RD ST TO 6TH St behind merc |
| LINCOLN AVE EAST | TZ | 8" | 2960 | 1985 | PVC | 4 | 3 | 3 | 60 | WALNUT TO US40 ON SHELTON |
| WASHINGTON AVE EAST | TZ | 8" | 2570 | 1985 | PVC | 4 | 3 | 3 | 60 | WALNUT TO SHELTON |
| CHESTNUT NO & SO of US40 | TZ | 8" | 780 | 1990 | PVC | 2 | 3 | 3 | 50 | |
| CHESTNUT SO of WASH | TZ | 8" | 275 | 2007 | PVC | 1 | 1 | 1 | 20 | |
| POPLAR NO of US40 | TZ | 8" | 790 | 1990 | PVC | 3 | 2 | 2 | 40 | |
| POPLAR SO of US40 TO JACKSON | TZ | 8" | 700 | 2007 | PVC | 1 | 0 | 0 | 0 | |
| POPLAR SO of JACKSON TO FAIRGROUNDS | TZ | 8" | 700 | 2008 | PVC | 2 | 0 | 0 | 0 | |
| POPLAR SO AT SKATE PARK TO 1ST ST. | TZ | 8" | 300 | 2008 | PVC | 2 | 0 | 0 | 0 | |
| POPLAR SO 2ND TO 1ST ST. | TZ | 8" | 410 | 2008 | PVC | 2 | 0 | 0 | 0 | AT EXHIBIT HALL |
| FAIRGROUNDS | TZ | 8" | 1520 | 2002 | PVC | 2 | 5 | 5 | 100 | DEAD END |
| FAIRGROUNDS | TZ | 6" | 60 | 2002 | DIP | 2 | 0 | 0 | 0 | WATER SALES SERVICE AND ARENA SERVICE |
| 2ND NO. OF US40 | TZ | 8" | 450 | 1990 | PVC | 1 | 2 | 2 | 80 | DEAD END |
| 3RD NO & SO OF US40 | TZ | 8" | 1100 | 1990 | PVC | 2 | 2 | 2 | 40 | |
| HIGH SCHOOL FIRE SERVICE | TZ | 4" | 100 | ? | DIP | 1 | 0 | NA | NA | HIGH SCHOOL SERVICE |
| 4TH NO & SO OF US40 | TZ | 8" | 1050 | 1997 | PVC | 3 | 3 | 3 | 60 | |
| 5TH NO & SO OF US40 | TZ | 8" | 1050 | 1997 | PVC | 3 | 3 | 3 | 60 | |
| 6TH NO OF US40 | TZ | 8" | 465 | 1997 | PVC | 2 | 2 | 2 | 40 | |
| US40, 5TH TO DRY CREEK | TZ | 8" | 430 | 1979 | DIP | 2 | 1 | 1 | 20 | |
| CREEK VIEW | TZ | 8" | 630 | 2007 | PVC | 4 | 4 | 4 | 80 | CHECK FOR STUBS |
| DC XING AT US40 | TZ | 12" | 190 | 1991 | DIP poly | 0 | 0 | NA | NA | |

| **Town of Hayden**<br>**Water Distribution Pipe Inventory** | Pressure Zones: | | | TZ=TANK ZONE<br>HHZ = HOSPITAL HILL ZONE | | AZ=AIRPORT ZONE<br>GMZ = GOLDEN MEADOWS ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Zone or Area** | **Pipe Dia.** | **Length Feet** | **Year** | **Pipe Material** | **GV** | **FH** | **FH GV** | **FH Lateral** | **Notes and Condition of pipeline** |
| DC XING AT PARK | TZ | 8" | 480 | ? | DIP | 0 | 0 | NA | NA | ARV IN PARK SOUTH OF DRY CREEK |
| WASHINGTON WEST JACKSON TO 4TH ST | TZ | 8" | 1660 | 2003 | PVC | 5 | 3 | 3 | 60 | 2 FH ON WASH & 1 FH JACKSON & POPLAR |
| VOTECH IN ALLEY | TZ | 6" | 100 | 2008 | PVC | 1 | 0 | 0 | 0 | |
| VOTECH POPLAR TO ALLEY ON WASH | TZ | 8" | 150 | 2008 | PVC | 1 | 1 | 1 | 20 | |
| WASH CENTRAL POPLAR TO CHESTNUT | TZ | 8" | 390 | 2007 | PVC | 2 | 1 | 1 | 30 | |
| WASH CENTRAL CHESTNUT TO WALNUT | TZ | 8" | 330 | 2007 | PVC | 2 | 1 | 1 | 20 | |
| WAGNER CAT | TZ | 8" | 1250 | 1979? | PVC? | 0 | 1 | 1 | 20 | |
| PRECISION | TZ | 12" | 4460 | 2009 | PVC | 5 | 2 | 2 | 40 | DEAD END |
| MEADOW VIEW TP | TZ | 6" | 890 | ? | DIP | ? | 1 | ? | 20 | DEAD END |
| MEADOW VIEW TP | TZ | 6" | 2040 | ? | DIP | ? | 6 | ? | 360 | DEAD END |
| US40 EAST, WALNUT TO SHELTON | TZ | 8" | 2740 | 1987 | PVC | 4 | 7 | 7 | 140 | |
| SHELTON | TZ | 8" | 580 | 1987 | PVC | 1 | 0 | NA | NA | WASHINGTON TO ALLEY NO OF US40 |
| HAVEN (FOR POLICE STATION) | TZ | 10" | 386 | 2008 | PVC | 2 | 1 | 1 | 20 | |
| HAVEN | TZ | 6" | 381 | 1995 | DIP | 1 | 1 | 1 | 20 | |
| HAVEN | TZ | 4" | 50 | 1995 | DIP | 1 | 0 | 0 | 0 | HAVEN FIRE SERVICE |
| COMMUNITY CENTER | TZ | 8" | 381 | 2008 | PVC | 1 | 2 | 2 | 20 | |
| COMMUNITY CENTER | TZ | 4" | 80 | 2008 | DIP | 1 | 0 | 0 | 0 | FIRE SERVICE |
| POLICE STATION | TZ | 10" | 415 | 2008 | PVC | 0 | 2 | 2 | 40 | DEAD END |
| POLICE STATION | TZ | 6" | 20 | 2008 | PVC | 1 | | | 0 | FIRE SERVICE |
| PINE SO OF WASH | TZ | 4" | 230 | ? | PVC | 1 | 0 | NA | NA | |
| PINE NO OF US40 | TZ | 8" | 310 | 1987 | PVC | 2 | 0 | NA | NA | |
| SPRUCE NO OF US40 | TZ | 6" | 350 | 1987 | PVC | 2 | 0 | NA | NA | |
| SHELTON, WASH TO CRANDELL | TZ | 8" | 1370 | ? | DIP | 1 | 0 | NA | NA | TANK LINE |
| CEMETERY SERVICE | TZ | 4" | 20 | ? | DIP | 1 | 0 | NA | NA | CEMETERY SERVICE |
| CRANDELL | TZ | 8" | 1950 | ? | DIP | 0 | 0 | NA | NA | TANK LINE TO VALVE AT TANK |
| TANK | TZ | 8" | 50 | 1978 | DIP | 1 | 0 | NA | NA | TANK LINE |
| TANK TO JEFFERSON | TZ | 8" | 950 | ? | DIP | 3 | 0 | NA | NA | TANK LINE VALVE AT TANK, ARV AT HHPS, TO JEFFERSON |

| **Town of Hayden**<br>**Water Distribution Pipe Inventory** | Pressure Zones: | | | TZ=TANK ZONE<br>HHZ = HOSPITAL HILL ZONE | | AZ=AIRPORT ZONE<br>GMZ = GOLDEN MEADOWS ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Zone or Area** | **Pipe Dia.** | **Length Feet** | **Year** | **Pipe Material** | **GV** | **FH** | **FH GV** | **FH Lateral** | **Notes and Condition of pipeline** |
| HOSPITAL HILL | HHZ | 6" | 2850 | 60'S? | DIP | 2 | 1 | 1 | 20 | **LOCATION AND NUMBER OF VALVES NOT KNOWN** |
| WALNUT NO OF TANK | HHZ | 4" | 320 | 60'S? | DIP | 1 | 1 | 1 | NA | **LOCATION AND NUMBER OF VALVES NOT KNOWN** |
| VISTA VERDE TOWNHOMES | HHZ | 6" | 790 | 90'S | DIP | 1 | 0 | NA | NA | SERVICE LINE FOR VV TOWN HOMES |
| VISTA VERDE | HHZ | 8" | 2270 | 1995 | PVC | 7 | 6 | 6 | 60 | |
| CRANDELL INDUSTRIAL PARK | HHZ | 8" | 4200 | 2005 | PVC | 13 | 12 | 12 | 240 | PRV BETWEEN AZ &HHZ, 3 - 8" WATER STUBS |
| CRANDELL INDUSTRIAL PARK TO DCP | HHZ | 8" | 430 | 2007 | PVC | 2 | 0 | 0 | 0 | CRANDELL INDUSTRIAL PARK 2 STUBS TO DCP |
| DRY CREEK ROAD NORTH | HHZ | 8" | 950 | 2007 | PVC | 2 | 2 | 2 | 40 | W/STUB TO LARGE LOT |
| VISTA MONTANA ROAD | HHZ | 8" | 950 | 2007 | PVC | 2 | 1 | 1 | 20 | W/STUB TO LARGE LOT |
| HAYDEN PARKWAY | HHZ | 8" | 500 | 2007 | PVC | 3 | 0 | 0 | 0 | TO LIFT STATION |
| DRY CREEK ROAD SOUTH | HHZ | 8" | 1750 | 2007 | PVC | 4 | 6 | 6 | 120 | W/STUB TO LARGE LOT |
| 3RD ST WASH TO BBB | TZ | 8" | 1160 | 1975? | PVC | 2 | 0 | NA | NA | GOLDEN MEADOWS SUPPLY LINE |
| CLEVLAND TH | TZ | 4" | 150 | 1996 | PVC | 1 | 0 | NA | NA | BULDING SERVICE WITH INDIVIDUAL TAPS FOR UNITS |
| CLEVLAND TH | TZ | 8" | 250 | 1996 | PVC | 1 | 1 | 1 | 10 | |
| BBB | TZ | 8" | 750 | 2000 | PVC | 1 | 3 | 3 | 60 | |
| GOLDEN MEADOWS, BBB TO GMPS | TZ | 8" | 2370 | 1975? | DIP | 2 | 0 | NA | NA | GOLDEN MEADOWS SUPPLY LINE |
| HAYDEN ELEMENTARY SCHOOL | TZ | 6" | NA | 1975? | DIP | 0 | 1 | 1 | 100 | |
| HAYDEN ELEMENTARY SCHOOL | TZ | 4" | 100 | 1975? | DIP | 1 | 0 | NA | NA | BUILDING SERVICE |
| MCCARTY/PERO SUB. | TZ | 4" | 250 | 90'S | PVC | 1 | 0 | NA | NA | STUB FOR HOUSE SERVICES |
| THE MEADOWS, Paul Flood | TZ | 8" | 600 | 2004 | PVC | 3 | 2 | 2 | 40 | |
| GM ZONE HARVEST DR | GMZ | 8" | 2120 | ? | DIP | 6 | 2 | 2 | 40 | FROM GMPS WEST |
| GM ZONE CLOVER CIR | GMZ | 6" | 1560 | ? | DIP | 4 | 6 | 6 | 120 | |
| GM ZONE MEADBRK CT | GMZ | 6" | 550 | ? | DIP | 1 | 2 | 2 | 40 | |
| GM ZONE HIGH MED CT | GMZ | 6" | 460 | ? | DIP | 1 | 2 | 2 | 40 | |
| GM ZONE HARVEST DR | GMZ | 8" | 1420 | 1979 | DIP | 2 | 2 | 2 | 40 | |
| GM ZONE HARVEST DR | GMZ | 12" | 790 | 1979 | DIP | 2 | 1 | 1 | 20 | |
| GM ZONE GMTH | GMZ | 6" | 400 | 1979 | DIP | 1 | 0 | NA | NA | |

| **Town of Hayden**<br>**Water Distribution Pipe Inventory** | Pressure Zones: | | | TZ=TANK ZONE<br>HHZ = HOSPITAL HILL ZONE | | AZ=AIRPORT ZONE<br>GMZ = GOLDEN MEADOWS ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Zone or Area** | **Pipe Dia.** | **Length Feet** | **Year** | **Pipe Material** | **GV** | **FH** | **FH GV** | **FH Lateral** | **Notes and Condition of pipeline** |
| GM ZONE YVE | GMZ | 6" | 160 | 2000 | PVC | 1 | 1 | 1 | 20 | |
| GM ZONE LILAC CT | GMZ | 8" | 400 | 2002 | PVC | 1 | 1 | 1 | 20 | |
| GM ZONE HONEYSUCKLE DR | GMZ | 8" | 1000 | 2002 | PVC | 1 | 2 | 2 | 40 | |
| GM ZONE HONEYSUCKLE CT. | GMZ | 6" | 120 | 2002 | PVC | 1 | 1 | 1 | NA | |
| GM ZONE HONEYSUCKLE DR | GMZ | 8" | 1200 | 2004 | PVC | 3 | 2 | 2 | 40 | |
| GMZ CHURCH | GMZ | 6" | 475 | 1979 | DIP | 3 | 0 | NA | NA | |
| SUNFLOWER DR. SOUTH | GMZ | 8" | 250 | 2004+ | PVC | 2 | 1 | 1 | 20 | LAKE VILLAGE |
| STARLITE LN. | GMZ | 8" | 260 | 2004+ | PVC | 2 | 0 | 0 | 0 | LAKE VILLAGE |
| LITTLE BEND RD. | GMZ | 8" | 1180 | 2004+ | PVC | 3 | 4 | 4 | 80 | LAKE VILLAGE |
| LITTLE BEND CIR. | GMZ | 8" | 570 | 2004+ | PVC | 0 | 1 | 1 | 20 | LAKE VILLAGE |
| MARIPOSA DR. | GMZ | 8" | 630 | 2004+ | PVC | 1 | 3 | 3 | 60 | LAKE VILLAGE |
| HAYDEN PARKWAY | GMZ | 8" | 290 | 2004+ | PVC | 2 | 2 | 1 | 20 | LAKE VILLAGE |
| LAKEVIEW ROAD | GMZ | 8" | 2670 | 2004+ | PVC | 7 | 6 | 6 | 120 | LAKE VILLAGE |
| 1 ST FROM WASH TO DC PARK | TZ | 8" | 2730 | 2003 | PVC | 4 | 2 | 2 | 40 | GOLDEN MEADOWS SUPPLY LINE |
| 2ND ST SO OF WASH | TZ | 8" | 970 | 2006 | PVC | 1 | 2 | 2 | 40 | |
| JACKSON BET 2ND & 3RD | TZ | 8" | 350 | 2006 | PVC | 1 | 1 | 1 | 20 | |
| TOTAL | | | 111839 | | | 230 | 176 | 168 | 4071 | |
| TOTAL LENGTH PLUS FH LATERALS | | | 115910 | | | | | | | |

2013 UPDATES SHOWN SHADED

# APPENDIX F

## RECOMMENDED STUDIES AND UPDATES

**Town of Hayden**
**Water System Capital Improvement Plan**

## Water System Studies

## Water Treatment Facility Studies

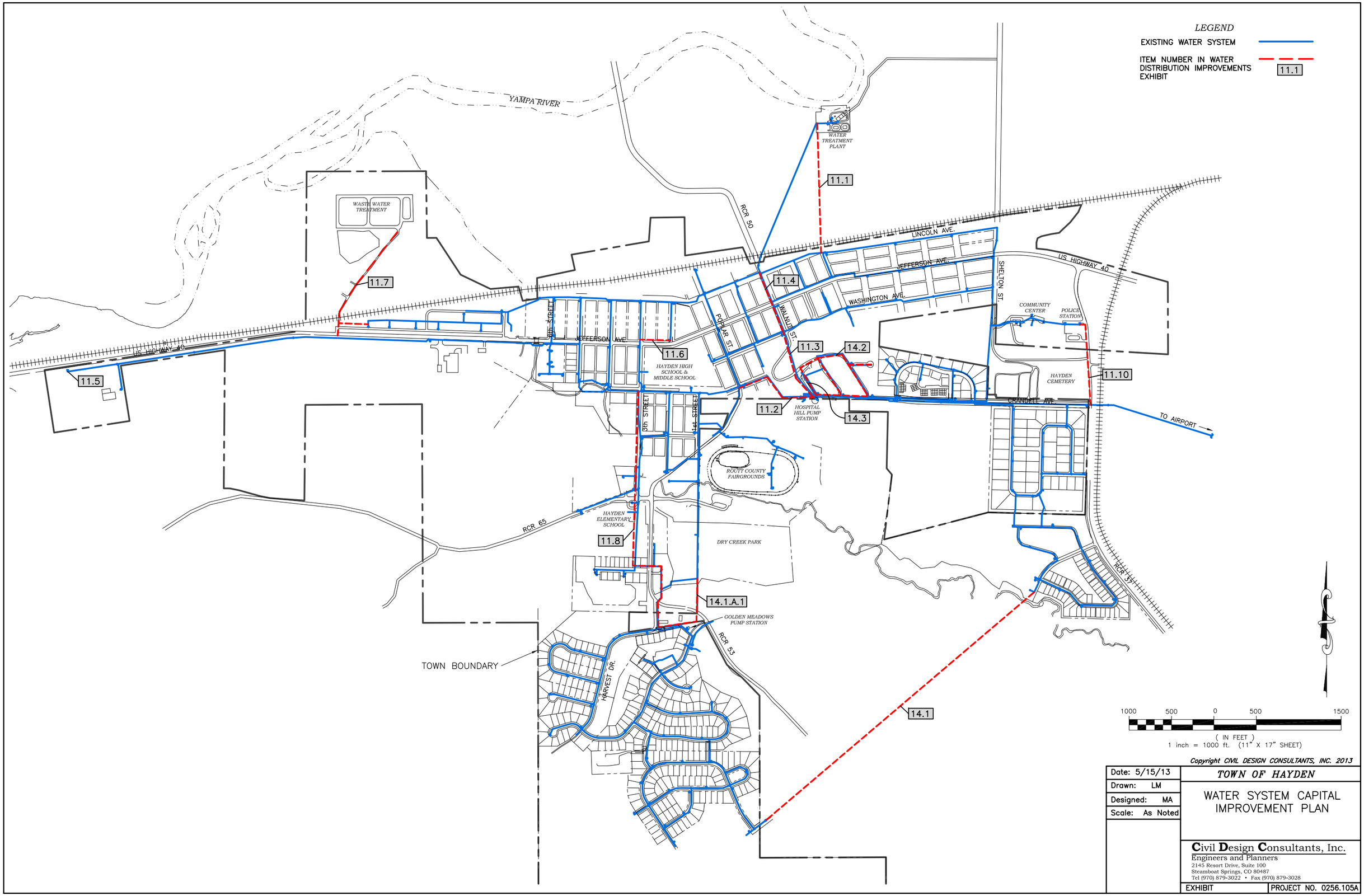
| Item # | Description | Priority |
|---|---|---|
| 20.1 | Discussions with CDPHE to determine acceptable operational stategy to maintain conventional filtration WTP classification and still allow for availability of clarifier and flocculator bypass on a temporary basis | 1 |
| 20.2 | Study to prepare recommendations for fluoride feed concentration and controls | 2 |
| 20.3 | Prepare extended simulation water model for water distribution system and determine appropriate locations for DBP monitoring | 1 |
| 20.4 | Stage II DBP compliance strategy study | 1 |
| 20.5 | Evaluate monitoring plan and recommend considerations for modifications | 1 |
| 20.6 | Jar Testing Analysis to optimize coagulant selection and dosage for DBP precursor reduction, % TOC removal, and chemical costs | 2 |
| 20.7 | Taste and Odor alternative analysis - assess PAC improvements for isolation vs. changing to alternate treatment technologies | 1 |
| 20.8 | Alternatives analysis for WTP expansion | 3 |
| 20.9 | Electrical grounding, controls programming modifications (in progress) | 1 |
| 20.10 | Treatment facility capacity evaluation - review of limiting hydraulic and process capacity and recommendations for feasible alternatives to optimize and upgrade the capacity. Consider the operational duty cycle and recommendations for SCADA upgrades to allow 24/7 operation. | 1 |
| 20.11 | Soda ash alternative analysis - recommendations for chemical feed type (liquid, solid), and location | 1 |
| 20.12 | Flash mixing optimization study. Consider two flash mixers, etc. | 2 |
| 20.13 | Flocculator study - optimize speed of VFD for performance, coordinate with the manufacturer to appropriately adjust equipment to avoid motor strain | 2 |

## Water Distribution and Pumping Studies

| Item # | Description | Priority |
|---|---|---|
| 30.1 | Develop GIS network model | 2 |
| 30.2 | GMPS Standby Power study | 1 |
| 30.3 | Record drawings last 2 water distribution replacement project | 1 |
| 30.4 | Update town mapping, add aerial topo, town plat info | 1 |
| 30.5 | Update water system model - annual / biannual infrastructure updates, 5 yrs to rev FH flow data | 1 |
| 30.6 | Water rights review | 2 |
| 30.7 | Leak detection program | 3 |

# APPENDIX G

## EXHIBITS

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| | |
|---|---|
| Date: 5/15/13 | TOWN OF HAYDEN |
| Drawn: LM | WATER SYSTEM CAPITAL IMPROVEMENT PLAN |
| Designed: MA | |
| Scale: As Noted | |

Civil Design Consultants, Inc.
Engineers and Planners
2145 Resort Drive, Suite 100
Steamboat Springs, CO 80487
Tel (970) 879-3022 • Fax (970) 879-3028

EXHIBIT | PROJECT NO. 0256.105A

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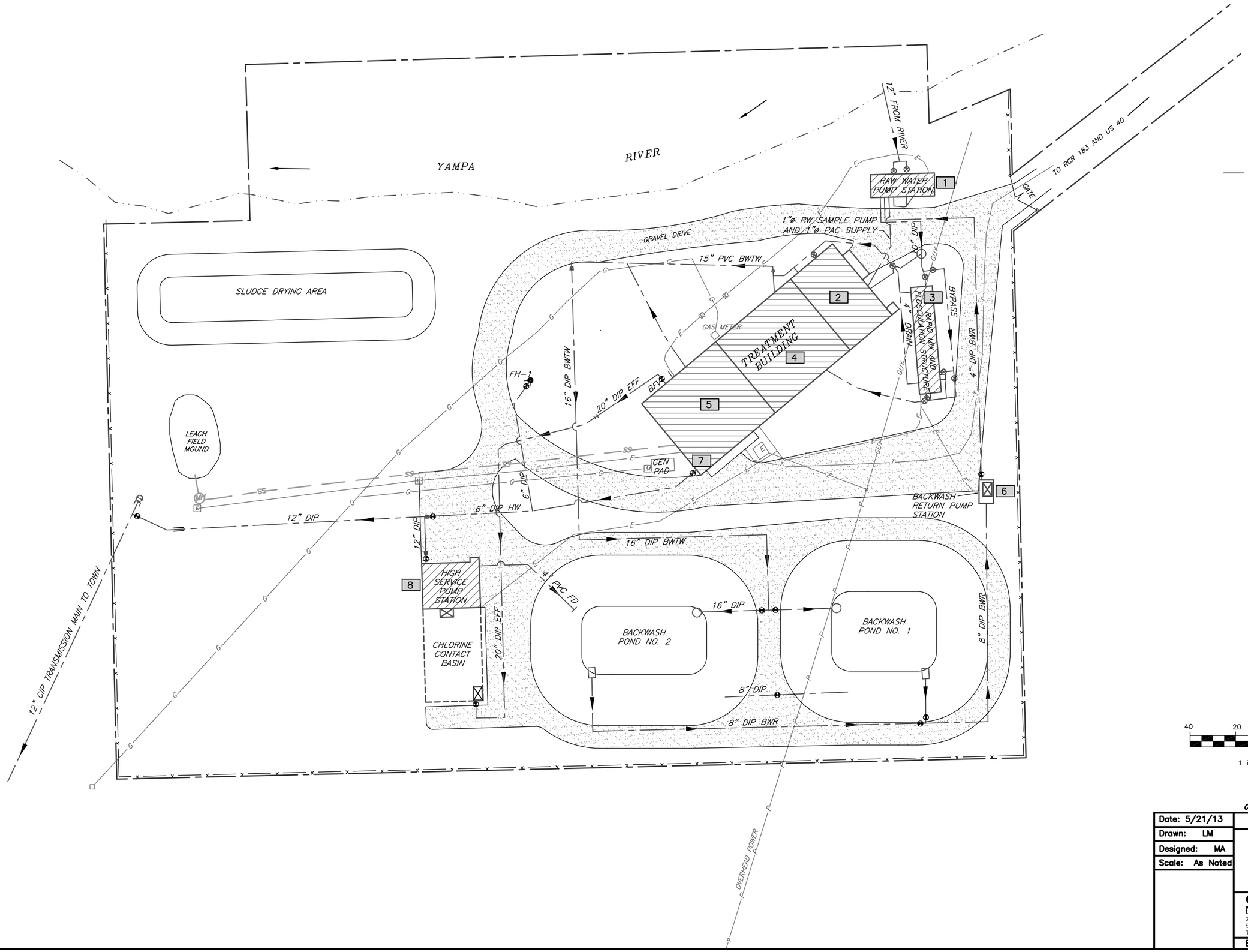


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| | |
|---|---|
| Date: 5/21/13 | TOWN OF HAYDEN |
| Drawn: LM | WATER SYSTEM CAPITAL IMPROVEMENT PLAN |
| Designed: MA | WATER TREATMENT PLANT SITE PLAN |
| Scale: As Noted | |

Civil Design Consultants, Inc.
Engineers and Planners
2145 Resort Drive, Suite 100
Steamboat Springs, CO 80487
Tel (970) 879-3022 • Fax (970) 879-3028

EXHIBIT | PROJECT NO. 0256.105A

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