APRIL 2024
PROJECT NO. 218102-007

NORTH LAKE RECREATIONAL SEWER AND WATER DISTRICT

Master Planning Study

APPROVED
By: C. Gary Carroll, P.E.
State of Idaho
Department of Environmental Quality
Date: May 28, 2024

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CHAPTER 0 - EXECUTIVE SUMMARY

This Water Master Plan study presents the findings and recommendations for the North Lake Recreational Sewer and Water District's (District) water system based on recent trends and forecasts of future demands. The Water Master Plan also documents the current condition of the facilities, identifies deficiencies, evaluates the benefits and costs of improvement alternatives, and makes recommendations for financial plans to support the improvements. The goal of this facility planning study is to create a financial plan to guide financial and operational decisions.

Keller Associates has worked with key District staff to understand the challenges currently facing each water system to develop practical, cost-effective, solutions. Keller Associates gratefully recognizes the Board of Directors, the Operations Manager, the District administrative support staff, and all others involved for their support and assistance in the completion of this study.

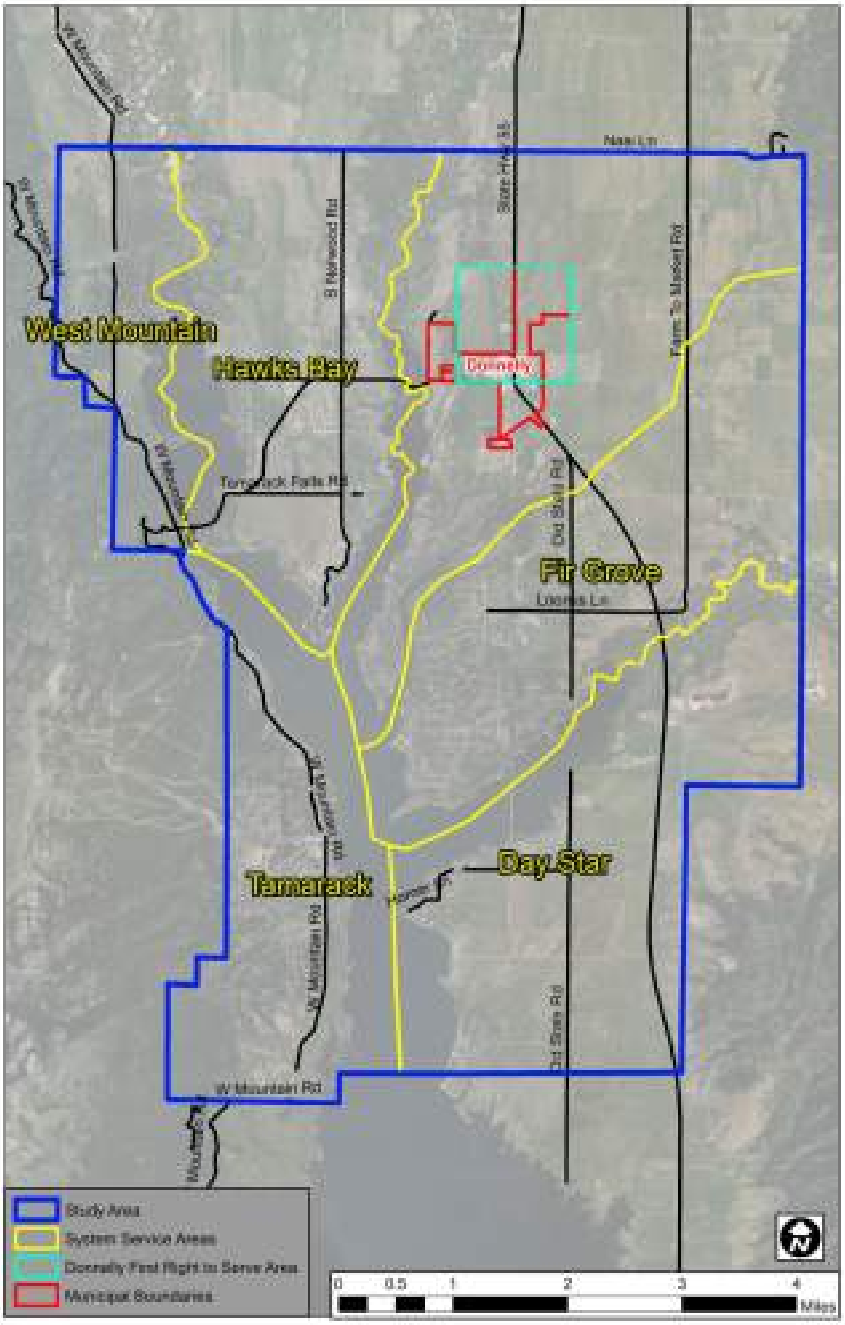
0.1. ES.1 PLANNING CRITERIA

Regulatory requirements and engineering best practices formed the basis for the evaluation in this facility planning study. Applicable regulatory requirements include IDEQ/EPA water quality standards. An in-depth discussion of planning criteria is included in Chapter 2 and Chapter 4.

- Study Area and Land Use

  The District owns and operates four separate water systems in the west central portion of Idaho, 90 miles north of Boise. The project planning boundary is shown in Figure ES-1. The planning boundary shows the overall boundary as well as individual service areas for each water system. The service area is largely recreational cabins and homesites, the majority of which are used on weekends and holidays. There is also federal, county, and state-owned land scattered throughout; some of which includes campground facilities for summer use by the general public.

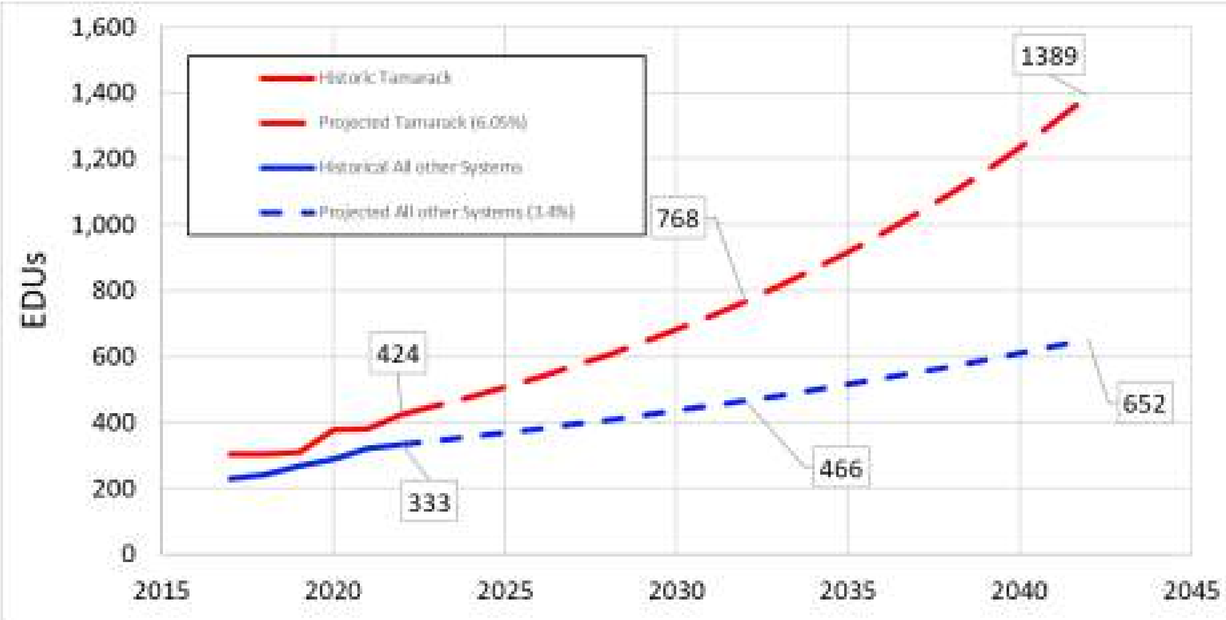
FIGURE ES-1: PLANNING BOUNDARY



➢ Population

The District has seen steady growth and is predicted to continue during the 20-year planning period. Valley County historical population data shows a growth rate of 3.4% from 2015 to 2020. This recent growth rate was assumed for the 20-year planning period for the three systems of Hawks Bay, Fir Grove, and Day Star. Growth at Tamarack was limited to the total buildout of the existing system which equates to a 6.05% growth rate. The historical number of EDUs for these systems and the projected EDUs during the planning period are shown in Figure ES-2.

FIGURE ES-2: EDU PROJECTIONS



- Planning Flows

Planning criteria flows on a per EDU basis were selected for each system using the average of the average day demand (ADD) and the maximum day demand (MDD) from the last five years. In the absence of continuous SCADA data, the MDD to peak hour demand (PHD) factors for each system were calculated using Equation 3-1 from the Washington State Water System Design Manual. The planning criteria flows are shown in Table ES-1.

TABLE ES-1: PLANNING CRITERIA FLOWS

System	Current EDU's	Committed EDU's	ADD Planning Criteria (gped)	MDD Planning Criteria (gped)	PHD Planning Criteria (gped)	PHD/MDD[2]
Hawks Bay	55	158	280	1,470	4,743	3.23
Fir Grove	111	226	270	1,550	4,362	2.81
Day Star	167	287	320	1,435	3,657	2.55
Tamarack	424	1,389	330	1,210	2,593	2.14

1. EDU = Equivalent dwelling unit; ADD = average day demand; MDD = max day demand; PHD = peak hour demand; gped = gallons per EDU per day; gpm = gallons per minute

2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)

Existing demands along with demand projections are shown in Table ES-2, Table ES-3, Table ES-4, and Table ES-5.

TABLE ES-2: HAWKS BAY PROJECTED DEMANDS

Hawks Bay Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD
			GPM	GPM	GPM
2022 Existing	55	-	11	57	182
2022 Committed	158	-	31	162	521
2042 Projected	135	-	26	138	445
Buildout Projected[3]	5,262	7.6	1,031	5,414	17,374

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area was calculated based on the growth areas and densities identified by the District.
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria was calculated using the peaking factor (MDD/ADD). PHD was assumed to be the same as MDD for commercial areas

TABLE ES-3: FIR GROVE PROJECTED DEMANDS

Fir Grove Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD[2]
			GPM	GPM	GPM
2022 Existing	111	-	21	120	337
2022 Committed	226	-	42	244	685
2042 Projected	159	-	30	172	482
Buildout Projected[3]	8,402	19.5	1,596	9,161	25,568

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area was calculated based on the growth areas and densities identified by the District.
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria was calculated using the peaking factor (MDD/ADD). PHD was assumed to be the same as MDD for commercial areas

TABLE ES-4: DAY STAR PROJECTED DEMANDS

Day Star Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD[2]
			GPM	GPM	GPM
2022 Existing	167	-	37	167	425
2022 Committed	287	-	64	287	729
2042 Projected	358	-	80	357	910
Buildout Projected[3]	9,373	0.0	2,083	9,341	23,804

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD w as calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.w a.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area w as calculated based on the grow th areas and densities identified by the District.
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria w as calculated using the peaking factor (MDD/ADD). PHD w as assumed to be the same as MDD for commercial areas
6. Data w as missing during portions Oct-Dec, an accurate ADD cannot be calculated.

TABLE ES-5: TAMARACK PROJECTED DEMANDS

Tamarack Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD
			GPM	GPM	GPM
2022 Existing	424	-	97	357	764
2022 Committed	1,389	-	318	1,168	2,502
2042 Projected[3]	1,389	-	318	1,168	2,502
Buildout Projected[3]	1,389	-	318	1,168	2,502

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD w as calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.w a.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The "Committed", "2042 Projected", and "Buildout" EDU's are all equal as the District is committed to serve all of the buildout that is projected to occur at Tamarack in the next 20 years.

Additional Planning Criteria that were used for the purposes of this study are summarized in Table ES-6. Note that the residential available fire flow planning criteria is 1,500 gpm for two hours. The rural residential requirement from the local fire authority is 1,125 gpm for two hours. For dead-end waterline areas that can meet the 1,125 gpm local requirement, but not the 1,500 gpm planning criteria, no improvements were recommended.

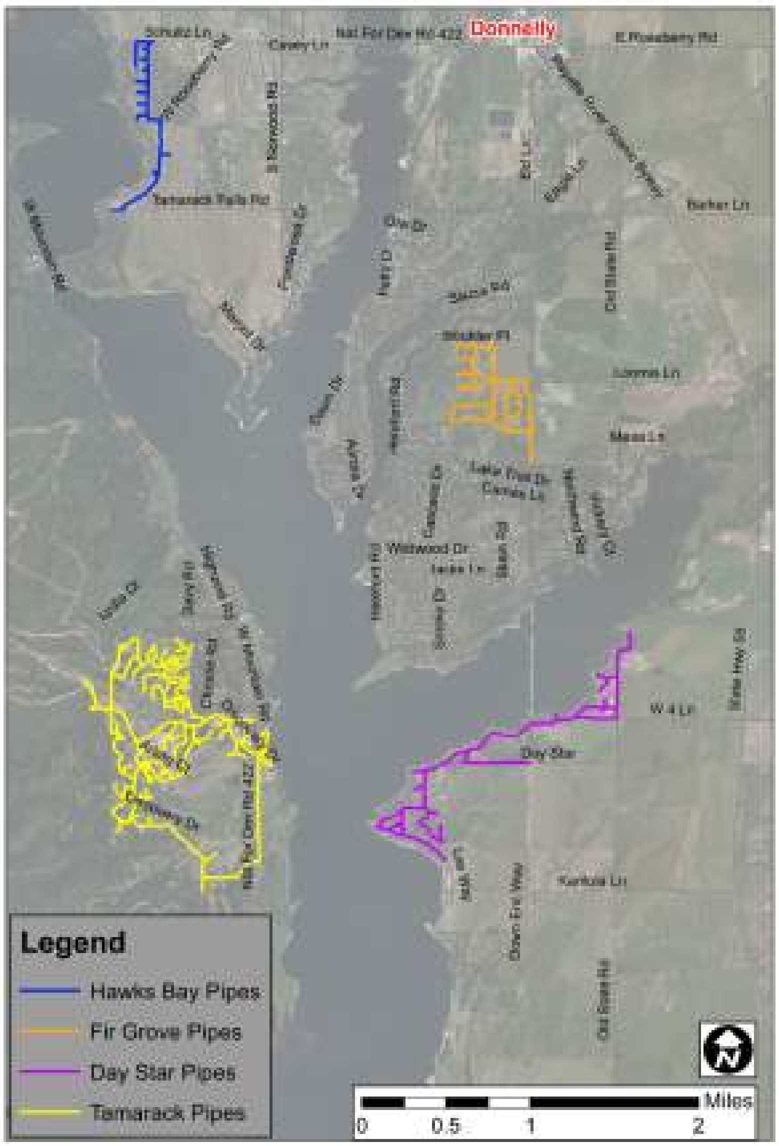
TABLE ES-6: ADDITIONAL PLANNING CRITERIA

Fire Flow Requirements	
Residential	1,500 gpm for 2 hours
Commercial	2,500 gpm for 2 hours
Tamarack Commercial	3,000 gpm for 4 hours
Pressure Requirements	
Fire Flow	20 psi
Peak Hour Demand	40 psi
Max Overall Pressure	80 psi
Main Line Max Pressure	100 psi
Storage Planning Requirements	
Operational & Peaking Storage	25% of MDD
Emergency Storage	8 hours of ADD
Nest Fire & Emergency Storage?	No
Allow Wells with Standby Power to Offset Emergency Storage in Existing Storage Facilities?	Yes
Redundancy Requirements	
Power Outage	System to deliver ADD + Fire
Largest Pump Offline	System to deliver PHD System to deliver MDD + Fire
Pipe Velocity Criteria	
Max velocity under PHD conditions	10 fps
Max velocity under MDD + FF conditions	15 fps

0.2. ES.2 EXISTING SYSTEM ASSESSMENT

All four water systems were code compliant at the time of construction. As upgrades to the water systems occur, the water systems will be brough into compliance with the current IDAPA Code. The District owns and operates four potable water systems which serve a total of 757 equivalent dwelling units (EDUs) or approximately 2,100 people. The water systems are Hawks Bay, Fir Grove, Day Star, and Tamarack. They consist of eight wells, one storage tank, various pressure zones and almost 25 miles of distribution pipeline. The Districts facilities are in good condition with only minor O&M issues that need to be addressed (see Chapter 3). Figure ES-3 shows each of the District's water systems.

FIGURE ES-3: OVERALL SYSTEMS MAP



- Water Quality

The four water systems operated by NLRSWD are mainly free from any major water quality concerns. No system has had any violations other than monitoring violations in the last four years. This is not to say these containments do not exist, but they have not exceeded allowable limits.

The District recently received reports from multiple users of yellow tinted water in their fixtures in the Tamarack system. The color is due to iron and manganese in the water – both secondary aesthetic water quality parameters. Keller is currently working closely with the District to reduce the iron and manganese in the finished drinking water. A sampling plan has been developed by Keller and provided to the District.

- Water Rights

Table ES-7 summarizes the water rights for each of the District's systems and compares it to the system's existing MDD or PHD, and the larger of the existing committed or 2042 projected MDD/PHD. Each system has adequate water rights for existing demands. The Day Star and Tamarack system fall slightly short of meeting the future demands.

TABLE ES-7: WATER RIGHT ANALYSIS

System	Water Right No.	Use	Diversion Rate (cfs)	Diversion Rate (gpm)	Existing MDD / PHD[2] (gpm)	Future[2,3] MDD / PHD	Future Surplus / (Deficit) (gpm)
Day Star	65-22358	Municipal	1.85	830	425	910	(80)
Fir Grove	65-22882	Municipal	4.12	1,849	337	685	1,164
Hawks Bay	65-22889	Municipal	1.01	453			
Hawks Bay	65-22971	Municipal	0.94	422			
Hawks Bay	Total	Municipal	1.95	875	182	521	354
Tamarack	65-23812	Municipal	2.49	1,118	357	1,168	(50)

1. cfs = cubic feet per second; gpm = gallons per minute; MDD = max day demand; PHD = peak hour demand
2. Day Star, Fir Grove, and Hawks Bay water rights are compared to the system's PHD; Tamarack is compared to its MDD as it has storage.
3. The Future demand is the larger of the current committed demand or the 2042 projected demand.

- Water Supply

Table ES-8 summarizes the supply analysis that was completed for each of the District's systems and compares it to the system's existing MDD+FF or PHD, and the larger of the existing committed or 2042 projected MDD/PHD. The Hawks Bay, Fir Grove, and Day Star systems all suffer from insufficient firm supply with existing and future demands. Adding additional supply and storage is recommended for these systems. The Tamarack system shows a firm supply capacity exceeding existing and future demands. However, this takes into account Well #5, an emergency backup well that is normally used for irrigation and snow making. The Tamarack development is currently constructing a new well (Well #12) that will be provided to the District for potable water purposes. This well is needed immediately to provide existing firm capacity with wells solely dedicated to the potable system.

TABLE ES-8: SUPPLY ANALYSIS SUMMARY

System	Existing (gpm) Surplus/(Deficit)	Future (gpm) Surplus/(Deficit)
Hawks Bay[1]	(1,372)	(1,604)
Fir Grove[2]	(1,164)	(1,365)
Day Star[3]	(1,117)	(1,237)
Tamarack[4]	747	636

1. Future deficit is based on current commitments and Tamarack Falls Development
2. Future deficit is based on current commitments and the Timber Creek Development
3. Future deficit is based on 2042 demands
4. Includes capacity from emergency backup Well #5. Well #12 is needed now to provide firm capacity excluding Well #5.

- Water Storage

Table ES-9 summarizes the storage analysis that was completed for each of the District's systems. The analysis evaluated the current storage (if any) against the peaking and operational, emergency, and fire flow storage that is needed at each system. The Hawks Bay, Fir Grove, and Day Star systems lack storage, and it is recommended to add storage tanks of at least 350k gallons. The Tamarack system has adequate storage to meet existing demands but not future demands. The deficit can be negated by the addition of standby power at the wells. Additional storage for the Tamarack system is not recommended.

TABLE ES-9: STORAGE ANALYSIS SUMMARY

System	Existing (gal) Surplus/ (Deficit)	Future (gal) Surplus/ (Deficit)
Hawks Bay[1]	(207,000)	(312,000)
Fir Grove[2]	(235,000)	(323,000)
Day Star[3]	(259,000)	(348,000)
Tamarack[4]	325,000	33,000

1. Future deficit is based on current commitments and Tamarack Falls Development
2. Future deficit is based on current commitments and the Timber Creek Development
3. Future deficit is based on 2042 demands
4. Calculated with the emergency storage being offset by standby power at the wells in the future.

- Existing System Hydraulic Model Analysis

New hydraulic models were created and calibrated for this study using record drawings and Districts Staff's knowledge of the system. Hawks Bay, Fir Grove, and Day Star all calibrated well. The Tamarack system did not calibrate as well as the others due to a lack of knowledge of the PRV settings. Settings for the PRVs were recommended by Keller and were used in this study. It's recommended that the District have the PRVs serviced and settings adjusted, if needed.

The Hawks Bay, Fir Grove, and Day Star systems were all evaluated with existing demands during the MDD+FF and PHD scenarios. All three systems are either not able to supply adequate pressures and/or hit their HGLs during the PHD scenario at firm capacity (largest source off). Likewise, none of the three systems can satisfy either the fire flow planning criteria and/or the County requirement at firm capacity. It is recommended to add additional supply and delivery capacity and to loop several dead-end lines in the distribution system.

The Tamarack system was also evaluated with existing demands during the MDD+FF and PHD scenarios. It was able to supply adequate pressures during the PHD scenario. Many nodes were in excess of 80 psi which is typical for this terrain. The continued use of individual PRVs at services is still recommended. The system is also capable of supplying adequate fire flow to satisfy the planning criteria for all but three nodes. These nodes are served by undersized lines and are recommended to be upsized.

0.3. ES.3 ALTERNATIVES

For the three smaller systems (Hawks Bay, Fir Grove, and Day Star) three alternatives each were evaluated to correct the existing supply, delivery, and storage deficiencies. The alternatives for each system are as follows:

- Hawks Bay:

1. Construct two new groundwater wells.
2. Construct one new well, a storage tank, and a booster station.
3. Upgrade Well #1 and construct a new tank and booster station. (Existing wells feed tank)

An analysis of the three alternatives was completed including cost analysis and a pro's vs. con's list. It was determined that Alternative 2 would be the selected alternative. Alternative 3 struggles hydraulicly to provide adequate fire flows and Alternative 1 does not solve the storage deficiency.

- Fir Grove:

1. Construct two new groundwater wells.
2. Construct one new well, a storage tank, and a booster station.
3. Construct a new tank and booster station on the existing well lot. (Existing wells feed tank)

An analysis of the three alternatives was completed including cost analysis and a pro's vs. con's list. It was determined that Alternative 2 would be the selected alternative. Alternative 3 is not optimal as the District does not own the land needed, and Alternative 1 does not solve the storage deficiency.

- Day Star:

1. Construct two new groundwater wells.
2. Construct one new well, a storage tank, and a booster station.
3. Construct a new tank and booster station. (Existing wells feed tank)

An analysis of the three alternatives was completed including cost analysis and a pro's/con's list. It was determined that Alternative 2 would be the selected alternative. Alternative 3 struggles to provide sufficient fire flows to the entire system, and Alternative 1 does not solve the storage deficiency.

No other alternatives were evaluated as the remaining recommended projects are straight forward and only have one viable option for fixing the deficiencies (i.e., adding a generator, or upsizing a pipe).

0.4. ES.4 FUTURE SYSTEM ASSESSMENT

The existing hydraulic models were updated with the selected alternatives, recommended CIPs, and several new developments that are either already annexed or are currently working towards annexation into the District. The larger of the committed or 2042 projected demands were loaded into the model as well as any additional demands from new developments. The systems were all evaluated at firm capacity during the MDD+FF and PHD scenarios. The systems were able to deliver adequate pressures and hit their desired setpoints during the PHD scenario.

Similarly, the systems were able to deliver adequate fire flow during the MDD+FF scenario. Various dead-end lines fall short of the 1,500 gpm planning criteria requirement but meet the County's 1,125 gpm requirement. No recommendations for improvements were made in these locations.

0.5. ES.5 CAPITAL IMPROVEMENT PLAN

The summary of recommended system improvements and opinion of probable costs are shown in Table ES-10.

TABLE ES-10: CAPITAL IMPROVEMENT PLAN

Project ID#	Project Name	Primary Purpose	Total Estimated Cost (2023 Dollars)
Priority 1 Improvements (Prior to 5 Years)			
1.1	Tamarack Well #12	Correct Existing Supply Deficit	$2,640,000
1.2	Fir Grove Generator Addition	Provide Standby Power at Supply	$350,000
1.3	Day Star Generator Addition	Provide Standby Power at Supply	$350,000
1.4	Tamarack Generator Addition	Provide Standby Power at Supply	$700,000
1.5	District Water Scada Project	Data Information Collection and Tracking	$1,380,000
		Total Priority 1 Improvements (rounded)	**$5,420,000**
Priority 2 Improvements (Prior to 20 Years)			
2.1	Well Lots Fencing Project	Source Water Protection	$550,000
		Total Priority 2 Improvements (rounded)	**$550,000**
Priority 3 Improvements (Prior to 20 Years)			
3.1	Tamarack Osprey Meadow Lodge Waterline Replacement	Correct Existing Commercial Fire Flow Deficiencies	$610,000
3.2	Day Star Homer Lane Loop	Correct Existing Residential Fire Flow Deficiencies	$690,000
3.3	Day Star Lee Way Loop	Correct Existing Residential Fire Flow Deficiencies	$360,000
3.4	Tamarack Pinnacle Court Waterline Replacement	Correct Existing Residential Fire Flow Deficiencies	$130,000
		Total Priority 3 Improvements (rounded)	**$1,790,000**
Priority 4 Improvements (Development Driven)			
4.1	Hawks Bay Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$9,280,000
4.2	Day Star Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,400,000
4.3	Fir Grove Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,780,000
		Total Priority 4 Improvements (rounded)	**$26,460,000**
		TOTAL SYSTEM IMPROVEMENTS COSTS (rounded)	**$34,220,000**

1. The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

2. Federal funding requirements (i.e. AIS) were not included in costs and if this type of funding is utilized it is recommended cost estimates be revisited.

0.6. ES.6 IMPLEMENTATION PLAN

The District Board of Directors will determine the implementation timeline and funding options for the upgrades.

CHAPTER 1 - INTRODUCTION

North Lake Recreational Sewer and Water District (NLRSWD or District) has contracted with Keller Associates, Inc. (Keller) to update their Water Master Plan (WMP) that was previously completed in 2007. This chapter provides an introduction to the water master planning process, outlining the purpose and need of this plan.

1.1. PURPOSE AND NEED

This report was commissioned by NLRSWD in an effort to assess the current state of their four water systems (Hawks Bay, Fir Grove, Day Star, and Tamarack) and to plan for future needs. Master planning is an important task for a public water system as it assists in reassessing needs and priorities, properly allocates budgets to address system deficiencies, and establishes a plan for future growth. It is generally recommended to update a water plan every 5-7 years depending on the system's growth rate. This study is funded by the NLRSWD with additional funding from DEQ.

1.2. REPORT ORGANIZATION

This study was developed to meet the requirements of the DEQ water facility planning checklist. The report organization consists of the following:

- Chapter 1 – Introduction
- Chapter 2 – Study Area: Identifies the project planning area and environmental resources present that may be impacted by recommended improvements.
- Chapter 3 – Existing Water System: Provides an inventory of the existing water system including supply, distribution, storage, treatment, and controls.
- Chapter 4 – Project Planning: Establishing planning time periods, historical and projected growth, historical water usage, projected water usage, and regulatory evaluation criteria.
- Chapter 5 – Supply, Deliver, and Storage Analysis: Evaluation of the existing supply, delivery, and storage against the existing and future water demands.
- Chapter 6 – Existing System Hydraulic Model Analysis: Evaluation of the existing distribution systems including an analysis of operating system pressures and available fire flow under existing water demands.
- Chapter 7 – Alternative Analysis: Evaluation of alternatives to address deficiencies identified in the supply, delivery, storage, and hydraulic model evaluations.
- Chapter 8 – Future System Hydraulic Model Analysis: Evaluation of the future distribution system with the selected alternatives in place and establishes future buildout pipe network size and location.
- Chapter 9 – Capital Improvement Plan: Establishes prioritization criteria to rank selected improvements, provides cost estimates for selected improvements, discusses schedule for priority 1 improvements, and discusses financial implications of the selected alternatives.

1.3. PROJECT DESCRIPTION

This planning study evaluates the existing system and 20-year study periods. It consists of an inventory of the existing system, establishing planning/evaluation criteria, existing system evaluation, future system evaluation, water quality evaluation, alternatives analysis, and capital improvement plan. These components provide the District with a plan for accommodating the planned growth and how to improve their existing system. NLRSWD has operated each system for nearly twenty years and has proven to have the experience, technical ability, organizations, and facilities to carry out improvement projects as needed. NLRSWD will often employ a third-party Civil Engineer (typically Keller Associates) to provide these various roles in projects.

1.4. COMMUNITY ENGAGEMENT

The District plans to conduct a town hall meeting as part of the community engagement requirement of the project following the approval of the Water Master Plan. A town hall meeting will be made open to the public to help the community develop an understanding of the need for the project, the utility operational service levels required, and the funding and revenue strategies used to complete the project. No special efforts are anticipated to be required for low-income, minority, or limited English proficiency residents of the community.

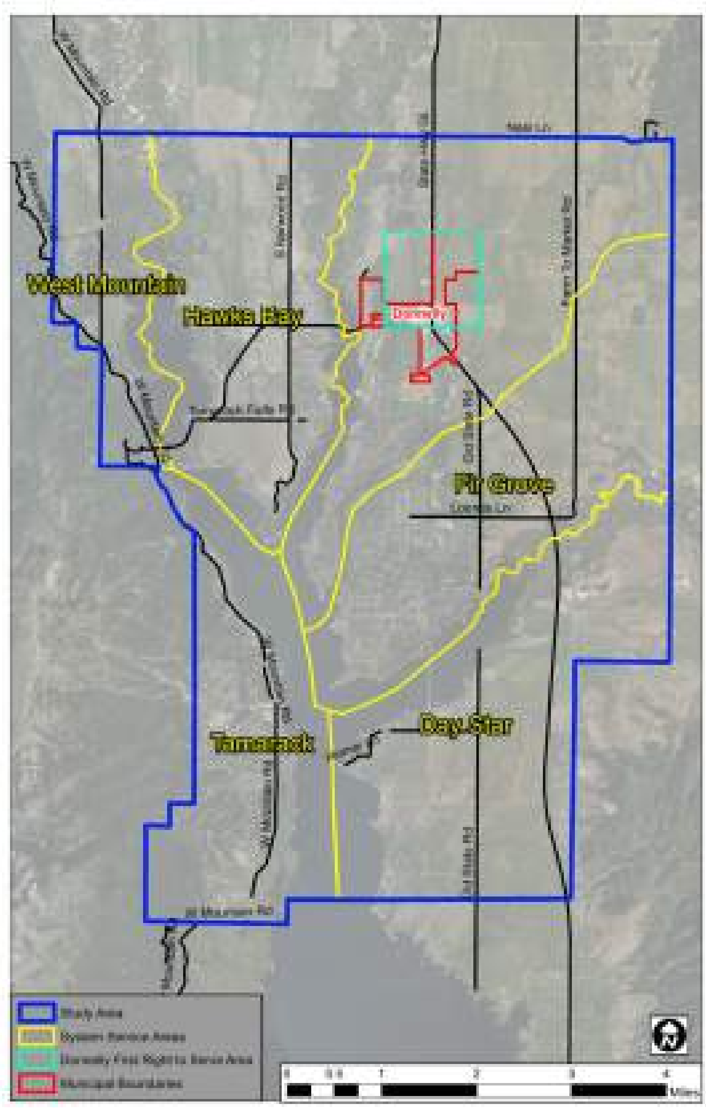
CHAPTER 2 - PLANNING BOUNDARY

This chapter provides the location of the project and defines the project planning boundary. Planning efforts will focus within the planning boundary only. This chapter also provides a summary of environmental resources present within the planning boundary.

2.1. LOCATION & PLANNING BOUNDARY

The District owns and operates four separate water systems in the west central portion of Idaho, 90 miles north of Boise. The project planning boundary is shown in Figure 2-1. The planning boundary shows the overall boundary as well as individual service areas for each water system. The service area is largely recreational cabins and homesites, the majority of which are used on weekends and holidays. There is also federal, county, and state-owned land scattered throughout; some of which includes campground facilities for summer use by the general public.

FIGURE 2-1: PLANNING BOUNDARY



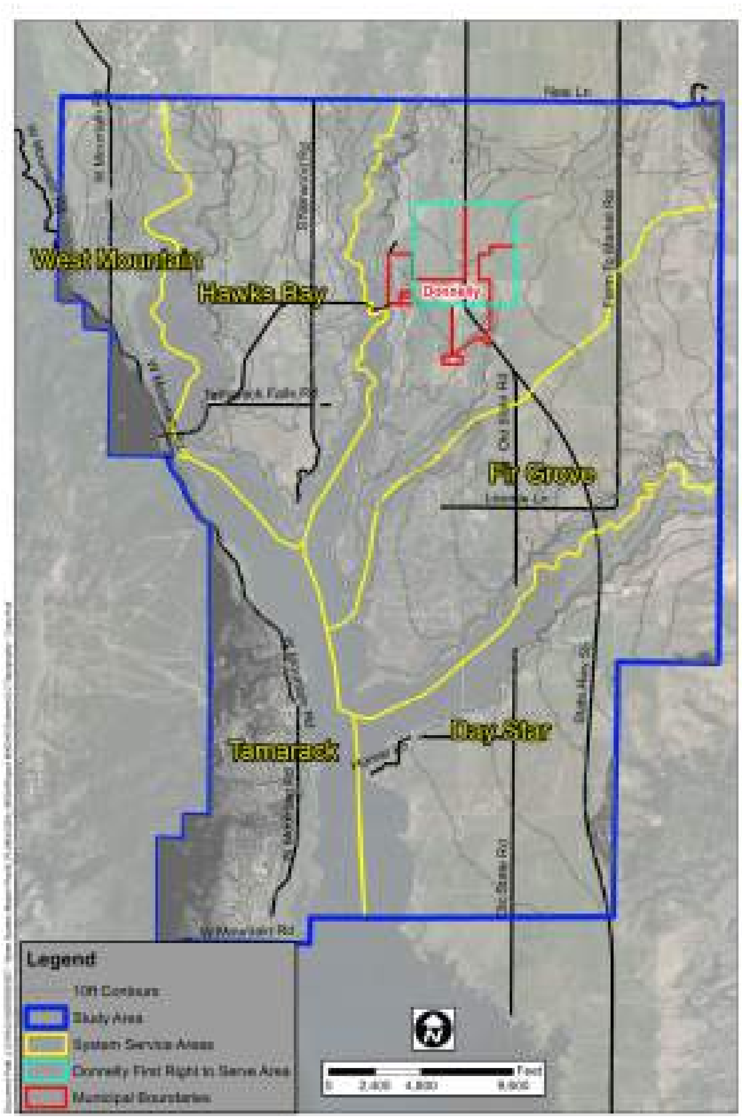
2.2. ENVIRONMENTAL RESOURCES PRESENT

The Water Master Plan is a planning effort with no physical construction of infrastructure or change of operation and maintenance procedures, but recommends infrastructure and operation improvements that may have environmental impacts. The environmental impact of the recommended improvements is briefly discussed throughout this report but does not represent a full environmental analysis for any of the recommended projects. A majority of the recommended projects are located within existing roadways, previously developed land, or District owned land. This section presents a summary of the environmental features within the planning boundary.

2.2.1. Physiography, Topography, Geology, & Soils

Lake Cascade and the City of Donnelly lie within the Long Valley of Valley County, Idaho at the base of the Payette National Forest. Elevations on the north end of Lake Cascade range from 4,800 to 5,000 feet, while the adjacent glaciated mountains rise above 7,000 feet.

FIGURE 2-2: TOPOGRAPHY



The project area lies within the Idaho Batholith. The majority of the soil is granitic, and the developed areas around the reservoir lie generally on sloping alluvium and glacial outwash. The soils through the northern Lake Cascade areas have considerable variability in grain size, texture, and depth. In general, soils on the northerly end of the reservoir near Donnelly consist of sandy loam topsoil reaching up to approximately 24 inches deep, underlain by loamy coarse granitic sand to a depth of 10 feet or more. The sand deposits at about 10-12 feet exhibit a fairly high percentage of silts and clay which tend to lower the permeability of these soils, resulting in perched groundwater.

2.2.2. Surface & Groundwater Hydrology

The primary surface water source for this area is from Lake Cascade which lies between the 4 service areas. Lake Cascade is located on the North Fork of the Payette River. Several major tributaries (Lake Fork Creek, Gold Fork River, Boulder Creek, and Willow Creek) enter from the northeast. The North Fork of the Payette and its major tributaries flow through Long Valley, north of the reservoir. Poor drainage and high-water tables are prevalent along the west shoreline and in smaller areas where the terrain is essentially flat with poorly draining soils or at elevations below the high-water line.

Groundwater throughout much of the planning boundary, particularly on level ground, is very near to the ground surface. Many areas, especially on the northeasterly side of the lake, have perched water tables at or above the ground surface during early spring.

NLRSWD is not over a sole source aquifer according to EPA’s sole source aquifers tool and map (see Figure 2-3) The sole source aquifer closest to NLRSWD is the Eastern Snake River Plain Aquifer.

FIGURE 2-3: SOLE SOURCE AQUIFER

2.2.3. Fauna, Flora, & Natural Communities

Species documented in Valley County near Donnelly that are listed as threatened, and candidate species by U.S. Fish and Wildlife Service (USFWS) as of March 3, 2022, are listed below:

- Threatened: Northern Idaho Ground Squirrel, Bull Trout, Canada Lynx
- Candidate: Monarch Butterfly

Undisturbed areas could be present in the planning boundary where habitats may exist, although there are no critical habitats defined within the planning boundary, as indicated using the USFWS planning and consulting tool (see Appendix B).

2.2.4. Housing, Industrial, and Commercial Development

Land use within the planning boundary includes public and private timbered areas, agricultural and grazing lands, campgrounds, church retreats, cabins, year-round homesites and trailer homes. The Tamarack Resort is a four-season resort that provides recreation and attracts tourism year-round. The residential home sites are generally clustered around the reservoir. Tourism and recreation are the major attractions that draw people to the county. Industrial facilities within the areas are confined to propane suppliers, and commercial facilities are tailored to recreation and tourism, such as motels, grocery stores, gas stations, shops, and restaurants.

2.2.5. Cultural Resources (Historical & Archaeological)

The National Park Service's National Register of Historic Places lists the Jacob and Herman Mahala Homestead and the Jacob Maki Homestead as historical resources near the service areas. However, these sites do not overlap with the service areas. No archaeological sites are listed for the planning area.

2.2.6. Utility Use

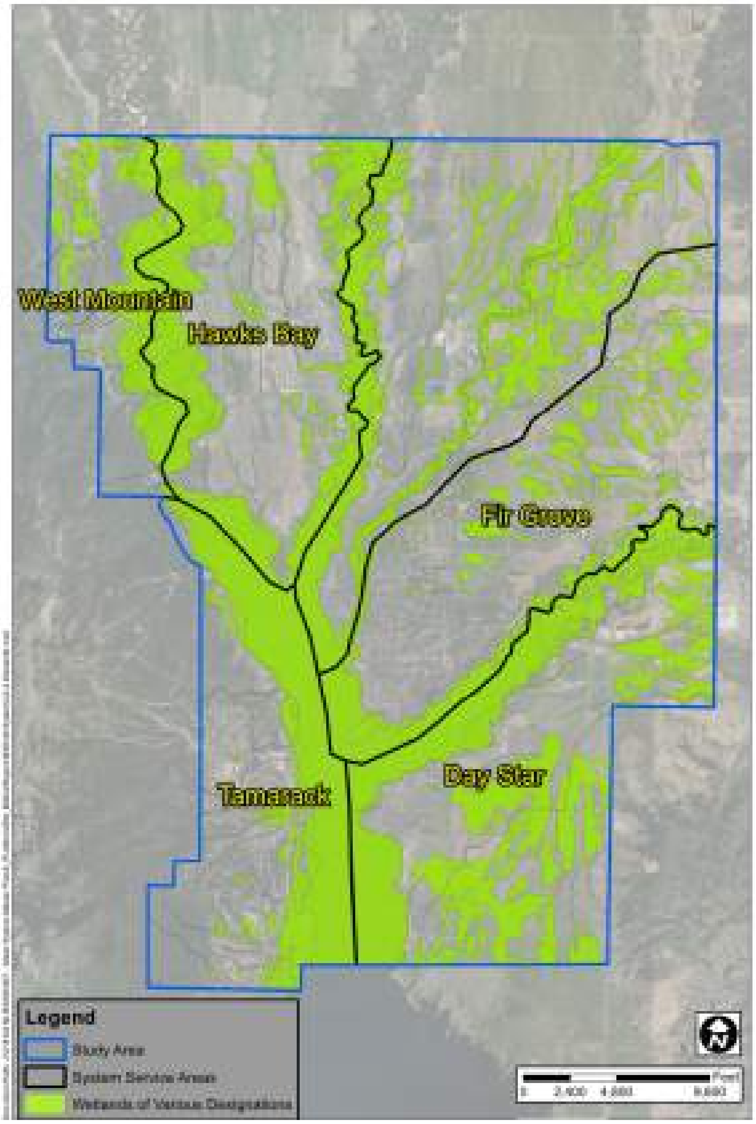
Based on current data, the annual average daily water demand in 2021 for all 4 systems was between 280-330 gallons per EDU per day (gped). NLRSWD is unique in that it varies greatly in population from season to season due to there being a high percentage of non-primary residence summer homes in the District. This causes there to be an even greater disparity between summer and winter flows. Average summer demands are approximately 5 to 12 times higher than average winter demands, driven primarily by irrigation and population movements. Peak hour water demands were estimated to be approximately 2.14 to 3.23 times the peak day demand. Water usage is discussed further in later chapters.

2.2.7. Floodplains & Wetlands

There are several mapped floodplains within the four service areas namely resulting from the flows of the North fork of the Payette River, Lake fork, and the Goldfork river. Although these floodplains exist, they are relatively small in nature and only exist within 20-100ft of existing river channels. For digitized flood plains visit (https://maps.idwr.idaho.gov/agol/idahofloodhazard/).

The National Wetlands Inventory through the USFWS provides geographic information system (GIS) data outlining surface waters and wetlands. Multiple locations within the service areas are classified as wetlands. These areas are generally adjacent to bodies of water and are not likely to be developed in the future. However, any projects that involve disturbances to jurisdictional wetlands, a formal consultation with the U.S Army Corps of Engineers, the Idaho Department of Water Resources, and the Idaho Department of Lands will be required to obtain nationwide 404 permits for stream crossings or wetland alteration. Figure 2-4 shows these wetlands with respect to the planning boundary.

FIGURE 2-4: WETLANDS



2.2.8. Wild & Scenic Rivers

There are no wild and scenic rivers within the planning boundary. Figure 2-5 shows wild and scenic rivers within Idaho with respect to NLRSWD.

FIGURE 2-5: WILD AND SCENIC RIVERS WITHIN IDAHO

2.2.9. Public Health & Water Quality

NLRSWD has a public drinking water system that provides potable water to the residents and businesses in the District. The Districts water is treated with chlorine before being pumped throughout the distribution system. The proposed improvements should not pose a threat to the existing groundwater quality. Best management practices should be employed during construction activities, which should also protect surface water quality in the Payette River, Cascade Lake, and other surface water bodies.

2.2.10. Prime Agricultural Farmlands

The land in and around the four service areas is not classified as prime farmland, but as “farmland of statewide importance, if irrigated” by the NRCS (https://websoilsurvey.nrcs.usda.gov/). The District has historically discouraged “leapfrog” development. Future development is expected to occur close to the existing system but could eventually involve development of farmland of statewide importance. Most improvements would likely be located within areas previously disturbed by development. In some cases, future pipelines may be constructed within easements through unimproved or agricultural lands.

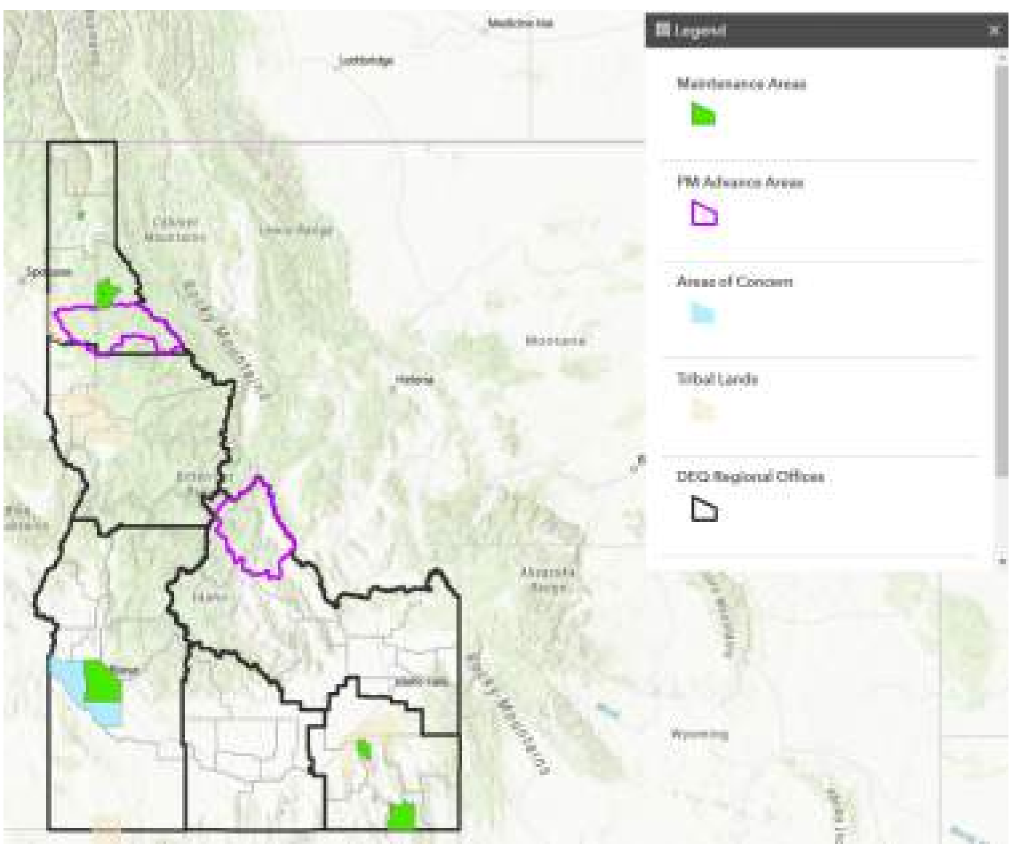
2.2.11. Precipitation, Temperature, and Prevailing Winds

The nearest complete climate summary is for McCall (1905 through 2016), which shows average minimum temperatures ranging from 10.6°F to 44.2°F and average maximum temperatures ranging from 30.3°F to 81°F. Over this same period, the total annual precipitation averaged 26.19 inches with a snowfall average of 134.2 inches. The wettest month is January; the driest month is July. Snowfalls can be heavy, with short growing seasons. Snowmelt in the spring results in large volumes of runoff and results in standing water in many of the flatter areas. Based on Western Regional Climate Center wind data, the prevailing wind direction is southeast at an average wind speed of nearly 9 mph. Mean wind speeds range from 6.3 to 9.9 mph. However, winds can vary according to the season.

2.2.12. Air Quality & Noise

Idaho is among the states that have delegated authority from EPA to issue air quality permits and enforce air quality regulations. DEQ's air protection efforts are intended to ensure compliance with federal and state health-based air quality regulations. The Clean Air Act of 1970 identified six common air pollutants of concern, called "criteria pollutants." These criteria pollutants are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Fugitive dust is also closely regulated as it contributes to particulate matter. DEQ monitors air quality and publishes air quality information. Lake Cascade or the City of Donnelly is not in an area of concern, Class I area, or non-attainment area. Additionally, no noise issues have been identified for the area. A map of areas with sensitive air quality is shown in Figure 2-6.

FIGURE 2-6: IDAHO AIR QUALITY PRIORITY AREAS



2.2.13. Energy Production and Consumption

The District does not produce any energy. Energy use by the water distribution systems is comprised primarily of pumping from wells and dosing pumps for disinfection.

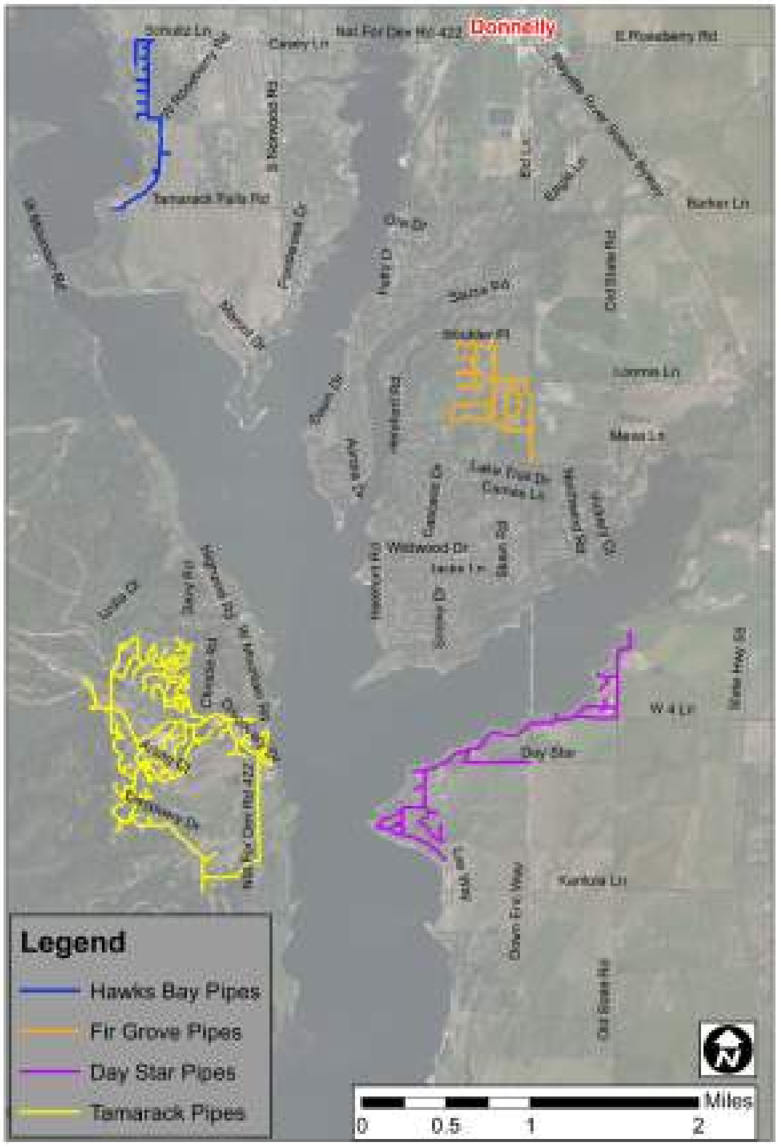
2.2.14. Socioeconomic Profile

Major employers in the area are state and local government, farming, logging, mining, and related services. Tourism and recreation are the major attractions that draw people to the region. With periodic increases in utility rates and future development, the District will be able to continue funding proposed improvements. There are no low-income or disadvantaged groups that will be adversely impacted; conversely, such groups would benefit from the improved water system. Historical and projected populations are presented later in this report.

CHAPTER 3 - EXISTING WATER SYSTEM

The District owns and operates four potable water systems that serve a total of 757 equivalent dwelling units (EDUs), or approximately 2,100 people. The water systems are Hawks Bay, Fir Grove, Day Star, and Tamarack. They consist of eight wells, one storage tank, various pressure zones, and almost 25 miles of distribution pipeline. This chapter provides an inventory of the existing water system components. Facilities are summarized per water system. A figure of all the District's water systems is illustrated in Figure 3-1. Individual system maps and descriptions follow.

FIGURE 3-1: OVERALL SYSTEMS MAP



3.1. SYSTEMS MAPS

3.1.1. Hawks Bay System

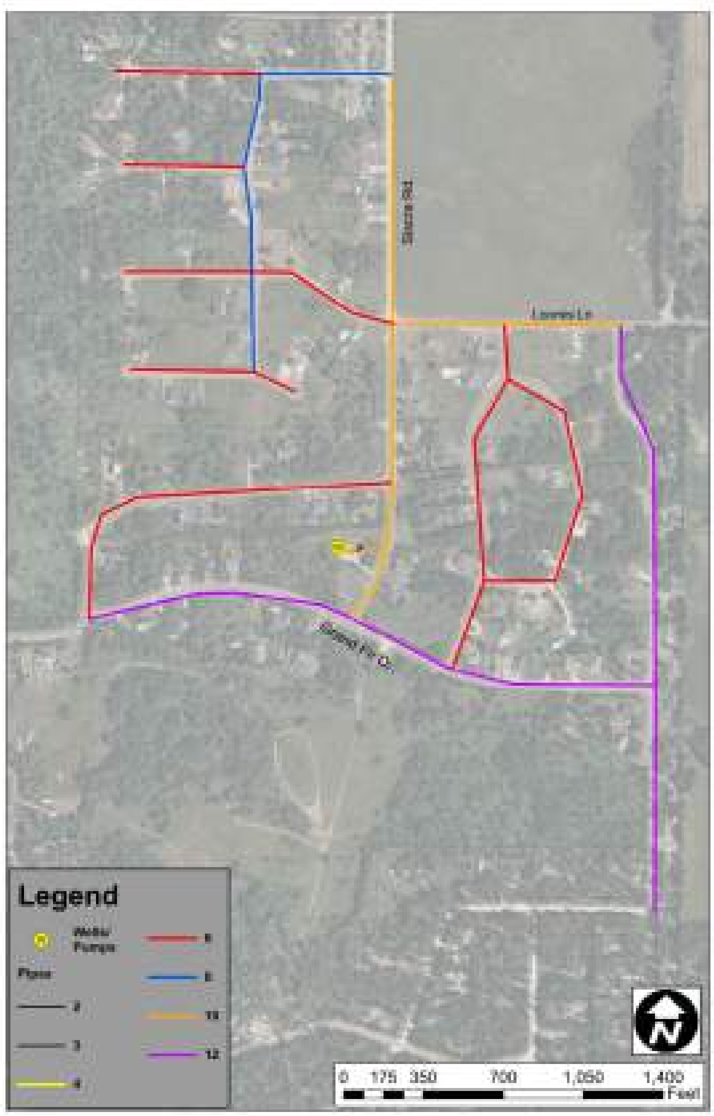
The existing system as shown below in Figure 3-2 was constructed in 2005 and 2006 and has not undergone any major updates since the original construction. This system currently services 55 EDU's and has a total of 158 committed EDU's (includes existing). Updates to pumps and other equipment have been performed periodically as needed. The general pipe size is 12-inch and 10-inch main lines with 8-inch lines servicing the cul-de-sacs in the north half of the system. The system is supplied by two wells and one 300-gal pressure tank located at the pump house facility on Hawks Bay Road. The pump house is a CMU structure with a steel roof that was constructed in 2006. The main domestic well, or Well #1, is located inside of the building. The fire well, or Well #2, is located approximately 40' to the West of Well #1 outside of the pump house. The pump house also has a permanent backup diesel generator.

FIGURE 3-2: HAWKS BAY BASE MAP

3.1.2. Fir Grove System

The existing system, as shown in Figure 3-3, was constructed in 2004 and 2005 and has not undergone any major updates since the original construction. Updates to pumps and other equipment have been performed periodically as needed. The Fir Grove System is located on the north side of Cascade Lake near the crossroads of Siscra Road and Loomis Lane. The system currently services 111 EDUs and has a total of 226 committed EDU's (includes existing). The general pipe size is 12-inch and 10-inch main lines with 8-inch and 6-inch lines servicing the areas off the main lines. The system is supplied by two wells and three 528-gal pressure tanks located at the pump house facility on Siscra Road. The pump house is a CMU structure with a steel roof that was constructed in 2005. Both the domestic well and fire well are located outside of the building and protected/marked by three steel bollards each.

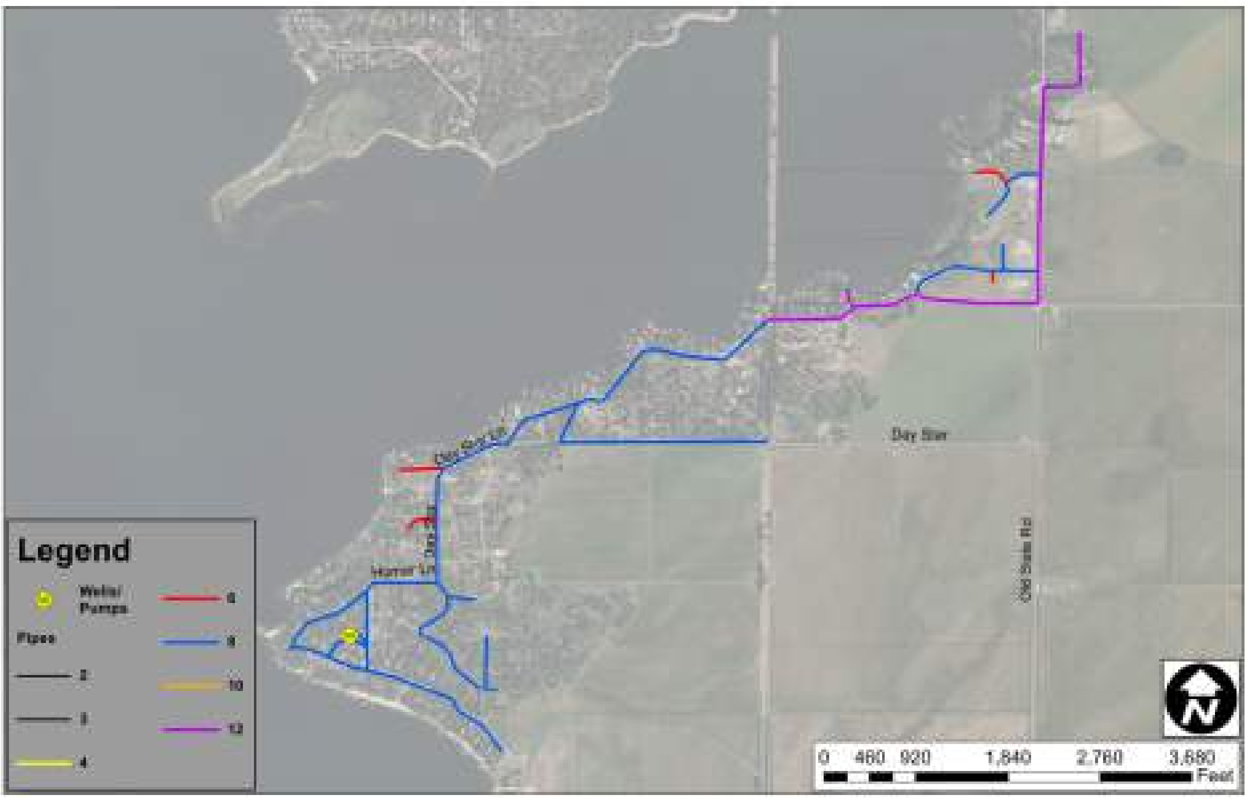
FIGURE 3-3: FIR GROVE BASE MAP



3.1.3. Day Star System

The existing system is shown in Figure 3-4. The majority of the west half of this system was constructed in 2001 and 2002. Additions that now make up the eastern half of the system came in 2008, 2018, and 2021. Updates to pumps and other equipment have been performed periodically as needed. This system is located on the northeast side of Cascade Lake to the west of the crossroads Homer Lane and Old State Road. The system currently services 167 EDUs and has a total of 287 committed EDU's (includes existing). The general pipe size is mainly 8-inch main lines with some 12-inch main lines in the northern half of the system. Waterlines into smaller cul-de-sacs are typically 6-inch in size. The system is supplied by two wells and three 300-gal pressure tanks located at the pump house facility on Beverly Road. The pump house is a wood framed structure with a steel roof and siding that was constructed in 2002. Both the domestic well and fire well are located outside of the building and are marked with vertical blue pipes.

FIGURE 3-4: DAY STAR BASE MAP

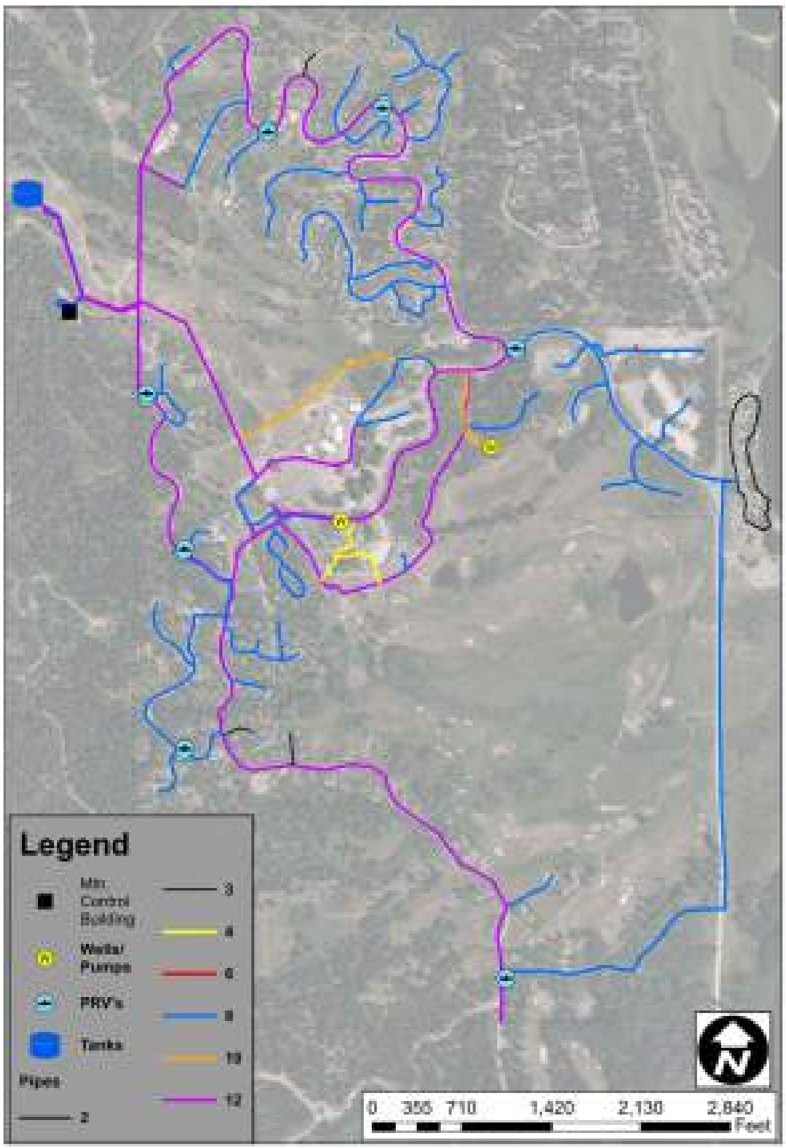


3.1.4. Tamarack System

The majority of the existing system, as shown in Figure 3-5, was constructed in 2003 and 2004. There have been several minor updates since the original construction that mainly have to do with the commercial side of the resort. Updates to pumps and other equipment have been performed periodically as needed. The Tamarack system is located on the west side of Cascade Lake and is centered around the Tamarack Ski Resort. This is the largest of the District's four systems and the only system that currently operates with a storage tank. The system currently services 424 EDUs with a total of 1,389 committed EDU's (includes existing). The general size for main lines is 12-inch with 8-inch lines servicing areas off the main lines. The system is supplied by two wells (Wells #4 & #7).

The wells pump into a common 12-inch transmission line that pumps water up the mountain to the Mountain Control Building. Water treatment occurs in the Mountain Control Building consisting of pH adjustment, and chlorine disinfection. The treatment occurs under pressure and the water continues up the mountain to fill the 1.25-million-gallon (MG) tank at the top of the system. The system is gravity fed from the tank. Several pressure reducing valves (PRVs) break head periodically to avoid excessive system pressures. Well #4 is the smaller of the two wells and is located near the Arling Center; this well typically cannot meet system demands during the summer. Well #7 is the larger, more reliable well and usually supplies the higher demands in the summer. Well #7 is located on Rocky Pine Court near Well #6 (an irrigation well). Both wells are submersible wells with their accompanying infrastructure located in subsurface concrete vaults with stainless steel doors.

FIGURE 3-5: TAMARACK BASE MAP



3.2. SYSTEM CLASSIFICATION AND LICENSURE

The current Distribution System Classification on file with DEQ for all four systems is Very Small Water System (VSWS) and the current Treatment Classifications is Treatment Class 1 (DWT1). Current IDEQ records state each system's Distribution Classification as "Not Applicable". Since North Lake's operators are over all four systems a Class 1 distribution and treatment license is required. Current operators and their licenses are shown in Table 3-1.

TABLE 3-1: OPERATOR LICENSES

License Type	Individual	License Number	Designation
Class 1 Distribution	Joseph Bedford	DWD1-25688	Responsible Charge Operator
Class 1 Distribution	-	-	-
Class 1 Treatment	Joseph Bedford	DWT1-26013	Responsible Charge Operator
Class 1 Treatment	Job Burton	DWT1-26781	Secondary Operator

3.3. SUPPLY AND TREATMENT

This section summarizes the systems' supply, treatment, and briefly discusses the existing water quality monitoring.

3.3.1. Supply

Table 3-2 summarizes the various sources that serve the four systems. The capacities are the results of pump testing that occurred during this study. Tamarack Well #4's capacity is based on a pump curve from a new pump that was installed after testing occurred. NLRSWD is in the process of acquiring another well for the Tamarack system (Well #12); this well is not included in the summary as the well has yet to be constructed completely. A more detailed evaluation of treatment is included later in this report.

TABLE 3-2: WATER SUPPLY/TREATMENT SUMMARY

Water Supply Summary					
System/Well	Capacity (gpm)	Location	Construction Year	Treatment	Backup Power
Hawks Bay					
Well #1 (Domestic)	185	In Well House	2005	Chlorination	Generator
Well #2 (Fire)	1,082	In Well House	2005	Chlorination	Generator
Fir Grove					
Well #1 (Domestic)	456	Outside Well House	2004	Chlorination	None
Well #2 (Fire)	1,283	Outside Well House	2004	Chlorination	None
Day Star					
Well #1 (Domestic)	600	Outside Well House	2001	Chlorination	Temporary Generator
Well #2 (Fire)	550	Outside Well House	2001	Chlorination	Temporary Generator
Tamarack					
Well #4	300	Near The Arling Center	2003	Chlorination & PH adjustment	None (Has storage that can gravity feed to distribution system)
Well #7	804	Rocky Pine Ct.	2003	Chlorination & PH adjustment	None (Has storage that can gravity feed to distribution system)

3.3.2. Existing water quality and Monitoring

The Safe Drinking Water Act establishes standards for drinking water quality in an effort to ensure public health. These standards limit concentrations of primary contaminants that pose a risk to life and health, such as total coliform, nitrates, and arsenic; and are monitored by the United States Environmental Protection Agency (EPA) and DEQ. In planning for municipal water systems, sufficient elimination of these regulated contaminants is the chief concern, requiring regular testing and reporting. Other contaminants are sometimes found in water systems as well, referred to as nuisance or secondary contaminants. These include constituents such as hydrogen sulfide, ammonia, iron, and manganese. Where applicable, contaminants have been compared to the National Secondary Drinking Water Regulations as set by the EPA. These non-enforceable guidelines regulate aesthetic water quality parameters.

The four water systems operated by NLRSWD are mainly free from any major water quality concerns. Consumer confidence reports for all four systems as well as suggested sampling schedules are included in Appendix C for reference. Table 3-3 is a summary of the contaminants that were found to be in violation of the maximum contaminant level (MCL) limits in the last 1-4 years. No system has had any violations other than monitoring violations in the last 4 years. This is not to say these containments do not exist, but they have not exceeded allowable limits. (See the CCR sampling reports in the appendix for a more detailed breakdown of these contaminants)

TABLE 3-3: WATER QUALITY VIOLATION SUMMARY

Water Quality Violation Summary				
System/Well	**Date**	**Contaminant**	**Detected Level**	**In Violation?**
Hawks Bay				
System	4/1/2022	E. Coli	-	Monitoring Violation
Well #1 (Domestic)	None			
Well #2 (Fire)	None			
Fir Grove				
System	1/1/2014	IOCS	-	Monitoring Violation
System	4/1/2022	E. Coli	-	Monitoring Violation
Well #1 (Domestic)	None			
Well #2 (Fire)	None			
Day Star				
System	4/1/2022	E. Coli	-	Monitoring Violation
Well #1 (Domestic)	None			
Well #2 (Fire)	None			
Tamarack				
Well #4	1/1/2020	SOCS-Group	-	Monitoring Violation
Well #4	1/1/2017	VOCS- Group	-	Monitoring Violation
Well #7	None			

3.3.3. Tamarack Existing water treatment

Tamarack's water system is currently supplied by Wells #4 and #7, with Well #5 maintained only as an emergency backup due to aesthetic issues. Well #4 is a small well that is mainly used in winter while Well #7 is a large well that supplies water during high demand months in summer. Well #4 is under maintenance due to pump issues in 2023, so Well #7 is currently supplying water all year round.

Prior to water from Well #7 (and Well #4 when it is operating) entering the 1.25 MG tank, soda ash and free chlorine solutions stored in a treatment building are dosed into the water for chlorination and pH adjustment. Treated water then continues on into the tank where it flows downhill to the distribution system.

The District recently received reports from multiple users of yellow tinted water in their fixtures (Figure 3-6). The yellow tinted water is a result of iron and manganese in the water. Iron and manganese can be a nuisance in a water supply since they can cause the water to be discolored which can result in stained plumbing fixtures and laundry. Neither iron nor manganese are regulated under the Safe Drinking Water Act, but the U.S. EPA does have a lifetime health advisory for manganese of 0.3 milligrams per liter (mg/l).

Keller is currently working closely with the District to reduce the iron and manganese in the finished drinking water. A sampling plan has been developed by Keller and provided to the District. The first round of samples showed that both iron and manganese were present in the water and are likely the cause the yellow tinted water, see Table 3-4.

3.3.4. Water Treatment Options

Iron and manganese can be effectively removed from water using a number of treatment processes depending on both the form and concentration of the metals.

- Polyphosphate Addition

  Since most iron and manganese are soluble, polyphosphate treatment could be an effective method. With this method, the iron and manganese ions are surrounded or "sequestered" by phosphate in a complex molecule that is soluble in water. However, polyphosphates are not stable at high temperatures. The polyphosphates will release iron and manganese in the heat as they break down. The released iron and manganese will then react with oxygen and precipitate.

- Oxidation

  Oxidation (e.g., increase chlorine dose, use permanganate or hydrogen peroxide) is effective in removing iron and manganese by converting them into stable and insoluble solids. Preliminary bench test showed that hydrogen peroxide cleared up the yellow tinted tap water in 30 mins.

More testing is underway to find an optimal solution to mitigate the color issue.

FIGURE 3-6: YELLOW TINTED WATER FROM THE LODGE IN TAMARACK RESORT

TABLE 3-4: IRON AND MANGANESE CONCENTRATION IN TAP WATER OF TAMARACK

Date	Location	Water Faucet, Cold or Hot side	Parameter, mg/L			
			Dissolved Iron	Total Iron	Dissolved Manganese	Total Manganese
4/24/2023	Well No.7	N/A	0.74	1.11	0.075	0.075
	Treatment Building	N/A	1.14	1.49	0.035	0.066
	433 Sugarloaf Pl	Cold	0.97	1.05	0.028	0.049
		Hot	0.45	2.74	0.023	0.152
	Security Building	Cold	1	1.05	0.029	0.054
		Hot	0.85	0.95	0.022	0.044
	The Lodge in Tamarack Resort	Cold	0.96	1.05	0.029	0.054
		Hot	0.14	0.46	0.008	0.032

1. The Secondary Maximum Contaminant Level (MCL) for iron is 0.3 mg/L
2. The Secondary MCL for manganese is 0.05 mg/L

3.3.5. Cross-Connection Control Program

A cross connection control program for the Districts water systems was completed in 2006 and outlines several areas in which the District prevents cross connection and contamination of their systems. This includes inspections, monitoring, backflow installation and testing as well as other various prevention techniques to protect water quality. For more details on this program see Appendix C.

3.4. PRESSURE ZONES

Pressure zones are areas in the distribution system that have the same hydraulic grade line (HGL) or energy, consisting predominately of potential energy based on the ground elevation plus the water pressure in the system. The HGL within a pressure zone is typically controlled by boundaries in the distribution system. Examples of pressure zone boundaries include closed valves, water storage tanks, booster pumps, and control valves such as pressure reducing valves (PRVs) or pressure sustaining valves (PSVs).

The three smaller systems of Hawks Bay, Fir Grove and Day Star each consist of a single pressure zone due to their flat topography and relatively small size. See Table 3-5.

TABLE 3-5: HAWKS BAY, FIR GROVE, AND DAY STAR HGL

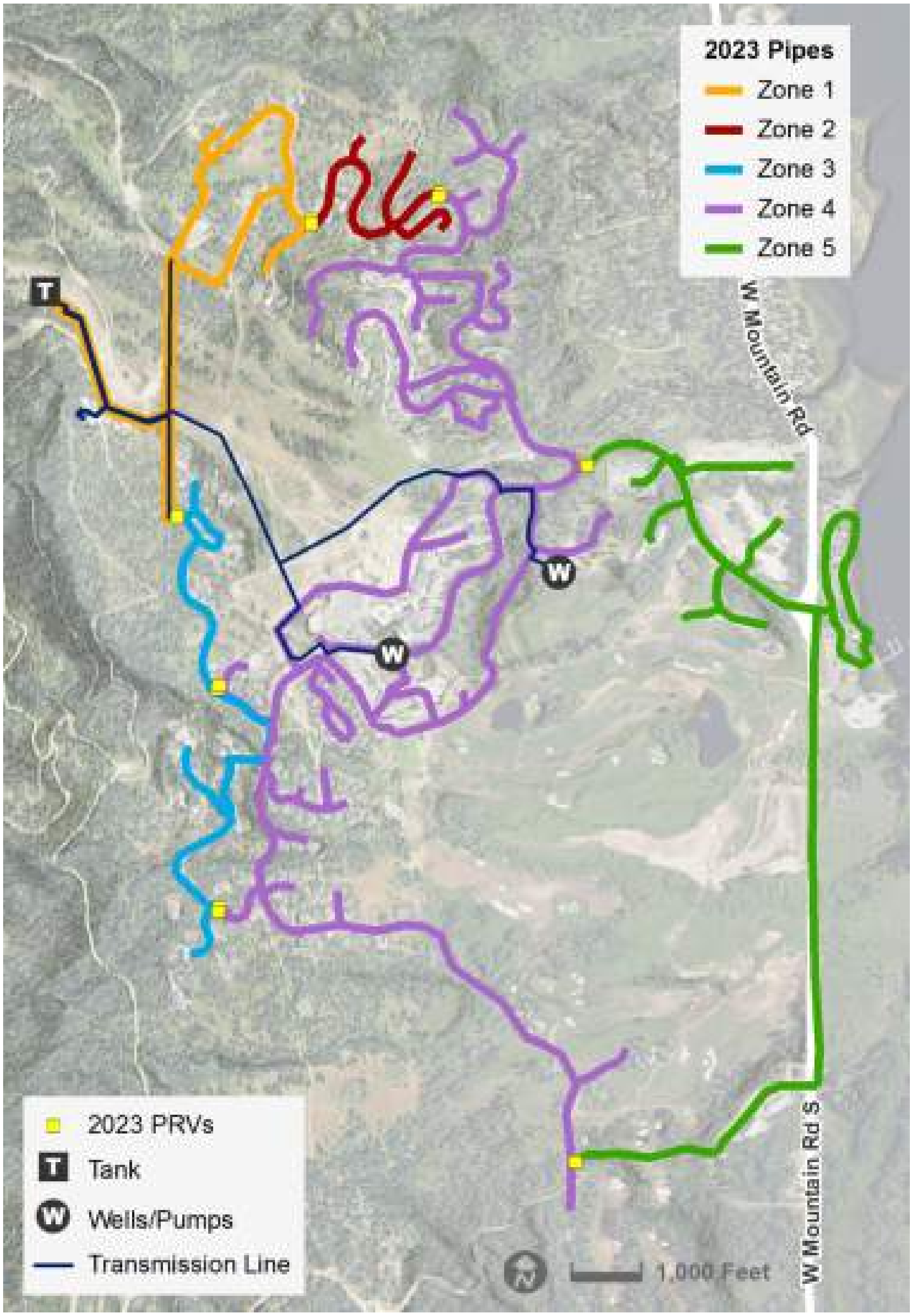
System HGLs	
System	HGL (ft)
Hawks Bay	5,020
Fir Grove	5,040
Day Star	5,006

The Tamarack system has multiple pressure zones separated by PRVs in order to reduce pressure coming down the mountain from the storage tank. Lower pressure zones in the Tamarac system rely upon supply from higher zones as the single supply source for the distribution system is the 1.25 MG tank at the top of the system. Table 3-6 is a summary of the systems' pressure zones and Figure 3-7 shows the various pressure zones in the Tamarack system. Pressure Zone 1 floats on the North Reservoir, the other zones are controlled by PRVs.

TABLE 3-6: TAMARACK PRESSURE ZONE SUMMARY

Tamarack Pressure Zones	
Pressure Zone	HGL (ft)
1	5,357
2	5,280
3	5,256
4	5,165
5	5,039

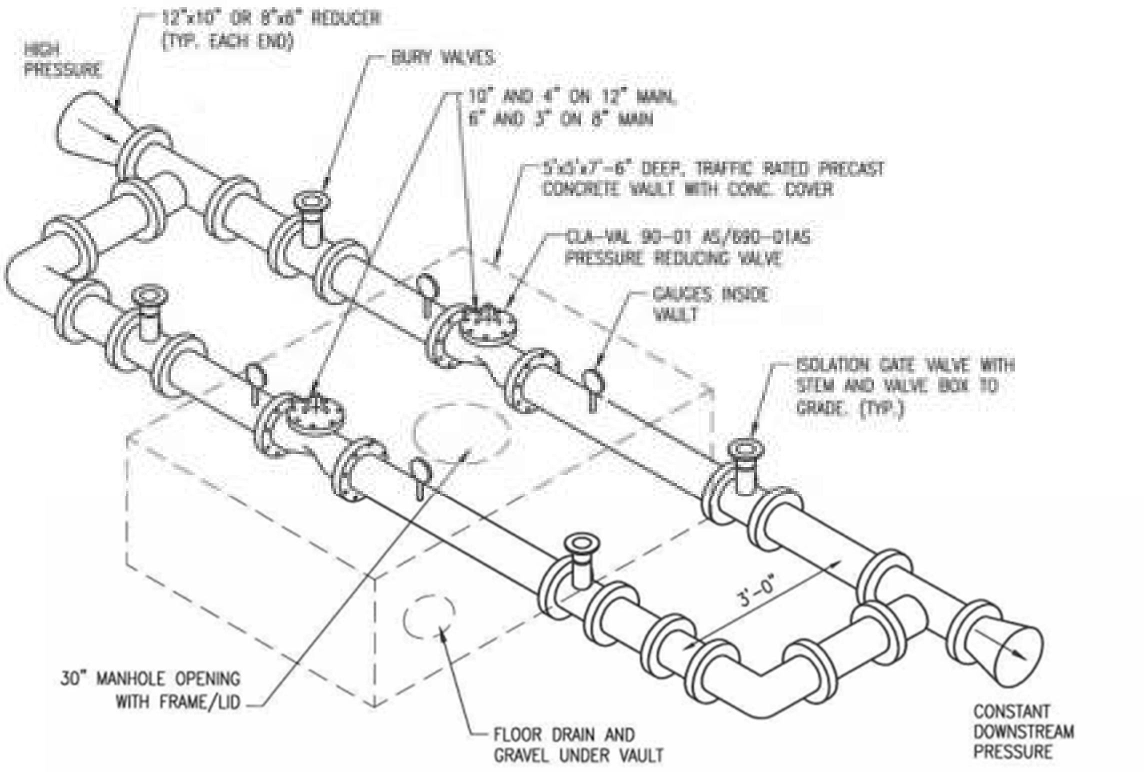
FIGURE 3-7: TAMARACK PRESSURE ZONE MAP



3.5. CONTROL VALVES

Tamarack is the only system that utilizes control valves (i.e., PRVs not regular isolation valves). There are a total of 12 existing PRVs. The PRVs are in underground vaults and are in pairs with one being larger to supply larger flows such as fire flow. The other is smaller and handles the day-to-day flows of the system. Figure 3-8 is a typical layout of these PRV vaults.

FIGURE 3-8: TYPICAL TAMARACK PRV VAULTS



The downstream pressure set points of these valves were unknown at the time of this study. Keller Associates checked the pressures at several locations in each pressure zone and was able to estimate the downstream pressure setting of the smaller valves in the PRV stations. Keller Associates also recommended downstream pressure set points for the larger valves in the PRV stations. It is recommended that the PRVs be checked by the manufacturer and setpoints adjusted if needed. Table 3-7 is a summary of the PRVs and recommended setpoints and Figure 3-9 shows the PRV locations.

FIGURE 3-9: TAMARACK PRV LOCATIONS

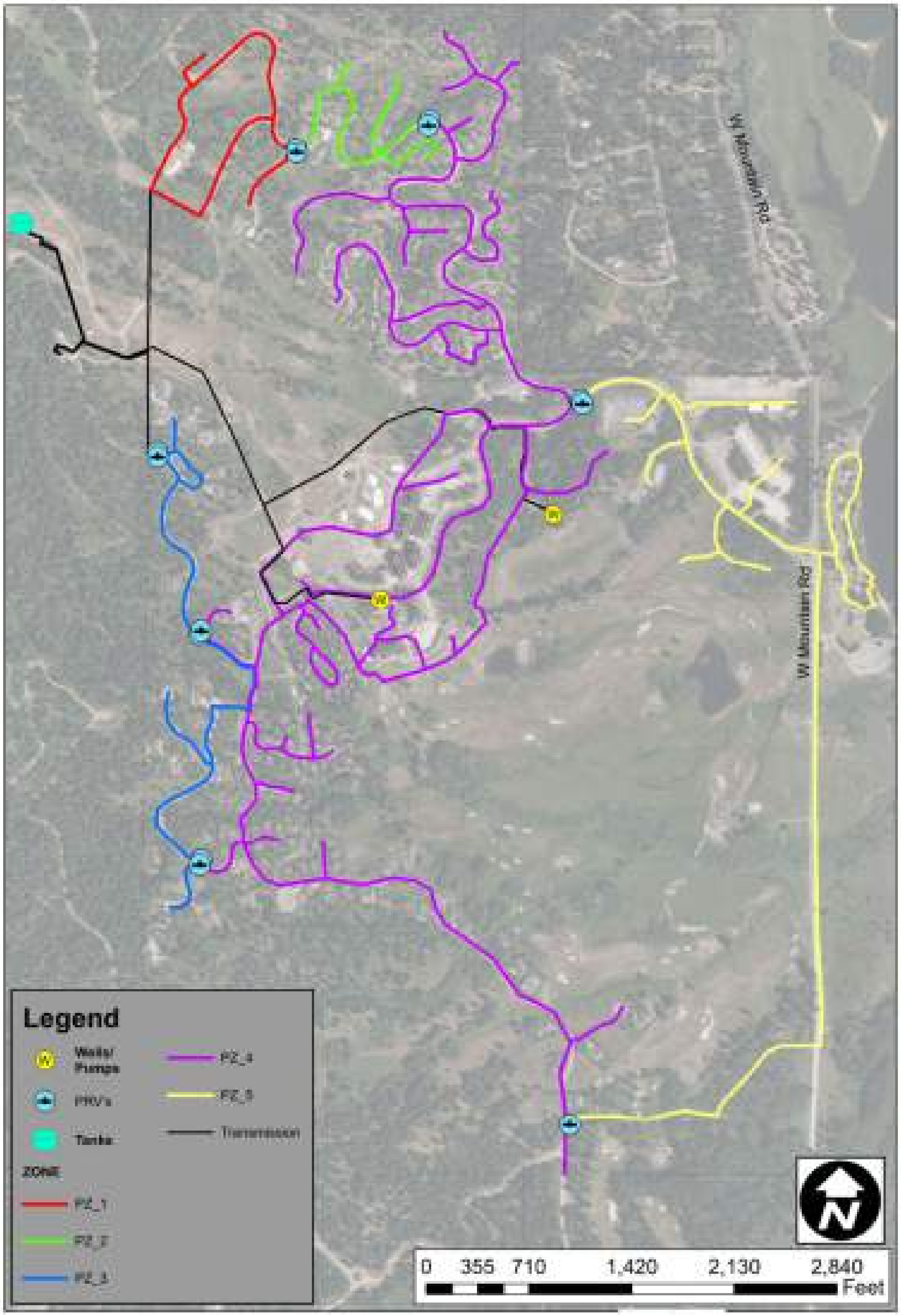


TABLE 3-7: TAMARACK PRV SUMMARY

Proposed Tamarack PRV Settings						
PRV #	Size (in)	From	To	Elevation (ft)	Setting (psi)	HGL (ft)
1-1	10	Tank	2	5,128	56.0	5,257
1-2	4	Tank	2	5,128	66.0	5,280
2-1	10	2	4	5,015	44.8	5,119
2-2	4	2	4	5,015	59.8	5,153
3-1	10	Tank	3	5,117	50.0	5,233
3-2	4	Tank	3	5,117	60.0	5,256
4-1	10	3	4	5,003	55.0	5,130
4-2	4	3	4	5,003	70.0	5,165
5-1	6	3	4	5,003	45.0	5,107
5-2	3	3	4	5,003	60.0	5,142
6-1	6	4	5	4,875	66.0	5,027
6-2	3	4	5	4,875	71.0	5,039
7-1[2]	6	4	5	4,936	36.0	5,019
1.Existing PRV settings are unknow n. These are proposed and should be confirmed by NLRSWD.						
2.Proposed PRV for Tamarack Employee Housing.						

3.6. STORAGE TANKS

Of the four systems, only the Tamarack system has a storage tank (the other three systems include smaller pressure tanks in the well pump facilities, but their capacity is de minimis). The tamarack tank is located in the snow front in Tamarack just north of the mountain control building. It is a nominal 1.25 MG reinforced rectangular concrete tank that was constructed in 2004 and is known as the "North Reservoir". It is fed by an 8-inch line coming from the mountain control building where the water supplied by both wells is treated before going into the tank. The outlet is a 12-inch pipe that tees off to supply pressure zones 1 directly and the remainder of the zones through PRVs. Table 3-8 provides a summary of the North Reservoir.

TABLE 3-8: NORTH RESERVOIR SUMMARY

North Reservoir Summary	
Location	North of the Mtn. Control Building
Material	Concrete
Type	Buried Rectangular
Length, ft	136.67
Width, ft	60
High Water Level, ft	20
Nominal Volume	1.25 MG
Effective Storage, gal.	1,168,232
Dead Storage, gal	94,001
Base Elevation, ft	5,347.5
Outlet Elevation, ft	5,348.2
Overflow Elevation, ft	5,370
Volume per ft (gal)	56,765

3.7. SYSTEM CONTROLS

Table 3-9 provides a summary of the system controls that exist at all four systems. The well pumps at the three smaller systems are pressure and flow controlled while the Tamarack pumps are controlled by the water level in the North Reservoir. The well pumps at the three smaller systems are all equipped with VFDs, and the Tamarack well pumps are equipped with soft starts. The only system with different setpoints for winter and summer is Tamarack.

TABLE 3-9: SYSTEM CONTROLS SUMMARY

System Controls Summary						
	Summer			Winter		
System/Well	ON	OFF	VFD	ON	OFF	VFD
Hawks Bay						
Well #1 (Domestic)	49 psi	10 gpm	72 psi	-	-	-
Well #2 (Fire)	40 psi	100 gpm	72 psi	-	-	-
Fir Grove						
Well #1 (Domestic)	44 psi	45 gpm, 80 psi	78 psi	-	-	-
Well #2 (Fire)	30 psi	25 gpm, 80 psi	-	-	-	-
Day Star						
Well #1 (Domestic)	63 psi	74 psi	72 psi	-	-	-
Well #2 (Fire)	55 psi	65 psi	72 psi	-	-	-
Tamarack						
Well #4	17 ft	20 ft	Soft Start	19 ft	20 ft	Soft Start
Well #7	18 ft	20 ft	Soft Start	18 ft	20 ft	Soft Start
1. "-" denotes no change from summer to winter						

3.8. DISTRIBUTION PIPE

Table 3-10 provides a summary of the distribution pipe of all four systems. The majority of the distribution pipes were installed when systems were created so there is not a large disparity in age between pipes in an individual system. The majority of pipe in the distribution systems is PVC material.

TABLE 3-10: DISTRIBUTION PIPE SUMMARY

Water Pipe Length Summary								
Service Area	3" (ft)	4" (ft)	6" (ft)	8" (ft)	10" (ft)	12" (ft)	Total Pipe Length (ft)	Total Pipe Length (mi)
Fir Grove	-	-	7,397	2,436	3,668	5,178	18,679	3.5
Hawks Bay	-	-	374	2,755	3,355	4,058	10,542	2.0
Day Star	-	-	1,190	18,044	-	5,985	25,219	4.8
Tamarack	688	1,141	-	35,382	2,846	36,306	76,363	14.5
Total Pipe Length (ft)	688	1,141	8,961	58,617	9,869	51,527	130,803	-
Total Pipe Length (mi)	0.1	0.2	1.7	11.1	1.9	9.8	24.8	-

3.9. CONDITONS ASSESSMENT

3.9.1. Hawks Bay

The Hawks Bay well site is shown below in Figure 3-10. During the visits to this facility, several issues were noted as follows: 1) The paint on the exterior wood trim and fascia was deteriorating and needs to be removed and re-applied. 2) There is an additional 1 hp pump on top of the existing 7.5 hp pump in the domestic well that needs to be removed (the 1 hp pump is not operational). 3) Operators believed the 7.5 hp pump is undersized and needs to be replaced with a larger pump that can meet peak demands (this will be discussed in additional detail in Chapter 5. 4)The roof was leaking due to damage during the removal and replacement of the domestic well pump. 5) Exhaust ducts are sitting on the ground and exhaust fan is mounted right above the domestic well. Operators reported the fan has never been used and needs to be removed. 6) There were several areas on the ductile iron well discharge piping pipe in the pump house that showed moderate surface rust, as shown in Figure 3-11. 7) No alarm system exists at this site.

<u>Recommended Improvements</u>

- Strip and repaint wood on the exterior of building.
- Remove the inactive 1 hp pump on top of the existing 7.5 hp pump in the domestic well.
- Repair or replace the roof to address leaking.
- Remove the exhaust fan and ducts from the building that are not being utilized.
- Remove rust and repaint DIP in the pump house.
- Add Auto Dialer Alarm System

FIGURE 3-10: HAWKS BAY WELL SITE

FIGURE 3-11: HAWKS BAY (RUST, ROOF LEAK, AND UNUSED EHASUT FAN)

3.9.2. Fir Grove

The Fir Grove well site is shown below in Figure 3-12. During the visits to this facility, several issues were noted as follows:1) The domestic pump faulted due to a motor overload during our pump test. 2) No backup power or hookup for backup power exists at this site. However, the Timber Creek subdivision is currently being annexed into the District and as part of the annexation agreement, the developer will provide, at no cost to the District, a new permanent backup generator with separate building. 3) No alarm system exists at this site. The new subdivision to be annexed will also provide, at no cost to the District, an auto dialer alarm system.

<u>Recommended Improvements</u>

- Confirm the fault issue with Domestic pump is not a lingering issue.
- Install emergency backup power (Planned with the Timber Creek subdivision annexation) (Included in Capital Improvement Plan Projects)

- Install hookup for emergency backup power (Planned with the Timber Creek subdivision annexation).
- Install Auto Dialer alarm system. (Planned with the Timber Creek subdivision annexation).

FIGURE 3-12: FIR GROVE WELL SITE

3.9.3. Day Star

The Day Star well site is shown below in Figure 3-13. During the visit to this facility, several issues were noted as follows: 1) A cover for the temporary generator is needed and it is recommended that a permanent generator be installed. 2) Chlorine injection is delayed 10-15 seconds from the pump starting up. 3) Loose cables running across ceiling need to be placed in new conduit, as shown in Figure 3-14. 4) The check valve on the Domestic well is leaking and allowing water to flow back into the well hole.

Recommended Improvements

- Construct a new temporary shelter/cover for the temporary diesel generator.
- Diagnose and fix or replace Chlorine injection pump.
- Run new conduit and secure loose cables.
- Remove and replace or rebuild leaking check valve.
- Recommended that a permanent generator be installed (included in Capital Improvement Plan projects).

FIGURE 3-13: DAY STAR WELL SITE

FIGURE 3-14: DAY STAR LOOSE CABLES

3.9.4. Tamarack

The Tamarack well sites are shown below in Figure 3-15 and Figure 3-16. During the visits to this facility, several issues were noted as follows: 1) Well #4 is difficult to use in the summer and will draw down to the point where the pump starts sucking air. 2) Well #4 Pump was pulled for replacement at the time of the visit. 3) Well #7 flow meter working with SCADA but not displaying at the site correctly. 4) Well #7 discharge pressure transducer not communicating with Scada. 5) Both well sites lack backup power or hookups for backup power. 6) Both well sites lack alarms except those that only go to the control computer at the resort. 7) The vault doors at both well sites need locks to prevent unauthorized entry. 8) Floor drains in the bottom of the vaults at both well sites let in water during spring melt. Sump pumps were added to remove this water.

Recommended Improvements

- Fix or replace flowmeter readout and totalizer display at Well #7 site.
- Fix or replace discharge pressure transducer to allow for communication with Scada.
- Add emergency backup power generators to both sites (included in Capital Improvement Plan projects).
- Add hookups for emergency backup power to both sites.
- Add an alarm system to allow communication with operators not at Tamarack.
- Add locks to all vault doors and access panels.

FIGURE 3-15: TAMARACK WELL#4 SITE

FIGURE 3-16: TAMARACK WELL#7 SITE

3.10. SANITARY SURVEY

A sanitary survey is an on-site review, conducted by DEQ, to evaluate and document the capabilities of a water system's sources, treatment, storage, distribution system, operation and maintenance, and overall management and financial capacity. It also identifies any deficiencies that might adversely impact a public water system's ability to provide a safe, reliable water supply. The survey seeks to identify systems that need technical or capacity development. The Idaho Rules for Public Drinking Water Systems require sanitary surveys of water systems to be taken every 3 years for community water systems. Below is a summary of the deficiencies that were found during the latest sanitary survey for each system. The full Surveys can also be found in Appendix C.

3.11. HAWKS BAY (COMPLETED ON 04/06/23)

- **Deficiency**: No secondary spill containment for bulk liquid chemical containers.
- **Corrective Action:** Add secondary containment of at least 110% of the containers volume.
- **Deficiency**: Some corrosion on wellhouse piping.
- **Corrective Action**: Address with upcoming system upgrades.
- **Deficiency:** Chlorine storage tanks are not properly sealed or vented outside.
- **Corrective Action:** Add proper cover and venting.

3.12. FIR GROVE (COMPLETED 05/07/19)

- **Deficiency**: Bolts in wellhead casing are loose.
- **Corrective Action:** Replace and securely tighten bolts.
- **Deficiency**: All dead-end water mains are not flushed at least semiannually.
- **Corrective Action**: Develop a plan to flush mains twice a year.
- **Deficiency:** No auxiliary power to pumps.
- **Corrective Action:** No action required but will be revaluated at each ESS (Enhanced Sanitary Survey).

3.13. DAY STAR (COMPLETED 05/07/19)

- **Deficiency**: Sample tap for Well #2 is threaded.
- **Corrective Action:** Replace with non-threaded tap or install backflow preventer.
- **Deficiency:** A deluge shower and/or eye washing device is not installed where strong acids and alkalis are used or stored.
- **Corrective Action**: Install a deluge shower and/or eye washing device.
- **Deficiency:** All dead-end water mains are not flushed at least semiannually.
- **Corrective Action:** Develop a plan to flush mains twice a year.
- **Deficiency:** No provisions are made for measuring quantities of chemicals used.
- **Corrective Action**: Provide provisions for measuring the quantities of used chemicals.

3.14. TAMARACK (COMPLETED 07/19/22)

- **Deficiency**: The pits for Well #4 and #7 are not watertight and are not protected from contamination.
- **Corrective Action:** Monitor sump pumps during wet times of the year to ensure effectiveness.
- **Deficiency:** The well casing for well #4 exists in a depression and is not protected from flooding.
- **Corrective Action**: Regrade the area around well #4 to drain away from the well casing.
- **Deficiency:** The well casing for Well #5 is nearly flush with the ground.
- **Corrective Action:** Regrade area around well #5 to drain away from well casing or extend casing 18in above ground surface. (Well #5 is not owned or operated by NLRSWD)
- **Deficiency:** The quantity of chemicals being used is not measured.
- **Corrective Action:** Provide measuring equipment and more frequent testing.
- **Deficiency:** Where more than one chemical is stored/handled, tanks and pipes are not clearly labeled.
- **Corrective Action:** Label tanks and pipes to prevent cross contamination.
- **Deficiency:** No method of preventing bulk liquid container leaks or spills.

- **Corrective Action:** Install secondary containment.
- **Deficiency:** Known cross connections exist and/or were observed.
- **Corrective Action:** Test all known testable backflow assemblies.
- **Deficiency:** All air valves are not protected from contamination.
- **Corrective Action:** Downturn and screen all air relief valve discharges located in vaults.

CHAPTER 4 - PROJECT PLANNING

4.1. POPULATION PROJECTIONS

The District has seen steady growth and is predicted to continue growing during the 20-year planning period. Table 4-1 displays the Valley County historical population data which shows a growth rate of 3.4% from 2015 to 2020 (see Appendix D). This recent growth rate was assumed for the 20-year planning period for the three systems of Hawks Bay, Fir Grove, and Day Star. The historical number of EDUs for these three systems and the projected EDUs during the planning period are presented in Table 4-2.

TABLE 4-1: VALLEY COUNTY GROWTH RATES

Valley County Growth		
Year	Population[1]	% Growth Per year
1970	3609	-
1980	5,604	4.50%
1990	6,109	0.87%
2000	7,651	2.28%
2010	9,862	2.57%
2011	9,639	-2.26%
2012	9,544	-0.99%
2013	9,585	0.43%
2014	9,805	2.30%
2015	10,058	2.58%
2016	10,438	3.78%
2017	10,700	2.51%
2018	11,054	3.31%
2019	11,443	3.52%
2020	11,746	2.65%
2015-2020 Growth	1,688	3.40%

1. County populations from 1970-2010 and 2020 were taken from Census data. County populations for 2011-2019 were taken from Idaho Department of Labor estimates.

TABLE 4-2: GROWTH PROJECTIONS (NON TAMARACK)

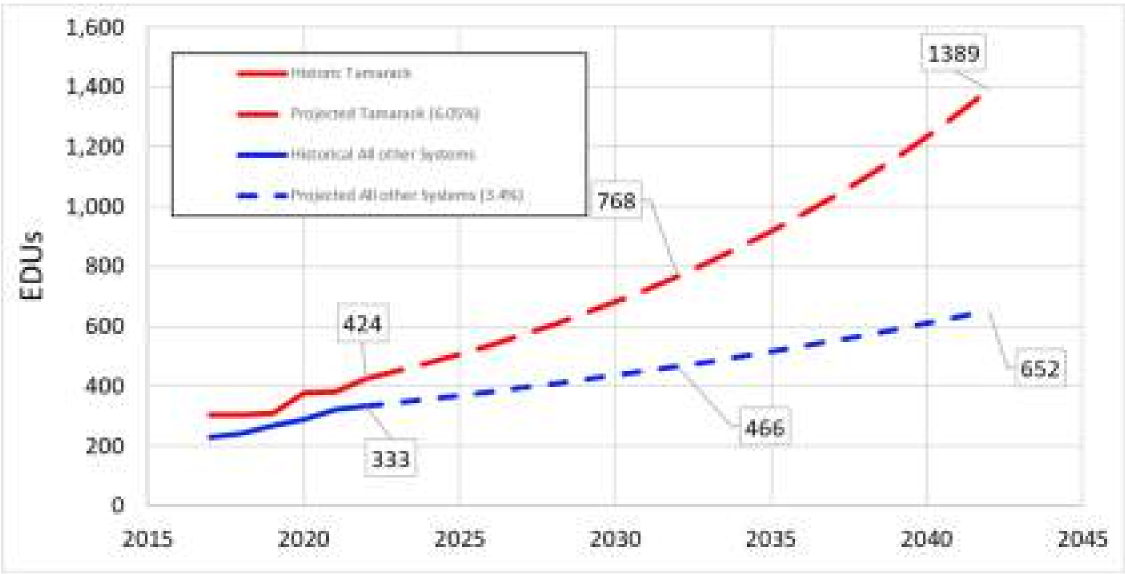
Projected Water Systems Growth- Non Tamarack			
	Year	Non Tamarack EDUs[1,2]	Estimated Population[3]
Historical	2017	229	637
	2018	242	673
	2019	267	743
	2020	288	801
	2021	320	890
	2022	333	926
Projected	2027	394	1,096
	2032	466	1,296
	2037	551	1,532
	2042	652	1,813
	2022-2042 Growth	319	887

1. EDU = equivalent dwelling unit
2. EDUs for 2017-2022 are historical values, and EDUs for 2027-2042 are calculated based on a growth rate of 3.4%.
3. Population based on a household size of 2.78 (2016-2020 Census estimate).

In more recent years, development within the Tamarack system has increased significantly; the District does not feel that the historical County growth rate accurately reflects the anticipated growth of this system. The District currently serves 424 EDUs in this system and has a 1,389 EDU commitment (additional 965 EDUs can be added). For this system, the District has elected to assume the total committed 1,389 EDUs are active at the end of the planning period. This equates to a growth rate of approximately 6.05%.

The selected growth rates result in an additional 319 EDUs of growth for the 3 smaller systems and 965 EDUs of growth for the Tamarack system. Historical and projected growth is shown in Figure 4-1.

FIGURE 4-1: EDU PROJECTIONS



Buildout EDU projections were also developed for each system with input from the District on areas to be incorporated into each system and anticipated housing densities. Figure 4-2 shows the buildout growth areas for the three smaller systems; the Tamarack system is anticipated to be built out by the end of the 20-year planning period with 1,389 EDUs. Table 4-3 show the growth over the 20-year planning period and the total buildout EDUs for each of the four systems.

FIGURE 4-2: BUILDOUT GROWTH AREAS

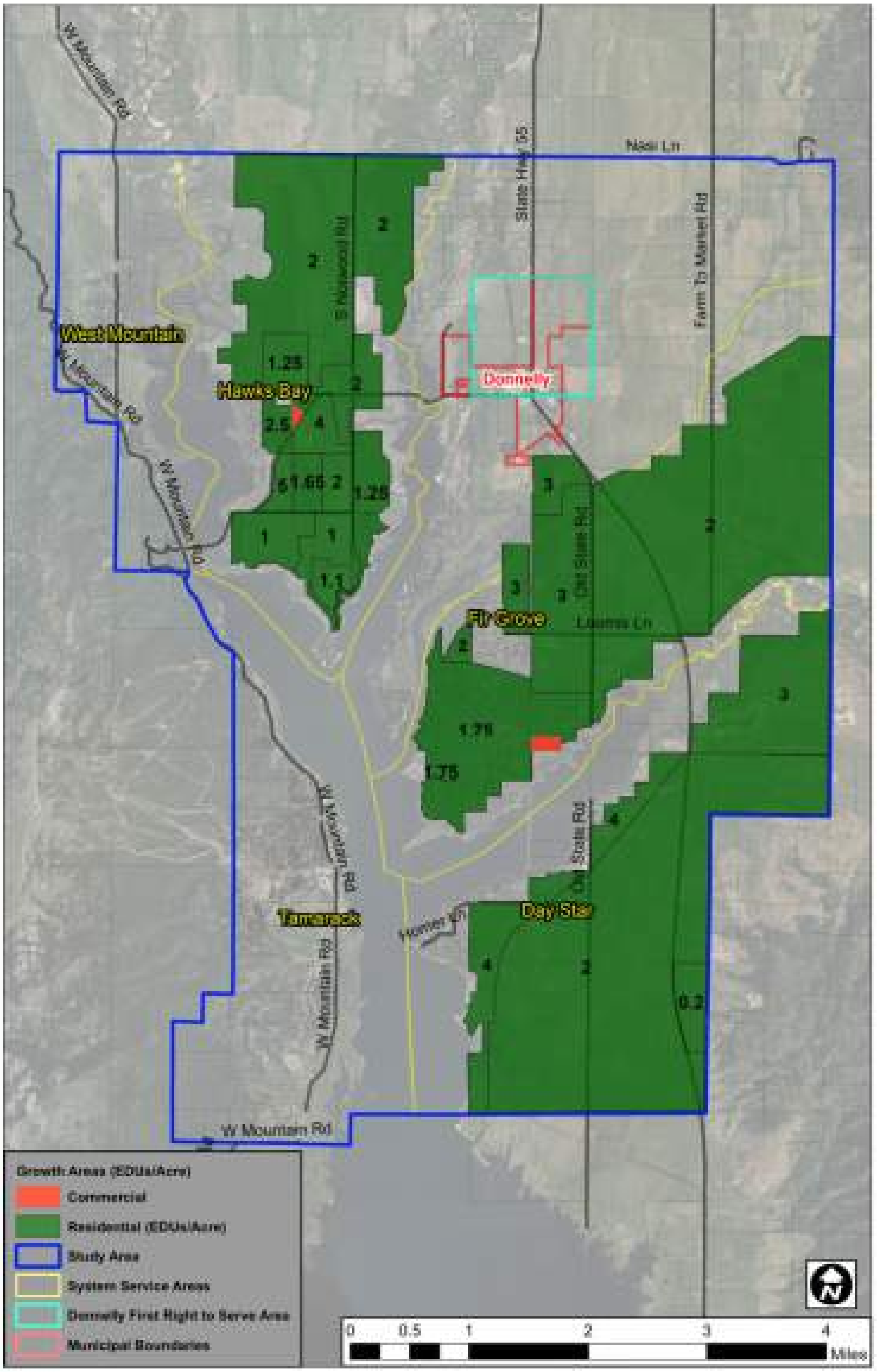


TABLE 4-3: GROWTH DISTRIBUTION SUMMARY

Growth Projections Per Water System							
System	2022 Existing EDUs	2022 Committed EDUs[4]	2022-2042 Total Growth (EDUs)[2]	Percent of Total Growth[3]	2022-2042 System Growth (EDUs)	2042 Projected EDUs	Buildout Projected EDUs
Hawks Bay	55	158	319	25%	80	135	5,159
Fir Grove	111	226		15%	48	159	8,287
Day Star	167	287		60%	191	358	9,253
Tamarack	424	1,389	965	100%	965	1,389	1,389

1. EDU = equivalent dwelling unit
2. Assumes Hawks Bay, Fir Grove, and Day Star grow at the county growth rate of 3.4%, and the Tamarack system builds out.
3. District provided percent of growth distribution to the Hawks Bay, Fir Grove, and Day Star systems. Assumes that by 2042 all commitments in Tamarack are fulfilled.
4. Includes Existing EDUs

4.2. DEMAND ANALYSIS

This section outlines the historical demands for each system and the selected planning demands on a per EDU basis for the planning period.

4.2.1. Historical Water Demands

Daily well production meter readings from 2017 through 2021 from each of the systems' wells were used to summarize the historical demands for each system. The District also provided historical EDUs served in each system that were active during each of these years. The production data coupled with the number of EDUs were used to summarize historical demands on a per EDU basis. Table 4-4, Table 4-5, Table 4-6, and Table 4-7 summarize the historical demands for each system.

TABLE 4-4: HAWKS BAY HISTORICAL DEMANDS

Year	EDU's	ADD		MDD		Peaking Factor (MDD/ADD)
		GPM	GPED	GPM	GPED	
2017	22	6	378	19	1,264	3.34
2018	26	6	306	26	1,462	4.78
2019	34	6	269	26	1,086	4.04
2020	41	7	239	32	1,132	4.75
2021	51	7	187	25	718	3.84
Average / Max	-	7	276	33	1,462	5.30

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day

TABLE 4-5: FIR GROVE HISTORICAL DEMANDS

Year	EDU's	ADD		MDD		Peaking Factor (MDD/ADD)
		GPM	GPED	GPM	GPED	
2017	78	11	199	69	1,274	6.41
2018	82	19	326	88	1,546	4.74
2019	90	16	261	68	1,085	4.16
2020	97	17	258	80	1,184	4.60
2021	107	21	287	90	1,211	4.22
Average / Max	-	17	267	90	1,546	5.79

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day

TABLE 4-6: DAY STAR HISTORICAL DEMANDS

Year	EDU's	ADD		MDD		Peaking Factor (MDD/ADD)
		GPM	GPED	GPM	GPED	
2017	129	30	336	115	1,285	3.82
2018	134	30	319	128	1,381	4.33
2019	143	30	303	135	1,357	4.48
2020	150	33	317	149	1,434	4.52
2021[2]	162	-	-	158	1,408	-
Average / Max	-	31	319	159	1,434	4.50

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. Data was missing during portions Oct-Dec, an accurate ADD cannot be calculated

TABLE 4-7: TAMARACK HISTORICAL PRODUCTION

Year	EDU's	ADD		MDD		Peaking Factor (MDD/ADD)
		GPM	GPED	GPM	GPED	
2017	304	73	344	241	1,140	3.3
2018	304	64	304	161	762	2.5
2019[2]	310	81	375	260	1,210	3.2
2020[2]	377	77	295	245	935	3.2
2021	379	86	329	301	1,144	3.5
Average / Max	-	77	330	301	1,210	3.67

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. Rolling 2-day average was used

4.2.2. Planning Criteria Flows

Planning criteria flows on a per EDU basis were selected for each system using the average ADD and max MDD for the last 5 years. In the absence of continuous SCADA data, the max day demand (MDD) to peak hour demand (PHD) factors for each system were calculated using Equation 3-1 from the Washington State Water System Design Manual. These factors are multiplied by the MDD planning criteria flow of each system to Table 4-8 summarizes the planning criteria flows and PHD factors for each system. The peak hour analysis is provided in Appendix E.

TABLE 4-8: PLANNING CRITERIA FLOWS

System	Current EDU's	Committed EDU's	ADD Planning Criteria (gped)	MDD Planning Criteria (gped)	PHD Planning Criteria (gped)	PHD/MDD[2]
Hawks Bay	55	158	280	1,470	4,743	3.23
Fir Grove	111	226	270	1,550	4,362	2.81
Day Star	167	287	320	1,435	3,657	2.55
Tamarack	424	1,389	330	1,210	2,593	2.14

1. EDU = Equivalent dwelling unit; ADD = average day demand; MDD = max day demand; PHD = peak hour demand; gped = gallons per EDU per day; gpm = gallons per minute

2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)

Demand projections for existing, current commitments, the next 20 years and buildout conditions were estimated using the planning criteria flows and growth projections. These projected demands are summarized in Table 4-9, Table 4-10, Table 4-11, and Table 4-12.

TABLE 4-9: HAWKS BAY PROJECTED DEMANDS

Hawks Bay Projected Demands					
Year	EDU's	Commercial Acres	ADD GPM	MDD GPM	PHD[2] GPM
2022 Existing	55	-	11	57	182
2022 Committed	158	-	31	162	521
2042 Projected	135	-	26	138	445
Buildout Projected[3]	5,262	7.6	1,031	5,414	17,374

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area was calculated based on the growth areas and densities identified by the District.(See Figure 4-2)
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria was calculated using the peaking factor (MDD/ADD). PHD was assumed to be the same as MDD for commercial areas

TABLE 4-10: FIR GROVE PROJECTED DEMANDS

Fir Grove Projected Demands					
Year	EDU's	Commercial Acres	ADD GPM	MDD GPM	PHD[2] GPM
2022 Existing	111	-	21	120	337
2022 Committed	226	-	42	244	685
2042 Projected	159	-	30	172	482
Buildout Projected[3]	8,402	19.5	1,596	9,161	25,568

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD was calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area was calculated based on the growth areas and densities identified by the District. (See Figure 4-2)
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria was calculated using the peaking factor (MDD/ADD). PHD was assumed to be the same as MDD for commercial areas

TABLE 4-11: DAY STAR PROJECTED DEMANDS

Day Star Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD[2]
			GPM	GPM	GPM
2022 Existing	167	-	37	167	425
2022 Committed	287	-	64	287	729
2042 Projected	358	-	80	357	910
Buildout Projected[3]	9,373	0.0	2,083	9,341	23,804

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD w as calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.w a.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The buildout number of EDUs in the study area w as calculated based on the grow th areas and densities identified by the District. (See Figure 4-2)
4. Commercial planning demand taken from Metcalf & Eddy 5th edition page 195 at 1,500 gallons per acre per day for average day demand.
5. Commercial MDD planning criteria w as calculated using the peaking factor (MDD/ADD). PHD w as assumed to be the same as MDD for commercial areas
6. Data w as missing during portions Oct-Dec, an accurate ADD cannot be calculated.

TABLE 4-12: TAMARACK PROJECTED DEMANDS

Tamarack Projected Demands					
Year	EDU's	Commercial Acres	ADD	MDD	PHD
			GPM	GPM	GPM
2022 Existing	424	-	97	357	764
2022 Committed	1,389	-	318	1,168	2,502
2042 Projected[3]	1,389	-	318	1,168	2,502
Buildout Projected[3]	1,389	-	318	1,168	2,502

1. ADD = average day demand; MDD = max day demand; GPM = gallons per minute; GPED = gallons per EDU per day
2. PHD w as calculated using equation 3-1 from Washington State Water System Design Manual (https://doh.w a.gov/sites/default/files/2022-02/331-123.pdf?ver=2019-10-03-153237-220)
3. The "Committed", "2042 Projected", and "Buildout" EDU's are all equal as the District is committed to serve all of the buildout that is projected to occur at Tamarack in the next 20 years.

4.2.3. Water Consumption

NLRSWD does not read the meter usage for their connections, therefore water consumption could not be analyzed. Expected reductions in water usage if metering-based billing was to take place can range anywhere from 10%-20%. The District does not plan to implement this for the foreseeable future.

4.3. ADDITIONAL PLANNING CRITERIA

Additional Planning Criteria that were used for the purposes of this study are summarized in Table 4-13, note that the residential available fire flow planning criteria is 1,500 gpm for two hours. The rural residential requirement from the local fire authority is 1,125 gpm for two hours (see Appendix K for a letter from the local fire authority). For existing water lines in cul-de-sacs and dead-end roads, the District may not recommend improvements if the available fire flow meets or exceeds the local fire flow authority's requirement of 1,125 gpm but is less than 1,500 gpm.

TABLE 4-13: ADDITIONAL PLANNING CRITERIA

Fire Flow Requirements	
Residential	1,500 gpm for 2 hours
Commercial	2,500 gpm for 2 hours
Tamarack Commercial	3,000 gpm for 4 hours
Pressure Requirements	
Fire Flow	20 psi
Peak Hour Demand	40 psi
Max Overall Pressure	80 psi
Main Line Max Pressure	100 psi
Storage Planning Requirements	
Operational & Peaking Storage	25% of MDD
Emergency Storage	8 hours of ADD
Nest Fire & Emergency Storage?	No
Allow Wells with Standby Power to Offset Emergency Storage in Existing Storage Facilities?	Yes
Redundancy Requirements	
Power Outage	System to deliver ADD + Fire
Largest Pump Offline	System to deliver PHD System to deliver MDD + Fire
Pipe Velocity Criteria	
Max velocity under PHD conditions	10 fps
Max velocity under MDD + FF conditions	15 fps

CHAPTER 5 - SUPPLY, DELIVERY, & STORAGE ANALYSIS

This chapter summarizes the capacity of each distribution system to supply and deliver water. This will include a high-level water rights analysis, a supply analysis, and a storage analysis.

5.1. WATER RIGHTS

Water rights define the legal diversion rate from a water supply (i.e., groundwater or surface water). The authorized diversion rate of a water right should, at a minimum, equal the max day demand (MDD) of a water system that is equipped with storage, or the peak hour demand (PHD) of a water system without storage.

Table 5-1 summarizes the water rights for each of the District's systems and compares it to the system's existing MDD or PHD, and the larger of the existing committed or 2042 projected MDD or PHD. Each system has adequate water rights for existing demands. However, the Day Star and Tamarack systems fall slightly short of meeting the future demands. See Appendix F for water right information.

TABLE 5-1: WATER RIGHT ANALYSIS

System	Water Right No.	Use	Diversion Rate (cfs)	Diversion Rate (gpm)	Existing MDD / PHD[2] (gpm)	Future[2,3] MDD / PHD	Future Surplus / (Deficit) (gpm)
Day Star	65-22358	Municipal	1.85	830	425	910	(80)
Fir Grove	65-22882	Municipal	4.12	1,849	337	685	1,164
Hawks Bay	65-22889	Municipal	1.01	453			
Hawks Bay	65-22971	Municipal	0.94	422			
Hawks Bay	Total	Municipal	1.95	875	182	521	354
Tamarack	65-23812	Municipal	2.49	1,118	357	1,168	(50)

1. cfs = cubic feet per second; gpm = gallons per minute; MDD = max day demand; PHD = peak hour demand
2. Day Star, Fir Grove, and Hawks Bay water rights are compared to the system's PHD; Tamarack is compared to its MDD as it has storage.
3. The Future demand is the larger of the current committed demand or the 2042 projected demand.

The Tamarack system is currently in the process of acquiring an additional well (Well #12) which is anticipated to bring an additional 4.3 cfs (1,930 gpm) of water right capacity to the system under permit 65-23750. With the addition of this permit, the system will have sufficient capacity to meet the projected 2042 MDD (system has storage).

The Day Star system falls 80 gpm short of meeting the projected 2042 PHD (system does not have storage). It is recommended that this system acquire additional water right capacity as additional sources (i.e., wells) are incorporated into the system.

5.2. SUPPLY ANALYSIS

The supply capacity is the physical capability of delivering water. This differs from the water rights capacity, which is only a legal ability to divert water. Similar to water rights, a water system's supply capacity should, at a minimum, equal the MDD of a water system that is equipped with storage, or the larger of the PHD or MDD plus fire flow of a water system without storage.

The District's systems were constructed prior to 2008 when major revisions were made to Idaho Administrative Code (IDAPA) that now require water systems to meet supply with firm capacity (i.e., largest source out of service). This supply analysis compares the systems against current IDAPA requirements. Table 5-2 through Table 5-5 compare each system's current firm supply capacity against existing and future demands. For the Hawks Bay, Fir Grove, and Day Star systems, the future demands (PHD and MDD+ fire flow) are also compared to the firm supply, this assumes the systems grow without adding storage. Adding storage will drastically change the supply analysis; this is discussed in Chapter 7 with the alternatives to correct noted deficiencies. All four water systems were code compliant at the time of construction. As upgrades to the water systems occur, the water systems will be brought into compliance with the current IDAPA Code.

TABLE 5-2: HAWKS BAY SUPPLY ANALYSIS

Scenario	2022 (gpm)	2042 (gpm)	Committed (gpm)	Committed with Tamarack Falls[4] (gpm)
Well #1	185	185	185	185
Well #2	1,082	1,082	1,082	1,082
Total Capacity	1,267	1,267	1,267	1,267
Firm Capacity	**185**	**185**	**185**	**185**
PHD	182	445	521	930
MDD+FF[2]	1,557	1,638	1,662	1,789
Supply Surplus / (Deficit)[3]	**(1,372)**	**(1,453)**	**(1,477)**	**(1,604)**

1.MDD = Maximum Day Demand; PHD = Peak Hour Demand; FF= Fire Flow
2. Residential fire flow planning criteria of 1,500 gpm.
3. Supply surplus or deficit is the firm capacity minus the larger of the PHD and MDD+FF.
4. Tamarack Falls proposes adding 124 EDUs.

The Hawks Bay system's firm supply capacity is less than 200 gpm, resulting in a large supply deficit for the existing and future scenarios. Currently, the District is in the process of annexing the proposed Tamarack Falls development that would be served by this system. The addition of this development adds to the supply deficit. It is recommended that an additional supply be added to the system. One method of decreasing the supply deficit is to consider adding storage to this system so the supply only needs to meet the MDD rather than the larger of the PHD or MDD plus fire flow. Alternatives to address this deficit will be discussed further in Chapter 7.

TABLE 5-3: FIR GROVE SUPPLY ANALYSIS

Scenario	2022 (gpm)	2042 (gpm)	Committed (gpm)	Committed with Timber Creek[4] (gpm)
Well #1	456	456	456	456
Well #2	1,283	1,283	1,283	1,283
Total Capacity	1,739	1,739	1,739	1,739
Firm Capacity	**456**	**456**	**456**	**456**
PHD	337	482	685	901
MDD+FF[2]	1,620	1,672	1,744	1,821
Supply Surplus / (Deficit)[3]	**(1,164)**	**(1,216)**	**(1,288)**	**(1,365)**

1.MDD = Maximum Day Demand; PHD = Peak Hour Demand; FF= Fire Flow
2. Residential fire flow planning criteria of 1,500 gpm.
3. Supply surplus or deficit is the firm capacity minus the larger of the PHD and MDD+FF.
4. Timber Creek proposes adding 71 EDUs.

The firm capacity for the Fir Grove system is approximately 450 gpm, resulting in a large supply deficit for the existing and future scenarios. Currently, the District is in the process of annexing the proposed Timber Creek development that would be served by this system. The addition of this development adds to the supply deficit. It is recommended that an additional supply be added to the system. One method of decreasing the supply deficit is to consider adding storage to this system so the supply only needs to meet the MDD rather than the larger of the PHD or MDD plus fire flow. Alternatives to address this deficit will be discussed further in Chapter 7.

TABLE 5-4: DAY STAR SUPPLY ANALYSIS

Scenario	2022 (gpm)	2042 (gpm)	Committed (gpm)
Well #1	600	600	600
Well #2	550	550	550
Total Capacity	1,150	1,150	1,150
Firm Capacity	**550**	**550**	**550**
PHD	425	910	729
MDD+FF[2]	1,667	1,857	1,787
Supply Surplus / (Deficit)[3]	**(1,117)**	**(1,307)**	**(1,237)**

1.MDD = Maximum Day Demand; PHD = Peak Hour Demand; FF= Fire Flow
2. Residential fire flow planning criteria of 1,500 gpm.
3. Supply surplus or deficit is the firm capacity minus the larger of the PHD and MDD+FF.

The firm capacity for the Day Star system is approximately 550 gpm, resulting in a large supply deficit for the existing and future scenarios. It is recommended that an additional supply be added to the system. One method of decreasing the supply deficit is to consider adding storage to this system so the supply only needs to meet the MDD rather than the larger of the PHD or MDD plus fire flow. Alternatives to address this deficit will be discussed further in Chapter 7.

TABLE 5-5: TAMARACK SUPPLY ANALYSIS

Year	2022 (gpm)	2042 (gpm)
Well #4	300	300
Well #5[4]	1,000	1,000
Well #7	804	804
Well #12[5]		700
Total Capacity	1,104	1,804
Firm Capacity	**300**	**1,000**
MDD	357	1,168
Supply Surplus / (Deficit)[2,3]	**(57)**	**(168)**

1.MDD = Maximum Day Demand
2. Supply surplus or deficit is the firm capacity minus the MDD.
3. Supply only compared to the MDD as this system is served by gravity from the 1.25 MG tank. The delivery analysis for this system for PHD and MDD + fire flow will be discussed in Chapter 6.
4. Well #5 is an emergency backup supply well that has a 1,000 gpm capacity which pumps to the snow making tank. There is booster from the snow making tank that pumps to the 1.25 MG tank with a capacity of 1,000 gpm. This is a well that can be used in emergencies with DEQ approval, but will not be counted towards the total or firm supply capacity.
5. Well #12 is planned with a minimum capacity of 700 gpm. This supply analysis should be updated once the actual production rate of the well is established after construction.

The existing firm capacity for The Tamarack system is approximately 300 gpm, which is not sufficient to meet existing demands. As mentioned in Section 5.1, the District is currently acquiring an additional well (Well #12) for the Tamarack System. This well is anticipated to produce at least 700 gpm (Well Engineering Report, HDR, Section 3.2). With the anticipated production of this additional new well, the system will have a future firm capacity of 1,000 gpm which is sufficient to meet existing demands, but insufficient to meet future demands.

Note, Well #5 is listed in the supply analysis. Well #5 is an emergency backup well that is primarily used for irrigation and snowmaking, but in an emergency can be used to fill the 1.25 MG tank. DEQ granted permission to utilize Well #5 in a letter dated 11/30/2022 with a subject line "Tamarack Resort – Tamarack Employee Housing Project (Valley County) Facility Plan Addendum and Preliminary Engineering Report – DEQ Approval". Well #5 was not counted towards the firm capacity as it is an emergency only well.

Well #12 is needed currently to provide firm supply capacity without utilizing the emergency backup Well #5. An additional well will be needed to meet the projected 2042 demands. This will be discussed in more detail in Chapter 7.

5.3. STORAGE ANALYSIS

There are four components of storage requirements for potable water systems:

- Operational Storage: volume between on/off set points of sources that fill the tank.
- Peaking Storage: volume needed to compensate for the difference between the maximum supply capacity and the system's peak demands.
- Fire Storage: The largest fire flow requirement coupled with its required fire flow duration.
- Emergency Storage: Storage needed to supply water to the system should the water sources fail.

None of the District's systems have continuous historical SCADA data available to develop a diurnal curve for calculating peaking storage. For this study, a value of 25% of the MDD was assumed for peaking and operating storage. For storage calculations, it was also assumed that the system's firm supply capacity is equal to the MDD.

Currently, only the Tamarack system has existing storage. The other three systems are not currently equipped with storage. If storage is added to these systems, this section outlines the required storage to meet current IDAPA requirements. Table 5-6 through Table 5-9 summarize the storage analysis for each system. Note, the buildout projections for the Hawks Bay and Fir Grove systems show some commercial development. The storage analysis presented in this section also provides the required storage if commercial development occurs sooner, but recommendations within this report are made with the understanding that commercial development will not occur within the 20-year planning period.

TABLE 5-6: HAWKS BAY STORAGE ANALYSIS

Demands	2022	2042	Committed (Residential FF)	Committed (Commercial FF)	Committed + Tamarack Falls (Residential FF)	Committed + Tamarack Falls (Commercial FF)
ADD (gpm)	11	26	31	31	56	56
MDD (gpm)	57	138	162	162	289	289
Storage Analysis (all values in gal)						
Peaking and Operational Storage[1]	21,000	50,000	59,000	59,000	105,000	105,000
Emergency[2]	6,000	13,000	15,000	15,000	27,000	27,000
Fire[3]	180,000	180,000	180,000	300,000	180,000	300,000
Total Storage Required (rounded)	207,000	243,000	254,000	374,000	312,000	432,000
Total Storage Available (rounded)	0	0	0	0	0	0
Storage Surplus / (Deficiency)	**(207,000)**	**(243,000)**	**(254,000)**	**(374,000)**	**(312,000)**	**(432,000)**

1. Assumes 25% of the MDD.
2. Assumes 8 hours of the ADD.
3. Assumes 1,500 gpm for 2 hours Residential and 2,500 gpm for 2 hours Commerical
4. ADD = average day demand; MDD = maximum day demand; FF=Fire Flow

The Hawks Bay system shows a future required storage volume of over 300,000 gallons with existing commitments and the soon to be annexed Tamarack Falls development (assuming no commercial development). It is recommended that if storage is added to this system, a minimum usable storage volume of 350,000 gallons be added.

TABLE 5-7: FIR GROVE STORAGE ANALYSIS

Demands	2022	2042	Committed (Residential FF)	Committed (Commercial FF)	Committed + Timber Creek (Residential FF)	Committed + Timber Creek (Commercial FF)
ADD (gpm)	21	30	42	42	56	56
MDD (gpm)	120	172	244	244	321	321
Storage Analysis (all values in gal)						
Peaking and Operational Storage[1]	44,000	62,000	88,000	88,000	116,000	116,000
Emergency[2]	11,000	15,000	21,000	21,000	27,000	27,000
Fire[3]	180,000	180,000	180,000	300,000	180,000	300,000
Total Storage Required (rounded)	235,000	257,000	289,000	409,000	323,000	443,000
Total Storage Available (rounded)	0	0	0	0	0	0
Storage Surplus / (Deficiency)	**(235,000)**	**(257,000)**	**(289,000)**	**(409,000)**	**(323,000)**	**(443,000)**

1. Assumes 25% of the MDD.
2. Assumes 8 hours of the ADD.
3. Assumes 1,500 gpm for 2 hours Residential and 2,500 gpm for 2 hours Commerical
4. ADD = average day demand; MDD = maximum day demand; FF=Fire Flow

The Fir Grove system shows a future required storage volume of over 300,000 gallons with existing commitments and the soon to be annexed Timber Creek development (assuming no commercial development). It is recommended that if storage is added to this system, a minimum usable storage volume of 350,000 gallons be added.

TABLE 5-8: DAY STAR STORAGE ANALYSIS

Demands	2022	2042	Committed
ADD (gpm)	37	80	64
MDD (gpm)	167	357	287
Storage Analysis (all values in gal)			
Peaking and Operational Storage[1]	61,000	129,000	104,000
Emergency[2]	18,000	39,000	31,000
Fire[3]	180,000	180,000	180,000
Total Storage Required (rounded)	259,000	348,000	315,000
Total Storage Available (rounded)	0	0	0
Storage Surplus / (Deficiency)	**(259,000)**	**(348,000)**	**(315,000)**

1. Assumes 25% of the MDD.
2. Assumes 8 hours of the ADD.
3. Assumes 1,500 gpm for 2 hours
4. ADD = average day demand; MDD = maximum day demand; FF=Fire Flow

The Day Star system shows a required storage volume of nearly 350,000 gallons with projected growth in 2042. It is recommended that if storage is added to this system, a minimum usable storage volume of 350,000 gallons be added.

TABLE 5-9: TAMARACK STORAGE ANALYSIS

Demands	2022	2042
ADD (gpm)	98	319
MDD (gpm)	357	1,168
Storage Analysis (all values in gal)		
Peaking and Operational Storage[1]	129,000	421,000
Emergency[2]	48,000	154,000
Fire[3]	720,000	720,000
Total Storage Required (rounded)	897,000	1,295,000
Total Storage Available (rounded)[4]	1,174,000	1,174,000
Storage Surplus / (Deficiency)	**277,000**	**(121,000)**

1. Calculated as 25% of the MDD.
2. Calculated as 8 hours of the ADD.
3. Based on 3,000 gpm for 4 hours
4. Assumes high water elevation 1 foot below overflow.
5. ADD = average day demand; MDD = maximum day demand; FF=Fire Flow

The Tamarack system shows a storage deficit of approximately 120,000 gallons with projected growth in 2042. It is unlikely that additional storage will be constructed for this system. Chapter 7 will discuss alternatives for correcting the projected storage deficit that does not involve constructing additional storage.

CHAPTER 6 - EXISTING SYSTEM HYDRAULIC MODEL ANALYSIS

A hydraulic model was developed for each of the District's four water systems to evaluate the water distribution system under several demand scenarios. This chapter will summarize the efforts to develop and calibrate the models as well as the model results for the existing systems.

6.1. EXISTING MODEL DEVELOPMENT

As part of this study, Keller Associates created water models for the District's four systems in Bentley's WaterCAD software. These models were created from record drawings and knowledge of the systems from District personnel. A summary of the existing and future demands for each system was provided in Chapter 4. The existing 2022 MDDs and PHDs were loaded into the models.

6.1.1. Model Calibration

Hydrant flow tests were conducted in each system to assist in calibrating the models. The process consisted of flowing a hydrant, measuring the static and residual pressures at two different hydrants in the distribution system, and monitoring the pump station/tank outflows/levels/pressures. The results of the calibration efforts are presented in Table 6-1. The three smaller systems calibrated very well, and no further calibration or field work is recommended.

The Tamarack system did not calibrate as well. The District does not know the exact settings of the PRVs, especially the larger fire flow PRVs; it is believed that this is the main reason for the residual pressures not aligning as well for the two Tamarack hydrant tests. Recommended setpoints for the Tamarack PRVs are presented in Chapter 3. It is recommended that the District have the PRV valve manufacturer's representative service the PRVs and adjust the settings based on these recommendations if needed. Static pressures at various hydrants in the Tamarack system were taken to estimate the existing settings of the small PRVs and the HGL of each zone. These settings were incorporated into the model. Model vs field observed pressures in the Tamarack System are shown in Appendix G.

TABLE 6-1: WATER CALIBRATION SUMMARY

Water Models Calibration Summary						
System/Node	Hydrant Test		Model		Difference	
	Static (psi)	Residual (psi)	Static (psi)	Residual (psi)	Static (psi)	Residual (psi)
Hawks Bay A	56	21	56	21	0	0
Hawks Bay B	62	32.5	61	30	1	2.5
Fir Grove A	81	69	81	72	0	-3
Fir Grove B	80	78	80	78	0	0
Day Star A	69	59	69	59	0	0
Day Star B	71	67	71	67	0	0
Tamarack A[1]	104	78	104	86	0	-8
Tamarack B[1]	91	84	92	79	-1	5

1. The Tamarack model did not calibrate well due to not knowing the set point of the larger PRV's. Keller was directed to create these setpoints for the model and that it would be reflected in the field when the study is completed.

6.2. EXISTING SYSTEM EVALUATION

This section includes a summary of the existing (2022) distribution systems' hydraulic evaluation to meet the pressure, fire flow, and pipe velocity planning criteria under current demands. This evaluation was completed with the hydraulic model that was developed, loaded, and calibrated as discussed previously. The planning criteria for pressure, fire flow, and pipe velocity are provided in Chapter 4.

6.2.1. Peak Hour Demand

The water models were exercised to evaluate pressures and pipe velocities in the distribution systems under peak hour demand (PHD). As mentioned previously, these systems were constructed prior to 2008 when major revisions were made to Idaho Administrative Code (IDAPA) that now require water systems to meet supply with firm capacity (i.e., largest pump out of service). For the three smaller systems, results are presented for firm capacity as well as with both well pumps on.

<u>Hawks Bay</u>

The PHD pressure results for the Hawks Bay system under firm pumping capacity are presented in Figure 6-1. The system is unable to maintain pressures above the required 40 psi minimum. With both well pumps running, the system is capable of delivering adequate pressures, see Figure 6-2. Pipe velocities are under ten feet per second (fps).

FIGURE 6-1: HAWKS BAY EXISTING PHD (FIRM CAPACITY)

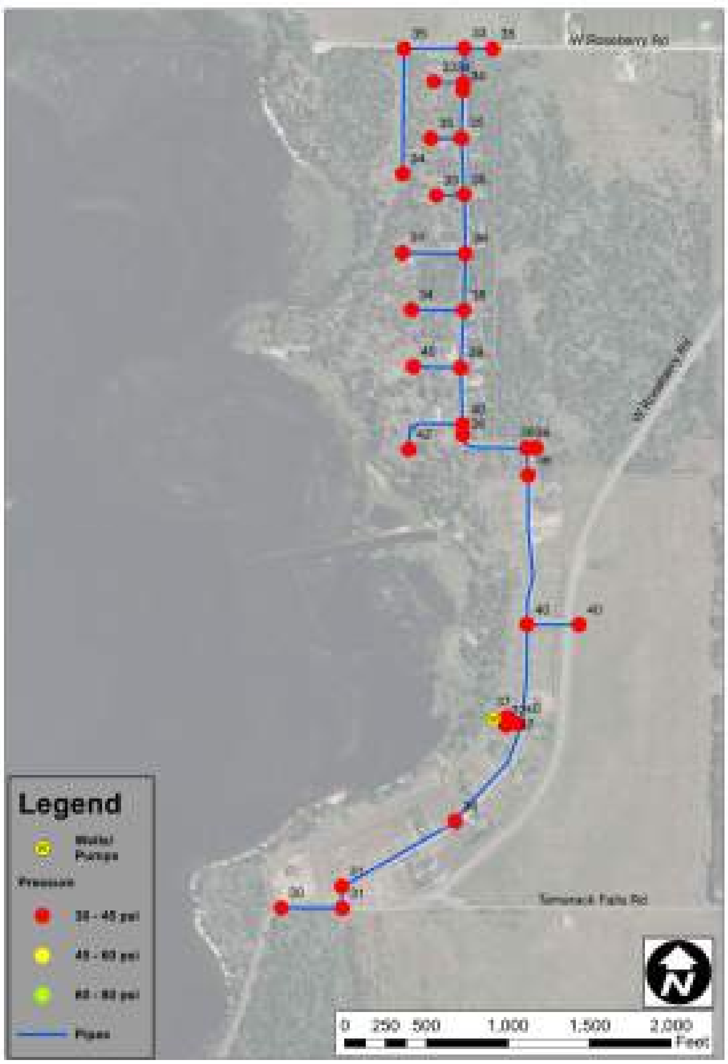


FIGURE 6-2: HAWKS BAY EXISTING PHD (BOTH PUMPS)

Fir Grove

The PHD pressure results for the Fir Grove system under firm pumping capacity are presented in Figure 6-3. At firm capacity, this system is able to maintain 40+ psi in the distribution system during the existing PHD scenario. However, the smaller domestic well is not able to maintain its target discharge pressure of 78 psi. This means that during peak demands, with the larger well off, the domestic well could operate at a lower pressure and lower efficiency. Pipe velocities are under 10 fps. Pressures during PHD with both pumps on are presented in Figure 6-4.

FIGURE 6-3: FIR GROVE EXISTING PHD (FIRM CAPACITY)

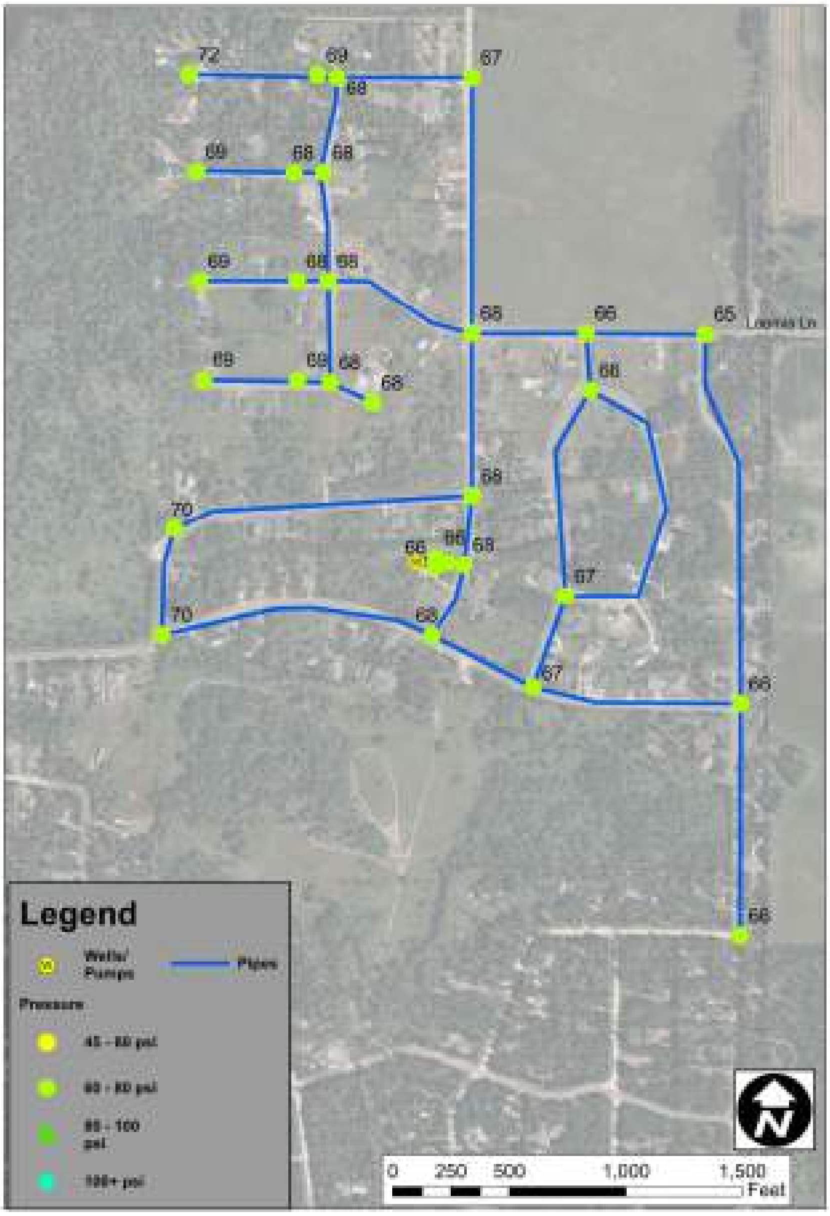
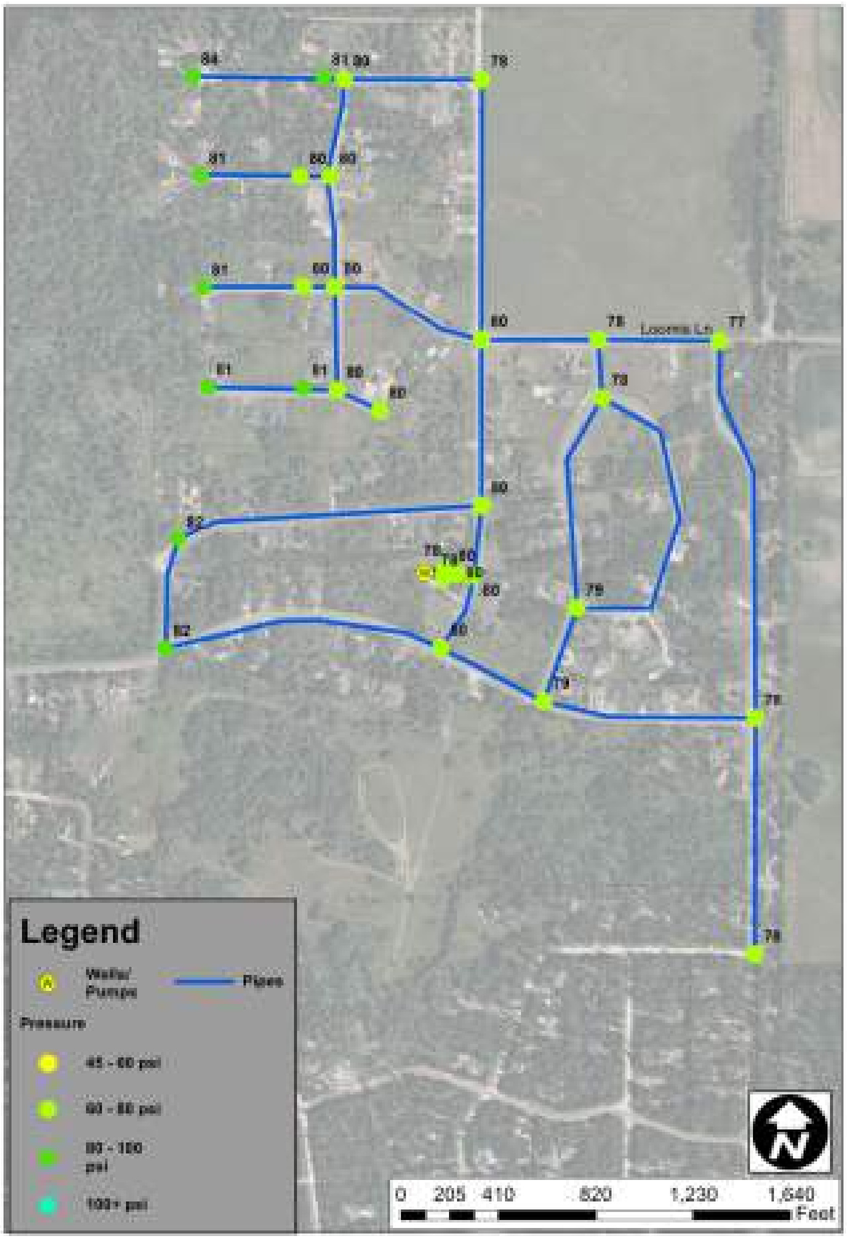


FIGURE 6-4: FIR GROVE EXISTING PHD (BOTH PUMPS)



<u>Day Star</u>

The PHD pressure results for the Day Star system under firm pumping capacity are presented in Figure 6-5. The system is unable to maintain pressures above the required 40 psi minimum. With both well pumps running, the system is capable of delivering adequate pressures, see Figure 6-6. Pipe velocities are under 10 fps. Figure 6-2

FIGURE 6-5: DAY STAR EXISTING PHD (FIRM CAPACITY)

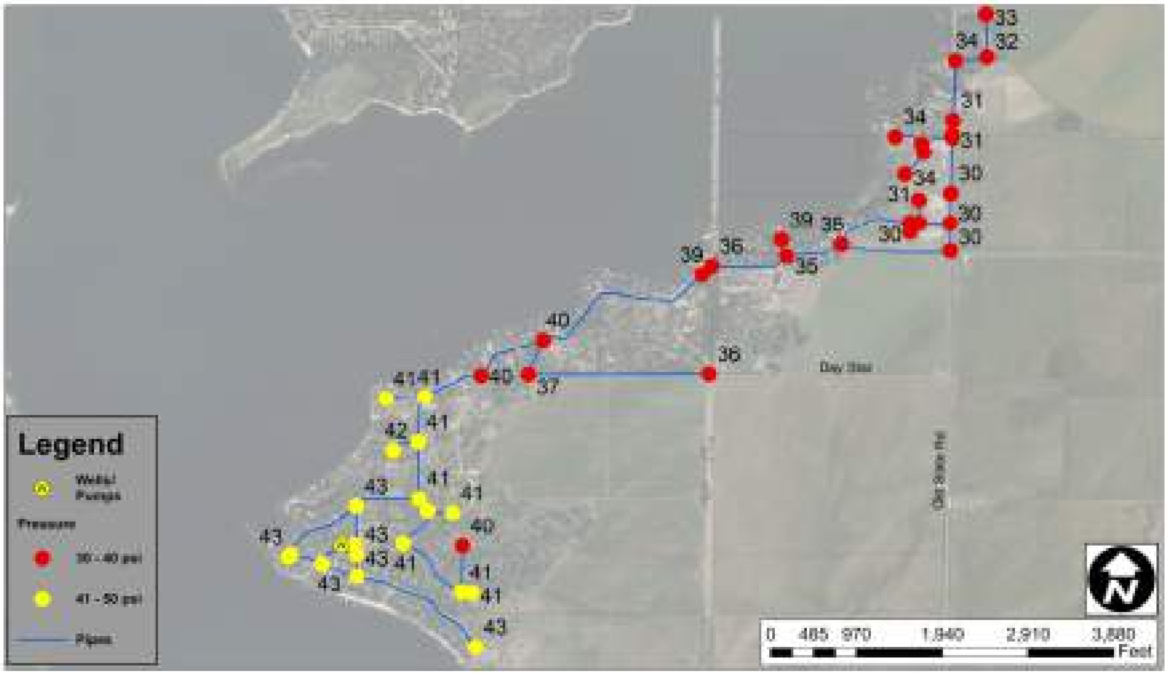
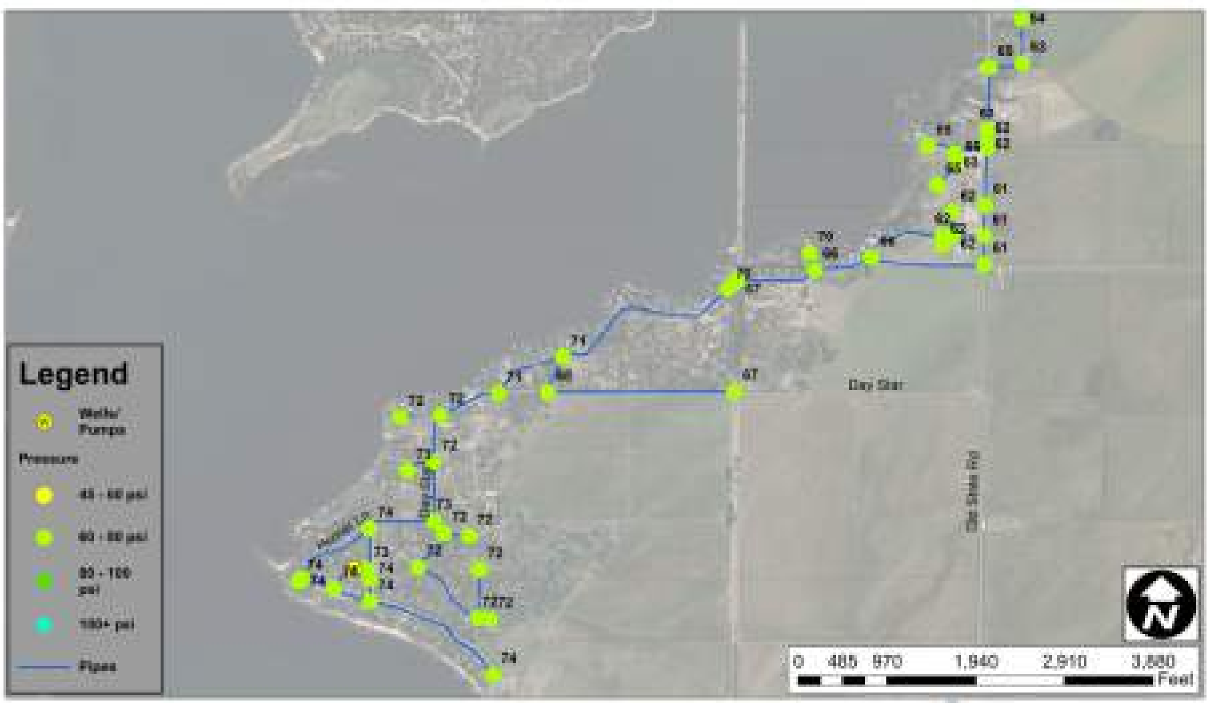


FIGURE 6-6: DAY STAR EXISTING PHD (BOTH PUMPS)

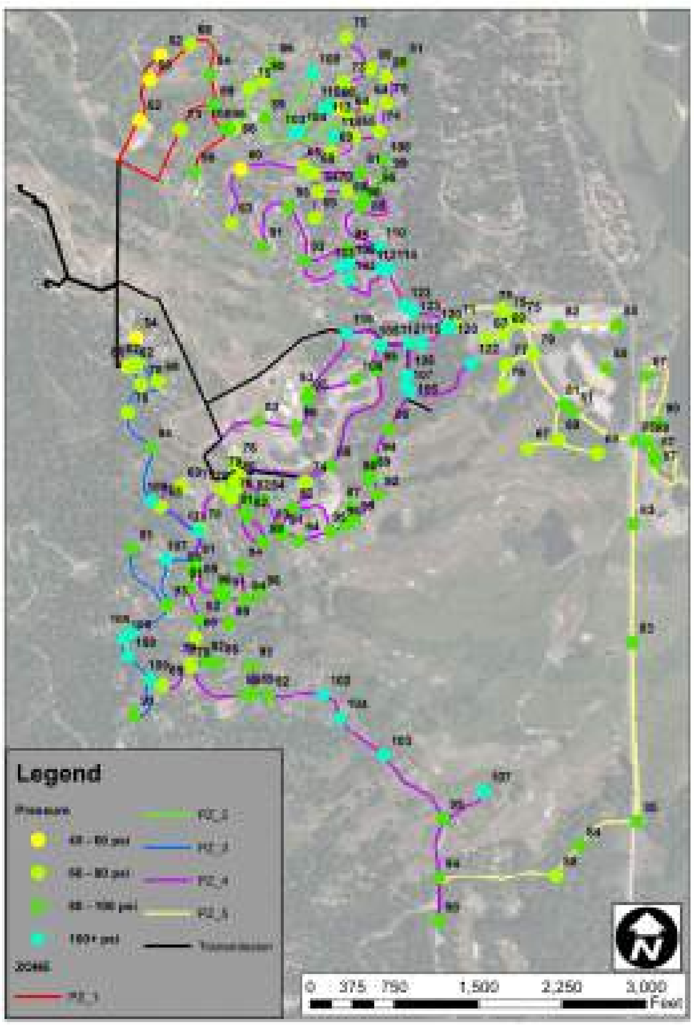


Tamarack

The Tamarack system is capable of delivering adequate pressures during the existing PHD scenario. Several locations throughout the system experience pressure in excess of 80 psi, with a few locations over 100 psi. higher pressures are typical for distribution systems in mountainous terrain where it is impractical to break head and reduce pressures frequently. The District requires that individual services be equipped with pressure reducing valves to mitigate high pressure. Velocities in distribution pipes are under 10 fps except for small PRV lines and valves which are designed to accommodate higher velocities.

During the efforts of this plan, a new line was proposed in the Tamarack system and is currently being constructed. This line consists of an 8-inch main on West Mountain Road from the roundabout at Village Drive south through the Tamarack Employee Housing development, and an 8-inch line connecting to the existing distribution system on Discovery Drive to the west. The 8-inch line is equipped with a PRV at Discovery Drive to maintain a zone boundary between Pressure Zones 4 and 5. This new line and PRV were included in the existing PHD fire flow scenario. The proposed PRV size and setting is provided in Chapter 3

FIGURE 6-7: TAMARACK EXISTING PHD



6.2.2. Max Day plus Fire Flow

A MDD plus fire flow model scenario was run for each system to evaluate the available fire flow and velocities throughout the existing distribution systems. The results of these scenarios are discussed and shown in the following figures. Similar to the PHD analysis, results for firm capacity and with both well pumps on are shown for the three smaller systems. Fire flow planning criteria was discussed in Chapter 4. Where the system meets the County's requirement of 1,125 gpm but not the 1,500 gpm planning criteria for rural residential areas, the District will not be making recommended improvements.

<u>Hawks Bay</u>

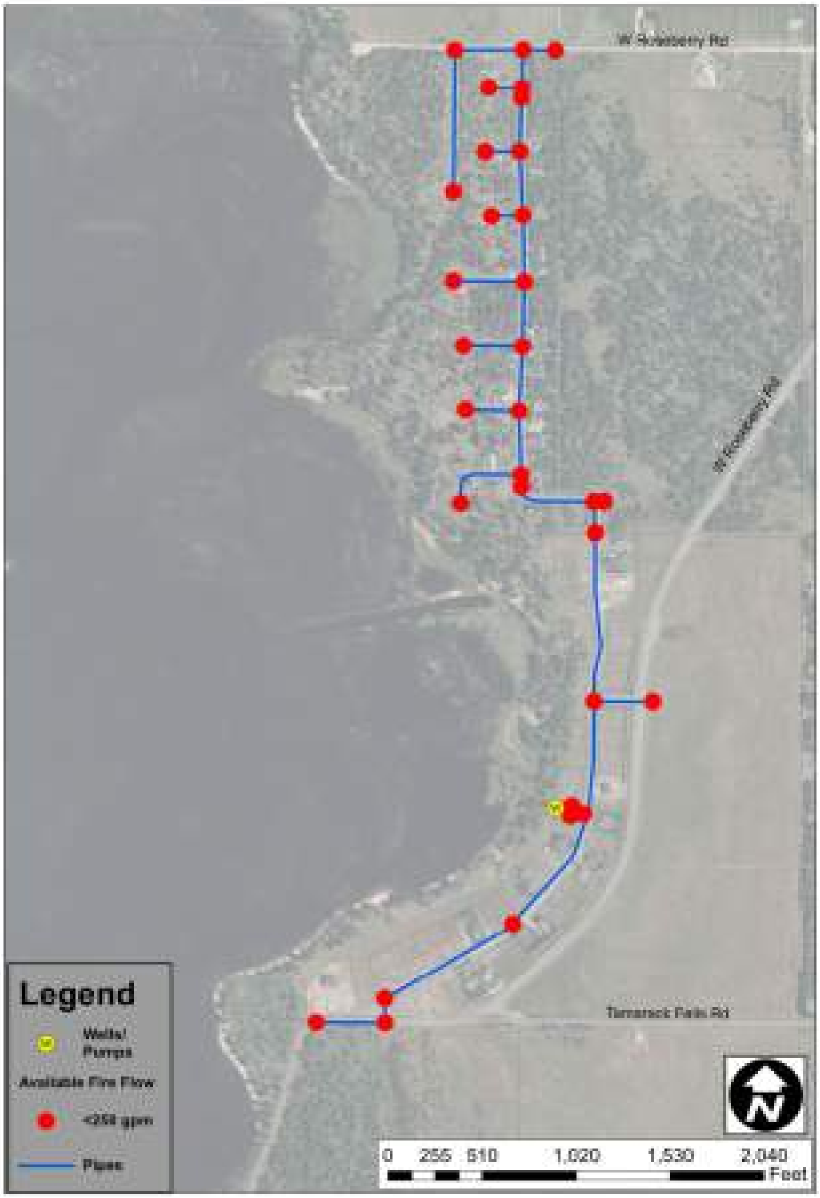
The Hawks Bay system is not capable of delivering the fire flow planning criteria during the existing MDD scenario at firm capacity, see

Figure 6-8.

Figure 6-9 shows the system has less than 250 gpm of fire protection at firm capacity. Velocities are under 15 fps.

FIGURE 6-8: HAWKS BAY EXISTING MEETS REQ'D FF (FIRM CAPACITY)

FIGURE 6-9: HAWKS BAY EXISTING AFF (FIRM CAPACITY)



When both well pumps are on, the Hawks Bay system is capable of meeting the fire flow planning criteria throughout the majority of the distribution system, see Figure 6-10. As shown in Figure 6-11, the four locations that don't meet the fire flow planning criteria have over 1,125 gpm of available fire flow (the County's requirement), so no recommendations will be made to improve fire flow for these locations. These four locations will have additional available fire flow and meet the planning criteria in the with future looping and supply projects as development occurs on the north end of the system. Velocities are under 15 fps.

FIGURE 6-10: HAWKS BAY EXISTING MEETS REQ'D FF (BOTH PUMPS)

FIGURE 6-11: HAWKS BAY EXISTING AFF (BOTH PUMPS)

<u>Fir Grove</u>

The Fir Grove system is not capable of delivering adequate fire flow during the existing MDD scenario at firm capacity. Approximately 500 gpm of fire protection is available. Pipe Velocities during firm capacity fire flow are under 15 fps. Results are shown in Figure 6-12 and Figure 6-13.

FIGURE 6-12: FIR GROVE EXISTING MEETS REQ'D FF (FIRM CAPACITY)

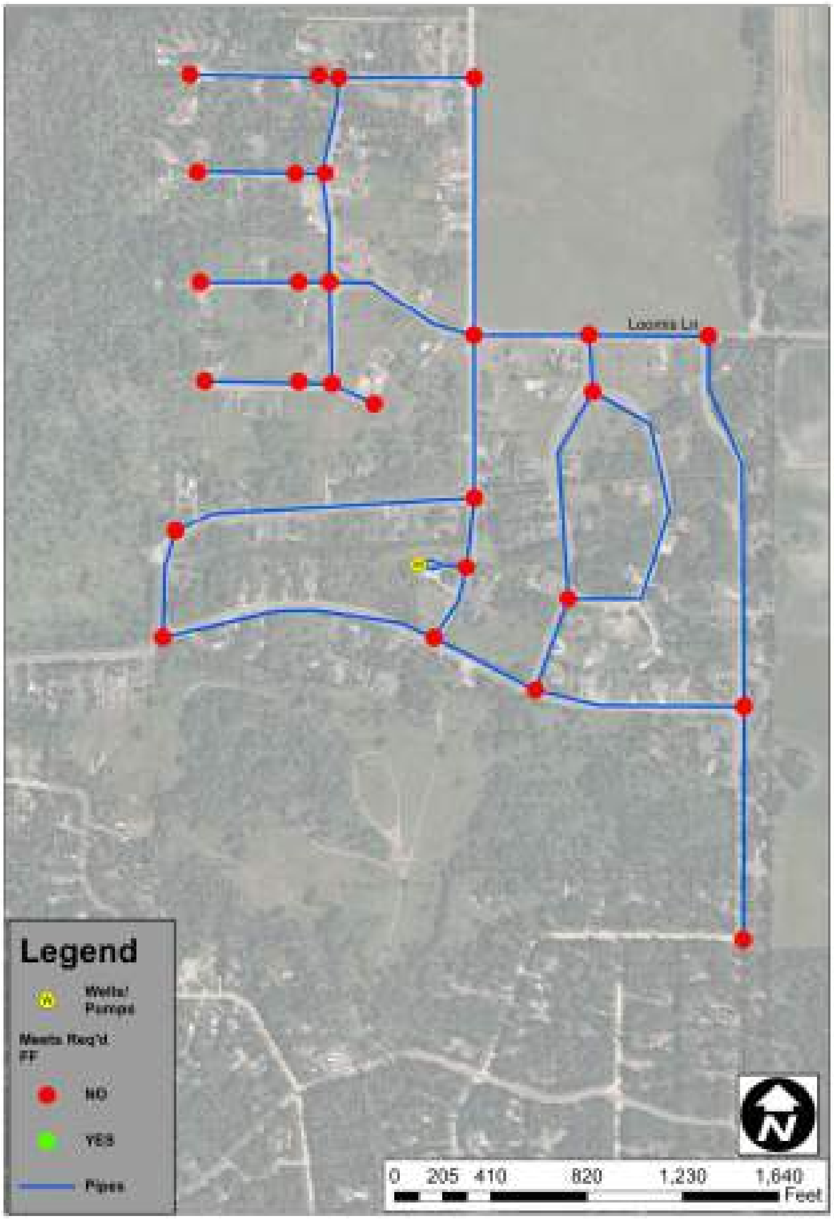
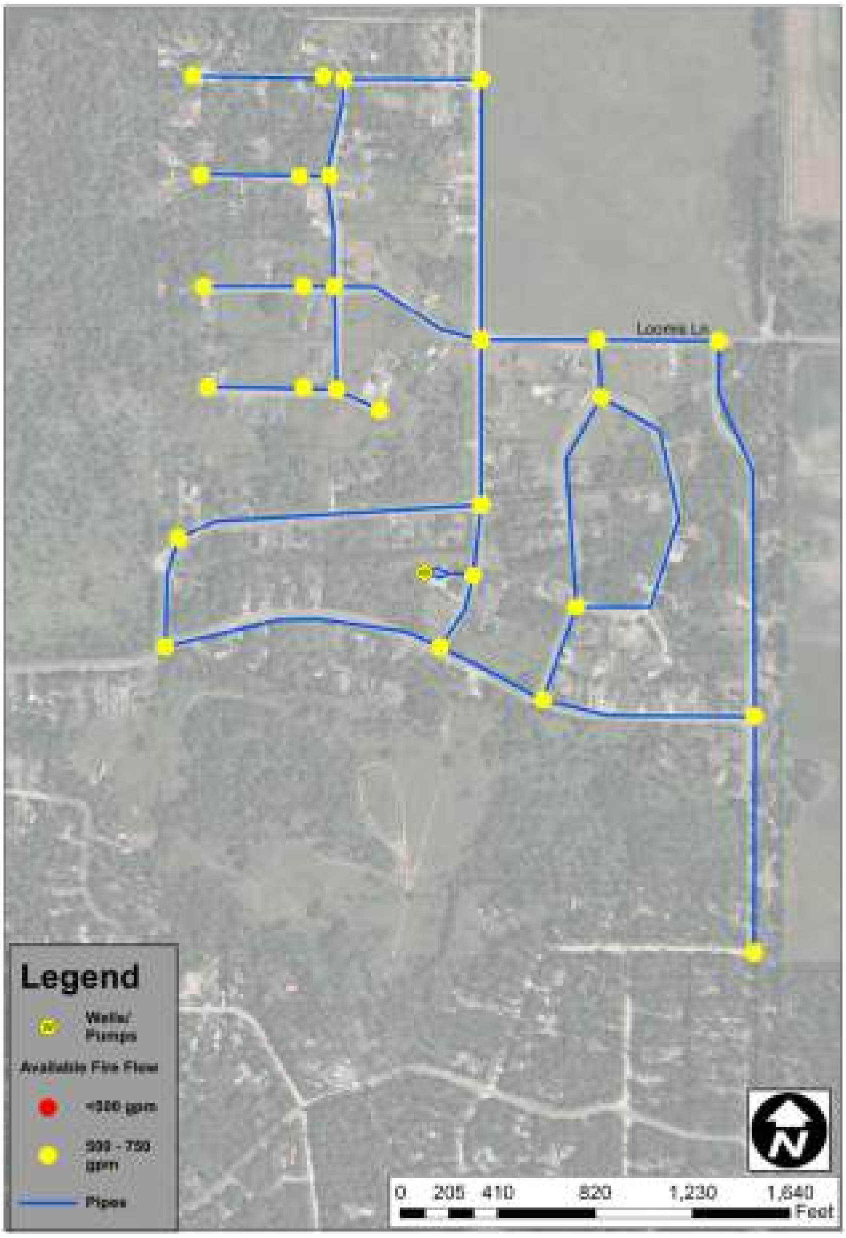


FIGURE 6-13: FIR GROVE EXISTING AFF (FIRM CAPACITY)



With both well pumps on, the Fir Grove system is able to meet the fire flow planning criteria during the existing MDD scenario except at the end of the dead-end cul-de-sacs on the west side of the system. The dead-end cul-de-sacs have approximately 1,300 – 1,400 gpm of available fire flow, which is larger than the County's 1,125 gpm rural residential requirement. Therefore, no recommendations to improve the available fire flow to these cul-de-sacs will be made. Pipe velocities with both pumps on are under 15 fps at the required fire flows. Available fire flows with both pumps on are shown in Figure 6-14 and Figure 6-15.

FIGURE 6-14: FIR GROVE EXISTING MEETS REQ'D FF (BOTH PUMPS)

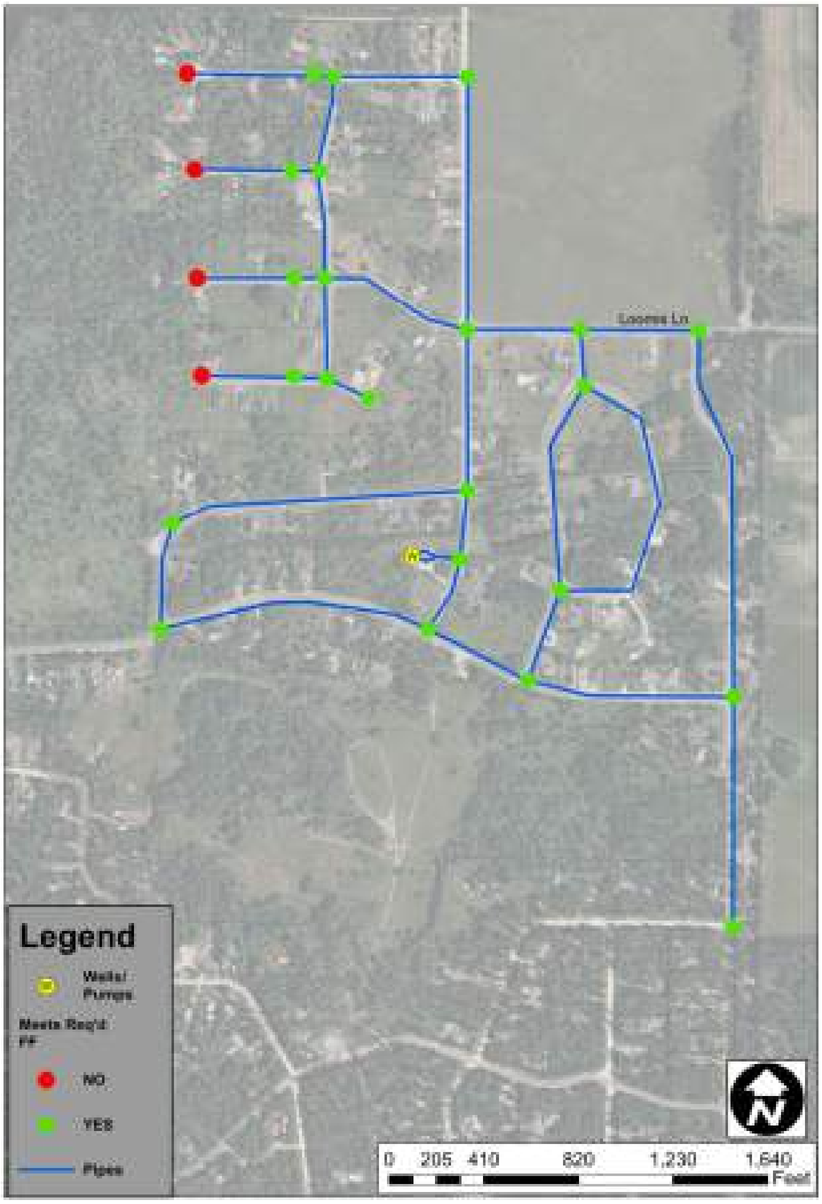
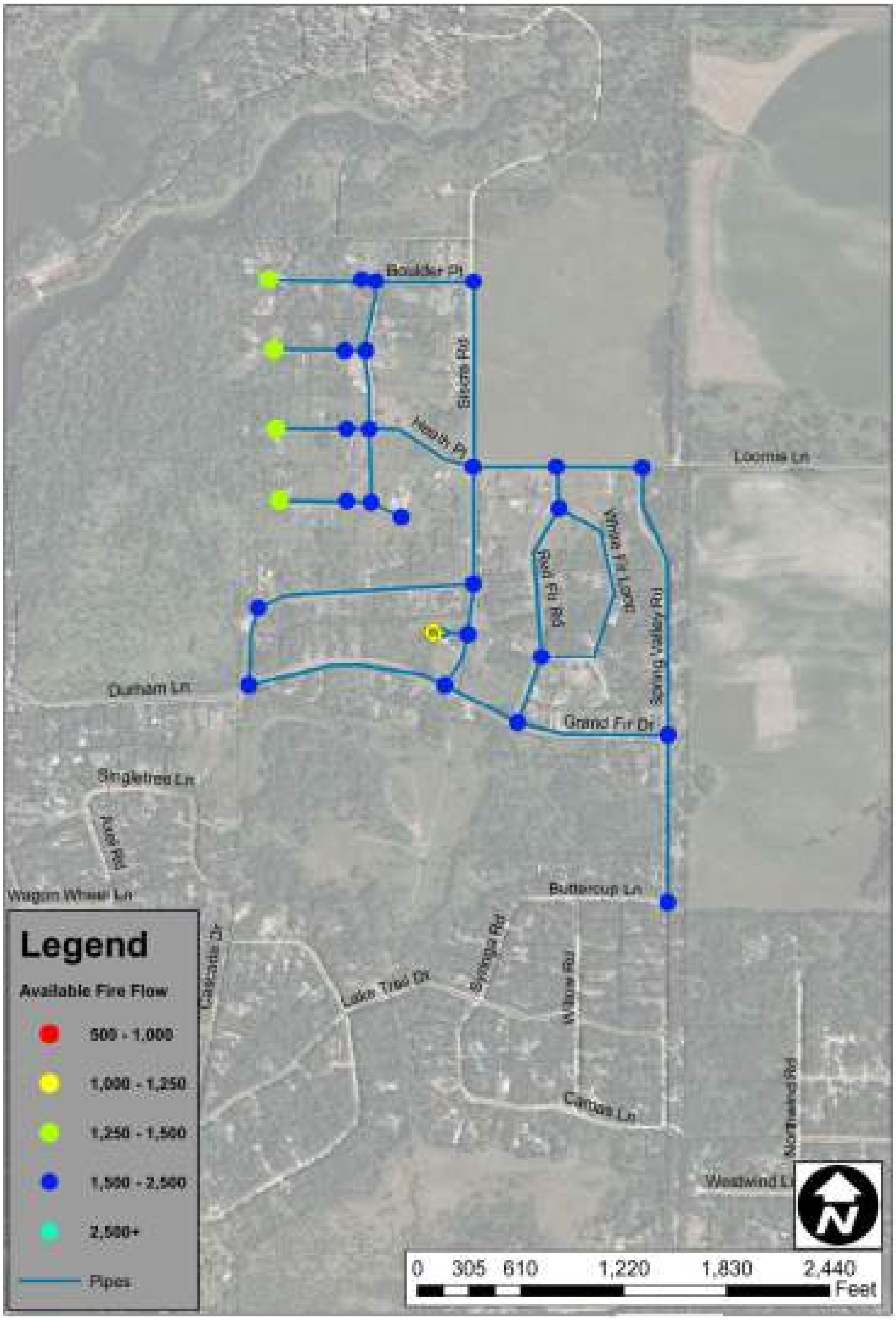


FIGURE 6-15: FIR GROVE EXISTING AFF (BOTH PUMPS)



<u>Day Star</u>

The Day Star system is not capable of meeting the fire flow planning criteria during the existing MDD scenario at firm capacity. Approximately 200 – 400 gpm of fire protection is available. Pipe velocities during firm capacity fire flow are under 15 fps. Results are shown in Figure 6-16 and Figure 6-17.

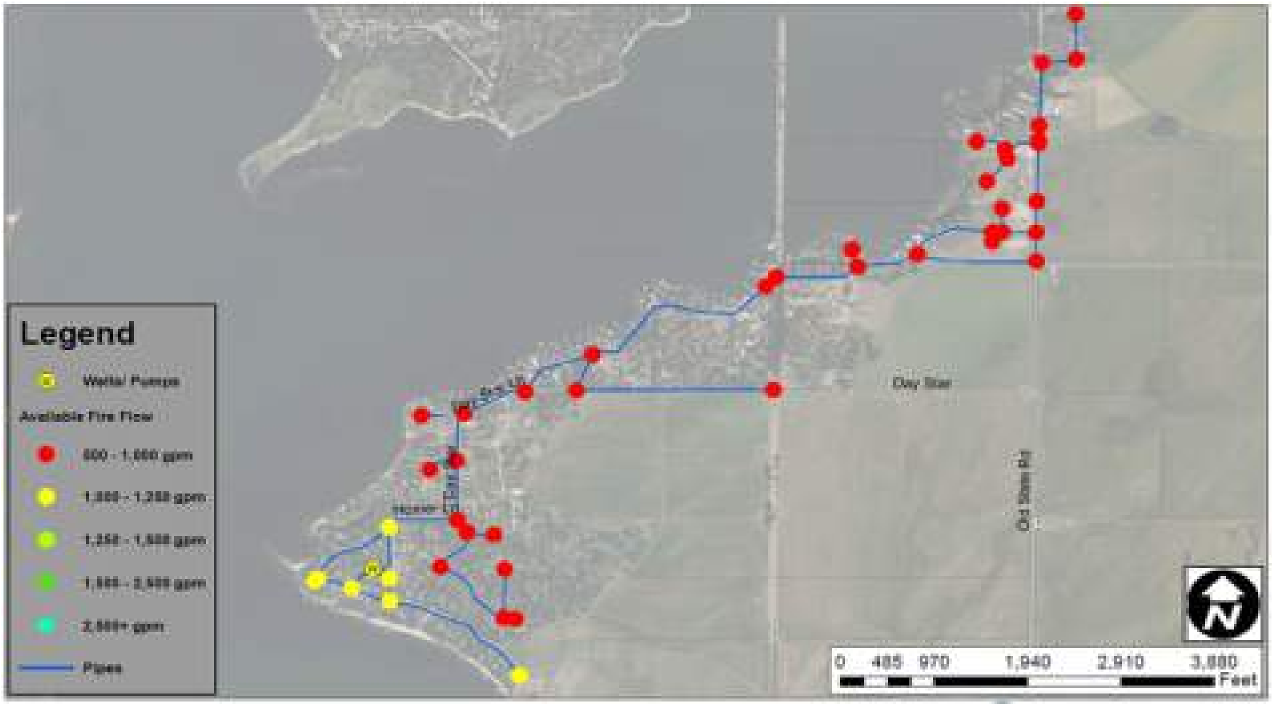
FIGURE 6-16: DAY STAR EXISTING MEETS REQ'D FF (FIRM CAPACITY)

FIGURE 6-17: DAY STAR EXISTING AFF (FIRM CAPACITY)

With both well pumps on, the Day Star system is still not able to meet the fire flow planning criteria during the existing MDD scenario. Approximately 500 – 1,100 gpm of fire protection available. The majority of the fire flow deficit can be attributed to the supply deficit. The long single 8-inch mainline is also restricting available fire flow. Alternatives to address the fire flow deficit are discussed in Chapter 7. Pipe velocities with both pumps on are under 15 fps. Results are shown in Figure 6-18 and Figure 6-19.

FIGURE 6-18: DAY STAR EXISTING MEETS REQ'D FF (BOTH PUMPS)

FIGURE 6-19: DAY STAR EXISTING AFF (BOTH PUMPS)



Tamarack

The Tamarack system is capable of meeting the fire flow planning criteria during the existing MDD scenario except for two areas. Results are shown in

Figure 6-20 and Figure 6-21. The first area that does not meet the fire flow planning criteria is around the Lodge at Osprey Meadows. The water main in the road can meet the planning criteria, but the 4-inch lines around the Lodge have less than 1,500 gpm of fire protection. This is a Tamarack commercial area with a fire flow planning criterion of 3,000 gpm. A project will be recommended to upsize these 4-inch waterlines around the Lodge. The second area is the small dead-end waterline in Pinnacle Court. Records show this area is served with a 3-inch line that is equipped with a fire hydrant. Achieving any significant available fire flow with a 3-inch line is not possible. There is a possibility that records show the incorrect line size here. A project will be recommended to address this deficiency (i.e., replace the line with a larger line). Prior to commencing this project, it is recommended that the District investigate the existing line size first. This could be done through estimating the line size by counting the turns it takes to close the mainline valve, potholing to physically see the line, and/or flowing the hydrant off this line to observe available flows.

As noted, before, during the efforts of this plan, a new line was proposed in the Tamarack system and is currently being constructed. This line consists of an 8-inch main on West Mountain Road from the roundabout at Village Drive south through the Tamarack Employee Housing development, and an 8-inch line connecting to the existing distribution system on Discovery Drive to the west. The 8-inch line is equipped with a PRV at Discovery Drive to maintain a zone boundary between Pressure Zones 4 and 5. These new lines and PRV were included in the existing MDD available fire flow scenario.

FIGURE 6-20: TAMARACK EXISTING MEETS REQ'D FF

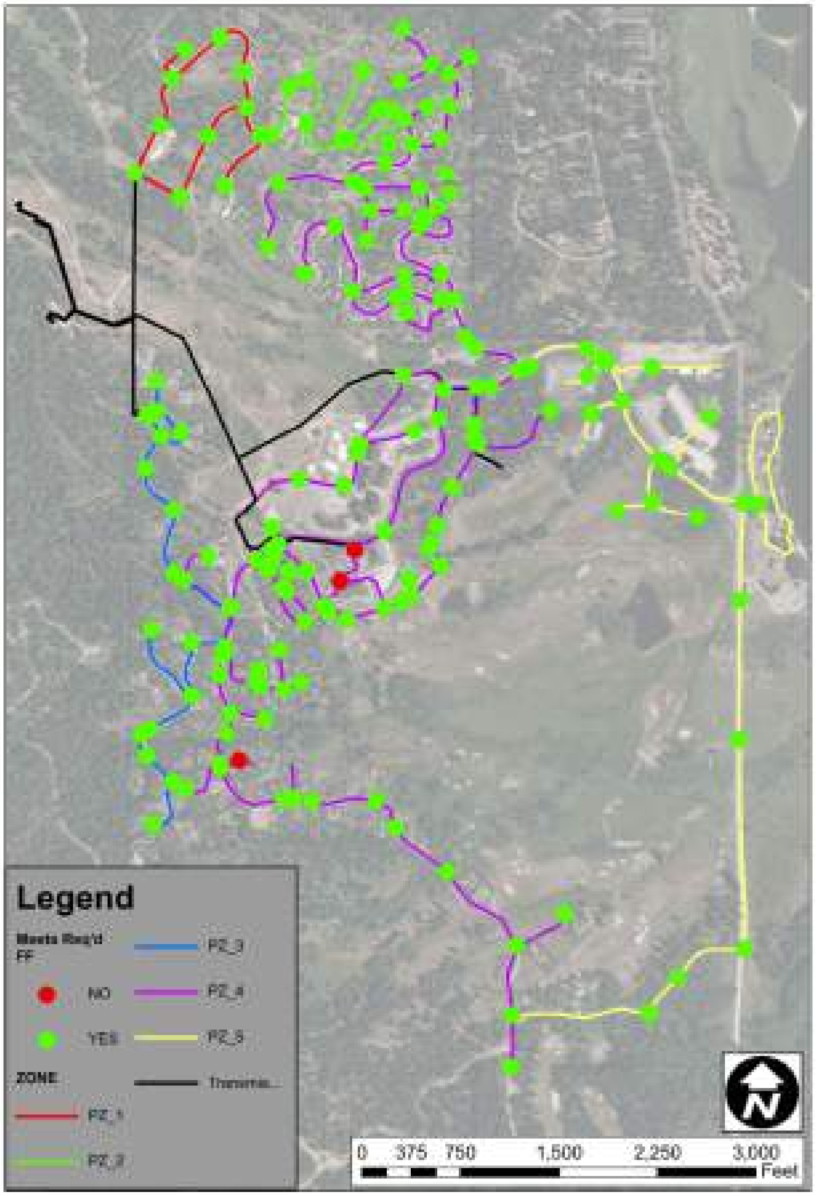
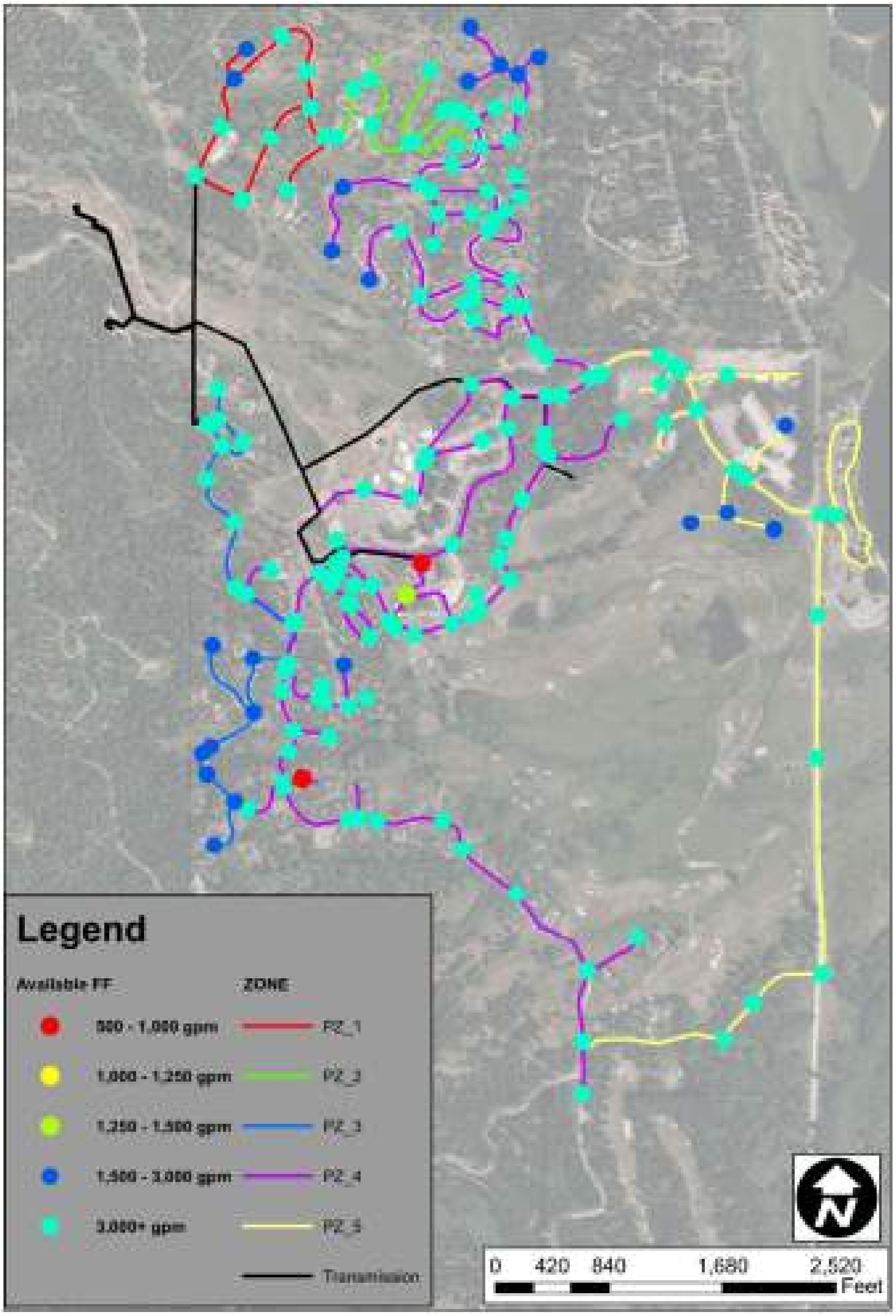


FIGURE 6-21: TAMARACK EXISTING AFF



CHAPTER 7 - ALTERNATIVE ANALYSIS

This chapter discusses improvement alternatives to address deficiencies identified in the previous chapters. Where improvements are relatively straightforward (i.e., undersized waterline needing upsized to meet fire flow requirements), alternatives are not discussed. For more complex deficiencies (i.e., supply deficit, insufficient storage, or operating pressures out of compliance with requirements/planning criteria), up to three alternatives are explored. For projects adding storage to systems, elevated tanks were not considered as it is anticipated that the County and residents of this area would not approve a structure of this type during the permitting phase. This Chapter will also discuss pros and cons for each alternative, provide estimated costs for each alternative, and identify the selected alternative for each deficiency. It will also provide a brief environmental impact review for each selected alternative. Selected alternatives will be included in the capital improvement plan (CIP) that will be discussed in Chapter 9.

7.1. NEED FOR SYSTEM IMPROVEMENTS

The District's four water systems do not have any water quality concerns with the constituents listed in the EPA's National Primary Drinking Water Regulations. Recently, the District has had customer complaints about yellow colored water in the Tamarack system. The yellow-colored water is a result of iron and manganese, which are listed on the EPA's list of Secondary Drinking Water Requirements – these constituents are suggested for aesthetics only and are non-enforceable. Keller Associates is currently working with the District to improve the water quality and address the iron and manganese issue (see Chapter 3 section 3.1.4). There are no improvements recommended at this time to address water quality concerns for the health and safety of the District's customers. The Department of Environmental Quality had several observations and recommendations for each system in the last round of sanitary surveys. These observations and recommendations are summarized in Chapter 3. The District views these as maintenance activities; they will not be included in the CIP.

The four water systems were constructed prior to 2008 when major revisions were made to Idaho Administrative Code (IDAPA) that now require water systems to meet supply with firm capacity (i.e., largest source out of service). These three systems currently do not require firm supply capacity but will when material modifications are made to the systems. Recommendations for these three systems are made with the intention of bringing them into compliance with the current code when material modifications are made. The Tamarack distribution system is supplied by gravity from the 1.25 MG tank and does not need firm delivery for peak hour demand (PHD) or max day demand (MDD) plus fire flow from pumps.

The District's four water systems were constructed in the early 2000's. The four systems are relatively new with infrastructure only approximately 20 years old. Conditions of the pumping facilities were noted in Chapter 3; there are recommendations to address the pumping facilities aging infrastructure, but the recommendations are considered maintenance activities by the District. No CIP projects will be recommended based on aging infrastructure. The majority of the distribution piping is of PVC material which has a useful life of up to 100 years. Therefore, there are no recommendations to replace specific areas, materials, or age of pipes; all the pipes are still anticipated to have a significant portion of their useful life remaining.

Valley County has seen steady growth in recent years, and it is anticipated that the County will continue to grow. Consequently, the District's four water systems are also anticipated to grow. Anticipated growth for each system was discussed in Chapter 4. The additional growth in each system will place more and more demand on existing infrastructure, most notably the supply for the Hawks Bay, Fir Grove, and Day Star systems. See Chapter 5 for specific projected supply deficits based on the anticipated growth. The District will seek opportunities with the anticipated growth to secure real estate for new infrastructure to support the additional demand and bring each system into compliance with current IDAPA code for being able to meet demands with firm supply capacity.

Other system specific deficiencies are noted and discussed in Sections 7.5 – 7.8.

7.2. NO-ACTION ALTERNATIVE

In the “No-Action Alternative” the District would choose not to correct any of the noted deficiencies and the systems will remain as is. This is not an acceptable alternative as the systems’ existing deficiencies will only get worse as growth occurs, even with the existing commitments. The systems would be at a higher risk of depressurization events and further their inability to supply fire flow in emergencies.

7.3. OPTIMUM OPERATION OF EXISTING FACILITIES

Optimizing operations of existing facilities is not a viable option to correct the deficiencies as the systems suffer from physical constraints such as undersized wells/pumps and insufficient storage. No adjustment of set points or valve turning will fix the existing deficiencies.

The District has not conducted an energy audit of their water systems. However, all pumps that directly pressurize distribution systems are controlled by variable frequency drives (VFD’s) and have pressure tanks to minimize pump cycling. As future improvements take place energy efficiency will be included in the design process.

Energy efficiency improvements that can be achieved in water systems generally focus on two key aspects: VFDs and higher efficiency pumps. By installing VFDs on the well pumps, motor speed can be adjusted based on the required water demand. This allows the pumps to operate at optimal levels, reducing energy consumption during periods of lower water demand. VFDs also enable soft starts and stops, preventing sudden surges in power and reducing wear and tear on the equipment. Furthermore, upgrading to higher efficiency pumps with improved hydraulic performance can decrease energy usage. These pumps are designed to deliver the same flow rate while consuming less power, resulting in tangible energy savings over the long term.

7.4. REGIONALIZATION

The District’s four systems are all separated by physical barriers that make it nearly impossible to regionalize the systems. Cascade lake and various streams/rivers cut off the systems from one another and installing a connection through these areas is not viable. Also, currently the systems are separated by several miles. The District has no plans to regionalize any of the systems as it is not a viable option with their current configurations and locations.

7.5. HAWKS BAY ALTERNATIVE ANALYSIS

The Hawks Bay system has sufficient water rights but lacks the physical ability to deliver the water with a firm capacity supply deficit of approximately 1,600 gpm based on current commitments and the soon to be committed Tamarack Falls development. Due to the lack of firm supply capacity, the system is not able to maintain 40+ psi during peak hour and is not able to meet the available fire flow planning criteria of 1,500 gpm. The system currently does not have storage; if storage were to be added, a tank with a usable volume of 350,000 gallons is recommended.

To correct the various deficiencies, three alternatives were reviewed. These alternatives include:

7.5.1. HB Alternative 1 – Construct two new groundwater wells

The recommended capacity of each well is 900+ gpm targeting a hydraulic grade of 5,020 feet. With the addition of two new wells the system would be able to meet demands with firm capacity. Table 7-1 shows an updated supply analysis with future demands under this alternative.

The two additional wells could be located within the Tamarack Falls development and would be pumped directly into the distribution system. Figure 7-1 shows the wells and the mainline line from the existing system to the Tamarack Falls development. The location of the wells is flexible, the location shown in Figure 7-1 is shown for illustration purposes only. Adding two new wells to the system would bring the overall supply up to meet existing and future demands. However, without adding storage, the supply would need to continue to meet PHD and MDD plus fire flow.

TABLE 7-1: HAWKS BAY ALTERNATIVE 1 SUPPLY SUMMARY

Source	Capacity (gpm)
Well #1	185
Well #2	1,082
New Well A	900
New Well B	900
Total Capacity	3,067
Firm Capacity	1,985
MDD+FF[1]	1,789
PHD[1]	930
Excess Supply[2]	**196**
1. Committed with Tamarack Falls	
2. Firm capacity compared to the larger of MDD+FF or PHD	

FIGURE 7-1: HAWKS BAY ALTERNATIVE 1 LAYOUT

7.5.2. HB Alternative 2 – Construct one new well, a storage tank, and a booster station

The new well would pump to a ground level tank with a storage capacity of 350,000 gallons. The well is recommended to have a capacity of 500+ gpm to be able to meet the future MDD of the system with some surplus and to fill the tank at a substantial rate. The booster station would have a firm delivery capacity of 1,700 gpm targeting a hydraulic grade of 5,020 feet. Table 7-2 shows the updated supply analysis under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

The new well, tank, and booster station could be located within the Tamarack Falls development. Figure 7-2 shows the well, tank, booster, and the mainline from the existing system to the Tamarack Falls development. The location of the well, tank, and booster station is flexible, the location shown in Figure 7-2 is shown for illustration purposes only.

TABLE 7-2: HAWKS BAY ALTERNATIVE 2 SUPPLY AND DELIVERY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1	185	185
Well #2	1,082	1,082
New Well A	500	-
New Booster	-	1,700
Total Capacity	1,767	2,967
Firm Capacity[4]	685	1,885
MDD[1]	289	-
MDD+FF[1]	-	1,789
PHD[1]	-	930
Excess Supply[5]	**396**	**96**

1. Committed with Tamarack Falls
2. Upgrade Well 1 to have a greater Capacity
3. PHD and FF met by booster
4. Assumes Well #2 is the largest pump. This is conservative as the booster station could have a pump larger than the capacity of Well #2.
5. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-2: HAWKS BAY ALTERNATIVE 2 LAYOUT

7.5.3. HB Alternative 3 – Upgrade Well #1 and construct a new tank and booster station

In this alternative, Well #1's capacity would be upgraded to 500+ gpm, Wells #1 and #2 would be pumped directly to a new ground level tank with a storage capacity of 350,000 gallons, and a new booster station targeting a hydraulic grade of 5,020 feet would supply the distribution system from the new tank. The new booster station would have a firm capacity of 2,000 gpm to meet peak demands including MDD plus fire flow. Table 7-3 shows the updated supply analysis with future demands under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

The tank and booster station could be located within the Tamarack Falls development. Figure 7-3 shows the tank, booster, and the transmission lines from the existing system to the Tamarack Falls development. The location of the tank and booster station is flexible, the location shown in Figure 7-3 is shown for illustration purposes only.

TABLE 7-3: HAWKS BAY ALTERNATIVE 3 SUPPLY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1[2]	500	-
Well #2	1,082	-
New Booster	-	2,000
Total Capacity	1,582	2,000
Firm Capacity[4]	500	2,000
MDD[1]	289	-
MDD+FF[1]	-	1,789
PHD[1]	-	930
Excess Supply[5]	**211**	**211**

1. Committed with Tamarack Falls
2. Assumes Well #1's capacity is upgraded
3. PHD and FF met by booster
4. Assumes firm capacity of the booster station is met with multiple large booster pumps
5. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-3: HAWKS BAY ALTERNATIVE 3 LAYOUT

Costs for each of the three alternatives are presented in Table 7-4. Detailed cost estimates are provided in Appendix H.

TABLE 7-4: HAWKS BAY ALTERNATIVES ESTIMATED COSTS

Alternative	Description	Estimated Cost[1,2]
1	Construct two new groundwater wells	$ 7,068,000
2	Construct one new well, a storage tank, and a booster station	$ 11,570,000
3	Upgrade Well #1 and construct new tank and booster station	$ 11,482,000

1. Costs assume real estate will be provided at no cost to the District by developers.
2. Costs include total project costs and 20-year O&M costs. See Appendix H for cost estimate details.

Pros and cons for each alternative are provided in Table 7-5. Although constructing two new wells appears to be the lowest cost alternative, the District has selected Alternative 2 as the preferred solution to the Hawks Bay deficiencies. Adding storage to the system has many benefits such as providing emergency storage and allowing the supply to be maximized (i.e., storage can be used to meet peak demands and fire flow rather than the wells' capacity). As this alternative includes the construction of a new well, additional water rights should be acquired to insure adequate supply for future growth. Existing wells within the District's service areas have produced water meeting drinking water standards, and only simple chlorination treatment is anticipated with new sources. It is recommended that the District model the improvements at their proposed locations to check the infrastructure is capable of meeting the needs of the system before securing the real estate or implementing the improvements.

TABLE 7-5:HAWKS BAY ALTERNATIVES PRO'S & CON'S

Alternative	Pros	Cons
1	- Lowest cost alternative. - Least amount of infrastructure. - Greatest increase to total supply.	- Does not add storage to the system. - Does not maximize the existing well supply as under this alternative the system would continue to need to meet peak demands and fire flows with the supply (i.e., wells).
2	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Adds additional supply (i.e., new well). - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility). - Greater available fire flow than Alternative 3 as the system is supplied from multiple locations.	- More infrastructure than Alternative 1 and anticipated additional operations and maintenance associated with multiple pumps and a tank facility.
3	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility).	- Most amount of infrastructure. - Lower available fire flow than Alternative 2 as the system is only supplied from one location.

7.6. FIR GROVE ALTERNATIVE ANALYSIS

The Fir Grove system has sufficient water rights but lacks the physical ability to deliver the water with a firm capacity supply deficit of approximately 1,370 gpm based on current commitments and the recently committed Timber Creek development. The system is able to maintain pressures above 40 psi during existing PHD with firm capacity but will not be able to do so when current commitments, including the Timber Creek development, come online. Also due to the lack of firm supply capacity, the system is not able to meet the available fire flow planning criteria of 1,500 gpm. The system currently does not have storage; if storage were to be added, a tank with a usable volume of 350,000 gallons is recommended.

To correct the various deficiencies, three alternatives were reviewed. These alternatives include:

7.6.1. FG Alternative 1 – Construct two new groundwater wells

The recommended capacity of each well is 800+ gpm targeting a hydraulic grade of 5,040 feet. With the addition of two new wells the system would be able to meet demands with firm capacity. Table 7-6 shows an updated supply analysis with future demands under this alternative.

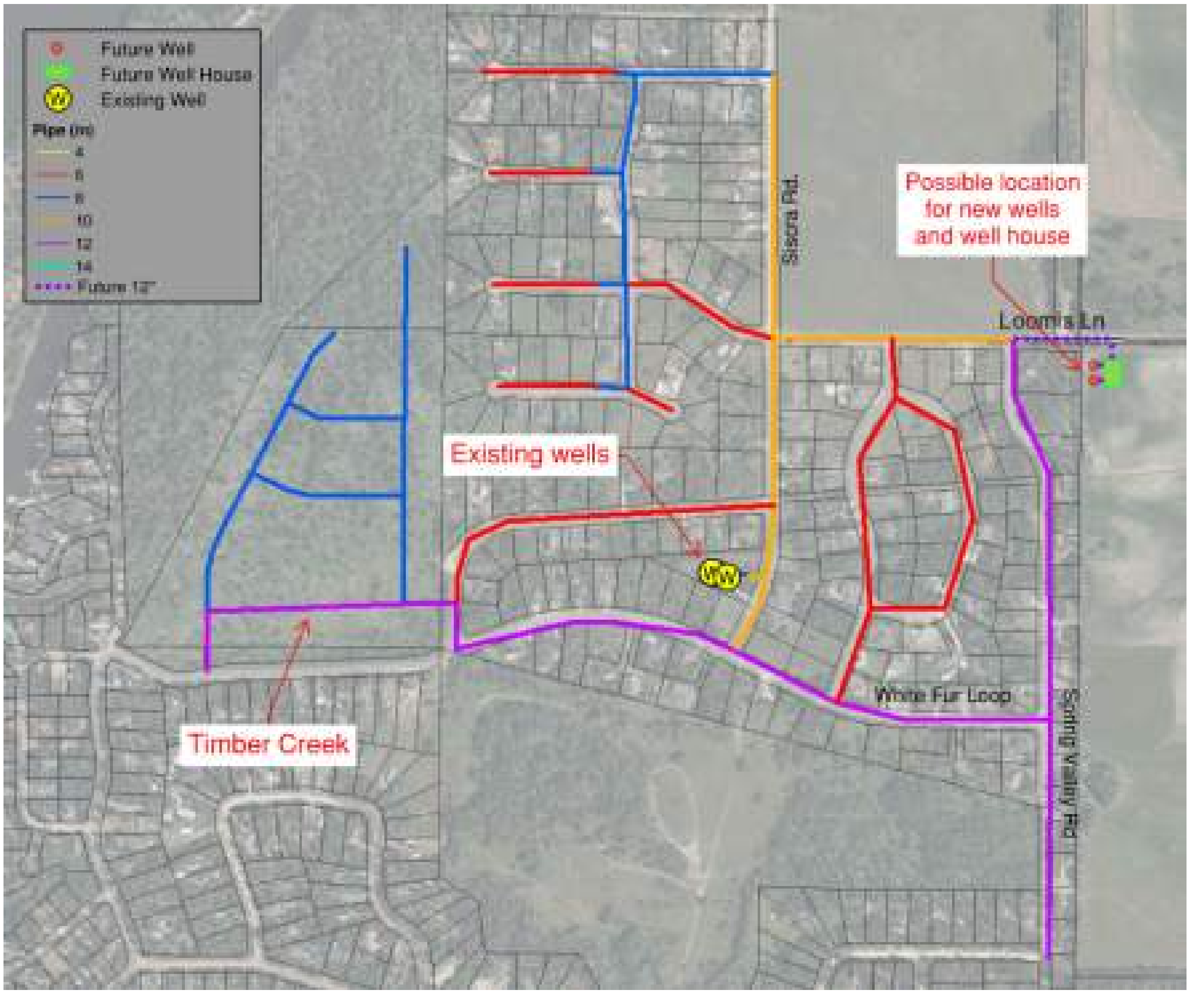
The two additional wells could be located at various undeveloped areas along the 10” or 12” mainlines. The District would work with future development to identify the location of these wells. Figure 7-4 shows the wells and the existing system. The location of the wells is flexible, the location shown in Figure 7-4 is shown for illustration purposes only. Adding two new wells to the system would bring the overall supply up to meet existing and future demands. However, without adding storage, the supply would need to continue to meet PHD and MDD plus fire flow.

TABLE 7-6: FIR GROVE ALTERNATIVE 1 SUPPLY SUMMARY

Source	Capacity (gpm)
Well #1	456
Well #2	1,283
New Well A	800
New Well B	800
Total Capacity	3,339
Firm Capacity	2,056
MDD+FF[1]	1,821
PHD[1]	901
Excess Supply[2]	**235**

1. Committed with Timber Creek
2. Firm capacity compared to the larger of MDD+FF or PHD

FIGURE 7-4: FIR GROVE ALTERNATIVE 1 LAYOUT



7.6.2. FG Alternative 2 – Construct one new well, a storage tank, and a booster station

The new well would pump to a ground level tank with a storage capacity of 350,000 gallons. The well is recommended to have a capacity of 500+ gpm to be able to meet the future MDD of the system with some surplus and to fill the tank at a substantial rate. The booster station would have a firm delivery capacity of 1,500 gpm targeting a hydraulic grade of 5,040 feet. The existing wells will remain in their current configuration and maintain the ability to pump into the system to support during peak or fire flows. Table 7-7 shows the updated supply analysis under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

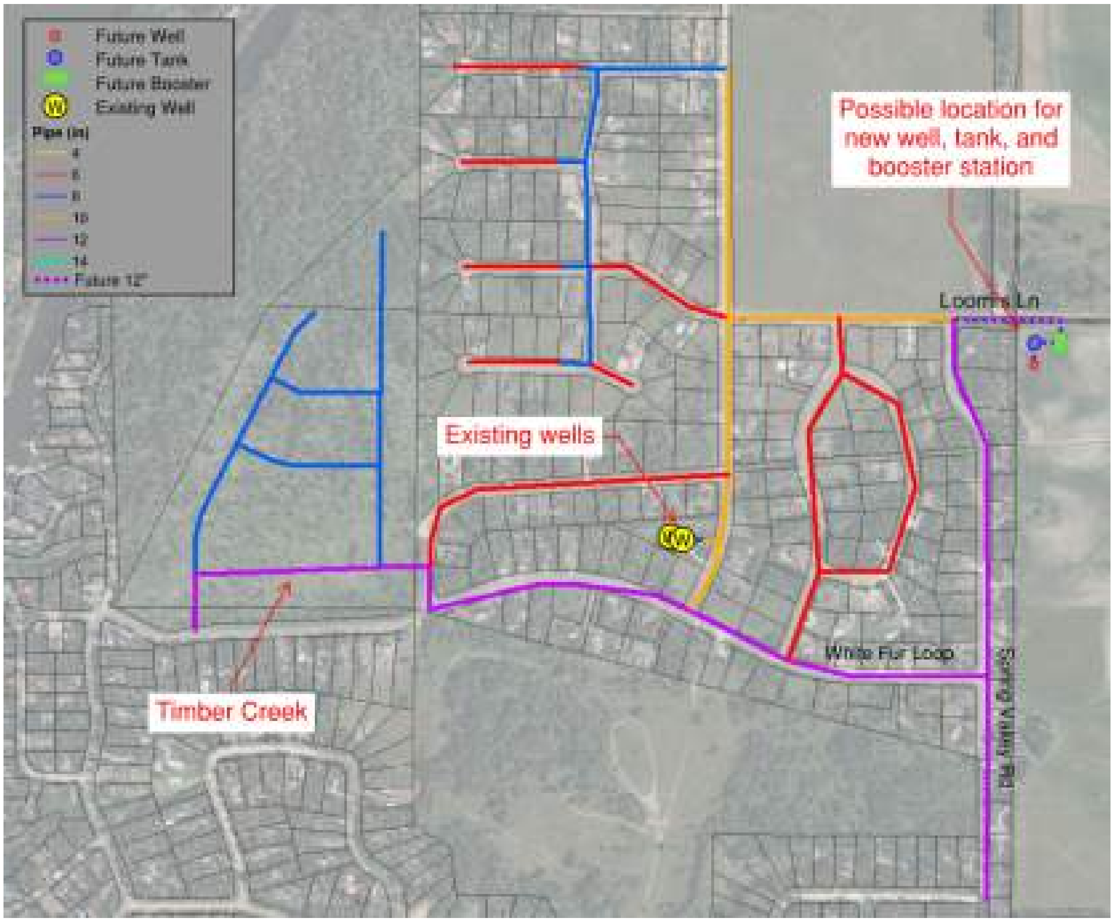
The new well, tank, and booster station could be located in various undeveloped areas along the 10" or 12" mainlines. The District would work with future development to identify the location of these new facilities. Figure 7-5 shows the well, tank, booster, and existing distribution lines. The location of the well, tank, and booster station is flexible, the locations shown in Figure 7-5 are for illustration purposes only.

TABLE 7-7: FIR GROVE ALTERNATIVE 2 SUPPLY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1	456	456
Well #2	1,283	1,283
New Well A	500	-
New Booster	-	1,500
Total Capacity	2,239	3,239
Firm Capacity[3]	956	1,956
MDD[1]	321	-
MDD+FF[1]	-	1,821
PHD[1]	-	901
Excess Supply[4]	**635**	**135**

1. Committed with Timber Creek
2. PHD and FF met by booster
3. Assumes Well #2 is the largest pump. This is conservative as the booster station could have a pump larger than the capacity of Well #2.
4. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-5: FIR GROVE ALTERNATIVE 2 LAYOUT



7.6.3. FG Alternative 3 – Construct a new tank and booster station on the existing well lot

In this alternative, Wells #1 and #2 would be pumped directly to a new ground level tank, and a new booster station would supply the distribution system from the new tank (the tank and booster station would be constructed at the existing well site). The new booster station would have a firm capacity of 2,000 gpm targeting a hydraulic grade of 5,040 feet to meet peak demands including MDD plus fire flow. Table 7-8 shows the updated supply analysis with future demands under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

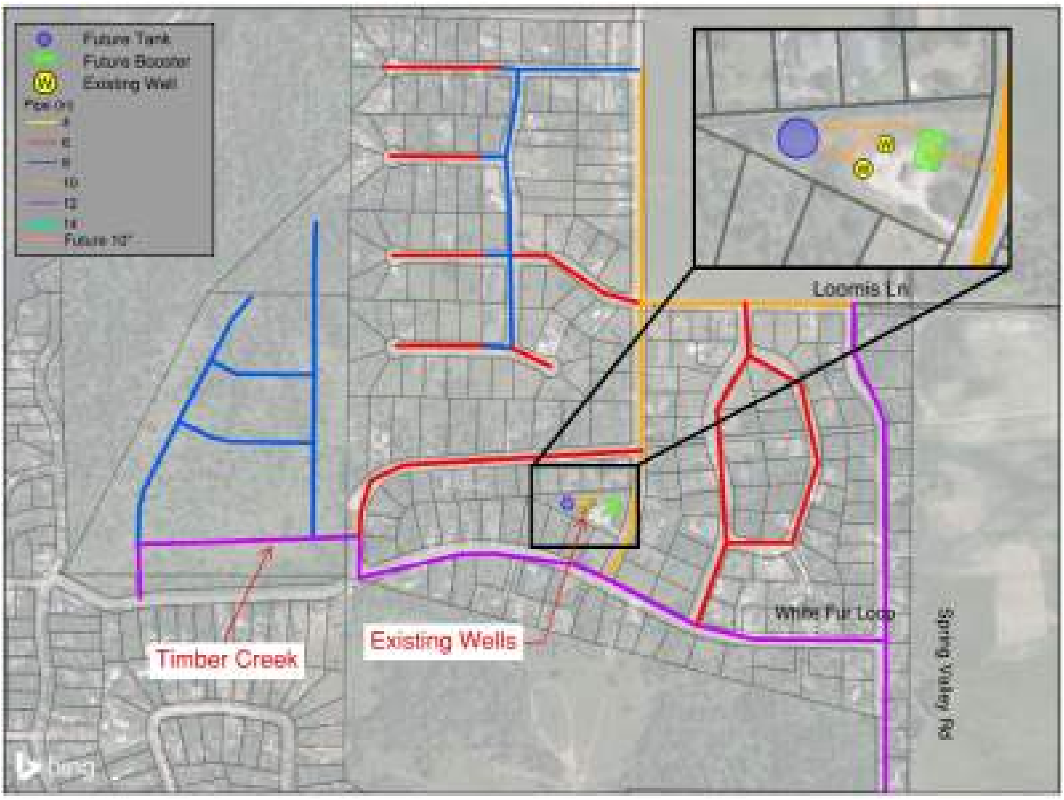
The tank and booster station would be located within the existing well lot. Figure 7-6 shows the tank, booster, wells and existing distribution lines. The location of the tank and booster station within the existing well site has minimal flexibility as storage tank setbacks would need to be met. The location shown in Figure 7-6 is shown for illustration purposes only. The existing well site is owned by the local homeowners' associates (HOA). Installing new infrastructure on land not owned by the District may require additional easements/land acquisition and/or agreements.

TABLE 7-8: FIR GROVE ALTERNATIVE 3 SUPPLY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1	456	-
Well #2	1,283	-
New Booster	-	2,000
Total Capacity	1,739	2,000
Firm Capacity[2]	456	2,000
MDD[1]	321	-
MDD+FF[1]	-	1,821
PHD[1]	-	901
Excess Supply[3]	**135**	179

1. Committed with Timber Creek
2. Assumes firm capacity of the booster station is met with multiple larger booster pumps
3. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-6: FIR GROVE ALTERNATIVE 3 LAYOUT



Costs for each of the three alternatives are presented in Table 7-9. Detailed cost estimates are provided in Appendix H.

TABLE 7-9: FIR GROVE ALTERNATIVES ESTIMATED COSTS

Alternative	Description	Estimated Cost[1,2]
1	Construct two new groundwater wells	$ 7,084,000
2	Construct one new well, a storage tank, and a booster station	$ 10,960,000
3	Construct new tank and booster station on existing well lot	$ 9,108,000

1. Costs assume real estate will be provided at no cost to the District by developers.
2. Cost includes total project cost and 20-year O&M costs. See Appendix H for cost estimate details.

Pros and cons for each alternative are provided in Table 7-10. Although Alternatives 1 and 3 are lower cost alternatives, the District has selected Alternative 2 as the preferred solution to the Fir Grove deficiencies. The District does not own the existing well lot and does not want to invest in infrastructure on property owned by others. Alternative 1 is also not selected due to the fact that adding storage to the system has many benefits such as providing emergency storage. Also, with a tank and booster station, the well capacity can be maximized by only needing to meet the MDD of the system rather than PDH or MDD plus fire flow. As the selected alternative includes the construction of a new well, additional water rights should be acquired to insure adequate supply for future growth. Existing wells within the District service areas have produced water meeting drinking water standards, and only simple chlorination treatment is anticipated with new sources. It is recommended that the District model the improvements at their proposed locations to check the infrastructure is capable of meeting the needs of the system before securing the real estate or implementing the improvements.

TABLE 7-10:FIR GROVE ALTERNATIVES PRO'S & CON'S

Alternative	Pros	Cons
1	- Lowest cost alternative. - Least amount of infrastructure. - Greatest increase to total supply.	- Does not add storage to the system. - Does not maximize the existing well supply as under this alternative the system would continue to need to meet peak demands and fire flows with the supply (i.e., wells).
2	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Adds additional supply (i.e., new well). - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility). - Greater available fire flow than Alternative 3 as the system is supplied from multiple locations.	- More infrastructure than Alternative 1.
3	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility).	- More infrastructure than Alternative 1. - Lower available fire flow than other alternatives as the system is only supplied from one location. - Does not increase the overall supply. - Existing well site not owned by the District.

7.7. DAY STAR ALTERNATIVE ANALYSIS

The Day Star system lacks approximately 80 gpm in water rights and also has a firm capacity supply deficit of approximately 1,300 gpm based on future demands. Due to the lack of firm supply capacity, the system is not able to maintain 40+ psi during peak hour and is not able to meet the available fire flow planning criteria of 1,500 gpm. The system currently does not have storage; if storage were to be added, a tank with a usable volume of 350,000 gallons is recommended.

To correct the various deficiencies three alternatives were reviewed. These alternatives include:

7.7.1. DS Alternative 1 – Construct two new groundwater wells

The recommended capacity of each well is 900+ gpm targeting a hydraulic grade of 5,006 feet. With the addition of two new wells the system would be able to meet demands with firm capacity. Table 7-11 shows an updated supply analysis with future demands under this alternative.

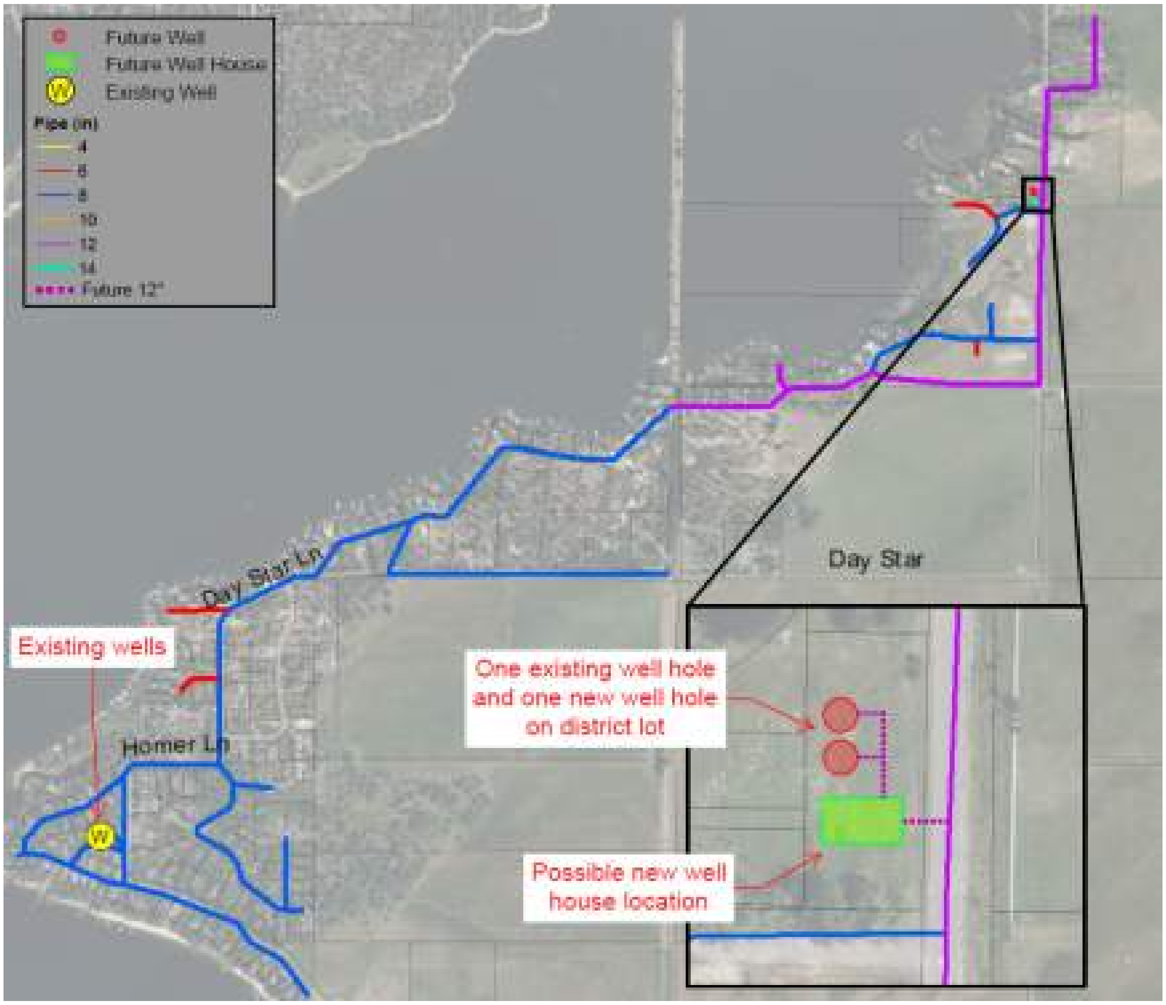
One of the two additional well holes has already been drilled and is located on a District owned lot. The second well would also be located on the same District owned lot. The constructed well has already been approved by DEQ for use in a public drinking water system. Figure 7-7 shows the wells' locations and the existing distribution system. The location of the well house is flexible, the locations shown in Figure 7-7 are shown for illustration purposes only. Adding two new wells to the system would bring the overall supply up to meet existing and future demands. However, without adding storage, the supply would need to continue to meet PHD and MDD plus fire flow.

TABLE 7-11: DAY STAR ALTERNATIVE 1 SUPPLY SUMMARY

Source	Capacity (gpm)
Well #1	600
Well #2	550
New Well A	900
New Well B	900
Total Capacity	2,950
Firm Capacity	2,050
MDD+FF[1]	1,857
PHD[1]	910
Excess Supply[2]	**193**

1. Buildout MDD +FF
2. Firm capacity compared to the larger of MDD+FF or PHD

FIGURE 7-7: DAY STAR ALTERNATIVE 1 LAYOUT



7.7.2. DS Alternative 2 – Construct one new well, a storage tank, and a booster station

The new well would pump to a ground level tank with a storage capacity of 350,000 gallons. The well is recommended to have a capacity of 500+ gpm targeting a hydraulic grade of 5,006 feet to be able to meet the MDD of the system with some surplus and to fill the tank at a substantial rate. The well hole has already been constructed and approved by DEQ for potable water use (see Section 7.7.1). The booster station would have a firm delivery capacity of 1,700 gpm. Table 7-12 shows the updated supply analysis under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

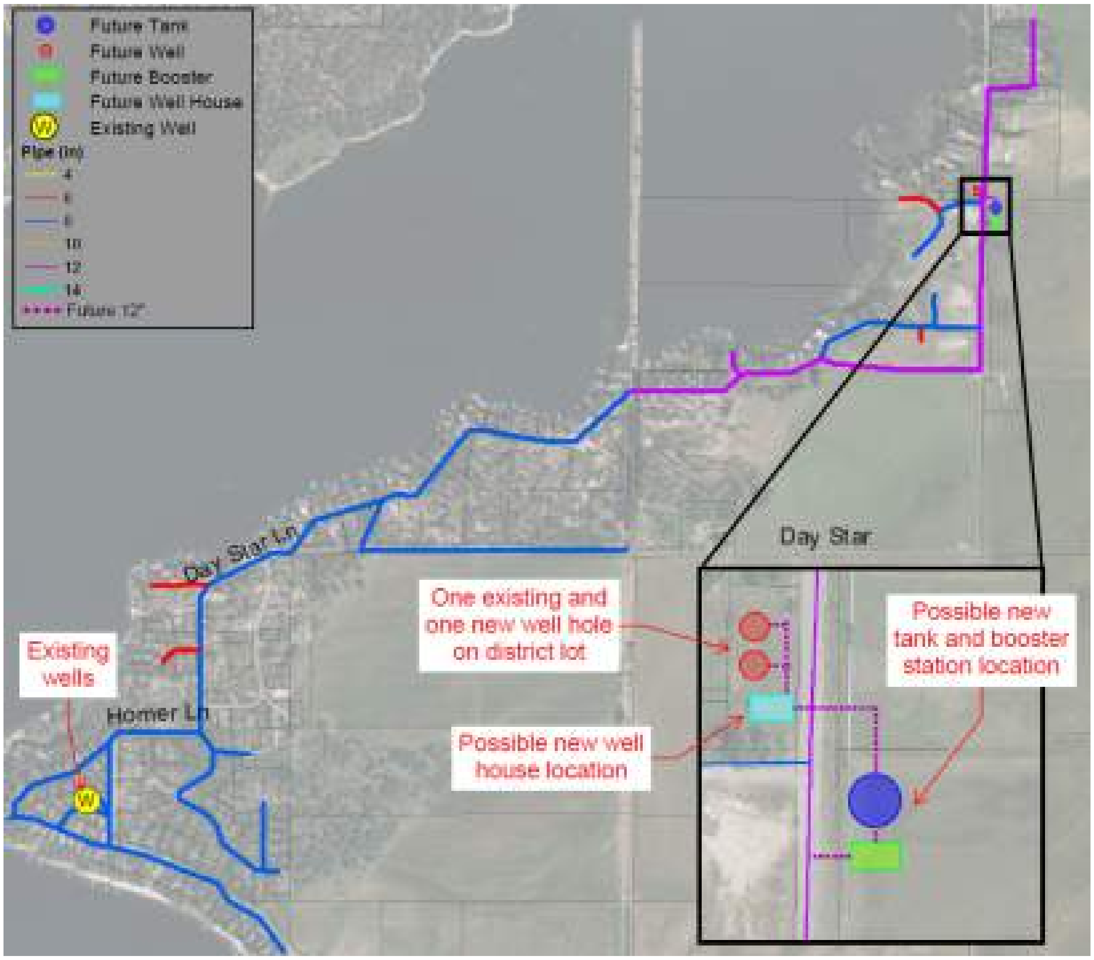
The new well, tank, and booster station could be located near the existing well holes. Figure 7-8 shows the well, tank, booster, and existing distribution system. The location of the tank and booster station is flexible, the location shown in Figure 7-8 is shown for illustration purposes only.

TABLE 7-12: DAY STAR ALTERNATIVE 2 SUPPLY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1	600	600
Well #2	550	550
New Well A	500	-
New Booster	-	1,700
Total Capacity	1,650	2,850
Firm Capacity[2]	1,050	2,250
MDD[1]	357	-
MDD+FF[1]	-	1,857
PHD[1]	-	910
Excess Supply[3]	**693**	**393**

1. 2042 projected demands
2. Firm capacity conservatively assumes Well #1 is the largest pump and is offline. The booster station could be equipped with larger pumps to increase the firm capacity.
3. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-8: DAY STAR ALTERNATIVE 2 LAYOUT



7.7.3. DS Alternative 3 – Construct a new tank and booster station.

In this alternative, Wells #1 and #2 would be pumped directly to a new ground level tank, and a new booster station would supply the distribution system from the new tank. The new booster station would have a firm capacity of 2,000 gpm targeting a hydraulic grade of 5,006 feet to meet peak demands including MDD plus fire flow. Table 7-13 shows the updated supply analysis with future demands under this alternative, as well as a delivery analysis (sources that can pump directly into the distribution system).

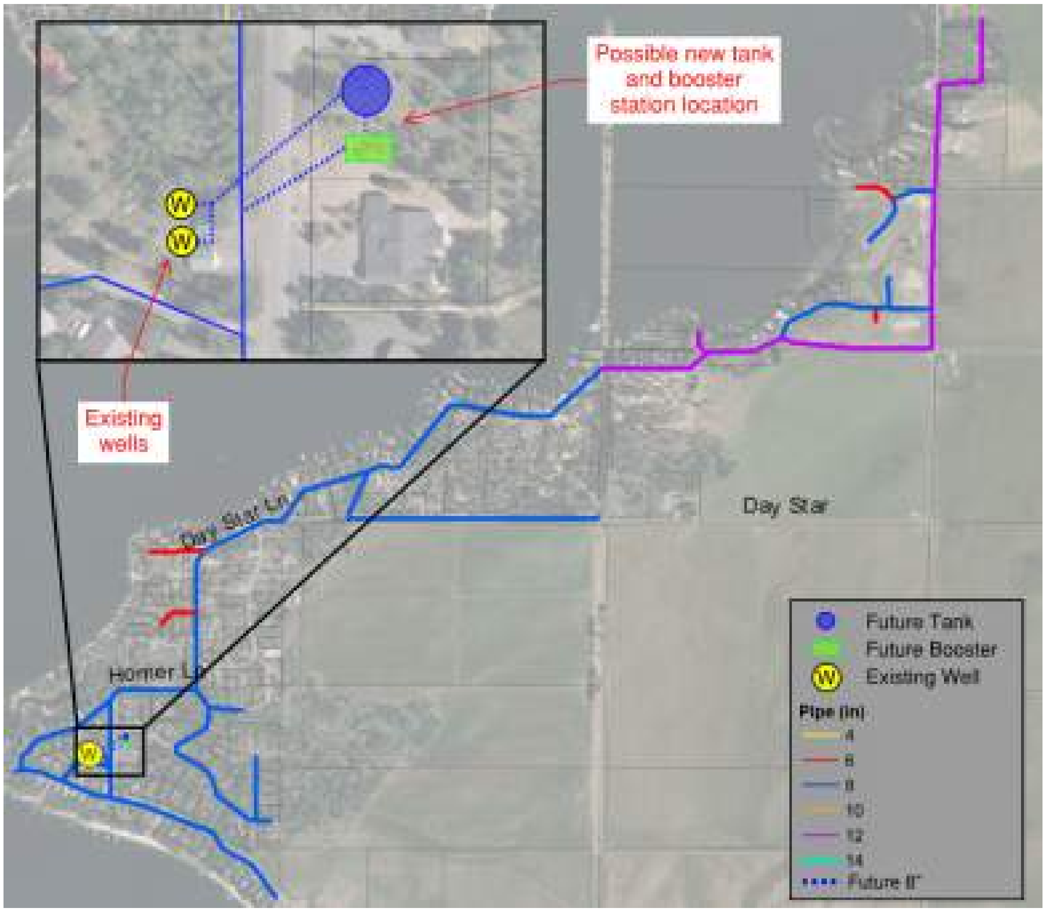
The tank and booster station could be located in various locations near the existing wells. Figure 7-9 shows the tank, booster, and existing wells. The location of the tank and booster station is flexible, the location shown in Figure 7-9 is shown for illustration purposes only.

TABLE 7-13: DAY STAR ALTERNATIVE 3 SUPPLY SUMMARY

Source	Supply Capacity (gpm)	Delivery Capacity (gpm)
Well #1	600	-
Well #2	550	-
New Booster	-	2,000
Total Capacity	1,150	2,000
Firm Capacity[2]	550	2,000
MDD[1]	357	-
MDD+FF[1]	-	1,857
PHD[1]	-	910
Excess Supply[3]	**193**	**143**

1. 2042 projected demands
2. Assumes firm capacity of the booster station is met with multiple larger booster pumps
3. Firm capacity compared to the larger of MDD, MDD+FF, or PHD

FIGURE 7-9: DAY STAR ALTERNATIVE 3 LAYOUT



Costs for each of the three alternatives are presented in Table 7-14. Detailed cost estimates are provided in Appendix H.

TABLE 7-14: DAY STAR ALTERNATIVES ESTIMATED COSTS

Alternative	Description	Estimated Cost[1,2]
1	Construct two new groundwater wells	$ 6,114,000
2	Construct one new well, a storage tank, and a booster station	$ 10,738,000
3	Construct new tank and booster station	$ 9,824,000

1. Costs assume real estate will be provided at no cost to the District by developers.
2. Costs include total project costs and 20-year O&M costs. See Appendix H for cost estimate details.

Pros and cons for each alternative are provided in Table 7-15. Although constructing two new wells appears to be the lowest cost alternative, the District has selected Alternative 2 as the preferred solution to the Day Star deficiencies. Adding storage to the system has many benefits such as providing emergency storage. Also, with a tank and booster station, the well capacity can be maximized by only needing to meet the MDD of the system rather than PDH or MDD plus fire flow. Alternative 3 was ruled out due to it being hydraulically limited with the current distribution system configuration; a booster station near the existing wells is not able to meet the fire flow planning criteria for the majority of the system. The selected Alternative 2 includes the construction of a new well; additional water rights should be acquired with the new well. With additional water rights the water right capacity will increase, although the addition of storage to the system rectifies the water right deficit alone. The new well's water rights will provide additional capacity to supply future growth. Existing wells within the District service areas have produced water meeting drinking water standards, and only simple chlorination treatment is anticipated with new sources. It is recommended that the District model the improvements at their proposed locations to check the infrastructure is capable of meeting the needs of the system before securing the real estate or implementing the improvements.

TABLE 7-15: DAY STAR ALTERNATIVES PRO'S & CON'S

Alternative	Pros	Cons
1	- Lowest cost alternative. - Least amount of infrastructure. - Greatest increase to total supply.	- Does not add storage to the system. - Does not maximize the existing well supply as under this alternative the system would continue to need to meet peak demands and fire flows with the supply (i.e., wells).
2	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Adds additional supply (i.e., new well). - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility). - Greater available fire flow than Alternative 3 as the system is supplied from multiple locations.	- More infrastructure than Alternative 1.
3	- Adds storage to the system. - Maximizes the existing well supply with the addition of storage – wells in this alternative only need to meet the MDD; the tank and booster can meet peak and fire demands. - Booster station can provide firm capacity with minimal additional infrastructure (i.e., adding space for an additional pump is less costly than drilling and building a new well facility).	- Lower available fire flow than Alternative 2 as the system is only supplied from one location. - Doesn't increase overall supply as much as Alternative 2.

7.8. TAMARACK ALTERNATIVE ANALYSIS

The Tamarack system lacks approximately 50 gpm in water rights. The Tamarack development is currently constructing potable Well #12 that will be incorporated into the District's system. The well is being developed under permit 65-23750 for 4.3 cfs (1,930 gpm). When the permit is approved, the water right from this well will eliminate the systems projected water right deficit. The Tamarack development will be providing the well to the District. This system also has an existing and future supply deficit. Well #12 will correct the existing deficit but is not sufficient to address the future deficit completely. A second new well is recommended with a minimum capacity of 500 gpm. This second well should be added to the system prior to the MDD exceeding 1,000 gpm. Wells can take several years to design, drill, and construct. It is recommended that the process be started when the MDD starts approaching 700-800 gpm. It is assumed that this new well will also be provided to the District by the Tamarack development similar to Well #12. The updated supply analysis with Well #12 and the second new well is provided in Table 7-17.

TABLE 7-16: TAMARACK SUPPLY ALTERNATIVE

Year	2042 (gpm)
Well #4	300
Well #5[4]	1,000
Well #7	804
Well #12[5]	700
New Tamarack Well	500
Total Capacity	2,304
Firm Capacity	**1,500**
MDD	1,168
Supply Surplus / (Deficit)[2,3]	**332**

1.MDD = Maximum Day Demand
2. Supply surplus or deficit is the firm capacity minus the MDD.
3. Supply only compared to the MDD as this system is served by gravity from the 1.25 MG tank. The delivery analysis for this system for PHD and MDD + fire flow will be discussed in Chapter 6.
4. Well #5 is an emergency backup supply well that has a 1,000 gpm capacity which pumps to the snow making tank. There is booster from the snow making tank that pumps to the 1.25 MG tank with a capacity of 1,000 gpm. This is a well that can be used in emergencies with DEQ approval, but will not be counted towards the total or firm supply capacity.
5. Well #12 is planned with a minimum capacity of 700 gpm. This supply analysis should be updated once the actual production rate of the well is established after construction.

The Tamarack system also has a future storage deficit of approximately 120,000 gallons. Where the Tamarack storage facility is exiting, the selected planning criteria allows the emergency storage to be offset with standby power at the sources (i.e., generators at the wells). To correct this deficit, the District has elected to install backup power at the two existing wells (Well #4 and Well #7). The soon to be constructed Well #12 will also be equipped with standby power. The addition of standby power will eliminate the projected storage deficit; Table 7-17 shows the updated storage analysis assuming standby power at the wells. Costs for standby power are presented in the CIP.

No alternatives were analyzed for the Tamarack system due to the systems deficiencies being resolved with projects that are currently being developed or straight forward corrections (i.e., addition of a generator).

TABLE 7-17: TAMARACK STORAGE ANALYSIS ASSUMING BACKUP POWER

Demands	2022	2042
ADD (gpm)	98	319
MDD (gpm)	357	1,168
Storage Analysis (all values in gal)		
Peaking and Operational Storage[1]	129,000	421,000
Emergency[2]	0	0
Fire[3]	720,000	720,000
Total Storage Required (rounded)	849,000	1,141,000
Total Storage Available (rounded)[4]	1,174,000	1,174,000
Storage Surplus / (Deficiency)	**325,000**	**33,000**

1. Calculated as 25% of the MDD.
2. Calculated as 8 hours of the ADD, but can be offset by standby power at Well #4, Well #7, and Well #12 which have a total capacity of 1,800 gpm that can offset up to 864,000 gallons of emergency storage.
3. Based on 3,000 gpm for 4 hours
4. Assumes high water elevation 1 foot below overflow.
5. ADD = average day demand; MDD = maximum day demand; FF=Fire Flow

7.9. ADDING STORAGE CONSIDERATIONS

Alternatives to add storage to the Hawks Bay, Fir Grove, and Day Star systems have been selected. The recommended storage volumes are based on typical storage volume percentages and the planning criteria established in this study. When storage is added to each system, it is recommended that the SCADA data (see Capital Improvement Project 1.5 in Chapter 9) and historical demands be reviewed to develop system specific diurnal usage patterns and check the recommended storage volumes. The recommended storage volume should also be checked to see if the fire flow volumes are still applicable (i.e., if commercial usage has been added or is planned to be added).

7.10. SELECTED ALTERNATIVES ENVIRONMENTAL IMPACTS

The potential environmental impacts of the recommended alternatives are summarized in the following section.

- Land Use / Prime Farmland / Formally Classified Lands

  The selected supply and storage alternatives will take place either on District owned property or property that is being developed for residential use. Distribution improvements will take place within existing easements, roadways, and/or rights-of-way. Land use and classifications will not be changed due to these improvements.

- Floodplains / Wetlands

  The selected supply and storage alternative's locations will be finalized as development occurs. It is unlikely that they will be located in a floodplain and are not expected to create new obstructions to the flood plain. It is assumed at this time that the improvements will not be located in wetland areas. Further analysis will be completed as these projects develop.

- Cultural, Biological, and Water Resources

  The improvements being evaluated will occur on previously disturbed lands and it is not anticipated that they will interfere with cultural, biological, or water resources. Further analysis will be completed as these projects develop.

- Socio-Economic Conditions

  Alternatives are not anticipated to have a disproportionate effect on any segment of the population (economic, social, or cultural status). The main economic effect is the cost of the alternatives.

- Land Requirements

  It is not anticipated that the District would need to purchase land for any of the alternatives. It is anticipated that alternatives would take place within existing roadways and easements, existing District land, or on land provided to the District by development.

- Potential Construction Challenges

  The depth of the water table may affect the construction of the alternatives. Subsurface investigations were not within the scope of this project. Construction techniques to effectively manage excavation, dewatering, and sloughing issues should be required of any construction plans. Construction plans for any of the alternatives should also include provisions to control dust and runoff. A short construction season is also another item to consider when planning for the construction of the selected alternatives.

- Sustainability Considerations

  Sustainability considerations will be made as these alternatives develop in the future. Some of these sustainability elements that will be considered would be metering, high efficiency lighting, continued use of VFDs, installation of energy efficient motors/pumps, SCADA installation and integration, source water protection, and encouraging users to use water efficient fixtures in the service areas.

TABLE 7-18: ALTERNATIVES ENVIRONMENTAL IMPACTS TABLE

Environmental Criteria	Supply Alternatives	Storage Alternatives	Distribution Alternatives
Land Use/ Prime Farmland / Formally Classified Lands	No Impact	No Impact	No Impact
Floodplains/ Wetlands	No Impact	No Impact	No Impact
Cultural, Biological, and Water Resources	No Impact	No Impact	No Impact
Socio-Economic Conditions	May impact user rates	May impact user rates	May impact user rates
Land Requirements	No Impact	No Impact	No Impact
Potential Construction Challenges	High water table, short construction season.	High water table, short construction season.	High water table, short construction season.
Sustainability Considerations	High Efficiency Lighting, VFDs, High Efficiency Motors/Pumps, SCADA, Source Water Protection	SCADA	Installation of meters

CHAPTER 8 - FUTURE HYDRAULIC MODEL ANALYSIS

The selected alternatives and projected growth were added to the computer hydraulic models for each system to evaluate future performance under PHD and MDD plus fire flow. The results of this future evaluation are summarized in this chapter. This chapter also provides a buildout pipe network for each system's service area.

8.1. FUTURE MODEL DEVELOPMENT

Future models were created for each system that included the existing systems and future growth. The selected alternatives that are relevant to supply or distribution (i.e., new wells, tanks, booster station, & additional pipes) were also modeled. The larger of the committed or 2042 projected demands were loaded into the model as well as any additional demands from new developments. These future systems can be seen in Figure 8-1, Figure 8-2, Figure 8-3 and Figure 8-4

FIGURE 8-1: HAWKS BAY FUTURE SYSTEM

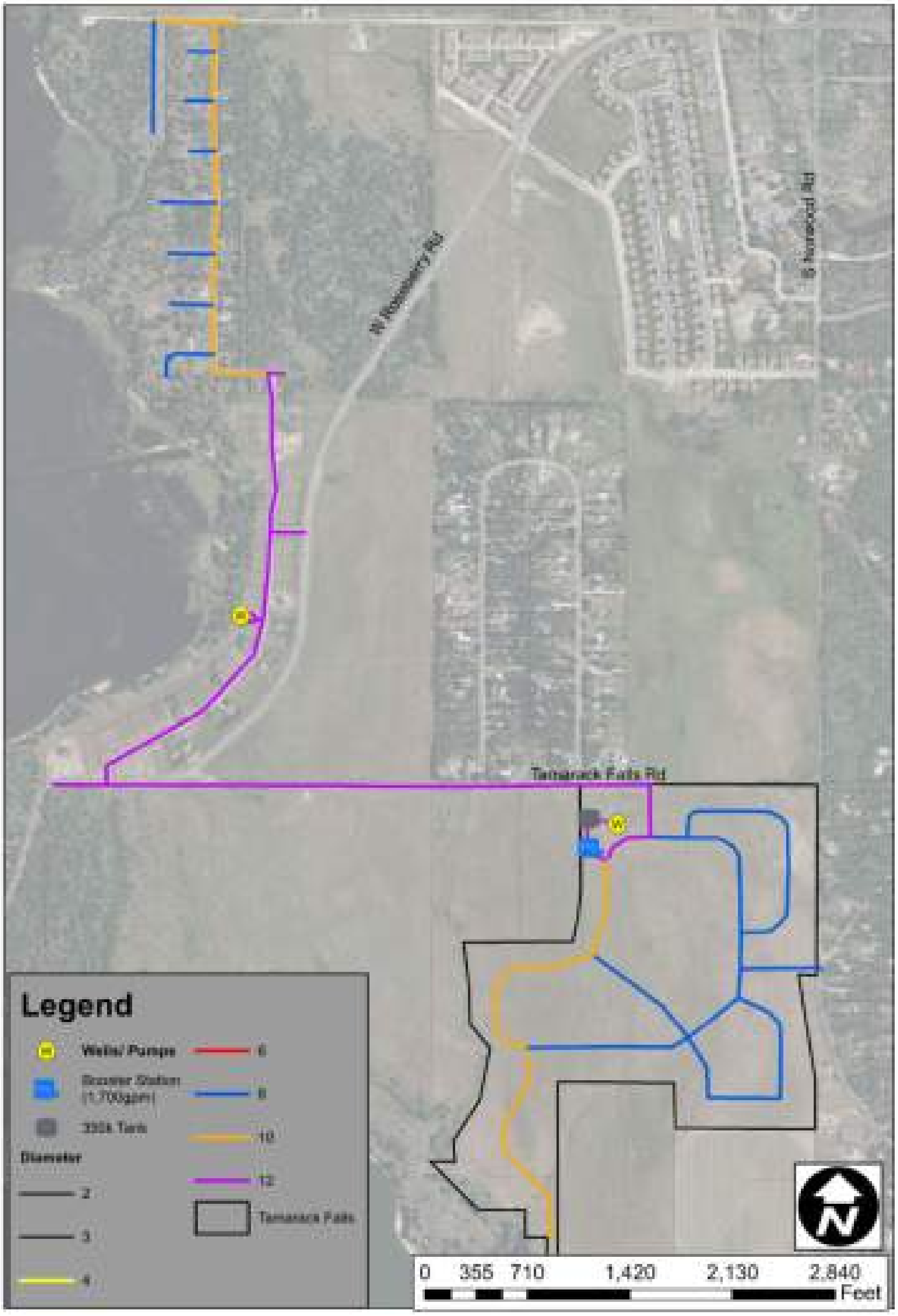


FIGURE 8-2: FIR GROVE FUTURE SYSTEM

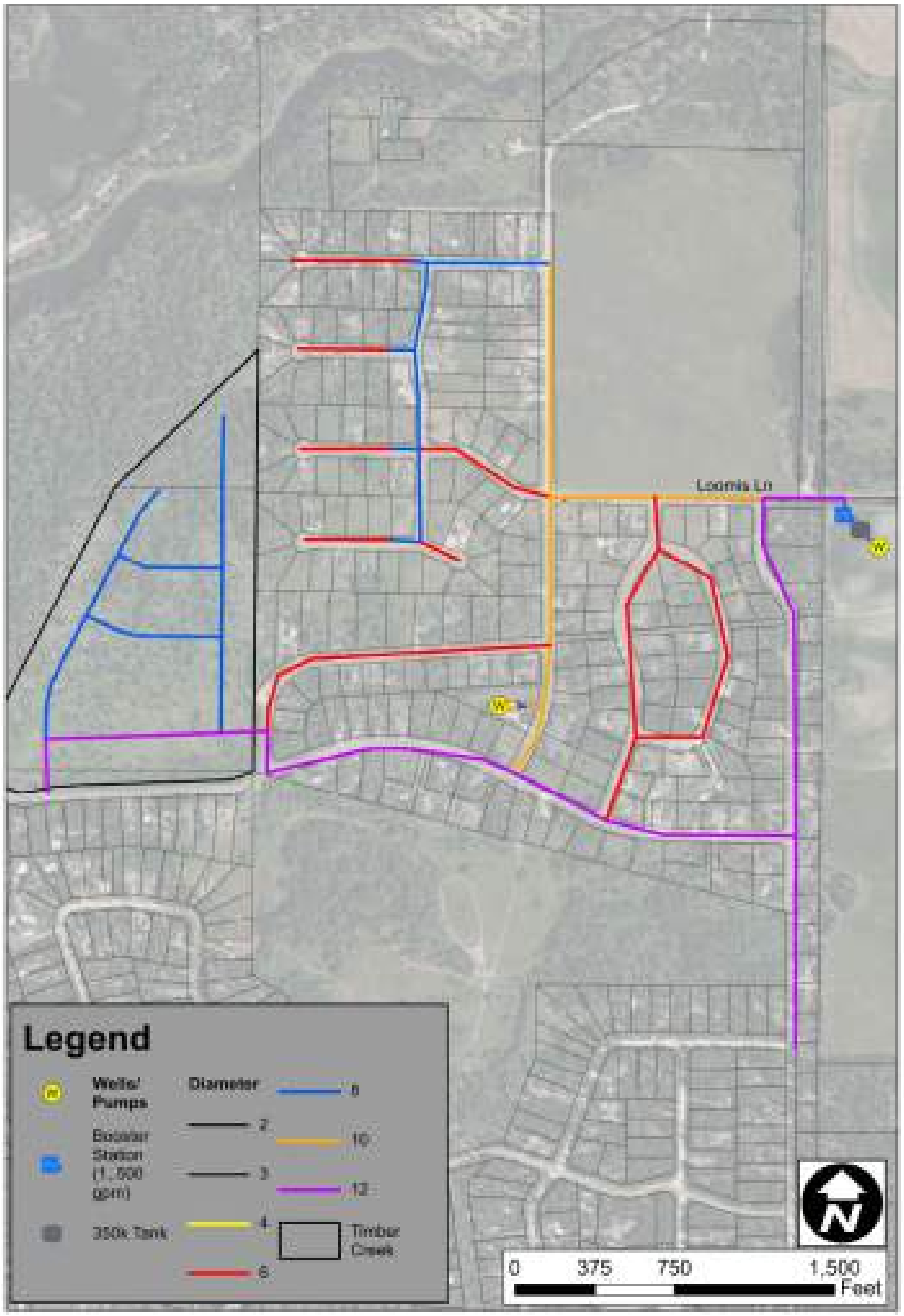


FIGURE 8-3: DAY STAR FUTURE SYSTEM

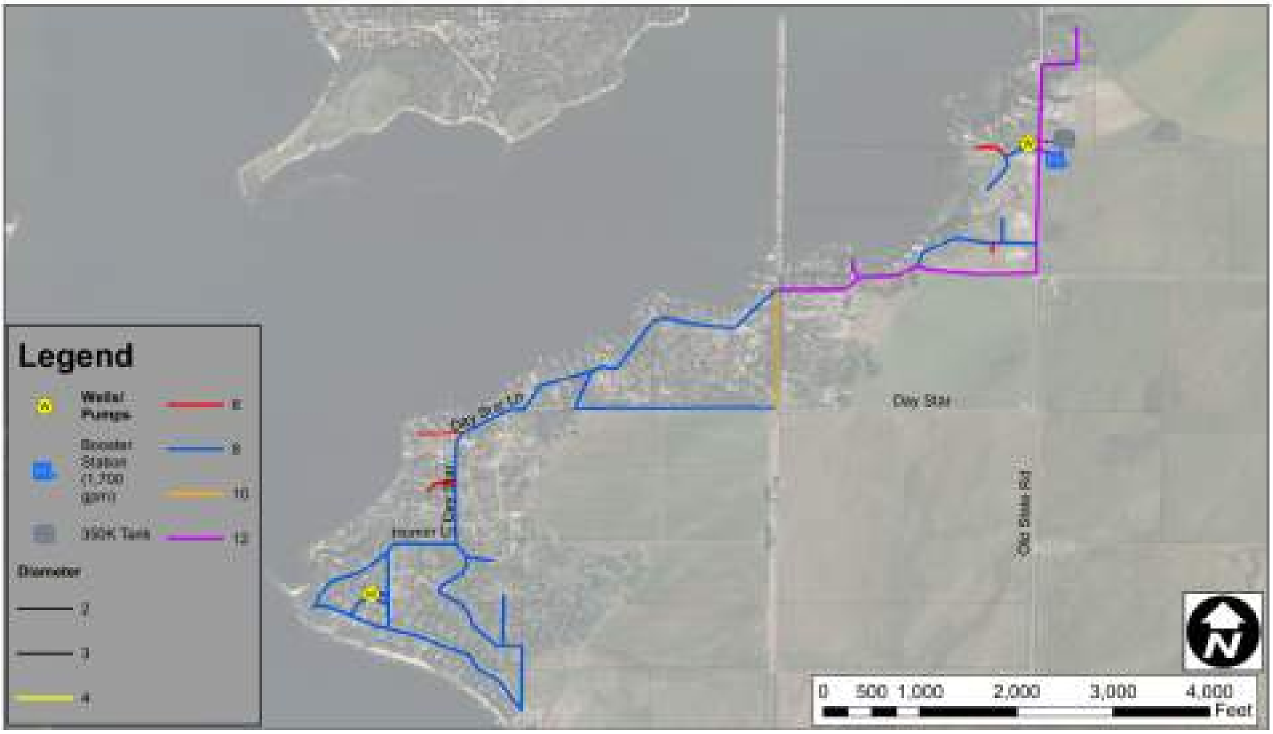
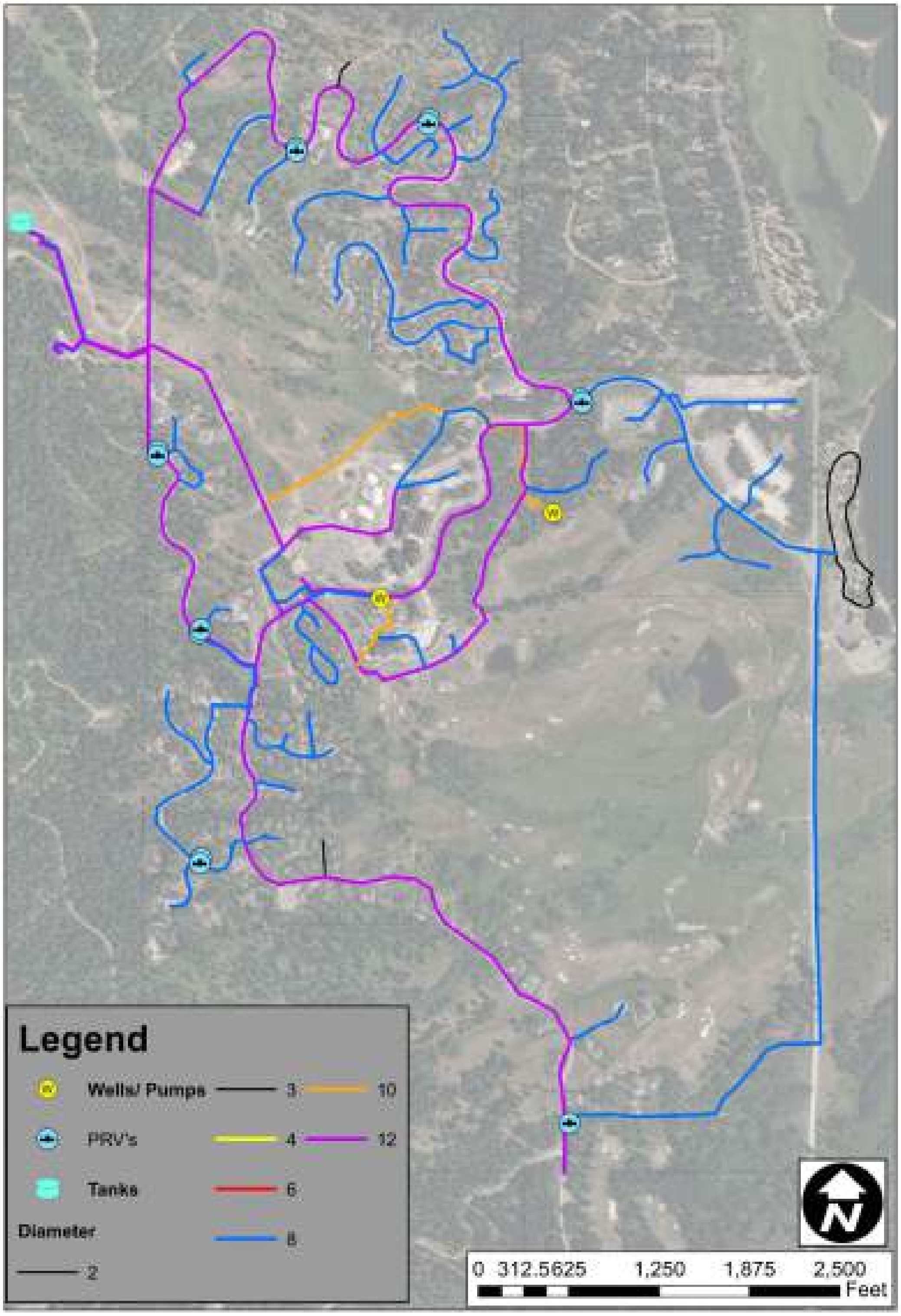


FIGURE 8-4: TAMARACK FUTURE SYSTEM PIPES



8.2. FUTURE SYSTEM EVALUATION

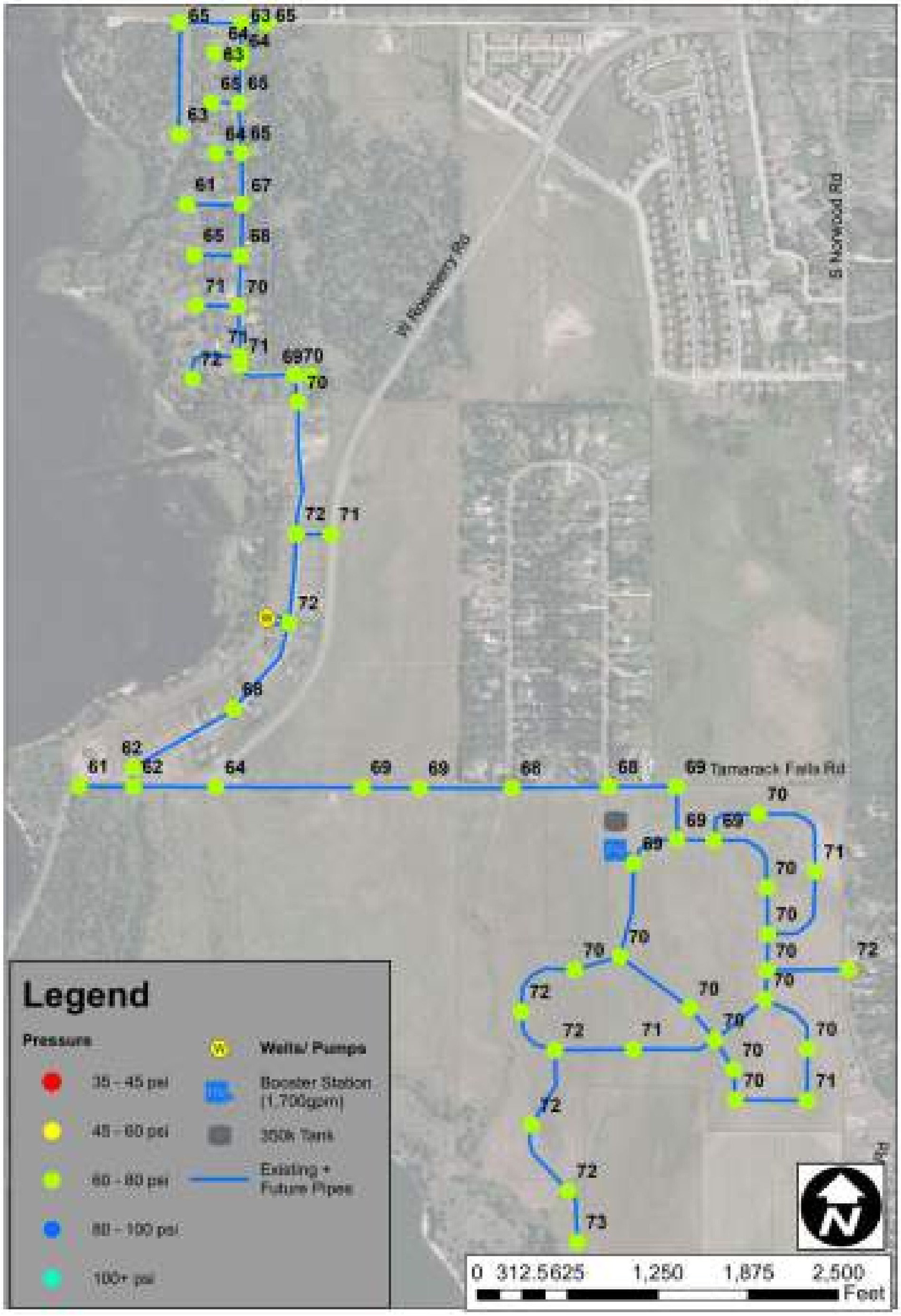
This section includes a summary of the future (2042) distribution system's hydraulic evaluation to meet pressure and fire flow requirements under future committed/projected demands. This evaluation was completed with the hydraulic models that were developed, loaded, and previously calibrated as discussed. These models also include the selected alternatives to correct deficiencies discussed in Chapter 7. The planning criteria for pipe velocity, pressure, and fire flow requirements are provided in Chapter 4.

8.2.1. Future Peak Hour Pressures

The water models were exercised to evaluate pressures in the distribution systems under peak hour demand (PHD). For the three smaller systems, the larger of the existing wells was turned off for firm capacity. The Tamarack system is supplied by gravity from the tank and did not require turning the largest source off.

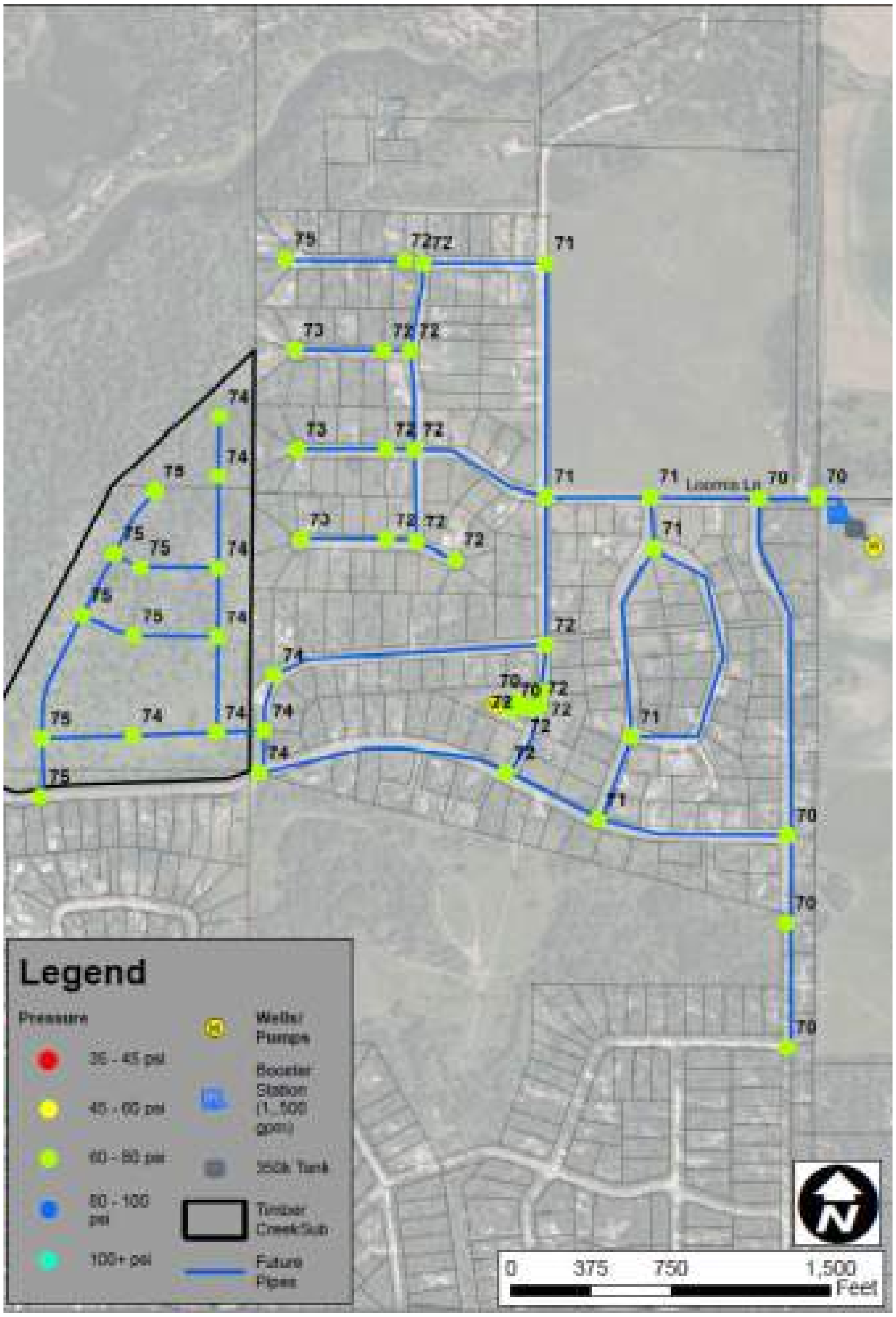
Hawks Bay is capable of delivering adequate pressures and hitting the desired pressure set points during the committed PHD scenario at firm capacity under future demands, see Figure 8-5. Pipe velocities are under 10 feet per second (fps).

FIGURE 8-5: HAWKS BAY FUTURE PHD



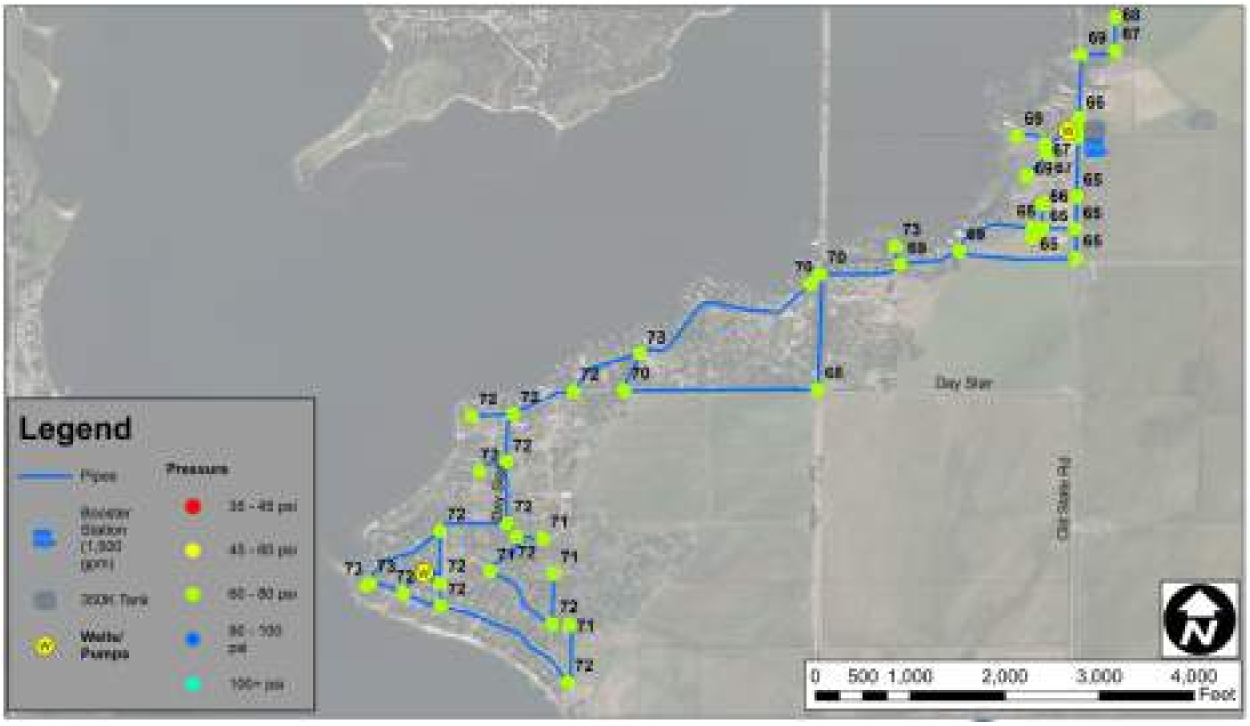
The wells in the Fir Grove system currently target a hydraulic grade of 5,040 feet (about 78 psi at the well discharge). Some of the existing system, and the entirety of the Timber Creek development experience pressures over 80 psi at this hydraulic grade. It is recommended that the District lower the hydraulic grade of this system by about 7 psi to a grade of 5,024 feet (71 psi at the well discharge). This is a simple operational change, and as such was not discussed in Chapter 7. With this reduced hydraulic grade, the system is capable of delivering adequate pressures and hitting the desired pressure set points during the committed PHD scenario at firm capacity under future demands. See Figure 8-6. Pipe velocities are under 10 fps. If pressure complaints arise from the decrease in hydraulic grade the District could consider creating a second pressure zone in this system.

FIGURE 8-6: FIR GROVE COMMITTED PHD



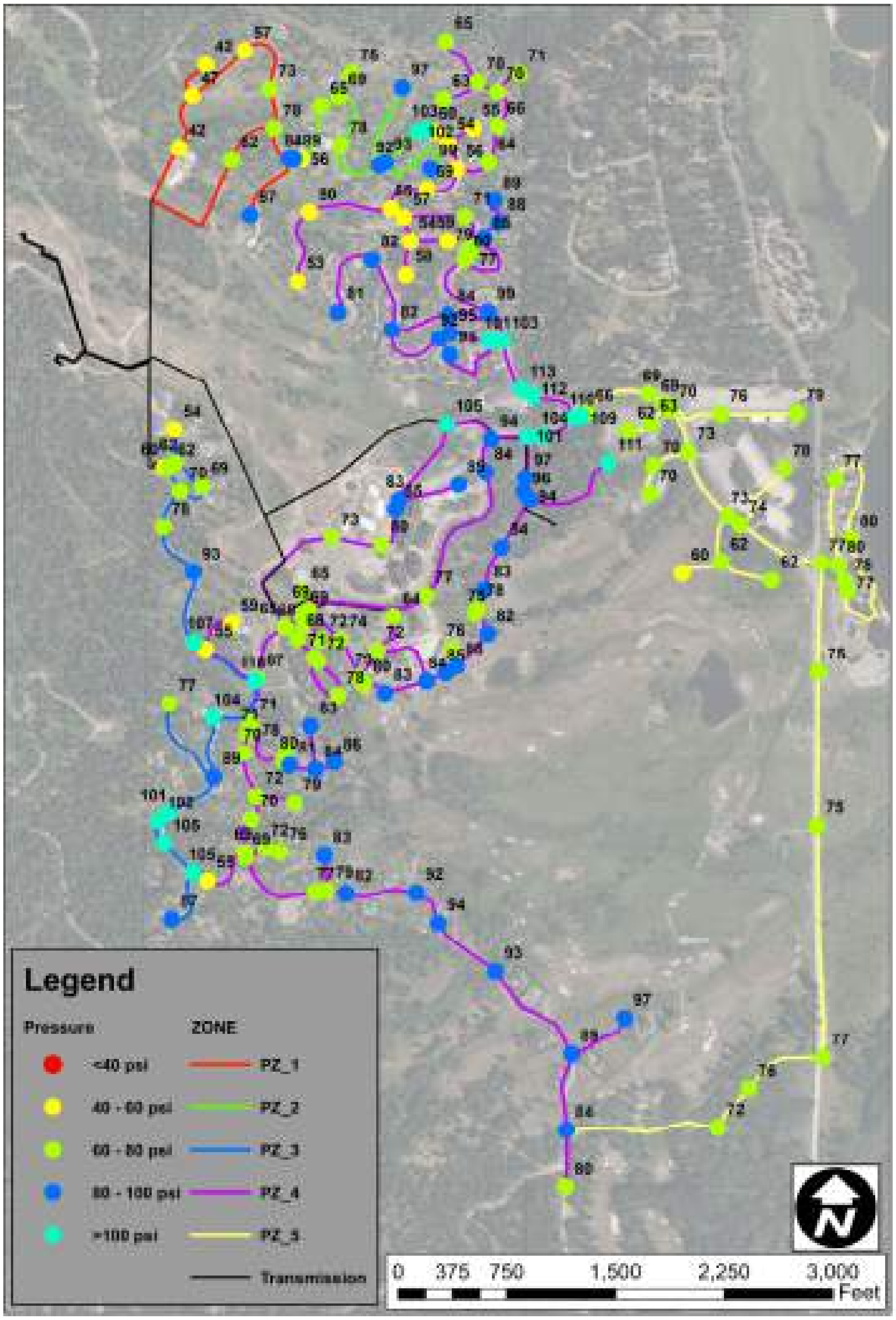
Daystar is capable of delivering adequate pressures and hitting the desired pressure set points during the committed PHD scenario at firm capacity for future demands. See Figure 8-7. Pipe velocities are under 10 fps.

FIGURE 8-7: DAY STAR 2042 PROJECTED PHD



The Tamarack system is able to deliver adequate pressures to the entire system during the committed PHD scenario for future demands. The majority of the system can achieve pressures over 45 psi however 2 of the topmost nodes in zones 1 and 3 fall below 45 psi. However, they still achieve the state requirement of 40psi. See Figure 8-8. Pipe velocities are under 10 fps except for some smaller lines and PRVs that are designed to accommodate higher velocities.

FIGURE 8-8: TAMARACK COMMITTED PHD



8.2.2. Future Available Fire Flow

The future MDD plus fire flow model scenarios were run to evaluate the available fire flow throughout the future systems. The results of these scenarios for each system are presented in the following discussion and figures.

The Hawks Bay system is capable of delivering the planning criteria fire flow (1,500 gpm) to all but one node during the future MDD scenario at firm capacity. This node does have over 1,125 gpm of available fire flow (the County's requirement), so a capital improvement project was not recommended for this area. See Figure 8-9 and Figure 8-10. Pipe velocities are under 15 fps.

FIGURE 8-9: HAWKS BAY COMMITTED MEETS REQ'D FF

FIGURE 8-10: HAWKS BAY COMMITTED AFF

At the reduced hydraulic grade, the Fir Grove system is capable of delivering the planning criteria fire flow (1,500 gpm) during the future MDD scenario at firm capacity to all but one location. See Figure 8-11 and Figure 8-12. The one location that fails is at a dead end 6-inch line and has approximately 1,460 gpm of fire flow available. This is more than the county required 1,125 gpm and the near-by 8-inch lines have sufficient available fire flow. For these reasons, a pipe improvement project was not recommended at this location. Pipe velocities are under 15 fps except for the dead end 6-inch lines, the District has elected not to make recommendations to correct these locations as the pipe velocities are under 15 fps at the County's 1,125 gpm requirement. Upsizing these dead-end pipes with larger pipes should be considered when the pipe is replaced due to age or other failure.

FIGURE 8-11: FIR GROVE COMMITTED MEETS REQ'D FF

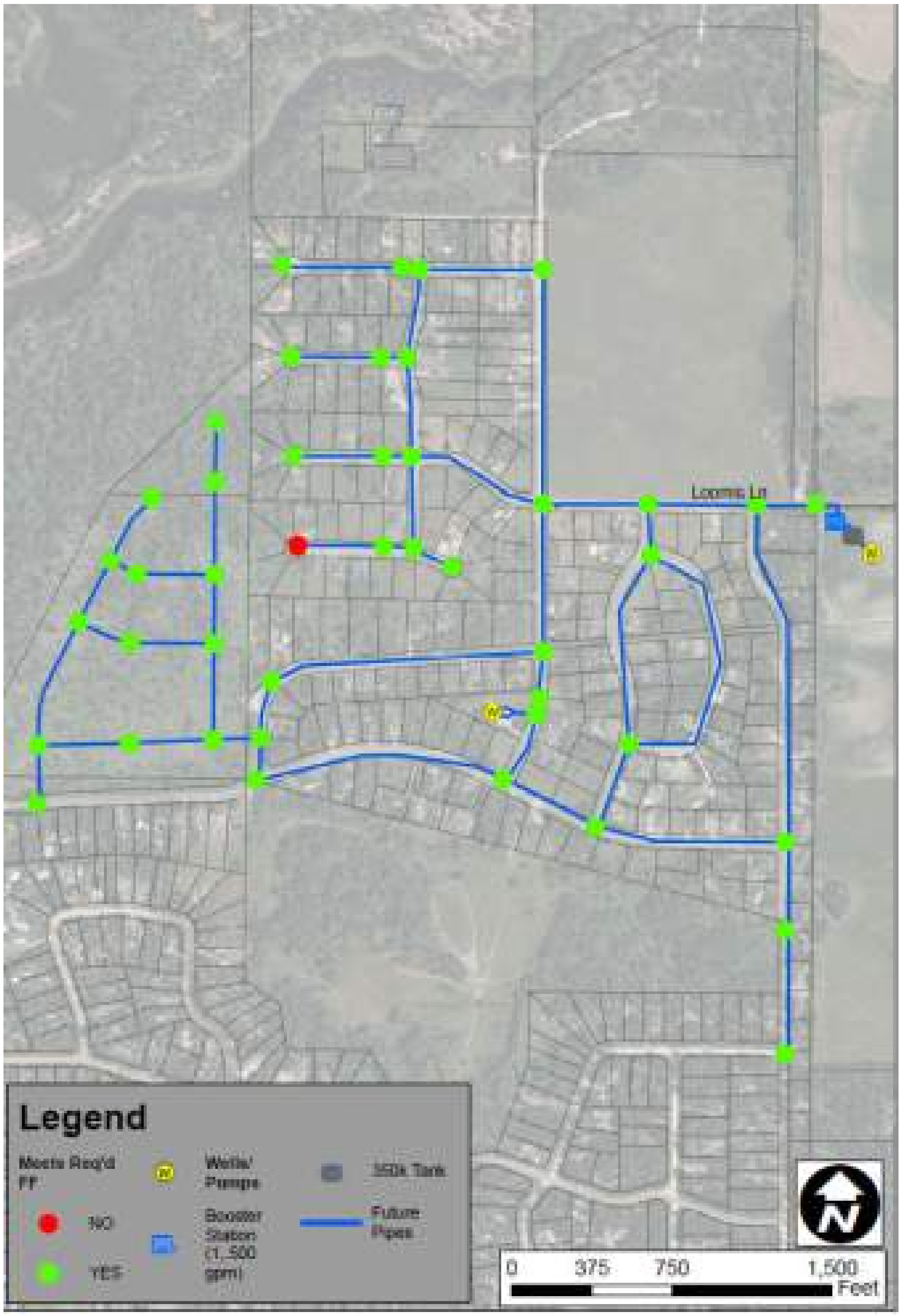
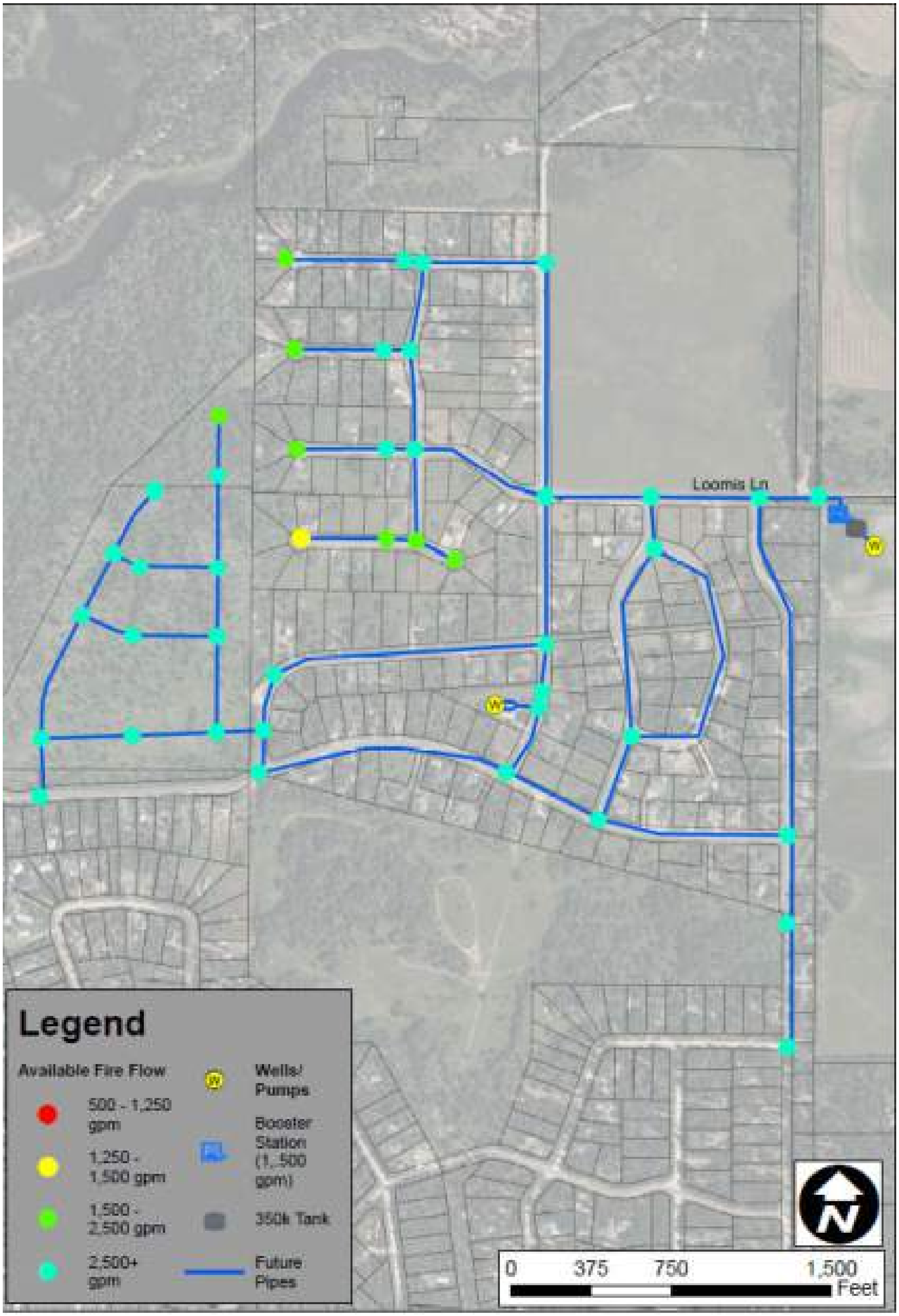


FIGURE 8-12: FIR GROVE COMMITTED AFF



The Day Star system is capable of delivering the planning criteria fire flow (1,500 gpm) to all nodes, except 5, during the future MDD scenario at firm capacity. The nodes that do not meet the fire flow planning criteria do however have over 1,125 gpm of available fire flow (the County's requirement), therefore no capital improvement projects were recommended to correct these locations. These locations are either on dead end 8-inch or 6-lines, see Figure 8-13 and Figure 8-14. These results also include two recommended pipe looping projects; one on Homer Lane and one on Lee Way Loop. See Chapter 9 and Appendix I for details. Pipe velocities are under 15 fps except for some dead end 6-inch lines, the District has elected not to make recommendations to correct these locations as the pipe velocities are under 15 fps at the County's 1,125 gpm requirement. Upsizing these dead-end pipes with larger pipes should be considered when the pipe is replaced due to age or other failure.

FIGURE 8-13: DAY STAR 2042 PROJECTED MEETS REQ'D FF

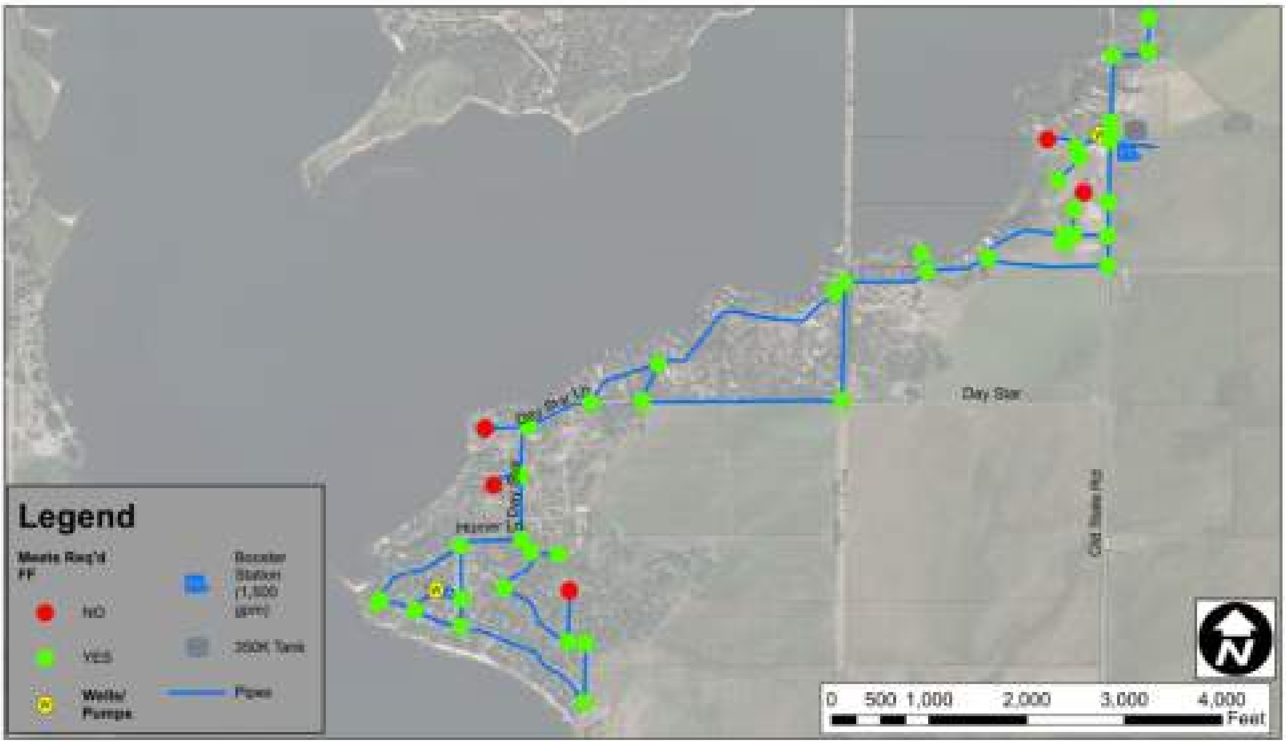
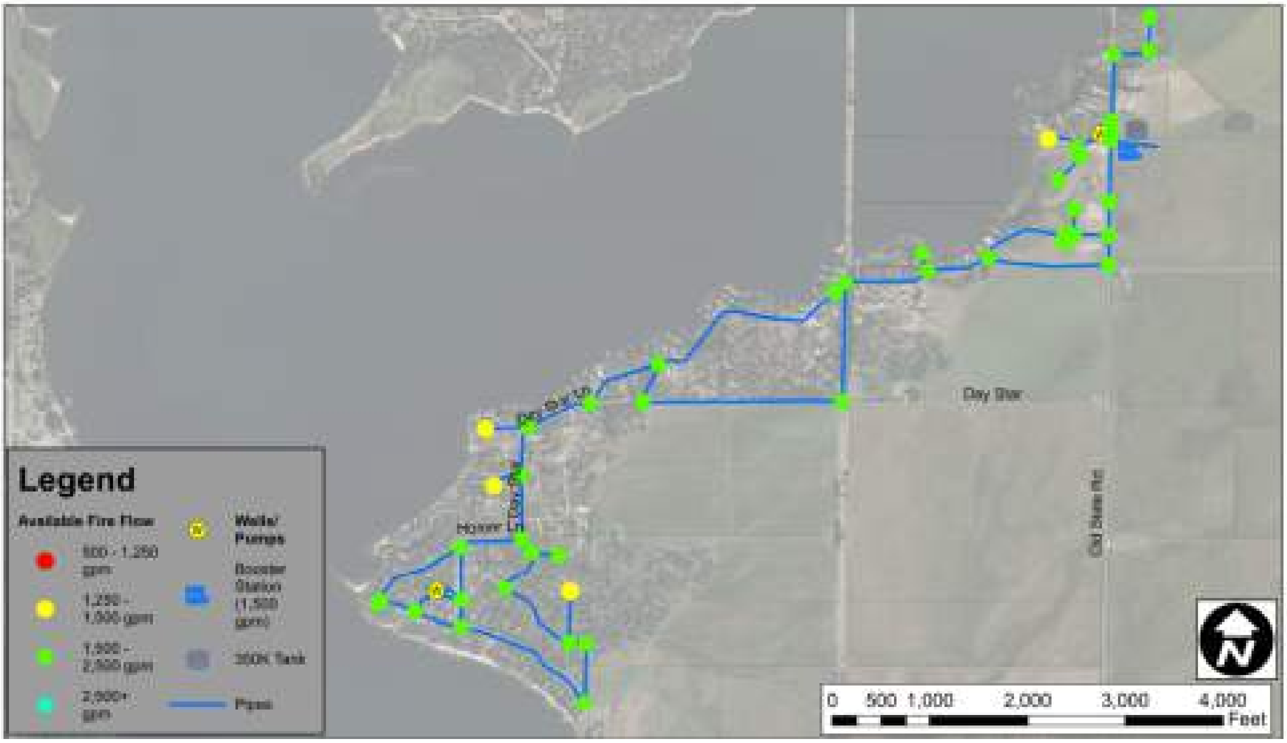


FIGURE 8-14: DAY STAR 2042 PROJECTED AFF



The Tamarack system is capable of delivering the fire flow planning criteria (1,500 gpm for residential, 2,500 gpm for commercial, and 3,000 gpm for Tamarack Commercial) to the entire system during the future MDD scenario. See Figure 8-15 and Figure 8-16. Pipe velocities are under 15 fps except for a handful of dead-end 8-inch lines in the commercial portion of the system. It is unlikely that all the commercial fire flow would be taken from a single hydrant off these lines, and there is adequate fire flow and velocity in the hydrants off the mainlines. No recommendations to fix these pipes are made. Upsizing these dead-end pipes with larger pipes should be considered when the pipe is replaced due to age or other failure.

FIGURE 8-15: TAMARACK COMMITTED MEETS REQ'D FF

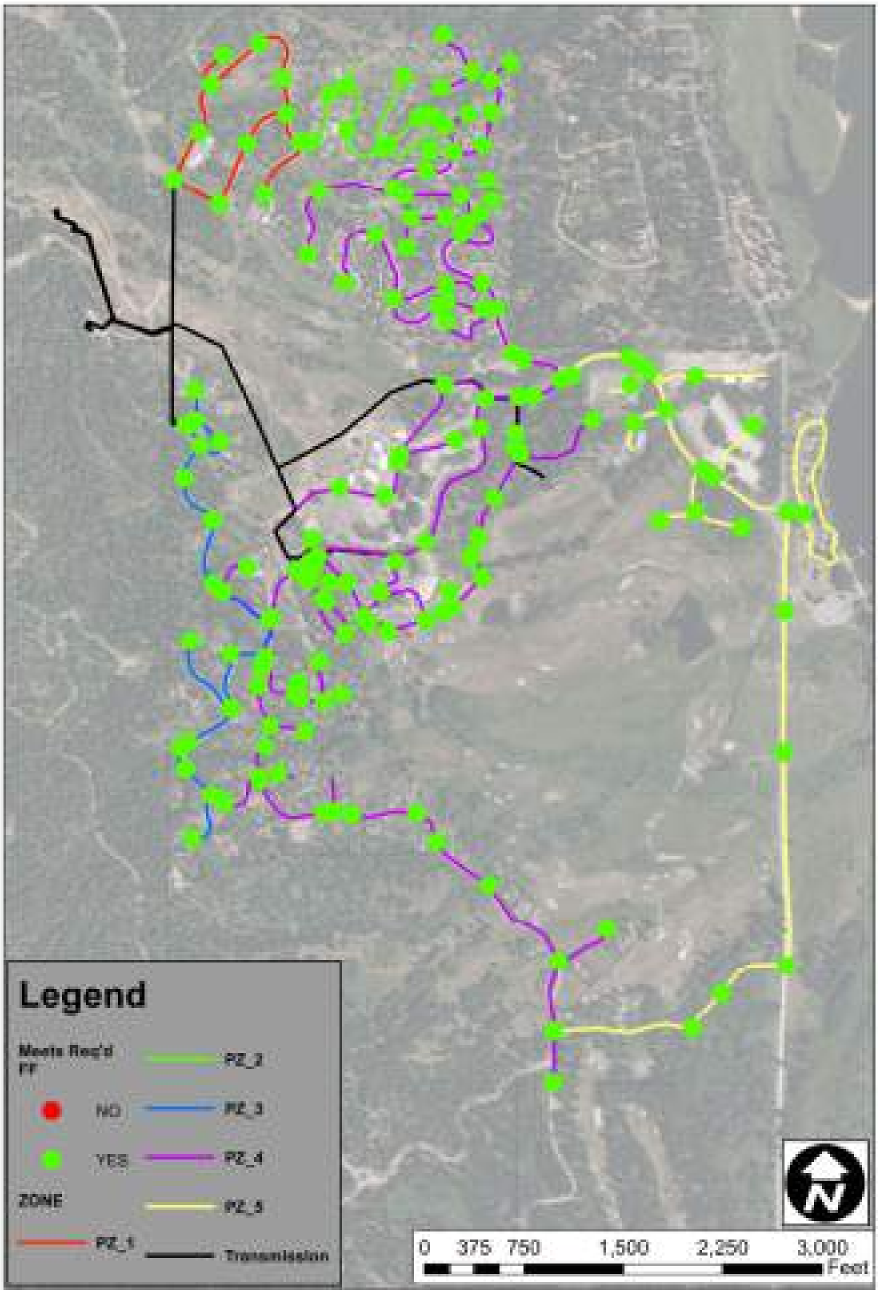
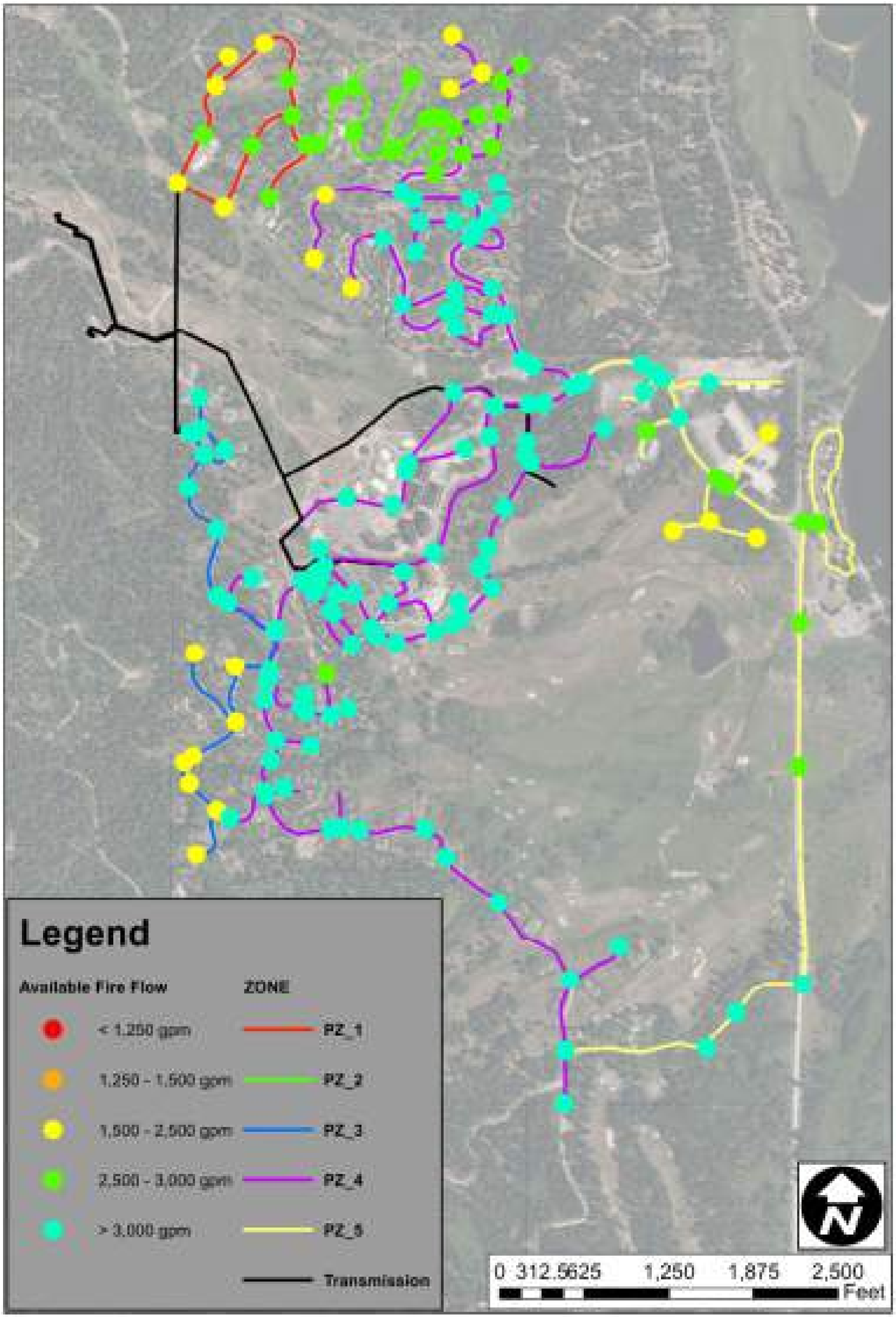


FIGURE 8-16: TAMARACK COMMITTED AFF



8.3. BUILDOUT PIPE NETWORK

Buildout models were created for the Hawks Bay, Fir Grove, and Day Star systems that included the future 2042 system and a general mainline pipe network for the system's service area. Buildout demands and sufficient supply were added to each system to test the mainline sizes to check that adequate fire flow and peak hour pressures were obtainable with the mainline network. Figure 8-17 through Figure 8-19 show the buildout pipe networks. The Tamarack system shown in Figure 8-4 is the buildout system.

Phasing of development is common, resulting in temporary dead-end waterlines or parts of the system that are not looped. It is recommended that the District model each proposed development, per phase, to check that proposed piping can provide adequate pressures and fire flows. Adjustment to development or the proposed pipe network may be required to accommodate phasing.

For the Day Star buildout system, elevation climbs to the east, which will result in lower pressures. Higher HGLs in sources should be explored near the eastern and northern extremities of this system when development reaches these areas.

FIGURE 8-17: HAWKS BAY BUILDOUT SYSTEM

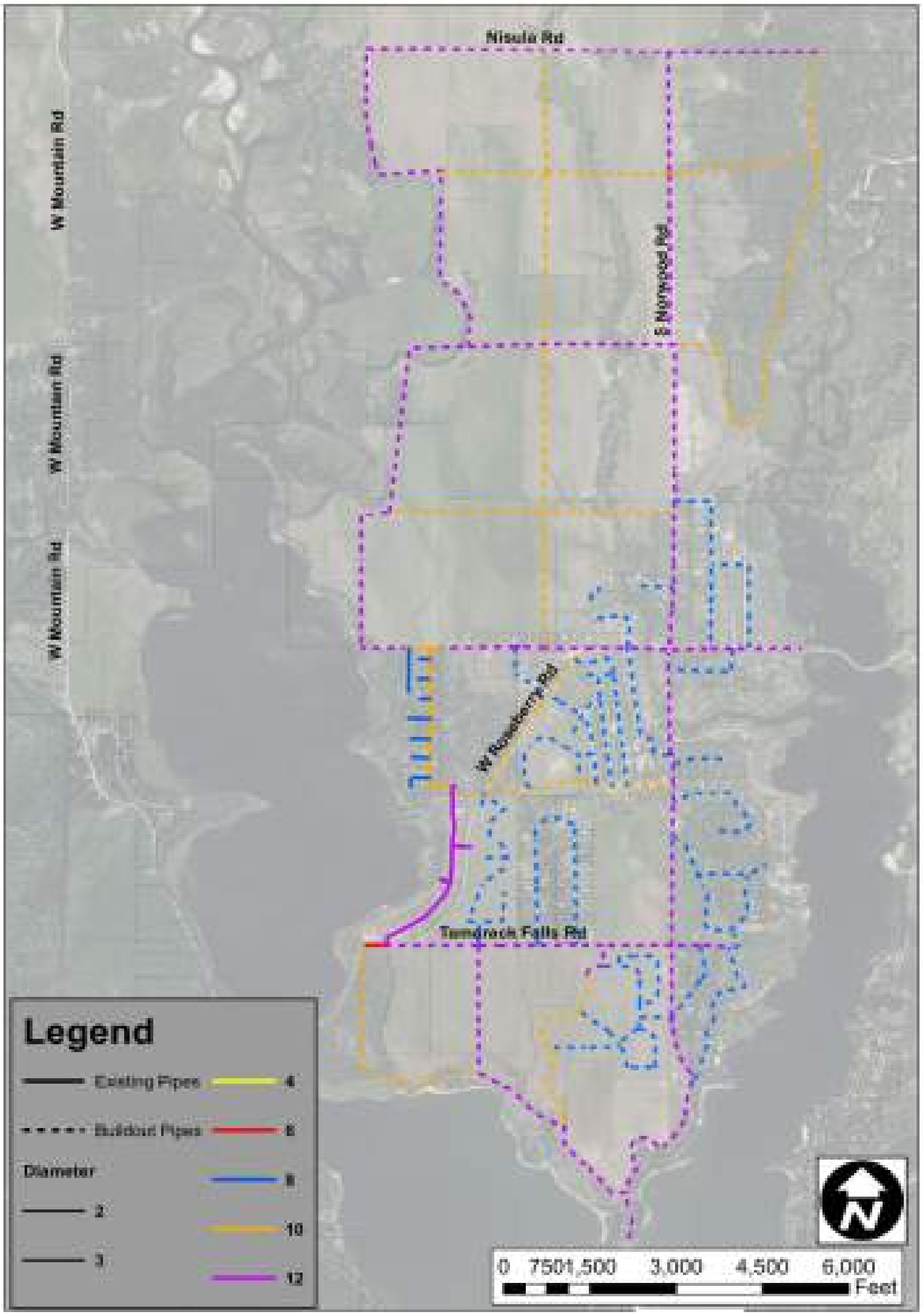


FIGURE 8-18: FIR GROVE BUILDOUT SYSTEM

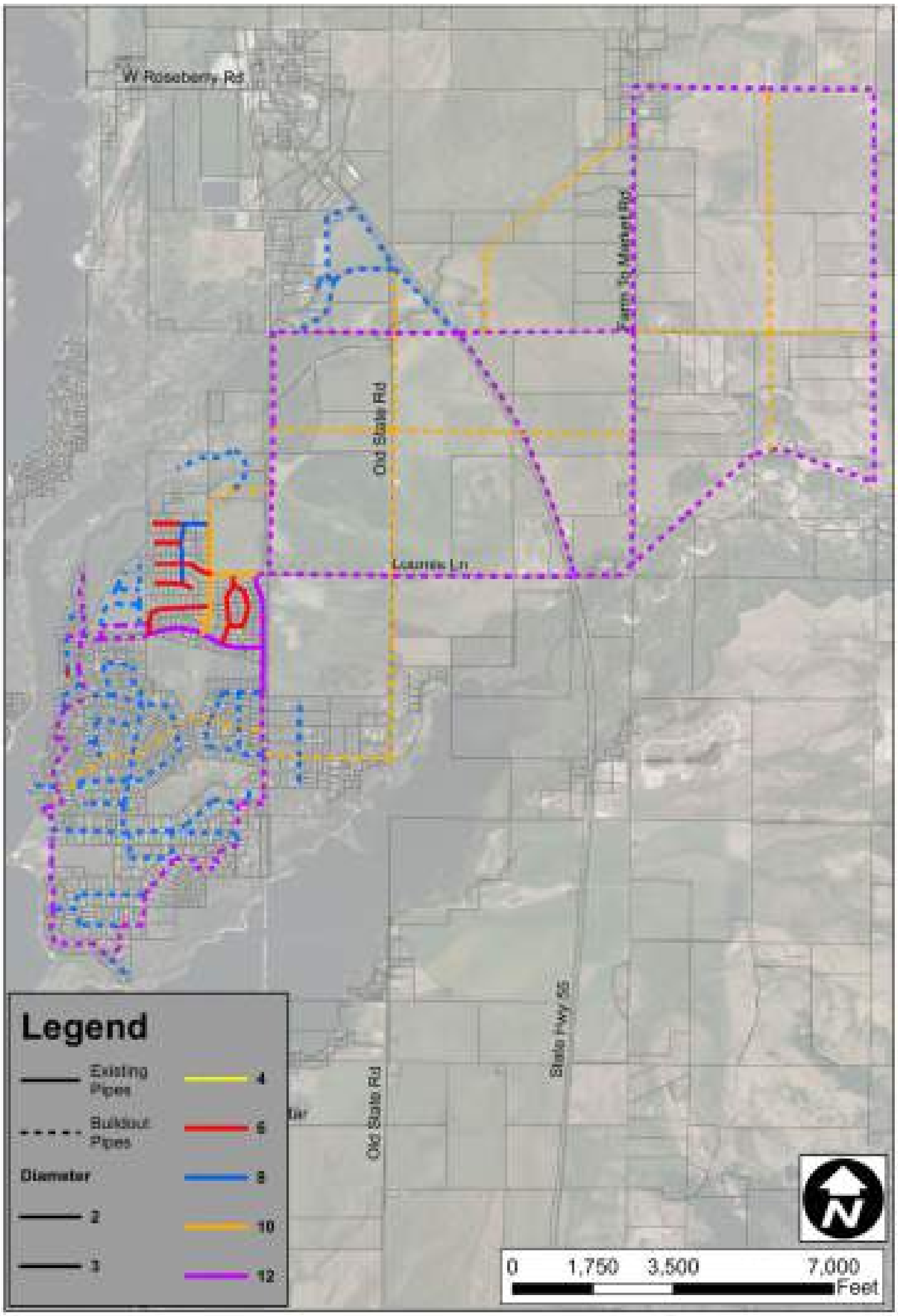
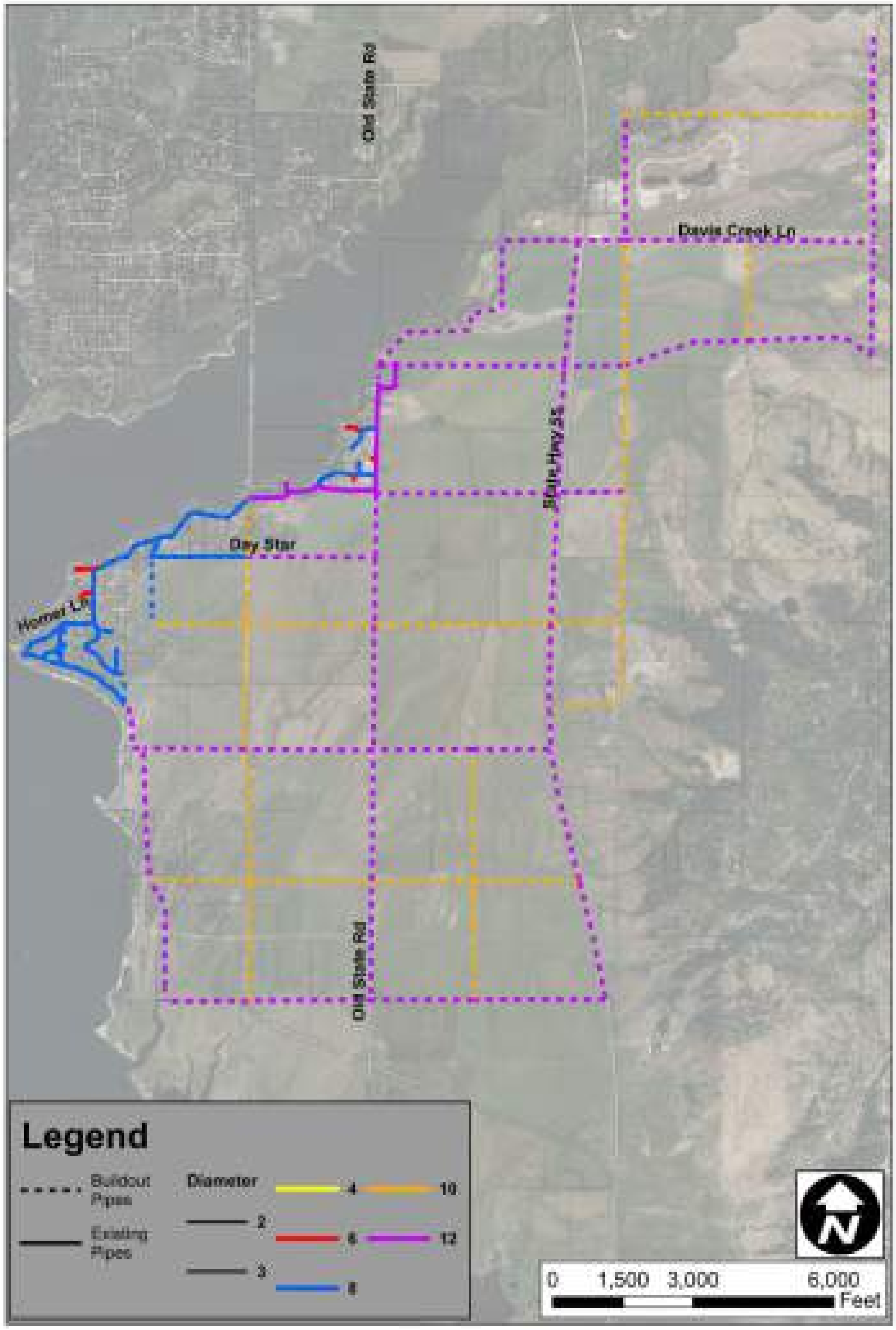


FIGURE 8-19: DAY STAR BUILDOUT SYSTEM



CHAPTER 9 - CAPTIAL IMPROVEMENT PLAN

The alternatives evaluated in Chapter 7 helped the District select the improvements to correct supply and storage deficits within each system. There are several other recommended improvements that are straightforward and do not require an alternative evaluation. This chapter discusses all improvements that are recommended, provides prioritization criteria to rank the improvements, provides cost estimates for each improvement, and a schedule for their implementation. The complete list of improvement projects in order of priority and accompanying schedule is called the Capital Improvement Plan (CIP).

9.1. PRIORITIZATION CRITERIA

There are several CIP projects identified and selected to correct deficiencies within each water system. Recognizing that the District has limited funds, prioritization criteria were developed to help rank the projects to assist in scheduling funding for the improvements. Table 9-1 outlines the prioritization criteria selected to rank the CIP projects.

TABLE 9-1: PRIORITIZATION CRITERIA

Priority	Description
1	- Provide firm supply capacity for Tamarack without utilizing the emergency backup Well #5 - Provide standby power to existing supply - Install District wide SCADA system
2	- Address security and source water protection
3	- Correct available fire flow deficiencies due to distribution system bottlenecks
4 (Future – as development occurs)	- Provide Storage to systems that are not currently equipped with storage - Provide firm supply capacity for systems that don't currently have to meet firm supply - Provide firm delivery capacity for systems that don't currently have to meet firm delivery

9.2. CAPITAL IMPROVEMENT PLAN AND OPINION OF PROBABLE COSTS

The summary of recommended system improvements and opinion of probable costs are shown in Table 9-2. Individual cost sheets with additional details are included in Appendix I. Figure 9-1 through Figure 9-4 show the locations of the CIP projects. Full size figures can be found in Appendix I. Some of the additional details include a description of need for the project, project objectives, and design considerations. Costs shown are planning-level estimates (Class 5 cost opinion by the Association for the Advancement of Cost Engineering) and can vary depending on market conditions. Project costs include construction markups such as mobilization, bonding, contractor overhead and profit, and a contingency allowance. Most projects include plans and contract document markups such as engineering, permitting, geotechnical services, SCADA integration, surveying, and legal/admin/funding. Operation and maintenance costs for applicable projects are provided in Appendix I.

TABLE 9-2: CAPITAL IMPROVEMENT PLAN

Project ID#	Project Name	Primary Purpose	Total Estimated Cost (2023 Dollars)
Priority 1 Improvements (Prior to 5 Years)			
1.1	Tamarack Well #12	Correct Existing Supply Deficit	$2,640,000
1.2	Fir Grove Generator Addition	Provide Standby Power at Supply	$350,000
1.3	Day Star Generator Addition	Provide Standby Power at Supply	$350,000
1.4	Tamarack Generator Addition	Provide Standby Power at Supply	$700,000
1.5	District Water Scada Project	Data Information Collection and Tracking	$1,380,000
		Total Priority 1 Improvements (rounded)	**$5,420,000**
Priority 2 Improvements (Prior to 20 Years)			
2.1	Well Lots Fencing Project	Source Water Protection	$550,000
		Total Priority 2 Improvements (rounded)	**$550,000**
Priority 3 Improvements (Prior to 20 Years)			
3.1	Tamarack Osprey Meadow Lodge Waterline Replacement	Correct Existing Commercial Fire Flow Deficiencies	$610,000
3.2	Day Star Homer Lane Loop	Correct Existing Residential Fire Flow Deficiencies	$690,000
3.3	Day Star Lee Way Loop	Correct Existing Residential Fire Flow Deficiencies	$360,000
3.4	Tamarack Pinnacle Court Waterline Replacement	Correct Existing Residential Fire Flow Deficiencies	$130,000
		Total Priority 3 Improvements (rounded)	**$1,790,000**
Priority 4 Improvements (Development Driven)			
4.1	Hawks Bay Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$9,280,000
4.2	Day Star Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,400,000
4.3	Fir Grove Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,780,000
4.4	New Tamarack Well	Correct Future Supply Deficit	$2,640,000
		Total Priority 4 Improvements (rounded)	**$29,100,000**
		TOTAL SYSTEM IMPROVEMENTS COSTS (rounded)	**$36,860,000**

1. The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

2. Federal funding requirements (i.e. AIS) were not included in costs and if this type of funding is utilized it is recommended cost estimates be revisited.

FIGURE 9-1: HAWKS BAY CIP MAP

FIGURE 9-2: FIR GROVE CIP MAP

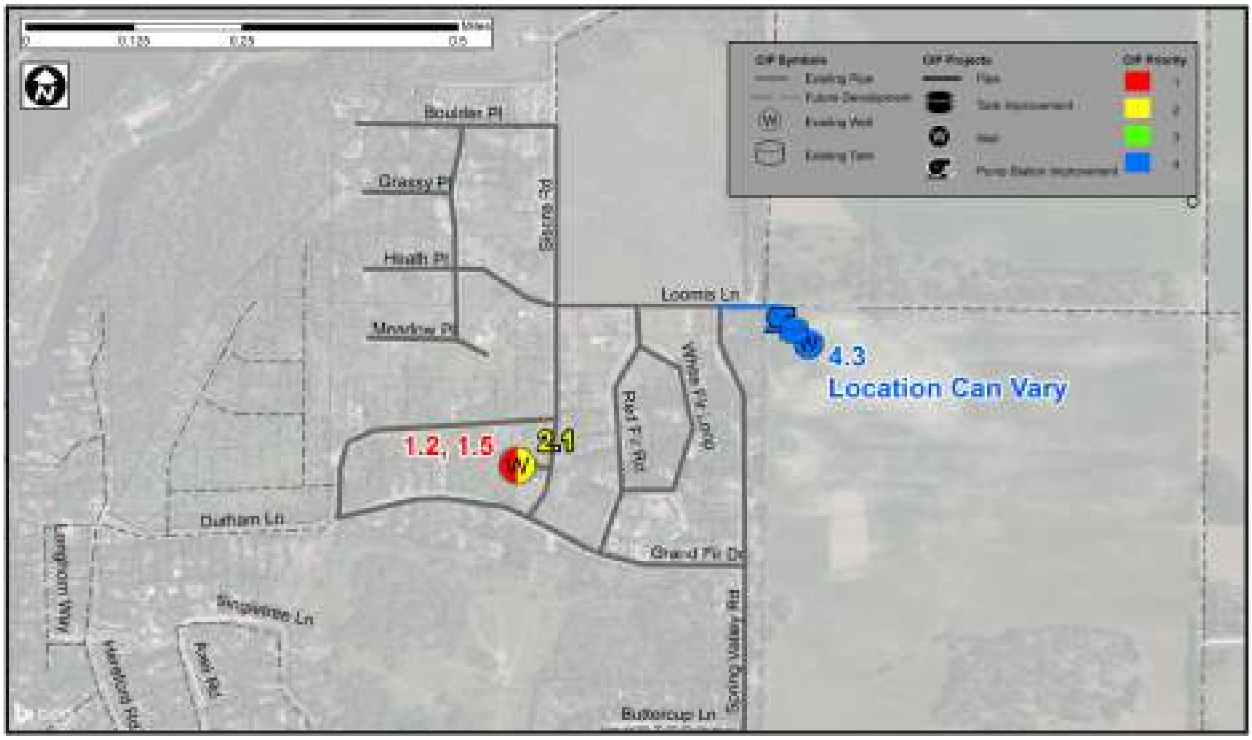


FIGURE 9-3: DAY STAR CIP MAP

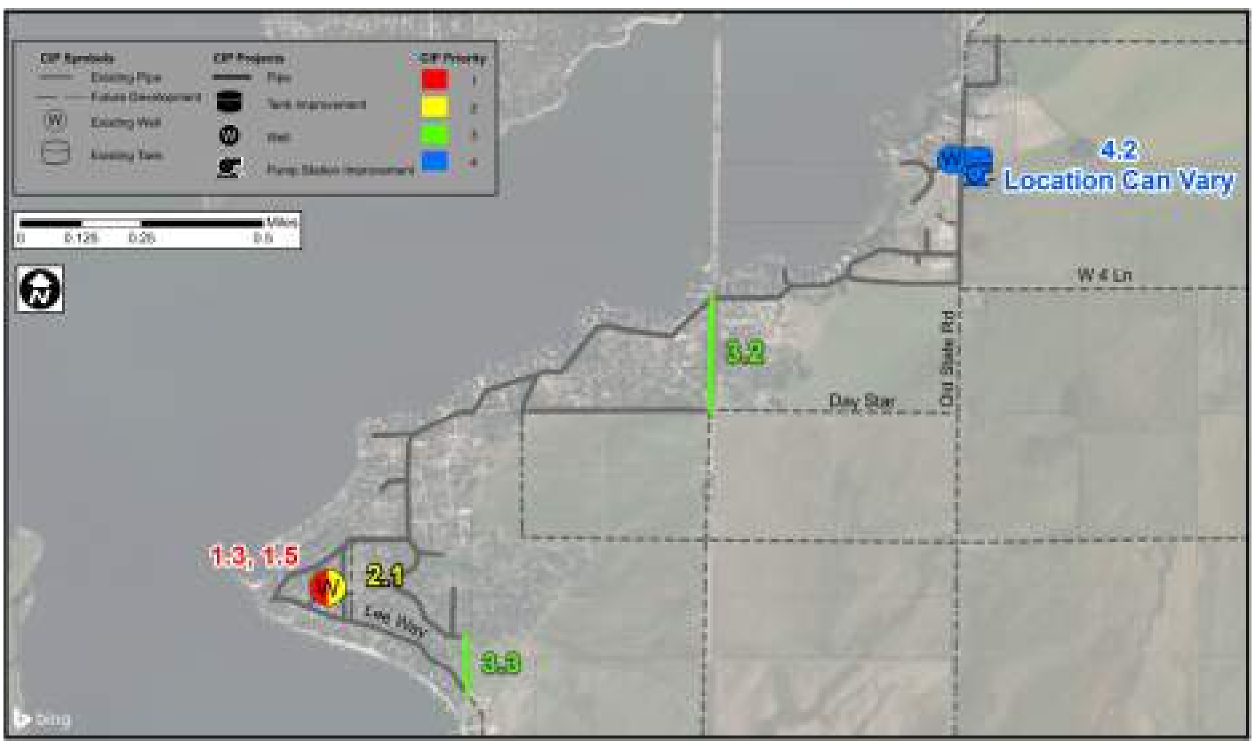
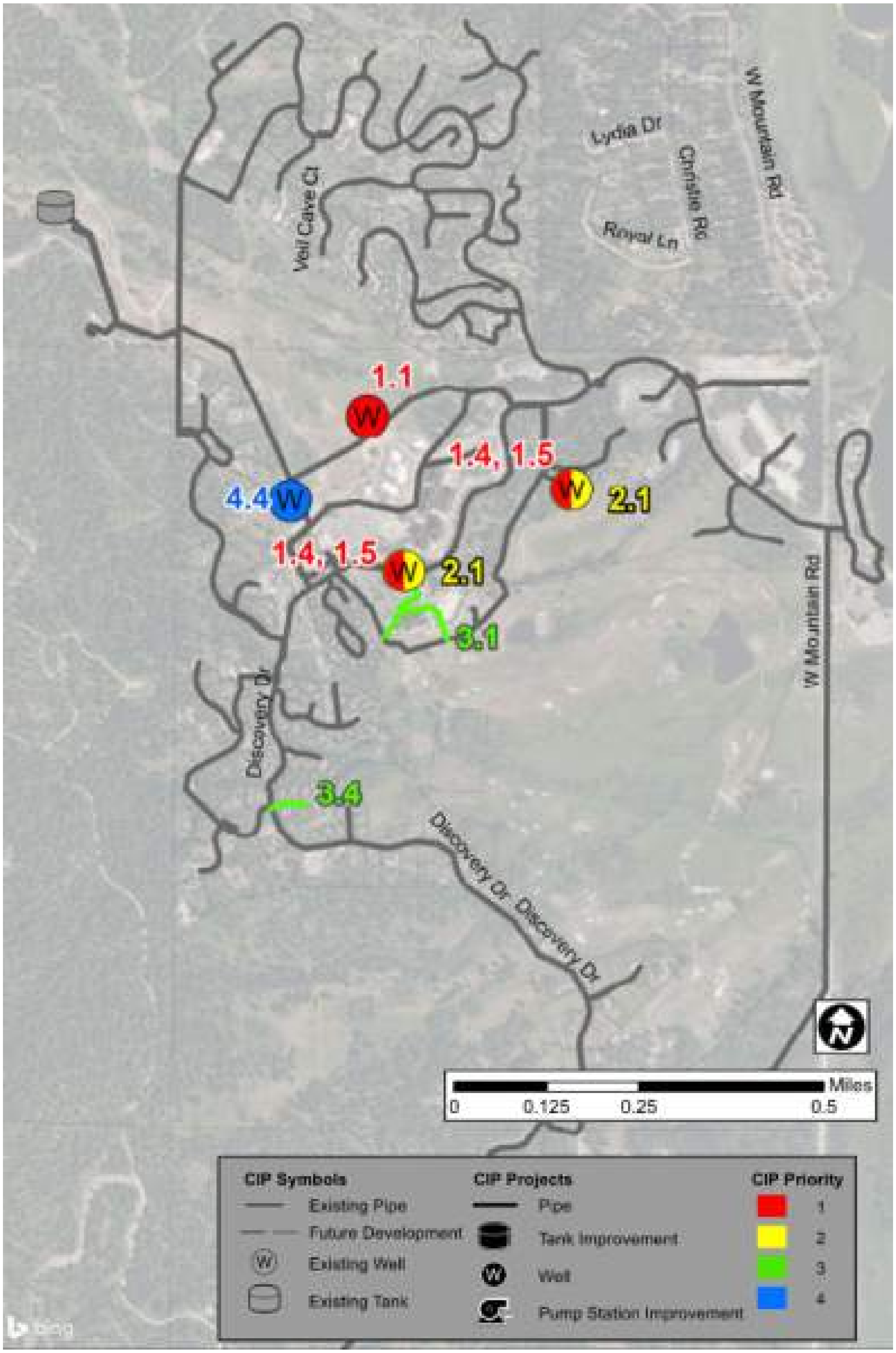


FIGURE 9-4: TAMARACK CIP MAP



9.3. PRIORITY 1 PROJECT SCHEDULE

An estimated schedule for the Priority 1 improvements over the next five years is shown in Table 9-3. In order to provide a more affordable project, Priority 1 improvements may need to be phased over a multi-year project. Actual costs may vary depending on market conditions and should be updated as projects are further refined in the pre-design and design phases.

TABLE 9-3: PRIORITY 1 CIP SCHEDULE (2023 DOLLARS)

CIP ID	Capital Improvement Item	Total Cost (2023 dollars)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
1.1	Tamarack Well #12	$ 2,640,000	$ 2,640,000				
1.2	Fir Grove Generator Addition	$ 350,000		$ 350,000			
1.3	Day Star Generator Addition	$ 350,000			$ 350,000		
1.4	Tamarack Generator Addition	$ 700,000				$ 350,000	$ 350,000
1.5	District Water Scada Project	$ 1,380,000		$ 345,000	$ 345,000	$ 345,000	$ 345,000
	Total Capital Costs	**$ 5,420,000**	**$ 2,640,000**	**$ 695,000**	**$ 695,000**	**$ 695,000**	**$ 695,000**

9.4. PERMIT REQUIREMENTS

The larger projects to add storage and firm supply/delivery capacity will likely be located with residential developments. It is common for utility facilities to be located within residential developments. The County will require a conditional use permit (CUP) to construct these facilities. A CUP is required for these types of facilities in residential areas to ensure that the installation of such structures aligns with the established zoning regulations and land use plans of the community.

Approval for storage and pumping facilities will require the typical DEQ approvals such as a preliminary engineering report (PER), well site approval, well completion report, and final plans and specifications approval. Simple waterline projects could be submitted to DEQ for approval or be approved by a Qualified Licensed Professional Engineer (QLPE).

Other permits should be identified in the PER or pre-design phase of each project such as irrigation facility crossings, right of way (ROW) permits, stormwater permits, SWPPP, and grading permits.

9.5. SUSTAINABILITY CONSIDERATIONS

The following sustainability items will be considered during the pre-design and design of the CIP projects.

9.5.1. Operate and Maintain the System

The District is making improvements to management-based sustainability initiative efforts, including plans to implement a capital budget that is funded and supported by a CIP (accomplished with this Facility Plan). The Priority 1 projects also include the implementation of a District wide water SCADA system to assist in monitoring and maintaining the system.

9.5.2. Green Project Reserve (GPR)

Technology based sustainability initiative efforts that are anticipated to be addressed with this project include:

- High-efficiency lighting and lighting controls at new supply or delivery facilities.
- VFD pumps at new supply or delivery facilities.

- Energy efficient motors that meet National Electrical Manufacturers Association (NEMA) Premium specifications.
- SCADA system installation for each water system.

9.6. OPERATOR AND STAFFING REQUIREMENTS

Currently the District's water systems do not have a Distribution Classification and have a Treatment Classification of Class I. There is no anticipated need for additional license classes upon completion of the CIP projects. With the addition of new supply or delivery facilities, operators will need to be trained to operate the new equipment. Additional staffing may be necessary during the planning period as growth occurs and additional infrastructure and facilities are added. Updated system classification worksheets will be filled out and provided to DEQ subsequent to this plan.

9.7. FUNDING ALTERNATIVES

Many of the CIP projects will be funded by development as growth occurs and new facilities are needed to meet increasing demands. Methods of funding are available should the District choose to investigate, including the following:

9.7.1. Cash Funding

The District could consider raising rates to cash fund the improvements. This would require the least total cash outlay; however, the rates would be higher than if they were spread out over a long-term loan, which could be a significant hardship.

9.7.2. Idaho Department of Environmental Quality (State Revolving Fund)

The State Revolving Fund (SRF) program is funded by a combination of repayment of loans previously made by DEQ and grant money supplied by EPA. Owners of public water systems can apply for SRF funds annually through a competitive application process. Applications are ranked by state officials based on need, sustainability, water quality improvements, and other criteria. Davis-Bacon Wage Act and Build America, Buy America Act apply. Applicants may qualify for principal forgiveness or other subsidy programs. DEQ is required to commit a significant percentage of available loan funds to sustainable, energy efficient, and "green" infrastructure improvements. Consequently, elements that meet the "green" infrastructure qualifications may receive priority for funding. Voter approval in a bond election or through judicial confirmation is required for this funding source.

9.7.3. United States Department of Agriculture-Rural Development (SUDA-RD)

USDA-RD offers a grant and loan program for improvements to water systems that serve rural communities. Rural communities are defined as systems that serve less than 10,000 people. Grants up to 45% of the project cost are eligible depending on user rates. Applicants can apply for USDA-RD funds anytime during the year. Funds have multiple program requirements including, but not limited to, the completion of a short-lived asset inventory and an approved engineering report. Voter approval in a bond election or through judicial confirmation and interim financing is required with this funding source.

9.7.4. United States Army Corps of Engineers (Section 595)

The USACE can sometimes offer money for water-related infrastructure projects to supplement funding from DEQ or USDA-RD. Funding availability depends on an appropriation from Congress and varies from year to year. Costs are shared with a 25 percent local match is required.

9.7.5. Idaho Bond Bank

The Idaho Bond Bank is a state level entity that lends money to local governments within the state, with the goal of providing funds for their infrastructure needs and access to the capital markets at competitive interest rates. Under the Idaho Bond Bank program (IBBA), a municipality obtains a loan from the Bond Bank secured by either the municipality's bond or a loan agreement with the Bond Bank. The Bond Bank pools several loans to municipalities into one bond issue. The municipalities then repay the loan, and those repayments are used to repay the revenue bonds. The Bond Bank can obtain better credit ratings, more attractive interest rates, and lower underwriting costs than municipalities could achieve individually. The Bond Bank is able to pledge certain state funds as additional security for its bonds, further reducing interest costs. Additionally, the Idaho Bond Bank Authority can open doors to municipalities that were previously barred from the capital markets due to the high costs of financing or challenging credit situations.

9.7.6. Local and Private

In addition to federal and state funding programs, there are local and private funding sources available to communities to fund. Some of these include a local improvement district (LID), the municipal bond market with voter approval or judicial confirmation, a business improvement district (BID), urban renewal district, connection fees, development agreements with developers, and others.

9.8. ANNUAL BUDGET CONSIDERATIONS

See Rate Study completed in November 2020 (Appendix J). The District anticipates a combination of developer funded and District funded projects.

APPENDIX A

Full Size Figures

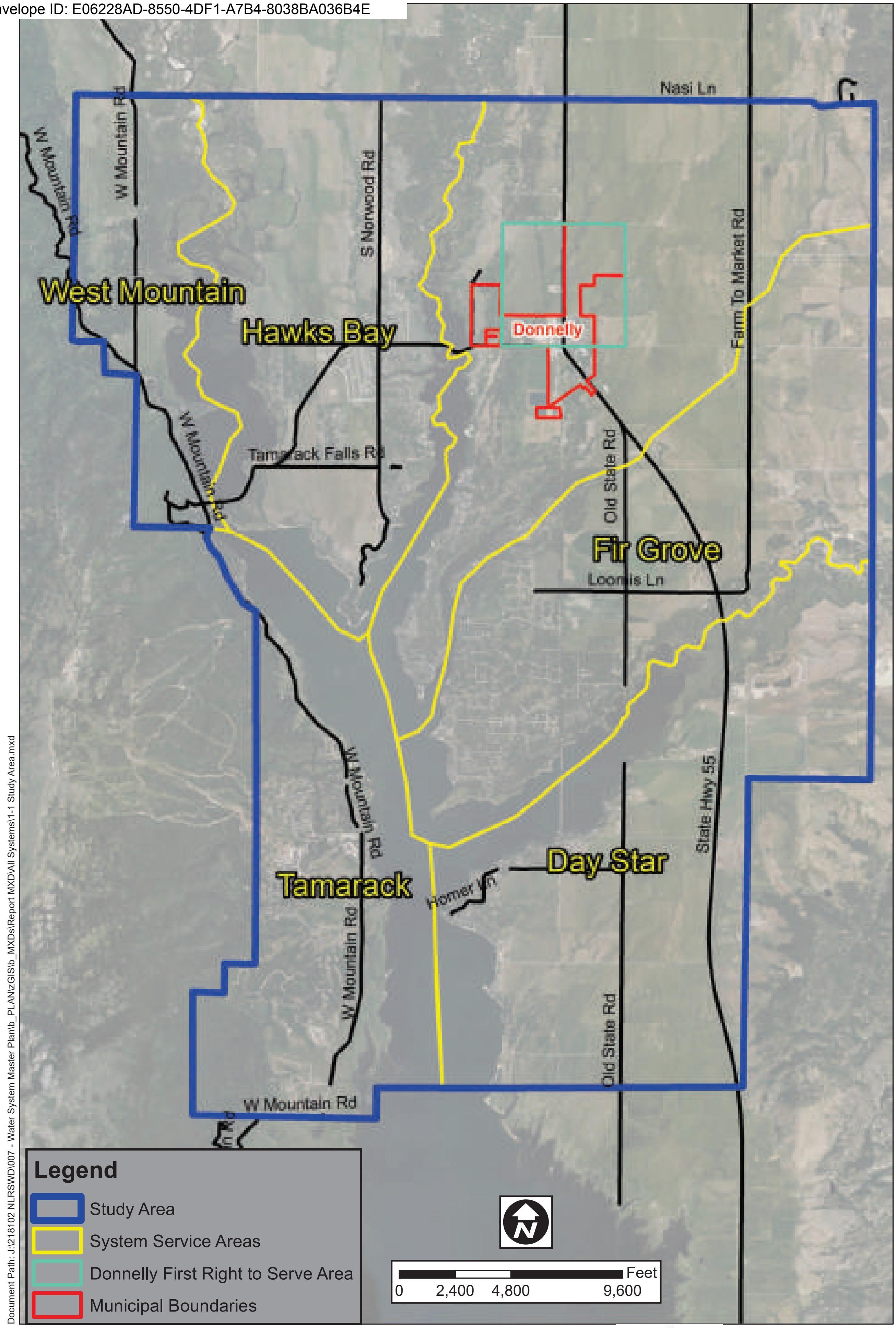


Figure 2-1

NLRSWD

Planning Boundary

Water Master Plan

KELLER ASSOCIATES

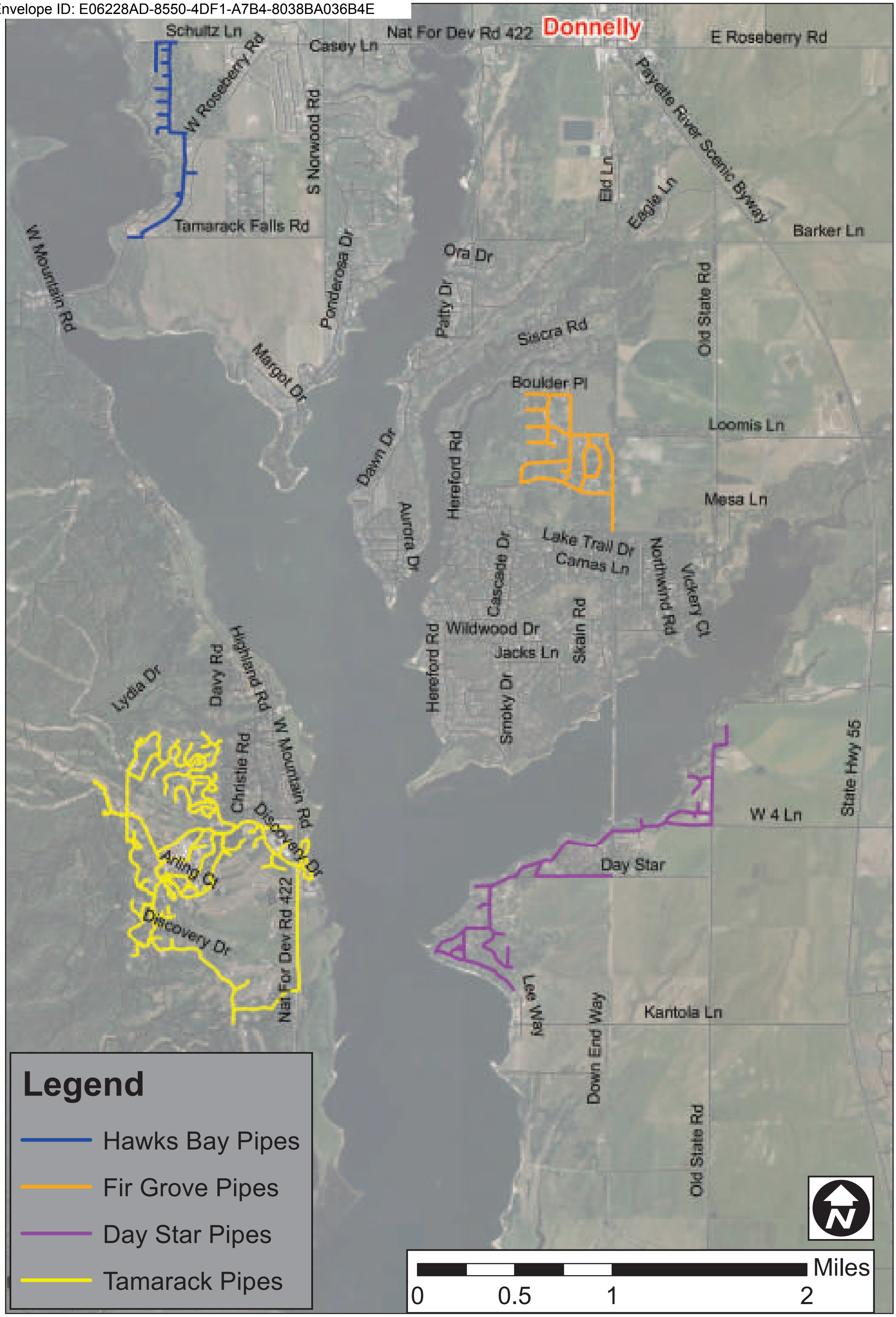


Figure 3-1

NLRSWD

Water Systems Map

Water Master Plan

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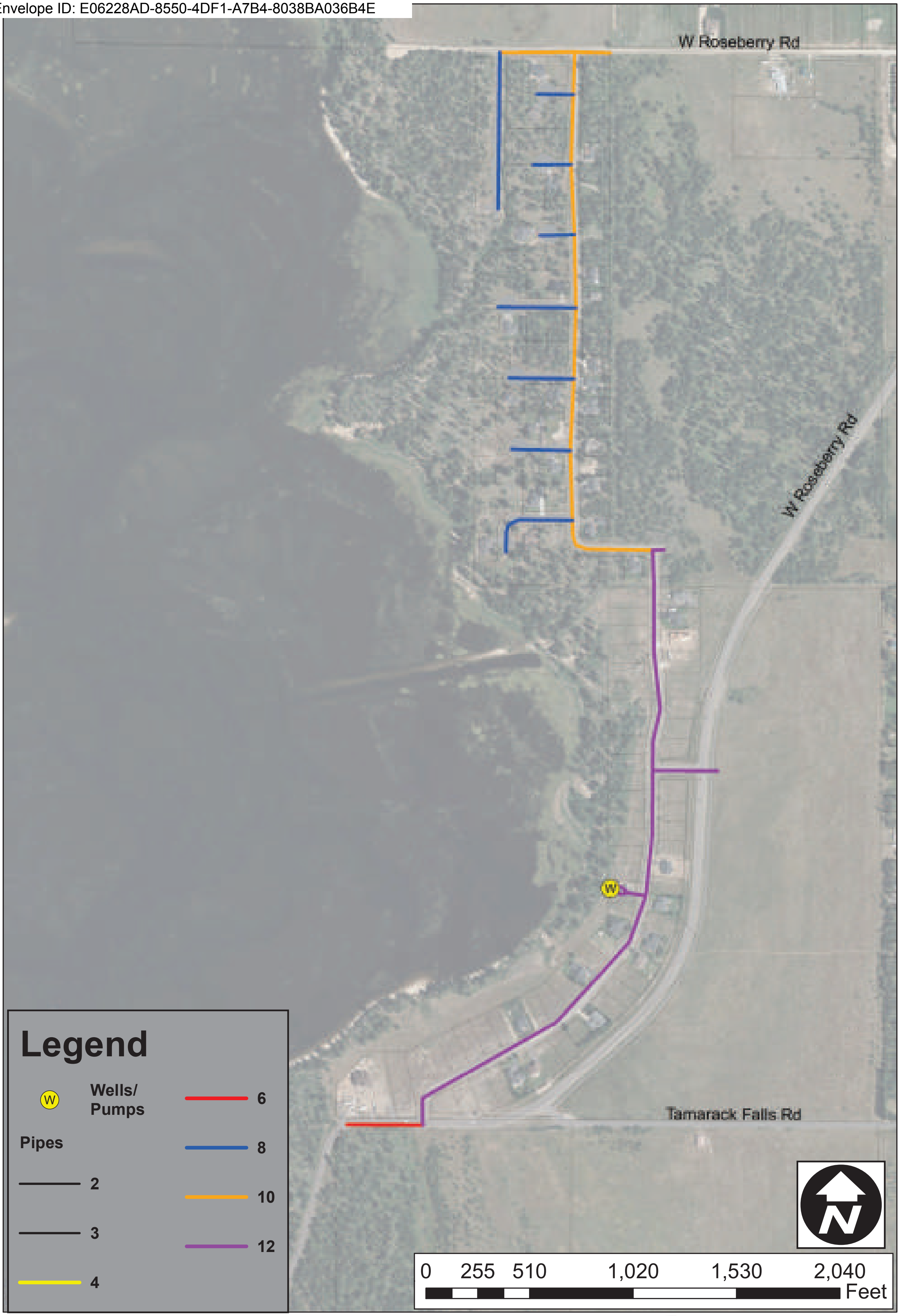

Figure 3-2

NLRSWD

Hawks Bay Existing System

Water Master Plan

KELLER ASSOCIATES

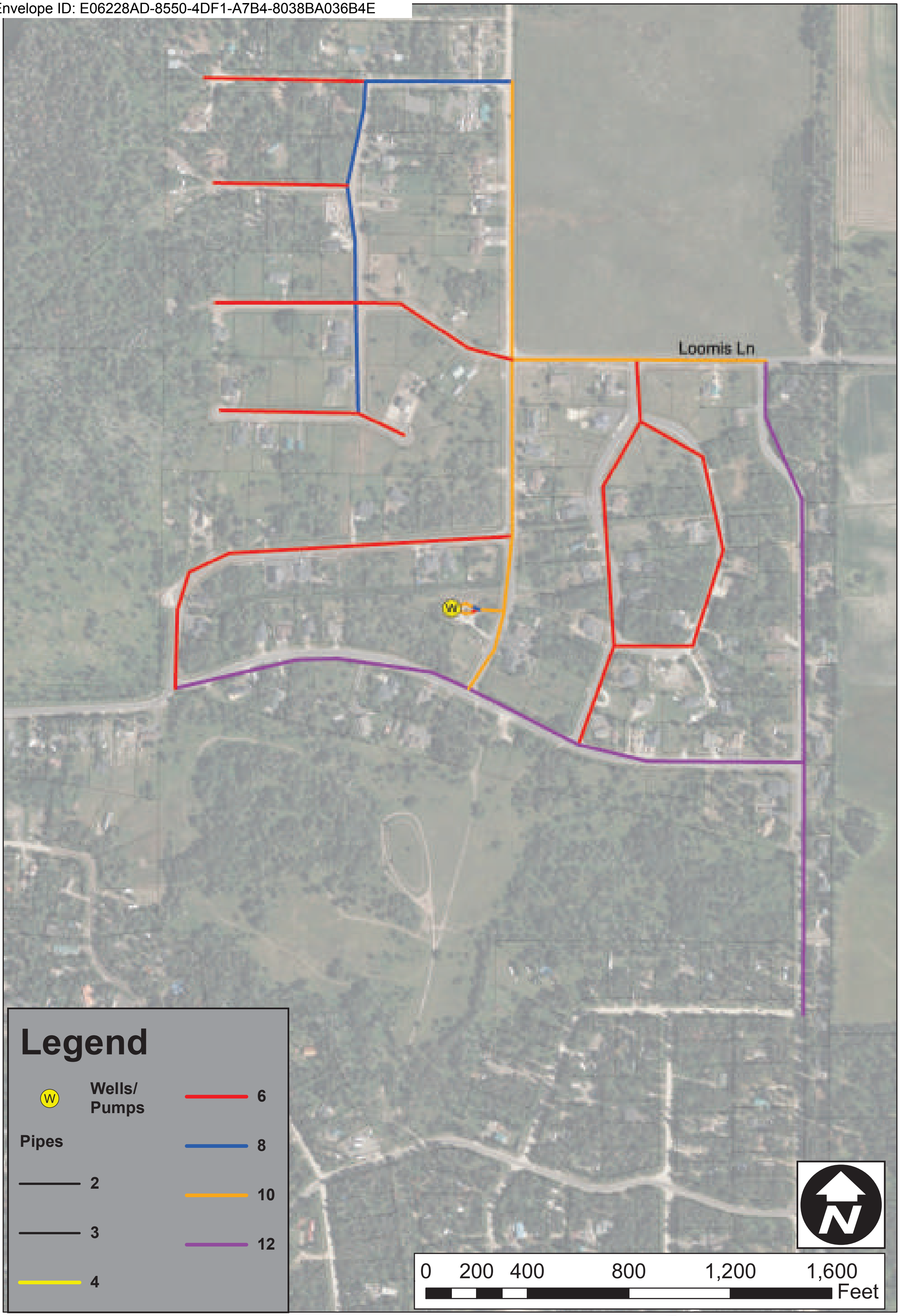

Figure 3-3

NLRSWD

Fir Grove Existing System

Water Master Plan

KELLER ASSOCIATES

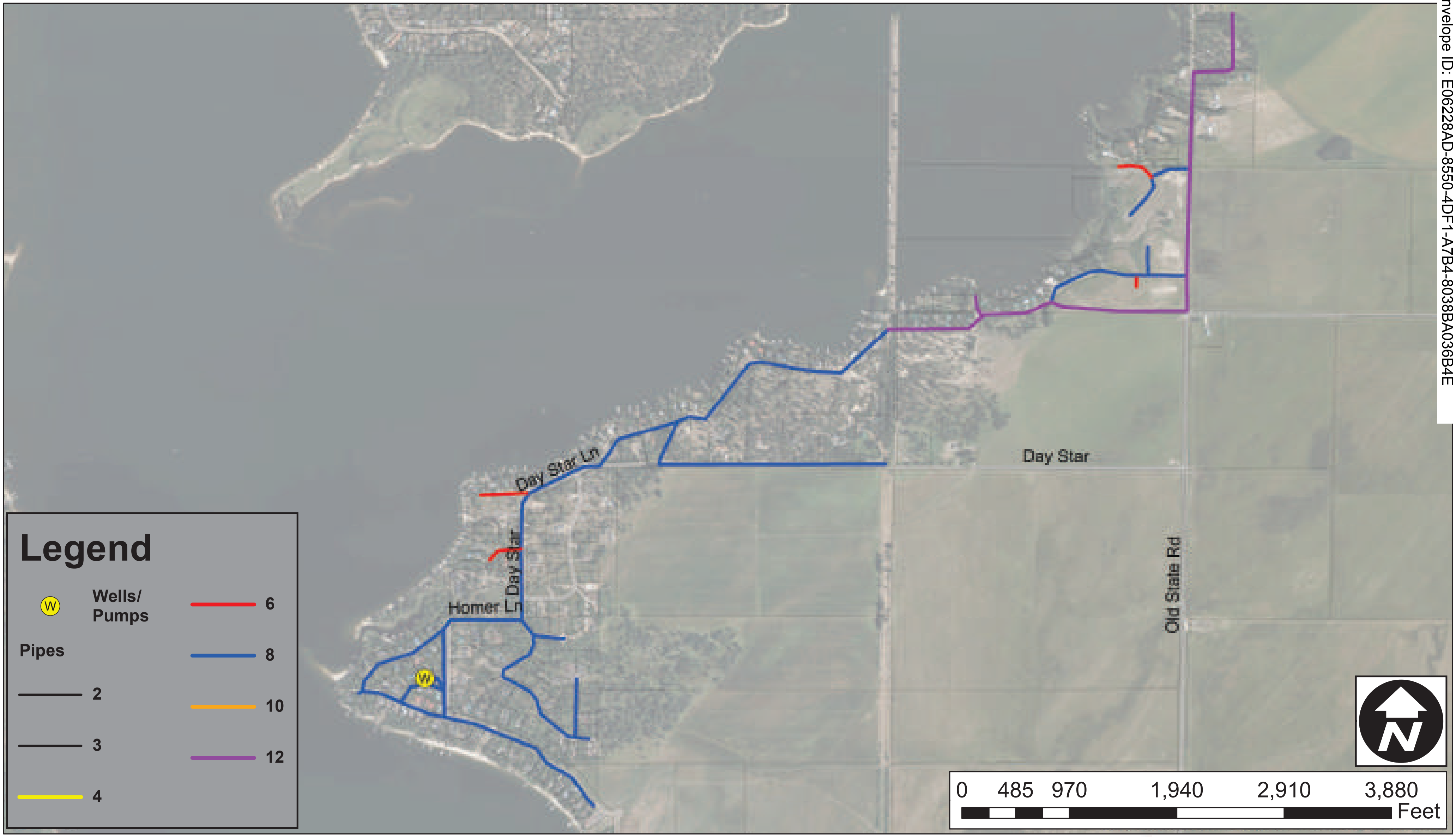

Figure 3-4

NLRSWD

Day Star Existing System

Water Master Plan

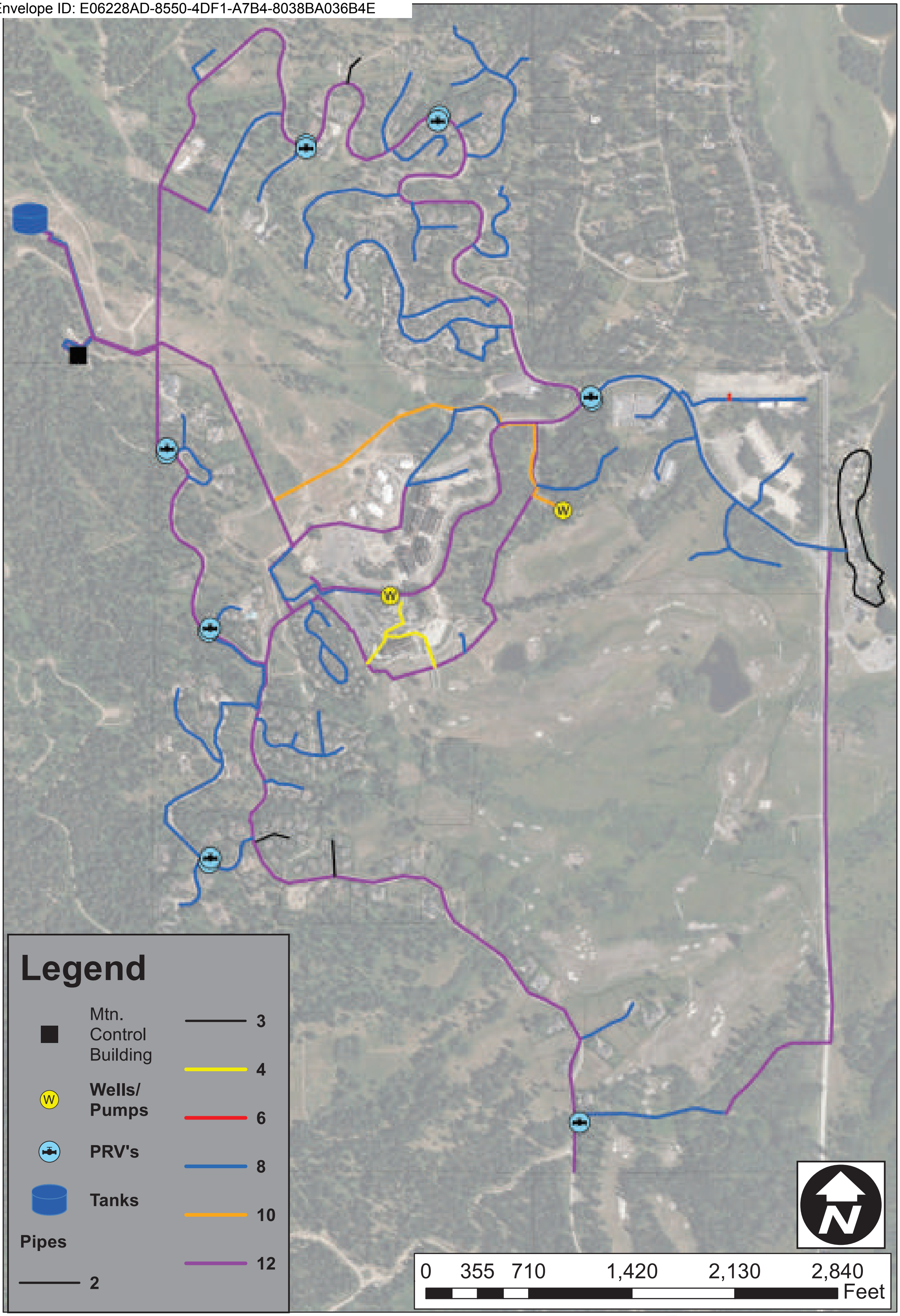

Figure 3-5 Tamarack Existing System (Pipes)

NLRSWD

Water Master Plan

KELLER ASSOCIATES

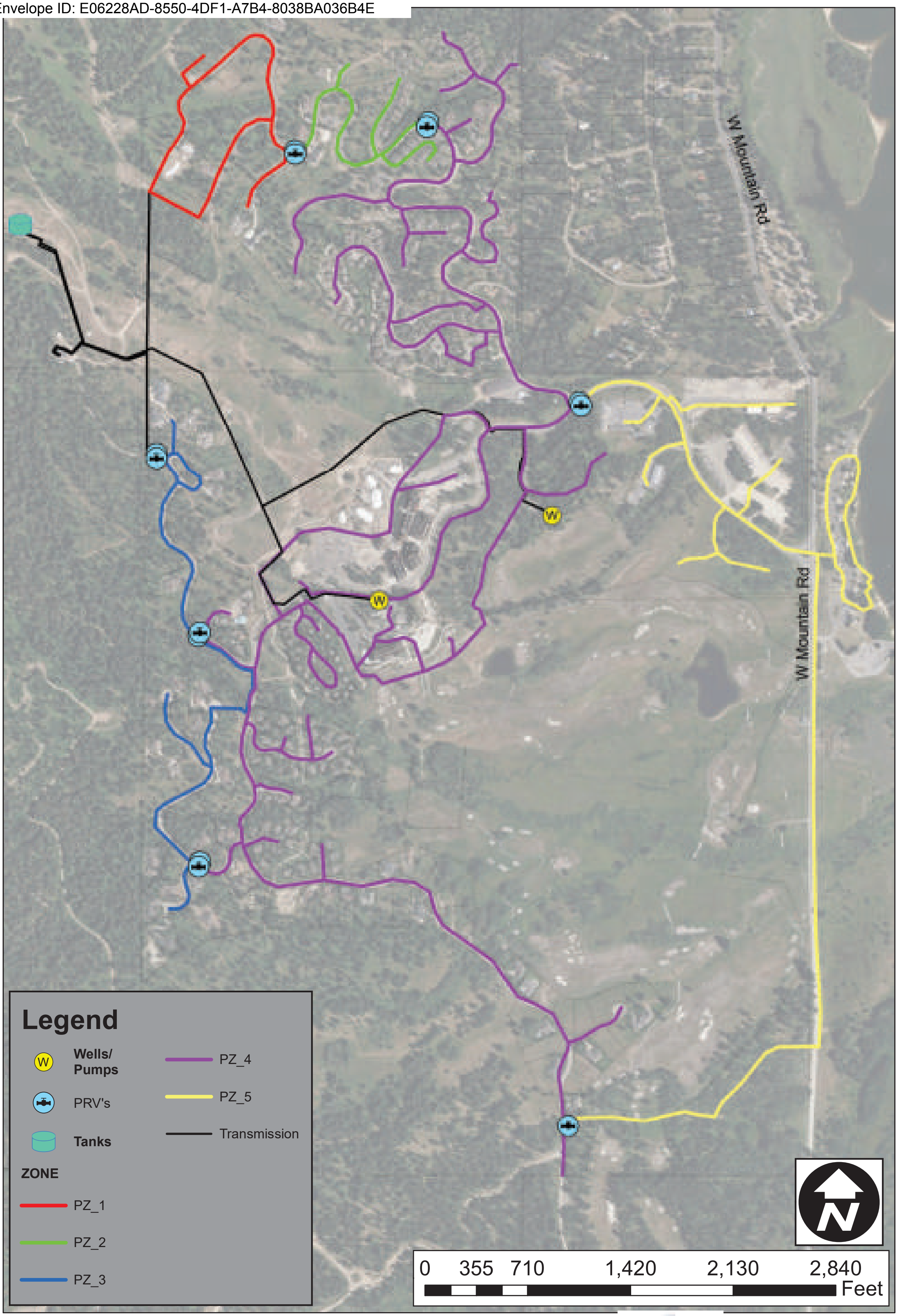

Figure 3-7

NLRSWD

Tamarack Existing System (PZ)

Water Master Plan

KELLER ASSOCIATES

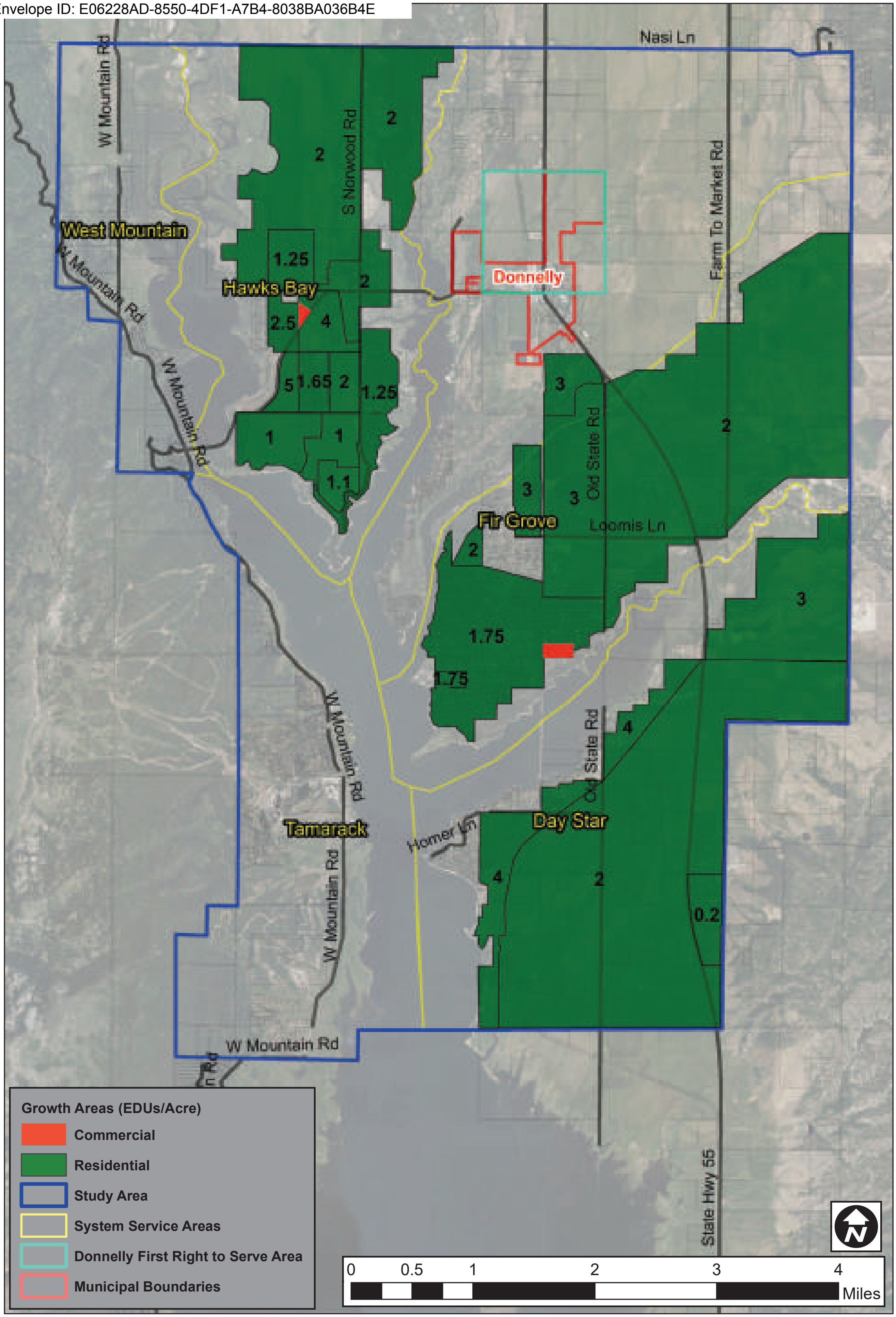

Figure 4-2

NLRSWD

Buildout Growth Areas

Water Master Plan

KELLER ASSOCIATES

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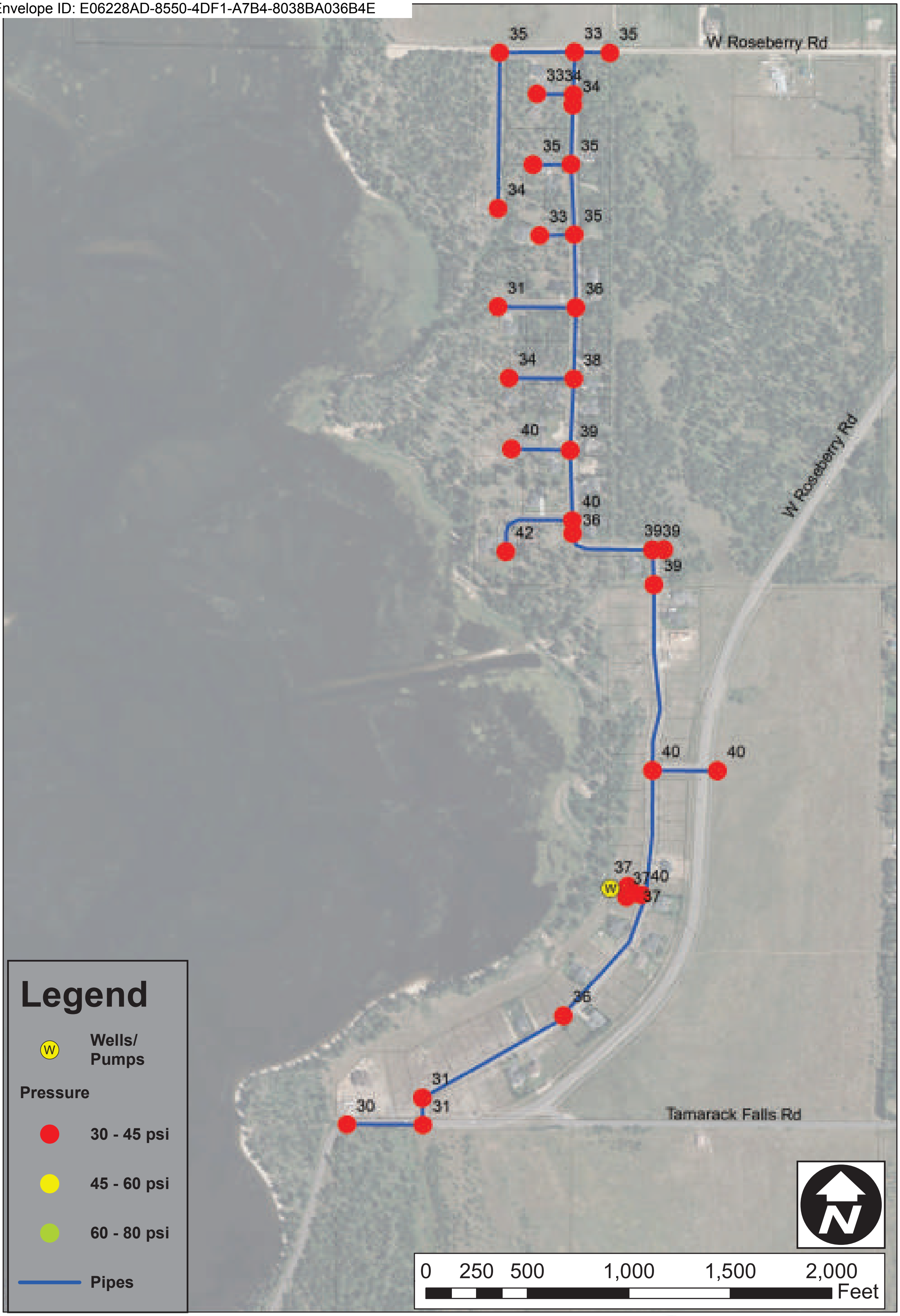

Figure 6-1

NLRSWD

Hawks Bay PHD Existing (Domestic Pump)

Water Master Plan

KELLER ASSOCIATES

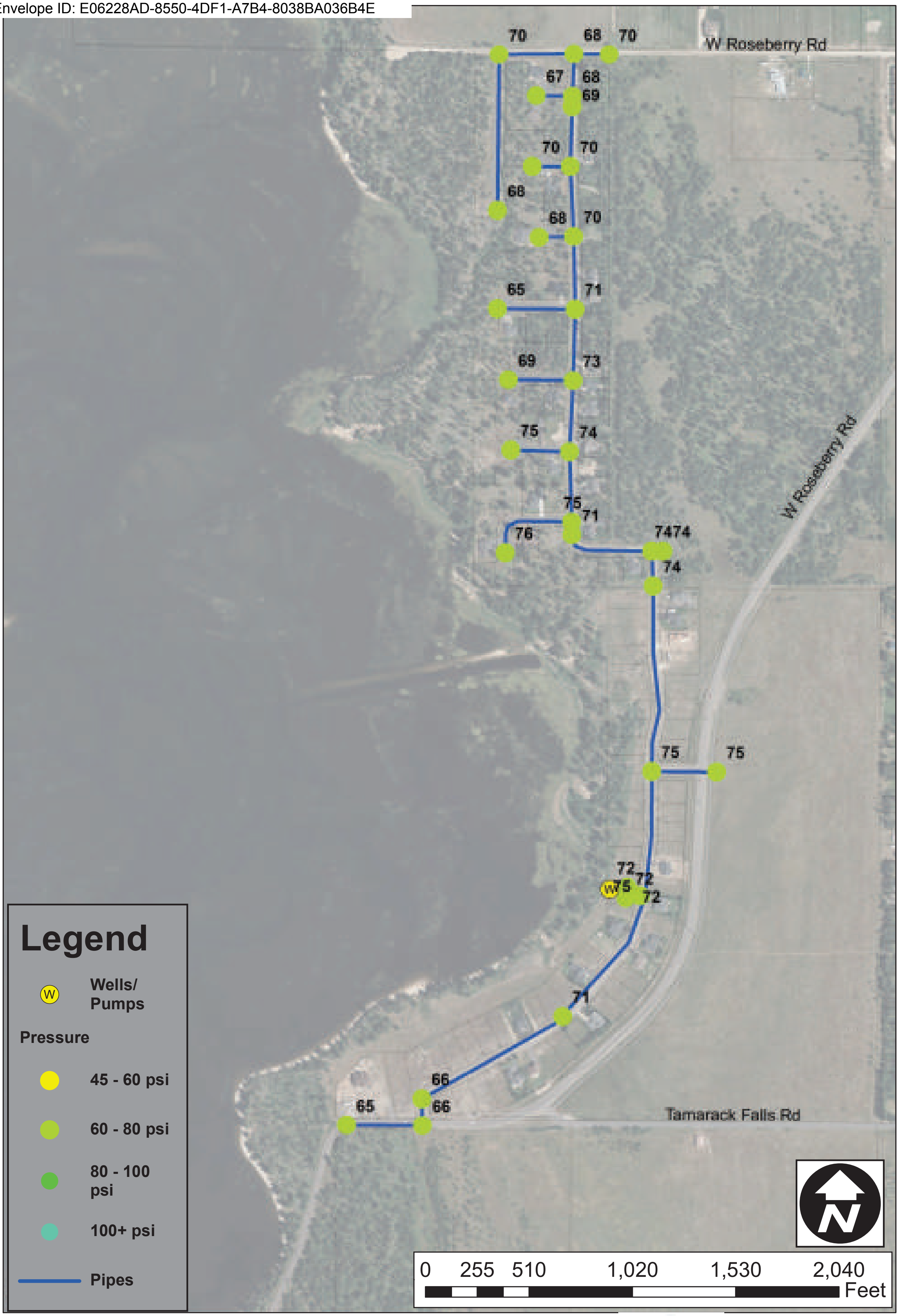

Figure 6-2

NLRSWD

Hawks Bay PHD Existing (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

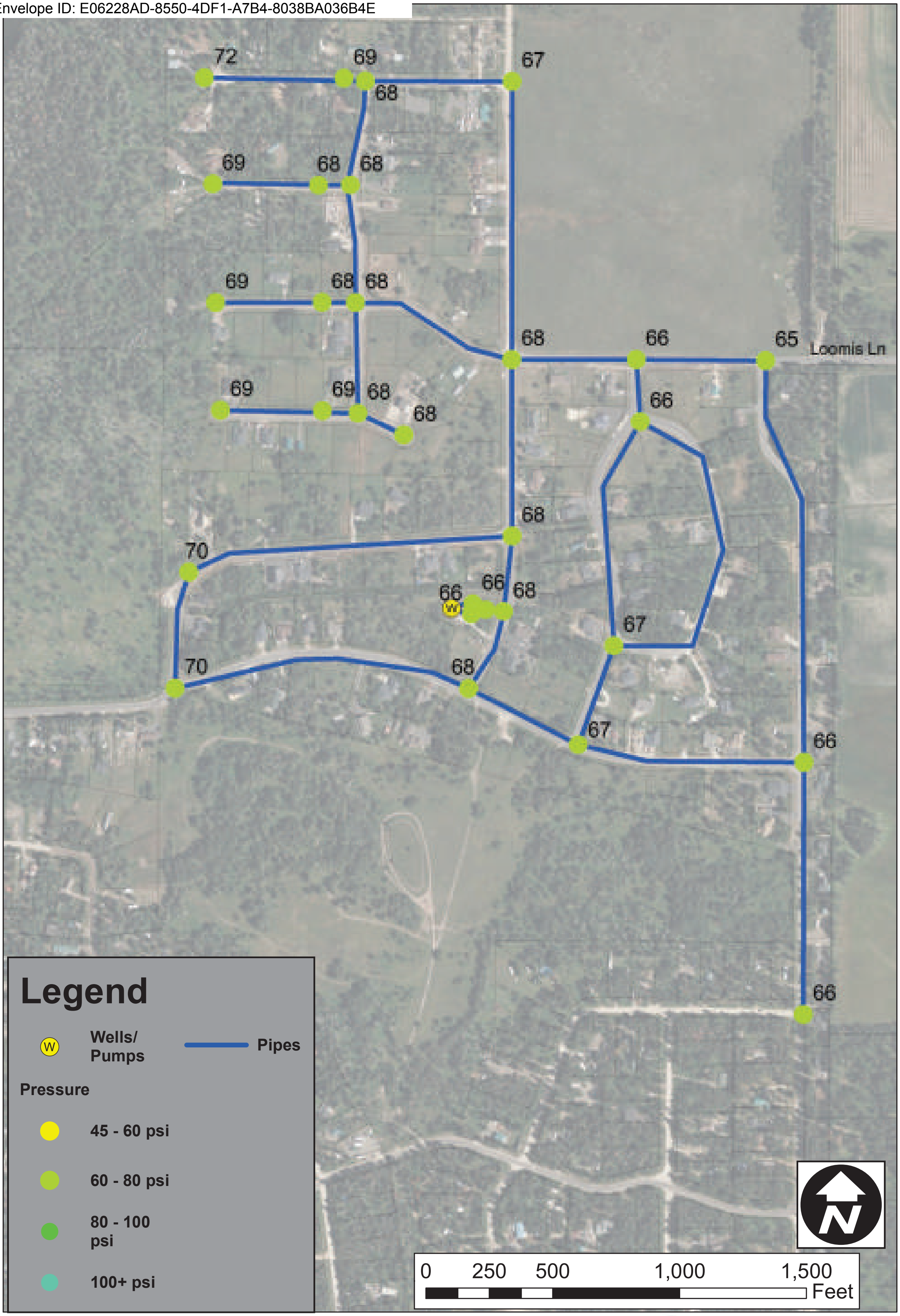

Figure 6-3

NLRSWD

Fir Grove Existing PHD (Domestic Pump)

Water Master Plan

KELLER ASSOCIATES

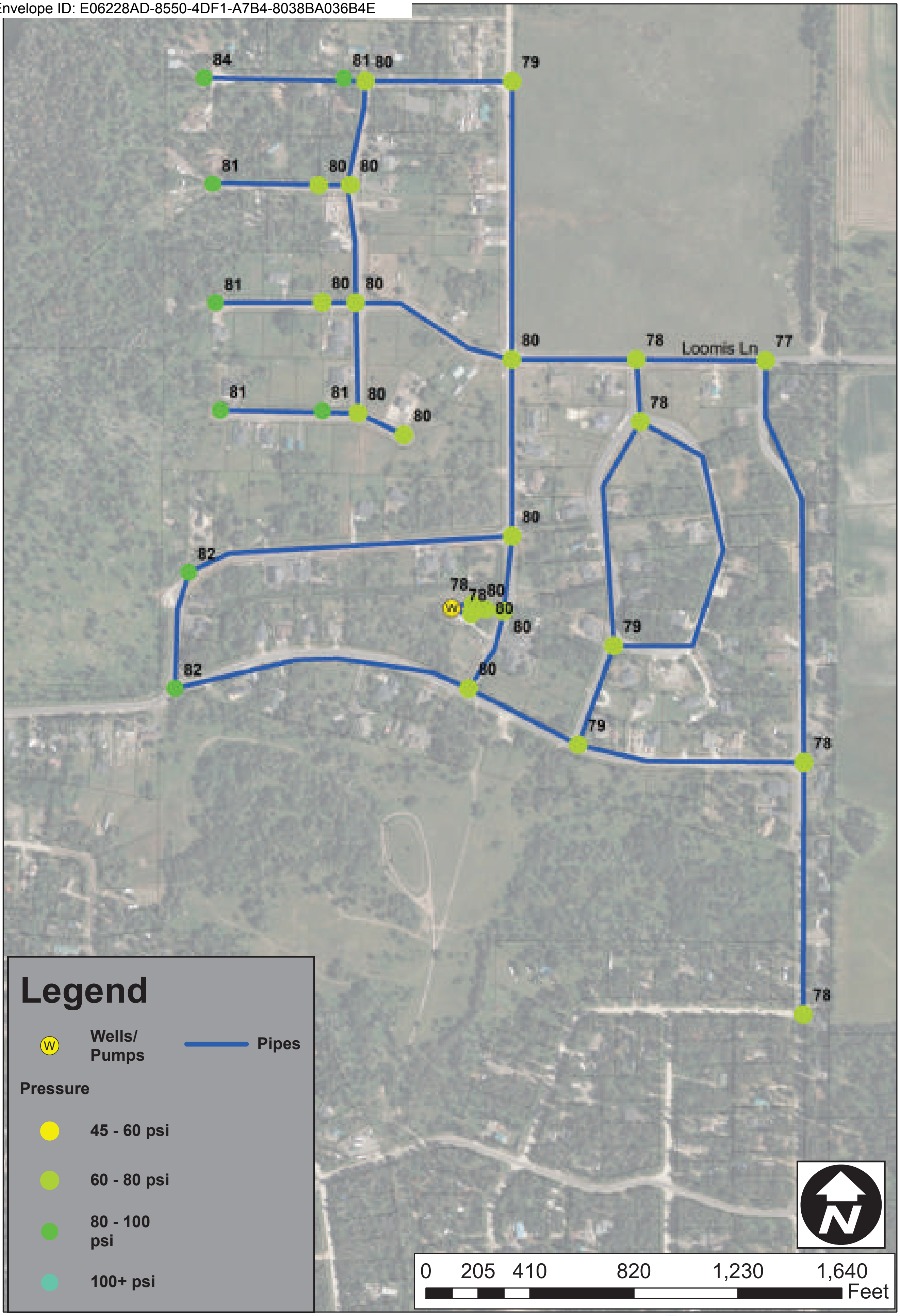

Figure 6-4

NLRSWD

Fir Grove Existing PHD (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

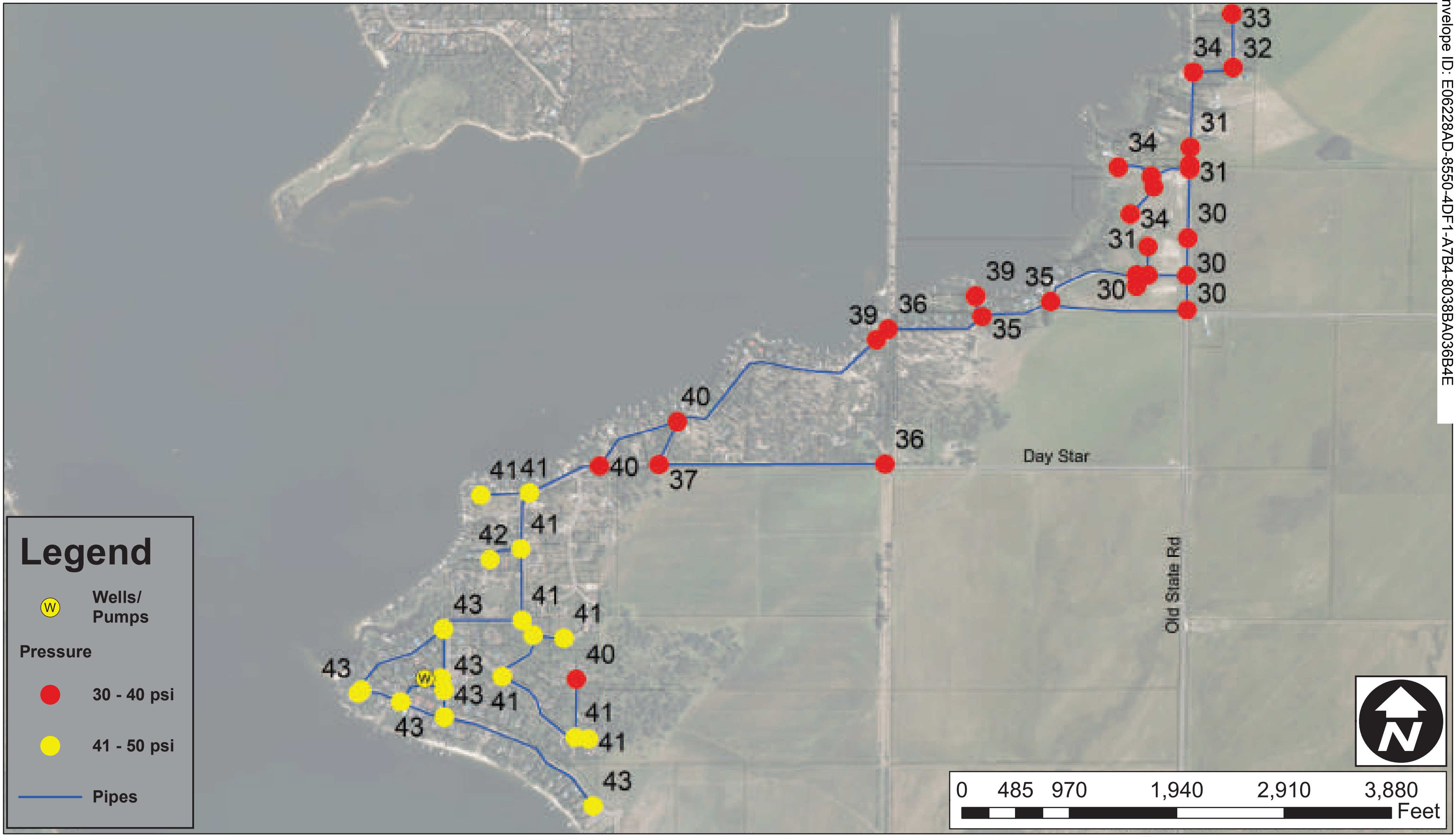

Figure 6-5

NLRSWD

Day Star Existing PHD (Domestic Pump)

Water Master Plan

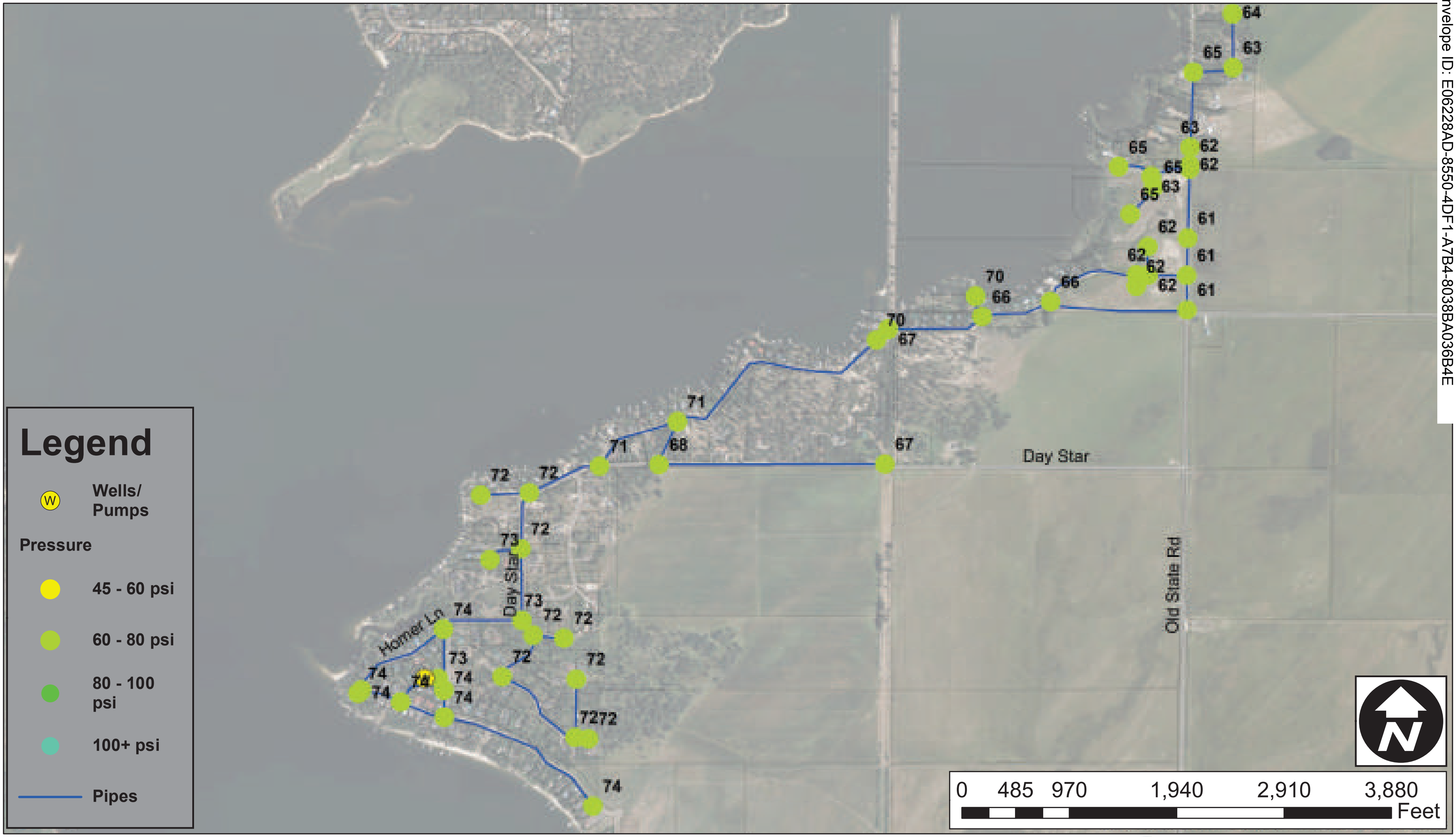

Figure 6-6

NLRSWD

Day Star Existing PHD (Both Pumps)

Water Master Plan

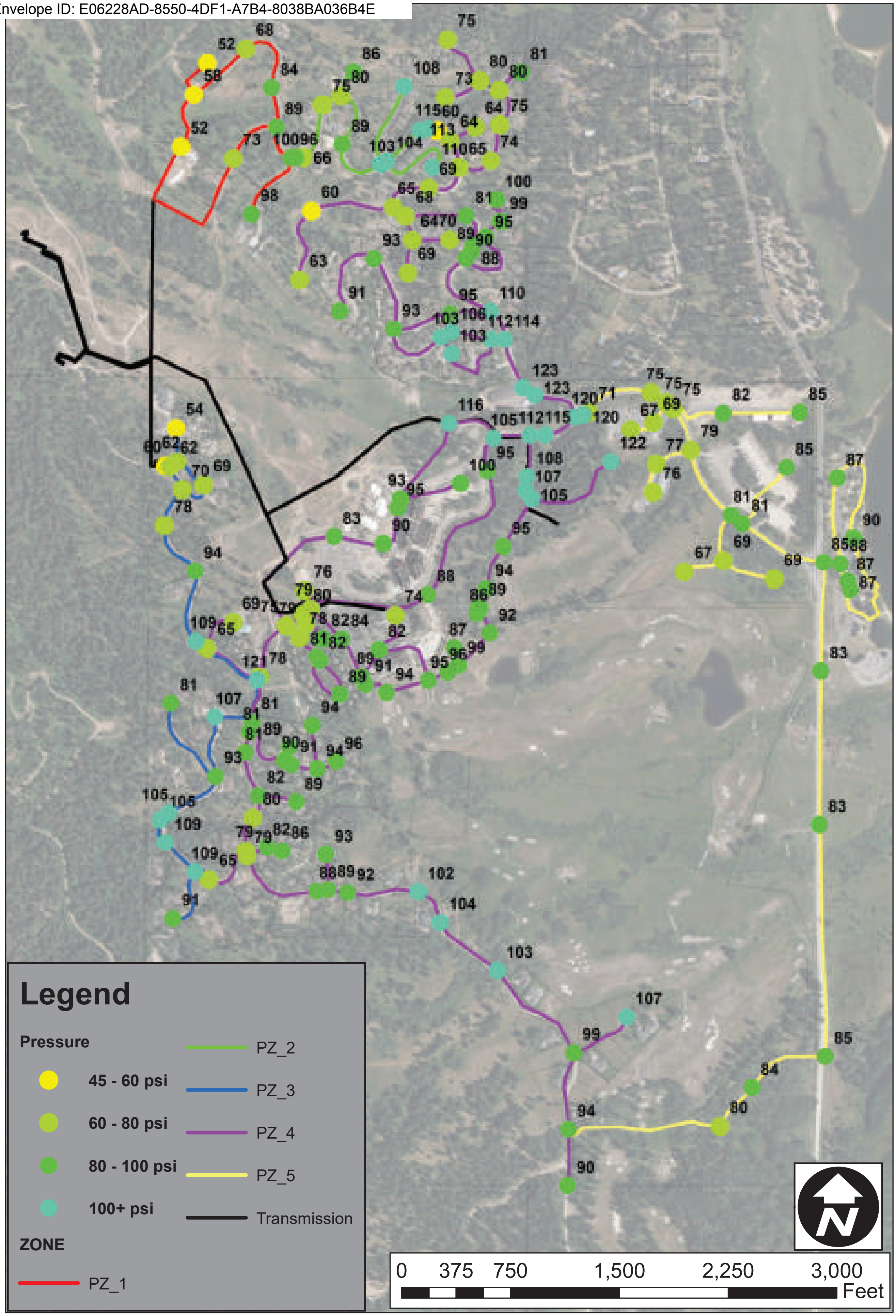

Figure 6-7

NLRSWD

PHD Existing Pressures

Water Master Plan

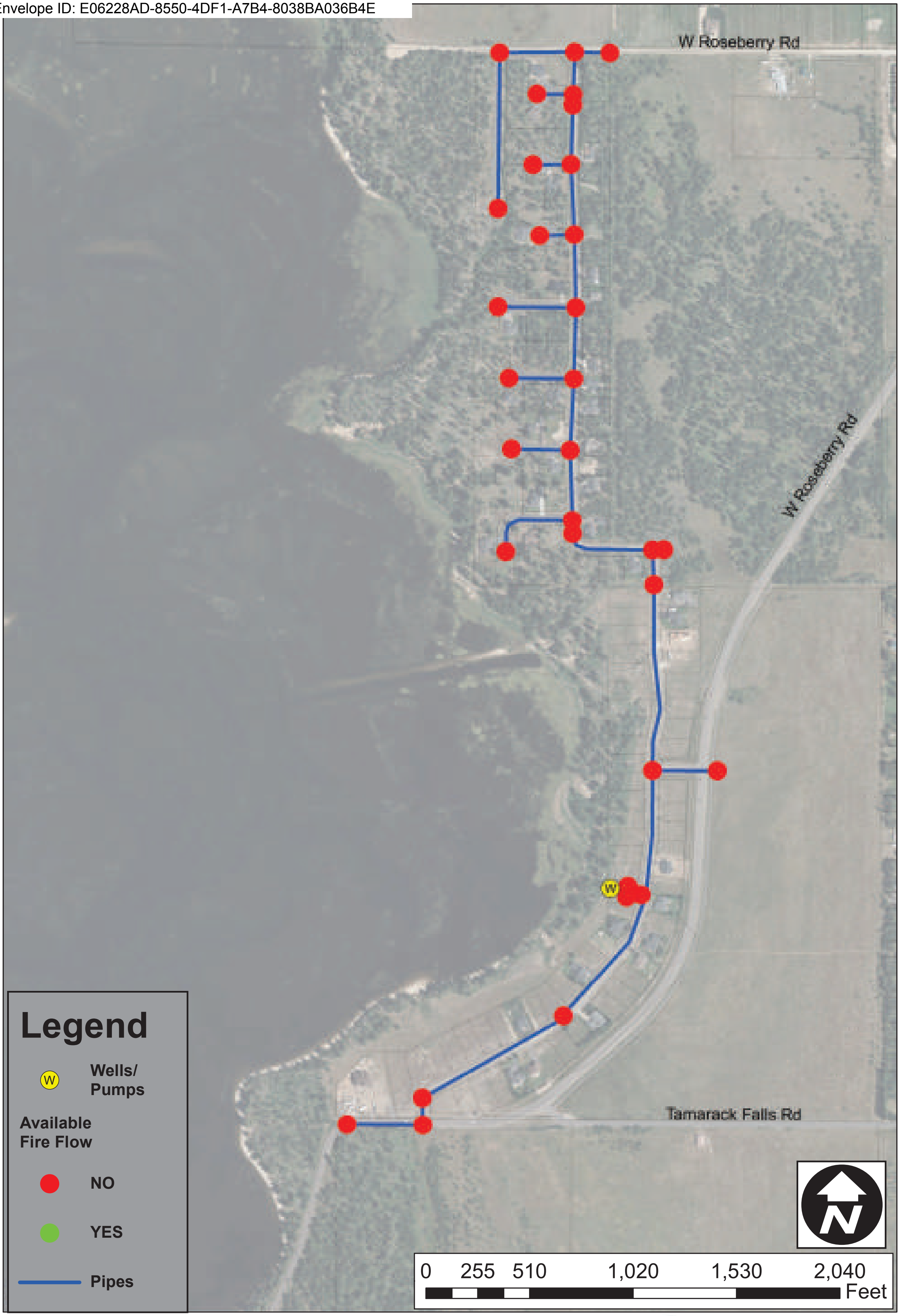

Figure 6-8

NLRSWD

Hawks Bay Meets Req'd FF Existing (Domestic Pump)

Water Master Plan

KELLER ASSOCIATES

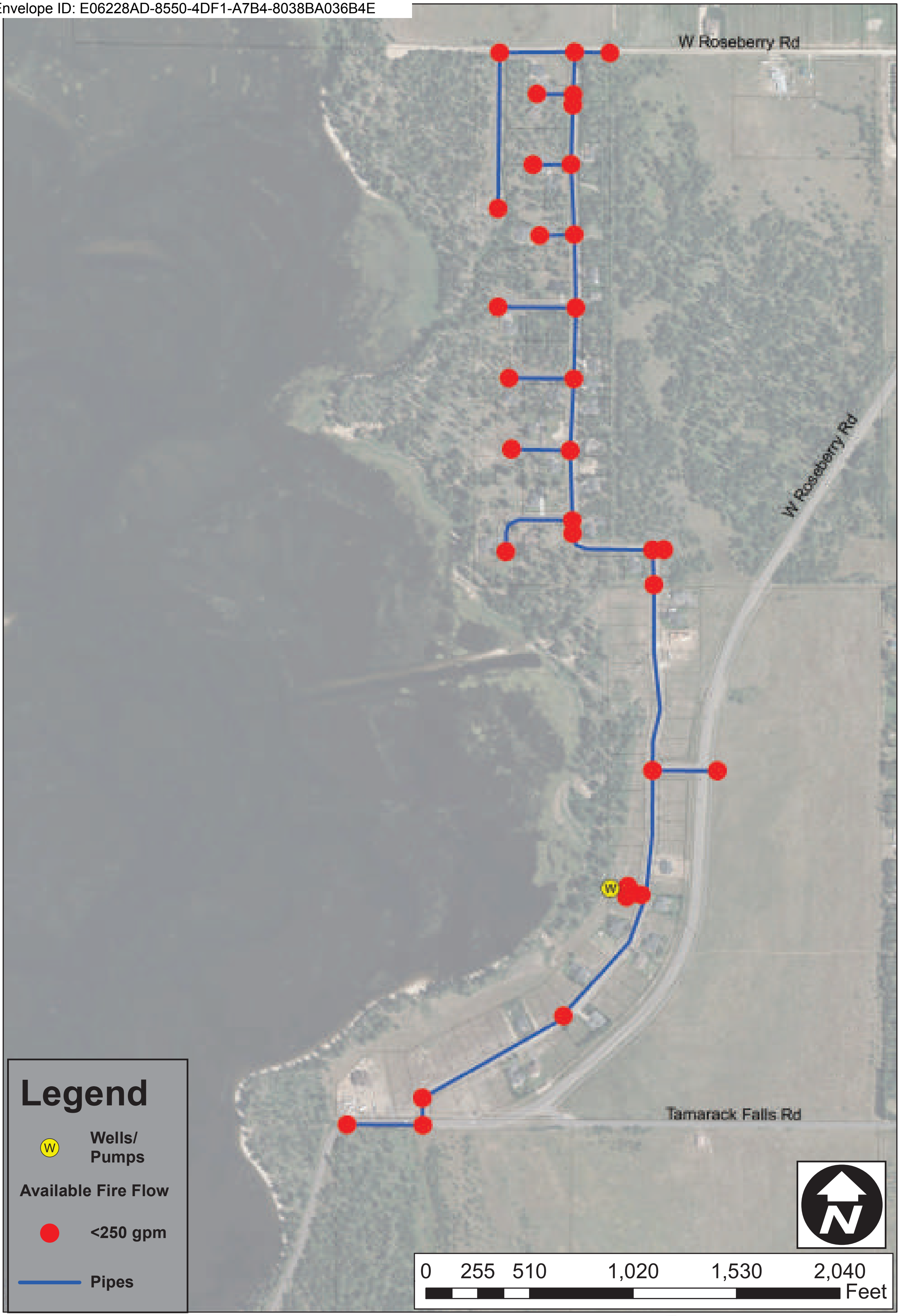

Figure 6-9

NLRSWD

Hawks Bay AFF Existing (Domestic Pump)

Water Master Plan

KELLER ASSOCIATES

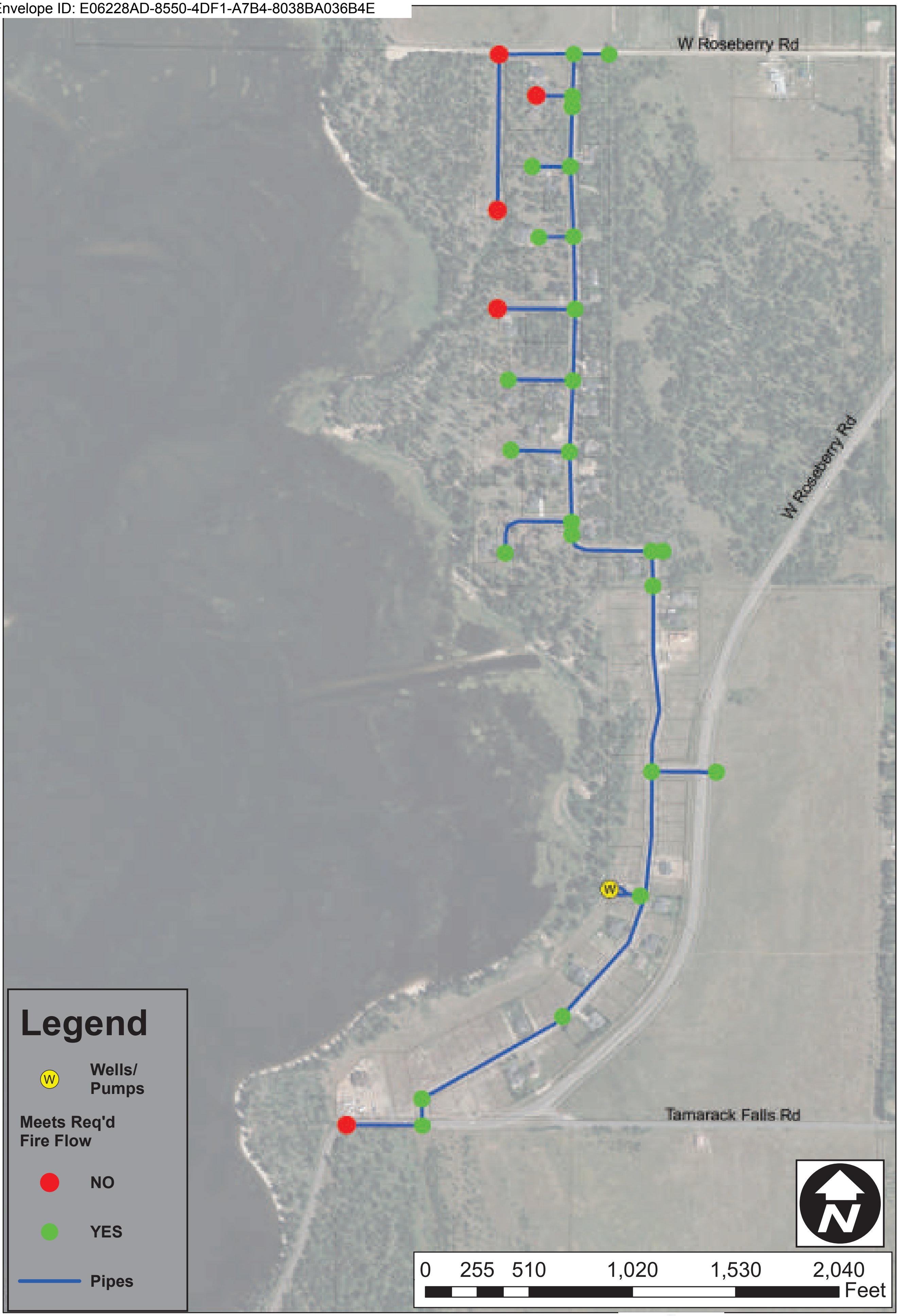

Figure 6-10

NLRSWD

Hawks Bay Meets Req'd FF Existing (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

Figure 6-11

NLRSWD

Hawks Bay AFF
Existing (Both Pumps)

Water Master Plan

KELLER
ASSOCIATES

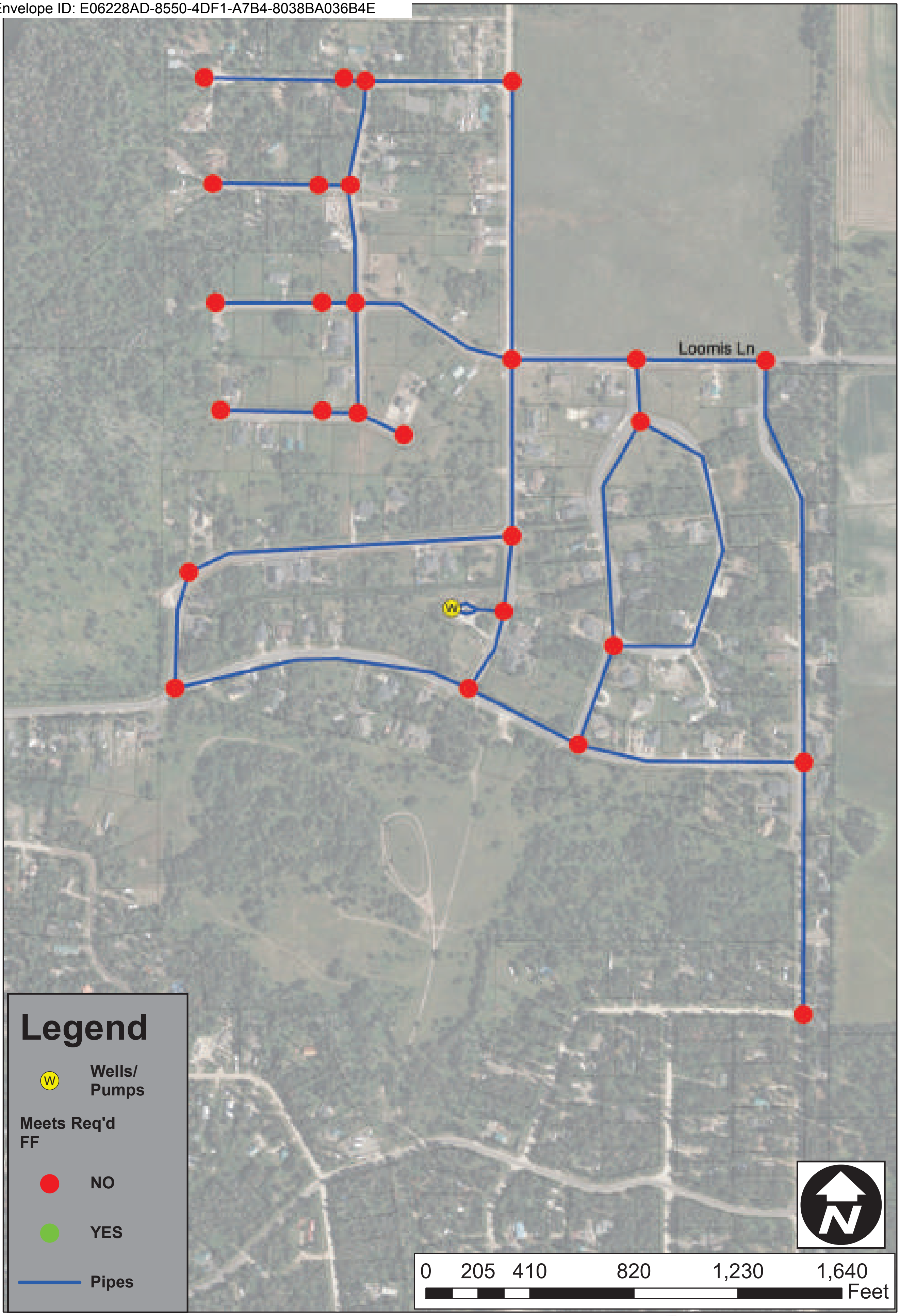

Figure 6-12

NLRSWD

Fir Grove Existing Meets Req'd FF (Domestic Only)

Water Master Plan

KELLER ASSOCIATES

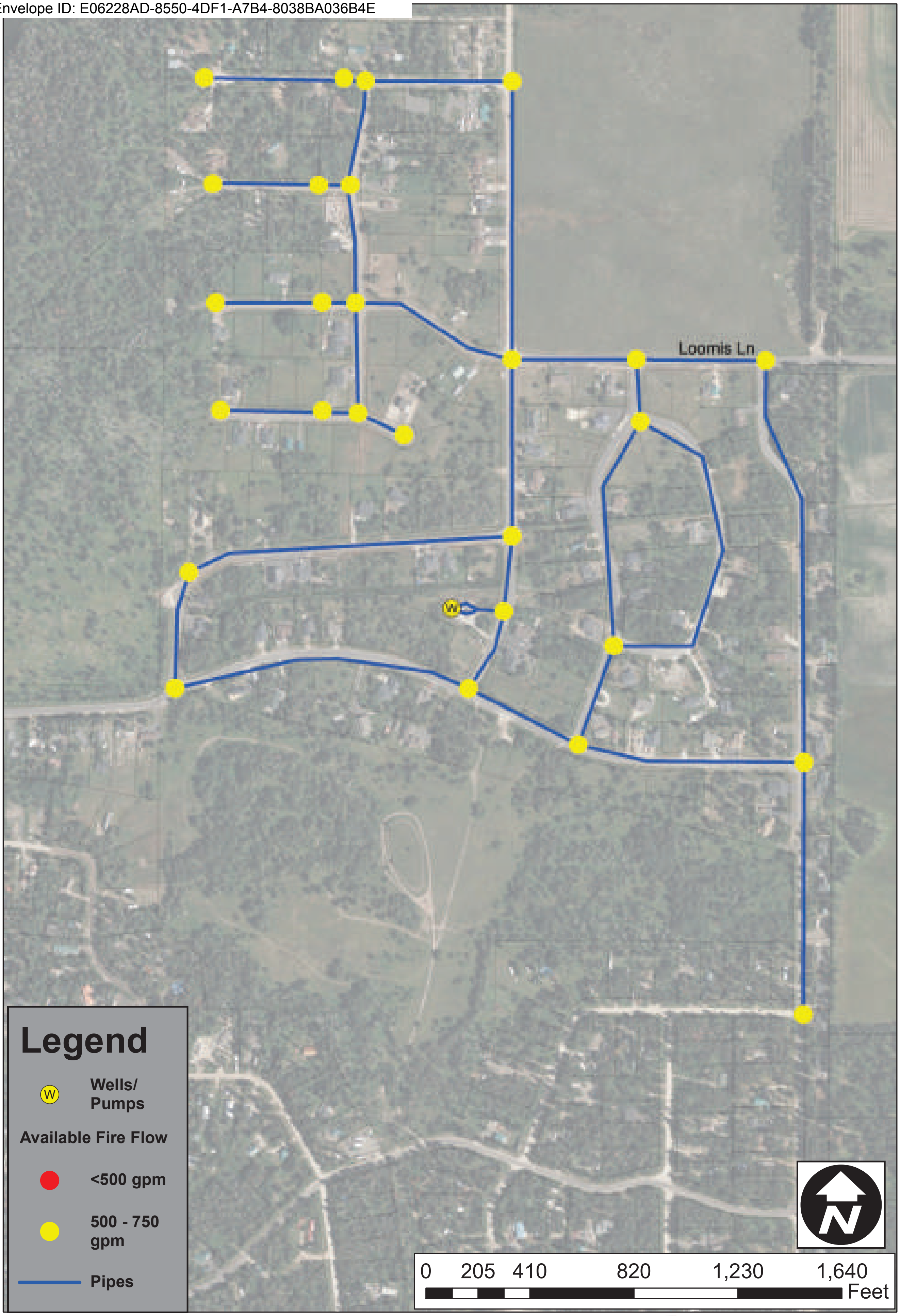

Figure 6-13
NLRSWD

Fir Grove Existing AFF
(Domestic Only)

Water Master Plan

KELLER ASSOCIATES

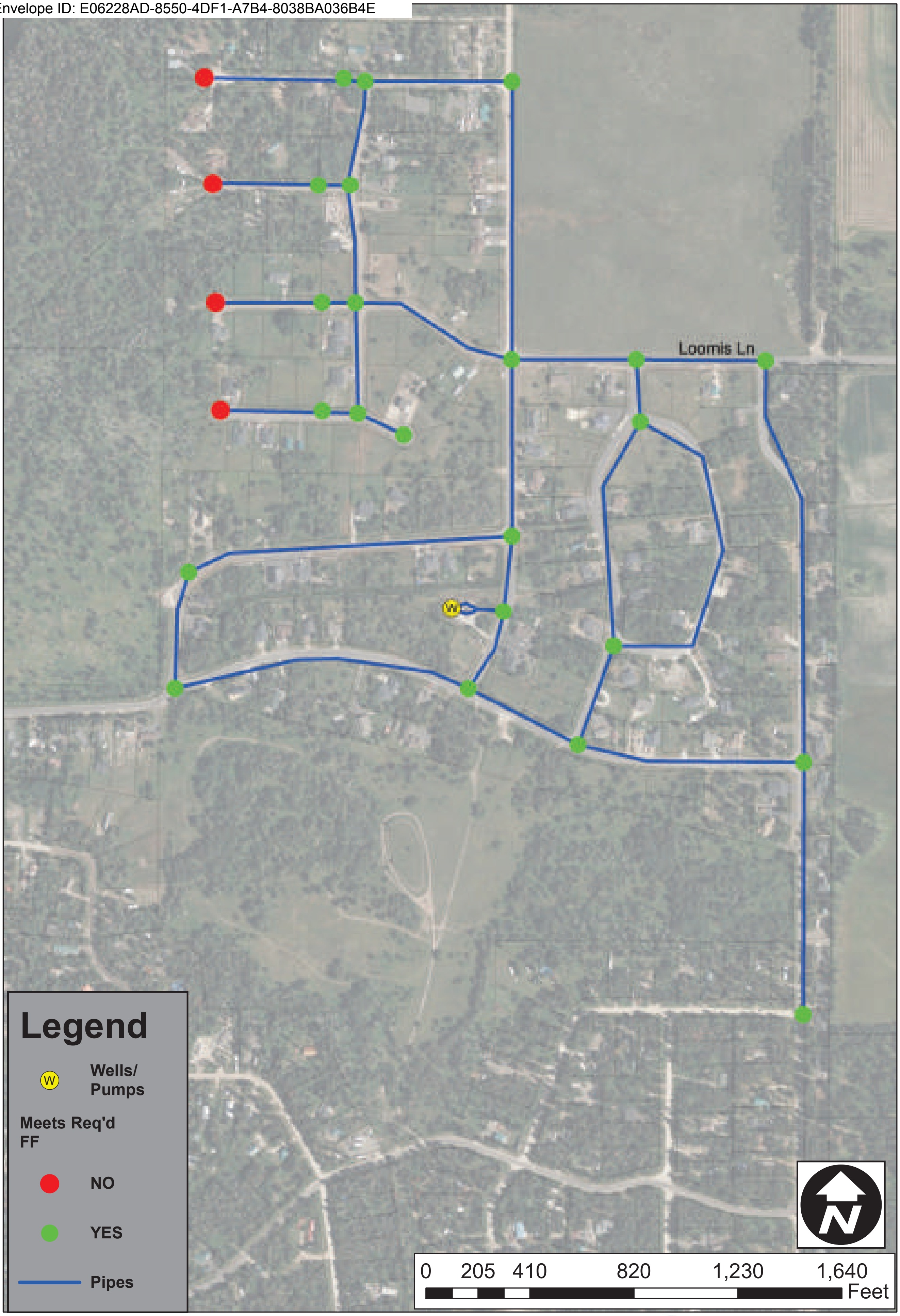

Figure 6-14
NLRSWD

Fir Grove Meets Req'd FF Existing (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

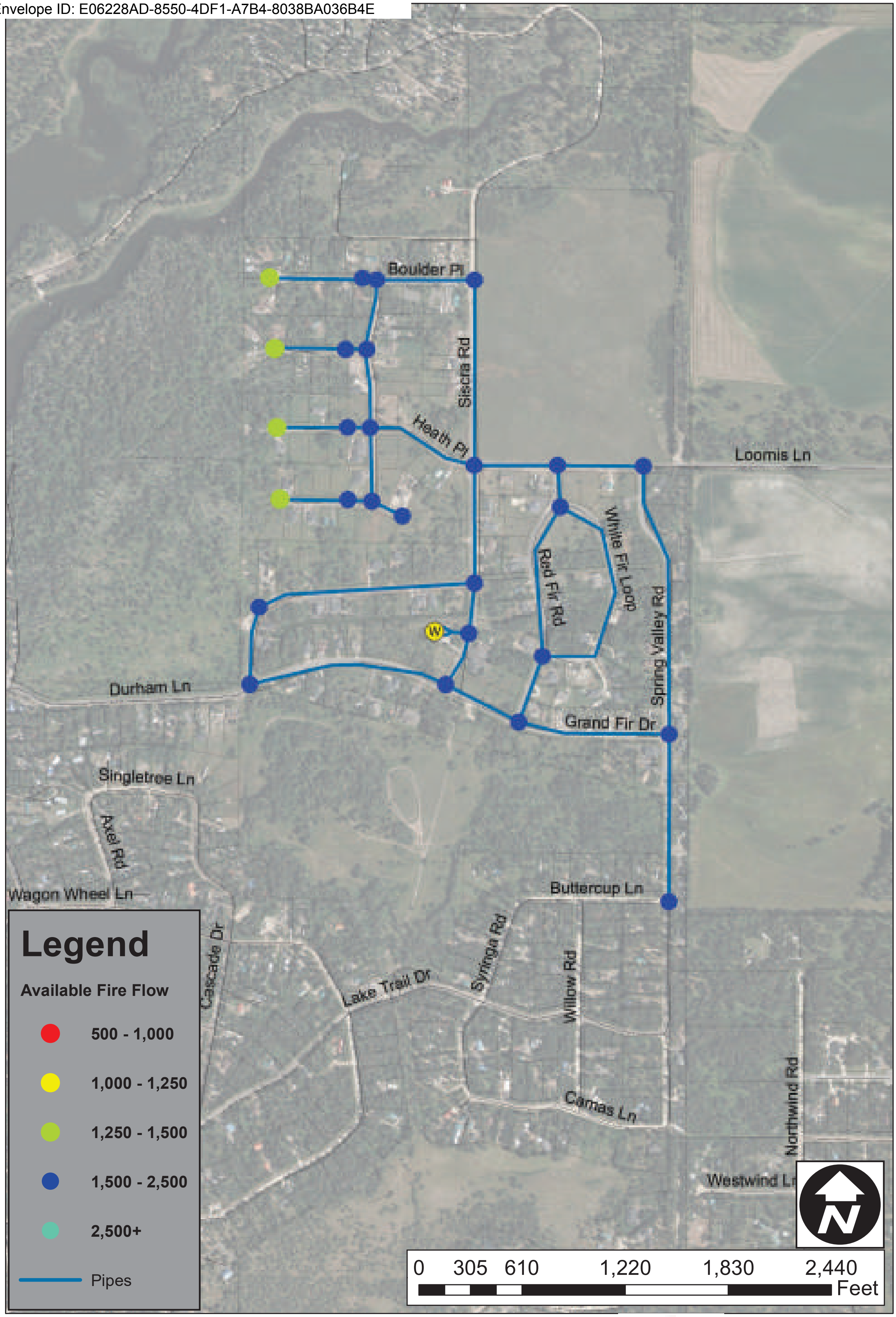

Figure 6-15

NLRSWD

Fir Grove Existing AFF (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

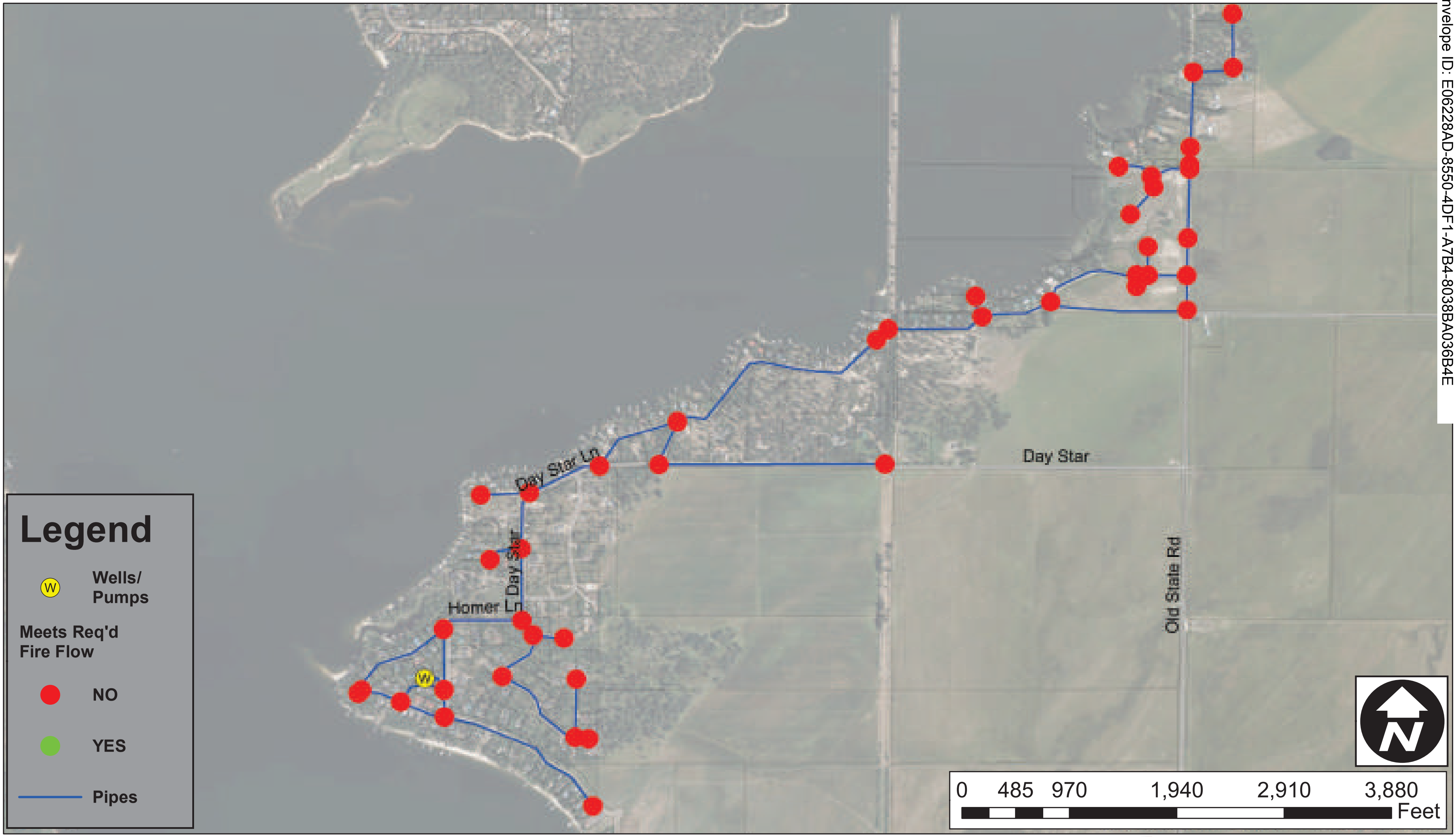

Figure 6-16

NLRSWD

Day Star Meets Req'd FF Committed (Domestic Pump)

Water Master Plan

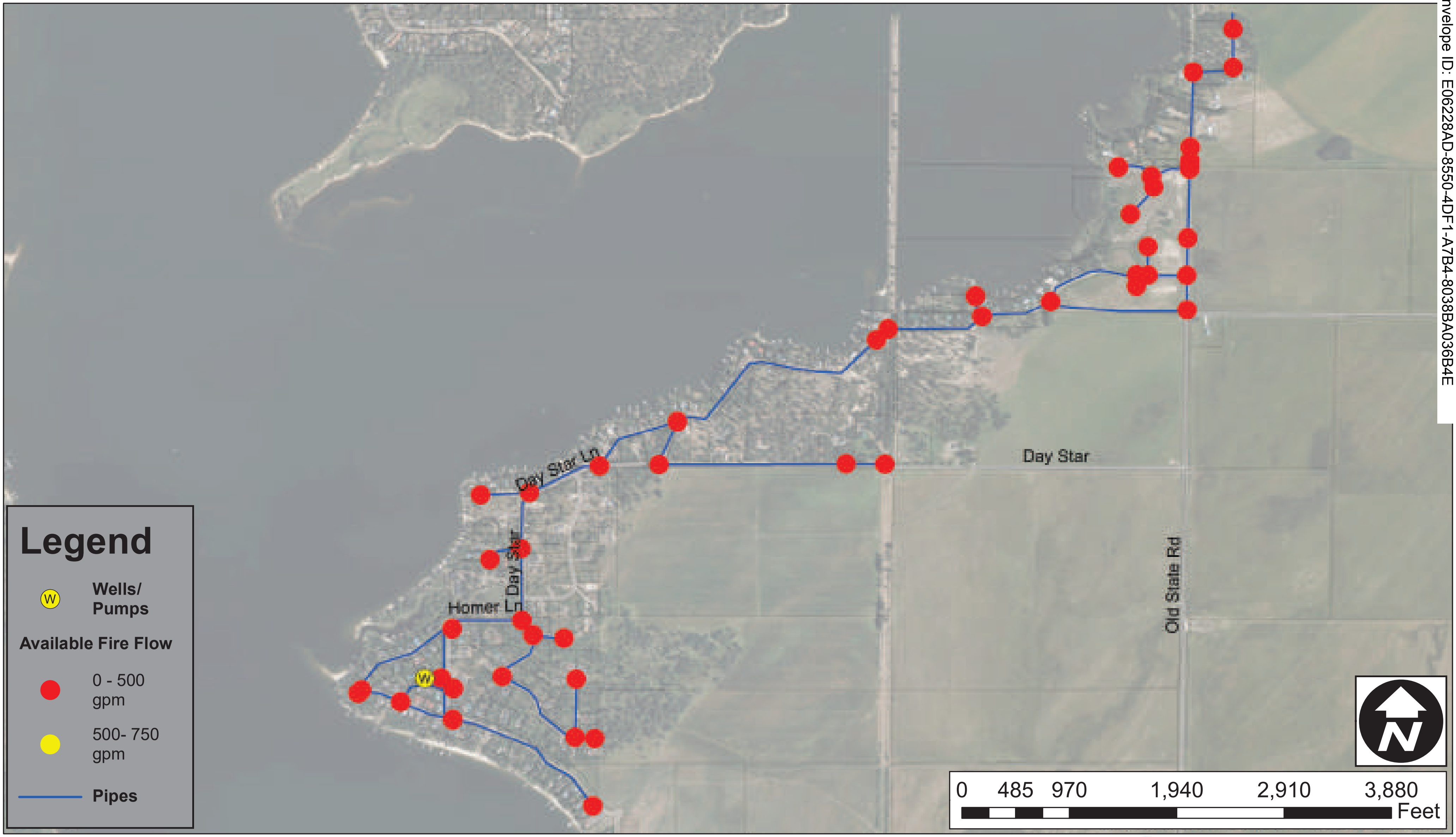

Figure 6-17

NLRSWD

Day Star AFF Existing (Domestic Pump)

Water Master Plan

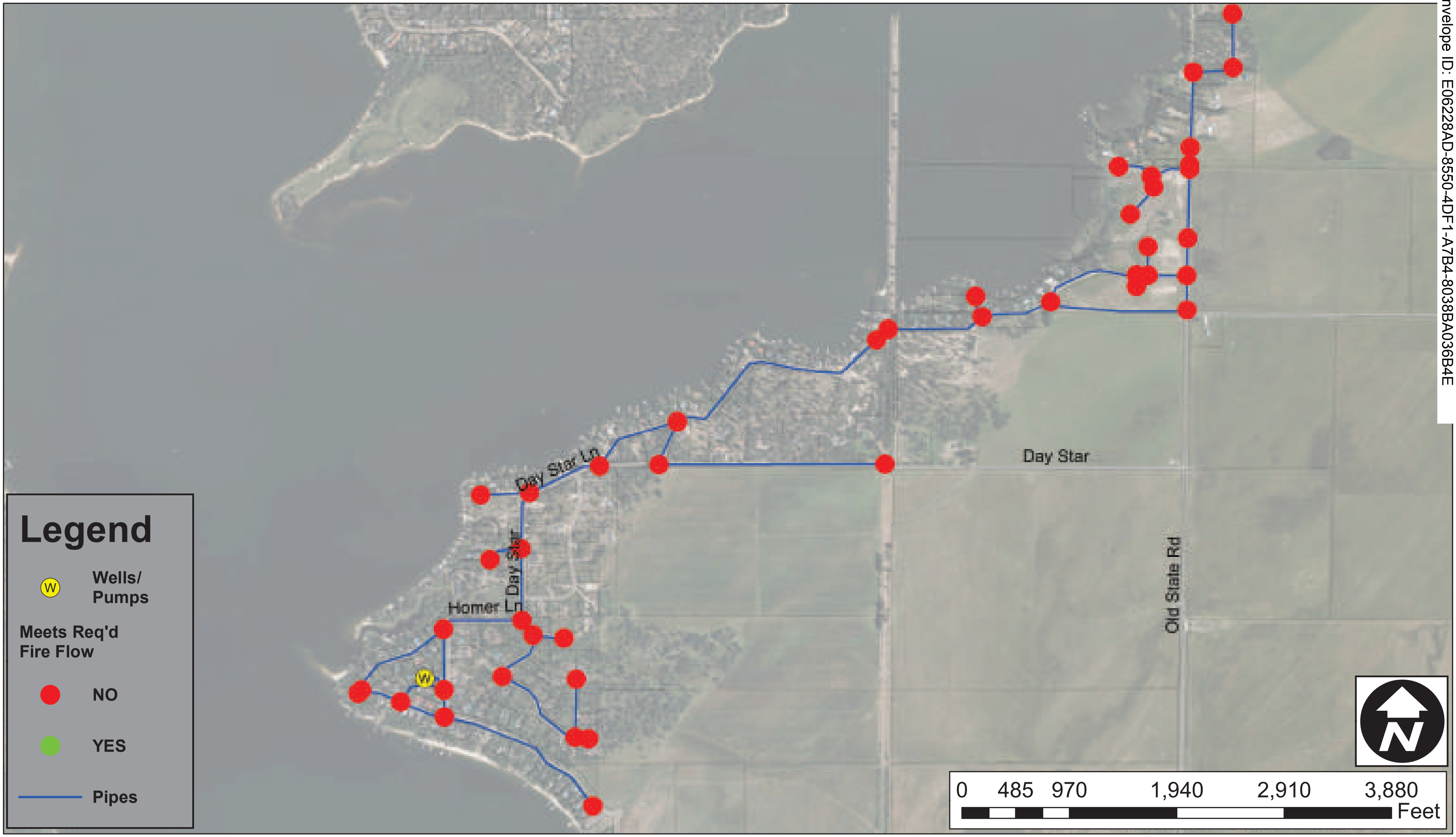

Figure 6-18

NLRSWD

Day Star Meets Req'd FF Committed (Both Pumps)

Water Master Plan

KELLER ASSOCIATES

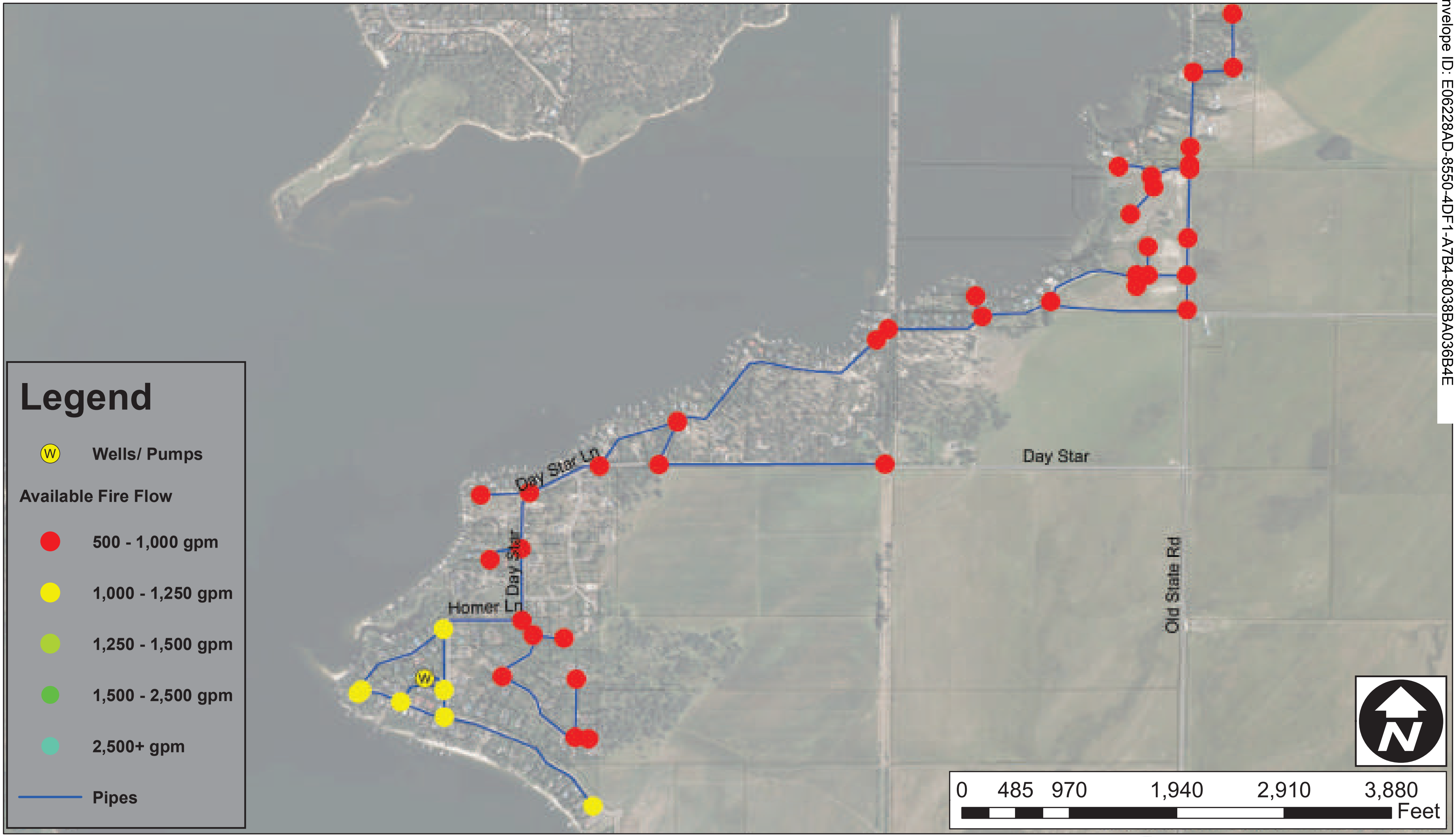

Figure 6-19

NLRSWD

Day Star AFF Existing (Both Pumps)

Water Master Plan

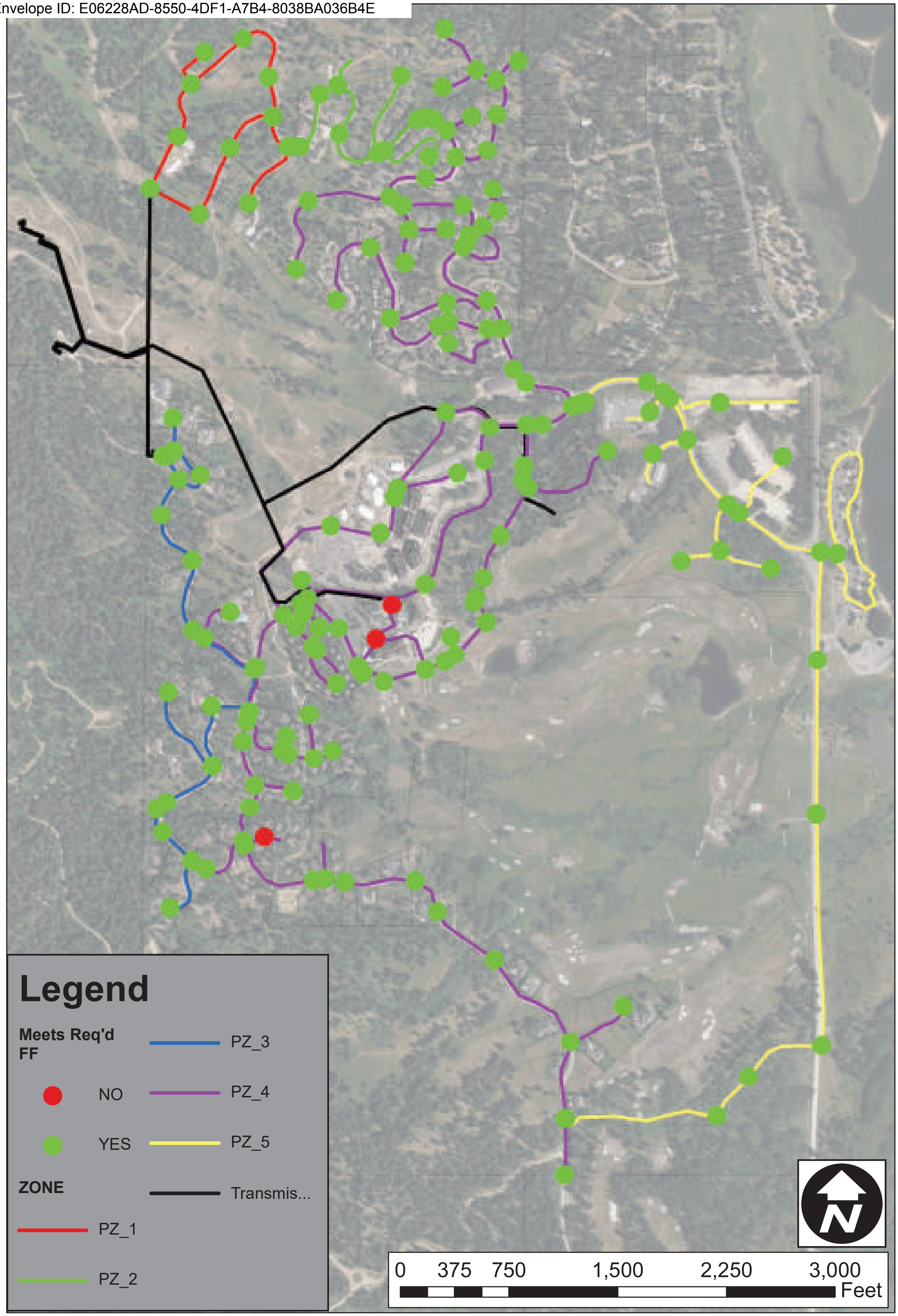

Figure 6-20

NLRSWD

Meets Req'd FF Existing

Water Master Plan

KELLER ASSOCIATES

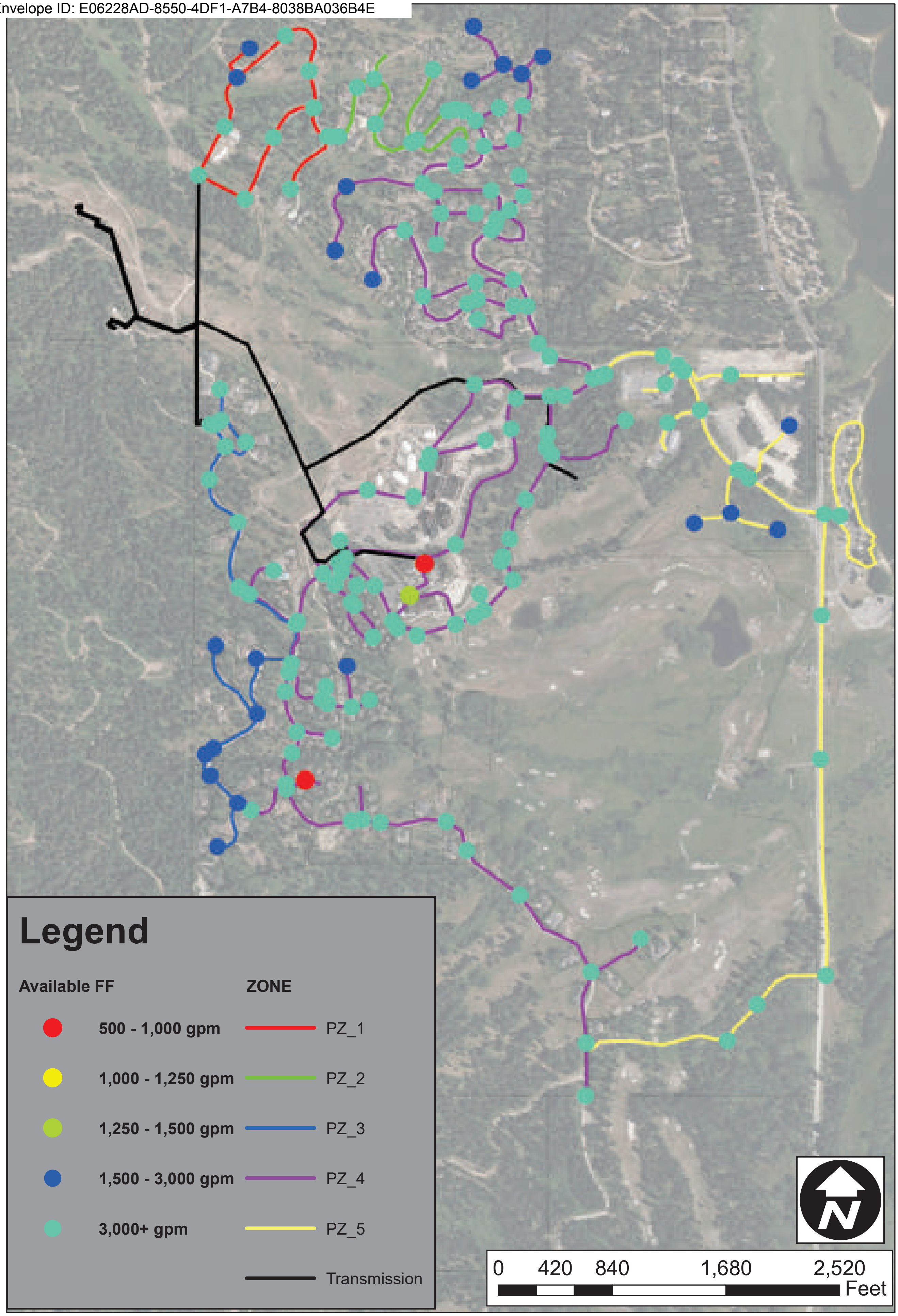

Figure 6-21

NLRSWD

AFF Existing

Water Master Plan

KELLER ASSOCIATES

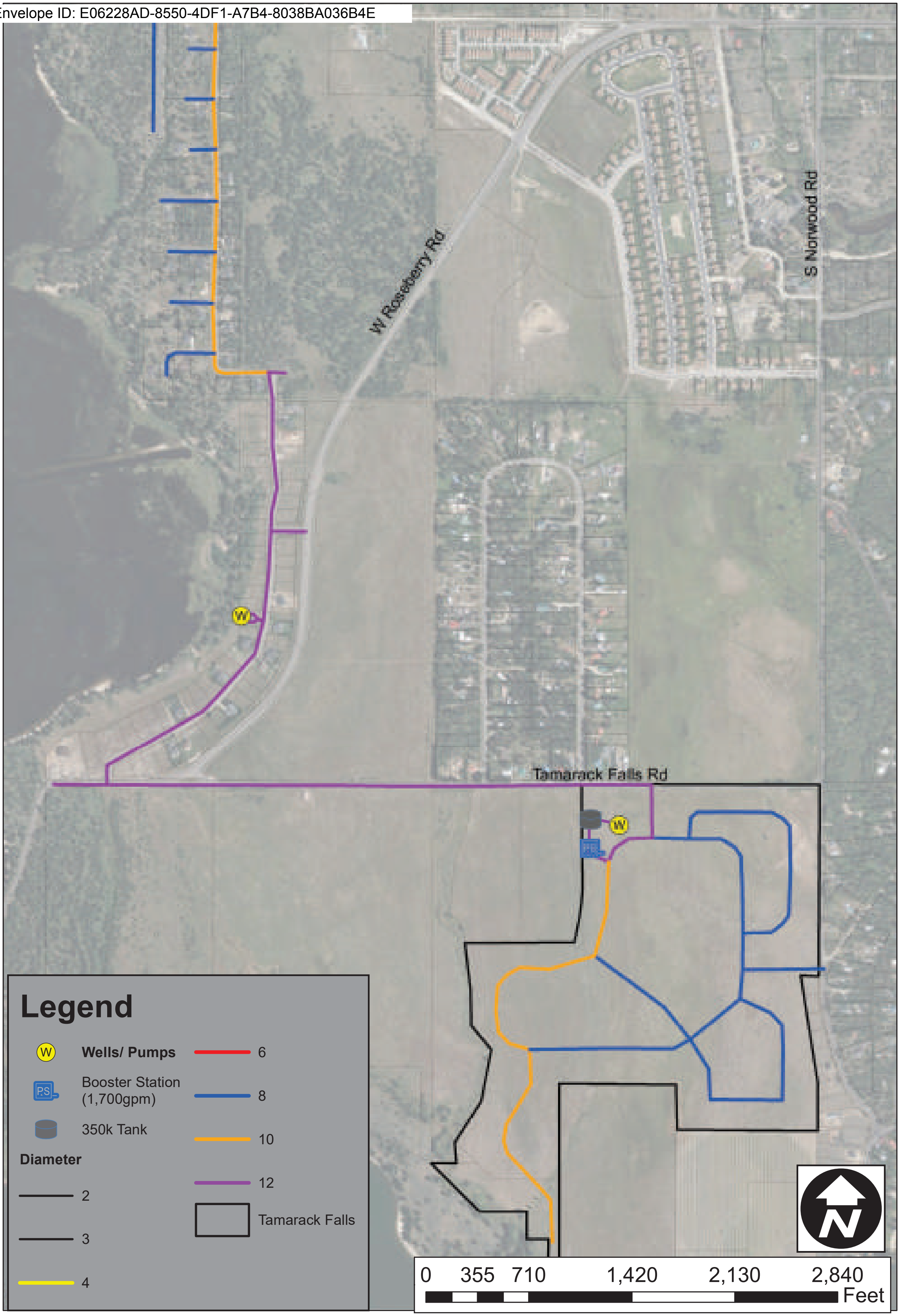

Figure 8-1

NLRSWD

Hawks Bay Future System

Water Master Plan

KELLER ASSOCIATES

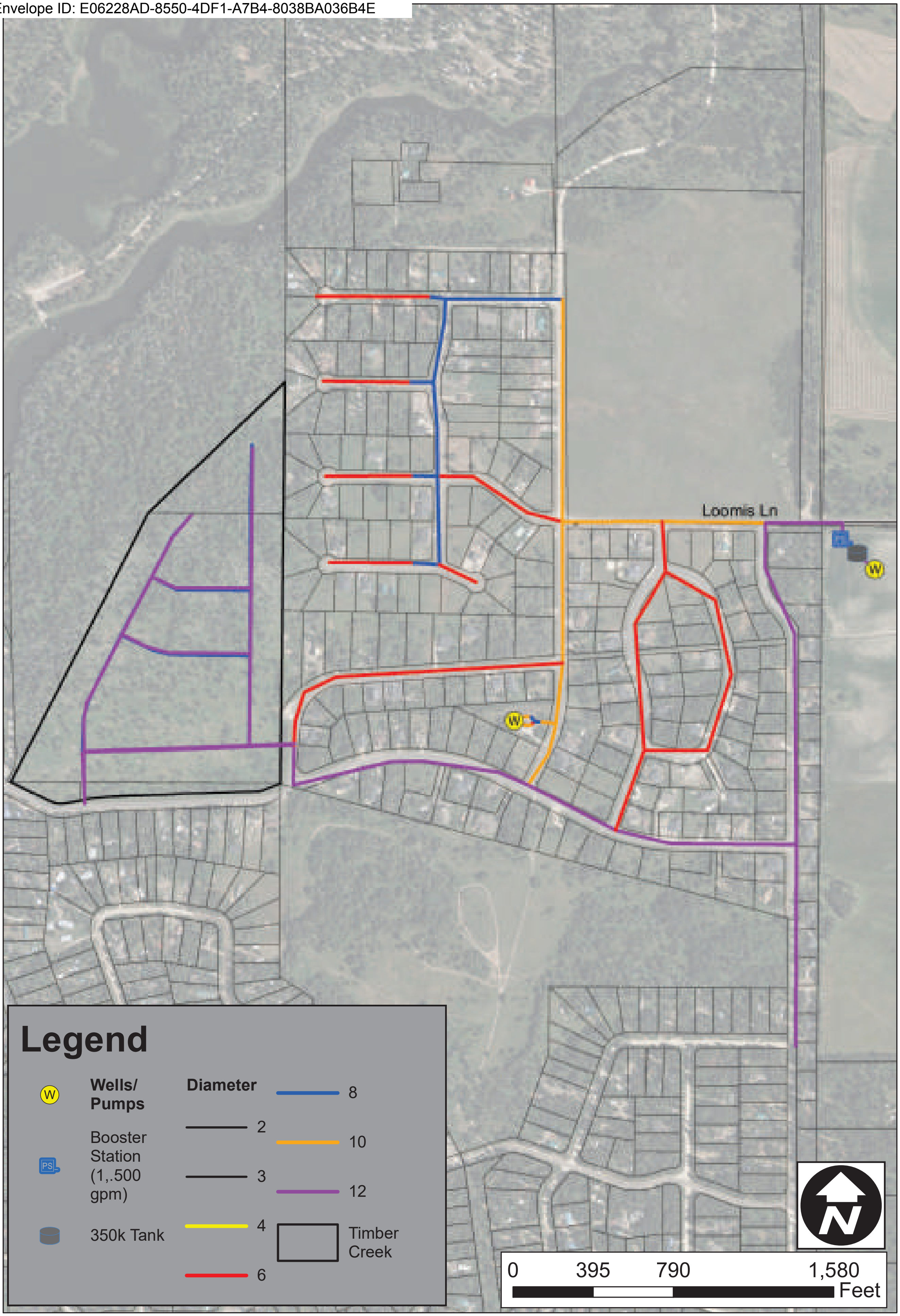

Figure 8-2

NLRSWD

Fir Grove Future System

Water Master Plan

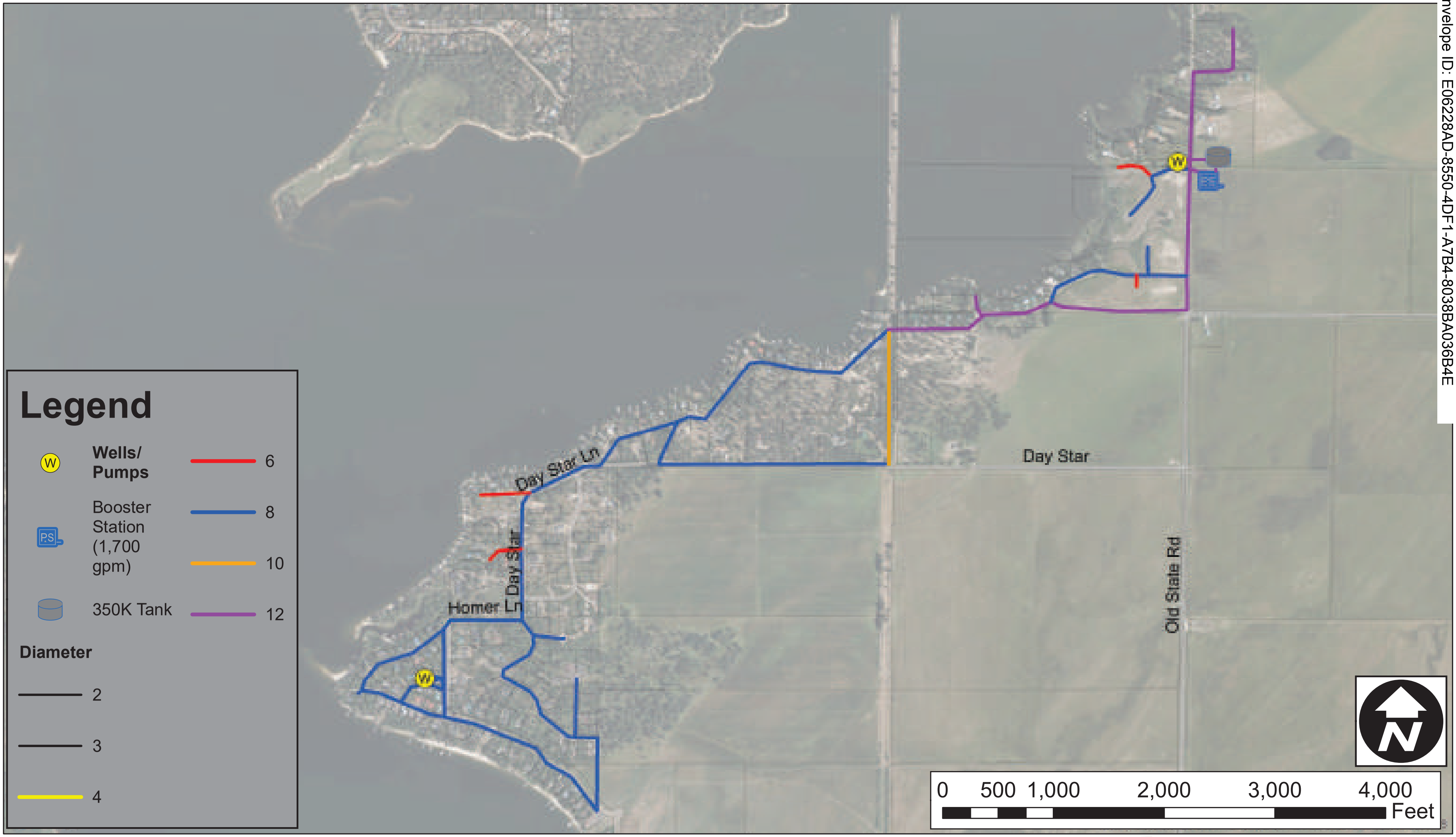

Figure 8-3

NLRSWD

Day Star Future System

Water Master Plan

KELLER ASSOCIATES

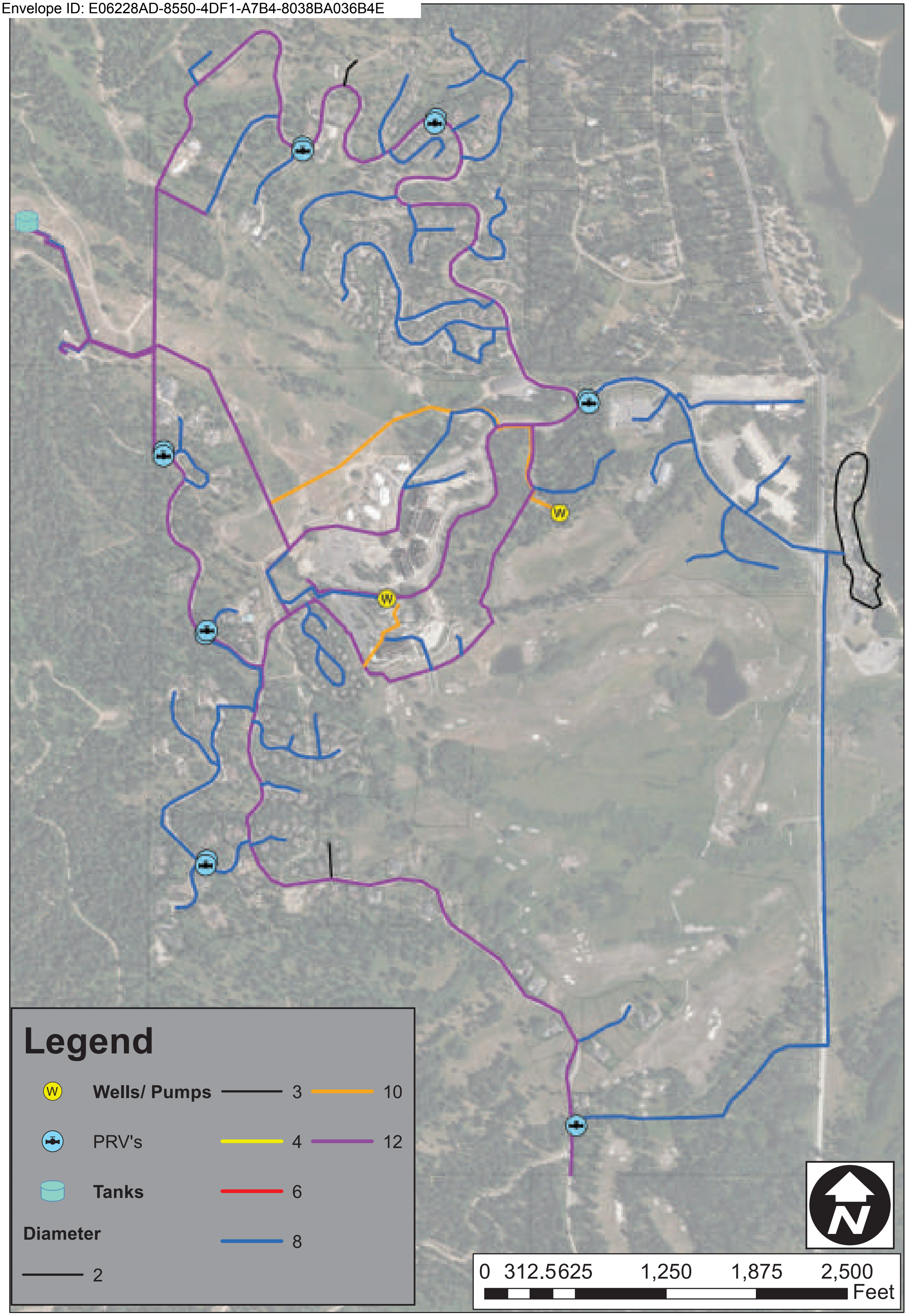

Figure 8-4 Tamarack Future System (Pipes)

NLRSWD

Water Master Plan

KELLER ASSOCIATES

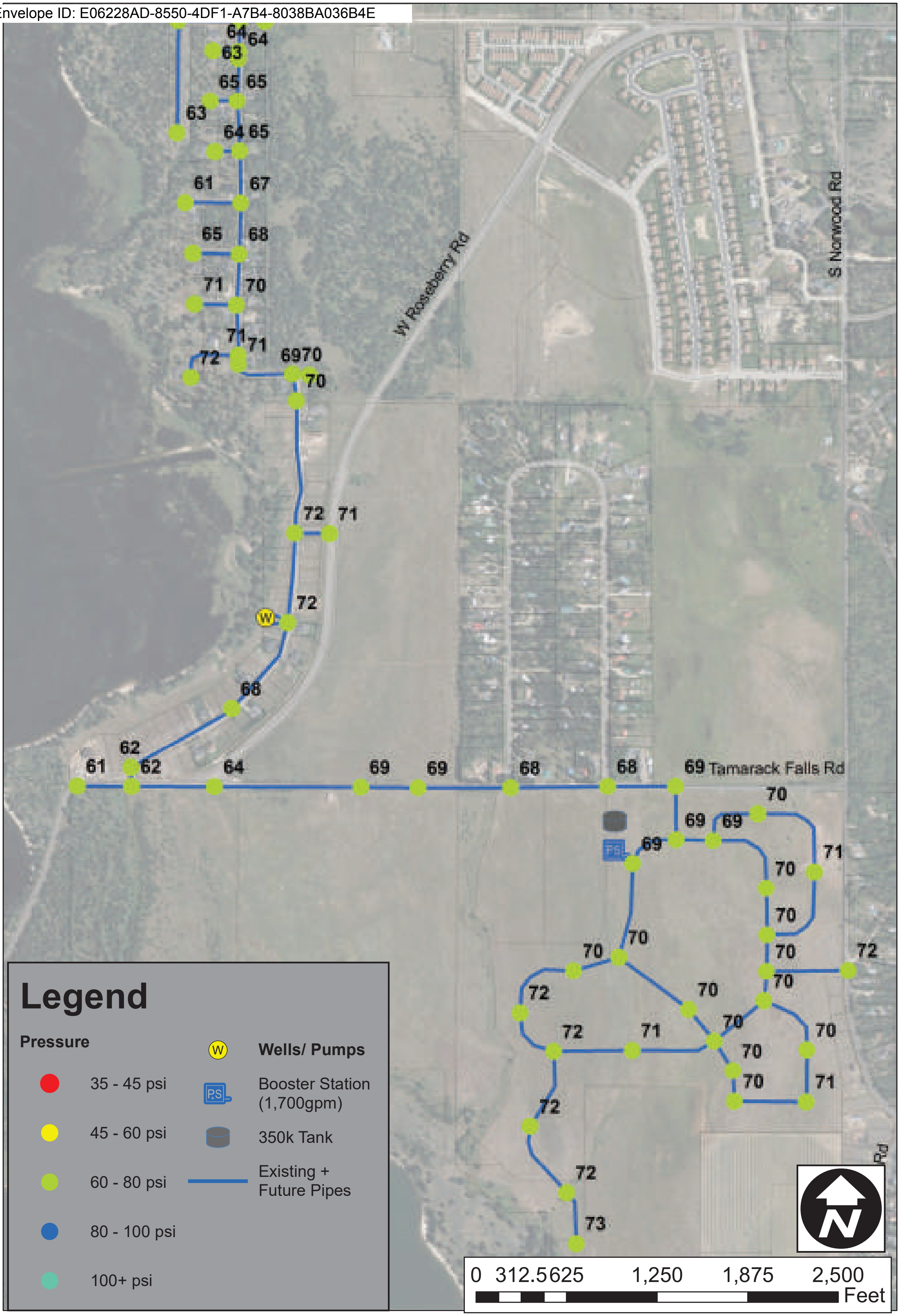

Figure 8-5

NLRSWD

Hawks Bay PHD Future

Water Master Plan

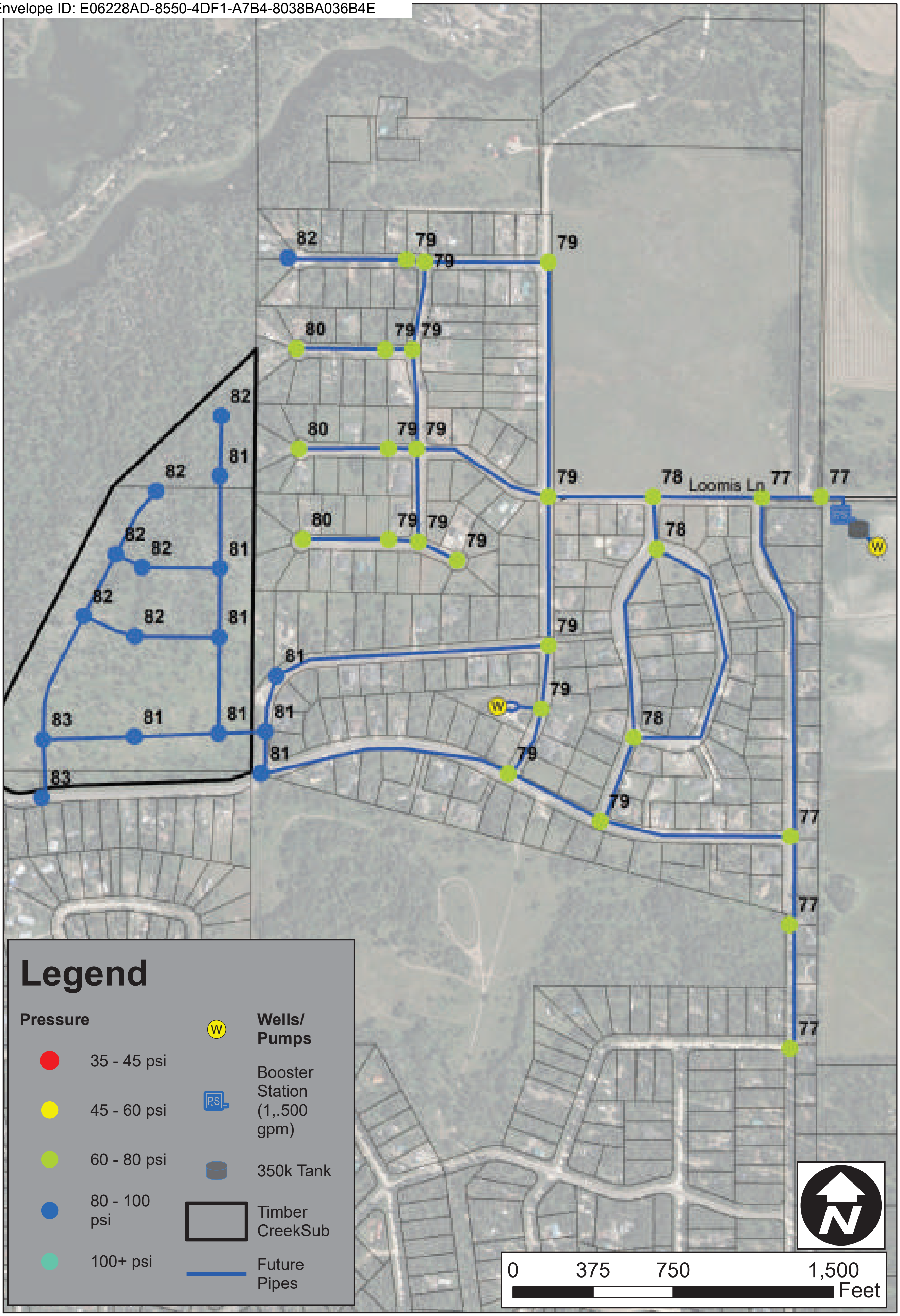

Figure 8-6

NLRSWD

Fir Grove Future System PHD

Water Master Plan

KELLER ASSOCIATES

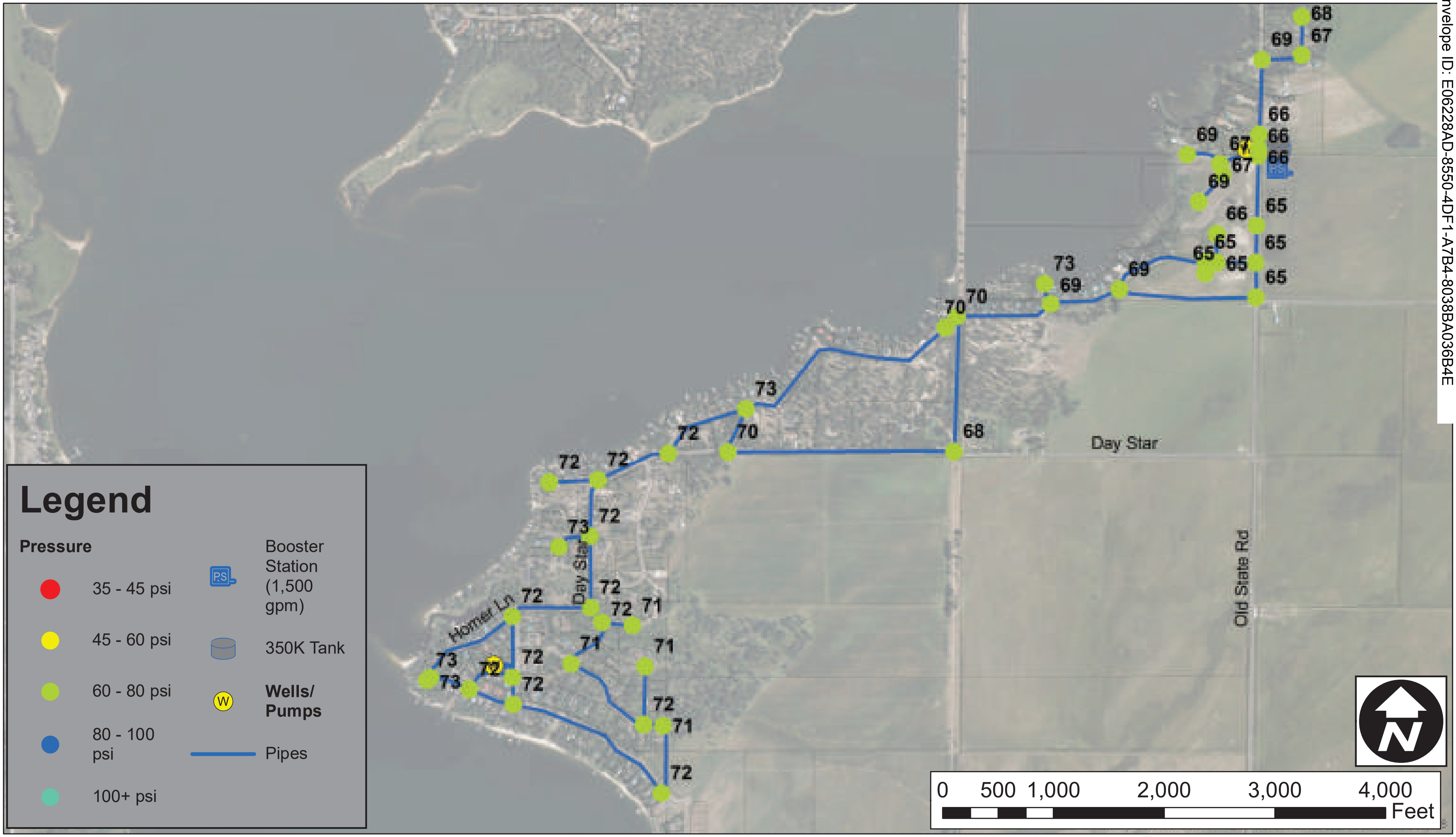

Figure 8-7

NLRSWD

Day Star Future System PHD

Water Master Plan

KELLER ASSOCIATES

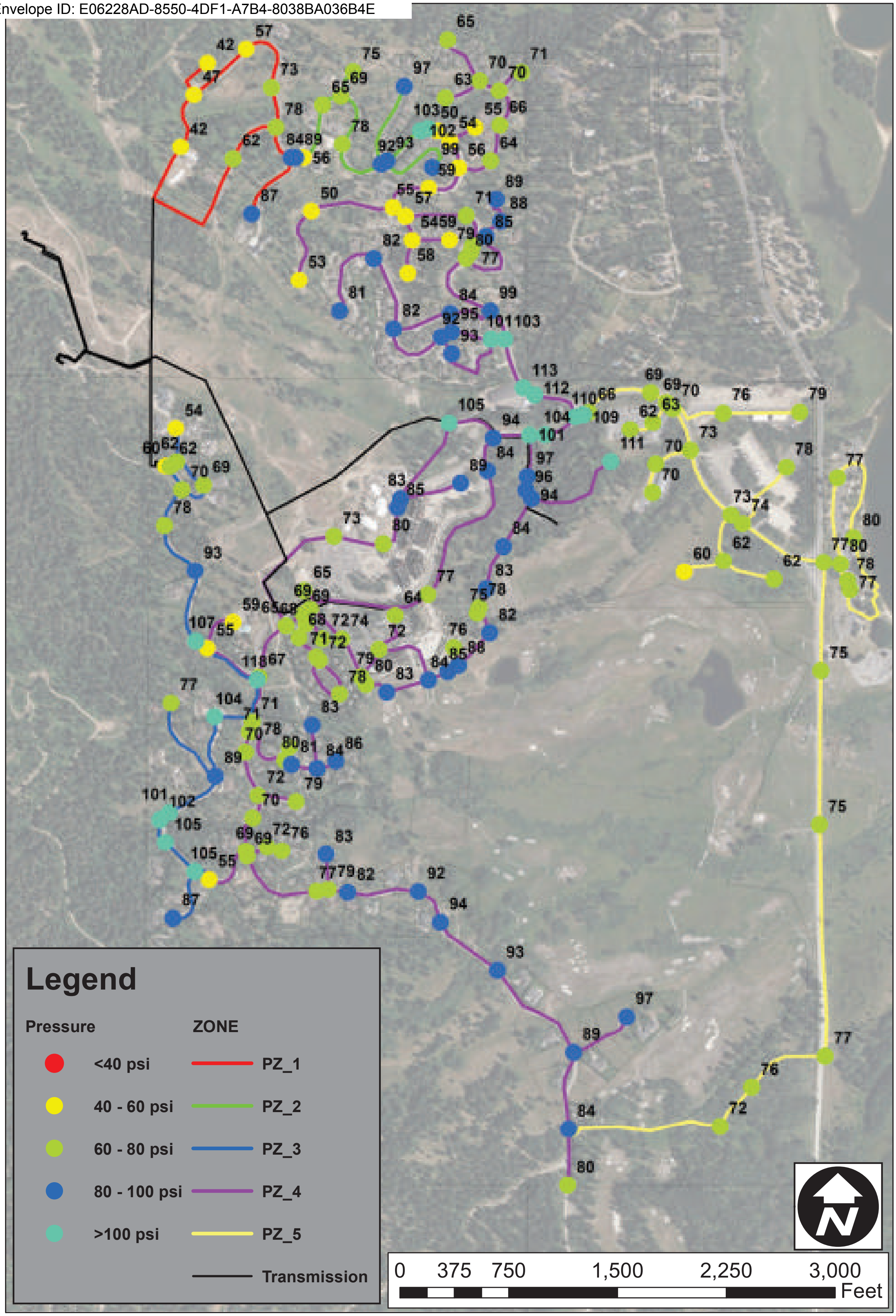

Figure 8-8

NLRSWD

PHD Committed Pressures

Water Master Plan

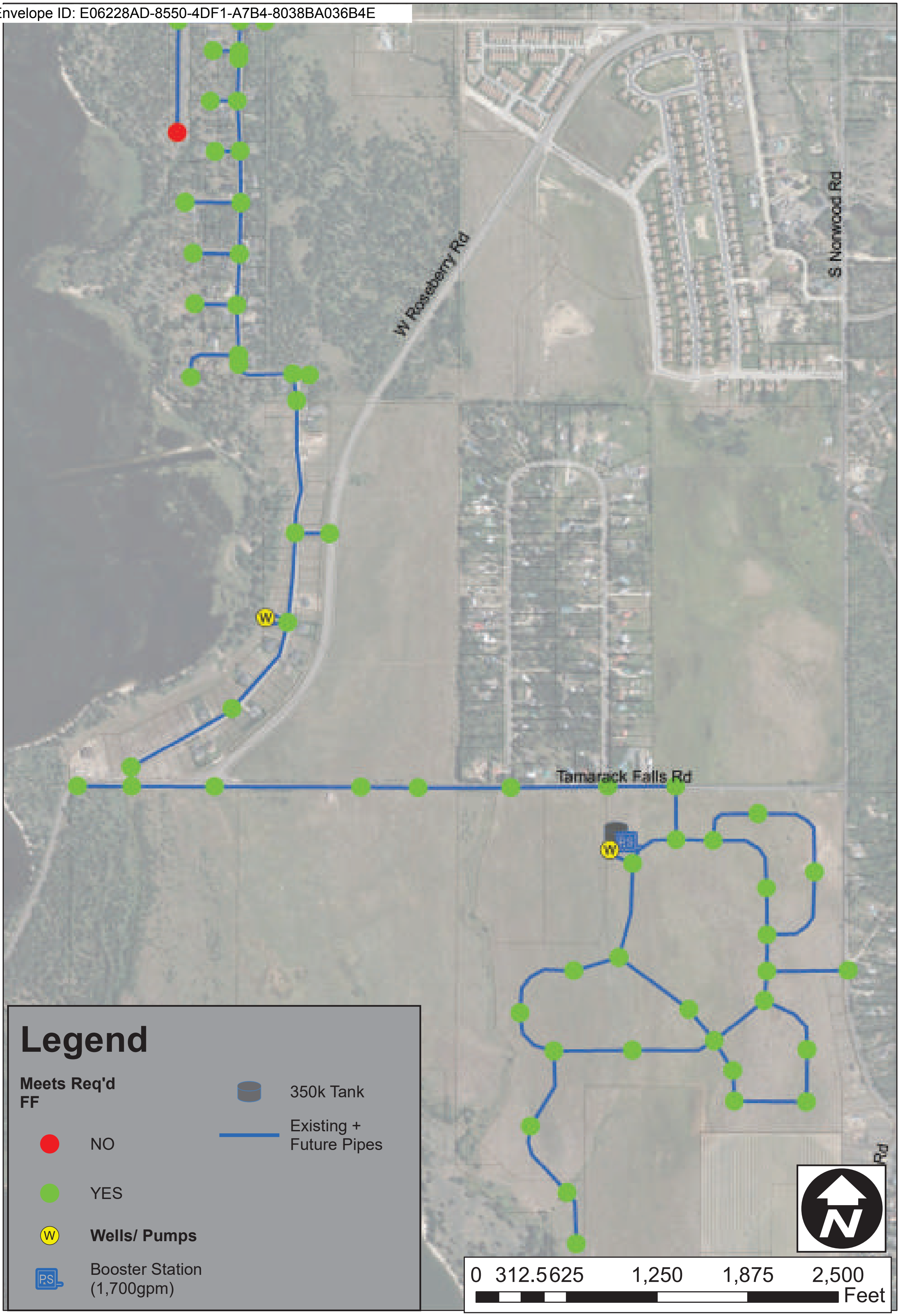

Figure 8-9 **Hawks Bay Meets Req'd FF Future**

NLRSWD

Water Master Plan

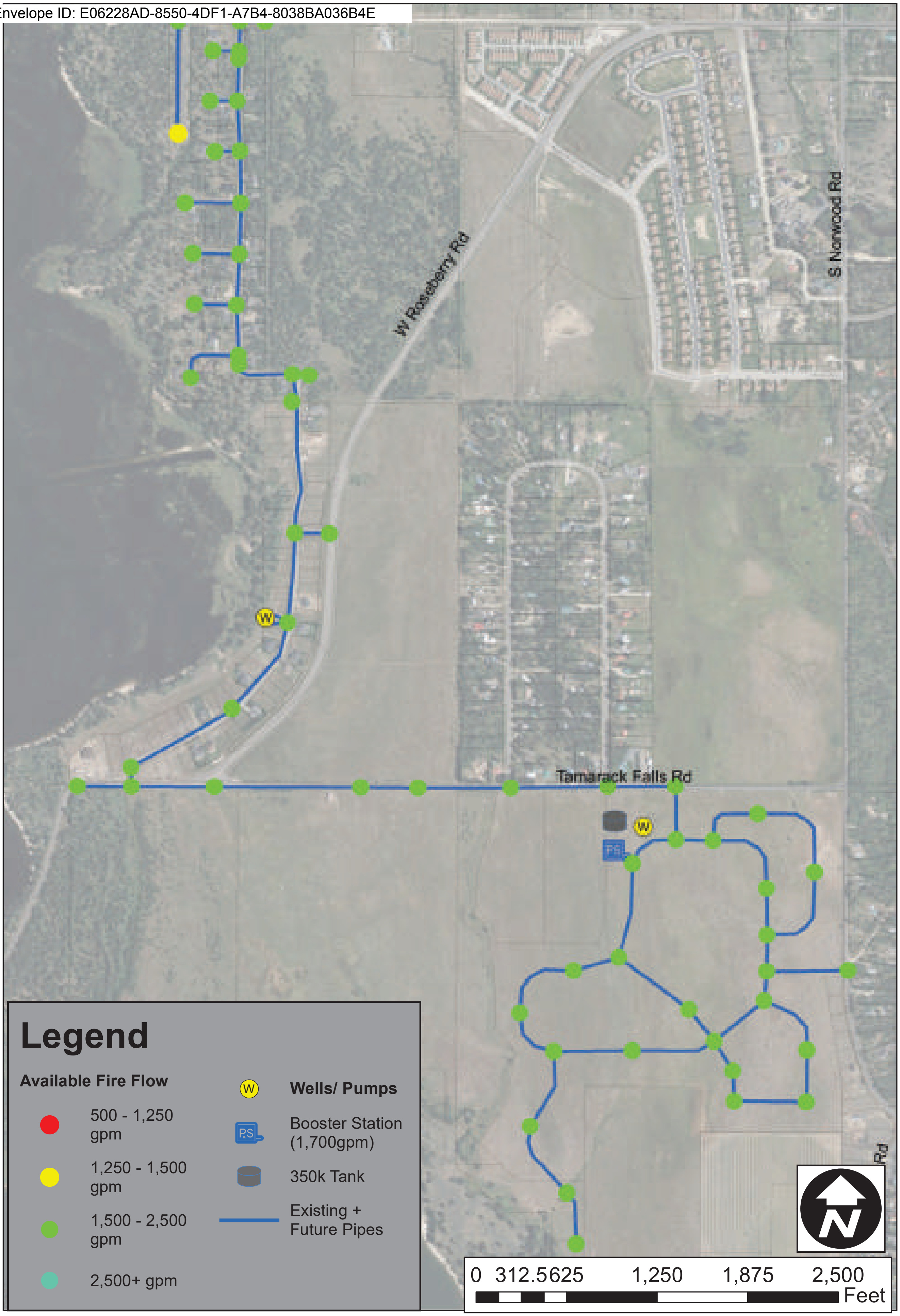

Figure 8-10 NLRSWD

Hawks Bay AFF Future

Water Master Plan

KELLER ASSOCIATES

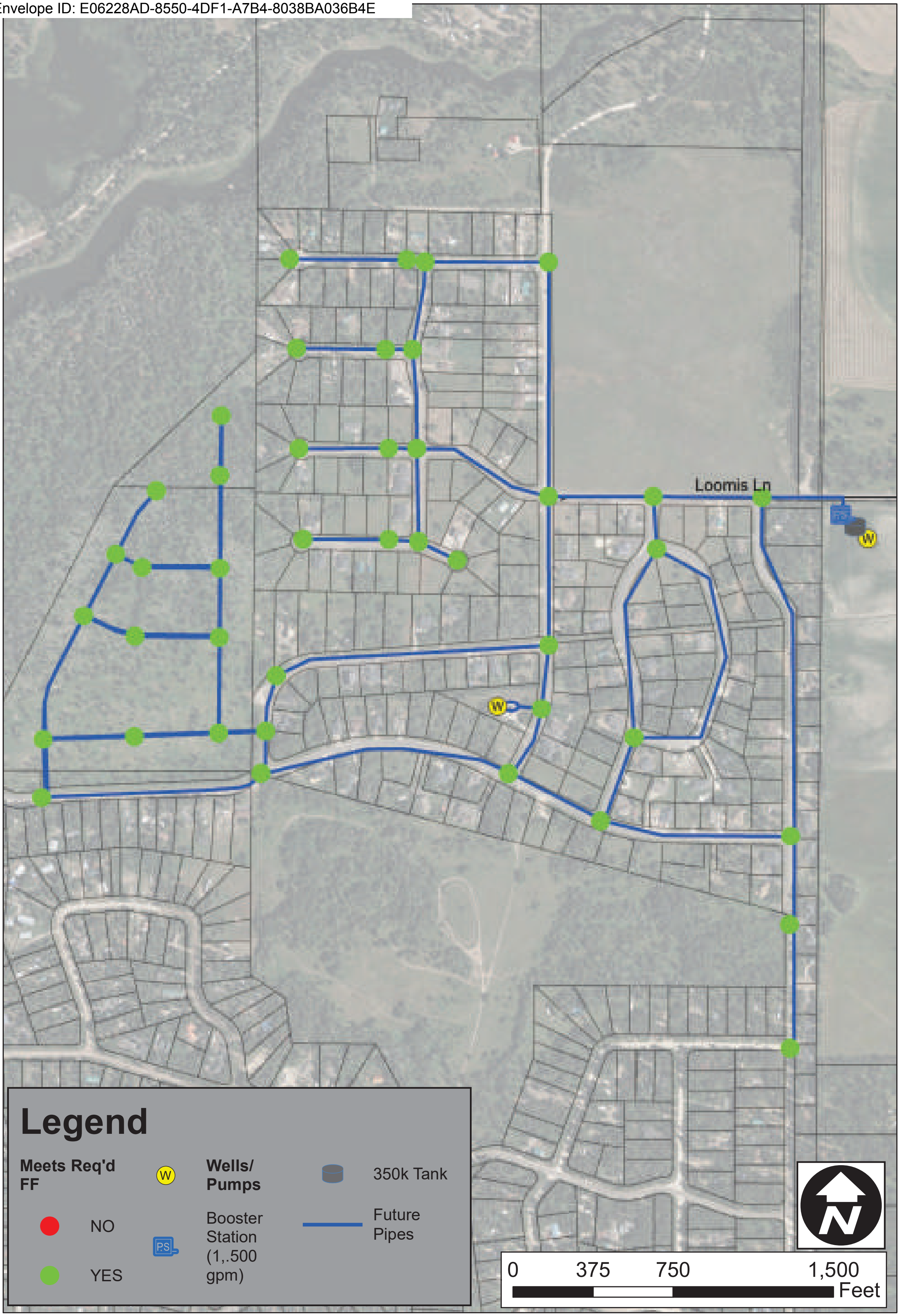

Figure 8-11

NLRSWD

Fir Grove Future System Meets Req'd FF

Water Master Plan

KELLER ASSOCIATES

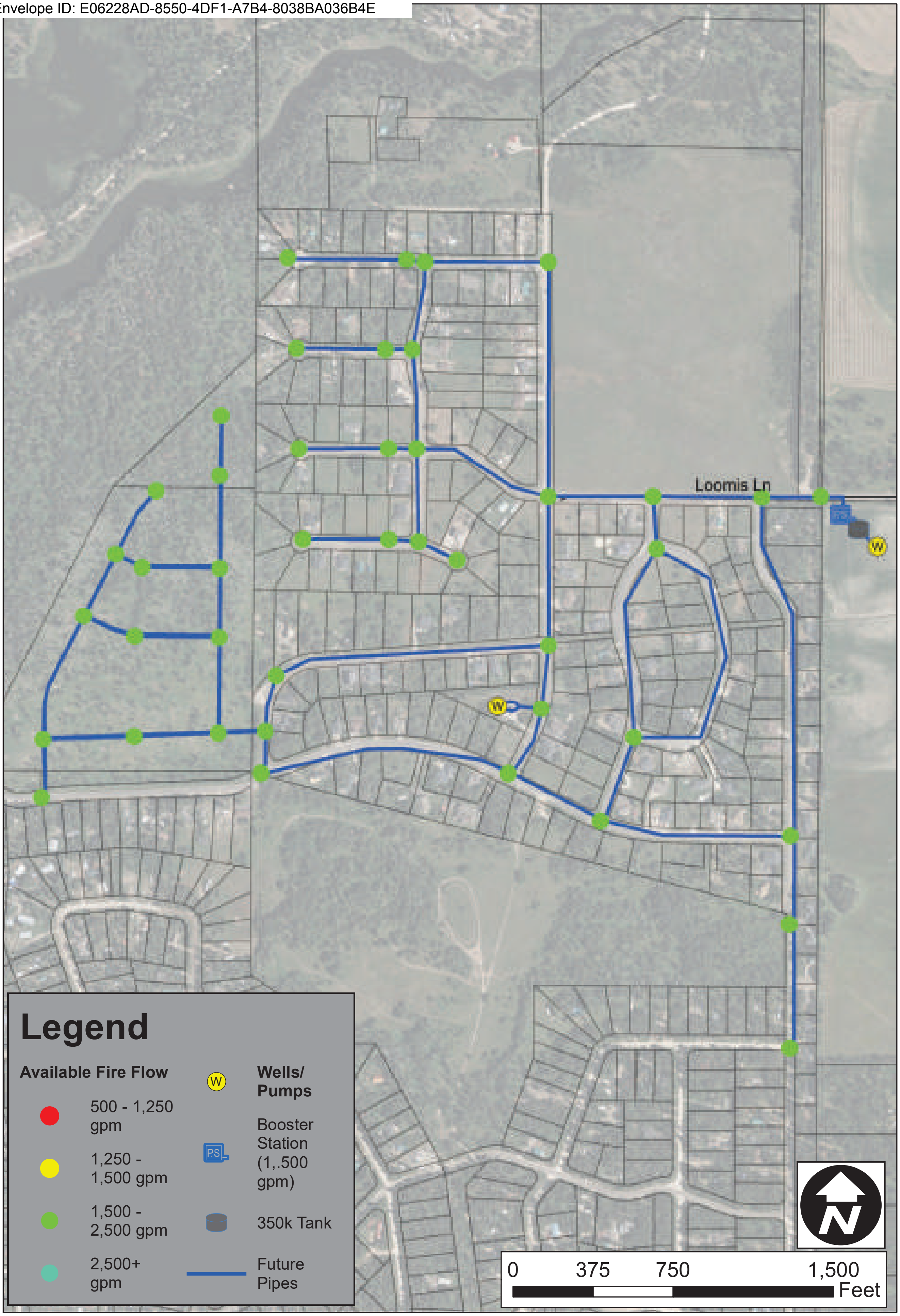

Figure 8-12

NLRSWD

Fir Grove Future System AFF

Water Master Plan

KELLER ASSOCIATES

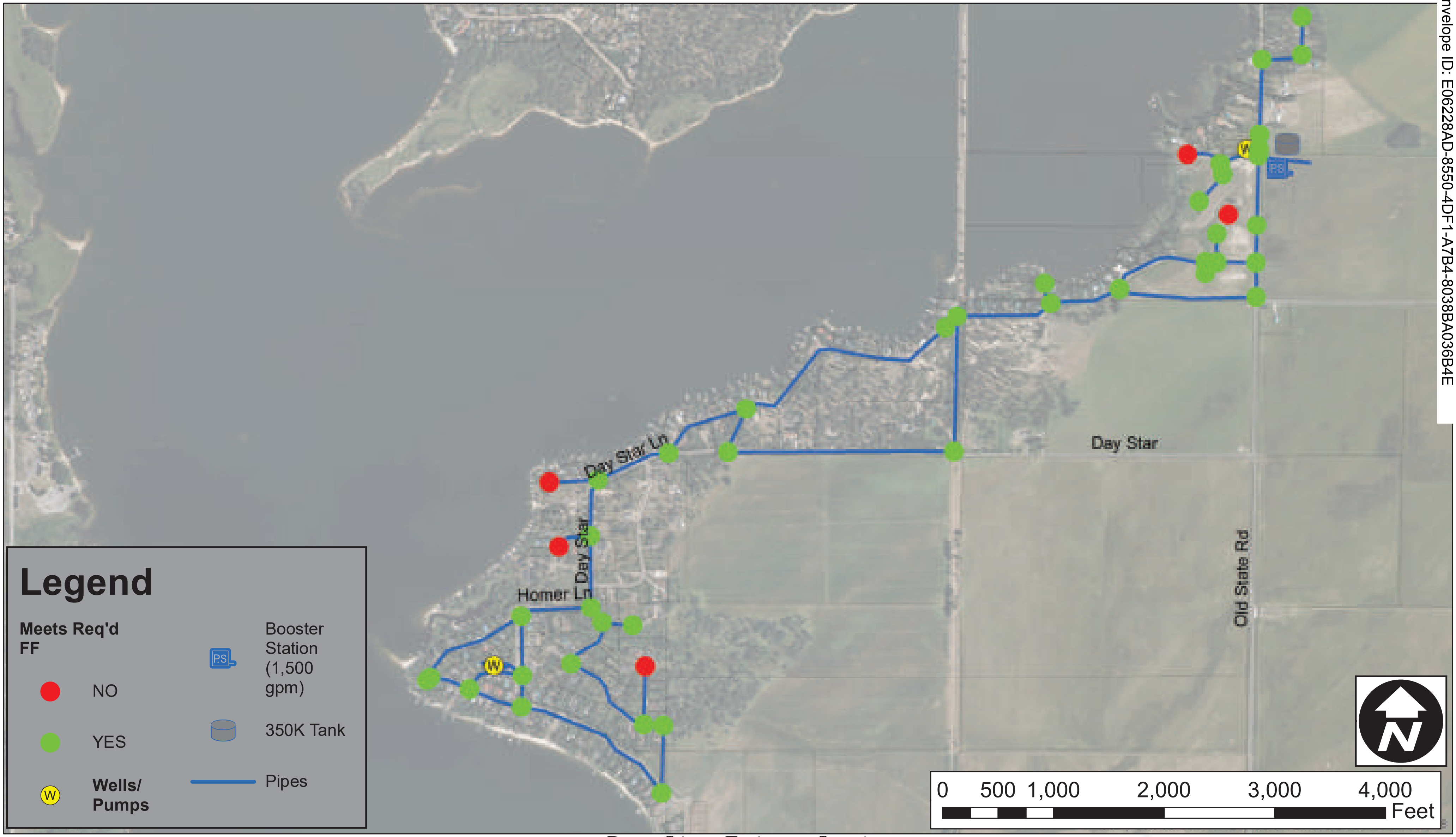

Figure 8-13

NLRSWD

Day Star Future System Meets Req'd FF

Water Master Plan

KELLER ASSOCIATES

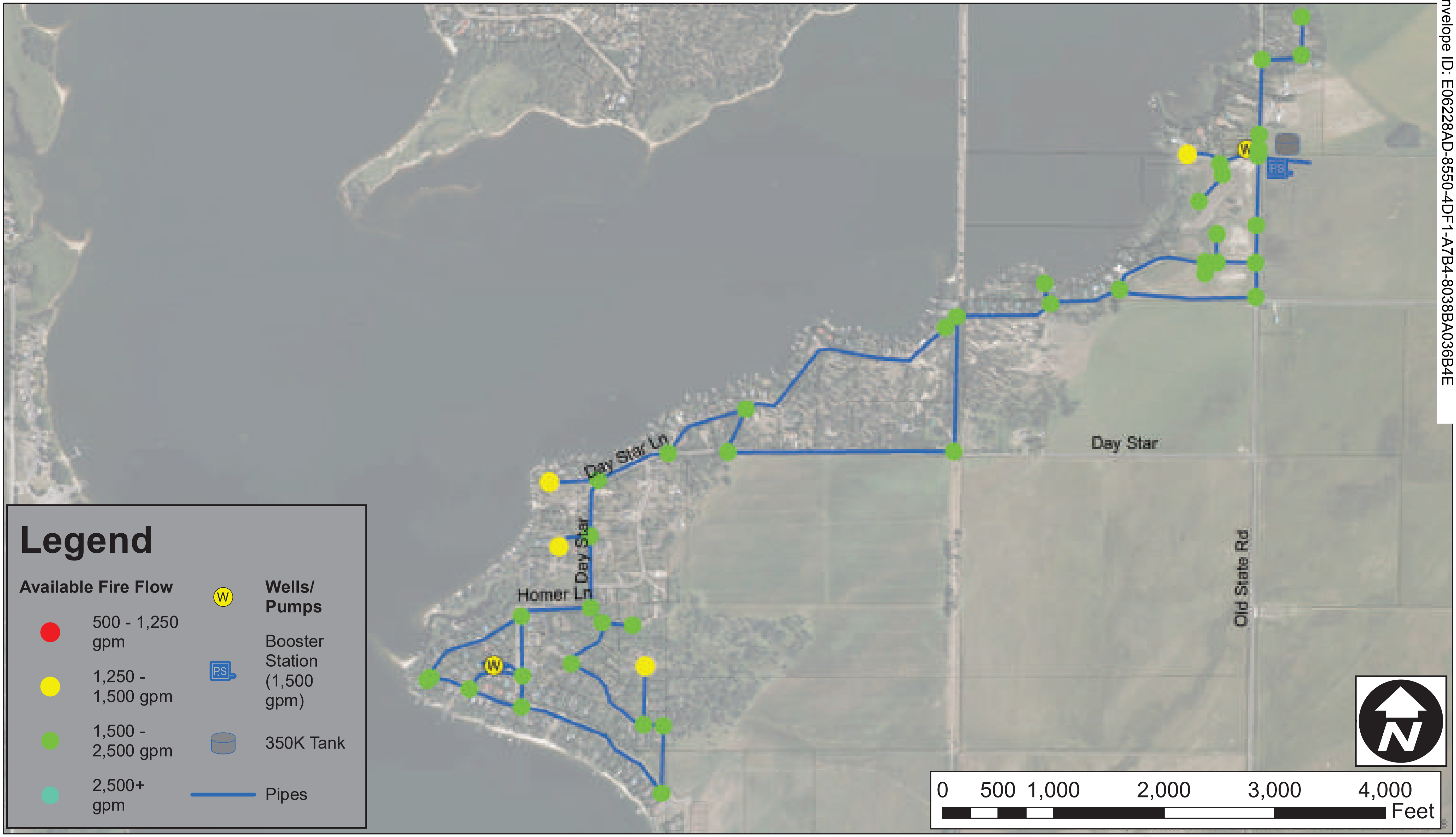

Figure 8-14

NLRSWD

Day Star Future System AFF

Water Master Plan

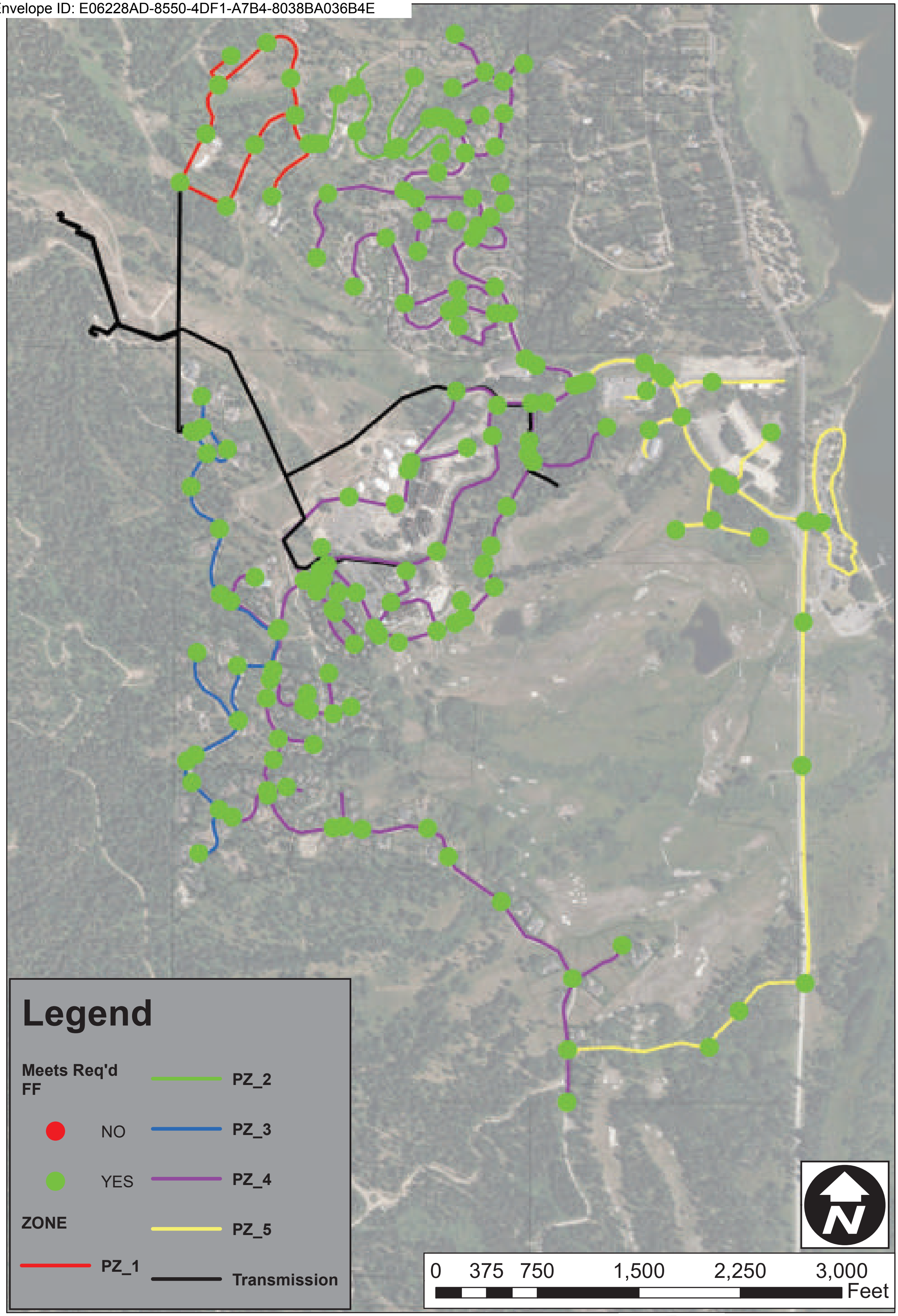

Figure 8-15 **Meets Req'd FF Committed**

NLRSWD

Water Master Plan

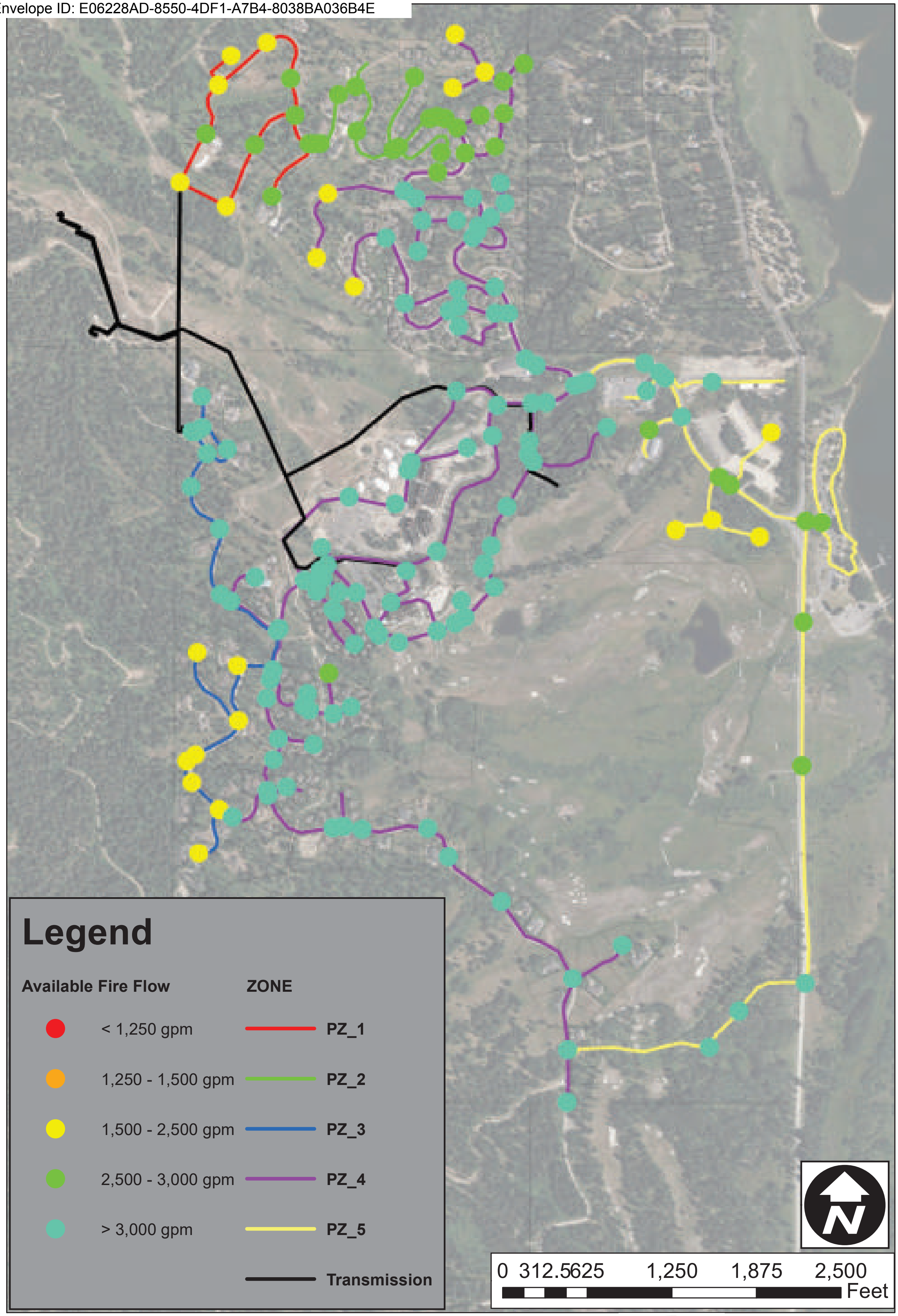

Figure 8-16

NLRSWD

AFF Committed

Water Master Plan

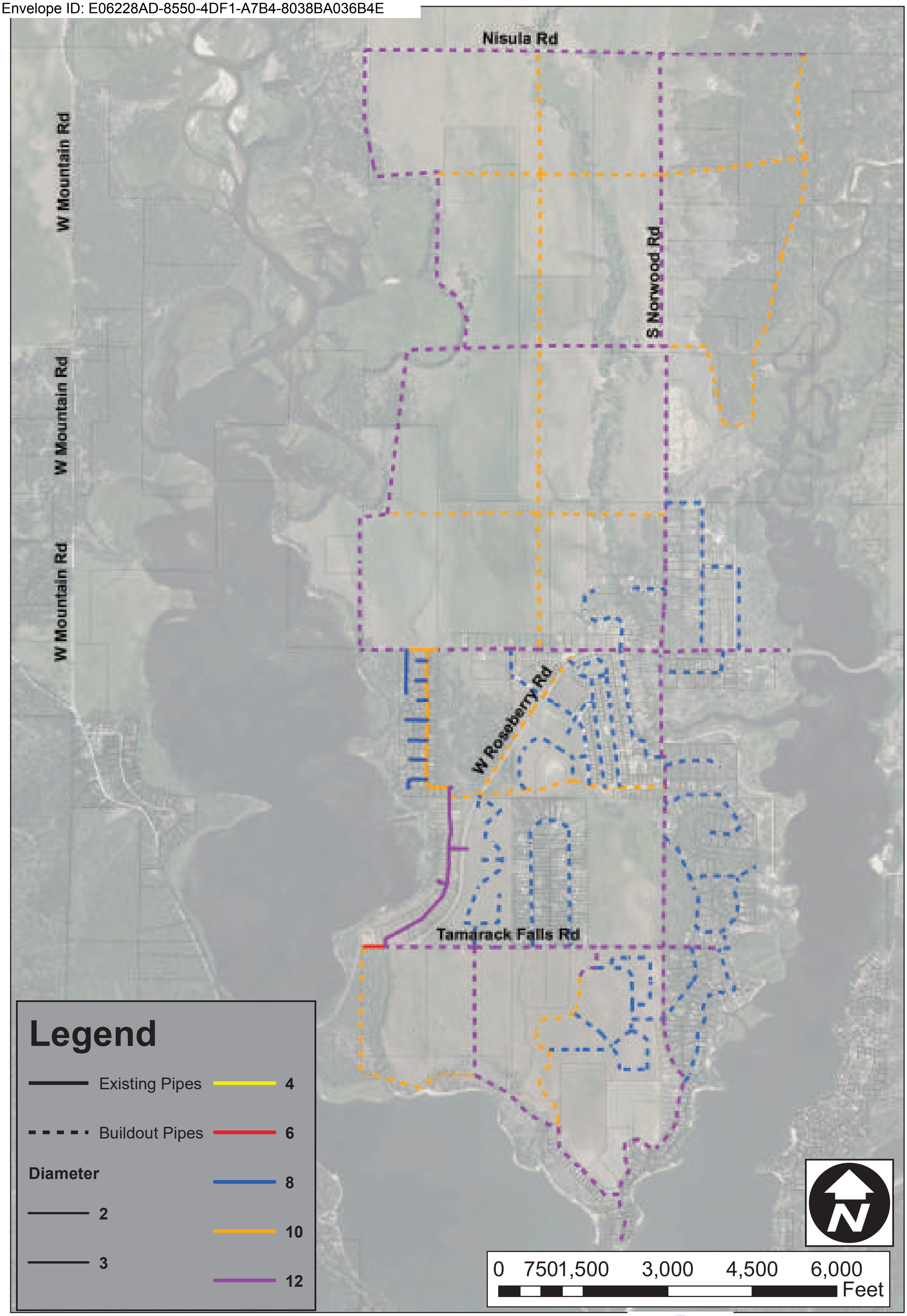

Figure 8-17

NLRSWD

Hawks Bay
Future System Expansion

Water Master Plan

KELLER ASSOCIATES

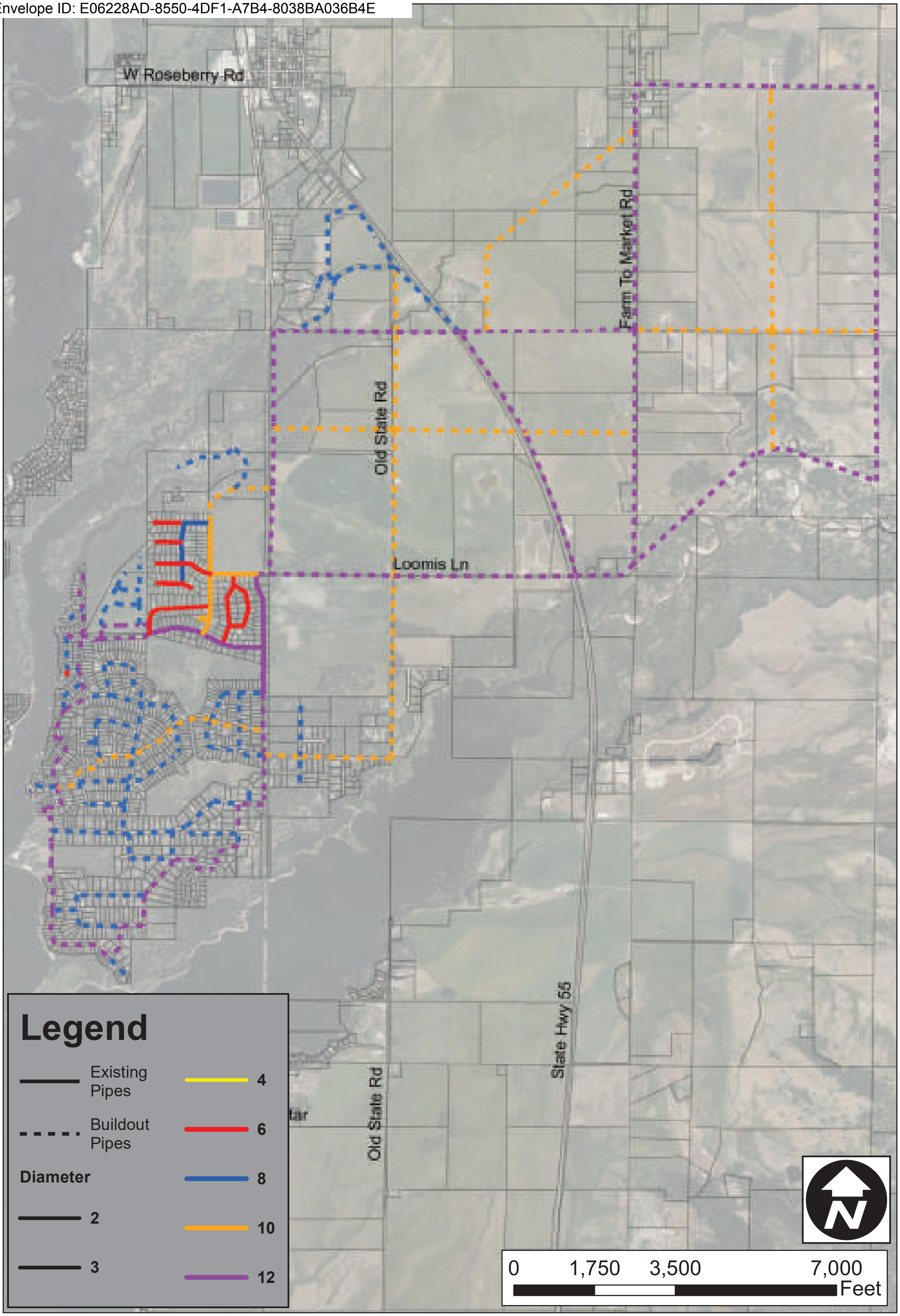

Figure 8-18

NLRSWD

Fir Grove Future System Expansion

Water Master Plan

KELLER ASSOCIATES

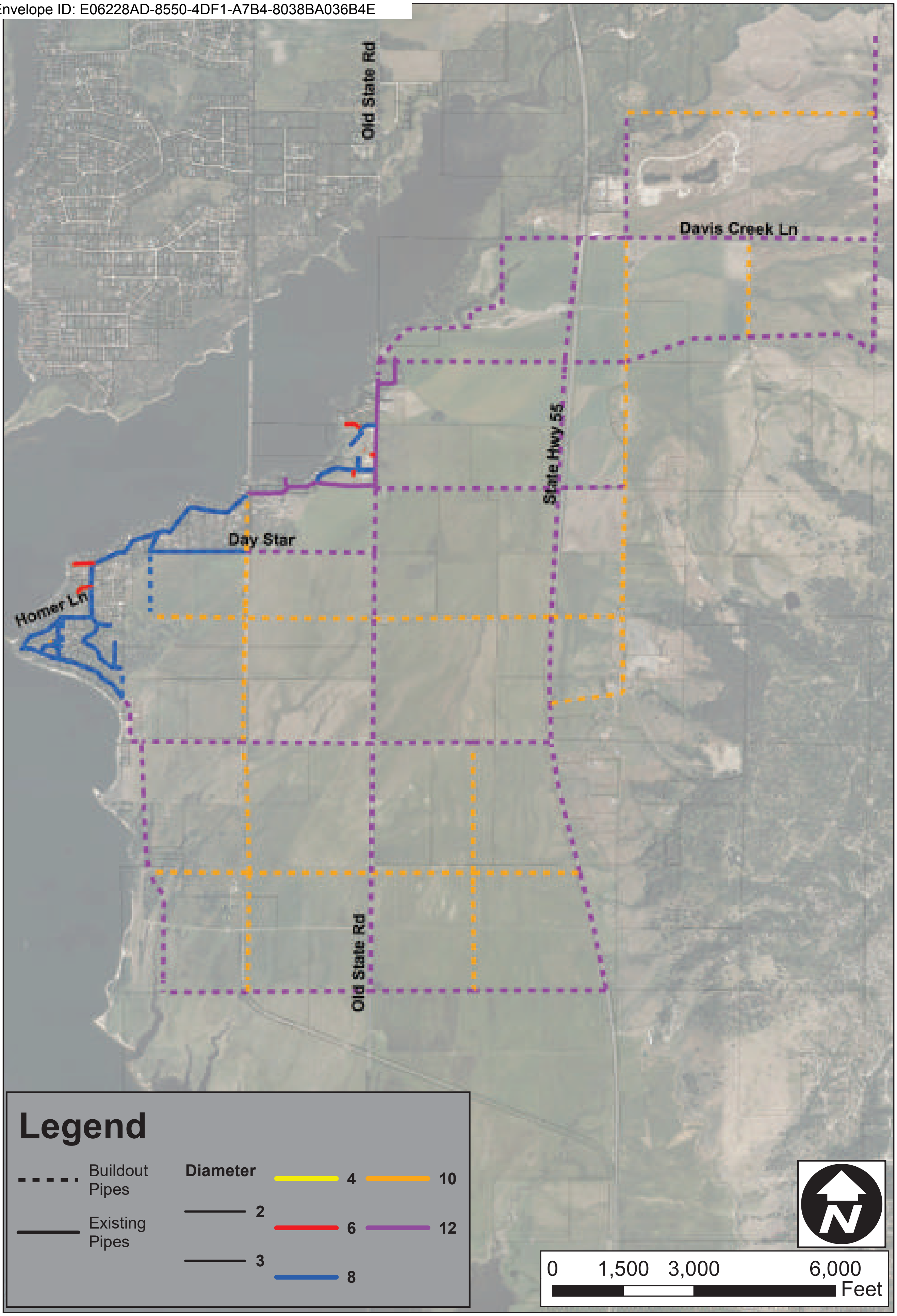

Figure 8-19
NLRSWD

Day Star Future System Expansion
Water Master Plan

KELLER ASSOCIATES

APPENDIX B

Environmental Resources

IPaC

U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Valley County, Idaho

Local office

Idaho Fish And Wildlife Office

📞 (208) 378-5243
📠 (208) 378-5262

1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Canada Lynx Lynx canadensis There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3652	Threatened

Fishes

NAME	STATUS
Bull Trout Salvelinus confluentus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8212	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Conifers and Cycads

NAME	STATUS
Whitebark Pine Pinus albicaulis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cassin's Finch Carpodacus cassinii — Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9462

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Franklin's Gull Leucophaeus pipixcan — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos
Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lesser Yellowlegs Tringa flavipes
Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Lewis's Woodpecker Melanerpes lewis
Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-eared Owl asio otus
Breeds Mar 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Olive-sided Flycatcher Contopus cooperi
Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Rufous Hummingbird selasphorus rufus
Breeds Apr 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

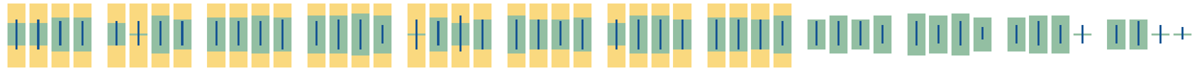
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

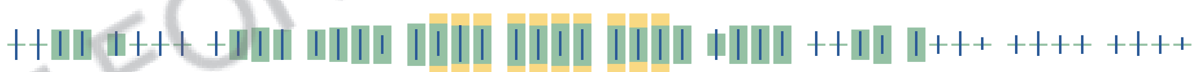
SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

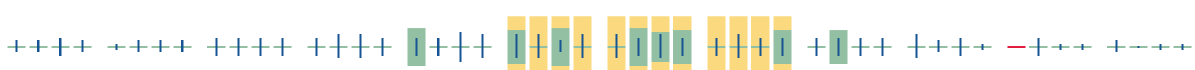


Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

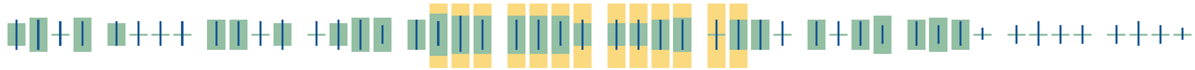
Cassin's Finch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



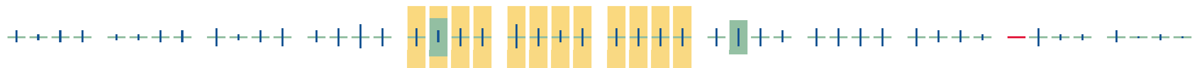
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



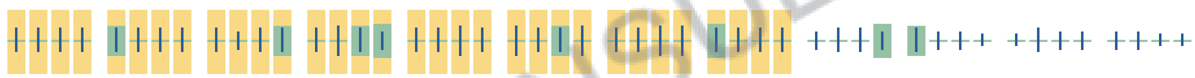
Evening Grosbeak
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



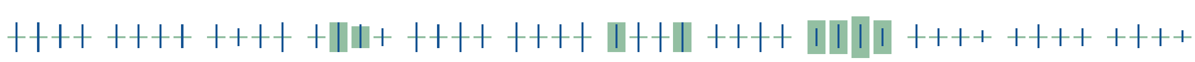
Franklin's Gull
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



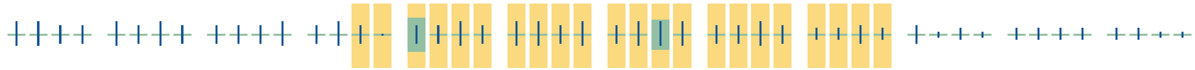
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



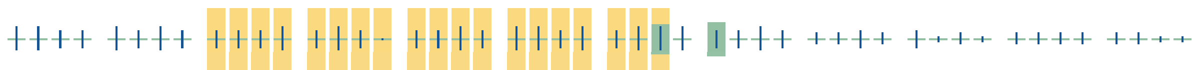
Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



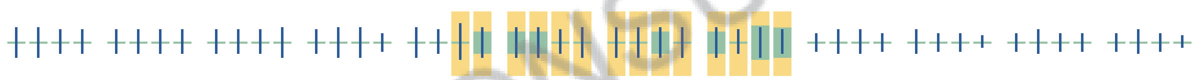
Lewis's Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-eared Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin

Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND
- Palustrine

LAKE
- Lacustrine

RIVERINE
- Riverine

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

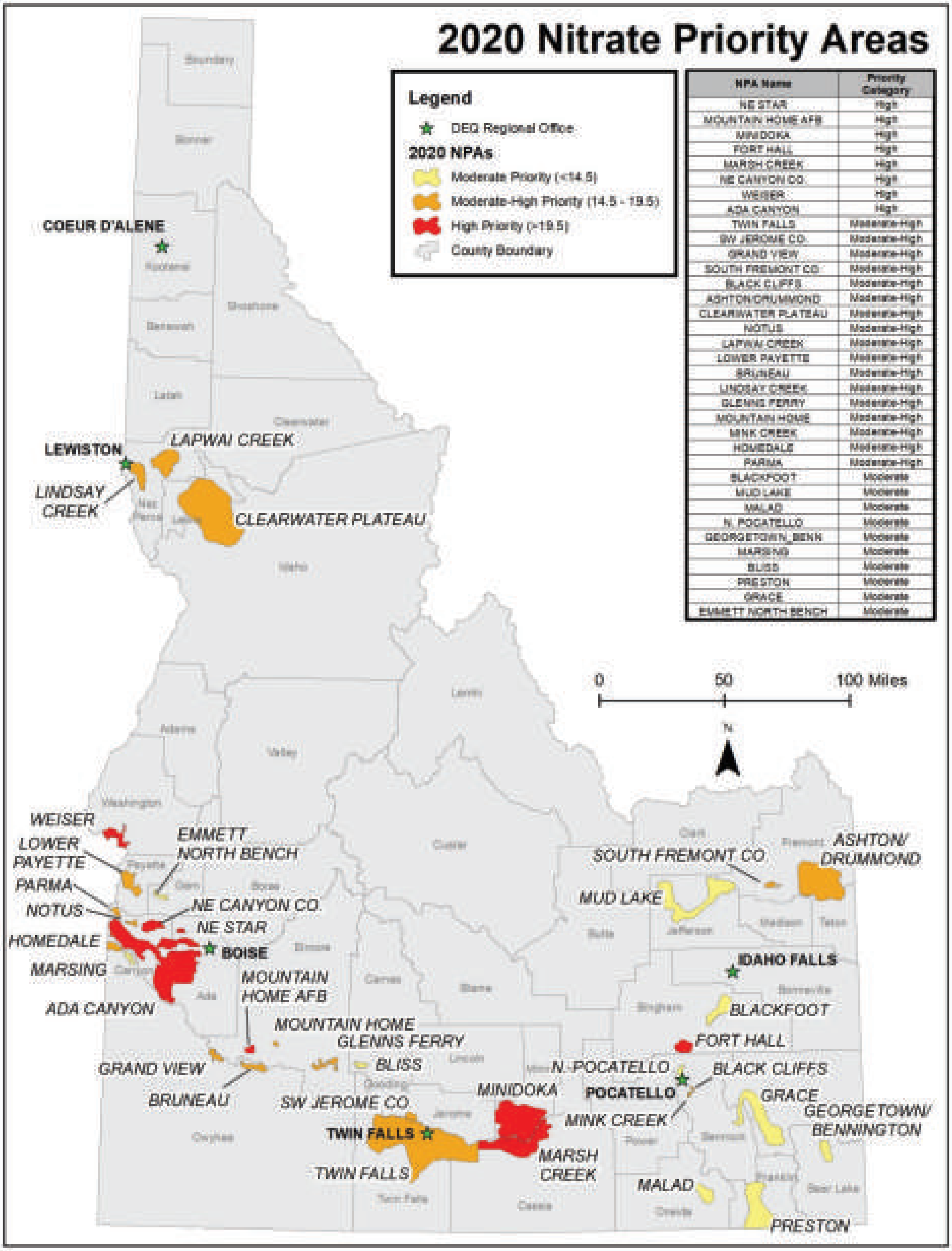


Figure 1. 2020 ranked nitrate priority areas.

2020 NPA Delineations and Ranking Table

August 2021

Name	Region	Acres	Sq. Miles	Population	Number of Sites	Max. Nitrate	Average Nitrate	Median	PWS Wells	PWS SWA	# ≥ 2mg/L	% ≥ 2mg/L	# ≥ 5mg/L	% ≥ 5mg/L	# ≥ 10mg/L	% ≥ 10mg/L	2007-2016 Trend*	2020 Score	Rounded 2020 Score	2020 Rank
NE STAR	BRO	3,180	5	357	47	44	12.2	7.7	2	5	35	74	29	62	22	47	**Increasing Trend**	24.28	24	1
MOUNTAIN HOME AFB	BRO	5,983	9	3,238	33	27.9	9.4	7.8	7	6	31	94	25	76	11	33	**Increasing Trend**	23.98	24	2
MINIDOKA	TFRO	145,083	227	18,605	347	83	5.1	4.3	48	75	227	65	142	41	27	8	**Increasing Trend**	23.15	23	3
FORT HALL	PRO	17,277	27	1,158	17	23.6	11.7	11.0	3	5	16	94	14	82	10	59	Ins. Data/No Trend	21.88	22	4
MARSH CREEK	TFRO	101,345	158	18,084	403	40	6.8	5.8	55	46	354	88	242	60	81	20	No Trend	21.76	22	5
NE CANYON CO. (PURPLE S.)	BRO	18,653	29	4,847	176	27	5.9	5.4	32	27	149	85	94	53	17	10	**Increasing Trend**	21.35	21	6
WEISER	BRO	21,462	34	7,393	150	60	12.0	10.1	26	24	130	87	118	79	75	50	*Decreasing Tendency*	21.19	21	7
ADA CANYON	BRO	251,883	394	205,419	1117	38.4	5.1	4.2	274	339	837	75	462	41	130	12	*No Trend*	19.75	20	8
TWIN FALLS	TFRO	363,687	568	76,293	719	41	4.9	4.7	111	91	621	86	315	44	30	4	No Trend	19.32	19	9
SW JEROME CO.	TFRO	7,901	12	615	30	30	7.4	5.0	0	0	29	97	15	50	5	17	**Increasing Trend**	19.14	19	10
GRAND VIEW	BRO	9,173	14	596	32	110	13.3	8.2	2	2	30	94	26	81	13	41	Ins. Data/No Trend	19.03	19	11
SOUTH FREMONT CO.	IFRO	4,964	8	156	13	38	14.5	7.9	0	4	11	85	9	69	6	46	Ins. Data/No Trend	18.75	19	12
BLACK CLIFFS	PRO	1,030	2	493	28	28.68	10.3	9.8	2	2	19	68	17	61	14	50	Ins. Data/No Trend	18.41	18	13
ASHTON/DRUMMOND	IFRO	145,111	227	2,367	209	38.3	7.3	6.4	12	16	187	89	148	71	35	17	No Trend	18.03	18	14
CLEARWATER PLATEAU	LRO	268,361	419	3,760	138	52	6.4	4.2	18	22	98	71	61	44	31	22	No Trend	17.82	18	15
NOTUS	BRO	4,288	7	211	20	16	7.6	7.3	1	1	17	85	16	80	6	30	Ins. Data/No Trend	17.7	18	16
LAPWAI CREEK	LRO	49,168	77	1,163	37	18.8	7.4	6.6	5	10	28	76	23	62	11	30	Ins. Data/No Trend	17.62	18	17
LOWER PAYETTE	BRO	26,205	41	7,214	207	61	6.3	4.4	23	37	148	71	96	46	38	18	No Trend	17.52	18	18
BRUNEAU	BRO	13,420	21	32	8	92	22.6	13.1	0	0	7	88	6	75	4	50	Ins. Data/No Trend	17.51	18	19
LINDSAY CREEK	LRO	26,246	41	13,212	65	21	5.6	4.3	19	19	42	65	31	48	15	23	No Trend	17.00	17	20
GLENNS FERRY	BRO	13,398	21	1,578	17	73.3	12.1	6.5	3	2	14	82	11	65	5	29	Ins. Data/No Trend	16.79	17	21
MOUNTAIN HOME	BRO	2,014	3	480	53	40	9.6	5.5	3	3	46	87	29	55	17	32	Ins. Data/No Trend	16.69	17	22
MINK CREEK	PRO	1,576	2	643	34	21	5.4	4.0	6	30	23	68	15	44	8	24	Ins. Data/No Trend	15.96	16	23
HOMEDALE	BRO	8,765	14	1,753	40	17.1	5.4	3.4	9	14	22	55	17	43	10	25	Ins. Data/No Trend	15.75	16	24
PARMA	BRO	4,980	8	998	30	16	5.7	5.2	5	6	19	63	16	53	8	27	Ins. Data/No Trend	15.61	16	25
BLACKFOOT	PRO	32,620	51	1,979	22	16	5.5	5.4	3	24	17	77	12	55	3	14	**Dereasing Tendency**	13.19	13	26
MALAD	PRO	22,379	35	2,803	16	11.51	3.3	2.6	4	4	8	50	4	25	2	13	Ins. Data/No Trend	12.55	13	27
MUD LAKE	IFRO	111,709	175	1,682	97	26	4.3	4.2	18	14	73	75	30	31	5	5	No Trend	12.55	13	28
N. POCATELLO	PRO	5,511	9	23,062	25	8.9	4.4	4.0	26	40	22	88	7	28	2	8	*Decreasing Tendency*	12.46	12	29
GEORGETOWN_BENN	PRO	17,764	28	795	22	13.3	4.2	2.8	2	2	14	64	10	45	2	9	Ins. Data/No Trend	12.43	12	30
MARSING	BRO	5,994	9	393	35	56	12.3	6.6	3	3	24	69	21	60	14	40	**Decreasing Trend**	12.38	12	31
BLISS	TFRO	6,218	10	66	24	19	4.6	2.9	0	0	14	58	9	38	4	17	Ins. Data/No Trend	11.76	12	32
PRESTON	PRO	94,761	148	9,856	82	27.75	5.9	4.5	14	18	56	68	39	48	13	16	**Decreasing Trend**	10.36	10	33
GRACE	PRO	95,693	150	2,737	60	42.57	5.1	2.8	27	19	37	62	18	30	6	10	**Decreasing Trend**	9.74	10	34
EMMETT NORTH BENCH	BRO	5,414	8	424	40	21	4.6	3.7	1	3	32	80	14	35	2	5	**Decreasing Trend**	6.85	7	35

*For this iteration, NPA nitrate concentrations between 2007–2011 and 2012–2016 were compared using previously established statistical methods and the threshold criteria analysis (DEQ 2014, Neely 2013). The methods and results of this nitrate trend analysis are presented in Nitrate Priority Area Trend Analysis, 2011-2016, DEQ 2020.

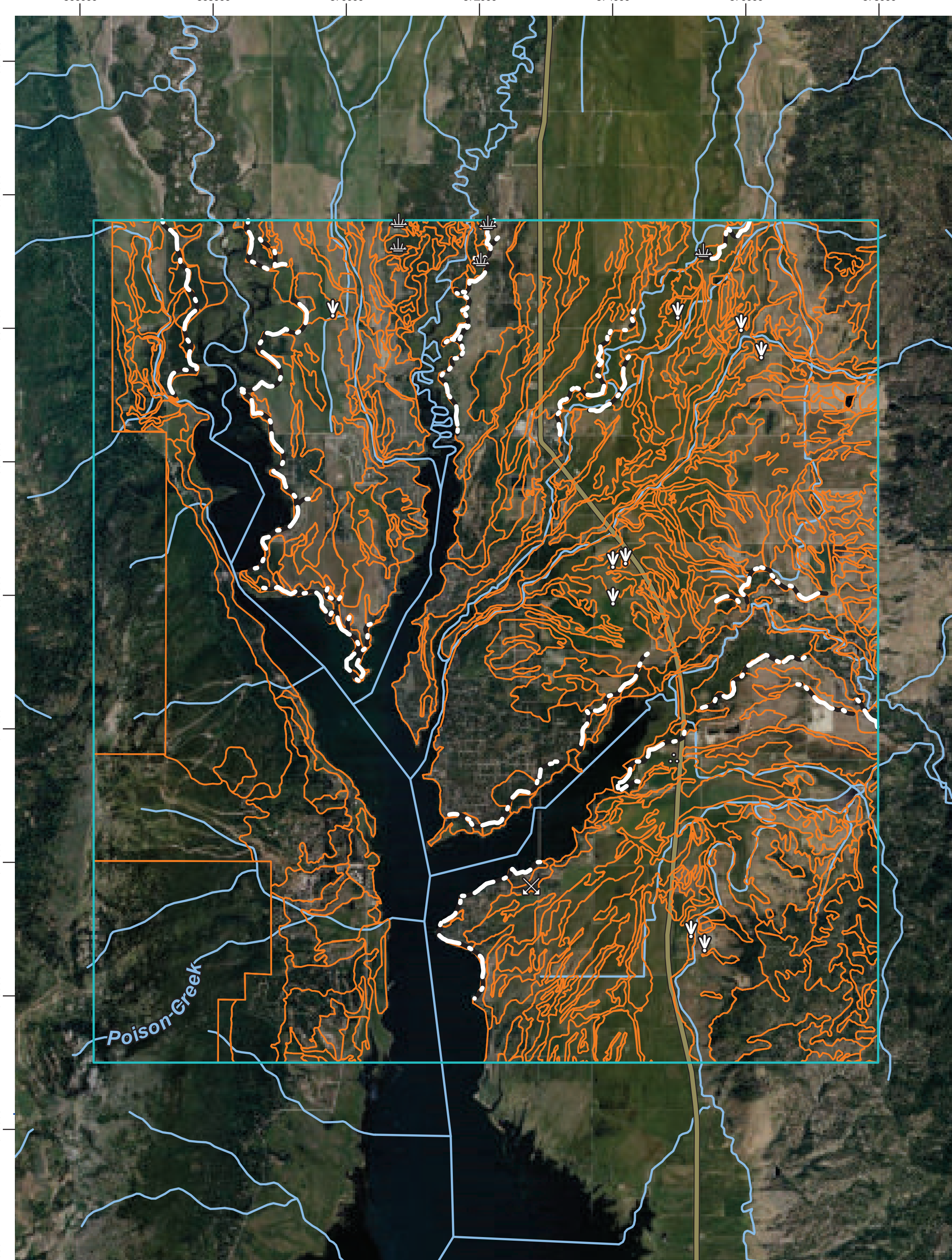
High Priority
Moderate - High Priority
Moderate Priority

Table 1. 2020 ranked Nitrate Priority Areas with score components.

HISTORIC NATIONAL REGISTRY

Reference number	Property Name	Status	Request Type	Category of Property	State	County	City	Street & Number	Federal Agencies	Level of Significance - International	Level of Significance - Local	Level of Significance - National	Level of Significance - Not Indicated	Level of Significance - State	Listed Date	Name of Multiple Property Listing	NHL Designated Date	Other Names	Park Name	Status Date	Area of Significance
00000327	Big Creek Commissary	Listed	Single	BUILDING	IDAHO	Valley	Big Creek	Yellow Pine, Payette National Forest	FOREST SERVICE	False	True	False	False	False	4/21/2000			Big Creek Barn; #1303 PY-797;10VY532		4/21/2000	ARCHITECTURE; POLITICS/GOVERNMENT
90000890	Cabin Creek Ranch	Listed	Single	DISTRICT	IDAHO	Valley	Black Butte	Cabin Cr. at jct. with Big Cr., Payette NF	FOREST SERVICE	False	True	False	False	False	6/27/1990			10VY143		6/27/1990	HISTORIC - NON-ABORIGINAL; AGRICULTURE; EXPLORATION/SETTLEMENT
82000366	Korvola, John, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Donnelly	Roseberry Rd. and Farm to Market Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82000369	Mahala, Jacob and Herman, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Donnelly	N of Donnelly		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82001053	Maki, Jacob, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Donnelly	Off ID 55		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82000363	Jarvi, Thomas, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	E of Lake Fork on Finn Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82000364	Johnson, John G., (Rintakangas) Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	NE of Lake Fork off Pearson Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR		Rintakangas		11/17/1982	ARCHITECTURE
82000365	Johnson, John S., (Sampila) Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	NE of Lake Fork off Pearson Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR		Sampila		11/17/1982	ARCHITECTURE
82000368	Laituri, Gust, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	NE of Lake Fork off Pearson Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
80001336	Long Valley Finnish Church	Listed	Single	BUILDING	IDAHO	Valley	Lake Fork	SE of Lake Fork		False	True	False	False	False	5/27/1980			"Finn" Church		5/27/1980	EXPLORATION/SETTLEMENT; ARCHITECTURE
82000370	Ojala, Herman, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	NE of Lake Fork Off Pearson Rd.		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82000371	Ruatsale, Matt, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	Lake Fork	N of Kantola Lane		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
82002515	Elo School	Listed	Multiple	BUILDING	IDAHO	Valley	McCall	SE of ID 55 on Farm to Market Rd.		False	False	False	False	True	7/26/1982	Long Valley Finnish Structures TR				7/26/1982	ARCHITECTURE
82000362	Hill, Matt N., Homestead Barn	Listed	Multiple	BUILDING	IDAHO	Valley	McCall	SE of McCall		False	True	False	False	False	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
100004675	Johnson Flying Service Hangar	Listed	Single	building	IDAHO	Valley	McCall	103 S. 3rd St.		False	True	False	False	False	11/20/2019			Pioneer Hangar		11/25/2019	TRANSPORTATION; CONSERVATION
82000367	Koski, Charles, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	McCall	SE of McCall		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
100000905	Payette Lakes Club	Listed	Single	building	IDAHO	Valley	McCall	1585 Warren Wagon Rd.		False	True	False	False	True	4/24/2017			Payette Lake Club		5/4/2017	ARCHITECTURE; ENTERTAINMENT/RECREATION
80001337	Rice Meetinghouse	Listed	Single	BUILDING	IDAHO	Valley	McCall	NE of McCall		False	True	False	False	False	4/9/1980					4/9/1980	ARCHITECTURE
90000680	Southern Idaho Timber Protective Association (SITPA) Bui	Listed	Single	BUILDING	IDAHO	Valley	McCall	1001 State St.		False	True	False	False	False	5/2/1990			IHSI #85-15355; 015334-015362		5/2/1990	CONSERVATION; ARCHITECTURE
82000372	Wargelin, Nickolai, Homestead	Listed	Multiple	BUILDING	IDAHO	Valley	McCall	SE of McCall		False	False	False	False	True	11/17/1982	Long Valley Finnish Structures TR				11/17/1982	ARCHITECTURE
99000416	North Fork Payette River Bridge	Listed	Single	STRUCTURE	IDAHO	Valley	Smiths Ferry	ID 55, Approx. 2.5 mi. N of Smiths Ferry		False	False	False	False	True	4/2/1999			Rainbow Bridge; 85-2114		4/2/1999	ENGINEERING
90000681	Southern Idaho Timber Protective Association (SITPA) Bui	Listed	Single	DISTRICT	IDAHO	Valley	Smiths Ferry	SR 55		False	True	False	False	False	5/2/1990			015338-015353		5/2/1990	CONSERVATION; ARCHITECTURE
85002157	Braddock Gold Mining and Milling Company Log Building	Listed	Single	BUILDING	IDAHO	Valley	Thunder City	Off Pack Trail near Suicide Rock		False	True	False	False	False	9/12/1985			Forsythe,William,Cabin		9/12/1985	EXPLORATION/SETTLEMENT; ARCHITECTURE
87001186	Stibnite Historic District	Listed	Single	DISTRICT	IDAHO	Valley	Yellow Pine	US Forest Rd. 412	FOREST SERVICE	False	False	False	False	True	7/19/1987			Stibnite Mining District		7/19/1987	MILITARY
92000688	Krassel Ranger Station	Listed	Single	DISTRICT	IDAHO	Valley	Yellowpine	Along S Fork Salmon R., 11 mi. W of Yellowpine, Payette N	FOREST SERVICE	False	True	False	False	False	11/19/1992			10-VY-492 and PY-584		11/19/1992	PREHISTORIC; CONSERVATION; POLITICS/GOVERNMENT; ARCHITECTURE

Soil Map—South Idaho Forests, Idaho; and Valley Area, Idaho, Parts of Adams and Valley Counties



Map Scale: 1:91,400 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 1000, 2000, 4000, 6000

Feet: 0, 4000, 8000, 16000, 24000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: South Idaho Forests, Idaho
Survey Area Data: Version 6, Sep 2, 2022

Soil Survey Area: Valley Area, Idaho, Parts of Adams and Valley Counties
Survey Area Data: Version 20, Sep 2, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2020—Oct 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

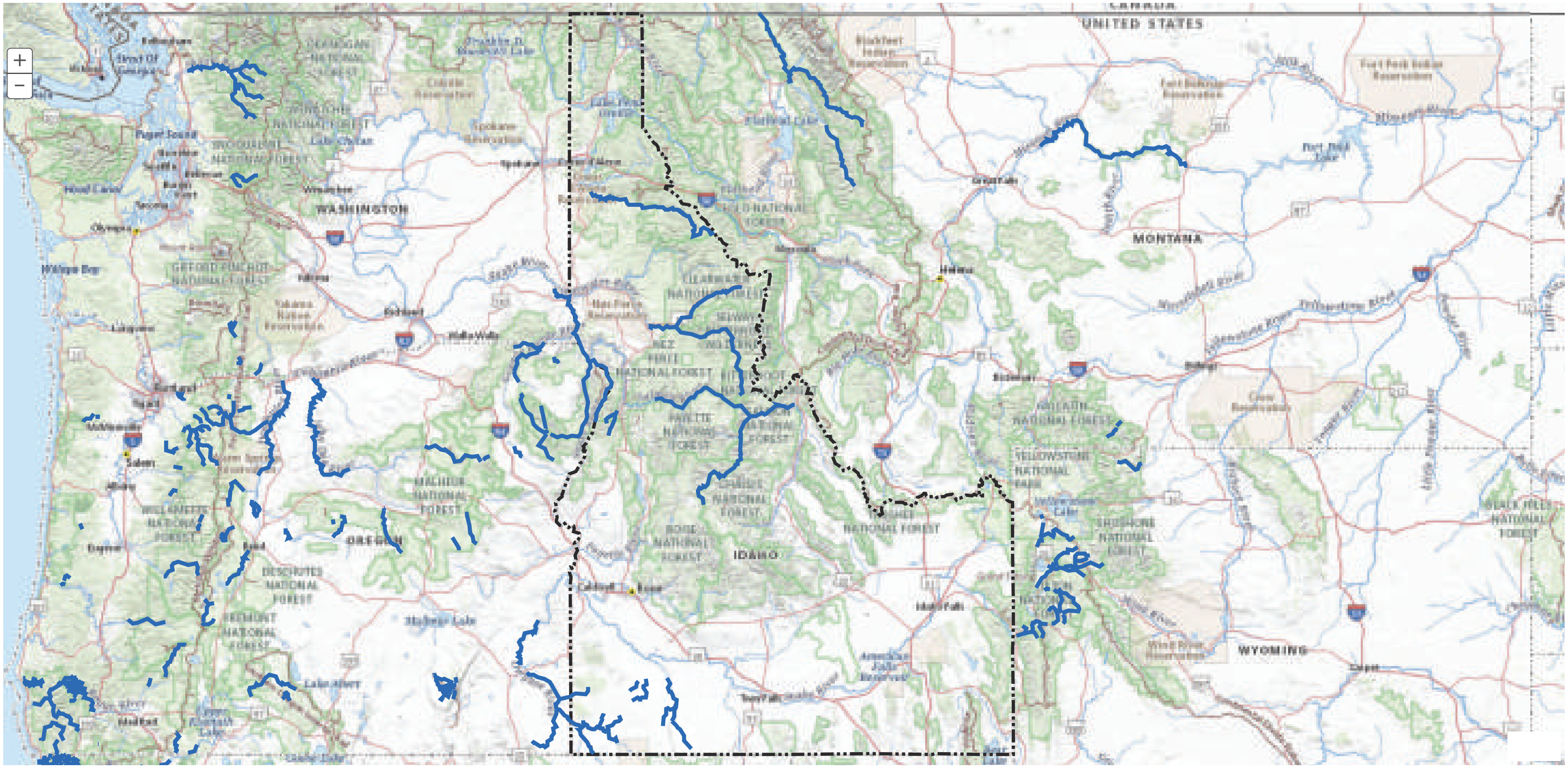
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	3,300.0	8.9%
Subtotals for Soil Survey Area		**3,300.0**	**8.9%**
Totals for Area of Interest		**36,934.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Archabal loam, 0 to 2 percent slopes	280.8	0.8%
2	Archabal loam, 2 to 4 percent slopes	551.3	1.5%
3	Archabal loam, 4 to 12 percent slopes	493.0	1.3%
4	Archabal loam, 12 to 20 percent slopes	94.8	0.3%
5	Blackwell clay loam	1,283.5	3.5%
6	Blackwell mucky silt loam	170.9	0.5%
7	Blackwell variant silt loam	65.5	0.2%
8	Bluebell cobbly loam, 5 to 35 percent slopes	670.8	1.8%
9	Bryan-Ligget complex, 20 to 40 percent slopes	58.5	0.2%
10	Bryan-Ligget complex, 40 to 60 percent slopes	1,217.6	3.3%
11	Bryan-Pyle complex, 40 to 60 percent slopes	48.1	0.1%
12	Cabarton silty clay loam	569.9	1.5%
14	Demast loam, 15 to 30 percent slopes	728.2	2.0%
15	Demast loam, 30 to 60 percent slopes	21.5	0.1%
16	Donnel sandy loam, 0 to 2 percent slopes	5,518.9	14.9%
17	Donnel sandy loam, 2 to 4 percent slopes	1,498.5	4.1%
18	Donnel sandy loam, 4 to 12 percent slopes	288.7	0.8%
20	Duston sandy loam, 0 to 2 percent slopes	208.8	0.6%
21	Duston sandy loam, 2 to 4 percent slopes	219.1	0.6%
22	Gestrin loam, 0 to 2 percent slopes	185.8	0.5%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
23	Gestrin loam, 2 to 4 percent slopes	594.1	1.6%
24	Gestrin loam, 4 to 12 percent slopes	96.0	0.3%
26	Jugson coarse sandy loam, 30 to 60 percent slopes	513.1	1.4%
27	Jurvannah sandy loam	119.1	0.3%
28	Kangas coarse sandy loam	535.8	1.5%
29	Kangas fine gravelly loamy coarse sand	804.8	2.2%
34	Melton loam	1,425.3	3.9%
37	Nisula loam, 4 to 12 percent slopes	641.2	1.7%
38	Nisula loam, 12 to 20 percent slopes	202.6	0.5%
40	Pits, gravel	39.2	0.1%
43	Quartzburg-Bryan complex, 10 to 45 percent slopes	830.5	2.2%
47	Roseberry coarse sandy loam	5,226.4	14.2%
48	Roseberry-Melton complex	729.7	2.0%
49	Shellrock loamy coarse sand, 12 to 35 percent slopes	497.2	1.3%
50	Shellrock loamy coarse sand, 35 to 60 percent slopes	259.9	0.7%
51	Shellrock-Rock outcrop complex, 2 to 25 percent slopes	117.5	0.3%
52	Shellrock-Rock outcrop complex, 25 to 60 percent slopes	341.7	0.9%
53	Sudduth variant loam, 3 to 20 percent slopes	351.1	1.0%
54	Swede silt loam, 2 to 4 percent slopes	5.6	0.0%
55	Swede silt loam, 4 to 12 percent slopes	124.7	0.3%
56	Swede silt loam, 12 to 20 percent slopes	18.2	0.0%
57	Takeuchi coarse sandy loam, 3 to 35 percent slopes	14.2	0.0%
58	Tica very cobbly loam, 4 to 65 percent slopes	140.8	0.4%
59	Water	5,824.8	15.8%
60	Miscellaneous water	1.6	0.0%
Subtotals for Soil Survey Area		**33,629.3**	**91.1%**
Totals for Area of Interest		**36,934.5**	**100.0%**

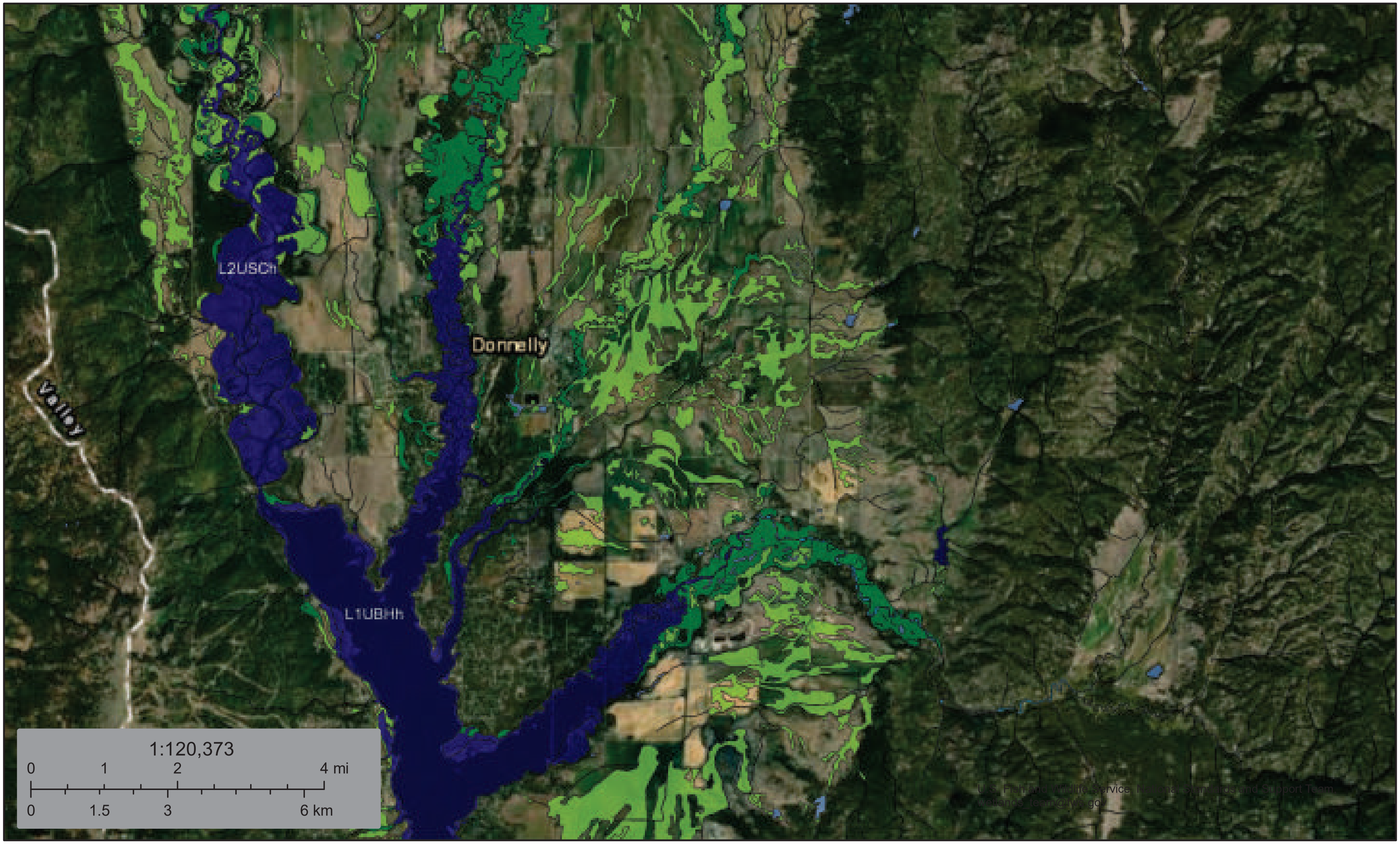
wild and scenic rivers



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



August 9, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

APPENDIX C

Water Quality, Cross-Connection Control Plan, & Sanitary Surveys

TABLE OF CONTENTS

1. Hawks Bay Sampling History Report

Chemical And Radiological Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 504

A PWS is only required to report the most recent detections of any contaminant at each representative sampling location. For example, if nitrate is detected in a sample collected at Well X in 2021, but is not detected at Well X in 2022, then the system is not required to report nitrate for Well X in the 2022 CCR. **Note:** If a contaminant (e.g., nitrate) is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, nitrate was not detected.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template** , find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)
PIC/L (pCi/L) = picocuries per liter

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,1-DICHLOROETHYLENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000

1,2,4-TRICHLOROBENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROETHANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROETHANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
1,2-DICHLOROPROPANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
1,2-DICHLOROPROPANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
2,4,5-TP	09/18/2018	WELL #1-EAST	Y	0.000		0.000
2,4,5-TP	09/18/2018	WELL #2-WEST	Y	0.000		0.000
2,4,5-TP	06/26/2018	WELL #1-EAST	Y	0.000		0.000
2,4,5-TP	06/26/2018	WELL #2-WEST	Y	0.000		0.000
2,4-D	09/18/2018	WELL #1-EAST	Y	0.000		0.000
2,4-D	09/18/2018	WELL #2-WEST	Y	0.000		0.000
2,4-D	06/26/2018	WELL #1-EAST	Y	0.000		0.000
2,4-D	06/26/2018	WELL #2-WEST	Y	0.000		0.000
ANTIMONY, TOTAL	09/20/2022	WELL #1-EAST	Y	0.000		0.000
ANTIMONY, TOTAL	09/20/2022	WELL #2-WEST	Y	0.000		0.000
ANTIMONY, TOTAL	03/19/2019	WELL #1-EAST	Y	0.000		0.000
ANTIMONY, TOTAL	03/19/2019	WELL #2-WEST	Y	0.000		0.000
ARSENIC	09/20/2022	WELL #1-EAST	Y	0.000		0.000
ARSENIC	09/20/2022	WELL #2-WEST	Y	0.000		0.000
ARSENIC	03/19/2019	WELL #1-EAST	Y	0.000		0.000
ARSENIC	03/19/2019	WELL #2-WEST	Y	0.000		0.000
ATRAZINE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
ATRAZINE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
ATRAZINE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
ATRAZINE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
BARIUM	09/20/2022	WELL #1-EAST	Y	0.000		0.000
BARIUM	09/20/2022	WELL #2-WEST	Y	0.000		0.000
BARIUM	03/19/2019	WELL #1-EAST	Y	0.000		0.000
BARIUM	03/19/2019	WELL #2-WEST	Y	0.000		0.000
BENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
BENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
BENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
BENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
BENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
BENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
BENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
BENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
BENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000

BENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
BENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
BENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
BENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
BENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
BENZO(A)PYRENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
BENZO(A)PYRENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
BENZO(A)PYRENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
BENZO(A)PYRENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
BERYLLIUM, TOTAL	09/20/2022	WELL #1-EAST	Y	0.000		0.000
BERYLLIUM, TOTAL	09/20/2022	WELL #2-WEST	Y	0.000		0.000
BERYLLIUM, TOTAL	03/19/2019	WELL #1-EAST	Y	0.000		0.000
BERYLLIUM, TOTAL	03/19/2019	WELL #2-WEST	Y	0.000		0.000
BHC-GAMMA	09/18/2018	WELL #1-EAST	Y	0.000		0.000
BHC-GAMMA	09/18/2018	WELL #2-WEST	Y	0.000		0.000
BHC-GAMMA	06/26/2018	WELL #1-EAST	Y	0.000		0.000
BHC-GAMMA	06/26/2018	WELL #2-WEST	Y	0.000		0.000
CADMIUM	09/20/2022	WELL #1-EAST	Y	0.000		0.000
CADMIUM	09/20/2022	WELL #2-WEST	Y	0.000		0.000
CADMIUM	03/19/2019	WELL #1-EAST	Y	0.000		0.000
CADMIUM	03/19/2019	WELL #2-WEST	Y	0.000		0.000
CARBOFURAN	09/18/2018	WELL #1-EAST	Y	0.000		0.000
CARBOFURAN	09/18/2018	WELL #2-WEST	Y	0.000		0.000
CARBOFURAN	06/26/2018	WELL #1-EAST	Y	0.000		0.000
CARBOFURAN	06/26/2018	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
CARBON TETRACHLORIDE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
CARBON TETRACHLORIDE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
CHLORDANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
CHLORDANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
CHLORDANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
CHLORDANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
CHLOROBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
CHLOROBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
CHROMIUM	09/20/2022	WELL #1-EAST	Y	0.000		0.000
CHROMIUM	09/20/2022	WELL #2-WEST	Y	0.000		0.000
CHROMIUM	03/19/2019	WELL #1-EAST	Y	0.000		0.000
CHROMIUM	03/19/2019	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	06/18/2019	WELL #1-EAST	Y	0.000		0.000

COMBINED RADIUM (-226 & -228)	06/18/2019	WELL #2-WEST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	03/19/2019	WELL #1-EAST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	03/19/2019	WELL #2-WEST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	11/27/2018	WELL #1-EAST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	11/27/2018	WELL #2-WEST	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	09/18/2018	WELL #1-EAST		1.140	PCI/L	1.140
COMBINED RADIUM (-226 & -228)	09/18/2018	WELL #2-WEST	Y	0.000		0.000
COMBINED URANIUM	06/18/2019	WELL #1-EAST	Y	0.000		0.000
COMBINED URANIUM	06/18/2019	WELL #2-WEST	Y	0.000		0.000
COMBINED URANIUM	03/19/2019	WELL #1-EAST	Y	0.000		0.000
COMBINED URANIUM	03/19/2019	WELL #2-WEST	Y	0.000		0.000
COMBINED URANIUM	11/27/2018	WELL #1-EAST	Y	0.000		0.000
COMBINED URANIUM	11/27/2018	WELL #2-WEST	Y	0.000		0.000
COMBINED URANIUM	09/18/2018	WELL #1-EAST	Y	0.000		0.000
COMBINED URANIUM	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DALAPON	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DALAPON	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DALAPON	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DALAPON	06/26/2018	WELL #2-WEST	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DICHLOROMETHANE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DICHLOROMETHANE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
DINOSEB	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DINOSEB	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DINOSEB	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DINOSEB	06/26/2018	WELL #2-WEST	Y	0.000		0.000
DIQUAT	09/18/2018	WELL #1-EAST	Y	0.000		0.000
DIQUAT	09/18/2018	WELL #2-WEST	Y	0.000		0.000
DIQUAT	06/26/2018	WELL #1-EAST	Y	0.000		0.000
DIQUAT	06/26/2018	WELL #2-WEST	Y	0.000		0.000
ENDOTHALL	09/18/2018	WELL #1-EAST	Y	0.000		0.000
ENDOTHALL	09/18/2018	WELL #2-WEST	Y	0.000		0.000
ENDOTHALL	06/26/2018	WELL #1-EAST	Y	0.000		0.000
ENDOTHALL	06/26/2018	WELL #2-WEST	Y	0.000		0.000
ENDRIN	09/18/2018	WELL #1-EAST	Y	0.000		0.000
ENDRIN	09/18/2018	WELL #2-WEST	Y	0.000		0.000
ENDRIN	06/26/2018	WELL #1-EAST	Y	0.000		0.000
ENDRIN	06/26/2018	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
ETHYLBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
ETHYLBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
ETHYLENE DIBROMIDE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
ETHYLENE DIBROMIDE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
FLUORIDE	09/20/2022	WELL #1-EAST	N	0.110	MG/L	0.110

FLUORIDE	09/20/2022	WELL #2-WEST	N	0.110	MG/L	0.110
FLUORIDE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
FLUORIDE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
GLYPHOSATE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
GLYPHOSATE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
GLYPHOSATE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
GLYPHOSATE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	06/18/2019	WELL #1-EAST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	06/18/2019	WELL #2-WEST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/19/2019	WELL #1-EAST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/19/2019	WELL #2-WEST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	11/27/2018	WELL #1-EAST	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	11/27/2018	WELL #2-WEST	Y	0.000		0.000
HEPTACHLOR	09/18/2018	WELL #1-EAST	Y	0.000		0.000
HEPTACHLOR	09/18/2018	WELL #2-WEST	Y	0.000		0.000
HEPTACHLOR	06/26/2018	WELL #1-EAST	Y	0.000		0.000
HEPTACHLOR	06/26/2018	WELL #2-WEST	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
HEPTACHLOR EPOXIDE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
HEPTACHLOR EPOXIDE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
HEXACHLOROBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
HEXACHLOROBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
HEXACHLOROBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
HEXACHLOROBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
LASSO	09/18/2018	WELL #1-EAST	Y	0.000		0.000
LASSO	09/18/2018	WELL #2-WEST	Y	0.000		0.000
LASSO	06/26/2018	WELL #1-EAST	Y	0.000		0.000
LASSO	06/26/2018	WELL #2-WEST	Y	0.000		0.000
MERCURY	09/20/2022	WELL #1-EAST	Y	0.000		0.000
MERCURY	09/20/2022	WELL #2-WEST	Y	0.000		0.000
MERCURY	03/19/2019	WELL #1-EAST	Y	0.000		0.000
MERCURY	03/19/2019	WELL #2-WEST	Y	0.000		0.000
METHOXYCHLOR	09/18/2018	WELL #1-EAST	Y	0.000		0.000
METHOXYCHLOR	09/18/2018	WELL #2-WEST	Y	0.000		0.000
METHOXYCHLOR	06/26/2018	WELL #1-EAST	Y	0.000		0.000
METHOXYCHLOR	06/26/2018	WELL #2-WEST	Y	0.000		0.000
NICKEL	09/20/2022	WELL #1-EAST	Y	0.000		0.000
NICKEL	09/20/2022	WELL #2-WEST	Y	0.000		0.000
NICKEL	03/19/2019	WELL #1-EAST	Y	0.000		0.000
NICKEL	03/19/2019	WELL #2-WEST	Y	0.000		0.000
NITRATE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
NITRATE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
NITRATE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
NITRATE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
NITRATE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
NITRATE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
NITRATE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
NITRATE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
NITRATE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
NITRATE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
NITRITE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
NITRITE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
O-DICHLOROBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
O-DICHLOROBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
OXAMYL	09/18/2018	WELL #1-EAST	Y	0.000		0.000
OXAMYL	09/18/2018	WELL #2-WEST	Y	0.000		0.000
OXAMYL	06/26/2018	WELL #1-EAST	Y	0.000		0.000
OXAMYL	06/26/2018	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000

P-DICHLOROBENZENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
P-DICHLOROBENZENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
P-DICHLOROBENZENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
PENTACHLOROPHENOL	09/18/2018	WELL #1-EAST	Y	0.000		0.000
PENTACHLOROPHENOL	09/18/2018	WELL #2-WEST	Y	0.000		0.000
PENTACHLOROPHENOL	06/26/2018	WELL #1-EAST	Y	0.000		0.000
PENTACHLOROPHENOL	06/26/2018	WELL #2-WEST	Y	0.000		0.000
PICLORAM	09/18/2018	WELL #1-EAST	Y	0.000		0.000
PICLORAM	09/18/2018	WELL #2-WEST	Y	0.000		0.000
PICLORAM	06/26/2018	WELL #1-EAST	Y	0.000		0.000
PICLORAM	06/26/2018	WELL #2-WEST	Y	0.000		0.000
RADIUM-226	06/18/2019	WELL #1-EAST	Y	0.000		0.000
RADIUM-226	06/18/2019	WELL #2-WEST	Y	0.000		0.000
RADIUM-226	03/19/2019	WELL #1-EAST	Y	0.000		0.000
RADIUM-226	03/19/2019	WELL #2-WEST	Y	0.000		0.000
RADIUM-226	11/27/2018	WELL #1-EAST	Y	0.000		0.000
RADIUM-226	11/27/2018	WELL #2-WEST	Y	0.000		0.000
RADIUM-226	09/18/2018	WELL #1-EAST	Y	0.000		0.000
RADIUM-226	09/18/2018	WELL #2-WEST	Y	0.000		0.000
RADIUM-228	06/18/2019	WELL #1-EAST	Y	0.000		0.000
RADIUM-228	06/18/2019	WELL #2-WEST	Y	0.000		0.000
RADIUM-228	03/19/2019	WELL #1-EAST	Y	0.000		0.000
RADIUM-228	03/19/2019	WELL #2-WEST	Y	0.000		0.000
RADIUM-228	11/27/2018	WELL #1-EAST	Y	0.000		0.000
RADIUM-228	11/27/2018	WELL #2-WEST	Y	0.000		0.000
RADIUM-228	09/18/2018	WELL #1-EAST	N	1.140	PCI/L	1.140
RADIUM-228	09/18/2018	WELL #2-WEST	Y	0.000		0.000
SELENIUM	09/20/2022	WELL #1-EAST	Y	0.000		0.000
SELENIUM	09/20/2022	WELL #2-WEST	Y	0.000		0.000
SELENIUM	03/19/2019	WELL #1-EAST	Y	0.000		0.000
SELENIUM	03/19/2019	WELL #2-WEST	Y	0.000		0.000
SIMAZINE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
SIMAZINE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
SIMAZINE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
SIMAZINE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
STYRENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
STYRENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
STYRENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
STYRENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
STYRENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
STYRENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
STYRENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
STYRENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
STYRENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
STYRENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
STYRENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
STYRENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
STYRENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
STYRENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TETRACHLOROETHYLENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TETRACHLOROETHYLENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
THALLIUM, TOTAL	09/20/2022	WELL #1-EAST	Y	0.000		0.000
THALLIUM, TOTAL	09/20/2022	WELL #2-WEST	Y	0.000		0.000
THALLIUM, TOTAL	03/19/2019	WELL #1-EAST	Y	0.000		0.000

THALLIUM, TOTAL	03/19/2019	WELL #2-WEST	Y	0.000		0.000
TOLUENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
TOLUENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
TOLUENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
TOLUENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
TOLUENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
TOLUENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
TOLUENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
TOLUENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
TOLUENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
TOLUENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
TOLUENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TOLUENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TOLUENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TOLUENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	06/26/2018	WELL #2-WEST	Y	0.000		0.000
TOXAPHENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TOXAPHENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TOXAPHENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TOXAPHENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
TRICHLOROETHYLENE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
TRICHLOROETHYLENE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	09/20/2022	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	09/20/2022	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	09/21/2021	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	09/21/2021	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	08/18/2020	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	08/18/2020	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	03/19/2019	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	03/19/2019	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	11/27/2018	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	11/27/2018	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	09/18/2018	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	09/18/2018	WELL #2-WEST	Y	0.000		0.000
VINYL CHLORIDE	06/26/2018	WELL #1-EAST	Y	0.000		0.000
VINYL CHLORIDE	06/26/2018	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	09/20/2022	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	09/20/2022	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	09/21/2021	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	09/21/2021	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	08/18/2020	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	08/18/2020	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	03/19/2019	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	03/19/2019	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	11/27/2018	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	11/27/2018	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	09/18/2018	WELL #1-EAST	Y	0.000		0.000

XYLENES, TOTAL	09/18/2018	WELL #2-WEST	Y	0.000		0.000
XYLENES, TOTAL	06/26/2018	WELL #1-EAST	Y	0.000		0.000
XYLENES, TOTAL	06/26/2018	WELL #2-WEST	Y	0.000		0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 11

Only report coliform results in the CCR if one or more samples tested positive during the 2022 calendar year.

Required Language. If your water system's coliform history for the year included one or more samples present for coliform, you must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value for coliforms, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Coliform Sampling History

Total Records: 11

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	12/09/2022	A
COLIFORM (TCR)	11/18/2022	A
COLIFORM (TCR)	10/13/2022	A
COLIFORM (TCR)	09/09/2022	A
COLIFORM (TCR)	08/23/2022	A
COLIFORM (TCR)	07/19/2022	A
COLIFORM (TCR)	06/21/2022	A
COLIFORM (TCR)	05/17/2022	A
COLIFORM (TCR)	03/22/2022	A
COLIFORM (TCR)	02/22/2022	A
COLIFORM (TCR)	01/25/2022	A

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 10

A public water system is only required to report the most recent 90% percentile detections for lead and copper within the past five years. If a result is listed as zero, it should be assumed the result was actually a non-detect.

Other lead and copper information to be included in the CCR not listed on this page are the number of samples collected from the distribution system, and the highest level of lead or copper that was detected.

Required Language. If there are detections for lead and copper to report, the system must give the major sources of the contaminant. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	5	0.012	MG/L	07/19/2021	12.000
COPPER SUMMARY	5	0.255	MG/L	07/19/2021	0.255
LEAD SUMMARY	5	0.005	MG/L	08/17/2020	5.000
COPPER SUMMARY	5	0.180	MG/L	08/17/2020	0.180
LEAD SUMMARY	5	0.005	MG/L	06/12/2019	5.000
COPPER SUMMARY	5	0.063	MG/L	06/12/2019	0.063
LEAD SUMMARY	5	0.000	MG/L	12/15/2018	0.000
COPPER SUMMARY	5	0.045	MG/L	12/15/2018	0.045
LEAD SUMMARY	5	0.000	MG/L	06/18/2018	0.000
COPPER SUMMARY	5	0.040	MG/L	06/18/2018	0.040

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 10

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Public water systems that are required to collect one sample for disinfection byproducts once every year, or every three years, are only required to report the most recent detections for disinfection byproducts. If the most recent sampling was a non-detect for the contaminants, then it is not necessary to report any disinfection byproduct sampling. **Note:** If a contaminant is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, the contaminant was not detected.

If a public water system collects more than one sample per year, the system must report the average of Total Trihalomethanes and Haloacetic Acids Group 5 over the 2022 calendar year. The highest level detected, and the range for each contaminant must also be reported.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value of a contaminant, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Contaminant	Date Collected	Sampling Location	Non Detect?	Detected Level	Units	CCR Units
TOTAL HALOACETIC ACIDS (HAA5)	09/20/2022	12 SPRING WATER CT	N	0.009	MG/L	8.550
TOTAL HALOACETIC ACIDS (HAA5)	07/20/2021	12 SPRING WATER CT	N	0.009	MG/L	9.160
TOTAL HALOACETIC ACIDS (HAA5)	08/18/2020	12 SPRING WATER CT	N	0.013	MG/L	13.100
TOTAL HALOACETIC ACIDS (HAA5)	07/16/2019	12 SPRING WATER CT	N	0.005	MG/L	5.110
TOTAL HALOACETIC ACIDS (HAA5)	07/24/2018	12 SPRING WATER CT	Y	0.000		0.000
TTHM	09/20/2022	12 SPRING WATER CT	N	0.008	MG/L	8.390
TTHM	07/20/2021	12 SPRING WATER CT	N	0.010	MG/L	10.000
TTHM	08/18/2020	12 SPRING WATER CT	N	0.015	MG/L	15.400
TTHM	07/16/2019	12 SPRING WATER CT	N	0.006	MG/L	6.010
TTHM	07/24/2018	12 SPRING WATER CT	N	0.001	MG/L	1.140

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

RTCR Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

Only report if your water system was required to comply with one or more Revised Total Coliform Rule (RTCR) Level 1 and/or Level 2 Assessments during the 2017 calendar year.

Required Language: If your water system was required to conduct an RTCR Level 1 or Level 2 Assessment (numbers I-III below), the associated information must be reported in the CCR in accordance with IDAPA 58.01.08.151.

I. If your water system was required to conduct a Level 1 or 2 assessment **not** due to an *E. coli* MCL violation, go to section I below.
II. If your water system was required to conduct a Level 2 assessment **due** to an *E. coli* MCL violation, go to section II below.
III. If your water system detected *E. coli* and **did not** violate the *E. coli* MCL, go to section III below.

I. If your water system was required to conduct a Level 1 or 2 assessment not due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

c. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. During the past year we failed to conduct all of the required assessment(s).

ii. During the past year we failed to correct all identified defects that were found during the assessment.

II. If your water system was required to conduct a Level 2 assessment due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. We failed to conduct the required assessment.

ii. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. Any system that violated the *E. coli* MCL, the system must include, in addition to the required adverse health effects text [see II.(A) above], one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

III. If your water system detected *E. coli* and did not violate the *E. coli* MCL, the system may include, in addition to the required adverse health effects text [See II.(A) above], a statement that explains that although *E. coli* water detected, your system was not in violation of the *E. coli* MCL.

No results were found for the RTCR Sampling History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chlorine Maximum Residual Disinfectant Level Sampling History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 12

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Please include in your CCR the highest chlorine residual level detected during the previous calendar year (2022) by your system, as well as the average of all residuals collected during 2022.

Required Language. If the system exceeds the chlorine MCL (maximum contaminant level) value, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Samples Collected	Chlorine Residual	Units	Begin Date	Monitoring Period
1	0.3200	MG/L	01/01/2022	JAN2022
1	0.1800	MG/L	02/01/2022	FEB2022
1	0.1600	MG/L	03/01/2022	MAR2022
0	0.0000	MG/L	04/01/2022	APR2022
1	0.3400	MG/L	05/01/2022	MAY2022
1	0.2900	MG/L	06/01/2022	JUN2022
1	0.2600	MG/L	07/01/2022	JUL2022
1	0.5100	MG/L	08/01/2022	AUG2022
1	0.4000	MG/L	09/01/2022	SEP2022
1	0.1600	MG/L	10/01/2022	OCT2022
1	0.0000	MG/L	11/01/2022	NOV2022
1	0.1000	MG/L	12/01/2022	DEC2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

2. Hawks Bay Violation History Report

Chemical And Radiological Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the chemical monitoring report shows no results, then the system has no chemical violations for the last (2022) calendar year.

No results were found for the Chemical And Radiological Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 1

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the coliform monitoring report shows no results, then the system has no coliform violations for the last (2022) calendar year.

Contaminant	Violation Type	Begin Date	End Date
E. COLI	MONITORING, ROUTINE, MAJOR (RTCR)	04/01/2022	04/30/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

If your system has a violation listed below, it means that your system was required to sample for lead and copper during calendar year 2022, but failed to do so during the appropriate time period. These violations must be reported in the CCR as a failure to monitor.

If the lead and copper monitoring violations report shows no results (Total Records: 0), then the system has no lead and copper monitoring violations for the last (2022) calendar year.

No results were found for the Lead And Copper Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the DBP monitoring violations report shows no results, then the system has no disinfection byproduct violations for the last (2022) calendar year.

No results were found for the DBP Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

SWTR and MRDL Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Violations listed are either treatment techniques or failure to monitor violations. Violation Type "TT" designates a treatment technique violation; violation type "MON" designates a monitoring violation.

If no records are displayed, the system did not accrue any applicable violations during the previous calendar year.

For your information - definitions of abbreviations found in the "Requirements" column:

EPRD: "entry point residual disinfection" level either not met or not reported.
DSRD: "distribution system residual disinfection" level either not met or not reported.
95PT: "95 percentile" (95%) turbidity level either exceeded or not reported.
MAXT: "maximum turbidity" level either exceeded or not reported.

No results were found for the SWTR and MRDL Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Sanitary Survey Significant Deficiency Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

This report identifies violations generated from unaddressed significant deficiencies and failing to consult with the state to produce a compliance schedule.

If the Sanitary Survey Significant Deficiency violations report shows no results, then the system has no significant deficiency violations for the last (2022) calendar year.

No results were found for the Sanitary Survey Significant Deficiency Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Public Notification Violation History

PWS Number: ID4430106
PWS Name: HAWKS BAY ESTATES HOA LLC
Total Records: 0

This report identifies violations generated from failing to deliver public notification to the public in accordance with the public notification schedule.

If the Public Notification violation history report shows no results, then the system has no public notification violations for the last (2022) calendar year.

No results were found for the Public Notification Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

3. Fir Grove Sampling History Report

Chemical And Radiological Sampling History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 93

A PWS is only required to report the most recent detections of any contaminant at each representative sampling location. For example, if nitrate is detected in a sample collected at Well X in 2021, but is not detected at Well X in 2022, then the system is not required to report nitrate for Well X in the 2022 CCR. **Note:** If a contaminant (e.g., nitrate) is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, nitrate was not detected.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template** , find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)
PIC/L (pCi/L) = picocuries per liter

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,1-DICHLOROETHYLENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,2-DICHLOROETHANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
1,2-DICHLOROPROPANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
2,4,5-TP	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
2,4,5-TP	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
2,4-D	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
2,4-D	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ATRAZINE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ATRAZINE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
BENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
BENZO(A)PYRENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
BENZO(A)PYRENE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
BHC-GAMMA	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
BHC-GAMMA	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CARBOFURAN	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CARBOFURAN	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CARBON TETRACHLORIDE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CHLORDANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CHLORDANE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CHLOROBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DALAPON	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DALAPON	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DICHLOROMETHANE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DINOSEB	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DINOSEB	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DIQUAT	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
DIQUAT	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ENDOTHALL	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ENDOTHALL	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ENDRIN	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ENDRIN	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ETHYLBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ETHYLENE DIBROMIDE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
FLUORIDE	08/23/2022	SOUTH WELL #2 MAIN WELL	N	0.140	MG/L	0.140

FLUORIDE	09/17/2019	SOUTH WELL #2 MAIN WELL	N	0.130	MG/L	0.130
GLYPHOSATE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
GLYPHOSATE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEPTACHLOR	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEPTACHLOR	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEPTACHLOR EPOXIDE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEXACHLOROBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEXACHLOROBENZENE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
LASSO	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
LASSO	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
METHOXYCHLOR	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
METHOXYCHLOR	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRATE	08/23/2022	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRATE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRATE	09/28/2021	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRATE	09/28/2021	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRATE	08/18/2020	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRATE	08/18/2020	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRATE	09/17/2019	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRATE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRATE	09/18/2018	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRATE	09/18/2018	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
NITRITE	09/17/2019	NORTH WELL #1 BACK UP WELL	Y	0.000		0.000
NITRITE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
O-DICHLOROBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
OXAMYL	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
OXAMYL	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
P-DICHLOROBENZENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
PENTACHLOROPHENOL	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
PENTACHLOROPHENOL	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
PICLORAM	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
PICLORAM	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
SIMAZINE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
SIMAZINE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
STYRENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TETRACHLOROETHYLENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TOLUENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TOXAPHENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TOXAPHENE	09/17/2019	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
TRICHLOROETHYLENE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
VINYL CHLORIDE	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000
XYLENES, TOTAL	08/23/2022	SOUTH WELL #2 MAIN WELL	Y	0.000		0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Sampling History
PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 11

Only report coliform results in the CCR if one or more samples tested positive during the 2022 calendar year.

Required Language. If your water system's coliform history for the year included one or more samples present for coliform, you must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value for coliforms, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Coliform Sampling History
Total Records: 11

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	12/09/2022	A
COLIFORM (TCR)	11/18/2022	A
COLIFORM (TCR)	10/13/2022	A
COLIFORM (TCR)	09/09/2022	A
COLIFORM (TCR)	08/23/2022	A
COLIFORM (TCR)	07/19/2022	A
COLIFORM (TCR)	06/21/2022	A
COLIFORM (TCR)	05/17/2022	A
COLIFORM (TCR)	03/22/2022	A
COLIFORM (TCR)	02/22/2022	A
COLIFORM (TCR)	01/25/2022	A

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Sampling History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 4

A public water system is only required to report the most recent 90% percentile detections for lead and copper within the past five years. If a result is listed as zero, it should be assumed the result was actually a non-detect.

Other lead and copper information to be included in the CCR not listed on this page are the number of samples collected from the distribution system, and the highest level of lead or copper that was detected.

Required Language. If there are detections for lead and copper to report, the system must give the major sources of the contaminant. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	6	0.005	MG/L	09/22/2021	5.000
COPPER SUMMARY	6	0.090	MG/L	09/22/2021	0.090
LEAD SUMMARY	5	0.003	MG/L	07/20/2018	3.000
COPPER SUMMARY	5	0.095	MG/L	07/20/2018	0.095

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Sampling History
PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 28

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Public water systems that are required to collect one sample for disinfection byproducts once every year, or every three years, are only required to report the most recent detections for disinfection byproducts. If the most recent sampling was a non-detect for the contaminants, then it is not necessary to report any disinfection byproduct sampling. **Note:** If a contaminant is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, the contaminant was not detected.

If a public water system collects more than one sample per year, the system must report the average of Total Trihalomethanes and Haloacetic Acids Group 5 over the 2022 calendar year. The highest level detected, and the range for each contaminant must also be reported.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value of a contaminant, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Contaminant	Date Collected	Sampling Location	Non Detect?	Detected Level	Units	CCR Units
TOTAL HALOACETIC ACIDS (HAA5)	08/23/2022	#22 GRAND FIR	N	0.002	MG/L	1.700
TOTAL HALOACETIC ACIDS (HAA5)	07/20/2021	#22 GRAND FIR	N	0.003	MG/L	2.520
TOTAL HALOACETIC ACIDS (HAA5)	08/18/2020	#22 GRAND FIR	N	0.004	MG/L	3.570
TOTAL HALOACETIC ACIDS (HAA5)	07/16/2019	#22 GRAND FIR	N	0.027	MG/L	26.500
TOTAL HALOACETIC ACIDS (HAA5)	09/24/2018	#22 GRAND FIR	N	0.024	MG/L	23.700
TOTAL HALOACETIC ACIDS (HAA5)	09/19/2017	#22 GRAND FIR	N	0.008	MG/L	8.000
TOTAL HALOACETIC ACIDS (HAA5)	07/12/2016	#22 GRAND FIR	N	0.040	MG/L	39.800
TOTAL HALOACETIC ACIDS (HAA5)	09/22/2015	#22 GRAND FIR	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2014	#22 GRAND FIR	N	0.013	MG/L	12.900
TOTAL HALOACETIC ACIDS (HAA5)	09/11/2012	GENERIC SAMPLING POI	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	07/15/2008	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TOTAL HALOACETIC ACIDS (HAA5)	11/15/2007	GENERIC SAMPLING POI	N	0.043	MG/L	43.000
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2007	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/26/2006	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	08/23/2022	#22 GRAND FIR	Y	0.000		0.000
TTHM	07/20/2021	#22 GRAND FIR	N	0.001	MG/L	1.450
TTHM	08/18/2020	#22 GRAND FIR	N	0.002	MG/L	2.130
TTHM	07/16/2019	#22 GRAND FIR	N	0.026	MG/L	26.300
TTHM	09/24/2018	#22 GRAND FIR	N	0.026	MG/L	25.600
TTHM	09/19/2017	#22 GRAND FIR	N	0.005	MG/L	4.820
TTHM	07/12/2016	#22 GRAND FIR	N	0.035	MG/L	35.300
TTHM	09/22/2015	#22 GRAND FIR	N	0.009	MG/L	8.900
TTHM	09/25/2014	#22 GRAND FIR	N	0.019	MG/L	19.000
TTHM	09/11/2012	GENERIC SAMPLING POI	N	0.004	MG/L	4.300
TTHM	07/15/2008	GENERIC SAMPLING POI	N	0.008	MG/L	7.800
TTHM	11/15/2007	GENERIC SAMPLING POI	N	0.058	MG/L	57.900
TTHM	09/25/2007	GENERIC SAMPLING POI	N	0.003	MG/L	2.500
TTHM	09/26/2006	GENERIC SAMPLING POI	N	0.004	MG/L	3.800

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

RTCR Sampling History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

Only report if your water system was required to comply with one or more Revised Total Coliform Rule (RTCR) Level 1 and/or Level 2 Assessments during the 2017 calendar year.

Required Language: If your water system was required to conduct an RTCR Level 1 or Level 2 Assessment (numbers I-III below), the associated information must be reported in the CCR in accordance with IDAPA 58.01.08.151.

I. If your water system was required to conduct a Level 1 or 2 assessment **not** due to an *E. coli* MCL violation, go to section I below.
II. If your water system was required to conduct a Level 2 assessment **due** to an *E. coli* MCL violation, go to section II below.
III. If your water system detected *E. coli* and **did not** violate the *E. coli* MCL, go to section III below.

I. If your water system was required to conduct a Level 1 or 2 assessment not due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

c. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. During the past year we failed to conduct all of the required assessment(s).

ii. During the past year we failed to correct all identified defects that were found during the assessment.

II. If your water system was required to conduct a Level 2 assessment <u>due</u> to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. We failed to conduct the required assessment.

ii. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. Any system that violated the *E. coli* MCL, the system must include, in addition to the required adverse health effects text [see II.(A) above], one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

III. If your water system detected *E. coli* and did not violate the *E. coli* MCL, the system may include, in addition to the required adverse health effects text [See II.(A) above], a statement that explains that although *E. coli* water detected, your system was not in violation of the *E. coli* MCL.

No results were found for the RTCR Sampling History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chlorine Maximum Residual Disinfectant Level Sampling History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 12

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Please include in your CCR the highest chlorine residual level detected during the previous calendar year (2022) by your system, as well as the average of all residuals collected during 2022.

Required Language. If the system exceeds the chlorine MCL (maximum contaminant level) value, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Samples Collected	Chlorine Residual	Units	Begin Date	Monitoring Period
1	0.2000	MG/L	01/01/2022	JAN2022
1	0.2500	MG/L	02/01/2022	FEB2022
1	0.1000	MG/L	03/01/2022	MAR2022
0	0.0000	MG/L	04/01/2022	APR2022
1	0.1100	MG/L	05/01/2022	MAY2022
1	0.6200	MG/L	06/01/2022	JUN2022
1	0.1000	MG/L	07/01/2022	JUL2022
1	0.1500	MG/L	08/01/2022	AUG2022
1	0.1000	MG/L	09/01/2022	SEP2022
1	0.1000	MG/L	10/01/2022	OCT2022
1	0.3700	MG/L	11/01/2022	NOV2022
1	0.1300	MG/L	12/01/2022	DEC2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

4. Fir Grove Violation History Report

Chemical And Radiological Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 1

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the chemical monitoring report shows no results, then the system has no chemical violations for the last (2022) calendar year.

Contaminant	Violation Type	Facility	Begin Date	End Date
IOCS - PHASE 2 AND 5	MONITORING, ROUTINE MAJOR	SOUTH WELL #2 MAIN WELL	01/01/2014	12/31/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Violation History
PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 1

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the coliform monitoring report shows no results, then the system has no coliform violations for the last (2022) calendar year.

Contaminant	Violation Type	Begin Date	End Date
E. COLI	MONITORING, ROUTINE, MAJOR (RTCR)	04/01/2022	04/30/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

If your system has a violation listed below, it means that your system was required to sample for lead and copper during calendar year 2022, but failed to do so during the appropriate time period. These violations must be reported in the CCR as a failure to monitor.

If the lead and copper monitoring violations report shows no results (Total Records: 0), then the system has no lead and copper monitoring violations for the last (2022) calendar year.

No results were found for the Lead And Copper Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the DBP monitoring violations report shows no results, then the system has no disinfection byproduct violations for the last (2022) calendar year.

No results were found for the DBP Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

SWTR and MRDL Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Violations listed are either treatment techniques or failure to monitor violations. Violation Type "TT" designates a treatment technique violation; violation type "MON" designates a monitoring violation.

If no records are displayed, the system did not accrue any applicable violations during the previous calendar year.

For your information - definitions of abbreviations found in the "Requirements" column:

EPRD: "entry point residual disinfection" level either not met or not reported.
DSRD: "distribution system residual disinfection" level either not met or not reported.
95PT: "95 percentile" (95%) turbidity level either exceeded or not reported.
MAXT: "maximum turbidity" level either exceeded or not reported.

No results were found for the SWTR and MRDL Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Sanitary Survey Significant Deficiency Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

This report identifies violations generated from unaddressed significant deficiencies and failing to consult with the state to produce a compliance schedule.

If the Sanitary Survey Significant Deficiency violations report shows no results, then the system has no significant deficiency violations for the last (2022) calendar year.

No results were found for the Sanitary Survey Significant Deficiency Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Public Notification Violation History

PWS Number: ID4430104
PWS Name: FIR GROVE ESTATES
Total Records: 0

This report identifies violations generated from failing to deliver public notification to the public in accordance with the public notification schedule.

If the Public Notification violation history report shows no results, then the system has no public notification violations for the last (2022) calendar year.

No results were found for the Public Notification Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

5. Day Star Sampling History Report

Chemical And Radiological Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 73

A PWS is only required to report the most recent detections of any contaminant at each representative sampling location. For example, if nitrate is detected in a sample collected at Well X in 2021, but is not detected at Well X in 2022, then the system is not required to report nitrate for Well X in the 2022 CCR. **Note:** If a contaminant (e.g., nitrate) is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, nitrate was not detected.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template** , find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)
PIC/L (pCi/L) = picocuries per liter

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	08/23/2022	WELL #3	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	08/23/2022	WELL #3	Y	0.000		0.000
1,1-DICHLOROETHYLENE	08/23/2022	WELL #3	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	08/23/2022	WELL #3	Y	0.000		0.000
1,2-DICHLOROETHANE	08/23/2022	WELL #3	Y	0.000		0.000
1,2-DICHLOROPROPANE	08/23/2022	WELL #3	Y	0.000		0.000
2,4,5-TP	08/23/2022	WELL #3	Y	0.000		0.000
2,4-D	08/23/2022	WELL #3	Y	0.000		0.000
ANTIMONY, TOTAL	08/23/2022	WELL #3	Y	0.000		0.000
ARSENIC	08/23/2022	WELL #3	N	0.007	MG/L	7.000
ATRAZINE	08/23/2022	WELL #3	Y	0.000		0.000
BARIUM	08/23/2022	WELL #3	N	0.100	MG/L	0.100
BENZENE	08/23/2022	WELL #3	Y	0.000		0.000
BENZO(A)PYRENE	08/23/2022	WELL #3	Y	0.000		0.000
BERYLLIUM, TOTAL	08/23/2022	WELL #3	Y	0.000		0.000
BHC-GAMMA	08/23/2022	WELL #3	Y	0.000		0.000
CADMIUM	08/23/2022	WELL #3	Y	0.000		0.000
CARBOFURAN	08/23/2022	WELL #3	Y	0.000		0.000
CARBON TETRACHLORIDE	08/23/2022	WELL #3	Y	0.000		0.000
CHLORDANE	08/23/2022	WELL #3	Y	0.000		0.000
CHLOROBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
CHROMIUM	08/23/2022	WELL #3	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	08/23/2022	WELL #3	Y	0.000		0.000
DALAPON	08/23/2022	WELL #3	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	08/23/2022	WELL #3	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	08/23/2022	WELL #3	Y	0.000		0.000
DICHLOROMETHANE	08/23/2022	WELL #3	Y	0.000		0.000
DINOSEB	08/23/2022	WELL #3	Y	0.000		0.000
DIQUAT	08/23/2022	WELL #3	Y	0.000		0.000
ENDOTHALL	08/23/2022	WELL #3	Y	0.000		0.000
ENDRIN	08/23/2022	WELL #3	Y	0.000		0.000
ETHYLBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
ETHYLENE DIBROMIDE	08/23/2022	WELL #3	Y	0.000		0.000
FLUORIDE	08/23/2022	WELL #3	N	0.220	MG/L	0.220
GLYPHOSATE	08/23/2022	WELL #3	Y	0.000		0.000
HEPTACHLOR	08/23/2022	WELL #3	Y	0.000		0.000
HEPTACHLOR EPOXIDE	08/23/2022	WELL #3	Y	0.000		0.000
HEXACHLOROBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	08/23/2022	WELL #3	Y	0.000		0.000
LASSO	08/23/2022	WELL #3	Y	0.000		0.000
MERCURY	08/23/2022	WELL #3	Y	0.000		0.000
METHOXYCHLOR	08/23/2022	WELL #3	Y	0.000		0.000
NICKEL	08/23/2022	WELL #3	Y	0.000		0.000
NITRATE	08/23/2022	WELL #2-BACK UP	Y	0.000		0.000

NITRATE	08/23/2022	WELL #3	Y	0.000		0.000
NITRATE	09/28/2021	WELL #2-BACK UP	Y	0.000		0.000
NITRATE	09/28/2021	WELL #3	Y	0.000		0.000
NITRATE	11/16/2020	WELL #2-BACK UP	Y	0.000		0.000
NITRATE	11/16/2020	WELL #3	Y	0.000		0.000
NITRATE	09/17/2019	WELL #2-BACK UP	Y	0.000		0.000
NITRATE	09/17/2019	WELL #3	Y	0.000		0.000
NITRATE	10/23/2018	WELL #2-BACK UP	Y	0.000		0.000
NITRATE	10/23/2018	WELL #3	Y	0.000		0.000
NITRITE	09/17/2019	WELL #2-BACK UP	Y	0.000		0.000
NITRITE	09/17/2019	WELL #3	Y	0.000		0.000
O-DICHLOROBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
OXAMYL	08/23/2022	WELL #3	Y	0.000		0.000
P-DICHLOROBENZENE	08/23/2022	WELL #3	Y	0.000		0.000
PENTACHLOROPHENOL	08/23/2022	WELL #3	Y	0.000		0.000
PICLORAM	08/23/2022	WELL #3	Y	0.000		0.000
SELENIUM	08/23/2022	WELL #3	Y	0.000		0.000
SIMAZINE	08/23/2022	WELL #3	Y	0.000		0.000
STYRENE	08/23/2022	WELL #3	Y	0.000		0.000
TETRACHLOROETHYLENE	08/23/2022	WELL #3	Y	0.000		0.000
THALLIUM, TOTAL	08/23/2022	WELL #3	Y	0.000		0.000
TOLUENE	08/23/2022	WELL #3	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	08/23/2022	WELL #3	Y	0.000		0.000
TOXAPHENE	08/23/2022	WELL #3	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	08/23/2022	WELL #3	Y	0.000		0.000
TRICHLOROETHYLENE	08/23/2022	WELL #3	Y	0.000		0.000
VINYL CHLORIDE	08/23/2022	WELL #3	Y	0.000		0.000
XYLENES, TOTAL	08/23/2022	WELL #3	Y	0.000		0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 11

Only report coliform results in the CCR if one or more samples tested positive during the 2022 calendar year.

Required Language. If your water system's coliform history for the year included one or more samples present for coliform, you must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value for coliforms, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Coliform Sampling History

Total Records: 11

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	12/19/2022	A
COLIFORM (TCR)	11/22/2022	A
COLIFORM (TCR)	10/13/2022	A
COLIFORM (TCR)	09/09/2022	A
COLIFORM (TCR)	08/23/2022	A
COLIFORM (TCR)	07/19/2022	A
COLIFORM (TCR)	06/21/2022	A
COLIFORM (TCR)	05/17/2022	A
COLIFORM (TCR)	03/22/2022	A
COLIFORM (TCR)	02/22/2022	A
COLIFORM (TCR)	01/25/2022	A

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 4

A public water system is only required to report the most recent 90% percentile detections for lead and copper within the past five years. If a result is listed as zero, it should be assumed the result was actually a non-detect.

Other lead and copper information to be included in the CCR not listed on this page are the number of samples collected from the distribution system, and the highest level of lead or copper that was detected.

Required Language. If there are detections for lead and copper to report, the system must give the major sources of the contaminant. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	5	0.010	MG/L	08/24/2021	10.000
COPPER SUMMARY	5	0.875	MG/L	08/24/2021	0.875
LEAD SUMMARY	5	0.007	MG/L	08/24/2018	7.000
COPPER SUMMARY	5	0.250	MG/L	08/24/2018	0.250

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 14

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Public water systems that are required to collect one sample for disinfection byproducts once every year, or every three years, are only required to report the most recent detections for disinfection byproducts. If the most recent sampling was a non-detect for the contaminants, then it is not necessary to report any disinfection byproduct sampling. **Note:** If a contaminant is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, the contaminant was not detected.

If a public water system collects more than one sample per year, the system must report the average of Total Trihalomethanes and Haloacetic Acids Group 5 over the 2022 calendar year. The highest level detected, and the range for each contaminant must also be reported.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value of a contaminant, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Contaminant	Date Collected	Sampling Location	Non Detect?	Detected Level	Units	CCR Units
TOTAL HALOACETIC ACIDS (HAA5)	08/23/2022	253 ELAINE WAY/ED WOOD	N	0.022	MG/L	21.700
TOTAL HALOACETIC ACIDS (HAA5)	07/16/2019	253 ELAINE WAY/ED WOOD	N	0.006	MG/L	5.910
TOTAL HALOACETIC ACIDS (HAA5)	07/12/2016	253 ELAINE WAY/ED WOOD	N	0.010	MG/L	9.680
TOTAL HALOACETIC ACIDS (HAA5)	09/11/2012	GENERIC SAMPLING POI	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	07/15/2008	GENERIC SAMPLING POI	N	0.011	MG/L	11.000
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2007	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/26/2006	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	08/23/2022	253 ELAINE WAY/ED WOOD	N	0.013	MG/L	12.600
TTHM	07/16/2019	253 ELAINE WAY/ED WOOD	N	0.001	MG/L	1.420
TTHM	07/12/2016	253 ELAINE WAY/ED WOOD	N	0.003	MG/L	2.500
TTHM	09/11/2012	GENERIC SAMPLING POI	Y	0.000		0.000
TTHM	07/15/2008	GENERIC SAMPLING POI	N	0.019	MG/L	18.500
TTHM	09/25/2007	GENERIC SAMPLING POI	N	0.005	MG/L	4.900
TTHM	09/26/2006	GENERIC SAMPLING POI	N	0.002	MG/L	2.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

RTCR Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

Only report if your water system was required to comply with one or more Revised Total Coliform Rule (RTCR) Level 1 and/or Level 2 Assessments during the 2017 calendar year.

Required Language: If your water system was required to conduct an RTCR Level 1 or Level 2 Assessment (numbers I-III below), the associated information must be reported in the CCR in accordance with IDAPA 58.01.08.151.

I. If your water system was required to conduct a Level 1 or 2 assessment **not** due to an *E. coli* MCL violation, go to section I below.
II. If your water system was required to conduct a Level 2 assessment **due** to an *E. coli* MCL violation, go to section II below.
III. If your water system detected *E. coli* and **did not** violate the *E. coli* MCL, go to section III below.

I. If your water system was required to conduct a Level 1 or 2 assessment not due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

c. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. During the past year we failed to conduct all of the required assessment(s).

ii. During the past year we failed to correct all identified defects that were found during the assessment.

II. If your water system was required to conduct a Level 2 assessment due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. We failed to conduct the required assessment.

ii. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. Any system that violated the *E. coli* MCL, the system must include, in addition to the required adverse health effects text [see II.(A) above], one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

III. If your water system detected *E. coli* and did not violate the *E. coli* MCL, the system may include, in addition to the required adverse health effects text [See II.(A) above], a statement that explains that although *E. coli* water detected, your system was not in violation of the *E. coli* MCL.

No results were found for the RTCR Sampling History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chlorine Maximum Residual Disinfectant Level Sampling History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 12

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Please include in your CCR the highest chlorine residual level detected during the previous calendar year (2022) by your system, as well as the average of all residuals collected during 2022.

Required Language. If the system exceeds the chlorine MCL (maximum contaminant level) value, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Samples Collected	Chlorine Residual	Units	Begin Date	Monitoring Period
1	0.1300	MG/L	01/01/2022	JAN2022
1	0.2400	MG/L	02/01/2022	FEB2022
1	0.1000	MG/L	03/01/2022	MAR2022
0	0.0000	MG/L	04/01/2022	APR2022
1	0.1600	MG/L	05/01/2022	MAY2022
1	0.2600	MG/L	06/01/2022	JUN2022
1	0.1400	MG/L	07/01/2022	JUL2022
1	0.3800	MG/L	08/01/2022	AUG2022
1	0.1900	MG/L	09/01/2022	SEP2022
1	0.1000	MG/L	10/01/2022	OCT2022
1	0.0000	MG/L	11/01/2022	NOV2022
1	0.0000	MG/L	12/01/2022	DEC2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

6. Day Star Violation History Report

Chemical And Radiological Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the chemical monitoring report shows no results, then the system has no chemical violations for the last (2022) calendar year.

No results were found for the Chemical And Radiological Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 1

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the coliform monitoring report shows no results, then the system has no coliform violations for the last (2022) calendar year.

Contaminant	Violation Type	Begin Date	End Date
E. COLI	MONITORING, ROUTINE, MAJOR (RTCR)	04/01/2022	04/30/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

If your system has a violation listed below, it means that your system was required to sample for lead and copper during calendar year 2022, but failed to do so during the appropriate time period. These violations must be reported in the CCR as a failure to monitor.

If the lead and copper monitoring violations report shows no results (Total Records: 0), then the system has no lead and copper monitoring violations for the last (2022) calendar year.

No results were found for the Lead And Copper Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the DBP monitoring violations report shows no results, then the system has no disinfection byproduct violations for the last (2022) calendar year.

No results were found for the DBP Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

SWTR and MRDL Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Violations listed are either treatment techniques or failure to monitor violations. Violation Type "TT" designates a treatment technique violation; violation type "MON" designates a monitoring violation.

If no records are displayed, the system did not accrue any applicable violations during the previous calendar year.

For your information - definitions of abbreviations found in the "Requirements" column:

EPRD: "entry point residual disinfection" level either not met or not reported.
DSRD: "distribution system residual disinfection" level either not met or not reported.
95PT: "95 percentile" (95%) turbidity level either exceeded or not reported.
MAXT: "maximum turbidity" level either exceeded or not reported.

No results were found for the SWTR and MRDL Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Sanitary Survey Significant Deficiency Violation History

PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

This report identifies violations generated from unaddressed significant deficiencies and failing to consult with the state to produce a compliance schedule.

If the Sanitary Survey Significant Deficiency violations report shows no results, then the system has no significant deficiency violations for the last (2022) calendar year.

No results were found for the Sanitary Survey Significant Deficiency Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Public Notification Violation History
PWS Number: ID4430001
PWS Name: DAY STAR
Total Records: 0

This report identifies violations generated from failing to deliver public notification to the public in accordance with the public notification schedule.

If the Public Notification violation history report shows no results, then the system has no public notification violations for the last (2022) calendar year.

No results were found for the Public Notification Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

7. Tamarack Sampling History Report

Chemical And Radiological Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 218

A PWS is only required to report the most recent detections of any contaminant at each representative sampling location. For example, if nitrate is detected in a sample collected at Well X in 2021, but is not detected at Well X in 2022, then the system is not required to report nitrate for Well X in the 2022 CCR. **Note:** If a contaminant (e.g., nitrate) is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, nitrate was not detected.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template** , find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)
PIC/L (pCi/L) = picocuries per liter

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	01/24/2023	WELL #4	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/20/2022	WELL #7	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	01/24/2023	WELL #4	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/20/2022	WELL #7	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,1-DICHLOROETHYLENE	01/24/2023	WELL #4	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/20/2022	WELL #7	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	01/24/2023	WELL #4	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	01/24/2023	WELL #4	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/20/2022	WELL #7	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,2-DICHLOROETHANE	01/24/2023	WELL #4	Y	0.000		0.000
1,2-DICHLOROETHANE	09/20/2022	WELL #7	Y	0.000		0.000
1,2-DICHLOROETHANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
1,2-DICHLOROPROPANE	01/24/2023	WELL #4	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/20/2022	WELL #7	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
2,4,5-TP	01/24/2023	WELL #4	Y	0.000		0.000
2,4,5-TP	01/24/2023	WELL #4	Y	0.000		0.000
2,4,5-TP	09/20/2022	WELL #7	Y	0.000		0.000
2,4,5-TP	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
2,4-D	01/24/2023	WELL #4	Y	0.000		0.000
2,4-D	01/24/2023	WELL #4	Y	0.000		0.000
2,4-D	09/20/2022	WELL #7	Y	0.000		0.000
2,4-D	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
ANTIMONY, TOTAL	09/20/2022	WELL #7	Y	0.000		0.000
ANTIMONY, TOTAL	09/17/2019	WELL #4	Y	0.000		0.000
ANTIMONY, TOTAL	09/17/2019	WELL #7	Y	0.000		0.000
ARSENIC	09/20/2022	WELL #7	Y	0.000		0.000
ARSENIC	09/17/2019	WELL #4	Y	0.000		0.000
ARSENIC	09/17/2019	WELL #7	Y	0.000		0.000

ATRAZINE	01/24/2023	WELL #4	Y	0.000		0.000
ATRAZINE	01/24/2023	WELL #4	Y	0.000		0.000
ATRAZINE	09/20/2022	WELL #7	Y	0.000		0.000
ATRAZINE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
BARIUM	09/20/2022	WELL #7	N	0.070	MG/L	0.070
BARIUM	09/17/2019	WELL #4	N	0.060	MG/L	0.060
BARIUM	09/17/2019	WELL #7	N	0.070	MG/L	0.070
BENZENE	01/24/2023	WELL #4	Y	0.000		0.000
BENZENE	09/20/2022	WELL #7	Y	0.000		0.000
BENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
BENZO(A)PYRENE	01/24/2023	WELL #4	Y	0.000		0.000
BENZO(A)PYRENE	01/24/2023	WELL #4	Y	0.000		0.000
BENZO(A)PYRENE	09/20/2022	WELL #7	Y	0.000		0.000
BENZO(A)PYRENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
BERYLLIUM, TOTAL	09/20/2022	WELL #7	Y	0.000		0.000
BERYLLIUM, TOTAL	09/17/2019	WELL #4	Y	0.000		0.000
BERYLLIUM, TOTAL	09/17/2019	WELL #7	Y	0.000		0.000
BHC-GAMMA	01/24/2023	WELL #4	Y	0.000		0.000
BHC-GAMMA	01/24/2023	WELL #4	Y	0.000		0.000
BHC-GAMMA	09/20/2022	WELL #7	Y	0.000		0.000
BHC-GAMMA	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
CADMIUM	09/20/2022	WELL #7	Y	0.000		0.000
CADMIUM	09/17/2019	WELL #4	Y	0.000		0.000
CADMIUM	09/17/2019	WELL #7	Y	0.000		0.000
CARBOFURAN	01/24/2023	WELL #4	Y	0.000		0.000
CARBOFURAN	09/20/2022	WELL #7	Y	0.000		0.000
CARBOFURAN	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
CARBON TETRACHLORIDE	01/24/2023	WELL #4	Y	0.000		0.000
CARBON TETRACHLORIDE	09/20/2022	WELL #7	Y	0.000		0.000
CARBON TETRACHLORIDE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
CHLORDANE	01/24/2023	WELL #4	Y	0.000		0.000
CHLORDANE	01/24/2023	WELL #4	Y	0.000		0.000
CHLORDANE	09/20/2022	WELL #7	Y	0.000		0.000
CHLORDANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
CHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
CHLOROBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
CHLOROBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
CHROMIUM	09/20/2022	WELL #7	Y	0.000		0.000
CHROMIUM	09/17/2019	WELL #4	Y	0.000		0.000
CHROMIUM	09/17/2019	WELL #7	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	01/24/2023	WELL #4	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #7	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DALAPON	01/24/2023	WELL #4	Y	0.000		0.000
DALAPON	01/24/2023	WELL #4	Y	0.000		0.000
DALAPON	09/20/2022	WELL #7	Y	0.000		0.000
DALAPON	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	01/24/2023	WELL #4	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	01/24/2023	WELL #4	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/20/2022	WELL #7	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	01/24/2023	WELL #4	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	01/24/2023	WELL #4	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/20/2022	WELL #7	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DICHLOROMETHANE	01/24/2023	WELL #4	Y	0.000		0.000
DICHLOROMETHANE	09/20/2022	WELL #7	Y	0.000		0.000
DICHLOROMETHANE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DINOSEB	01/24/2023	WELL #4	Y	0.000		0.000
DINOSEB	01/24/2023	WELL #4	Y	0.000		0.000
DINOSEB	09/20/2022	WELL #7	Y	0.000		0.000
DINOSEB	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
DIQUAT	01/24/2023	WELL #4	Y	0.000		0.000

DIQUAT	09/20/2022	WELL #7	Y	0.000		0.000
DIQUAT	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
ENDOTHALL	01/24/2023	WELL #4	Y	0.000		0.000
ENDOTHALL	09/20/2022	WELL #7	Y	0.000		0.000
ENDOTHALL	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
ENDRIN	01/24/2023	WELL #4	Y	0.000		0.000
ENDRIN	01/24/2023	WELL #4	Y	0.000		0.000
ENDRIN	09/20/2022	WELL #7	Y	0.000		0.000
ENDRIN	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
ETHYLBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
ETHYLBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
ETHYLBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
ETHYLENE DIBROMIDE	01/24/2023	WELL #4	Y	0.000		0.000
ETHYLENE DIBROMIDE	01/24/2023	WELL #4	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/20/2022	WELL #7	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
FLUORIDE	09/20/2022	WELL #7	N	0.140	MG/L	0.140
GLYPHOSATE	01/24/2023	WELL #4	Y	0.000		0.000
GLYPHOSATE	09/20/2022	WELL #7	Y	0.000		0.000
GLYPHOSATE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
HEPTACHLOR	01/24/2023	WELL #4	Y	0.000		0.000
HEPTACHLOR	01/24/2023	WELL #4	Y	0.000		0.000
HEPTACHLOR	09/20/2022	WELL #7	Y	0.000		0.000
HEPTACHLOR	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
HEPTACHLOR EPOXIDE	01/24/2023	WELL #4	Y	0.000		0.000
HEPTACHLOR EPOXIDE	01/24/2023	WELL #4	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/20/2022	WELL #7	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
HEXACHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
HEXACHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
HEXACHLOROBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
HEXACHLOROBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	01/24/2023	WELL #4	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	01/24/2023	WELL #4	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/20/2022	WELL #7	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
LASSO	01/24/2023	WELL #4	Y	0.000		0.000
LASSO	01/24/2023	WELL #4	Y	0.000		0.000
LASSO	09/20/2022	WELL #7	Y	0.000		0.000
LASSO	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
MERCURY	09/20/2022	WELL #7	Y	0.000		0.000
MERCURY	09/17/2019	WELL #4	Y	0.000		0.000
MERCURY	09/17/2019	WELL #7	Y	0.000		0.000
METHOXYCHLOR	01/24/2023	WELL #4	Y	0.000		0.000
METHOXYCHLOR	01/24/2023	WELL #4	Y	0.000		0.000
METHOXYCHLOR	09/20/2022	WELL #7	Y	0.000		0.000
METHOXYCHLOR	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
NICKEL	09/20/2022	WELL #7	Y	0.000		0.000
NICKEL	09/17/2019	WELL #4	Y	0.000		0.000
NICKEL	09/17/2019	WELL #7	Y	0.000		0.000
NITRATE	01/24/2023	WELL #4	Y	0.000		0.000
NITRATE	09/20/2022	WELL #7	Y	0.000		0.000
NITRATE	09/29/2021	WELL #4	Y	0.000		0.000
NITRATE	04/20/2021	WELL #7	Y	0.000		0.000
NITRATE	11/16/2020	WELL #4	Y	0.000		0.000
NITRATE	09/17/2019	WELL #4	Y	0.000		0.000
NITRATE	09/17/2019	WELL #7	Y	0.000		0.000
NITRATE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
NITRATE	09/18/2018	WELL #4	Y	0.000		0.000
NITRATE	09/18/2018	WELL #7	Y	0.000		0.000
NITRITE	09/17/2019	WELL #4	N	0.010	MG/L	0.010
NITRITE	09/17/2019	WELL #7	Y	0.000		0.000
NITRITE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	N	0.010	MG/L	0.010

O-DICHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
O-DICHLOROBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
O-DICHLOROBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
OXAMYL	01/24/2023	WELL #4	Y	0.000		0.000
OXAMYL	09/20/2022	WELL #7	Y	0.000		0.000
OXAMYL	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
P-DICHLOROBENZENE	01/24/2023	WELL #4	Y	0.000		0.000
P-DICHLOROBENZENE	09/20/2022	WELL #7	Y	0.000		0.000
P-DICHLOROBENZENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
PENTACHLOROPHENOL	01/24/2023	WELL #4	Y	0.000		0.000
PENTACHLOROPHENOL	01/24/2023	WELL #4	Y	0.000		0.000
PENTACHLOROPHENOL	09/20/2022	WELL #7	Y	0.000		0.000
PENTACHLOROPHENOL	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
PICLORAM	01/24/2023	WELL #4	Y	0.000		0.000
PICLORAM	01/24/2023	WELL #4	Y	0.000		0.000
PICLORAM	09/20/2022	WELL #7	Y	0.000		0.000
PICLORAM	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	N	0.103	UG/L	0.103
SELENIUM	09/20/2022	WELL #7	Y	0.000		0.000
SELENIUM	09/17/2019	WELL #4	Y	0.000		0.000
SELENIUM	09/17/2019	WELL #7	Y	0.000		0.000
SIMAZINE	01/24/2023	WELL #4	Y	0.000		0.000
SIMAZINE	01/24/2023	WELL #4	Y	0.000		0.000
SIMAZINE	09/20/2022	WELL #7	Y	0.000		0.000
SIMAZINE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
STYRENE	01/24/2023	WELL #4	Y	0.000		0.000
STYRENE	09/20/2022	WELL #7	Y	0.000		0.000
STYRENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
TETRACHLOROETHYLENE	01/24/2023	WELL #4	Y	0.000		0.000
TETRACHLOROETHYLENE	09/20/2022	WELL #7	Y	0.000		0.000
TETRACHLOROETHYLENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
THALLIUM, TOTAL	09/20/2022	WELL #7	Y	0.000		0.000
THALLIUM, TOTAL	09/17/2019	WELL #4	Y	0.000		0.000
THALLIUM, TOTAL	09/17/2019	WELL #7	Y	0.000		0.000
TOLUENE	01/24/2023	WELL #4	Y	0.000		0.000
TOLUENE	09/20/2022	WELL #7	Y	0.000		0.000
TOLUENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	01/24/2023	WELL #4	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	01/24/2023	WELL #4	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/20/2022	WELL #7	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
TOXAPHENE	01/24/2023	WELL #4	Y	0.000		0.000
TOXAPHENE	01/24/2023	WELL #4	Y	0.000		0.000
TOXAPHENE	09/20/2022	WELL #7	Y	0.000		0.000
TOXAPHENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	01/24/2023	WELL #4	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/20/2022	WELL #7	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
TRICHLOROETHYLENE	01/24/2023	WELL #4	Y	0.000		0.000
TRICHLOROETHYLENE	09/20/2022	WELL #7	Y	0.000		0.000
TRICHLOROETHYLENE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
VINYL CHLORIDE	01/24/2023	WELL #4	Y	0.000		0.000
VINYL CHLORIDE	09/20/2022	WELL #7	Y	0.000		0.000
VINYL CHLORIDE	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000
XYLENES, TOTAL	01/24/2023	WELL #4	Y	0.000		0.000
XYLENES, TOTAL	09/20/2022	WELL #7	Y	0.000		0.000
XYLENES, TOTAL	09/12/2019	WELL #5 IRRIGATION SNOW MAKING WELL	Y	0.000		0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 7

Only report coliform results in the CCR if one or more samples tested positive during the 2022 calendar year.

Required Language. If your water system's coliform history for the year included one or more samples present for coliform, you must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value for coliforms, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Coliform Sampling History

Total Records: 7

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	11/18/2022	A
COLIFORM (TCR)	10/13/2022	A
COLIFORM (TCR)	09/09/2022	A
COLIFORM (TCR)	05/17/2022	A
COLIFORM (TCR)	03/22/2022	A
COLIFORM (TCR)	02/22/2022	A
COLIFORM (TCR)	01/25/2022	A

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 10

A public water system is only required to report the most recent 90% percentile detections for lead and copper within the past five years. If a result is listed as zero, it should be assumed the result was actually a non-detect.

Other lead and copper information to be included in the CCR not listed on this page are the number of samples collected from the distribution system, and the highest level of lead or copper that was detected.

Required Language. If there are detections for lead and copper to report, the system must give the major sources of the contaminant. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (μg/L) = micrograms per liter (μg/L = ppb in Appendix A)

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	5	0.036	MG/L	09/27/2022	36.000
COPPER SUMMARY	5	0.125	MG/L	09/27/2022	0.125
LEAD SUMMARY	5	0.010	MG/L	08/23/2021	10.000
COPPER SUMMARY	5	0.090	MG/L	08/23/2021	0.090
LEAD SUMMARY	5	0.003	MG/L	07/23/2020	3.000
COPPER SUMMARY	5	0.050	MG/L	07/23/2020	0.050
LEAD SUMMARY	5	0.007	MG/L	08/06/2019	7.000
COPPER SUMMARY	5	0.055	MG/L	08/06/2019	0.055
LEAD SUMMARY	10	0.000	MG/L	05/23/2018	0.000
COPPER SUMMARY	10	0.070	MG/L	05/23/2018	0.070

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 14

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Public water systems that are required to collect one sample for disinfection byproducts once every year, or every three years, are only required to report the most recent detections for disinfection byproducts. If the most recent sampling was a non-detect for the contaminants, then it is not necessary to report any disinfection byproduct sampling. **Note:** If a contaminant is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, the contaminant was not detected.

If a public water system collects more than one sample per year, the system must report the average of Total Trihalomethanes and Haloacetic Acids Group 5 over the 2022 calendar year. The highest level detected, and the range for each contaminant must also be reported.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value of a contaminant, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Contaminant	Date Collected	Sampling Location	Non Detect?	Detected Level	Units	CCR Units
TOTAL HALOACETIC ACIDS (HAA5)	09/20/2022	SECURITY BUILDING	N	0.003	MG/L	3.100
TOTAL HALOACETIC ACIDS (HAA5)	07/16/2019	SECURITY BUILDING	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	07/12/2016	SECURITY BUILDING	N	0.004	MG/L	3.600
TOTAL HALOACETIC ACIDS (HAA5)	09/11/2012	GENERIC SAMPLING POI	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	07/15/2008	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2007	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/26/2006	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	09/20/2022	SECURITY BUILDING	N	0.003	MG/L	2.700
TTHM	07/16/2019	SECURITY BUILDING	N	0.002	MG/L	2.320
TTHM	07/12/2016	SECURITY BUILDING	N	0.003	MG/L	3.300
TTHM	09/11/2012	GENERIC SAMPLING POI	Y	0.000		0.000
TTHM	07/15/2008	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	09/25/2007	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	09/26/2006	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

RTCR Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

Only report if your water system was required to comply with one or more Revised Total Coliform Rule (RTCR) Level 1 and/or Level 2 Assessments during the 2017 calendar year.

Required Language: If your water system was required to conduct an RTCR Level 1 or Level 2 Assessment (numbers I-III below), the associated information must be reported in the CCR in accordance with IDAPA 58.01.08.151.

I. If your water system was required to conduct a Level 1 or 2 assessment **not** due to an *E. coli* MCL violation, go to section I below.
II. If your water system was required to conduct a Level 2 assessment **due** to an *E. coli* MCL violation, go to section II below.
III. If your water system detected *E. coli* and **did not** violate the *E. coli* MCL, go to section III below.

I. If your water system was required to conduct a Level 1 or 2 assessment not due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

c. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. During the past year we failed to conduct all of the required assessment(s).

ii. During the past year we failed to correct all identified defects that were found during the assessment.

II. If your water system was required to conduct a Level 2 assessment due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. We failed to conduct the required assessment.

ii. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. Any system that violated the *E. coli* MCL, the system must include, in addition to the required adverse health effects text [see II.(A) above], one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

III. If your water system detected *E. coli* and did not violate the *E. coli* MCL, the system may include, in addition to the required adverse health effects text [See II.(A) above], a statement that explains that although *E. coli* water detected, your system was not in violation of the *E. coli* MCL.

No results were found for the RTCR Sampling History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chlorine Maximum Residual Disinfectant Level Sampling History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 4

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Please include in your CCR the highest chlorine residual level detected during the previous calendar year (2022) by your system, as well as the average of all residuals collected during 2022.

Required Language. If the system exceeds the chlorine MCL (maximum contaminant level) value, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Samples Collected	Chlorine Residual	Units	Begin Date	Monitoring Period
3	0.5000	MG/L	01/01/2022	1Q2022
1	0.3600	MG/L	04/01/2022	2Q2022
4	0.3000	MG/L	07/01/2022	3Q2022
2	0.1000	MG/L	10/01/2022	4Q2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

8. Tamarack Violation History Report

Chemical And Radiological Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 3

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the chemical monitoring report shows no results, then the system has no chemical violations for the last (2022) calendar year.

Contaminant	Violation Type	Facility	Begin Date	End Date
SOCS - GROUP	MONITORING, ROUTINE MAJOR	WELL #4	01/01/2020	12/31/2022
VOCS - GROUP	MONITORING, ROUTINE MAJOR	WELL #4	01/01/2017	12/31/2022
WATER QUALITY PMETER	WATER QUALITY PARAMETER M/R (LCR)	WELL #7	07/01/2022	12/31/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Violation History
PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the coliform monitoring report shows no results, then the system has no coliform violations for the last (2022) calendar year.

No results were found for the Coliform Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 1

If your system has a violation listed below, it means that your system was required to sample for lead and copper during calendar year 2022, but failed to do so during the appropriate time period. These violations must be reported in the CCR as a failure to monitor.

If the lead and copper monitoring violations report shows no results (Total Records: 0), then the system has no lead and copper monitoring violations for the last (2022) calendar year.

Contaminant	Begin Date	End Date
LEAD & COPPER RULE	07/01/2022	12/31/2022

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the DBP monitoring violations report shows no results, then the system has no disinfection byproduct violations for the last (2022) calendar year.

No results were found for the DBP Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

SWTR and MRDL Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Violations listed are either treatment techniques or failure to monitor violations. Violation Type "TT" designates a treatment technique violation; violation type "MON" designates a monitoring violation.

If no records are displayed, the system did not accrue any applicable violations during the previous calendar year.

For your information - definitions of abbreviations found in the "Requirements" column:

EPRD: "entry point residual disinfection" level either not met or not reported.
DSRD: "distribution system residual disinfection" level either not met or not reported.
95PT: "95 percentile" (95%) turbidity level either exceeded or not reported.
MAXT: "maximum turbidity" level either exceeded or not reported.

No results were found for the SWTR and MRDL Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Sanitary Survey Significant Deficiency Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

This report identifies violations generated from unaddressed significant deficiencies and failing to consult with the state to produce a compliance schedule.

If the Sanitary Survey Significant Deficiency violations report shows no results, then the system has no significant deficiency violations for the last (2022) calendar year.

No results were found for the Sanitary Survey Significant Deficiency Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Public Notification Violation History

PWS Number: ID4430100
PWS Name: TAMARACK RESORT ASSOCIATION INC
Total Records: 0

This report identifies violations generated from failing to deliver public notification to the public in accordance with the public notification schedule.

If the Public Notification violation history report shows no results, then the system has no public notification violations for the last (2022) calendar year.

No results were found for the Public Notification Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

9. DEQ Public Drinking Water System Monitoring Schedule Reports

DEQ Public Drinking Water System
Monitoring Schedule Report

Print Date: May 05, 2023

ID4430106 - HAWKS BAY ESTATES HOA LLC

Community water system serving 59 people and 30 connections.

Regulated by: BOISE REGIONAL OFFICE

The following schedules include monitoring periods between 1-1-2023 and 12-31-2025

Schedules for Distribution System(s)

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
3100	COLIFORM (TCR)	1 per MN	1/1	12/31	Monthly
DBP2	DBP2-STAGE 2	1 per YR collected in 2023 taken 7/1 through 9/30 1 set TTHM/HAA5 - 12 SPRING WATER CT (DBP2A)	7/1	9/30	*FUTURE
DBP2	DBP2-STAGE 2	1 per YR collected in 2024 taken 7/1 through 9/30 1 set TTHM/HAA5 - 12 SPRING WATER CT (DBP2A)	7/1	9/30	*FUTURE
DBP2	DBP2-STAGE 2	1 per YR collected in 2025 taken 7/1 through 9/30 1 set TTHM/HAA5 - 12 SPRING WATER CT (DBP2A)	7/1	9/30	*FUTURE

Schedules for Distribution Systems(s) Lead and Copper

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
PBCU	LCR - LEAD COPPER	5 per 3Y collected in 2024 taken 6/1 through 9/30	6/1	9/30	*FUTURE

Note: Consumer notice of lead tap results, regardless of lead level, is required within 30 days after receiving results. For templates and more information, please visit: http://www.deq.idaho.gov/water-quality/drinking-water/pws-monitoring-reporting/public-notifications

Schedules for tag#: D0038344

Please Label Sampling Point/Location as: "WELL #1-EAST"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
VOCS	VOCS - GROUP	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
VOCS	VOCS - GROUP	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
R226	RADS - RADIUM 226	1 per 6Y due between 01/01/2020 and 12/31/2025	n/a	n/a	NO
R228	RADS - RADIUM 228	1 per 6Y due between 01/01/2020 and 12/31/2025	n/a	n/a	NO
SODI	IOC - SODIUM	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZARS	ARSENIC (1005)	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZFLU	IOC - FLUORIDE	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZIOC	IOCS - PHASE 2 AND 5	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE
VOCS	VOCS - GROUP	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

Schedules for tag#: D0038592

Please Label Sampling Point/Location as: "WELL #2-WEST"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
VOCS	VOCS - GROUP	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
VOCS	VOCS - GROUP	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
ZARS	ARSENIC (1005)	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZFLU	IOC - FLUORIDE	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZIOC	IOCS - PHASE 2 AND 5	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
SODI	IOC - SODIUM	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE
VOCS	VOCS - GROUP	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

"*FUTURE" in the "Satisfied" column indicates the sampling requirement begins sometime in the future. Sampling before the monitoring period begin date will not satisfy the requirement for the monitoring period.

"*See CO" in the "Satisfied" column indicates the operator needs to contact his or her compliance officer (CO) to verify that samples have been taken and the schedule has been satisfied.

IMPORTANT NOTICE: This monitoring schedule is provided to you as a courtesy and is current as of May 05, 2023 Surface water systems and systems that are disinfecting have additional sampling that is not reflected in this monitoring schedule report. This monitoring schedule may be changed or modified as needed. This monitoring schedule does not show past unfulfilled schedules for which violations may exist. Please revisit the monitoring schedule tool and review the system's monitoring schedule prior to sampling to ensure compliance with the most current monitoring requirements. Contact your public water system regulating agency if you have any questions.

When more than one year is selected for the search criteria, schedules due in 2023 will be highlighted.

DEQ Public Drinking Water System Monitoring Schedule Report

Print Date: May 05, 2023

ID4430104 - FIR GROVE ESTATES

Community water system serving 146 people and 73 connections.

Regulated by: BOISE REGIONAL OFFICE

The following schedules include monitoring periods between 1-1-2023 and 12-31-2025

Schedules for Distribution System(s)

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
3100	COLIFORM (TCR)	1 per MN	1/1	12/31	Monthly
DBP2	DBP2-STAGE 2	1 per YR collected in 2023 taken 7/1 through 9/30 1 set TTHM/HAA5 - #22 GRAND FIR (DBP2A)	7/1	9/30	*FUTURE
DBP2	DBP2-STAGE 2	1 per YR collected in 2024 taken 7/1 through 9/30 1 set TTHM/HAA5 - #22 GRAND FIR (DBP2A)	7/1	9/30	*FUTURE
DBP2	DBP2-STAGE 2	1 per YR collected in 2025 taken 7/1 through 9/30 1 set TTHM/HAA5 - #22 GRAND FIR (DBP2A)	7/1	9/30	*FUTURE

Schedules for Distribution Systems(s) Lead and Copper

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
PBCU	LCR - LEAD COPPER	5 per 3Y collected in 2024 taken 6/1 through 9/30	6/1	9/30	*FUTURE

Note: Consumer notice of lead tap results, regardless of lead level, is required within 30 days after receiving results. For templates and more information, please visit: http://www.deq.idaho.gov/water-quality/drinking-water/pws-monitoring-reporting/public-notifications

Schedules for tag#: D0038609

Please Label Sampling Point/Location as: "NORTH WELL #1 BACK UP WELL"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

Schedules for tag#: D0038610

Please Label Sampling Point/Location as: "SOUTH WELL #2 MAIN WELL"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
ALFA	RADS - GROSS ALPHA	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
R226	RADS - RADIUM 226	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
R228	RADS - RADIUM 228	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
URAN	RADS - URANIUM	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
ZARS	ARSENIC (1005)	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
ZFLU	IOC - FLUORIDE	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZIOC	IOCS - PHASE 2 AND 5	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
SOCS	SOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
SODI	IOC - SODIUM	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

"*FUTURE" in the "Satisfied" column indicates the sampling requirement begins sometime in the future. Sampling before the monitoring period begin date will not satisfy the requirement for the monitoring period.

"*See CO" in the "Satisfied" column indicates the operator needs to contact his or her compliance officer (CO) to verify that samples have been taken and the schedule has been satisfied.

IMPORTANT NOTICE: This monitoring schedule is provided to you as a courtesy and is current as of May 05, 2023 Surface water systems and systems that are disinfecting have additional sampling that is not reflected in this monitoring schedule report. This monitoring schedule may be changed or modified as needed. This monitoring schedule does not show past unfulfilled schedules for which violations may exist. Please revisit the monitoring schedule tool and review the system's monitoring schedule prior to sampling to ensure compliance with the most current monitoring requirements. Contact your public water system regulating agency if you have any questions.

When more than one year is selected for the search criteria, schedules due in 2023 will be highlighted.

DEQ Public Drinking Water System Monitoring Schedule Report

Print Date: May 05, 2023

ID4430001 - DAY STAR

Community water system serving 180 people and 120 connections.

Regulated by: BOISE REGIONAL OFFICE

The following schedules include monitoring periods between 1-1-2023 and 12-31-2025

Schedules for Distribution System(s)

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
3100	COLIFORM (TCR)	1 per MN	1/1	12/31	Monthly
DBP2	DBP2-STAGE 2	1 per 3Y due in 2025 taken 7/1 through 9/30	7/1	9/30	*FUTURE
		1 set TTHM/HAA5 - 253 ELAINE WAY/ED WOOD (DBP2A)			

Schedules for Distribution Systems(s) Lead and Copper

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
PBCU	LCR - LEAD COPPER	5 per 3Y collected in 2024 taken 6/1 through 9/30	6/1	9/30	*FUTURE

Note: Consumer notice of lead tap results, regardless of lead level, is required within 30 days after receiving results. For templates and more information, please visit: http://www.deq.idaho.gov/water-quality/drinking-water/pws-monitoring-reporting/public-notifications

Schedules for tag#: D0015847

Please Label Sampling Point/Location as: "WELL #2-BACK UP"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

Schedules for tag#: D0025651

Please Label Sampling Point/Location as: "WELL #3"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
R226	RADS - RADIUM 226	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
R228	RADS - RADIUM 228	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
URAN	RADS - URANIUM	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
ALFA	RADS - GROSS ALPHA	1 per 9Y due between 01/01/2017 and 12/31/2025	n/a	n/a	NO
SOCS	SOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
SODI	IOC - SODIUM	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

"*FUTURE" in the "Satisfied" column indicates the sampling requirement begins sometime in the future. Sampling before the monitoring period begin date will not satisfy the requirement for the monitoring period.

"*See CO" in the "Satisfied" column indicates the operator needs to contact his or her compliance officer (CO) to verify that samples have been taken and the schedule has been satisfied.

IMPORTANT NOTICE: This monitoring schedule is provided to you as a courtesy and is current as of May 05, 2023 Surface water systems and systems that are disinfecting have additional sampling that is not reflected in this monitoring schedule report. This monitoring schedule may be changed or modified as needed. This monitoring schedule does not show past unfulfilled schedules for which violations may exist. Please revisit the monitoring schedule tool and review the system's monitoring schedule prior to sampling to ensure compliance with the most current monitoring requirements. Contact your public water system regulating agency if you have any questions.

When more than one year is selected for the search criteria, schedules due in 2023 will be highlighted.

DEQ Public Drinking Water System Monitoring Schedule Report

Print Date: May 05, 2023

ID4430100 - TAMARACK RESORT ASSOCIATION INC

Nontransient Noncommunity water system serving 400 people and 353 connections.

Regulated by: BOISE REGIONAL OFFICE

The following schedules include monitoring periods between 1-1-2023 and 12-31-2025

Schedules for Distribution System(s)

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
3100	COLIFORM (TCR)	1 per QT	1/1	12/31	Quarterly
DBP2	DBP2-STAGE 2	1 per 3Y due in 2025 taken 7/1 through 9/30 1 set TTHM/HAA5 - SECURITY BUILDING (DBP2A)	7/1	9/30	*FUTURE

Schedules for Distribution Systems(s) Lead and Copper

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
PBCU	LCR - LEAD COPPER	10 per 6M due between 1/1/2023 and 6/30/2023	n/a	n/a	NO
PBCU	LCR - LEAD COPPER	10 per 6M due between 7/1/2023 and 12/31/2023	n/a	n/a	*FUTURE
PBCU	LCR - LEAD COPPER	10 per 6M due between 1/1/2024 and 6/30/2024	n/a	n/a	*FUTURE
PBCU	LCR - LEAD COPPER	10 per 6M due between 7/1/2024 and 12/31/2024	n/a	n/a	*FUTURE
PBCU	LCR - LEAD COPPER	10 per 6M due between 1/1/2025 and 6/30/2025	n/a	n/a	*FUTURE
PBCU	LCR - LEAD COPPER	10 per 6M due between 7/1/2025 and 12/31/2025	n/a	n/a	*FUTURE

Note: Consumer notice of lead tap results, regardless of lead level, is required within 30 days after receiving results. For templates and more information, please visit: http://www.deq.idaho.gov/water-quality/drinking-water/pws-monitoring-reporting/public-notifications

Schedules for tag#: E0008879

Please Label Sampling Point/Location as: "WELL #4"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	YES
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
SOCS	SOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	YES
VOCS	VOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	YES
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

Schedules for tag#: E0008880

Please Label Sampling Point/Location as: "WELL #7"

Code	Group/Analyte Name	Monitoring Frequency	Season Begin Date	Season End Date	Satisfied
ZNO3	NITRATE	1 per YR due between 01/01/2023 and 12/31/2023	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2024 and 12/31/2024	n/a	n/a	*FUTURE
SOCS	SOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
VOCS	VOCS - GROUP	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZARS	ARSENIC (1005)	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZIOC	IOCS - PHASE 2 AND 5	1 per 3Y due between 01/01/2023 and 12/31/2025	n/a	n/a	NO
ZNO3	NITRATE	1 per YR due between 01/01/2025 and 12/31/2025	n/a	n/a	*FUTURE

"*FUTURE" in the "Satisfied" column indicates the sampling requirement begins sometime in the future. Sampling before the monitoring period begin date will not satisfy the requirement for the monitoring period.

"*See CO" in the "Satisfied" column indicates the operator needs to contact his or her compliance officer (CO) to verify that samples have been taken and the schedule has been satisfied.

IMPORTANT NOTICE: This monitoring schedule is provided to you as a courtesy and is current as of May 05, 2023 Surface water systems and systems that are disinfecting have additional sampling that is not reflected in this monitoring schedule report. This monitoring schedule may be changed or modified as needed. This monitoring schedule does not show past unfulfilled schedules for which violations may exist. Please revisit the monitoring schedule tool and review the system's monitoring schedule prior to sampling to ensure compliance with the most current monitoring requirements. Contact your public water system regulating agency if you have any questions.

When more than one year is selected for the search criteria, schedules due in 2023 will be highlighted.

10. Resolution No. 06-17

ORIGINAL

RESOLUTION NO. 06-17

A RESOLUTION OF THE NORTH LAKE RECREATIONAL SEWER AND WATER DISTRICT, VALLEY COUNTY, IDAHO, ADOPTING STANDARDS AND REQUIREMENTS FOR IMPLEMENTATION OF THE CROSS CONNECTION CONTROL PROVISIONS OF THE STATE OF IDAHO DRINKING WATER REGULATIONS; ADOPTING THE DECEMBER 1995 EDITION OF THE AWWA CROSS CONNECTION CONTROL MANUAL; PROVIDING FOR INSPECTION OF CUSTOMER SYSTEMS; REQUIRING BACKFLOW PREVENTION ASSEMBLIES AND PROTECTION; PROVIDING FOR ENFORCEMENT; PROVIDING FOR SEVERABILITY; PROVIDING FOR RELATED MATTERS; AND, PROVIDING AN EFFECTIVE DATE

WHEREAS, the North Lake Recreational Sewer and Water District (the "District") is a recreational sewer and water district organized and operating under the laws of the State of Idaho, and is operating water systems that serve the public; and

WHEREAS, the State of Idaho Drinking Water Regulations were enacted to ensure that drinking water is safe to drink within the water systems that serve the public;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE NORTH LAKE RECREATIONAL SEWER AND WATER DISTRICT, VALLEY COUNTY, IDAHO, as follows:

Section 1: INTERPRETATION

Any interpretations of this document regarding scope, intent, degree of hazard or type of protection required will be subject to the current, accepted guidelines of the State of Idaho at the time of the interpretation and to the regulations established herein. The December 1995 edition of the AWWA "Cross Connection Control Manual" is hereby incorporated by reference.

Section 2: DEFINITIONS

As used in this document, unless the context indicates otherwise, the following shall apply:

1. Air Gap Separation – The physical vertical separation between the free-flowing discharge end of a potable water supply line and the open or non-pressure receiving vessel.

2. Approved Backflow Prevention Assembly – An assembly which has been approved by the State of Idaho and by the North Lake Recreational Sewer and Water District (District) for preventing backflow.

3. Atmospheric Vacuum Breaker – A device consisting of a single check valve in the supply line that opens to the atmosphere when the pressure in the line drops to atmospheric (also known as an anti-siphon valve).

4. Auxiliary Water Supply – Any supply of water used to augment the supply obtained through the District's water system which serves the premises in question.

5. Backflow – The flow of water or other fluids in the direction opposite to the normal flow.

6. Backflow Prevention Assembly Tester – An individual who is certified by the State of Idaho and approved by the District to test backflow prevention assemblies.

7. Check Valve – A valve that permits flow in only one direction.

8. Contaminant – Any physical, chemical, biological or radiological substance or matter in water which may render the water non-potable according to State of Idaho regulations.

9. Cross Connection – Any link or channel between piping which carries potable drinking water and the piping or fixtures which carry non-potable water or other substances.

10. Cross Connection Inspector – An individual certified by the State of Idaho and approved by the District to inspect for cross connections.

11. Customer System – All plumbing, piping and appurtenances on the customer's side of the point of metering or connection.

12. Double Check Valve Assembly – An assembly of two independently-acting check valves with a shut-off valve on each side of the two check valves. A Double Check Valve Assembly also has test ports for checking the water-tightness of each check valve. The assembly must be an approved Backflow Prevention Assembly.

13. Double Detector Check Valve Assembly – Same as a Double Check Valve Assembly with the addition of a water meter and an additional Double Check Valve Assembly bypassing the main line assembly for the purpose of measuring low or proportional flow. The entire assembly must be an approved Backflow Prevention Assembly.

14. Facility Survey – An on-site review of the water source, facilities, equipment, operation and maintenance for the purpose of evaluating the hazards to the drinking water supply.

15. Pressure Vacuum Breaker Assembly – A mechanical assembly consisting of one spring-loaded check valve in the supply line and a spring-loaded air inlet on the downstream side of the check valve which will open to the atmosphere when the pressure in the assembly drops below one pound per square inch. The complete assembly consists of two shut-off valves and two test ports for checking water-tightness of the check valve. The Assembly must be an approved Backflow Prevention Assembly.

16. Reduced Pressure Backflow Prevention Assembly (RP) – An assembly for preventing backflow incorporating two check valves, a differential relief valve located between the two check valves, two shut-off valves (one on each side of the assembly), and test ports

for checking water-tightness of the check valves and the operation of the relief valve. The Assembly must be an approved Backflow Prevention Assembly.

17. Reduced Pressure Detector Assembly (RPD) – Same as an RP Assembly with the addition of a water meter and an additional RP Assembly bypassing the main line Assembly for the purpose of measuring low or proportional flow. The complete Assembly must be an approved Backflow Prevention Assembly.

18. Safe Drinking Water (Potable Water) – Water which has sufficiently low concentrations of microbiological, inorganic chemical, organic chemical, radiological or physical substances so that individuals drinking such water at normal levels of consumption will not be exposed to disease organisms or other substances which may produce harmful physical effects.

19. Secondary Contaminant – A contaminant which, at levels generally found in drinking water, do not present unreasonable risk to health but do adversely affect taste, odor or color.

20. Service Connection – The point of delivery of water at or near the property line, generally at the water meter.

Section 3: CUSTOMER SYSTEM OPEN FOR INSPECTION

The customer system shall be open for "Facility Survey" at all reasonable times to the District to determine whether cross connections or other structural or sanitary hazards, including violations of these regulations, exist.

Section 4: BACKFLOW PREVENTION REQUIREMENTS

Backflow prevention assemblies shall be installed on each service line of a customer's system at or near the property line or immediately inside the building being served, but in all cases before the first branch line leading off the service line wherever any of the following conditions exist:

1. Where there is an auxiliary water supply which is, or could be, connected to the potable water piping.

2. Where there is piping for conveying liquids other than potable water, and where that piping is installed and operated in a manner which could cause a cross connection.

3. Where there are cross connections or where there is intricate plumbing which makes it impractical to ascertain whether or not a cross connection exists.

4. Where there has been a history of repeating the same or similar cross connection or backflow, even though these have been removed or disconnected.

5. Where there is a building over two stories in height or any plumbing system that is greater than or equal to thirty (30) feet above the water main from which it is served.

6. Where fire hydrants or fire systems are connected to the potable domestic water service within the property being served.

7. Where a single water service is used to supply three or more dwellings.

8. Where the water meter serving the property is one-and-one-half-inches or larger.

9. Where there is backflow or backsiphonage potential.

10. Where any fixture is subject to being submerged.

11. Where the system is not open for inspection.

Section 5: TYPE OF BACKFLOW PROTECTION REQUIRED

The type of protection required shall be commensurate with the degree of hazard which exists as follows:

1. An approved Air Gap of at least twice the inside diameter, but not less than one inch, of the incoming supply line measured vertically above the top rim of the vessel, or an approved Reduced Pressure Backflow Prevention Assembly shall be installed where the substance which could backflow is a "contaminant" or is potentially hazardous to health. Examples of premises where these conditions may exist include hospitals, mortuaries, car washes, medical clinics, auxiliary water systems, boilers, sewage piping, etc.

2. An approved Double Check Valve Assembly shall be installed where the substance which could backflow is a secondary contaminant. Examples would include landscape irrigation systems, multiple dwelling units served by a single water service, etc.

3. An approved Pressure Vacuum Breaker or an Atmospheric Vacuum Breaker shall be installed where the substance which could backflow is objectionable but does not pose a risk to health and where there is no possibility of backpressure in the downstream piping.

4. In the case of all private fire services, an approved Backflow Prevention Assembly installed to the District's construction specifications shall be required. The District may require a monitoring meter or detection system to detect unauthorized use or leakage within the system. The type of Backflow Prevention Assembly shall be as follows:

   a. Low Hazard – Systems with or without a pumper connection but with no auxiliary water supplies available, and with chemicals or additives or other detectable cross connection require an Approved Double Check Valve Assembly.

   b. High Hazard – Systems with auxiliary water supplies, chemical additives or other detectable cross connection shall require an approved Reduced Pressure Backflow Prevention Assembly.

Section 6: APPROVAL OF ASSEMBLIES

All Backflow Prevention Assemblies required under this Resolution shall be of a type and model approved by the State of Idaho and the District.

Section 7: OWNER'S DUTY FOR INSPECTION

It shall be the duty of the assembly owner of any premise where backflow assemblies are installed to have the assemblies tested and certified as working immediately upon installation of the assemblies, and at least once a year or more often in those instances where successive inspections indicate repeated failure. The frequency of these tests or the replacement of the assemblies because of repeated failure is at the discretion of the District. The tests, repairs and/or replacement of any Backflow Prevention Assembly shall be at the expense of the assembly Owner and shall be performed by a Backflow Prevention Assembly Tester who is currently certified by the State of Idaho and approved by the District. Test, repair and/or replacement shall be performed within thirty (30) days of the test due date. The assembly Owner is required to contact a Tester who can perform the test in the necessary time period. The District will notify the Owner each year when the assembly(ies) is/are due for testing. The assembly Owner shall notify the District a minimum of forty-eight (48) hours in advance of when a test is to be performed so that the District's Cross Connection Inspector may witness the test if they so desire. Records of such tests, repairs and/or replacement shall be submitted to the District within ten (10) days of such tests, repairs or replacement.

Section 8: PREVIOUSLY INSTALLED ASSEMBLIES

Backflow Prevention Assemblies which were approved at the time they were installed but are not on the current list of approved assemblies shall be permitted to remain in service provided they are properly maintained, are commensurate with the degree of hazard, are tested at least annually and perform satisfactorily. When assemblies of this type are moved or require more than minimum maintenance, they shall be replaced by assemblies which are on the list of approved assemblies by the State of Idaho and approved by the District.

Section 9: ENFORCEMENT

The Cross Connection Inspector shall cause the water service to the premises to be immediately discontinued or denied by a physical break in the service until the customer has corrected the condition in conformance with this Resolution in any of the following situations:

1. When it becomes known that a condition such as a cross connection, plumbing, structural or sanitary hazard or other violation of this Resolution is present.

2. In those cases of extreme emergency and where immediate threat to life or public health is found to exist.

3. When, in other cases and after a reasonable length of time has been allowed as determined solely by the District's Cross Connection Inspector, the tests, repairs and/or replacement of assemblies or any other requirement within this Resolution is not performed in accordance with this Resolution.

Section 10: SEVERABILITY

The provisions of this Resolution are severable. If any portion of this Resolution is held by a court of competent jurisdiction to be invalid or unenforceable for any reason, such determination shall not affect the validity of the remainder of this Resolution or its application to any other resolution.

Section 11: This Resolution shall take effect and be in full force immediately upon its passage and approval.

DATED this 17th day of November, 2006.

NORTH LAKE RECREATIONAL SEWER
AND WATER DISTRICT
Valley County, Idaho

District Chairperson
Vice

ATTEST:

District Secretary

(S E A L)

11. Hawks Bay Sanitary Survey Report

1445 N. Orchard St.
Boise ID 83706 • (208) 373-0550

Brad Little, Governor
Jess Byrne, Director

July 31, 2023

Travis Pryor
435 S. Eld Ln.
Donnelly ID 83615
travis@northlakesewerwater.com

Subject: **Hawks Bay Estates HOA LLC (ID4430106)** - Sanitary Survey conducted on April 6, 2023

Dear Mr. Pryor:

On April 6, 2023, the Department of Environmental Quality (DEQ) conducted a Sanitary Survey for Hawks Bay Estates HOA LLC (Hawks Bay). Enclosed are the Sanitary Survey Report (Report) and Photo Log.

> **Significant Deficiencies:** Significant deficiencies identified in the Report must be addressed after consulting with the DEQ Boise Regional Office. Consultation and a written corrective action plan are required within 30 days of any significant deficiencies and/or follow-up requirements identified in this notification, in accordance with the "Idaho Rules of Public Drinking Water Systems" (IDAPA 58.01.08). Follow the four steps identified in the Report to address all significant deficiencies.
>
> **Deficiencies:** The public water system operator/owner identified in the Report must address the deficiencies in a timely manner.
>
> **Recommendations:** Recommendations identified in the Report are not required to be corrected at this time; however, it is recommended.

Consult DEQ before taking specific corrective actions or modifying Hawks Bay. Modifying a public water system, or installing new components, may require assistance from an Idaho licensed professional engineer and DEQ's review and approval. Contact DEQ before making modifications.

Thank you for your help in completing the Sanitary Survey. For questions, contact me at (208) 373-0457 or brandon.lowder@deq.idaho.gov.

Sincerely,

Brandon Lowder
Drinking Water Compliance Supervisor

Attachment(s): Sanitary Survey Report
Photo Log

c: 2023ACA2153

Sanitary Survey Report

Hawks Bay Estates HOA LLC - ID4430106

Sanitary Survey conducted on April 6, 2023
Sanitary Survey Report generated on April 6, 2023

Narrative

Hawks Bay Estates HOA LLC Public Water System (Hawks Bay) serves approximately 30 connections. Water is provided to the distribution system from two wells. Well #1 is equipped with a 7.5 horsepower (HP) submersible pump and Well #2 has a 100-HP submersible pump designed to meet fire flow demands. Both wells are equipped with Variable Frequency Drives (VFD), and both wells have polyphosphate and chlorine injected to address taste and odor issues. A 135-gallon bladderless pressure tank allows the VFD's to rest during times of minimal demand. In the summer of 2023 or 2024, a large development to the southeast will be incorporated into Hawks Bay. Engineering documents will be submitted to DEQ as required.

Enforcement Actions

None

Significant Deficiencies:

A significant deficiency, as identified during a sanitary survey, is any defect in a public water system's (PWS) design, operation, maintenance, or administration, and any failure or malfunction of any system component, that the Department of Environmental Quality (DEQ) or its agent determines to cause, or have the potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water, in accordance with the "Idaho Rules of Public Drinking Water Systems" (IDAPA 58.01.08.003.131). Failure to address significant deficiencies constitutes a violation of IDAPA 58.01.08.302 or 58.01.08.303.

Significant deficiencies may reference IDAPA design standard requirements. IDAPA Rule citations for sections 500-549 are primarily requirements during the design or modification stage of a new system or component, and may not be enforceable as part of a sanitary survey. These requirements are listed to provide reference of what current standards would apply if that particular component were designed, modified, or constructed today. Corrective actions that include material modifications must be approved by DEQ.

To address all significant deficiencies identified in this Sanitary Survey Report (Report), follow steps 1 through 4.

Step 1 - Within 30 days of receiving this Report, submit to the DEQ Boise Regional Office, in writing, a corrective action plan including planned completion dates for each identified significant deficiency.

Step 2 - Complete the planned action(s) by the "Planned Completion Date(s)."

Step 3 - After completing each planned action, enter an "Actual Completion Date," your initials, and write the "Corrective action taken."

Step 4 - Sign your name at the bottom certifying that each corrective action has been corrected by the planned completion date(s) and that the PWS has completed the sanitary survey response requirements pursuant to IDAPA 58.01.08. Send a copy of the signed paperwork to the DEQ Boise Regional Office.

Treatment Plants

WELL #1 AND #2 TP (D0038344TP)

Question #24- Is secondary spill containment provided for all bulk liquid chemical containers? *(110% of container volume)* No.

Note: *Please address during upcoming system upgrades.*

There is no means to contain bulk liquid chemical container leaks and/or spills (IDAPA 58.01.08.531.02.j.viii).

A method of preventing bulk liquid chemical container leaks or spills must be provided to prevent contamination of the drinking water.

Submit planned completion dates to DEQ within 30 days of this letter.

Corrective Action Plan

Planned Completion Date: ____________,

Actual Completion Date: ____________, Initials: __________.

Corrective action(s) taken:

I certify, to the best of my knowledge that all significant deficiencies have been corrected by the agreed upon date and that the corrective action meets the requirements pursuant to IDAPA 58.01.08.

Signature: ____ Date: ________________

Deficiencies:

Deficiencies identified in the report should be addressed by the Public Water System's operator/owner in a timely manner.

Wells

WELL #1-EAST (D0038344)

Question #19- Are there signs of equipment damage due to excess heat, moisture, or corrosion? *(inadequate ventilation)* Yes.

Note: *There is some corrosion on the wellhouse piping. Please address this with the upcoming system upgrades.*

There is not adequate ventilation in the pump house for dissipation of excess heat and moisture from the equipment for Well: D0038344 (IDAPA 58.01.08.541.01.e). At the time of the Sanitary Survey, there was evidence of corrosion of metallic and/or electrical components from excessive heat and/or moisture.

Excess moisture in a pump house can lead to premature failure of electrical control systems and create unsafe conditions for operators. Extremely high temperatures may also damage electric motors.

Chlorinators

WELL #1 AND #2 TP (D0038344TP)

Question #11- Are chlorine storage tanks covered, sealed, and vented outside? No.

Chlorine storage tanks are uncovered and/or not sealed and/or not vented to the outside atmosphere (IDAPA 58.01.08.531.02.j).

Chlorine vapors that escape into the room could deteriorate other equipment and cause inhalation hazards for personnel.

Recommendations:

Recommendations identified in this Report are not required to be corrected at this time; however, it is recommended.

Hydropneumatic Tanks

Question #1- Is Hawks Bay served by VFD pumps? *(Recommended)* Yes.

A VFD pump produces steady pressure and can cause stagnation in a hydropneumatic tank. Stagnant water (aged water) is a major factor in water quality deterioration within a distribution system. DEQ recommends all hydropneumatic tanks associated with a VFD be isolated and drained twice a year to remove stagnant water.

Question #6- Have all hydropneumatic tanks been tested for structural integrity in the past five years? *(Recommended)* No.

Hydropneumatic tanks should be tested for structural integrity every five years or be replaced with a pressure tank of the same volume that meets American Society of Mechanical Engineers (ASME) code requirements.

Chlorinators

WELL #1 AND #2 TP (D0038344TP)

Question #14- Is the free chlorine residual measured daily at the entry point? *(Recommended)* No.

Note: *Chlorine residual is measured two to three times a week.*

The free chlorine residual should be measured daily at the entry point to the distribution system.

Financial/Managerial Capacity

Question #17- Is a water efficiency program in place? No.

A water efficiency program should be implemented. Improvements in water efficiency in the distribution system begin with metering, water audits, and water loss control programs. The following is a link to an EPA resource for developing a water efficiency program: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100MEV6.PDF?Dockey=P100MEV6.PDF.

Photographic Documentation

Inspection Date(s): Thursday, April 06, 2023

Facility ID: ID4430106

Name of Facility: Hawks Bay Estates

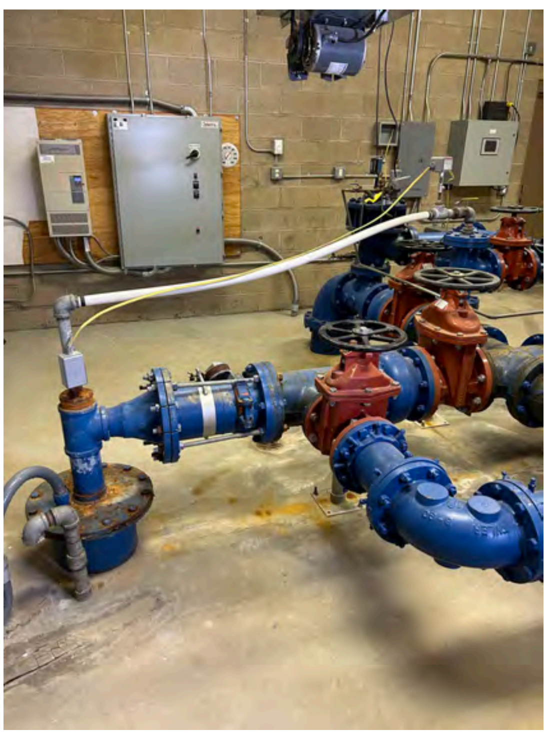
Inspector(s): Richard Lee

Purpose of Inspection: Sanitary Survey

State of Idaho
Department of Environmental Quality

Table of Photographs:

Photograph 1: Well #1 wellhead



Photograph 2: Well #1 wellhead and piping

Photograph 3: Well #1 screen

Photograph 4: Wellhouse piping

Photograph 5: Well #2 entering the wellhouse

Photograph 6: Well #2 VFD

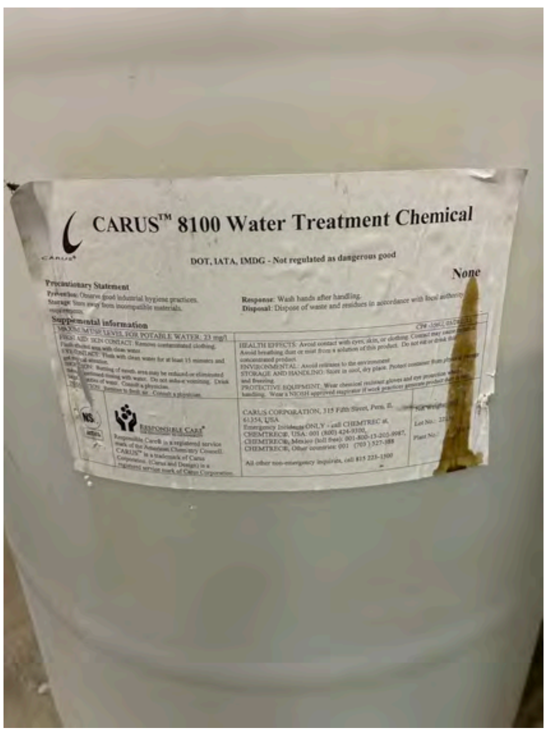
Photograph 7: Well #1 VFD

Photograph 8: Chemical injection on pipe to distribution

Photograph 9: Flow meter - 36818600 gallons

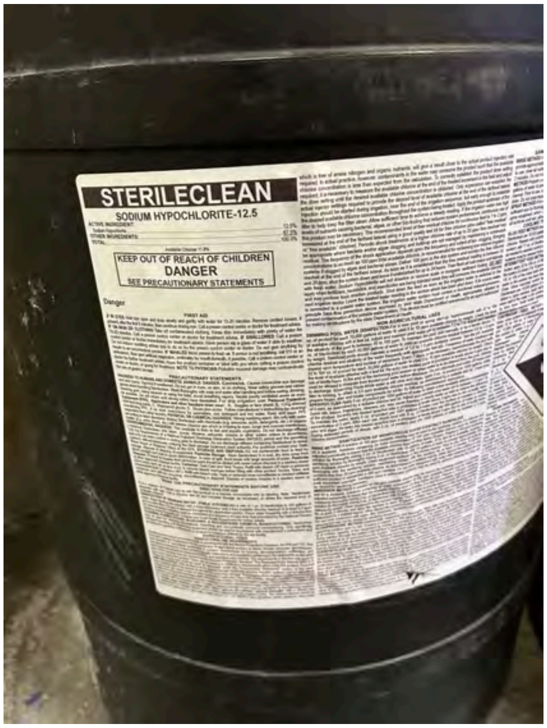
Photograph 10: Pressure guage 65 psi

Photograph 11: Chemical injection setting



Photograph 12: Carus 8100 - polyphosphate

Idaho Department of Environmental Quality
Photographic Documentation For: Hawks Bay Estates - ID4430106



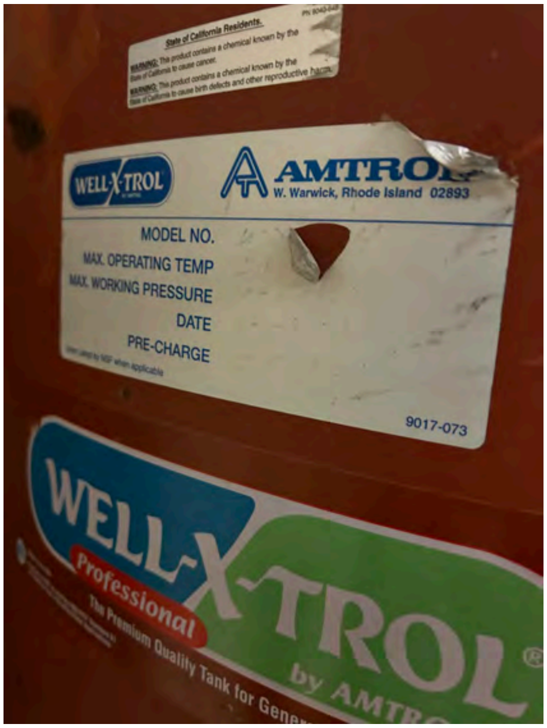
Photograph 13: Stericlean sodium hypochlorite chlorine

Photograph 14: Chemical injection pump specs

Photograph 15: Pressure tank isolation valve and union

Photograph 16: Bladderless pressure tank

Idaho Department of Environmental Quality
Photographic Documentation For: Hawks Bay Estates - ID4430106



Photograph 17: Pressure tank tag - Well Xtrol; WX-4

Photograph 18: Eyewash and goggles

Photograph 19: Backup generator with secondary containment

Photograph 20: Backup generator

Photograph 21: Well #2 under 3 feet of snow in early April

Photograph 22: Well #2 screen

Photograph 23: Downturned pump to waste into corrugated basin

Photograph 24: Exhaust for generator

Photograph 25: Wellhouse door - lockable; emergency contact info on placard

12. Fir Grove Sanitary Survey Report

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550
www.deq.idaho.gov

Governor Brad Little
Director John H. Tippets

May 23, 2019

Fir Grove Estates
ID4430104
Bill Eddy
PO Box 729
Donnelly ID 83615

Subject: Sanitary Survey conducted on May 7, 2019

Dear Bill Eddy:

On May 7, 2019, Department of Environmental Quality (DEQ) staff conducted an Enhanced Sanitary Survey (ESS) for Fir Grove Estates. I am enclosing a list of findings.

If any significant deficiencies were identified, Fir Grove Estates is required to address them. Please consult with me at the DEQ within 30 days regarding any significant deficiencies identified in this written notification, as required by IDAPA 58.01.08.

All modifications to existing public water systems (PWS) must be approved by DEQ to ensure that engineering requirements are being met. A preliminary engineering report (IDAPA 58.01.08.503.01) followed by plans and specifications (IDAPA 58.01.08.504) are both required and must be approved PRIOR to any work.

Thank you for your help in completing the ESS. Please contact me at 208-373-0457, or via email at Richard.lee@deq.idaho.gov.

Sincerely,

Richard Lee

Richard Lee
Drinking Water Analyst

ec: Chris Schneider
2019ACA5253

May 23, 2019
Fir Grove Estates
ID4430104

RE: Enhanced Sanitary Survey conducted on May 7, 2019

You will find a list of the deficiencies and recommended improvements for Fir Grove Estates summarized below.

Deficiencies

Groundwater Source:

- A few bolts on the wellhead casing are still loose. Please replace and securely tighten these with properly sized bolts.

Distribution:

- All dead end water mains are not flushed at least semiannually, as required by IDAPA 58.01.08.542.09. Please develop a plan to flush mains twice a year to avoid stagnant water and sediment settling.

Pumping:

- There is no auxiliary power on-site for these pumps as required by IDAPA 58.01.08.501.07. According to the operator, the power outages experienced by the system are of minimal frequency and duration, and auxiliary power will not be required. The need for auxiliary power on-site will be reevaluated every time an ESS is conducted. **(No action required at this time.)**

Recommendations

Disinfection:

- DEQ recommends measuring chlorine residual daily.

Thank you for your time and cooperation in the completion of this survey. If you have any questions, please contact me at 208-373-0457, or via email at Richard.lee@deq.idaho.gov.

Sincerely,

Richard Lee

Richard Lee
Drinking Water Analyst

13. Day Star Sanitary Survey Report

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, ID 83706 • (208) 373-0550
www.deq.idaho.gov

Brad Little, Governor
John H. Tippets, Director

May 21, 2019

Day Star
ID4430001
Bill Eddy
PO Box 729

Subject: Sanitary Survey conducted on May 7, 2019

Dear Bill Eddy:

On May 7, 2019, Department of Environmental Quality (DEQ) staff conducted an Enhanced Sanitary Survey (ESS) for Day Star. I am enclosing a list of findings for your system.

If any significant deficiencies were identified, Day Star is required to address them. Please consult with me at DEQ within 30 days regarding any significant deficiencies identified in this written notification, as required by IDAPA 58.01.08

All modifications to existing public water systems must be approved by DEQ to ensure that engineering requirements are being met. A preliminary engineering report (IDAPA 58.01.08.503.01) followed by plans and specifications (IDAPA 58.01.08.504) are both required and must be approved PRIOR to any work.

Thank you for your help in completing the ESS. Please contact me at (208) 373-0457, or via email at Richard.lee@deq.idaho.gov.

Sincerely,

Richard Lee

Richard Lee
Drinking Water Analyst

Enclosure: Required and recommended improvements

ec: Chris Schneider
2019ACA5358

May 21, 2019
Day Star
ID4430001

RE: Enhanced Sanitary Survey conducted on May 7, 2019

You will find a list of the significant deficiencies, deficiencies, and recommended improvements for your system summarized below. Your water system is required to address all significant deficiencies. The process follows steps 1, 2, 3 & 4.

Step 1: Within 30 days of receiving this written notification, submit to me a "Planned Completion Date" for each item.

Step 2: Complete the planned action(s) before the "Planned Completion Date."

Step 3: After completing each planned action, enter an "Actual Completion Date," your initials, and write the "Corrective action taken."

Step 4: Sign your name at the bottom certifying that each corrective action has been corrected by the agreed upon date and that your PWS has completed the Sanitary Survey response requirements pursuant to IDAPA 58.01.08. Send DEQ a copy of the signed paperwork.

Significant Deficiencies

Groundwater Source:

- The sample tap for Well #2 is threaded. Please fit this with a backflow prevention device.

*Planned Completion Date:*___________.

*Actual Completion Date:*____________, *Initials*_______.
Corrective action taken:

Treatment Application:

- A deluge shower and/or eye washing device is not installed where strong acids and alkalis are used or stored and, therefore, is not in accordance with IDAPA 58.01.08.531.05.c.ii.

*Planned Completion Date:*___________.

*Actual Completion Date:*____________, *Initials*_______.
Corrective action taken:

I certify, to the best of my knowledge that all significant deficiencies have been corrected by the agreed upon date(s) and that the corrective action meet the requirements pursuant to IDAPA 58.01.08.

Signature:______________________________________**Date:** ________________

Deficiencies

Distribution:

- All dead end water mains are not flushed at least semiannually, as required by IDAPA 58.01.08. 542.09. Please develop a plan to flush mains twice a year to avoid stagnant water and sediment settling.

Treatment Application:

- No provisions are made for measuring the quantities of chemicals used, as required by IDAPA 58.01.08. 531.02.b.v.

Recommendations

Groundwater Source:

- DEQ recommends locking J-boxes on wellheads.

Disinfection:

- DEQ recommends measuring chlorine residual daily.

This system will be in substantial compliance with regulations if the significant deficiencies found in this ESS are corrected. Thank you for your time and cooperation in the completion of this ESS. If you have any questions, please contact me at (208) 373-0457, or via e-mail at Richard.lee@deq.idaho.gov.

Sincerely,

Richard Lee

Richard Lee
Drinking Water Analyst

14. Tamarack Sanitary Survey Report

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 N. Orchard Street, Boise ID 83706
(208) 373-0550

Brad Little, Governor
Jess Byrne, Director

September 9, 2022

Email: travis@northlakesewerwater.com

Travis Pryor
435 S. Eld Lane
Donnelly, ID 83615

Subject: Tamarack Resort Association Inc., Sanitary Survey conducted on July 19, 2022 – ID4430100

Dear Mr. Pryor:

On July 19, 2022, the Department of Environmental Quality (DEQ) conducted a Sanitary Survey for Tamarack Resort Association Inc. Enclosed is a copy of the Sanitary Survey Report and Photo Log for your records.

Any significant deficiencies identified in the report are required to be addressed following consultation with the DEQ. Consultation and a written corrective action plan are required **within 30 days** regarding any significant deficiencies and/or follow-up requirements identified in this written notification, as required by IDAPA 58.01.08. Please follow the four (4) steps identified in the sanitary survey report to address all significant deficiencies.

Be advised that modifications to your public water system may require the assistance of an Idaho licensed professional engineer and require DEQ review and approval prior to making water system modifications or installing new components. Please contact DEQ before making modifications to your system.

Thank you for your help in completing the Sanitary Survey. Contact me at the DEQ Boise Regional Office at (208) 373-0457 or Richard.lee@deq.idaho.gov if you have any questions.

Sincerely,

Richard Lee
Drinking Water Analyst

rl; DR
2022ACA4511

Enclosures: Sanitary Survey Report
Photo Log
Field Sheets

c: Mike Black, Designated Operator

Sanitary Survey Report

September 9, 2021
4430100
Tamarack Resort Association Inc.

RE: Sanitary survey conducted on July 19, 2022

A list of findings for your system has been summarized below. In order to address all significant deficiencies, follow steps 1, 2, 3, and 4.

Step 1: Within 30 days of receiving this notification, submit to me in writing a corrective action plan including planned completion dates for each identified significant deficiency.

Step 2: Complete the planned action(s) by the "Planned Completion Date(s)".

Step 3: After completing each planned action, enter an "Actual Completion Date", your initials, and write the "Corrective action taken".

Step 4: Sign your name at the bottom certifying that each corrective action has been corrected by the planned completion date and that your public water system has completed the sanitary survey response requirements pursuant to IDAPA 58.01.08. Send me a copy of the signed paperwork.

Narrative

Tamarack Resort Association Inc. water system consists of two active wells (Well #4 and #7), and an emergency well (Well #5). Well #4 and #7 pump up the hill to a treatment building, where soda ash and onsite generated chlorine are injected. The treated water then proceeds to a 1.5 million gallon buried tank and then through distribution via gravity. Well #5 is used primarily for snow making, and pumps to a large storage reservoir beside the treatment building. In the event of an emergency, a large hose can be attached to storage tank piping and provide water to the distribution system. Until the soda ash treatment was installed, this water system had frequent lead exceedences, but has not had any issues since treatment installation.

Significant Deficiencies

A significant deficiency as identified during a sanitary survey, is any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the Department or its agent determines to cause, or have the potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water (IDAPA 58.01.08.003.131). Failure to address significant deficiencies constitutes a violation of IDAPA 58.01.08.302 or 58.01.08.303.

Significant deficiencies may reference IDAPA design standard requirements. IDAPA rule citations for sections 500-549 are primarily requirements during the design or modification stage of a new system or component, and may not be enforceable as part of a sanitary survey. These have been listed to provide reference of what current standards would apply if that particular component were designed, modified, or constructed today. Corrective actions that include material modifications must be approved by the Department.

Plan of Action for Significant Deficiencies:
When possible, please provide a photo as part of the corrective action taken.

Groundwater Source:

#4: The pits for Wells #4, #7 are not provided with watertight walls and/or floors and/or adequate floor drains and/or an acceptable pit cover and/or is not protected from contamination (IDAPA 58.01.08.511.09).

A well located in a pit can flood causing surface water to carry debris, bacteria, pesticides, fertilizers, or oil products into the drinking water supply. Mice, rodents, frogs, and bugs can also enter the well pit and potentially contaminate the well.

-Please monitor the effectiveness of the sump pumps during the wet time of year to ensure well components are not further compromised by shallow ground water that enters the vaults.

Planned Completion Date: 10/1/22,

Actual Completion Date: 10/1/22, *Initials* TP.

Corrective action taken (Please provide photo(s) when possible):

Operator inspections

#6: The well casing for Well #4 exists in a depression and therefore is not protected from flooding (IDAPA 58.01.08.511.06.a).

The casing height provides source protection against surface water runoff or drainage problems. In the event of a broken pipe in the pump house or a flooding event, a well with a short casing height could be susceptible to contamination creating a potential health hazard.

-Please regrade the area around Well #4 after the well work is completed. Currently Well #4 is in a low spot the potential for water to infiltrate along well casing should be reduced.

Planned Completion Date: 11/1/22,

Actual Completion Date: __________, *Initials*________.

Corrective action taken (Please provide photo(s) when possible):

#6: The well casing for Well #5 is nearly flush with the ground surface (IDAPA 58.01.08.511.06.a).

The casing height provides source protection against surface water runoff or drainage problems. In the event of a broken pipe in the pump house or a flooding event, a well with a short casing height could be susceptible to contamination creating a potential health hazard.

-Please regrade the area around Well #5 or extend the casing so it is higher above the ground. The rules call for a minimum of 18 inches.

Planned Completion Date: N/A,

Actual Completion Date: ____________, *Initials* ________.

Corrective action taken (Please provide photo(s) when possible):

Well 5 is not owned or operated by North Lake.

Treatment Application:

#11: The quantity of chemicals used is not measured and/or there are not provisions for measuring the quantities of chemicals used (IDAPA 58.01.08.531.02.b.v).

The ability to measure the quantities of chemicals used is critical for accurate chemical application.

According to the log sheet:
-System pH is not measured. This is very important, as it ensures treatment is adequate to protect against elevated lead levels in your system, which is the reason for the soda ash in the first place.
-Soda ash is measured every 2 to 5 days. That might be too infrequent.
-Letting the soda ash dosing tank get low enough to require 8 bags (almost 300 gallons of water) might not allow for consistent injection matrix.

-Please confirm that soda ash treatment is being optimized

Planned Completion Date: 9/15/22,

Actual Completion Date: 9/15/22, *Initials* TP.

Corrective action taken (Please provide photo(s) when possible):

Purchased handheld testing equipment for Water Operator. He now does more frequent testing.

#17: Where more than one chemical is stored or handled, tanks and pipelines do not clearly identify the chemical they contain (IDAPA 58.01.08.531.01.d).

Labeling tanks and pipelines to identify the chemical they contain help prevent accidental cross contamination of chemicals.

-Please label the chlorine barrel

Planned Completion Date: 12/1/22

Actual Completion Date: ____________, *Initials*________.

Corrective action taken (Please provide photo(s) when possible):

#24: There is no means to contain bulk liquid chemical container leaks and/or spills (IDAPA 58.01.08.531.02.j.viii).

A method of preventing bulk liquid chemical container leaks or spills must be provided to prevent contamination of the drinking water.

-Please install secondary containment for the chlorine barrel.

Planned Completion Date: 12/1/23

Actual Completion Date: ____________, *Initials*________.

Corrective action taken (Please provide photo(s) when possible):

Disinfection:

#21: Known cross connections exist and/or were observed at the public water system (IDAPA 58.01.08.543.

A cross connection may result in the backflow of unwanted non-potable substances back into the public water system through either backsiphonage or backpressure. Examples of distribution system cross connections include submerged blow-offs, direct connections to sewers, water mains in sewers, connections to unapproved sources, or hydrant drain lines to sewers.

-Please schedule to test all known testable backflow assemblies. In one case it is unknown if it has ever been tested.

Planned Completion Date: 12/1/23

Actual Completion Date: ____________, *Initials*________.

Corrective action taken (Please provide photo(s) when possible):

#23: All air valves are not protected from contamination and/or equipped with a means of backflow protection (IDAPA 58.01.08.542.15-16).
Automatic air valves not equipped with a means of backflow protection provide a pathway for distribution system contamination such as by back-siphonage. An air valve whose vent is located inside an undrained vault may threaten water quality in the distribution system.

-Please downturn and screen the piping from the air relief valves located in the vaults. Before doing so, checking for dead mice and bugs in the piping is suggested.

Planned Completion Date: 12/1/22

Actual Completion Date: ____________, Initials________.

Corrective action taken (Please provide photo(s) when possible):

I certify, to the best of my knowledge that all significant deficiencies have been corrected by the agreed upon date and that the corrective action meets the requirements pursuant to IDAPA 58.01.08.

Signature: [signature] **Date:** 10/6/2022

APPENDIX D

Population Projections Supporting Information

United States Census Bureau

QuickFacts

Valley County, Idaho

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	Valley County, Idaho
Population estimates base, April 1, 2020, (V2021)	**11,746**
PEOPLE	
Population	
Population Estimates, July 1 2021, (V2021)	12,241
Population estimates base, April 1, 2020, (V2021)	**11,746**
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	4.2%
Population, Census, April 1, 2020	11,746
Population, Census, April 1, 2010	9,862
Age and Sex	
Persons under 5 years, percent	3.9%
Persons under 18 years, percent	17.4%
Persons 65 years and over, percent	26.7%
Female persons, percent	48.6%
Race and Hispanic Origin	
White alone, percent	96.0%
Black or African American alone, percent (a)	0.4%
American Indian and Alaska Native alone, percent (a)	1.1%
Asian alone, percent (a)	0.6%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%
Two or More Races, percent	1.7%
Hispanic or Latino, percent (b)	5.1%
White alone, not Hispanic or Latino, percent	91.8%
Population Characteristics	
Veterans, 2016-2020	1,033
Foreign born persons, percent, 2016-2020	1.1%
Housing	
Housing units, July 1, 2021, (V2021)	12,524
Owner-occupied housing unit rate, 2016-2020	82.9%
Median value of owner-occupied housing units, 2016-2020	$306,900
Median selected monthly owner costs -with a mortgage, 2016-2020	$1,547
Median selected monthly owner costs -without a mortgage, 2016-2020	$429
Median gross rent, 2016-2020	$851
Building permits, 2021	375
Families & Living Arrangements	
Households, 2016-2020	3,920
Persons per household, 2016-2020	2.78
Living in same house 1 year ago, percent of persons age 1 year+, 2016-2020	77.5%
Language other than English spoken at home, percent of persons age 5 years+, 2016-2020	4.7%
Computer and Internet Use	
Households with a computer, percent, 2016-2020	96.8%
Households with a broadband Internet subscription, percent, 2016-2020	87.1%
Education	
High school graduate or higher, percent of persons age 25 years+, 2016-2020	91.6%
Bachelor's degree or higher, percent of persons age 25 years+, 2016-2020	30.3%
Health	
With a disability, under age 65 years, percent, 2016-2020	7.6%
Persons without health insurance, under age 65 years, percent	12.3%
Economy	
In civilian labor force, total, percent of population age 16 years+, 2016-2020	51.1%

In civilian labor force, female, percent of population age 16 years+, 2016-2020	47.8%
Total accommodation and food services sales, 2017 ($1,000) (c)	73,706
Total health care and social assistance receipts/revenue, 2017 ($1,000) (c)	54,158
Total transportation and warehousing receipts/revenue, 2017 ($1,000) (c)	6,537
Total retail sales, 2017 ($1,000) (c)	123,766
Total retail sales per capita, 2017 (c)	$11,567
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2016-2020	14.1
Income & Poverty	
Median household income (in 2020 dollars), 2016-2020	$63,115
Per capita income in past 12 months (in 2020 dollars), 2016-2020	$31,192
Persons in poverty, percent	8.7%
BUSINESSES	
Businesses	
Total employer establishments, 2020	686
Total employment, 2020	4,431
Total annual payroll, 2020 ($1,000)	155,326
Total employment, percent change, 2019-2020	4.5%
Total nonemployer establishments, 2019	1,437
All employer firms, Reference year 2017	646
Men-owned employer firms, Reference year 2017	316
Women-owned employer firms, Reference year 2017	126
Minority-owned employer firms, Reference year 2017	S
Nonminority-owned employer firms, Reference year 2017	571
Veteran-owned employer firms, Reference year 2017	S
Nonveteran-owned employer firms, Reference year 2017	512
GEOGRAPHY	
Geography	
Population per square mile, 2020	3.2
Population per square mile, 2010	2.7
Land area in square miles, 2020	3,665.12
Land area in square miles, 2010	3,664.52
FIPS Code	16085

About datasets used in this table

Value Notes

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info icon to th
row in TABLE view to learn about sampling error.

The vintage year (e.g., V2021) refers to the final year of the series (2020 thru 2021). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2016-2020 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2020 5-year ACS Comparison Guidance page.

Fact Notes

- **(a)** Includes persons reporting only one race
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
- **(b)** Hispanics may be of any race, so also are included in applicable race categories

Value Flags

- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
- **F** Fewer than 25 firms
- **D** Suppressed to avoid disclosure of confidential information
- **N** Data for this geographic area cannot be displayed because the number of sample cases is too small.
- **FN** Footnote on this item in place of data
- **X** Not applicable
- **S** Suppressed; does not meet publication standards
- **NA** Not available
- **Z** Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and P
Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

World Population Review

Valley County, Idaho Population 2022

Valley County, Idaho's estimated population is 12,122 with a growth rate of 1.58% in the past year according to the most recent United States census data. Valley County, Idaho is the 26th largest county in Idaho. The 2010 Population was 9,862 and has seen a growth of 22.92% since this time.

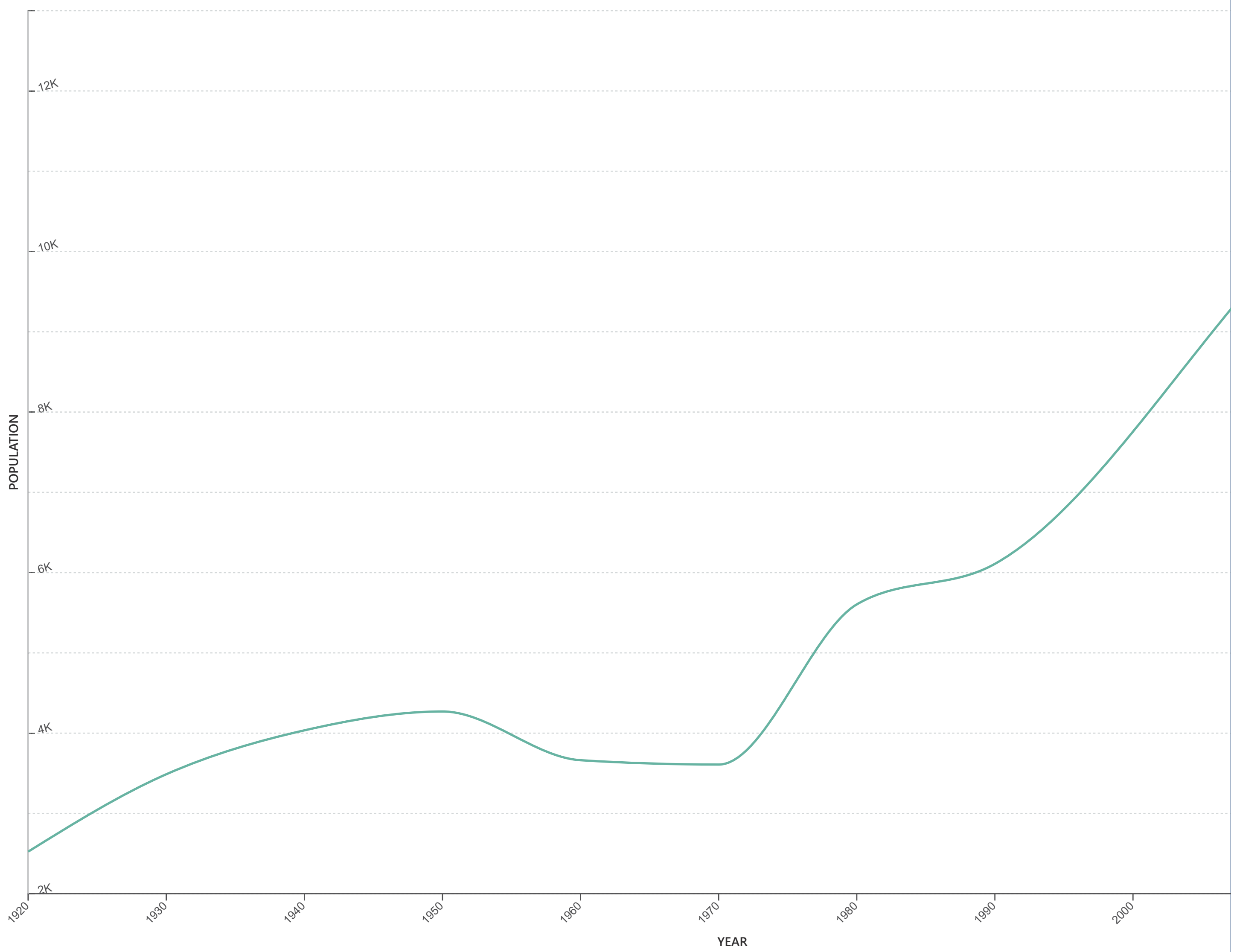
Note: 2021 and 2022 data is projected

Year	Population	Growth	Annual Growth Rate
2022	12,122	188	1.58%
2021	11,934	188	1.60%
2020	11,746	192	1.66%
2019	11,554	188	1.65%
2018	11,366	188	1.68%
2017	11,178	188	1.71%
2016	10,990	188	1.74%
2015	10,802	188	1.77%
2014	10,614	188	1.80%

2022 Growth Rate	1.58% (188)
County Website	Valley County
State	Idaho
Founded	February 26, 1917
County Seat	Cascade
Lat./Long.	(45.000, -116.000)
2010 Population	9,862

Year	Population	Growth	Annual Growth Rate
2011	10,050	188	1.91%
2010	9,862	3,753	61.43%
1990	6,109	505	9.01%
1980	5,604	1,995	55.28%
1970	3,609	-54	-1.47%
1960	3,663	-607	-14.22%
1950	4,270	235	5.82%
1940	4,035	547	15.68%
1930	3,488	964	38.19%
1920	2,524		0.00%

Valley County, Idaho Population Growth



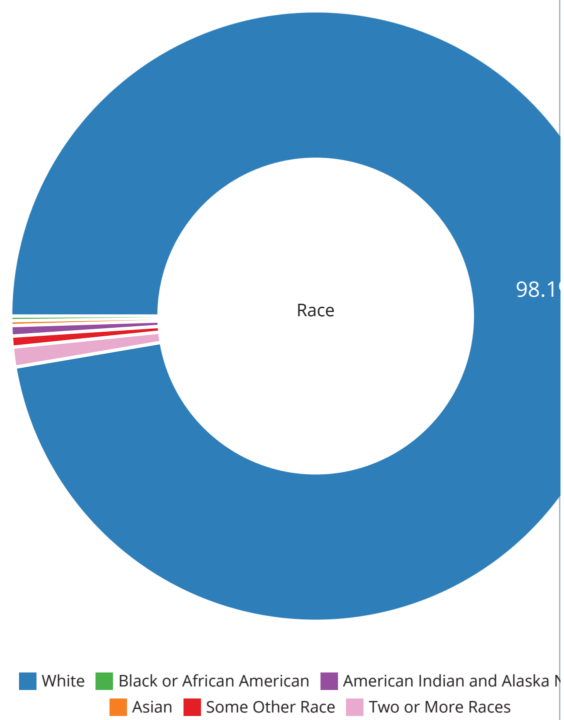
Valley County, Idaho Population by Race

Show Source

Population by Race

Total | Hispanic | Non-Hispanic

Race	Population	Percentage
White	10,874	98.10%
Two or More Races	100	0.90%
Some Other Race	47	0.42%
American Indian and Alaska Native	44	0.40%
Asian	11	0.10%
Black or African American	9	0.08%



Valley County, Idaho Population by Age

Show Source

Valley County, Idaho Population Pyramid 2022

Valley County, Idaho Median Age

50.4	49.8	50.6
Total	Male	Female

Valley County, Idaho Adults

There are 9,208 adults, (3,085 of whom are seniors) in Valley County, Idaho.

Valley County, Idaho Age Dependency

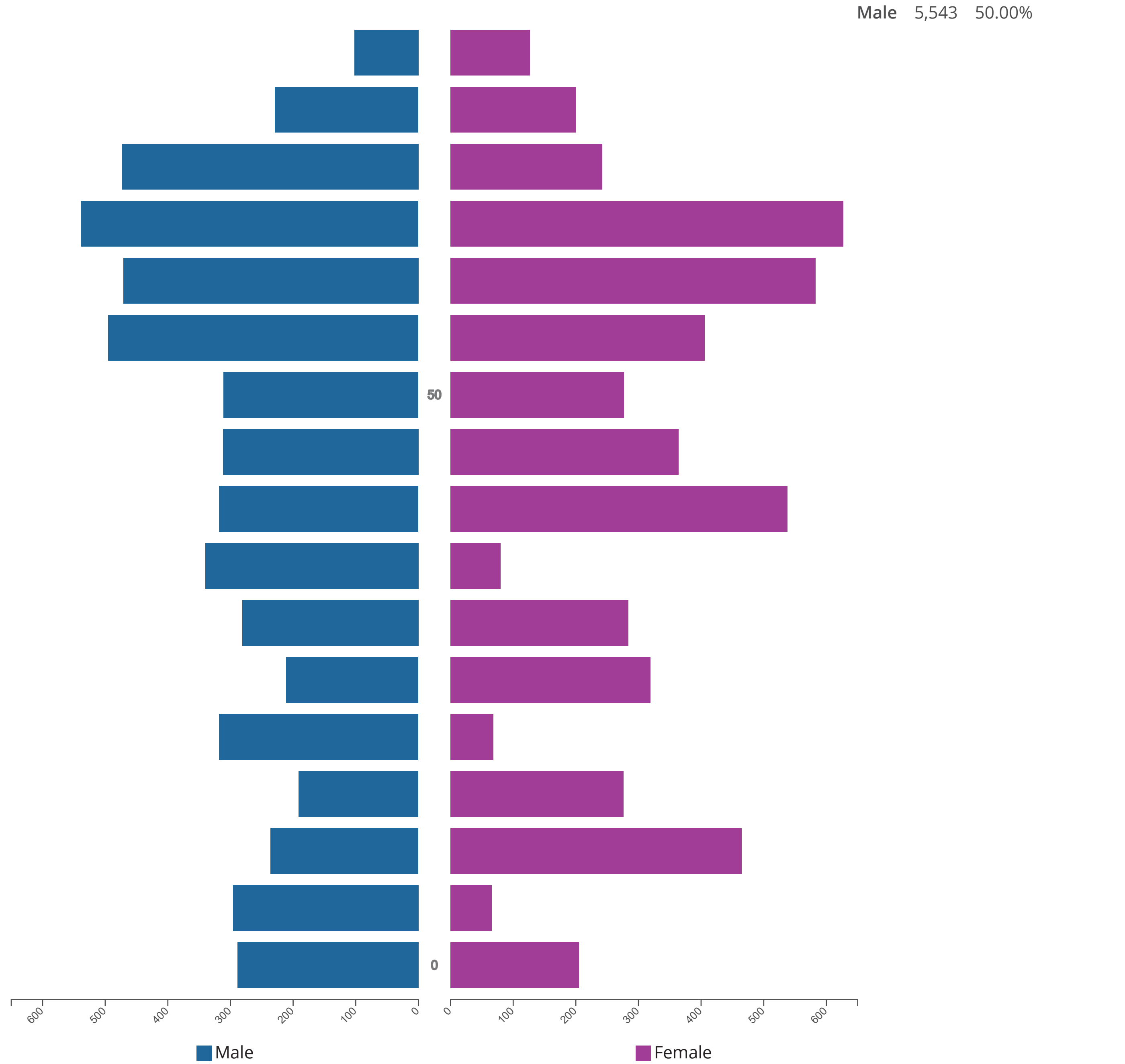
Age Dependency Ratio

50.4

Old Age Dependency Ratio

30.7

Child Dependency Ratio



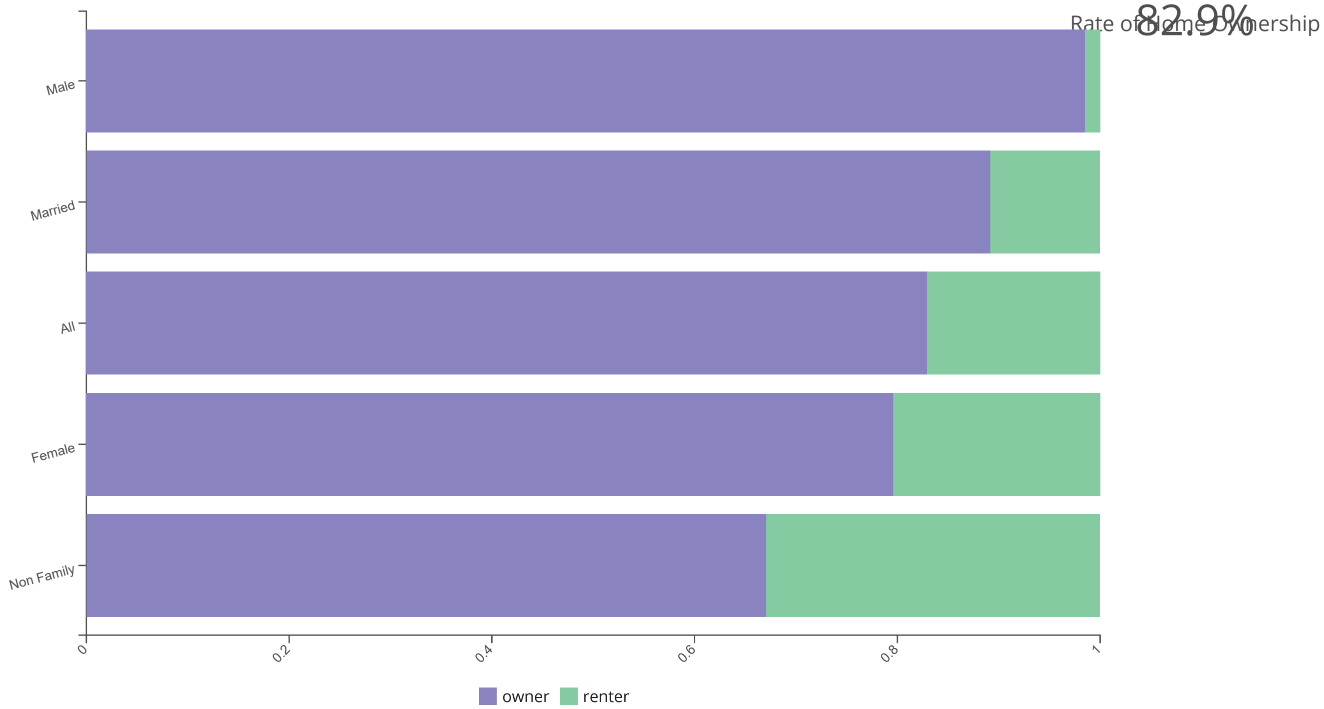
Valley County, Idaho Households and Families

Show Source

Valley County, Idaho Renter vs Owner Occupied by Household Type

Valley County, Idaho Household Types

Type	Owner	Renter
Non Family	67.1%	32.9%
Female	79.6%	20.4%
All	82.9%	17.1%
Married	89.2%	10.8%



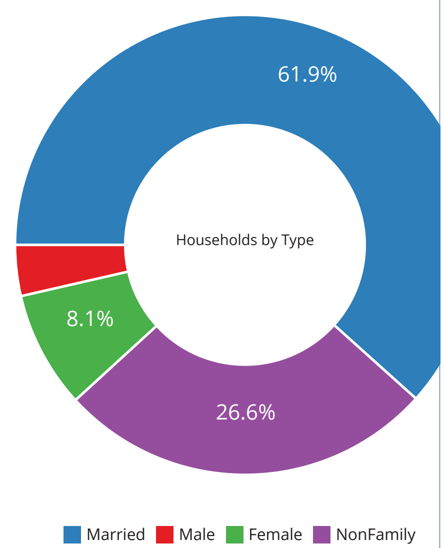
Valley County, Idaho Households by Type

Show Source

Type	Count	Average Size	Owned
All	3,920	2.78	82.9
Married	2,426	2.79	89.2
Non Family	1,041	1.82	67.1
Female	318	4.28	79.6
Male	135	6.33	98.5

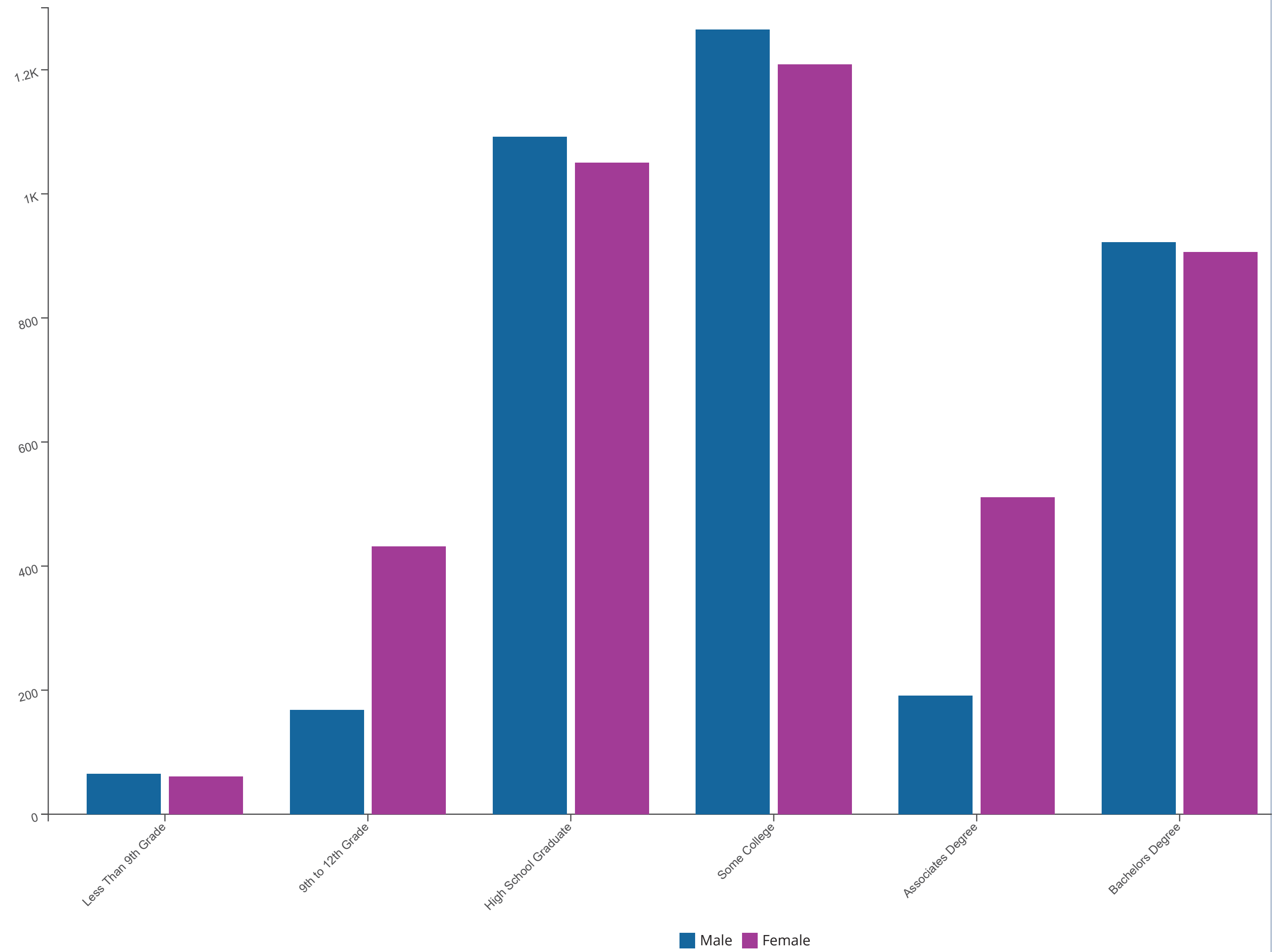
3.04
Average Family Size

2.78
Average Household Size

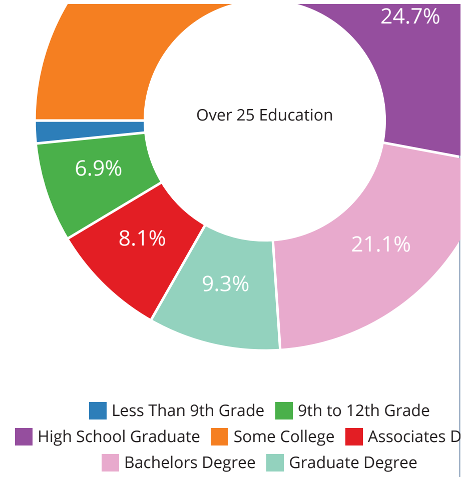


Valley County, Idaho Educational Attainment by Sex (over 25)

Show Source

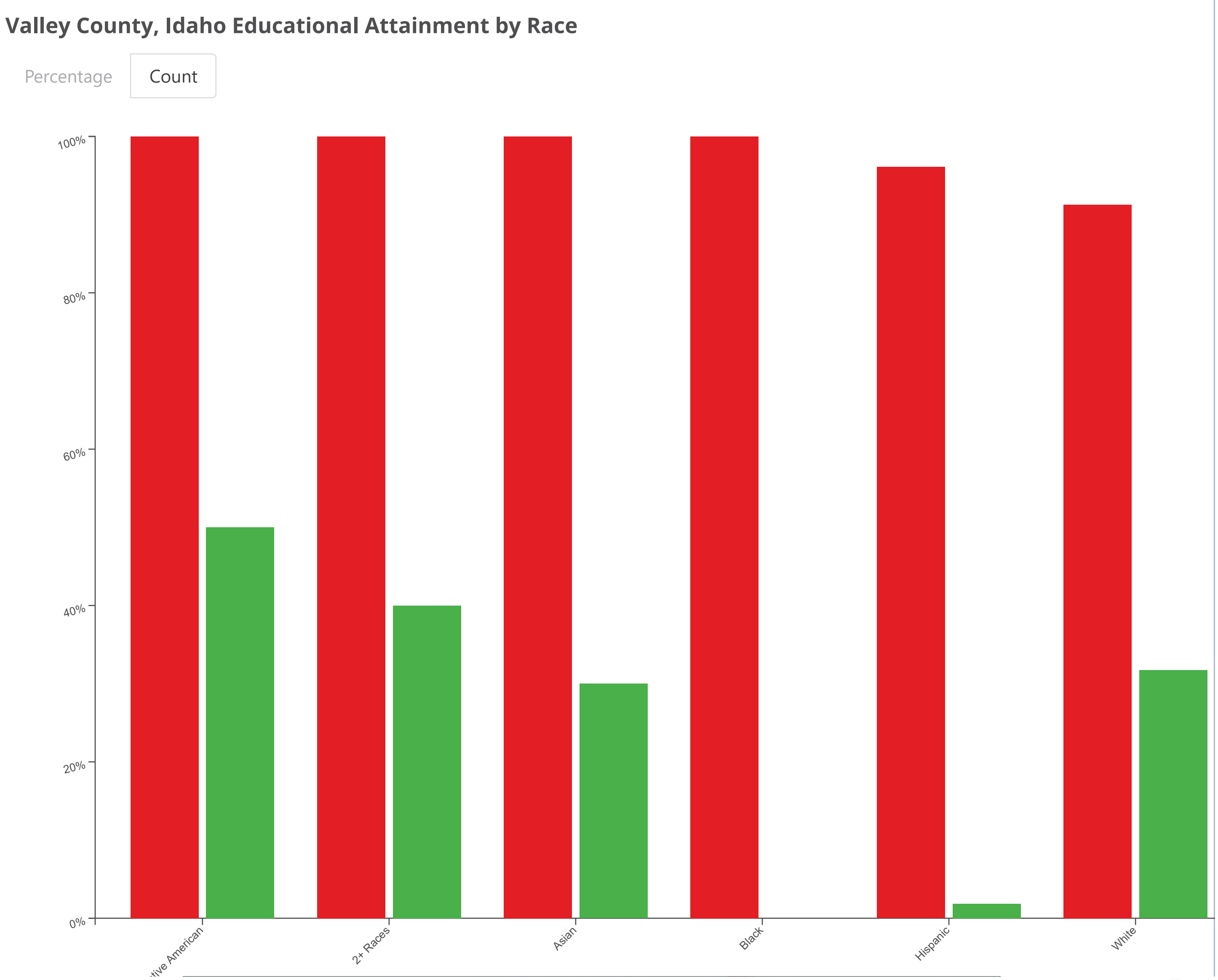


Education Attained	Count	Percentage
Less Than 9th Grade	126	1.45%
9th to 12th Grade	600	6.92%
High School Graduate	2,142	24.69%
Some College	2,474	28.52%
Associates Degree	702	8.09%
Bachelors Degree	1,828	21.07%
Graduate Degree	803	9.26%



Valley County, Idaho Educational Attainment by Race

Show Source



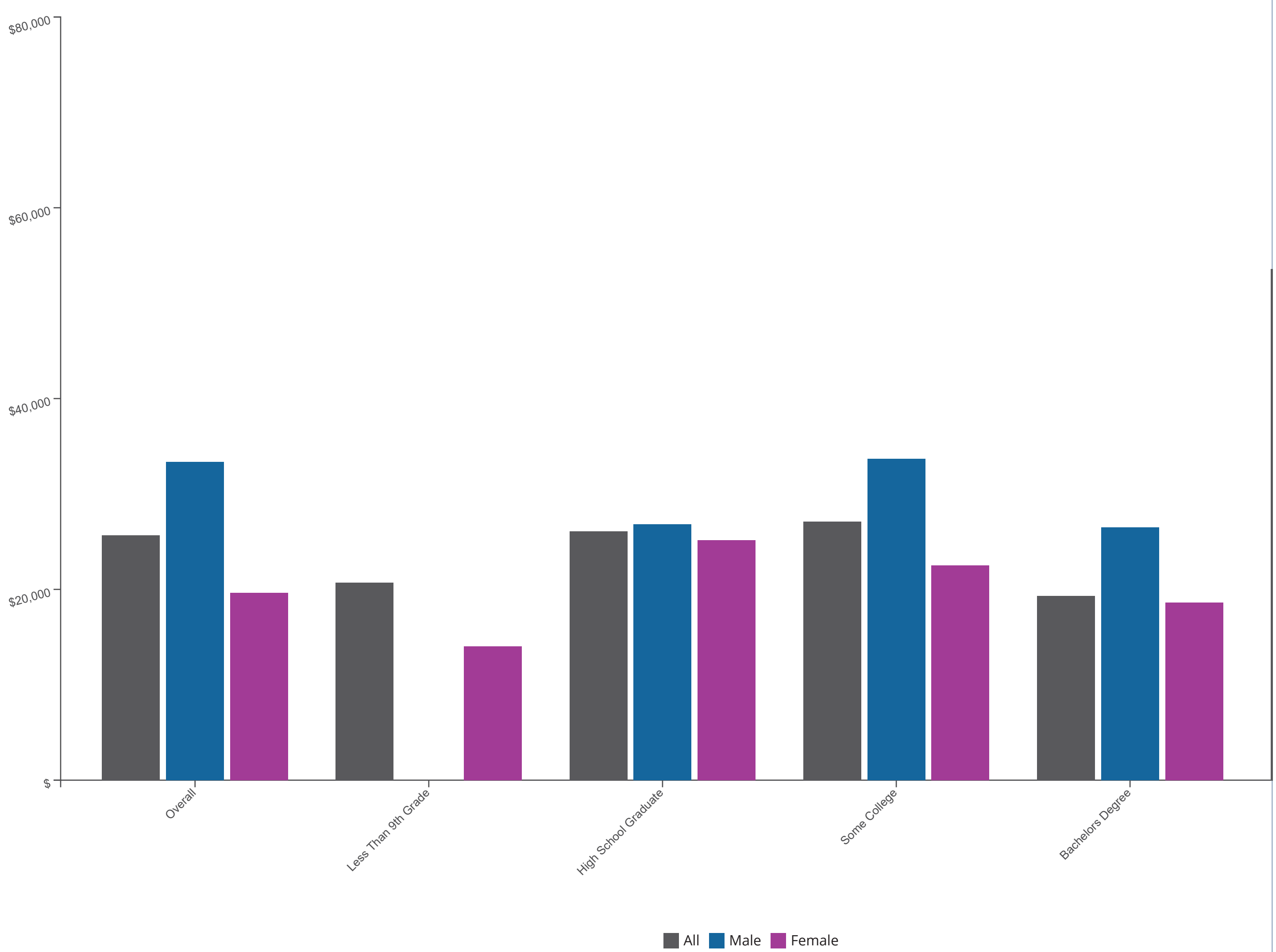
Race	Total	High School	Bachelors
White	8,125	7,416	2,577
Hispanic	435	418	8
2+ Races	55	55	22
Other Race	47	33	
Native American	44	44	22
Asian	10	10	3
Black	5	5	

The highest rate of high school graduation is among black people with a rate of 100.00%.

The highest rate of bachelors degrees is among native american people with a rate of 50.00%.

Valley County, Idaho Earnings by Educational Attainment

Show Source



Name	Average	Male	Female
High School Graduate	$26,096	$26,821	$25,143
Some College	$27,091	$33,666	$22,514
Bachelors Degree	$19,317	$26,500	$18,627
Graduate Degree	$53,574	$76,133	$29,282

$33,361
Average Male

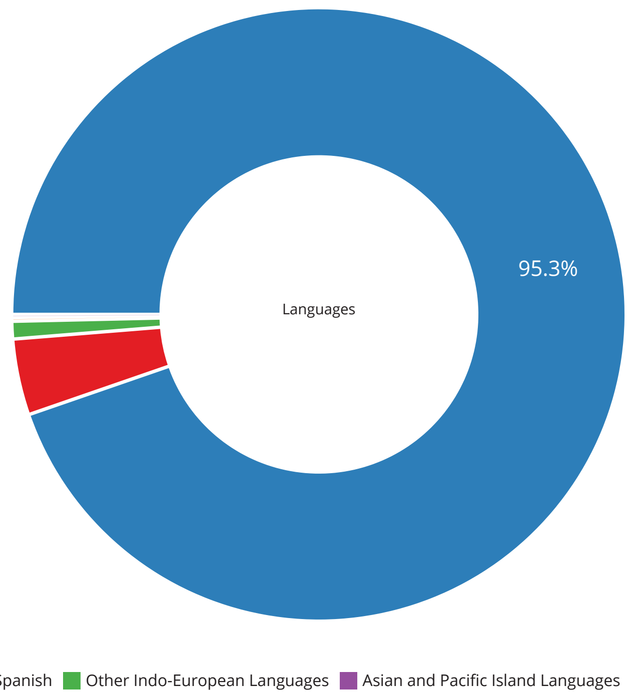
$19,644
Average Female

Valley County, Idaho Language

Show Source

Valley County, Idaho Language by Age

All Ages | 5-17 | 18-64 | 65+



Valley County, Idaho Language

95.30% of Valley County, Idaho residents speak only English, while 4.70% speak other languages. The non-English language spoken by the largest group is Spanish, which is spoken by 3.89% of the population.

Valley County, Idaho Poverty

Show Source

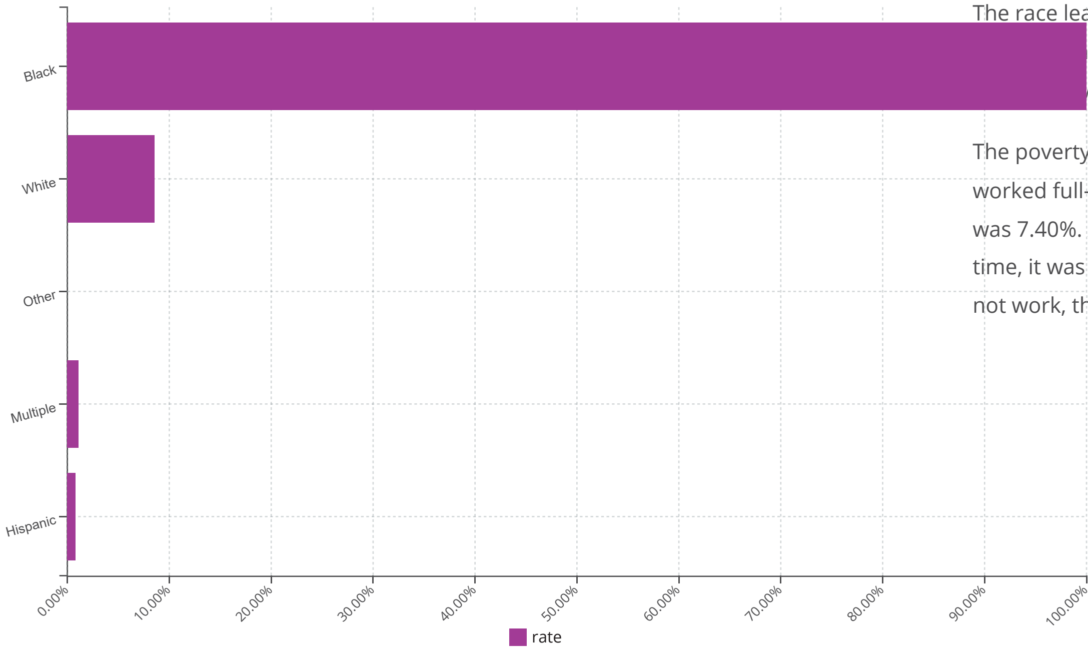
Valley County, Idaho Poverty by Race

8.10%
Overall Poverty Rate

5.67%
Male Poverty Rate

10.54%
Female Poverty Rate

Poverty in Valley County, Idaho



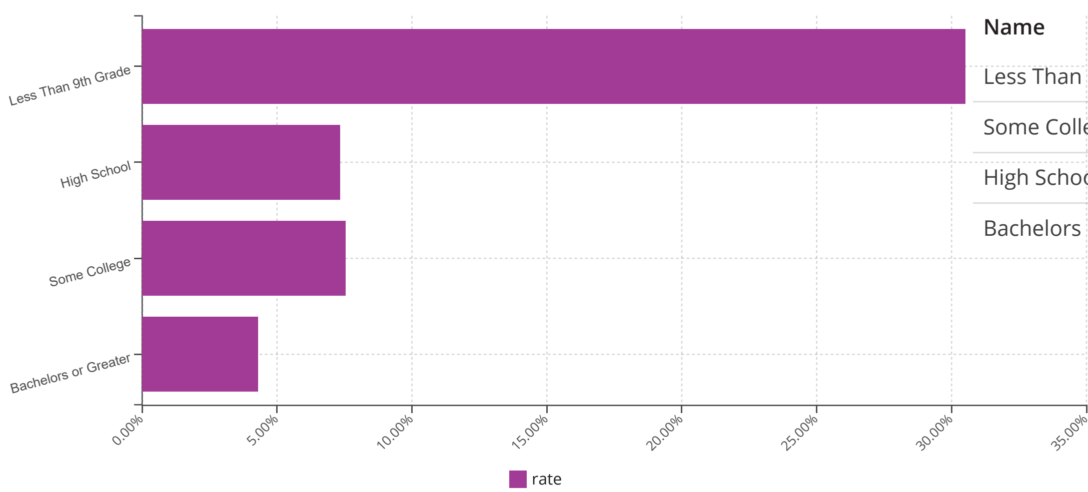
The race least likely to be in poverty in ...ty, Idaho is Hispanic, with ...w the poverty level.

The poverty rate among those that worked full-time for the past 12 months was 7.40%. Among those working part-time, it was 3.64%, and for those that did not work, the poverty rate was 12.65%.

Name	Total	In Poverty ▾	Poverty Rate
White	10,321	880	8.53%
Black	4	4	100.00%
Hispanic	509	4	0.79%
Other		1	NaN%
Multiple	92	1	1.09%

Valley County, Idaho Poverty Rate by Education

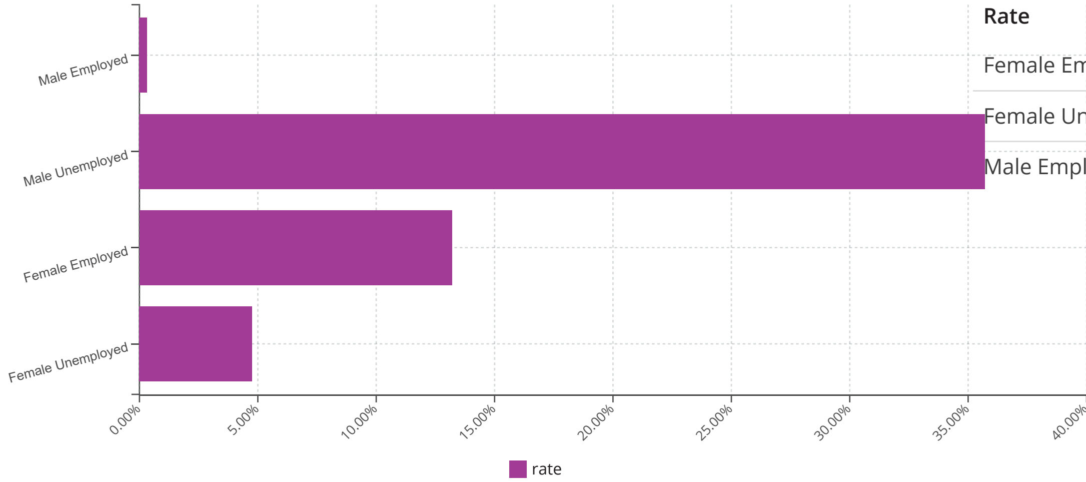
Show Source



Name	Poverty ▾
Less Than 9th Grade	30.50%
Some College	7.55%
High School	7.34%
Bachelors or Greater	4.29%

Valley County, Idaho Poverty Rate by Employment Status and Sex

Show Source

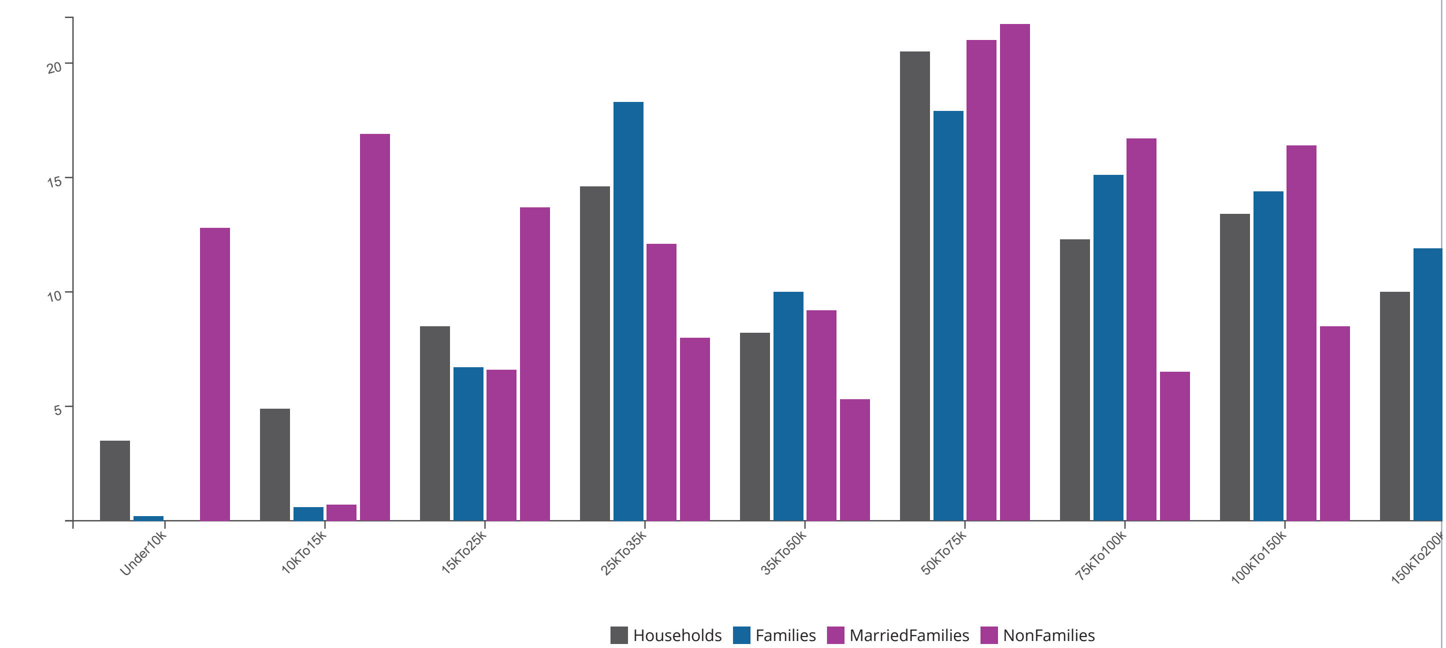


Rate	Poverty
Female Employed	13.19%
Female Unemployed	4.76%
Male Employed	0.32%

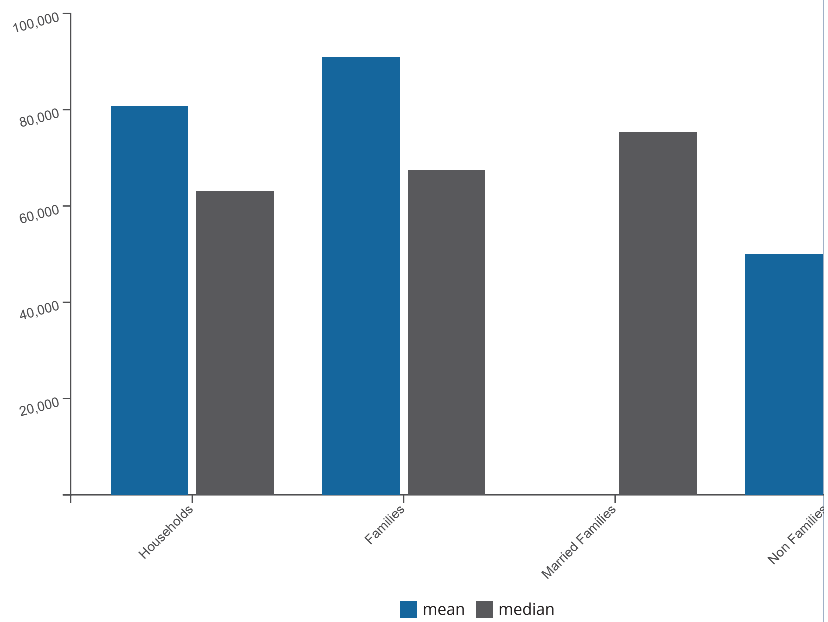
Income by Household Type

Show Source

Valley County, Idaho Income by Household Type



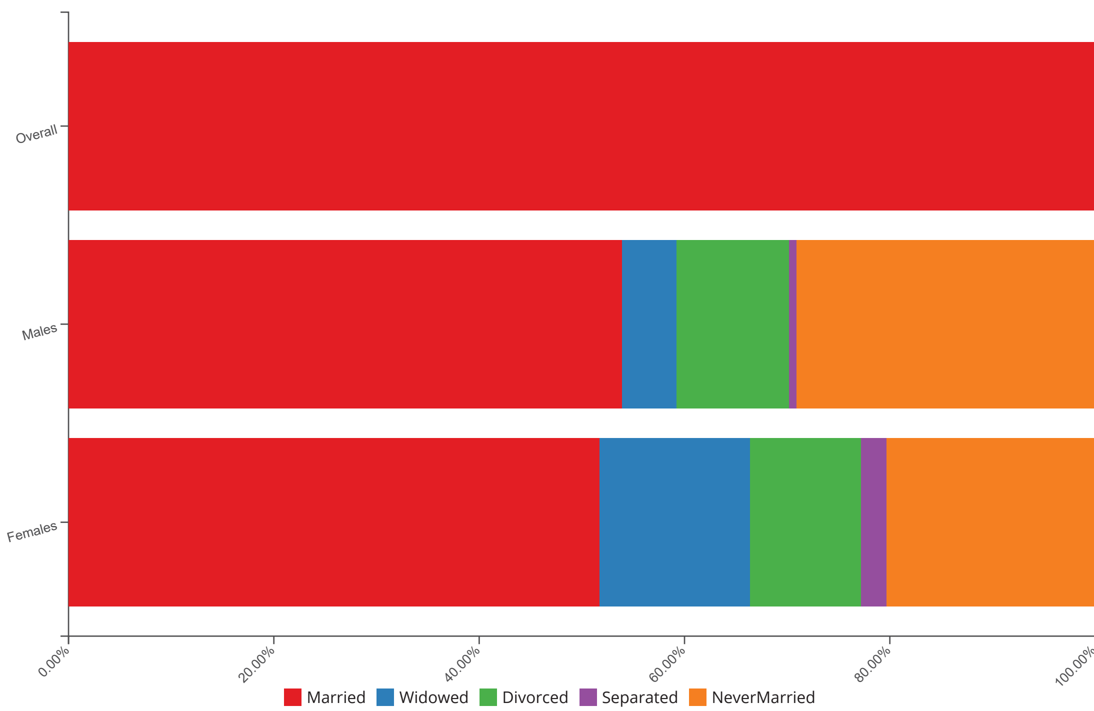
Name	Median	Mean
Households	$63,115	$80,681
Families	$67,348	$90,950
Married Families	$75,250	-
Non Families	$29,736	$50,024



Valley County, Idaho Marital Status

Show Source

Valley County, Idaho Marital Status



Marriage Rates

52.8%
Overall Marriage Rate

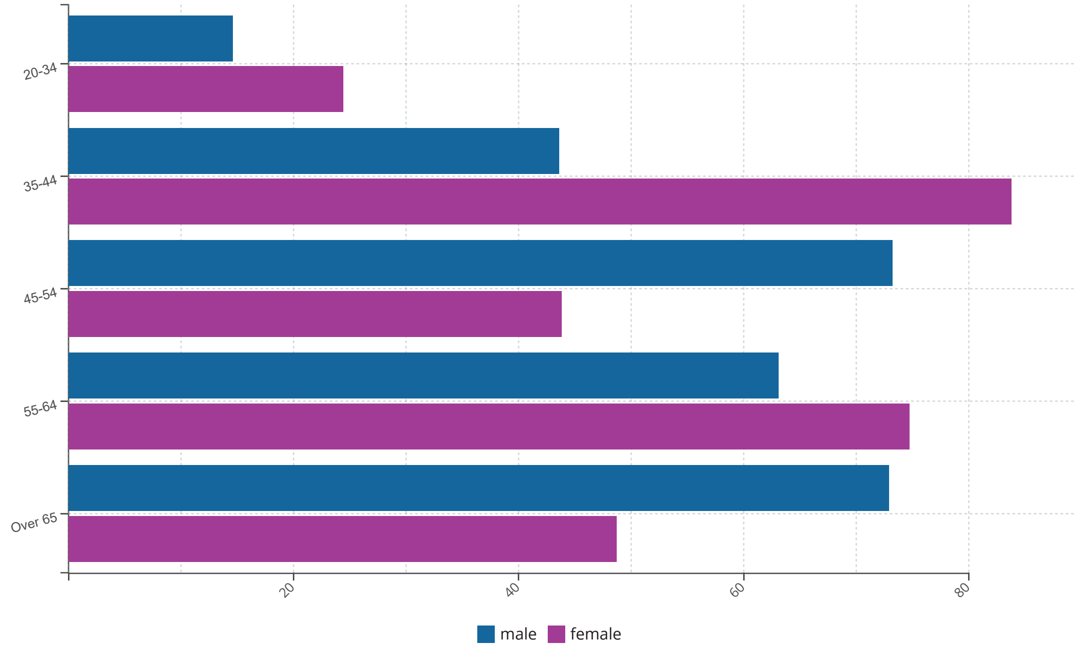
53.9%
Male Marriage Rate

51.7%
emale Marriage Rate

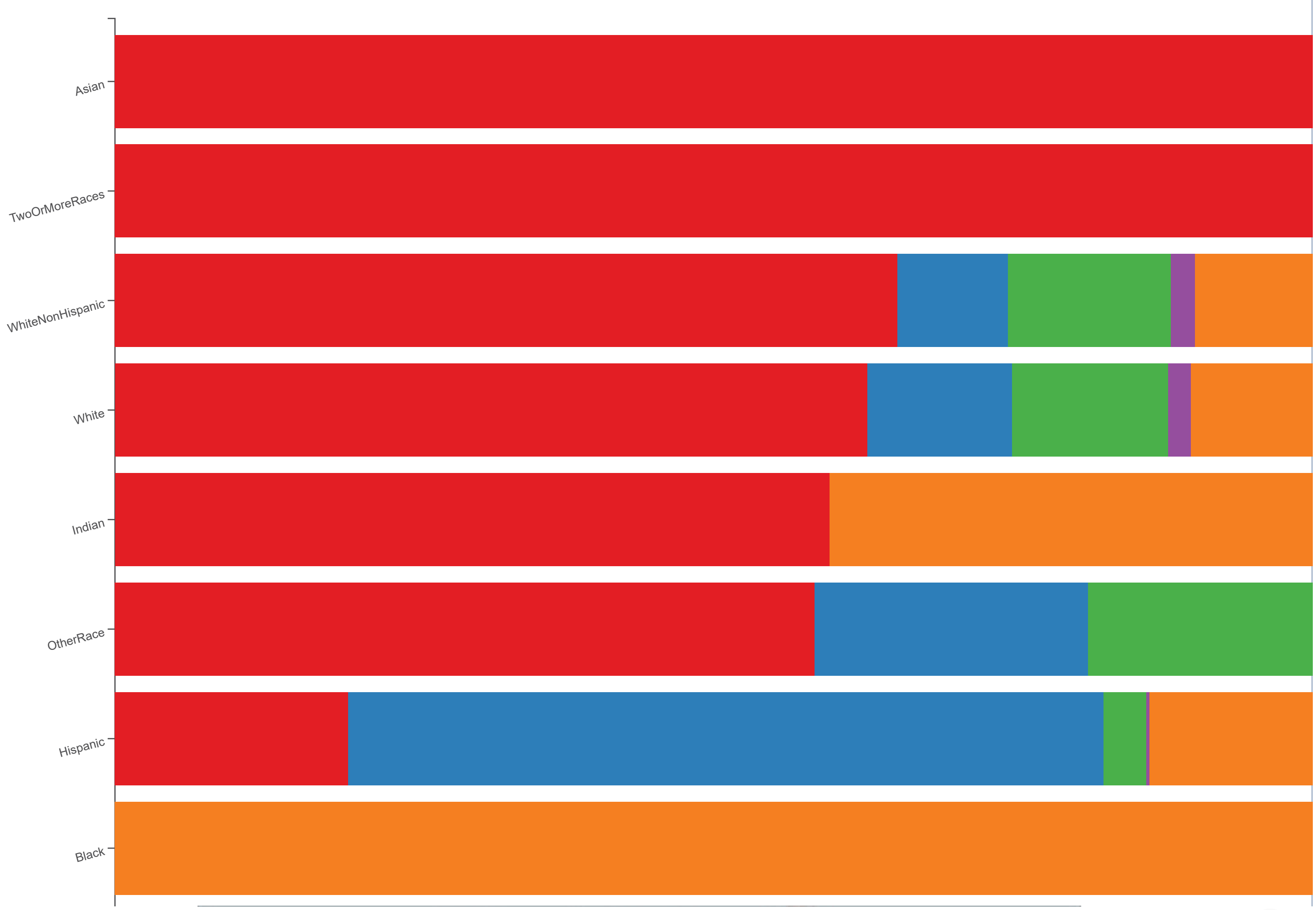
Valley County, Idaho Married by Age and Sex

Valley County, Idaho Marriage

The age group where males are most

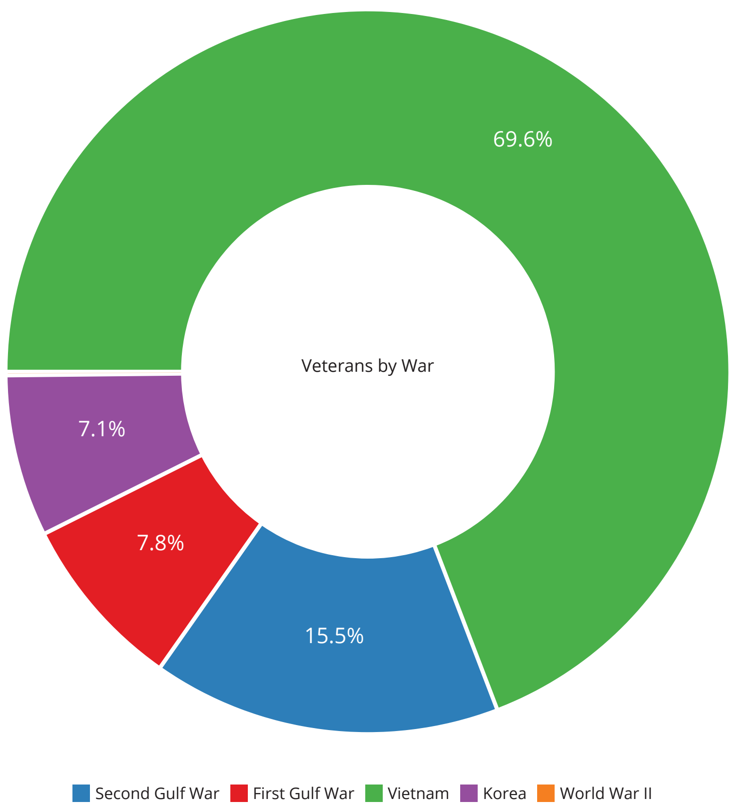


Valley County, Idaho Marital Status by Race



Valley County, Idaho Veterans by War

Show Source



1,033
Number of Veterans

Male Veterans

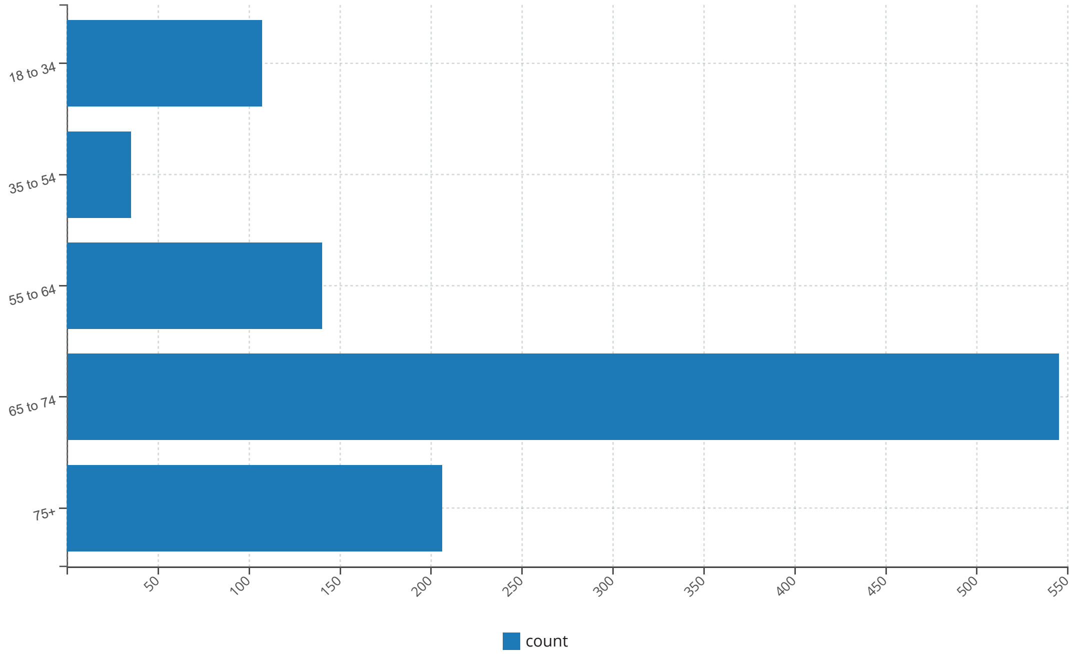
Female Veterans

War	Veterans
Vietnam	654
Second Gulf War	146
First Gulf War	73
Korea	67
World War II	

Valley County, Idaho Veterans by Age

Show Source

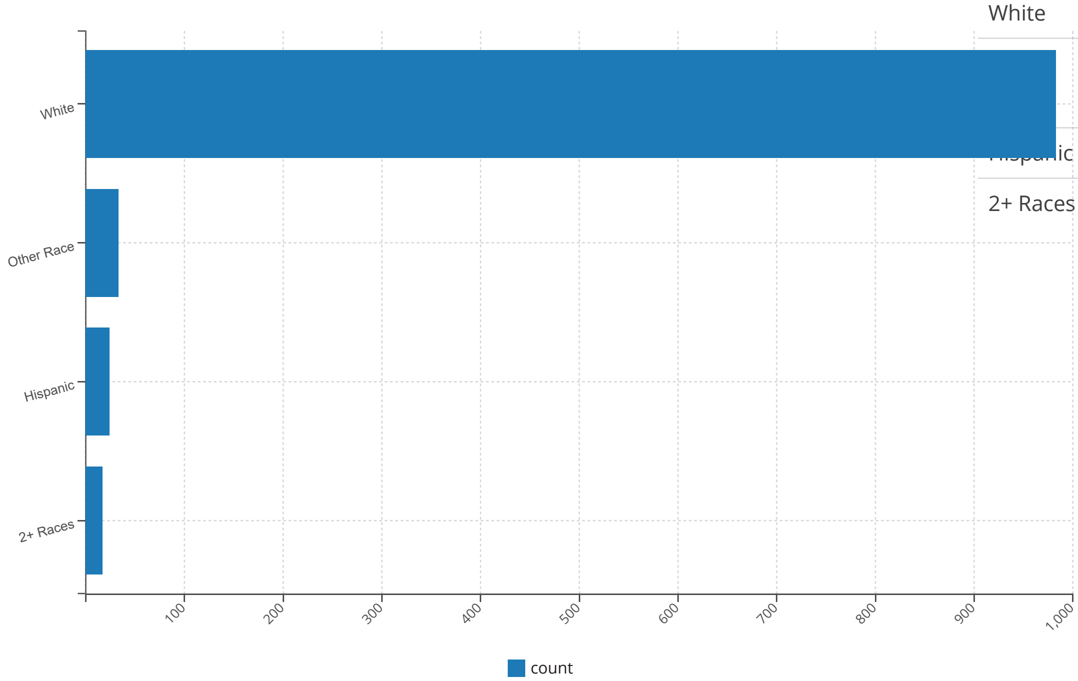
Age Group	Veterans
65 to 74	545
75+	206
55 to 64	140
18 to 34	107
35 to 54	35



Valley County, Idaho Veterans by Race

Show Source

Percentage Counts



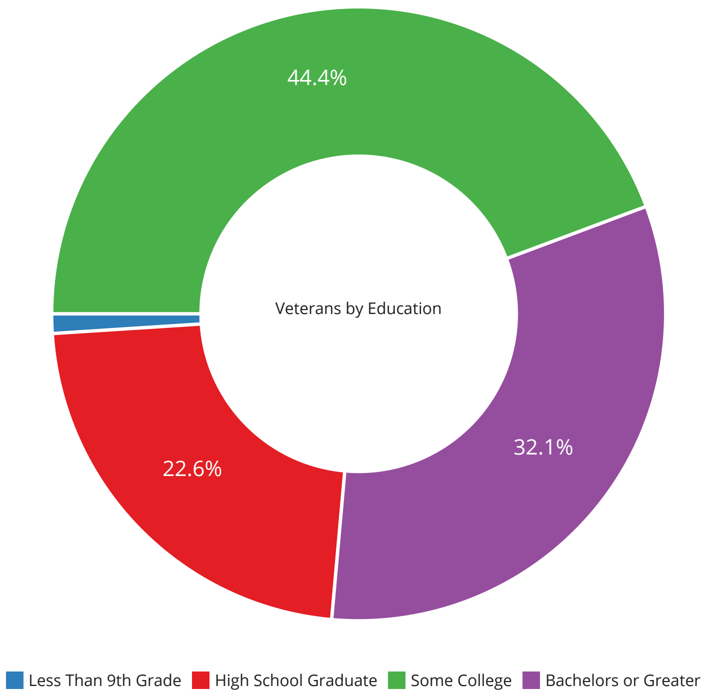
Name	Veterans	% of Total
White	983	10.87%
	33	70.21%
Hispanic	24	4.86%
2+ Races	17	29.82%

Valley County, Idaho Veterans by Education

Show Source

Valley County, Idaho Veterans by Education

9.22%
Veteran Poverty Rate



Valley County, Idaho Employment by Age

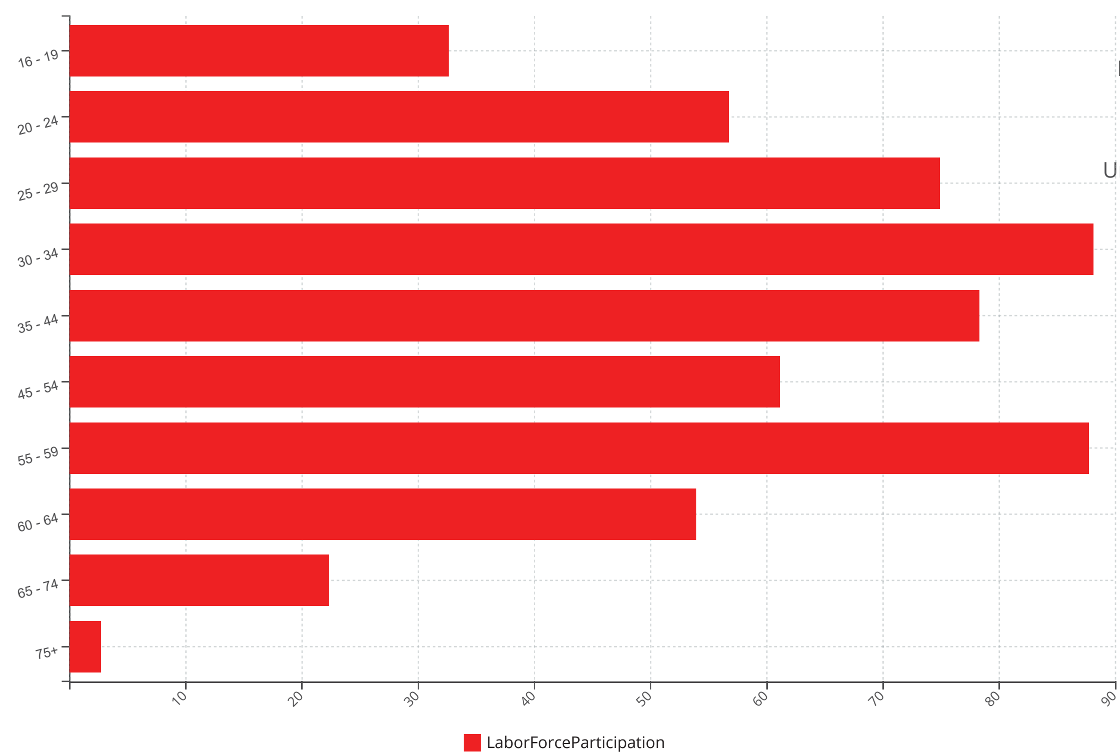
Show Source

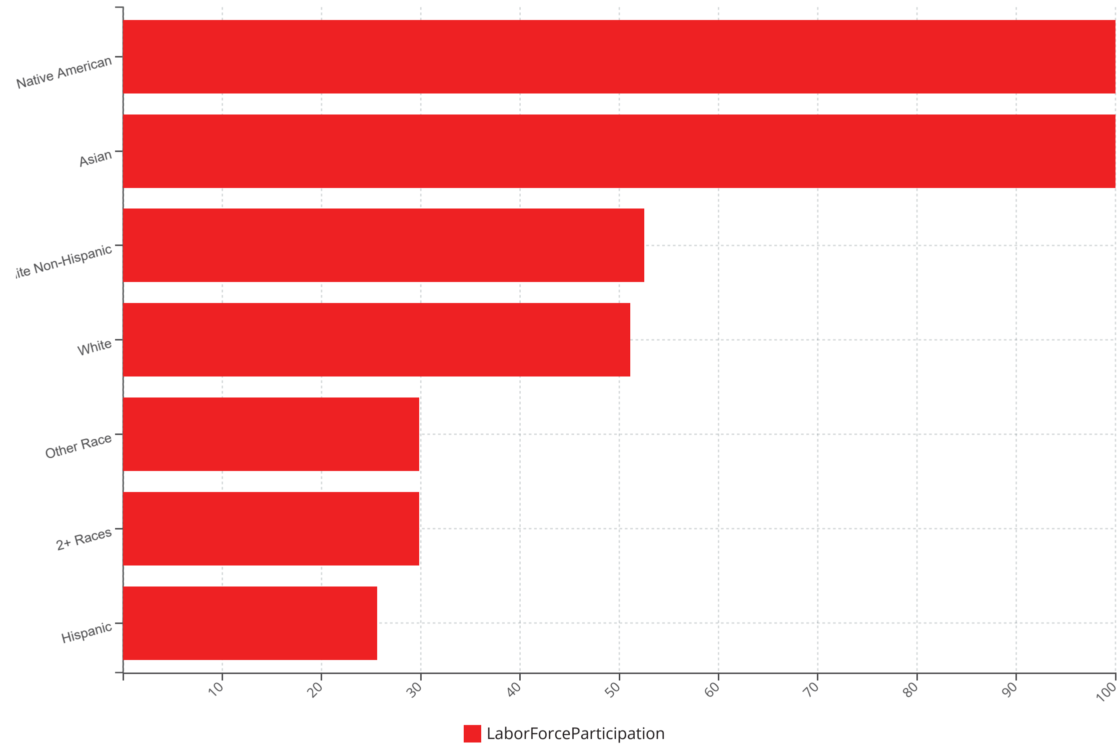
Labor Force Participation | Employment Rate | Unemployment Rate

51.1%
Labor Force Participation

50.7%
Employment Rate

0.7%
Unemployment Rate

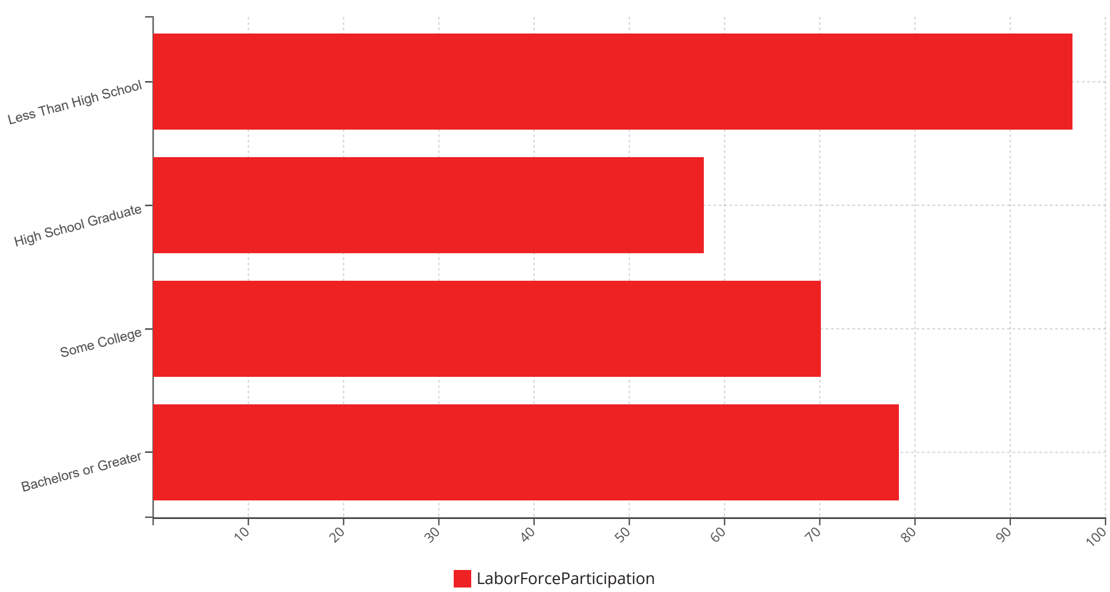




Valley County, Idaho Employment by Education

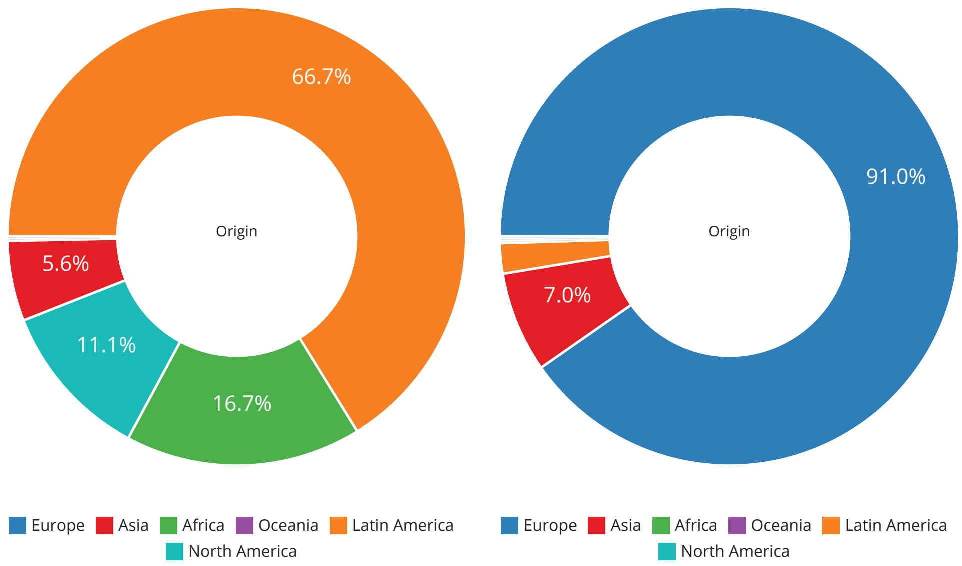
Show Source

Labor Force Participation | Employment Rate | Unemployment Rate



Valley County, Idaho Place of Birth

Show Source



98.94%
Native Born

1.06%
Foreign Born

0.16%
Non Citizen

0.90%
Naturalized

Non citizens include legal permanent residents (green card holders), international students, temporary workers, humanitarian migrants, and illegal immigrants.

Place of Birth

98.94% of Valley County, Idaho residents were born in the United States, with 44.32% having been born in Idaho. 0.16% of residents are not US citizens. Of those not born in the United States, the largest percentage are from Europe.

Sources

1. US Census City/Town Population estimates - Most recent state estimates from the Census Bureau's Population Estimates Program
2. Population of States and Counties of the United States: 1790 - 1990

Population Decennial Census & Annual Estimates

Source: U,S, Census Bureau

Geography	April 1, 2010 Census	April 1, 2020 Census	2010 - 2020 % Change	2020 Rank by % Change
Valley County	9,862	11,746	19.1%	5

Estimates Base			
	2010	2011	2012
9,854	9,788	9,639	9,544

Population Decennial Census & Annual Estimates

Source: U,S, Census Bureau

Geography	Annual Population Estimates (as of July 1)								Rank by 2010 Pop.
	2013	2014	2015	2016	2017	2018	2019	2020	
Valley County	9,585	9,805	10,058	10,438	10,700	11,054	11,443	11,792	29

Population Decennial Census & Annual Estimates

Source: U,S, Census Bureau

Geography	Rank by 2020 Pop.	Numeric Change 2010-2019	Percent Change 2010-2020	Rank by % Change 2010 -2020	Numeric Change 2018-2019	Percent Change 2019-2020
Valley County	28	2,004	20.5%	5	349	3.0%

Population Decennial Census & Annual Estimates

Source: U,S, Census Bureau

Geography	Rank by % Change 2019 - 2020
Valley County	4

APPENDIX E

PHD Analysis

Peak Hour Analysis

System	Existing EDUs	MDD (GPED)	MDD (gpm)	C	F	Calculated PHD (gpm)	Calculated MDD to PHD Factor	Recommended MDD to PHD Factor
Hawks Bay	55	1,470	57	3	25	182	3.19	3.19
Fir Grove	111	1,550	120	2	75	337	2.81	2.81
Day Star	167	1,435	167	2	75	425	2.54	2.54
Tamarack	424	1,210	357	2	125	764	2.14	2.14

No. of EDUs (N)	C	F
15-50	3	0
51-100	2.5	25
101-250	2	75
251-500	1.8	125
>500	1.6	225

Page 37 of the Washington Water System Design manual

Equation 3-1: Determine PHD

$$PHD = (ERU_{MDD}/1440)\ [(C)(N) + F] + 18$$

Where
- **PHD** = Peak Hourly Demand, total system (gallons per minute)
- **C** = Coefficient Associated with Ranges of ERUs
- **N** = Number of ERUs based on MDD
- **F** = Factor Associated with Ranges of ERUs
- **ERU_{MDD}** = Maximum Day Demand per ERU (gallons per day)

Table 3-1 identifies the appropriate coefficients and factors to substitute into Equation 3-1 for the ranges of single-family residential connections:

Table 3-1

Number of ERUs (N)	C	F
15 – 50	3.0	0
51 – 100	2.5	25
101 – 250	2.0	75
251 – 500	1.8	125
> 500	1.6	225

APPENDIX F

Water Rights Information

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22358

Priority: April 05, 2001 Maximum Diversion Rate. 1 85 CFS

It is hereby certified that NORTH LAKE RECREATIONAL SEWER & WATER DIST
PO BOX 729
DONNELLY ID 83615 has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated April 05, 2001; and has submitted Proof of Beneficial Use on June 20, 2003. An examination indicates that the works have a diversion capacity of 1 85 cfs of water from:

SOURCE
GROUND WATER

and a water right has been established as follows

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE
MUNICIPAL	01/01 to 12/31	1.85 CFS

LOCATION OF POINTS OF DIVERSION:

GROUND WATER	NE¼NW¼SE¼	Sec 4, Twp 15N, Rge 03E, B.M , VALLEY County
GROUND WATER	NE¼NW¼SE¼	Sec. 4, Twp 15N, Rge 03E, B.M , VALLEY County

CONDITIONS OF APPROVAL

1 Points of diversion are located within Lots 1 and 2, Blk 1, Mountain Shadows Subdivision No. 4
2. Place of use is within the service area of North Lake Recreational Sewer & Water District as provided for under Idaho law. The place of use is generally located within Sections 2, 3, 4, 9, 10, and 11, Township 15N, Range 3E; Sections 26, 34 and 35, Township 16N, Range 3E
3 The issuance of this right does not grant any right-of-way or easement across the land of another.
4 After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to determine the amount of water diverted from power records and shall annually report the information to the Department.
5 The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping

This license is issued pursuant to the provisions of Section 42-219, Idaho Code The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources

Signed and sealed this 10th day of May, 2004.

L. Glen Saxton
for KARL J DREHER
Director

MICROFILMED
JUN 0 2 2004

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22882

Priority: April 16, 2004 Maximum Diversion Rate: 4.12 CFS

It is hereby certified that NORTH LAKE RECREATIONAL SEWER & WATER DISTRICT
PO BOX 729
435 S ELD LN
DONNELLY ID 83615 has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated November 16, 2007; and has submitted Proof of Beneficial Use on August 29, 2014. An examination confirms water is diverted from:

SOURCE
GROUND WATER

and a water right has been established as follows:

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE
MUNICIPAL	01/01 to 12/31	4.12 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	NW1/4NW1/4	Sec. 27,	Twp 16N,	Rge 03E, B.M.	VALLEY County
GROUND WATER	NW1/4NW1/4	Sec. 27,	Twp 16N,	Rge 03E, B.M.	VALLEY County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of North Lake Recreational Sewer & Water District as provided for under Idaho Law. The place of use is generally described as Sections 14, 15, 21, 22, 23, 26, 27, 28, 33, and 34, Township 16N, Range 3E.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to use power records to determine the amount of water diverted and shall annually report the information to the Department.

4. When ordered by the Director, the right holder shall provide mitigation acceptable to the Director to offset depletion of lower Snake River flows needed for migrating anadromous fish. The amount of water required for mitigation, which is to be released into the Snake River or a tributary for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this right. Any order of the Director issued in accordance with this paragraph shall be in conformance with applicable rules allowing the right holder due process as the need for mitigation and the amount of mitigation are determined.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 14th day of October, 2014.

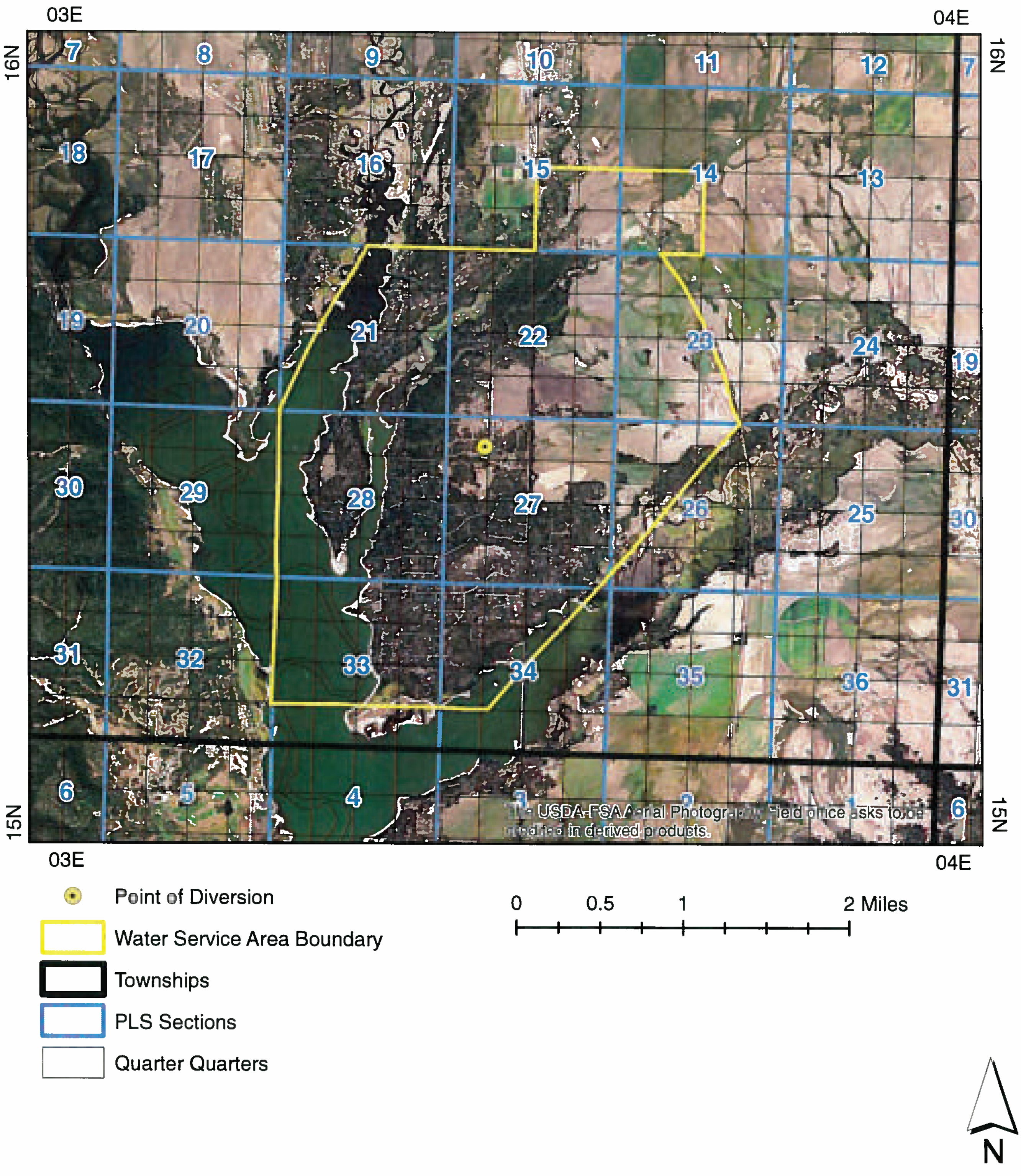
Shelley W. Keen
for GARY SPACKMAN
Director

North Lake Recreational Sewer & Water District

Attachment To Water Right License

65-22882

This map depicts the MUNICIPAL place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22889

Priority: May 18, 2004

Maximum Diversion Rate: 3.21 CFS
Maximum Diversion Volume: 79.2 AF

It is hereby certified that NORTH LAKE RECREATIONAL SEWER & WATER DIST
PO BOX 729
DONNELLY ID 83615 has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated May 18, 2004; and has submitted Proof of Beneficial Use on July 27, 2006. An examination confirms water is diverted from:

SOURCE
GROUND WATER

and a water right has been established as follows:

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL DIVERSION VOLUME
MUNICIPAL	01/01 to 12/31	1.01 CFS	79.2 AF
FIRE PROTECTION	01/01 to 12/31	2.23 CFS	

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SE¼SW¼	Sec. 17, Twp 16N, Rge 03E, B.M.	VALLEY County
GROUND WATER	SE¼SW¼	Sec. 17, Twp 16N, Rge 03E, B.M.	VALLEY County

PLACE OF USE: FIRE PROTECTION

Twp Rge Sec	NE				NW				SW				SE				
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	Totals
16N 03E 17						X	X	X	X		X	X					

PLACE OF USE: MUNICIPAL

See Conditions of Approval

CONDITIONS OF APPROVAL

1. This right does not grant any right-of-way or easement across the land of another.
2. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to determine the amount of water diverted from power records and shall annually report the information to the Department.
3. Water shall not be diverted for fire protection use under this right except to fight or repel an existing fire.
4. When ordered by the Director, the right holder shall provide mitigation acceptable to the Director to offset depletion of lower Snake River flows needed for migrating anadromous fish. The amount of water required for mitigation, which is to be released into the Snake River or a tributary for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this right. Any order of the Director issued in accordance with this paragraph shall be in conformance with applicable rules allowing the right holder due process as the need for mitigation and the amount of mitigation are determined.

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22889

5. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.

6. Place of use is within the service area of North lake Recreational Sewer & Water District as provided for under Idaho law. The place of use is generally described as located within Section 17, Township 16 North, Range 3 East.

7. Points of diversion are located within Lot 21, Blk. 2, Hawks Bay Subdivision No. 2.

8. The daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 9th day of May, 2012.

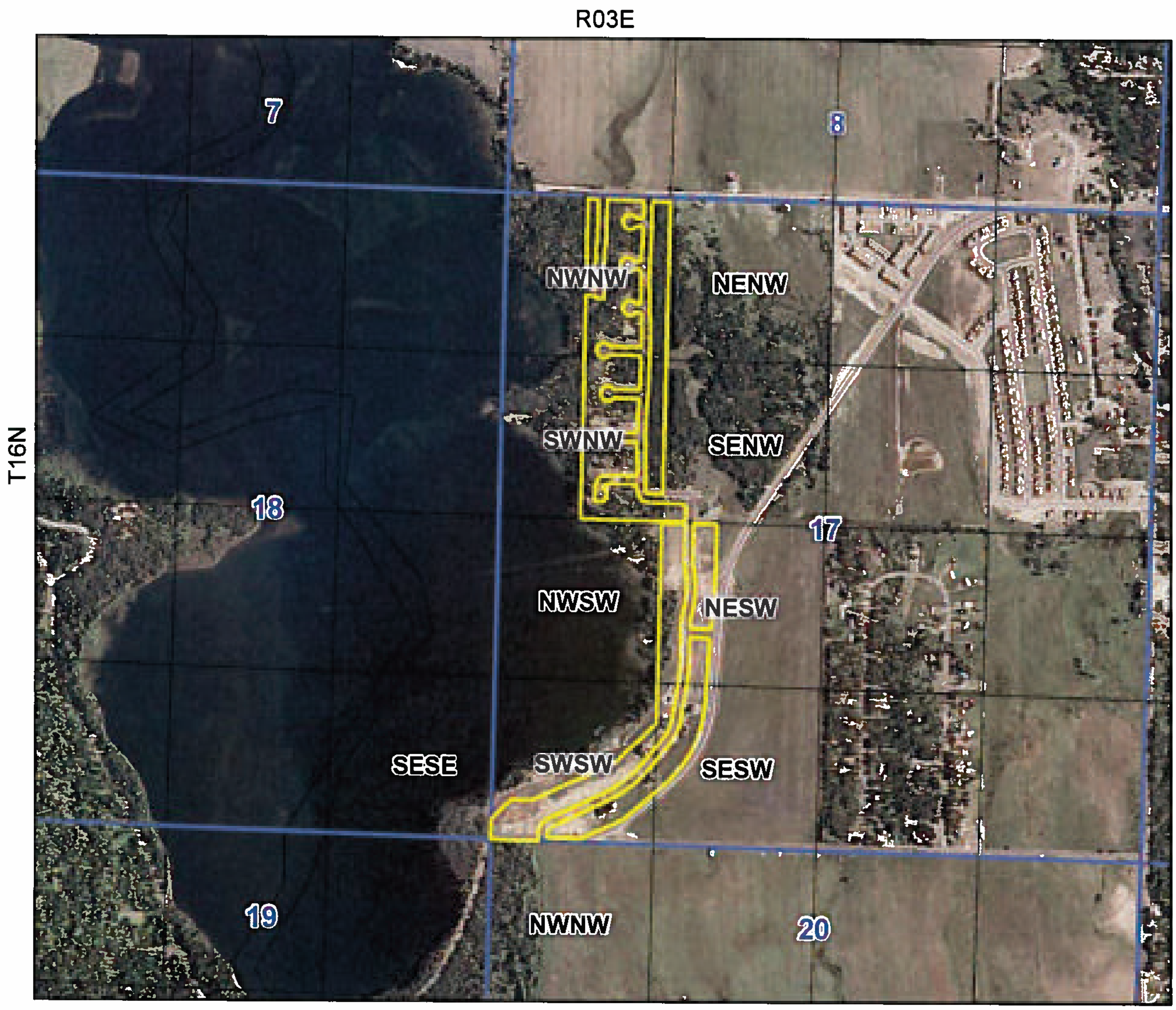
Shelley W. Keen
for GARY SPACKMAN
Interim Director

State of Idaho
Department of Water Resources

Water Right License

65-22889 & 65-22971

Water Service Area Boundary for North Lake Recreational Sewer & Water Dist



0 0.175 0.35 0.7 Miles

Water Service Area Boundary
Townships
PLS Sections
Quarter Quarters

N

Date Prepared: May 9, 2012

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22971

Priority: August 29, 2005

Maximum Diversion Rate: 0.94 CFS
Maximum Diversion Volume: 101.0 AF

It is hereby certified that NORTH LAKE RECREATIONAL SEWER & WATER DIST
PO BOX 729
DONNELLY ID 83615 has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated August 29, 2005; and has submitted Proof of Beneficial Use on March 22, 2012. An examination confirms water is diverted from:

SOURCE
GROUND WATER

and a water right has been established as follows:

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL DIVERSION VOLUME
MUNICIPAL	01/01 to 12/31	0.94 CFS	101.0 AF

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SE¼SW¼	Sec. 17, Twp 16N, Rge 03E, B.M.	VALLEY County
GROUND WATER	SE¼SW¼	Sec. 17, Twp 16N, Rge 03E, B.M.	VALLEY County

PLACE OF USE: MUNICIPAL

See Conditions of Approval

CONDITIONS OF APPROVAL

1. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to determine the amount of water diverted from power records and shall annually report the information to the Department.

2. This right does not grant any right-of-way or easement across the land of another.

3. When ordered by the Director, the right holder shall provide mitigation acceptable to the Director to offset depletion of lower Snake River flows needed for migrating anadromous fish. The amount of water required for mitigation, which is to be released into the Snake River or a tributary for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this right. Any order of the Director issued in accordance with this paragraph shall be in conformance with applicable rules allowing the right holder due process as the need for mitigation and the amount of mitigation are determined.

4. The diversion and use of water described in this right may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.

5. Points of diversion are located within Lot 21, Blk. 2, Hawks Bay Subdivision No. 2.

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-22971

6. Place of use is within the service area of North Lake Recreational Sewer & Water District as provided for under Idaho law. The place of use is generally described as located within Section 17, Township 16 North , Range 3 East.

7. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 9th day of May, 2012.

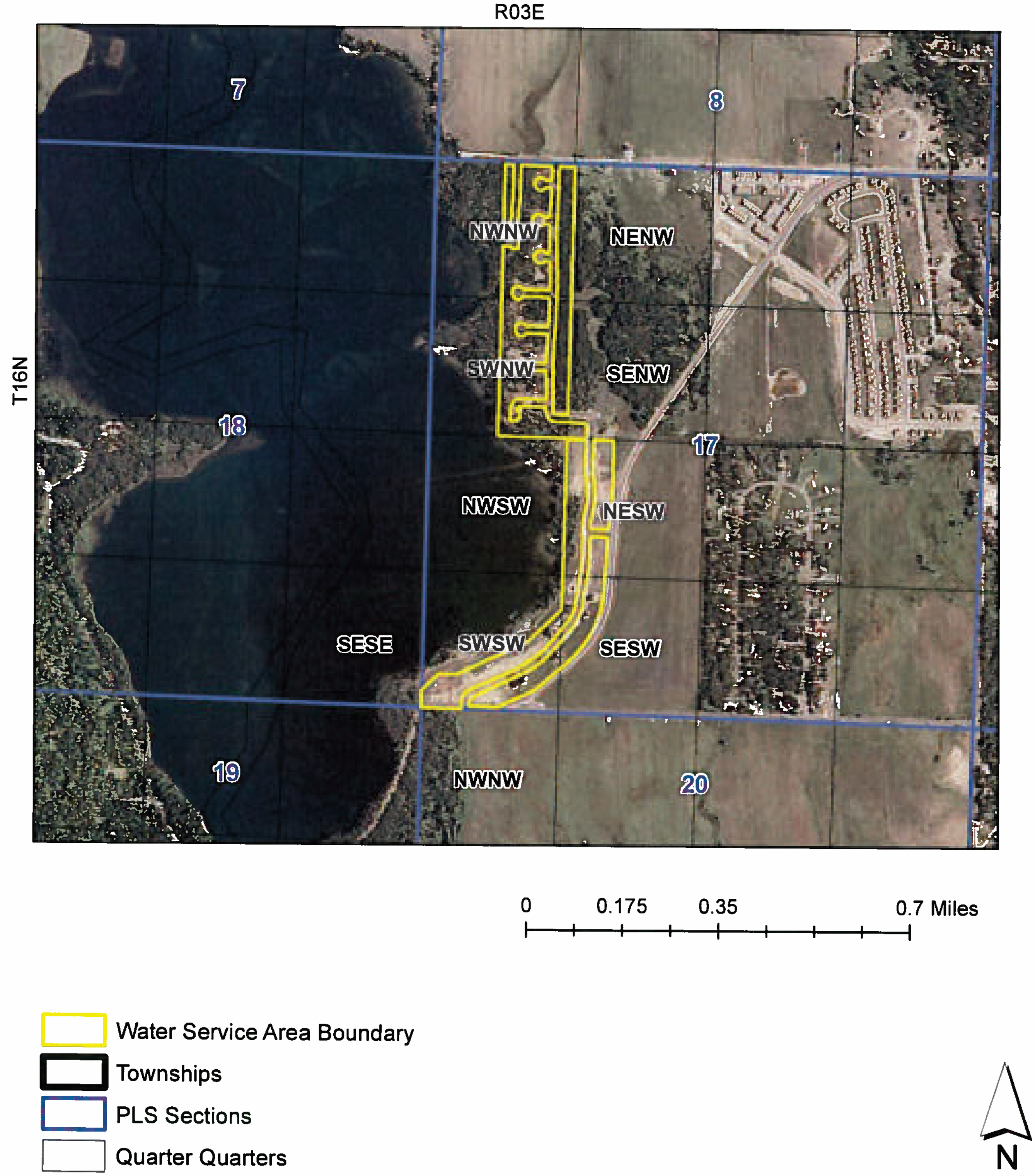
for Shelley W. Keen
GARY SPACKMAN
Interim Director

State of Idaho
Department of Water Resources

Water Right License

65-22889 & 65-22971

Water Service Area Boundary for North Lake Recreational Sewer & Water Dist



Date Prepared: May 9, 2012

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 65-23812

PRIORITY: March 16, 2001

Maximum Diversion Rate: 2.49 CFS
Maximum Diversion Volume: 500.0 AF

It is hereby certified that:
TAMARACK HOMEOWNERS ACQUISITION CO LLC 311 VILLAGE DR TAMARACK ID 83615-5014
has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated March 16, 2001, and has submitted Proof of Beneficial Use on December 29, 2017. An examination confirms water is diverted from:

SOURCE:
GROUND WATER
and a water right has been established as follows:

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL DIVERSION VOLUME
MUNICIPAL	01/01 to 12/31	2.49 CFS	500.0 AF

LOCATION OF POINT(S) OF DIVERSION:
GROUND WATER SE¼NW¼ Sec. 5, Twp 15N, Rge 03E, B.M. VALLEY County
GROUND WATER NE¼NW¼ Sec. 5, Twp 15N, Rge 03E, B.M. VALLEY County

CONDITIONS OF APPROVAL

1. Place of use is within the area served by the right holder's public water supply system. The place of use is generally located within Section 36, Township 16 North, Range 02 East, Sections 31 and 32, Township 16 North, Range 03 East, and Sections 5 and 8, Township 16 North, Range 03 East.
2. After specific notification by the Department, the right holder shall install a suitable measuring device to determine the amount of water diverted and shall annually report the information to the Department.
3. The right holder shall comply with the terms and conditions of the State Board of Land Commissioners' Commercial Lease M-5042, originally executed June 11, 2002, as amended, and as conditioned upon assignment, including specifically, but not limited to, Article VII of the Lease addressing water rights, and Article 3.f of the Assignment and Assumption Agreement of Commercial Lease No. M-5042 executed by the State Board of Land Commissioners on December 3, 2018, and as such instruments may hereafter be amended or superseded.
4. The right holder shall comply with the terms of the April 2002 Conservation Easement made and entered into between WestRock Associates, LLC and the Idaho Foundation for Parks and Lands.
5. The right holder shall comply with the requirements of the Wildlife Habitat Conservation Plan with any changes approved by the Idaho Department of Fish and Game, in particular as the Plan relates to the right holder's agreement to retain its appurtenant surface water rights.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

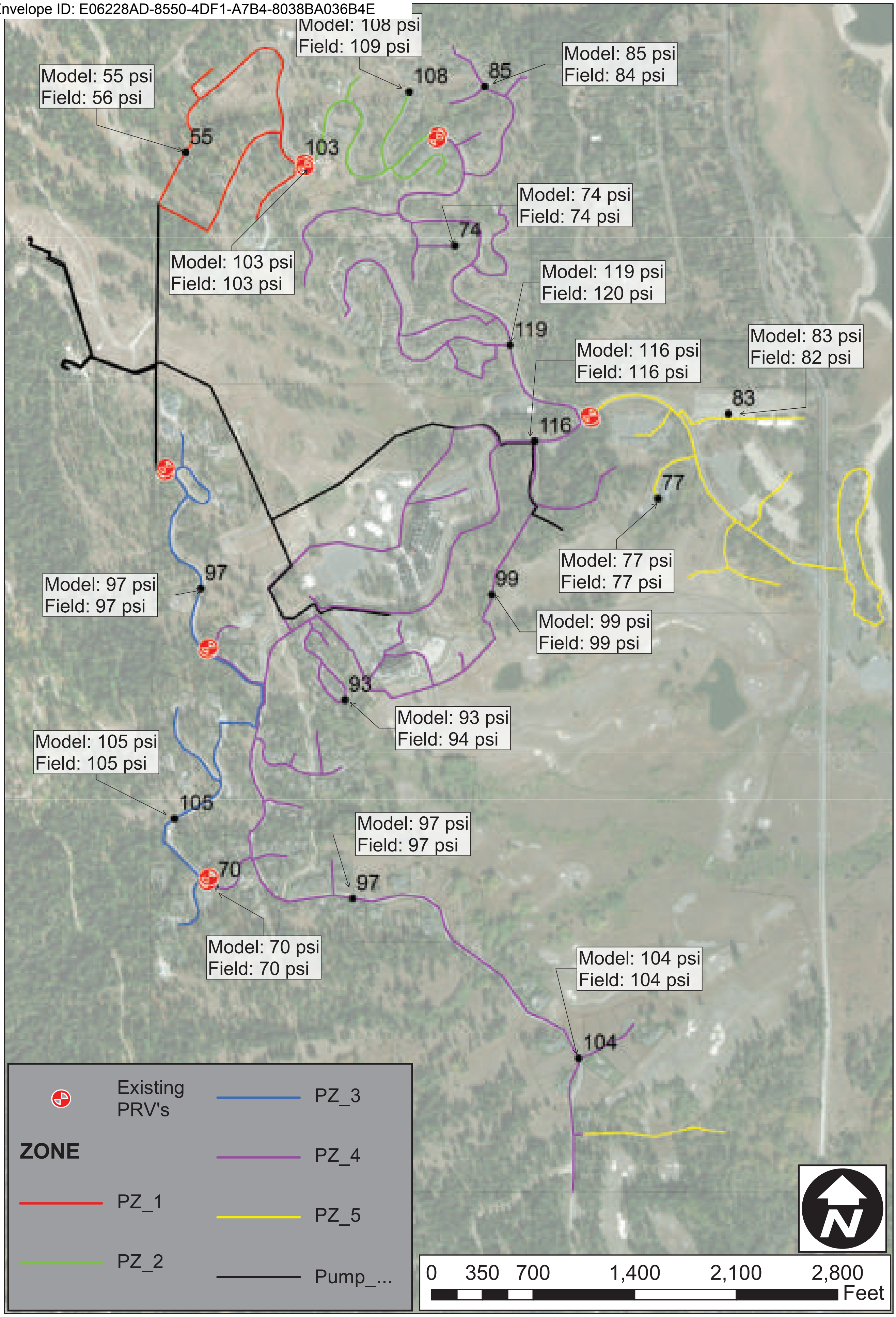
Signed this 13th day of March, 2019.

Shelley W. Keen

SHELLEY W. KEEN
Water Allocation Bureau Chief

APPENDIX G

Model Calibration



Tamarack

NLRSWD

Static Pressure Model vs Field

Water Master Plan

KELLER ASSOCIATES

APPENDIX H

Alternatives Cost Estimates

North Lake Recreation Sewer and Water District

2022 WMP

Hawks Bay Alternative 1

Project Title: (2) New 900+ gpm wells

Location: Tamarack Falls Rd. & Norwood Rd.

Need for Project:
The Hawks Bay water system has a current firm supply deficit of over 1,300 gpm and a projected deficit of over 1,600 gpm with existing commitments and the planned Tamarack Falls development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through two new 900+ gpm wells) to meet existing and future demands with firm capacity.

Design Considerations:
-Work with developers to identify actual location of the new wells.
-Meet well setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	2	EA	$ 500,000	$ 1,000,000	
Groundwater Well Station 2 Wells (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,600,000	$ 1,600,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading)	1	LS	$ 75,000	$ 75,000	
Electrical (lighting, generator and power to wells)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 2,945,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 295,000	
Bonding			2.5%	$ 74,000	
Contractor Overhead and Profit			15%	$ 442,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 884,000	
				Total Construction Subtotal	***$ 4,640,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 696,000	
Engineering - Construction Contract Administration			5%	$ 232,000	
Engineering -- Inspection			5%	$ 232,000	
Permitting, Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 10,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 92,800	
				Total Project Costs (rounded)	**$ 5,970,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 2,400	$ 48,000	
Short-Lived Asset Replacement	20	YR	$ 40,000	$ 800,000	
Subtotal					***$ 1,098,000***
20-Year Life Cycle Cost					**$ 7,068,000**

[1]EA = each, LF = linear foot, LS = lump sum

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

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North Lake Recreation Sewer and Water District
2022 WMP

KELLER ASSOCIATES

Hawks Bay Alternative 2

Project Title: New 500+ gpm Well, 350K gal. Tank, and 1,700 gpm Booster Station

Location: Tamarack Falls Rd. & Norwood Rd.

Need for Project:
The Hawks Bay water system has a current firm supply deficit of over 1,300 gpm and a projected deficit of over 1,600 gpm with existing commitments and the planned Tamarack Falls development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,700 gpm) to the Hawks Bay water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Work with developers to identify actual location of the new well, tank, and booster station.
-Aesthetics for tank and booster/well facility if located along Tamarack Falls Rd.
-Meet well/tank setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	1	EA	$ 500,000	$ 500,000	
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (1,700 firm capacity)	1	EA	$ 1,750,000	$ 1,750,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 4,595,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 460,000	
Bonding			2.5%	$ 115,000	
Contractor Overhead and Profit			15%	$ 689,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,379,000	
				Total Construction Subtotal	***$ 7,238,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 1,086,000	
Engineering - Construction Contract Administration			5%	$ 362,000	
Engineering -- Inspection			5%	$ 362,000	
Permitting, Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 144,800	
				Total Project Costs (rounded)	**$ 9,280,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 2,400	$ 48,000	
Short-Lived Asset Replacement	20	YR	$ 95,300	$ 1,906,000	
Subtotal					***$ 2,290,000***
20-Year Life Cycle Cost					**$ 11,570,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District
2022 WMP

KELLER ASSOCIATES

Hawks Bay Alternative 3

Project Title: New 350k gal tank, 2,000 gpm Booster Station, and Increaase Domestic Well Capacity

Location: Tamarack Falls Rd. & Norwood Rd.

<u>Need for Project:</u>
The Hawks Bay water system has a current firm supply deficit of over 1,300 gpm and a projected deficit of over 1,600 gpm with existing commitments and the planned Tamarack Falls development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

<u>Objective:</u>
Provide additional well source capacity by increasing the capacity of the existing domestic well (500+ gpm), provide storage (350k gal), and a booster station (2,000 gpm). Pump the existing wells to a new tank with the booster station supplying the system from the tank. The booster station would be the only source supplying the system.

<u>Design Considerations:</u>
-Work with developers to identify actual location of the new tank and booster station.
-Aesthetics for tank and booster/well facility if located along Tamarack Falls Rd.
-Meet tank setbacks required by Idaho Code.
-Existing well pump modifications to pump to the tank.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Improvements (both wells for new head condition)	1	LS	$ 500,000	$ 500,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (2,000 firm capacity)	1	EA	$ 2,000,000	$ 2,000,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	5,500	LF	$ 215	$ 1,182,500	
				Construction Subtotal	***$ 4,827,500***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 483,000	
Bonding			2.5%	$ 121,000	
Contractor Overhead and Profit			15%	$ 724,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,448,000	
				Total Construction Subtotal	***$ 7,604,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 1,141,000	
Engineering - Construction Contract Administration			5%	$ 380,000	
Engineering -- Inspection			5%	$ 380,000	
Permitting & Environmental			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 30,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 152,100	
				Total Project Costs (rounded)	**$ 9,770,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 1,600	$ 32,000	
Short-Lived Asset Replacement	20	YR	$ 71,500	$ 1,430,000	
Subtotal					***$ 1,712,000***
20-Year Life Cycle Cost					**$ 11,482,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Fir Grove)

Fir Grove Alternative 1

Project Title: (2) New 800+ gpm wells

Location: Various locations along 10" and 12" lines

Need for Project:
The Fir Grove water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,300 gpm with existing commitments and the planned Timber Creek development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through two new 800+ gpm wells) to meet existing and future demands with firm capacity.

Design Considerations:
-Work with developers to identify actual location of the new wells.
-Meet well setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	2	EA	$ 500,000	$ 1,000,000	
Groundwater Well Station 2 Wells (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,600,000	$ 1,600,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading)	1	LS	$ 75,000	$ 75,000	
Electrical (lighting, generator and power to wells)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 2,945,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 295,000	
Bonding			2.5%	$ 74,000	
Contractor Overhead and Profit			15%	$ 442,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 884,000	
				Total Construction Subtotal	***$ 4,640,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 696,000	
Engineering - Construction Contract Administration			5%	$ 232,000	
Engineering -- Inspection			5%	$ 232,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 10,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 92,800	
				Total Project Costs (rounded)	**$ 5,970,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 3,200	$ 64,000	
Short-Lived Asset Replacement	20	YR	$ 40,000	$ 800,000	
Subtotal					***$ 1,114,000***
20-Year Life Cycle Cost					**$ 7,084,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District
2022 WMP (Fir Grove)

Fir Grove Alternative 2

Project Title: New 500+ gpm well, 350k gal tank, and 1,500 gpm booster station

Location: Various locations along 10" and 12" lines

Need for Project:
The Fir Grove water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,300 gpm with existing commitments and the planned Timber Creek development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,500 gpm) to the Fir Grove water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Work with developers to identify actual location of the new well, tank, and booster station.
-Aesthetics for tank and booster/well facility if located along a main road.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	1	EA	$ 500,000	$ 500,000	
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (1,500 firm capcity)	1	EA	$ 1,500,000	$ 1,500,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 4,345,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 435,000	
Bonding			2.5%	$ 109,000	
Contractor Overhead and Profit			15%	$ 652,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,304,000	
				Total Construction Subtotal	***$ 6,845,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 1,027,000	
Engineering - Construction Contract Administration			5%	$ 342,000	
Engineering -- Inspection			5%	$ 342,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 136,900	
				Total Project Costs (rounded)	**$ 8,780,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 3,200	$ 64,000	
Short-Lived Asset Replacement	20	YR	$ 89,000	$ 1,780,000	
Subtotal					***$ 2,180,000***
20-Year Life Cycle Cost					**$ 10,960,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District
2022 WMP (Fir Grove)

Fir Grove Alternative 3

Project Title: New 350k gal tank and 2,000 gpm booster station (existing wells supply new tank)

Location: Existing Well Site

Need for Project:
The Fir Grove water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,300 gpm with existing commitments and the planned Timber Creek development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Pump the existing two wells to a new ground level storage tank (350k gal) constructed at the existing well site. Construct a new booster station (2,000 gpm) to supply the distribution system from the new tank.

Design Considerations:
-Existing well pump modifications to pump to the tank.
-Existing well pump modifications to pump to the tank.
-Meet tank setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Improvements (both pumps for new head condition)	1	LS	$ 500,000	$ 500,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (2,000 firm capcity)	1	EA	$ 2,000,000	$ 2,000,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 3,645,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 365,000	
Bonding			2.5%	$ 91,000	
Contractor Overhead and Profit			15%	$ 547,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,094,000	
				Total Construction Subtotal	***$ 5,742,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 861,000	
Engineering - Construction Contract Administration			5%	$ 287,000	
Engineering -- Inspection			5%	$ 287,000	
Permitting & Environmental			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 114,800	
				Total Project Costs (rounded)	**$ 7,380,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 2,400	$ 48,000	
Short-Lived Asset Replacement	20	YR	$ 71,500	$ 1,430,000	
Subtotal					***$ 1,728,000***
20-Year Life Cycle Cost					**$ 9,108,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Daystar)

Day Star Alternative 1	**Location: Existing Goldfork Bay Lot**
Project Title: (2) New 900+ gpm wells	

Need for Project:
The Day Star water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,200 gpm. The Supply deficit results in pressure sbelow 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through two new 900+ gpm wells) to meet existing and future demands with firm capacity.

Design Considerations:
-Construct the new well pump facility on the existing well lot.
-Meet well setbacks required by Idaho Code.
-One well hole already exists, during design verify capacity

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Groundwater Well Station 2 Wells (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,600,000	$ 1,600,000	
Well Hole	1	EA	$ 500,000	$ 500,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading)	1	LS	$ 75,000	$ 75,000	
Electrical (lighting, generator and power to wells)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 2,445,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 245,000	
Bonding			2.5%	$ 61,000	
Contractor Overhead and Profit			15%	$ 367,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 734,000	
				Total Construction Subtotal	***$ 3,852,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 578,000	
Engineering - Construction Contract Administration			5%	$ 193,000	
Engineering -- Inspection			5%	$ 193,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 10,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 77,000	
				Total Project Costs (rounded)	**$ 4,970,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 4,700	$ 94,000	
Short-Lived Asset Replacement	20	YR	$ 40,000	$ 800,000	
Subtotal					***$ 1,144,000***
20-Year Life Cycle Cost					**$ 6,114,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Daystar)

Day Star Alternative 2

Project Title: New 500+ gpm Well, 350K gal. Tank, and 1,700 gpm Booster Station

Location: Existing Goldfork Bay lot and lot from developer for booster and tank

Need for Project:
The Day Star water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,200 gpm. The Supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,700 gpm) to the Day Star water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Determine actual location of the new tank, and booster station.
-Aesthetics for tank and booster facility
-Site will need to provide adequate setbacks.
-The well hole already exists

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k	1	EA	$ 75,000	$ 75,000	
Booster Station (1,700 firm capcity)	1	EA	$ 1,750,000	$ 1,750,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	250	LF	$ 215	$ 53,800	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 4,148,800***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 415,000	
Bonding			2.5%	$ 104,000	
Contractor Overhead and Profit			15%	$ 622,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,245,000	
				Total Construction Subtotal	***$ 6,535,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 980,000	
Engineering - Construction Contract Administration			5%	$ 327,000	
Engineering -- Inspection			5%	$ 327,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 20,000	
Legal, Administrative, and Funding			2%	$ 130,700	
				Total Project Costs (rounded)	**$ 8,400,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 4,800	$ 96,000	
Short-Lived Asset Replacement	20	YR	$ 95,300	$ 1,906,000	
Subtotal					***$ 2,338,000***
20-Year Life Cycle Cost					**$ 10,738,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District
2022 WMP (Day Star)

KELLER ASSOCIATES

Day Star Alternative 3

Project Title: New 350k gal tank and 2,000 gpm Booster Station

Location: Existing well site and purchased lot or from developer for booster and tank

Need for Project:
The Day Star water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,200 gpm. The Supply deficit results in pressure sbelow 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Pump the existing two wells to a new ground level storage tank (350k gal) constructed near the existing well site. Construct a new booster station (2,000 gpm) to supply the distribution system from the new tank.

Design Considerations:
-Determine actual location of the new well, tank, and booster station.
-Aesthetics for tank and booster/well facility
-Site will need to provide adequate tank setbacks.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Improvements	1	LS	$ 500,000	$ 500,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k	1	EA	$ 75,000	$ 75,000	
Booster Station (2,000 firm capcity)	1	EA	$ 2,000,000	$ 2,000,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	1,000	LF	$ 215	$ 215,000	
				Construction Subtotal	***$ 3,860,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 386,000	
Bonding			2.5%	$ 97,000	
Contractor Overhead and Profit			15%	$ 579,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,158,000	
				Total Construction Subtotal	***$ 6,080,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 912,000	
Engineering - Construction Contract Administration			5%	$ 304,000	
Engineering -- Inspection			5%	$ 304,000	
Permitting & Environmental			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 30,000	
Land Acquisition			LS	$ 250,000	
Legal, Administrative, and Funding			2%	$ 121,600	
				Total Project Costs (rounded)	**$ 8,080,000**
Operations and Maintenance					
Staffing	20	YR	$ 12,500	$ 250,000	
Power	20	YR	$ 3,200	$ 64,000	
Short-Lived Asset Replacement	20	YR	$ 71,500	$ 1,430,000	
Subtotal					***$ 1,744,000***
20-Year Life Cycle Cost					**$ 9,824,000**

[1]EA = each, LF = linear foot, LS = lump sum

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APPENDIX I

Capital Improvement Plan

Client:	NLRSWD
Project:	Water Master Plan Update
Project No.:	218102-007
Location:	Meridian Office
Date:	Aug-23
Reviewed By:	

Project ID#	Project Name	Primary Purpose	Total Estimated Cost (2023 Dollars)
Priority 1 Improvements (Prior to 5 Years)			
1.1	Tamarack Well #12	Correct Existing Supply Deficit	$2,640,000
1.2	Fir Grove Generator Addition	Provide Standby Power at Supply	$350,000
1.3	Day Star Generator Addition	Provide Standby Power at Supply	$350,000
1.4	Tamarack Generator Addition	Provide Standby Power at Supply	$700,000
1.5	District Water Scada Project	Data Information Collection and Tracking	$1,380,000
		Total Priority 1 Improvements (rounded)	**$5,420,000**
Priority 2 Improvements (Prior to 20 Years)			
2.1	Well Lots Fencing Project	Source Water Protection	$550,000
		Total Priority 2 Improvements (rounded)	**$550,000**
Priority 3 Improvements (Prior to 20 Years)			
3.1	Tamarack Osprey Meadow Lodge Waterline Replacement	Correct Existing Commercial Fire Flow Deficiencies	$610,000
3.2	Day Star Homer Lane Loop	Correct Existing Residential Fire Flow Deficiencies	$690,000
3.3	Day Star Lee Way Loop	Correct Existing Residential Fire Flow Deficiencies	$360,000
3.4	Tamarack Pinnacle Court Waterline Replacement	Correct Existing Residential Fire Flow Deficiencies	$130,000
		Total Priority 3 Improvements (rounded)	**$1,790,000**
Priority 4 Improvements (Development Driven)			
4.1	Hawks Bay Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$9,280,000
4.2	Day Star Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,400,000
4.3	Fir Grove Tank, Booster, and Well Project	Correct Existing and Future Supply Deficit	$8,780,000
		Total Priority 4 Improvements (rounded)	**$26,460,000**
		TOTAL SYSTEM IMPROVEMENTS COSTS (rounded)	**$34,220,000**

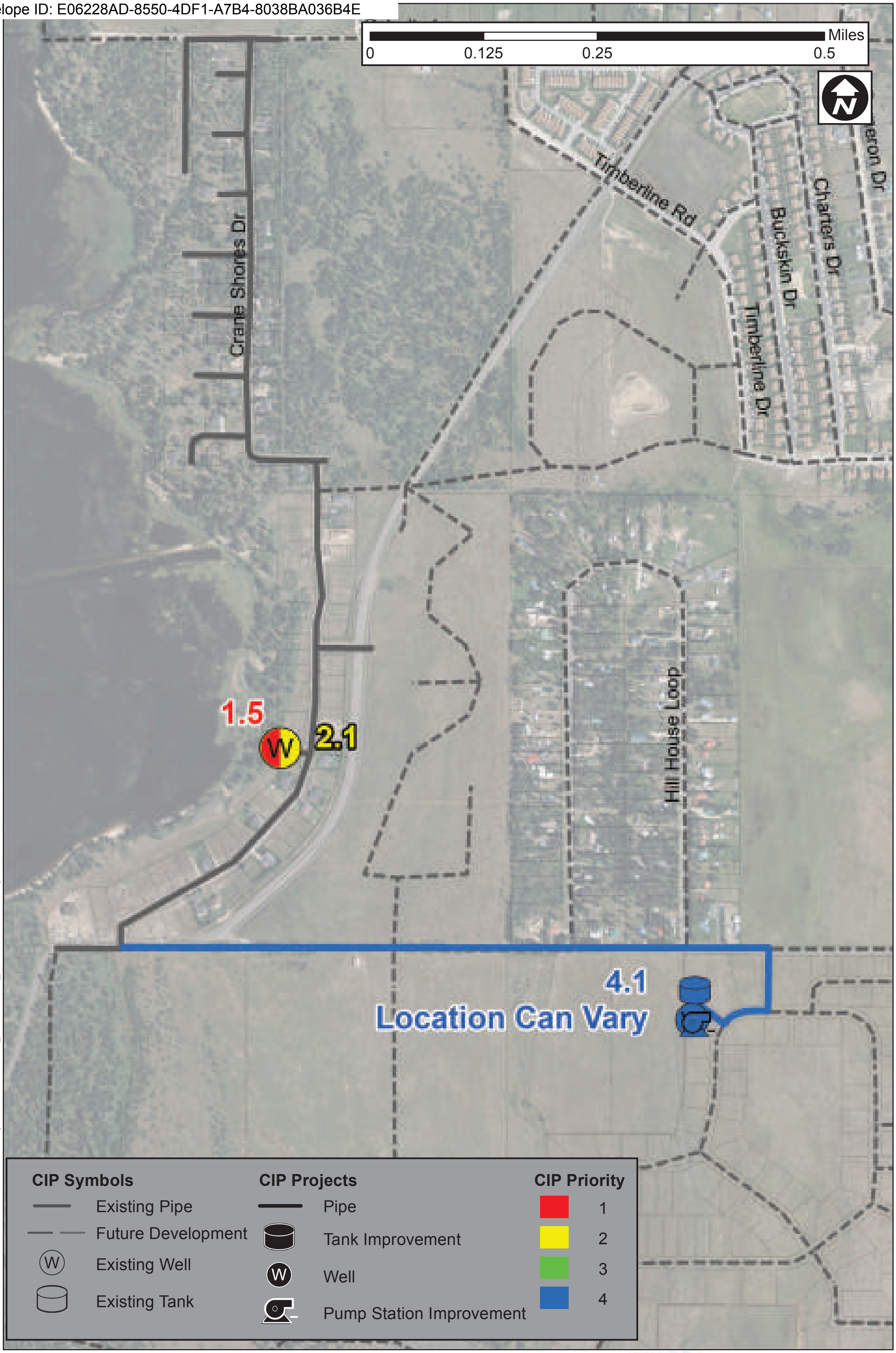
1. The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

2. Federal funding requirements (i.e. AIS) were not included in costs and if this type of funding is utilized it is recommended cost estimates be revisited.

Client: NLRSWD
Project: Water Master Plan Update
Project No 218102-007

CIP - Priority 1 Improvements Schedule

CIP ID	Capital Improvement Item	Total Cost (2023 dollars)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
1.1	Tamarack Well #12	$ 2,640,000	$ 2,640,000				
1.2	Fir Grove Generator Addition	$ 350,000		$ 350,000			
1.3	Day Star Generator Addition	$ 350,000			$ 350,000		
1.4	Tamarack Generator Addition	$ 700,000				$ 350,000	$ 350,000
1.5	District Water Scada Project	$ 1,380,000		$ 345,000	$ 345,000	$ 345,000	$ 345,000
	Total Capital Costs	**$ 5,420,000**	**$ 2,640,000**	**$ 695,000**	**$ 695,000**	**$ 695,000**	**$ 695,000**



Document Path: J:\218102 NLRSWD\007 - Water System Master Plan\b_PLAN\zGIS\b_MXDs\CIP\Hawks Bay CIP.mxd

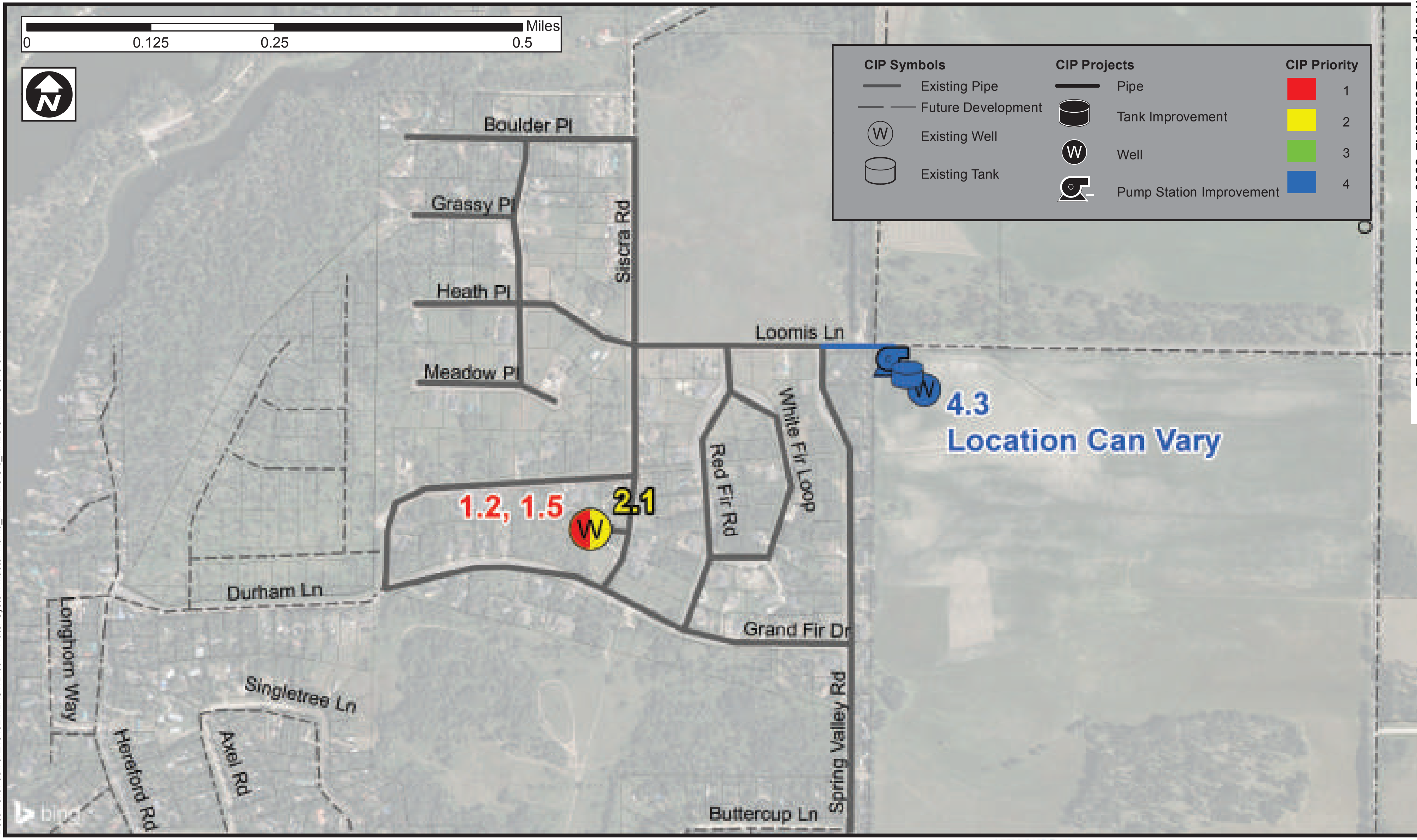
Figure 9-1

NLRSWD

CIP - Hawks Bay

Water Master Plan

KELLER ASSOCIATES



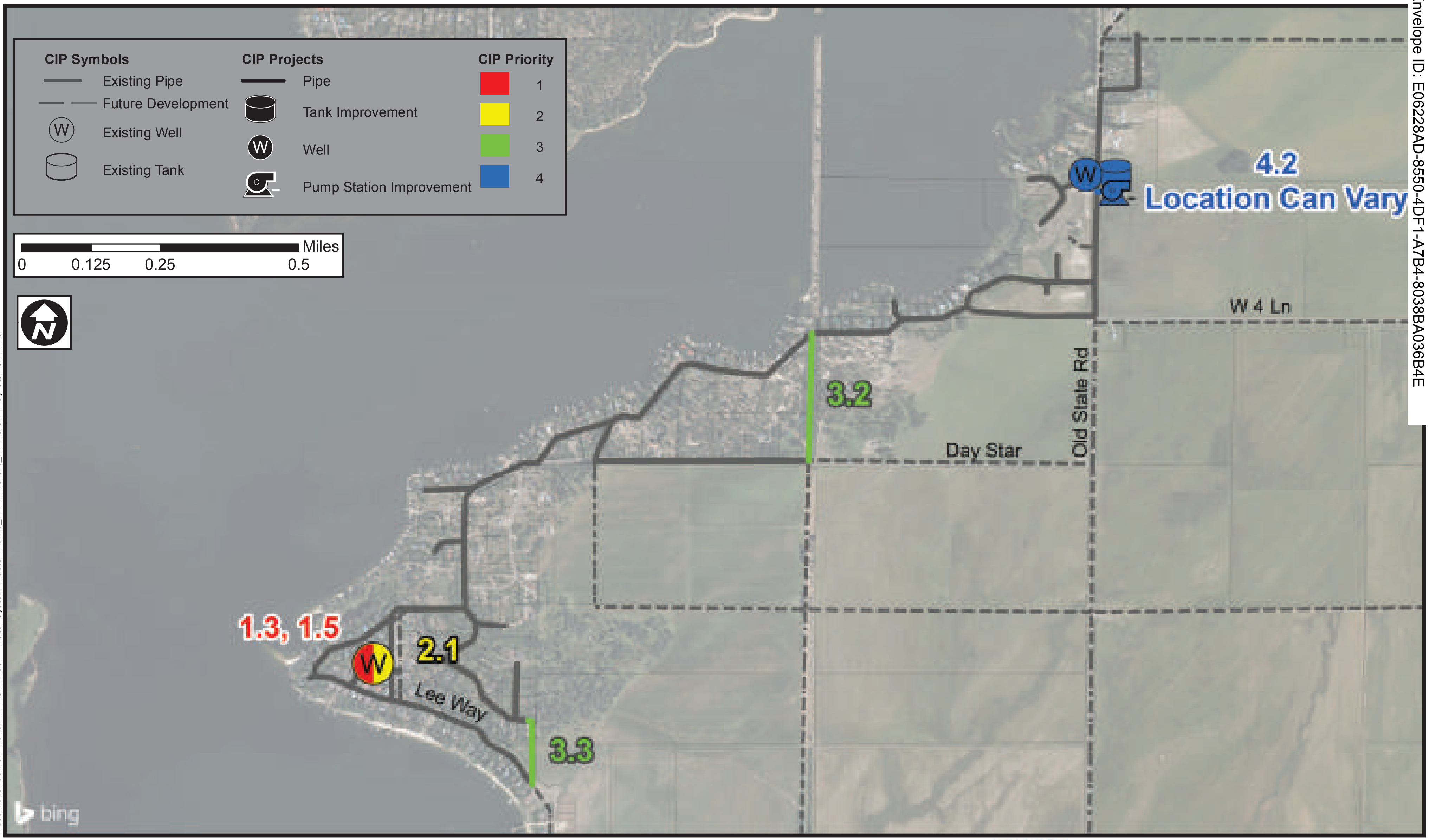
KELLER ASSOCIATES

CIP - Fir Grove

Water Master Plan

Figure 9-2

NLRSWD



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KELLER ASSOCIATES

CIP - Day Star

Water Master Plan

Figure 9-3

NLRSWD

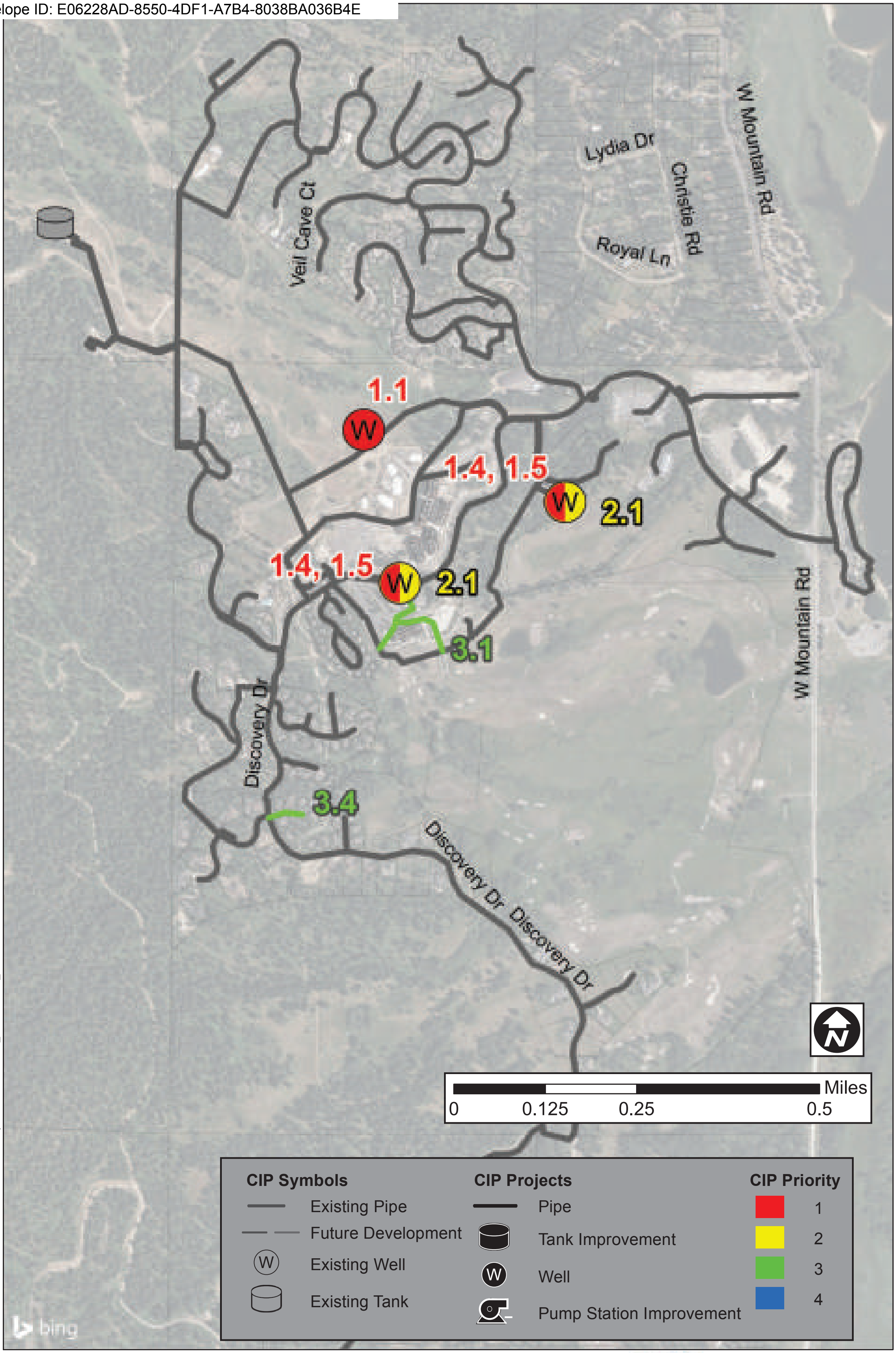


Figure 9-4

NLRSWD

CIP - Tamarack

Water Master Plan

Draft

North Lake Recreation Sewer and Water District

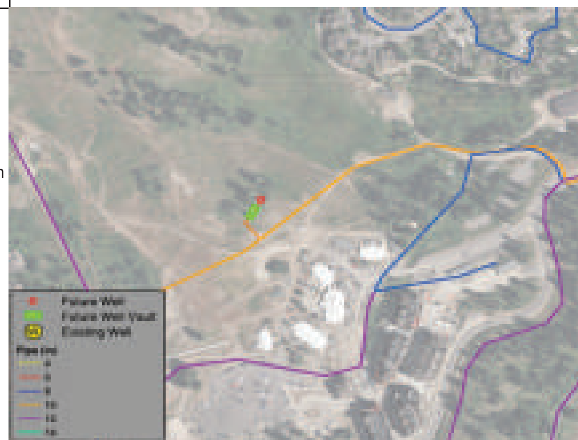
2022 WMP

Project Title: Tamarack Well #12	Location: Lower Showtime Ski Run
Project Identifier: 1.1	

<u>Need for Project:</u>
The Tamarack water system has a current firm supply deficit of 57 gpm and a projected deficit of over 850 gpm with existing commitments without the backup emergency Well #5.

<u>Objective:</u>
-Provide an additional permanent well source capacity (through a new 700+ gpm well), to the Tamarack water system to meet existing demands with permanent firm supply capacity. The new well will pump into the tank where it will gravity feed into the rest of the system similar to the other existing wells. The existing wells will remain in place with their capability of pumping directly into the tank as well.

<u>Design Considerations:</u>
-Final pumping capacity
- Lead/Lag position with the other 2 pumps



General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	1	EA	$ 500,000	$ 500,000	
Groundwater Well Station (Pump, Pitless Adapter, Electrical, Controls, Valves)	1	EA	$ 600,000	$ 600,000	
Yard piping	1	LS	$ 30,000	$ 30,000	
Site Improvement (fence, grading)	1	LS	$ 30,000	$ 30,000	
Electrical (lighting, generator and power to wells)	1	LS	$ 75,000	$ 75,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	*$ 1,280,000*
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 128,000	
Bonding			2.5%	$ 32,000	
Contractor Overhead and Profit			15%	$ 192,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 384,000	
				Total Construction Subtotal	*$ 2,016,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 302,000	
Engineering - Construction Contract Administration			5%	$ 101,000	
Engineering -- Inspection			5%	$ 101,000	
Permitting, Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 10,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 40,300	
				Total Project Costs (rounded)	**$ 2,640,000**
Operations and Maintenance					
Staffing	20	YR	$ 8,400	$ 168,000	
Power	20	YR	$ 54,100	$ 1,082,000	
Short-Lived Asset Replacement	20	YR	$ 15,000	$ 300,000	
Subtotal					*$ 1,550,000*
20-Year Life Cycle Cost					**$ 4,190,000**

[1]EA = each, LF = linear foot, LS = lump sum

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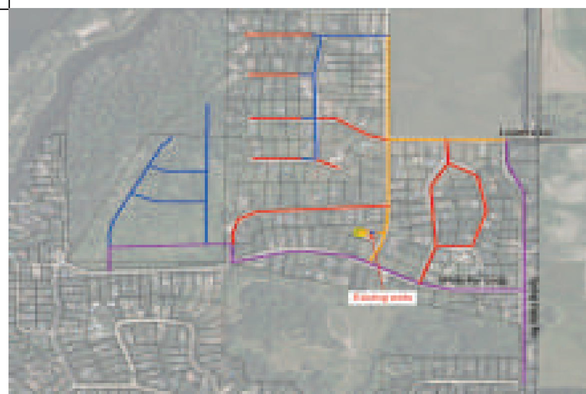
North Lake Recreation Sewer and Water District

2022 WMP (Fir Grove)

Project Title: Fir Grove Generator Addition

Project Identifier: 1.2

Location: Existing Well Site



Need for Project:
The Fir Grove water system does not currently have permanent backup power at their well site.

Objective:
- Provide a backup generator to supply wells during power outages.

Design Considerations:
-Fuel Duration

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Backup Power	1	EA	$ 175,000	$ 175,000	
				Construction Subtotal	*$ 175,000*
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 18,000	
Bonding			2.5%	$ 4,000	
Contractor Overhead and Profit			15%	$ 26,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 53,000	
				Total Construction Subtotal	*$ 276,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			10%	$ 28,000	
Engineering - Construction Contract Administration			2%	$ 6,000	
Engineering -- Inspection			2%	$ 6,000	
Permitting & Environmental			LS	$ -	
SCADA Integration			LS	$ 20,000	
Surveying			LS	$ -	
Legal, Administrative, and Funding			2%	$ 5,500	
				Total Project Costs (rounded)	**$ 350,000**
Operations and Maintenance					
Staffing	20	YR	$ 2,100	$ 42,000	
Power	20	YR	$ -	$ -	
Short-Lived Asset Replacement	20	YR	$ 4,400	$ 88,000	
Subtotal					*$ 130,000*
20-Year Life Cycle Cost					**$ 480,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District
2022 WMP (Daystar)

Project Title: Day Star Generator Addition

Project Identifier: 1.3

Location: At Existing Well Site

Need for Project:
The Daystar water system does not currently have permanent backup power at their well site.

Objective:
- Provide a backup generator to supply wells during power outages.

Design Considerations:
-Fuel Duration

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Backup Power	1	EA	$ 175,000	$ 175,000	
				Construction Subtotal	***$ 175,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 18,000	
Bonding			2.5%	$ 4,000	
Contractor Overhead and Profit			15%	$ 26,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 53,000	
				Total Construction Subtotal	***$ 276,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			10%	$ 28,000	
Engineering - Construction Contract Administration			2%	$ 6,000	
Engineering -- Inspection			2%	$ 6,000	
Permitting & Environmental			LS	$ -	
SCADA Integration			LS	$ 20,000	
Surveying			LS	$ -	
Legal, Administrative, and Funding			2%	$ 5,500	
				Total Project Costs (rounded)	**$ 350,000**
Operations and Maintenance					
Staffing	20	YR	$ 2,100	$ 42,000	
Power	20	YR	$ -	$ -	
Short-Lived Asset Replacement	20	YR	$ 4,400	$ 88,000	
Subtotal					***$ 130,000***
20-Year Life Cycle Cost					**$ 480,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

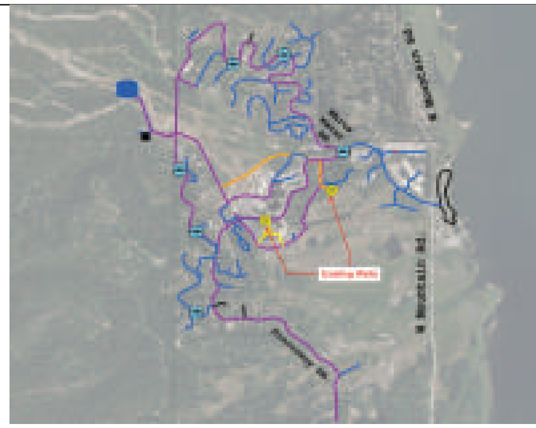
2022 WMP (Tamarack)

KELLER ASSOCIATES

Project Title: Tamarack Generator Addition

Project Identifier: 1.4

Location: At Existing Well Sites



Need for Project:
The Tamarack water system does not currently have permanent backup power at their well sites.

Objective:
- Provide a backup generator to supply wells during power outages.

Design Considerations:
-Fuel Duration

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	1.4
Goods and Services					
Backup Power	2	EA	$ 175,000	$ 350,000	
				Construction Subtotal	*$ 350,000*
Additional Elements (estimated % of above)					
Mobilization and Administration			12%	$ 42,000	
Bonding			2.5%	$ 9,000	
Contractor Overhead and Profit			15%	$ 53,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 105,000	
				Total Construction Subtotal	*$ 559,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			12%	$ 67,000	
Engineering - Construction Contract Administration			2%	$ 11,000	
Engineering -- Inspection			2%	$ 11,000	
Permitting & Environmental			LS	$ -	
SCADA Integration			LS	$ 40,000	
Surveying			LS	$ -	
Legal, Administrative, and Funding			2%	$ 11,200	
				Total Project Costs (rounded)	**$ 700,000**
Operations and Maintenance					
Staffing	20	YR	$ 4,200	$ 84,000	
Power	20	YR	$ -	$ -	
Short-Lived Asset Replacement	20	YR	$ 8,800	$ 176,000	
Subtotal					*$ 260,000*
20-Year Life Cycle Cost					**$ 960,000**

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North Lake Recreation Sewer and Water District
2022 WMP (All Systems)

KELLER ASSOCIATES

Project Title: District Water Scada Project

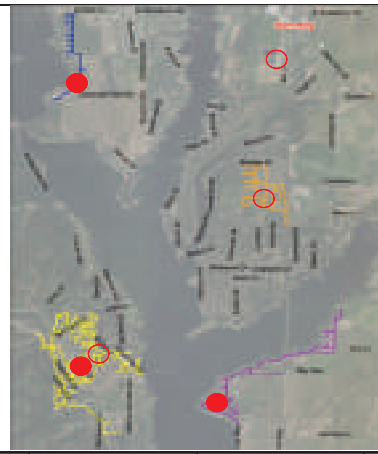
Project Identifier: 1.5

Location: Service Area Wide

Need for Project:
All four water systems currently lack any remote monitoring other than minimal alarms. Adding SCADA to each system is needed to better monitor the status of each system.

Objective:
- Provide SCADA for all systems

Design Considerations:
-Integration with all systems or each system separate?



General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
SCADA Addition	1	EA	$ 700,000	$ 700,000	
				Construction Subtotal	***$ 700,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 70,000	
Bonding			2.5%	$ 18,000	
Contractor Overhead and Profit			15%	$ 105,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 210,000	
				Total Construction Subtotal	***$ 1,103,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 165,000	
Engineering - Construction Contract Administration			4%	$ 44,000	
Engineering -- Inspection			4%	$ 44,000	
Legal, Administrative, and Funding			2%	$ 22,100	
				Total Project Costs (rounded)	**$ 1,380,000**

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North Lake Recreation Sewer and Water District

2022 WMP (All Systems)

Project Title: Well Lots Fencing Project

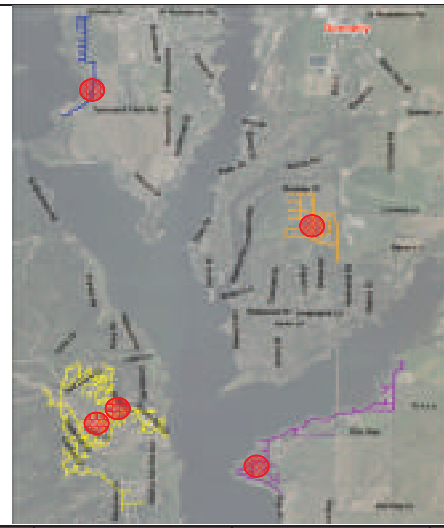
Location: At Existing Well Locations

Project Identifier: 2.1

Need for Project:
- Existing Well facilities are not fenced.

Objective:
- Construct security fencing around all existing well lots/sites to address source water protection and security deficiencies.

Design Considerations:
- Aesthetics
- Double wide gate
- 8 ft security fence
- Barbed wire
- Assumes going around full perimeter of well lots.



General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Security Fencing Addition Around Existing Wells	3,200	ft	$ 125	$ 400,000	
				Construction Subtotal	*$ 400,000*
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 40,000	
Bonding			2.5%	$ 10,000	
Contractor Overhead and Profit			15%	$ 60,000	
Prevailing Wages			0%	$ -	
Contingency			10%	$ 40,000	
				Total Construction Subtotal	*$ 550,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			0%	$ -	
Engineering - Construction Contract Administration			0%	$ -	
Engineering -- Inspection			0%	$ -	
Legal, Administrative, and Funding			0%	$ -	
				Total Project Costs (rounded)	**$ 550,000**
Operations and Maintenance					
Short-Lived Asset Replacement	20	YR	$ 10,000	$ 200,000	
Subtotal					*$ 200,000*
20-Year Life Cycle Cost					**$ 750,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Tamarack)

Project Title: Tamarack Osprey Meadow Lodge Waterline Replacement	Location: The Lodge at Osprey Meadows
Project Identifier: 3.1	

Need for Project:
The Tamarack water system can not meet the necessary fire flows near the Osprey Meadows Lodge due to undersized lines.

Objective:
- Replace undersized lines with larger diameter lines to improve fire flow.

Design Considerations:
-- Design and construct in conjunction with 3.4

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Upsize 4-inch to 8-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	520	LF	$ 180	$ 93,600	
Upsize 4-inch to 10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	580	LF	$ 215	$ 124,700	
Connect to Existing Water Main (8" Tapping Saddle and Valve)	1	EA	$ 8,000	$ 8,000	
Connect to Existing Water Main (10" Tapping Saddle and Valve)	1	EA	$ 10,000	$ 10,000	
Roadway Restoration	520	LF	$ 60	$ 31,200	
Traffic Control w/o Flaggers	1	LS	$ 8,000	$ 8,000	
Existing Utility Protection & Coordination	520	LF	$ 10	$ 5,200	
				Construction Subtotal	***$ 280,700***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 28,000	
Bonding			2.5%	$ 7,000	
Contractor Overhead and Profit			15%	$ 42,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 84,000	
				Total Construction Subtotal	***$ 442,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 66,000	
Engineering - Construction Contract Administration			4%	$ 18,000	
Engineering -- Inspection			4%	$ 18,000	
Permitting & Environmental			LS	$ 20,000	
Surveying			LS	$ 30,000	
Legal, Administrative, and Funding			2%	$ 8,800	
				Total Project Costs (rounded)	**$ 610,000**

[1]EA = each, LF = linear foot, LS = lump sum

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

Draft

North Lake Recreation Sewer and Water District

2022 WMP (Day Star)

Project Title: Day Star Homer Lane Loop

Project Identifier: 3.2

Location: Homer Lane to Shadow Trail Road

Need for Project:
- The Day Star water system comprised of a main 8-inch main line that is over a mile long. Fire flows are restricted in long smaller diameter main lines.

Objective:
- Loop the dead end 8-inch line in Homer Lane into the 8-inch main line in Shadow Trail Road. This will provide parallel piping for a significant portion of the 8-inch main line and increase available fire flows. This project is needed to achieve the planning criteria fire flow of 1,500 gpm in various locations on the southern part of the system.

Design Considerations:
-Easements needed
- Design and construct in conjunction with 3.3

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	1,200	LF	$ 215	$ 258,000	
Connect to Existing Water Main (10" Tapping Saddle and Valve)	2	EA	$ 10,000	$ 20,000	
Gravel/Natural Ground Surface Restoration	1,100	LF	$ 10	$ 11,000	
Roadway Restoration	1	LS	$ 8,000	$ 8,000	
Traffic Control w/o Flaggers	1	LS	$ 5,000	$ 5,000	
Existing Utility Protection & Coordination	1,200	LF	$ 6	$ 7,200	
				Construction Subtotal	*$ 309,200*
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 31,000	
Bonding			2.5%	$ 8,000	
Contractor Overhead and Profit			15%	$ 46,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 93,000	
				Total Construction Subtotal	*$ 488,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 73,000	
Engineering - Construction Contract Administration			4%	$ 20,000	
Engineering -- Inspection			4%	$ 20,000	
Permitting & Environmental			LS	$ 10,000	
Surveying			LS	$ 15,000	
Easement Establishment			10%	$ 48,800	
Legal, Administrative, and Funding			2%	$ 9,800	
				Total Project Costs (rounded)	**$ 690,000**

[1]EA = each, LF = linear foot, LS = lump sum

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Draft

North Lake Recreation Sewer and Water District

2022 WMP (Daystar)

Project Title: Day Star Lee Way Loop	Location: Lee Way to Windsong Way
Project Identifier: 3.3	

Need for Project:
The south end of the Day Star water system consists of two dead end 8-inch lines. The ends of these lines struggle to meet the fire flow planning criteria of 1,500 gpm.

Objective:
- Loop the two dead end 8-inch lines to meet the planning criteria fire flow of 1,500 gpm.

Design Considerations:
-Easements needed
- Design and construct in conjunction with 3.2

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
8-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	650	LF	$ 180	$ 117,000	
Connect to Existing Water Main (8" Tapping Saddle and Valve)	2	EA	$ 8,000	$ 16,000	
Gravel/Natural Ground Surface Restoration	600	LF	$ 10	$ 6,000	
Roadway Restoration	1	LS	$ 8,000	$ 8,000	
Traffic Control w/o Flaggers	1	LS	$ 5,000	$ 5,000	
Existing Utility Protection & Coordination	650	LF	$ 6	$ 3,900	
				Construction Subtotal	***$ 155,900***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 16,000	
Bonding			2.5%	$ 4,000	
Contractor Overhead and Profit			15%	$ 23,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 47,000	
				Total Construction Subtotal	***$ 246,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 37,000	
Engineering - Construction Contract Administration			4%	$ 10,000	
Engineering -- Inspection			4%	$ 10,000	
Permitting & Environmental			LS	$ 10,000	
Surveying			LS	$ 15,000	
Easement Establishment			10%	$ 24,600	
Legal, Administrative, and Funding			2%	$ 4,900	
				Total Project Costs (rounded)	**$ 360,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Tamarack)

Project Title: Tamarack Pinnacle Court Waterline Replacement

Project Identifier: 3.4

Location: Discovery Dr. and Pinnacle Ct.

Need for Project:
The Tamarack water system can not meet the necessary fire flows

Objective:
- Replace undersized lines with larger diameter lines to improve fire flow. Replacement is only up to existing hydrant.

Design Considerations:
-- Design and construct in conjunction with 3.1

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
8-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	200	LF	$ 180	$ 36,000	
Connect to Existing Water Main (8" Tapping Saddle and Valve)	1	EA	$ 8,000	$ 8,000	
Roadway Restoration	200	LF	$ 60	$ 12,000	
Traffic Control w/o Flaggers	1	LS	$ 3,000	$ 3,000	
Existing Utility Protection & Coordination	200	LF	$ 6	$ 1,200	
				Construction Subtotal	***$ 36,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 4,000	
Bonding			2.5%	$ 1,000	
Contractor Overhead and Profit			15%	$ 5,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 11,000	
				Total Construction Subtotal	***$ 57,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 9,000	
Engineering - Construction Contract Administration			4%	$ 2,000	
Engineering -- Inspection			4%	$ 2,000	
Permitting & Environmental			LS	$ 20,000	
Surveying			LS	$ 30,000	
Legal, Administrative, and Funding			2%	$ 1,100	
				Total Project Costs (rounded)	**$ 130,000**

[1]EA = each, LF = linear foot, LS = lump sum

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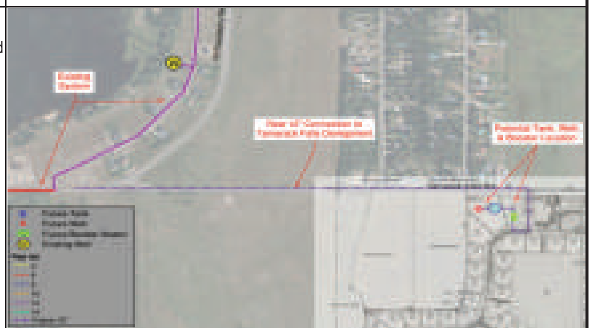
North Lake Recreation Sewer and Water District

2022 WMP

Project Title: Hawks Bay Tank, Booster, and Well Project

Project Identifier: 4.1

Location: Tamarack Falls Rd. & Norwood Rd.



Need for Project:
The Hawks Bay water system has a current firm supply deficit of over 1,300 gpm and a projected deficit of over 1,600 gpm with existing commitments and the planned Tamarack Falls development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,700 gpm) to the Hawks Bay water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Work with developers to identify actual location of the new well, tank, and booster station.
-Aesthetics for tank and booster/well facility if located along Tamarack Falls Rd.
-Meet well/tank setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	1	EA	$ 500,000	$ 500,000	
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (1,700 firm capacity)	1	EA	$ 1,750,000	$ 1,750,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	*$ 4,595,000*
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 460,000	
Bonding			2.5%	$ 115,000	
Contractor Overhead and Profit			15%	$ 689,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,379,000	
				Total Construction Subtotal	*$ 7,238,000*
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 1,086,000	
Engineering - Construction Contract Administration			5%	$ 362,000	
Engineering -- Inspection			5%	$ 362,000	
Permitting, Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 144,800	
				Total Project Costs (rounded)	**$ 9,280,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 2,400	$ 48,000	
Short-Lived Asset Replacement	20	YR	$ 95,300	$ 1,906,000	
Subtotal					*$ 2,290,000*
20-Year Life Cycle Cost					**$ 11,570,000**

[1]EA = each, LF = linear foot, LS = lump sum

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North Lake Recreation Sewer and Water District

2022 WMP (Daystar)

KELLER ASSOCIATES

Project Title: Day Star Tank, Booster, and Well Project

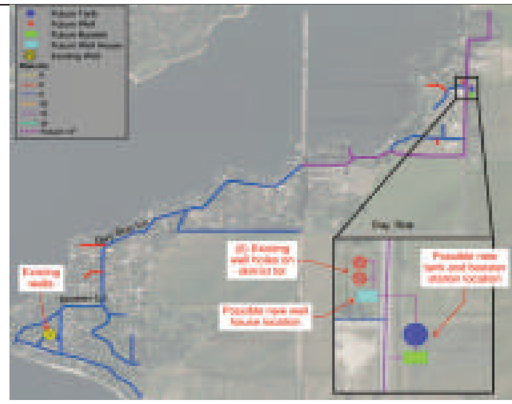
Project Identifier: 4.2

Location: Existing Goldfork Bay lot with 2 pre drilled wells and lot from developer for booster and tank

Need for Project:
The Day Star water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,200 gpm. The Supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,700 gpm) to the Day Star water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Determine actual location of the new tank, and booster station.
-Aesthetics for tank and booster facility
-Site will need to provide adequate setbacks.



General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k	1	EA	$ 75,000	$ 75,000	
Booster Station (1,700 firm capacity)	1	EA	$ 1,750,000	$ 1,750,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
10-inch PVC Pipe - Excavation, Backfill, Valves, Fittings, and Hydrants	250	LF	$ 215	$ 53,800	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 4,148,800***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 415,000	
Bonding			2.5%	$ 104,000	
Contractor Overhead and Profit			15%	$ 622,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,245,000	
				Total Construction Subtotal	***$ 6,535,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 980,000	
Engineering - Construction Contract Administration			5%	$ 327,000	
Engineering -- Inspection			5%	$ 327,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 20,000	
Legal, Administrative, and Funding			2%	$ 130,700	
				Total Project Costs (rounded)	**$ 8,400,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 4,800	$ 96,000	
Short-Lived Asset Replacement	20	YR	$ 95,300	$ 1,906,000	
Subtotal					*$ 2,338,000*
20-Year Life Cycle Cost					**$ 10,738,000**

[1]EA = each, LF = linear foot, LS = lump sum

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Draft

North Lake Recreation Sewer and Water District

2022 WMP (Fir Grove)

Project Title: Fir Grove Tank, Booster, and Well Project	**Location: Various locations along 10" and 12" lines**
Project Identifier: 4.3	

Need for Project:
The Fir Grove water system has a current firm supply deficit of over 1,100 gpm and a projected deficit of over 1,300 gpm with existing commitments and the planned Timber Creek development. The supply deficit results in pressures below 40 psi during peak demands and low available fire flows at firm capacity.

Objective:
Provide additional well source capacity (through a new 500+ gpm well), storage (350k gal), and a booster station (1,500 gpm) to the Fir Grove water system to meet existing and future demands with firm capacity. The new well will pump directly into the tank, and the booster station will supply the system from the tank. The existing wells will remain in place with their capability of pumping directly into the system.

Design Considerations:
-Work with developers to identify actual location of the new well, tank, and booster station.
-Aesthetics for tank and booster/well facility if located along a main road.
-Meet well/tank setbacks required by Idaho Code.

General Line Item	Estimated Quantity	Unit[1]	Unit Price	Item Cost (Rounded)	Total Cost (2023 Dollars)
Goods and Services					
Well Hole	1	EA	$ 500,000	$ 500,000	
Groundwater Well Station (Pump, Building, Electrical, Controls, Valves)	1	EA	$ 1,200,000	$ 1,200,000	
350k gal Bolted Steel Tank	1	EA	$ 700,000	$ 700,000	
Tank Foundation 350k gal	1	EA	$ 75,000	$ 75,000	
Booster Station (1,500 firm capacity)	1	EA	$ 1,500,000	$ 1,500,000	
Yard piping	1	LS	$ 75,000	$ 75,000	
Site Improvement (fence, grading, overflow pond grading)	1	LS	$ 100,000	$ 100,000	
Electrical (lighting, generator and power to booster)	1	LS	$ 150,000	$ 150,000	
Instrumentation and Controls	1	LS	$ 45,000	$ 45,000	
				Construction Subtotal	***$ 4,345,000***
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	$ 435,000	
Bonding			2.5%	$ 109,000	
Contractor Overhead and Profit			15%	$ 652,000	
Prevailing Wages			0%	$ -	
Contingency			30%	$ 1,304,000	
				Total Construction Subtotal	***$ 6,845,000***
Plans and Contract Documents					
Engineering Design and Bid Phase Services			15%	$ 1,027,000	
Engineering - Construction Contract Administration			5%	$ 342,000	
Engineering -- Inspection			5%	$ 342,000	
Permitting,Environmental, and Water Rights			LS	$ 20,000	
Geotechnical Investigation			LS	$ 20,000	
SCADA Integration			LS	$ 35,000	
Surveying			LS	$ 10,000	
Land Acquisition			LS	$ -	
Legal, Administrative, and Funding			2%	$ 136,900	
				Total Project Costs (rounded)	**$ 8,780,000**
Operations and Maintenance					
Staffing	20	YR	$ 16,800	$ 336,000	
Power	20	YR	$ 3,200	$ 64,000	
Short-Lived Asset Replacement	20	YR	$ 89,000	$ 1,780,000	
Subtotal					***$ 2,180,000***
20-Year Life Cycle Cost					**$ 10,960,000**

[1]EA = each, LF = linear foot, LS = lump sum

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APPENDIX J

2020 Rate Study

KELLER ASSOCIATES

Technical Memo

TO: Travis Pryor – North Lake Recreational Sewer and Water District

FROM: James Bledsoe, P.E.
Jason King, P.E.

DATE: November 12, 2020

SUBJECT: Water and Wastewater User Rate Study

PROFESSIONAL ENGINEER
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11/12/2020
STATE OF IDAHO
JAMES L. BLEDSOE

INTRODUCTION

The North Lake Recreational Sewer and Water District (District) owns and operates water and wastewater utilities in the area around Lake Cascade. The water system includes a 1.25-million-gallon water storage tank, eight wells, fire hydrants, pressure reducing valves, water meters, and approximately 15.5 miles of water mainlines. The wastewater system includes a mechanical Wastewater Treatment Plant (WWTP), 20 lift stations, and approximately 62 miles of sewer mainlines. The District's wastewater system also receives wastewater from the City of Donnelly.

The District engaged Keller Associates, Inc. to evaluate the existing user rates and make recommendations for water and sewer rates that would address the District's operations and maintenance requirements, short-lived asset replacement needs, existing deficiencies identified by District staff, and outstanding capital improvement upgrades previously identified in the Wastewater Master Plan completed in 2006.

Background

Water and wastewater user rates are used to provide the funds required to operate water and wastewater systems. These funds are used to pay for operations and maintenance and system component replacements. Billing rates are based on the number of residential equivalent dwelling units (EDUs); 1 EDU is assigned for each residential connection, and an equivalent EDU is estimated for non-residential connections. As of June 31, 2020, the District provided water and wastewater services to 709 water EDUs and 2410 wastewater EDUs. A summary of the water and wastewater EDUs serviced by the District is provided in Table 1.

TABLE 1: 2020 DISTRICT EDU SUMMARY[1]

Water System	Number EDUs	% of Total
Tamarack	423	59.7%
Non-Tamarack	286	40.3%
Total Water EDUs	*709*	
Wastewater System	**Number EDUs**	**% of Total**
Tamarack	423	17.6%
Non-Tamarack	1987	82.4%
Total Wastewater EDUs	*2410*	

[1]Number of EDUs as of June 31, 2020

The District currently charges a flat rate of $24.00 per month per EDU (/month/EDU) for all sewer users. The water rate structure is separated by Tamarack and non-Tamarack water users; a flat rate of $24.00/month/EDU and $38.00/month/EDU is charged to non-Tamarack and Tamarack users, respectively. User rates generally increase by a small percentage each year to account for inflation of maintenance and operations costs. For the District, rates were increased in 2005 and 2009. With the exception of a $4/month/EDU rate adjustments to water and wastewater made in 2017, no other user rate adjustments have been made over the last 11 years. As a result, the replacement budgets have largely been underfunded. This has made it difficult to complete needed replacements (i.e. new membranes at the WWTP) and preventative maintenance activities without utilizing connection fee revenues from new growth.

WATER AND WASTEWATER USAGE

Keller Associates reviewed water usage and wastewater flows and flow data for Tamarack non-Tamarack users. The analysis shows that Tamarack and non-Tamarack water users used similar volumes of water per EDU on an annual basis; however, the non-Tamarack costumers used more water under max day and max month conditions as a result of higher irrigation use. However, it should be noted that the analysis of Tamarack's water usage does not account for the additional irrigation usage associated with Tamarack's privately owned irrigation wells.

Tamarack wastewater annual average flows are approximately 70% than non-Tamarack flows. Under the max day and max month conditions, Tamarack flows were about three times more wastewater per EDU than non-Tamarack users. Higher wastewater flow rates from Tamarack are a result of infiltration and inflow entering the collection system. For additional analysis and information on water usage and wastewater flow data, refer to Attachment A.

FINANCIAL SUMMARY

A summary of revenues and expenses was compiled using past financial information provided by the District. Historically, the District has tracked many wastewater and water revenues and expenses together. Keller Associates reviewed the last three years of audit information provided by the District. These audits provided limited breakdown in terms of revenues and expenses. After reviewing the information and limited supplemental data from the District, it was felt that the more detailed FY 2020 budget and FY 2020 actual expenses/revenues would provide the best starting point for the user rate analysis.

To estimate recommended user rates the District's revenue and expenses were separated by utility for the current budget year. Most of the revenue and expenses were able to be separated based on the information provided by the District (water connection fees, lift station maintenance, etc.); however, other sources, such as property taxes, were proportioned to the water and wastewater utilities based on the total number of water and sewer EDUs. A summary of the 2020 water and wastewater budgets is provided in Table 2. A breakdown of the budget allocations can be found in Attachment B.

TABLE 2: DISTRICT FINANCIAL SUMMARY

Category	2020 Water System Budget (rounded)	2020 Wastewater System Budget (rounded)
Revenue		
Total Operating Revenue	$ 371,500	$ 999,300
Total Capital Revenue	$ 37,500	$ 182,500
Total Revenue	*$ 409,000*	*$ 1,181,800*
Expenses		
Total Operating Expenses	$ 223,400	$ 965,400
Total Replacement Expenses	$ 30,600	$ 215,600
Total Debt Expenses	$ -	$ -
Total Capital Improvements	$ -	$ 175,000
Total Expenses	*$ 254,000*	*$ 1,356,000*
Revenue Less Expenses	**$ 155,000**	**$ (174,200)**

Moving forward, Keller Associates recommends that revenues and expenses for the water and wastewater utilities be tracked independently. This is especially important as the majority of the District's users do not have both District-provided utilities available to them, and care should be taken such that one utility does not subsidize another.

Based on current replacement schedules, the financial summary shows that the 2020 water system budget had a $155,000 surplus while the 2020 wastewater system budget had a $174,200 deficit. Additionally, it appears that the wastewater system is currently subsidized with capital revenues (connection fees). Capital revenues are generally designated to be used for capital improvements such as system expansions and upgrades, although they can be used for system replacements. A more detailed financial breakdown is provided in Attachment B.

Water System Short-Lived Asset Replacements

The water system includes equipment that wears out and needs to be replaced. These items are generally referred to as short-lived assets. The water system short-lived assets include pipelines, fire hydrants, wells, etc. To develop recommended replacement budgets, costs were estimated for each asset that will be replaced, and an annual replacement budget was calculated by dividing the replacement budget by the estimated useful life of the asset. These costs were then used to approximate an annual replacement budget for the water system. A summary of the short-lived assets and their respective annual replacement budgets are presented in Table 3.

TABLE 3: ANNUAL WATER SYSTEM REPLACEMENT BUDGET

Short Lived Asset	Annual Replacements (2020 Dollars)
Vehicles and Equipment	$ 7,000
Pipelines[1]	$ 67,300
Fire Hydrants	$ 20,400
PRVs	$ 2,200
Water Meters	$ 10,500
Small Wells	$ 41,000
Large Wells	$ 112,000
Storage Tank	$ 5,000
Total Annual Replacement Budget (rounded)	**$ 265,400**

[1]Annual costs are calculated by estimating replacing 1% of piping per year

The total annual water system replacement budget is approximately $265,000. In 2020, approximately $30,000 was budgeted in the water system for asset replacements. To fully fund the annual water replacement budget, it would require an additional $235,000. To reduce the initial budget and user rate increase it is recommended that the pipelines and hydrants replacement budgets be phased in over time. Phasing in these improvements will also allow the District to identify and prioritize these improvements. A recommended water short-lived asset funding schedule is presented in Table 4. This schedule should be revised and updated every few years to better assess current and anticipated conditions. Establishing reserve funds for system replacement projects will also allow the District to maintain acceptable levels of service. A more detailed breakdown of the water system replacement budget is provided in Attachment C.

TABLE 4: WATER SYSTEM SHORT LIVED ASSET REPLACEMENT FUNDING SCHEDULE[1]

SLA Item	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Vehicles and Equipment	$ 7,200	$ 7,400	$ 7,600	$ 7,900	$ 8,100
Pipeline Replacements[2]	$ 6,900	$ 14,300	$ 22,100	$ 30,300	$ 39,000
Fire Hydrant Replacements[3]	$ 4,200	$ 8,700	$ 13,400	$ 18,400	$ 23,600
PRV Replacements	$ 2,300	$ 2,300	$ 2,400	$ 2,500	$ 2,600
Water Meter Replacements	$ 10,800	$ 11,100	$ 11,500	$ 11,800	$ 12,200
Small Well Replacements	$ 42,200	$ 43,500	$ 44,800	$ 46,100	$ 47,500
Large Well Replacements	$ 115,400	$ 118,800	$ 122,400	$ 126,100	$ 129,800
Storage Tank Replacements	$ 5,200	$ 5,300	$ 5,500	$ 5,600	$ 5,800
Total Annual Cost (rounded)	**$ 194,200**	**$ 211,400**	**$ 229,700**	**$ 248,700**	**$ 268,600**

[1]Costs adjusted for 3.0% inflation

[2]Pipeline replacements are 10% funded in 2021 with funding increasing by 10% until fully funded by FY 2030

[3]Hydrant replacements are 20% funded in 2021 with funding increasing by 20% until fully funded by FY 2025

Wastewater System Short-Lived Asset Replacements

Short-lived assets in the wastewater system include pipelines, manholes, lift stations, and the WWTP. By summarizing the approximate replacement costs for each of the wastewater short-lived assets, annual replacement budgets were calculated for each item using the estimated useful life of the asset. The estimated wastewater system short-lived asset annual replacement budget is shown in Table 5. A more detailed breakdown of how these budgets were estimated is included in Attachment C.

TABLE 5: ANNUAL WASTEWATER SYSTEM REPLACEMENT BUDGET

Short Lived Asset	Annual Replacements (2020 Dollars)	
Vehicles and Equipment	$	23,000
Gravity Sewer Pipelines[1]	$	367,600
Pressure Sewer Pipelines[1]	$	302,800
Manholes	$	55,500
Collection System Piping Subtotal	*$*	*748,900*
Small Lift Stations	$	165,000
Medium Lift Stations	$	74,000
WWTP	$	387,900
Lift Station and WWTP Subtotal	*$*	*626,900*
Total Annual Replacement Budget (rounded)	**$**	**1,375,800**

[1]Annual costs are calculated by estimating replacing 1% of the total sewer piping per year

In 2020, approximately $215,600 was budgeted for wastewater short-lived asset replacements. Of this approximately $97,000 was allocated for ongoing membrane replacements at the WWTP. An additional $1.1 million would be needed to fully fund the annual wastewater replacements shown in Table 5. Two of the largest expenses are for gravity and pressure sewer line replacements. To reduce the initial budget and user rate increase, it is recommended that pipeline and manhole replacements be phased in over the next 12-years. A recommended wastewater short-lived asset replacement funding schedule is presented in Table 6. A complete description of the wastewater system replacement budget is provided in Attachment C.

TABLE 6: WASTEWATER SYSTEM SHORT LIVED ASSET REPLACEMENT FUNDING SCHEDULE[1]

SLA Item	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Vehicles and Equipment	$ 23,700	$ 24,400	$ 25,100	$ 25,900	$ 26,700
Gravity Sewer Pipelines[2]	$ 31,600	$ 65,000	$ 100,400	$ 137,900	$ 177,600
Pressure Sewer Pipelines[2]	$ 26,000	$ 53,500	$ 82,700	$ 113,600	$ 146,300
Manholes[2]	$ 4,800	$ 9,800	$ 15,200	$ 20,800	$ 26,800
Small Lift Stations	$ 170,000	$ 175,000	$ 180,300	$ 185,700	$ 191,300
Medium Lift Stations	$ 76,200	$ 78,500	$ 80,900	$ 83,300	$ 85,800
WWTP	$ 399,500	$ 411,500	$ 423,900	$ 436,600	$ 449,700
Total Annual Cost (rounded)	**$ 731,800**	**$ 817,700**	**$ 908,500**	**$ 1,003,800**	**$ 1,104,200**

[1]Costs adjusted for 3.0% inflation

[2]Pipeline and manhole replacements are phased in over 12 years

Capital Improvement Projects

Several capital improvement projects (CIP) were identified for the water and wastewater systems with the help of the District. Costs were estimated for the capital projects based on experience and the District's input. A summary of the water and wastewater capital improvements are presented in Tables 7 and 8, respectively.

TABLE 7: WATER SYSTEM CAPITAL IMPROVEMENTS FUNDING SCHEDULE[1]

Capital Improvement Item	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Water Master Plan and GIS Mapping	$ 206,000	$ -	$ -	$ -	$ -
Tamarack SCADA	$ 378,000	$ -	$ -	$ -	$ -
Total Annual Cost (rounded)	**$ 584,000**	**$ -**	**$ -**	**$ -**	**$ -**

[1]Costs adjusted for 3.0% inflation

TABLE 8: WASTEWATER SYSTEM CAPITAL IMPROVEMENTS FUNDING SCHEDULE[1]

Capital Improvment Item	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Sewer Master Plan and GIS Mapping	$ 206,000	$ -	$ -	$ -	$ -
Solid Handling Facility	$ 61,800	$ 191,000	$ 1,923,200	$ -	$ -
Septage Handling	$ 283,300	$ -	$ -	$ -	$ -
Lagoon Dredging	$ -	$ -	$ 327,800	$ -	$ -
Headwords Improvements	$ 148,300	$ 1,120,300	$ -	$ -	$ -
Total Annual Cost	**$ 699,400**	**$ 1,311,300**	**$ 2,251,000**	**$ -**	**$ -**

[1]Costs adjusted for 3.0% inflation

[2]All projects are assumed to be cash financed expect the construction of the solid handling facility (FY 2023)

These summaries only account for the immediate needs of the District. When the water and wastewater master plans are completed (recommended in FY 2021), additional capital improvements are expected to be identified. The master planning effort should revise the user rate structures to address additional capital projects.

The water system capital improvement projects are recommended to be financed with the cash reserve that the District currently maintains. Currently, no debt financing is projected. However, if debt financing is required in the future, the debt payment is anticipated to be $8.27/month/EDU for every $1 million financed (assuming a 20-year loan at 3.5% interest).

For the wastewater system, all the capital improvements identified are recommended to be financed with the District cash reserve except for the construction of the solid handling facility (FY 2023) which was assumed to be debt-financed in this user rate analysis. It is estimated that wastewater system capital improvement financing will cost $2.40/month/EDU for every $1 million financed (assuming a 20-year loan at 3.5%).

RATE PROJECTION MODELS

Using the data provided by the District, it is evident that a substantial water and wastewater rate increase is required to fund the replacement needs of the systems. Five-year rate projection models were developed for the water and wastewater utilities. For each model, two rate adjustment strategies were evaluated. The first rate increase strategy included a single, large rate increase for both the water and wastewater systems in the first year. Each following year, the rate increased by 5%. The second rate increase strategy phased a rate increase over two years followed by 5% rate increases for the remaining years.

Water Rate Projections

As discussed previously, the District currently charges different water usage rates for Tamarack and non-Tamarack users. As of June 2020, Tamarack users paid $14/month/EDU more than non-Tamarack users. The 1-year water rate increase model includes a $10/month/EDU rate increase for both Tamarack and non-Tamarack users beginning in FY 2021. This rate increase represents a 26% (Tamarack) and a 42% (non-Tamarack) rate increase. The non-Tamarack user water rate increase by 5% each following year. The Tamarack rate increase from FY 2022 to FY 2025 is the same as the non-Tamarack rate increase to maintain a rate difference of $14/month/EDU. Reevaluating the cost of service (and associated cost differentials) for Tamarack and non-Tamarack users was beyond the scope of this study. A summary of the 1-year water rate increase model is provided in Table 9. The complete 1-year water rate model, including the assumptions made, is provided in Attachment D.

TABLE 9: 1-YEAR WATER RATE INCREASE

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
Non-Tamarack Water Rate[1]	$ 24.00	$ 34.00	$ 35.70	$ 37.50	$ 39.40	**$ 41.40**
Tamarack Water Rate[1]	$ 38.00	$ 48.00	$ 49.70	$ 51.50	$ 53.40	**$ 55.40**
% Rate Increase	-	26% - 42%	5%	5%	5%	5%
Total Revenues	$ 408,900	$ 496,000	$ 515,600	$ 536,400	$ 557,500	$ 580,700
Total Expenditures	$ 254,000	$ 1,008,100	$ 448,200	$ 473,600	$ 499,900	$ 527,300
Ending Account Balance[2]	**$ 1,359,100**	**$ 847,000**	**$ 914,400**	**$ 977,200**	**$ 1,034,800**	**$ 1,088,200**

[1]Rate per EDU per month

[2]Basis on an initial account balance provided in the 2019 Financial Audit

As shown in Table 9, the water system budgeted revenue in FY 2020 exceeds the expenditures; however, as discussed, the FY 2020 budget did not adequately fund system replacement budgets. The recommended system replacement budgets are applied to the 2021 through 2025 fiscal years. It should be noted that the water system capital improvement projects (approximately $584,000) were included in the FY 2021 expenditures. These improvements are expected to be cash financed by the District. The 1-year rate model results in a slight increase in the water system account balance each year after FY 2021 and an account balance of approximately $1.12 million at the end of FY 2025.

The 2-year water rate increase alternative includes a $6/month/EDU rate increase in FY 2021 and again in FY 2022. This results in a 25% (FY 2021) and a 20% (FY 2022) rate increase for non-Tamarack users. The Tamarack users will have a 16% (FY 2021) and a 14% (FY 2022) rate increase. Each subsequent year, a 5% rate increase will be applied to the non-Tamarack users. Like the 1-year rate increase alternative, the $14/month/EDU differential between the Tamarack and non-Tamarack users was maintained. A summary of the results of the 2-year water rate increase alternative is presented in Table 10. The full 2-year water rate model is provided in Attachment D.

TABLE 10: 2-YEAR PHASED WATER RATE INCREASE

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
Non-Tamarack Water Rate[1]	$ 24.00	$ 30.00	$ 36.00	$ 37.80	$ 39.70	**$ 41.70**
Tamarack Water Rate[1]	$ 38.00	$ 44.00	$ 50.00	$ 51.80	$ 53.70	**$ 55.70**
% Rate Increase	-	16% - 25%	14% - 20%	5%	5%	5%
Total Revenues	$ 408,900	$ 461,800	$ 518,200	$ 538,900	$ 560,100	$ 583,300
Total Expenditures	$ 254,000	$ 1,008,100	$ 448,200	$ 473,600	$ 499,900	$ 527,300
Ending Account Balance[2]	**$ 1,359,100**	**$ 812,800**	**$ 882,800**	**$ 948,100**	**$ 1,008,300**	**$ 1,064,300**

[1]Rate per EDU per month

[2]Basis on an initial account balance provided in the 2019 Financial Audit

For both the 1-year and 2-year rate increase alternatives, the recommended replacement budgets are included in the FY 2021 to FY 2025 expenditures. Additionally, it should be noted that the water system capital improvement projects (approximately $584,000) were included in the FY 2021 expenditures. These improvements are expected to be cash financed by the District. The 2-year rate increase alternative results in a slight increase in the water system account balance each year after FY 2021 and account balance of approximately $1.10 million at the end of FY 2025.

It is generally recommended that public utilities maintain a cash reserve fund of at least 6-months operating expenses. Including the increased funding for the water system replacements, a 6-month reserve of the District amounts to approximately $260,000 (FY 2025). Both the 1- and 2-year water rate models exceed the recommended cash reserve. The two water rate models result in nearly the same user rates at the end of FY 2025 with similar impacts on the District's cash reserve. Maintaining the current cash reserves in the water models will allow the District to complete additional capital improvements while mitigating the need for incurring additional debt in the future. More importantly, recommended user rates will provide a more sustainable user utility, allowing for user rates to pay for the ongoing replacement of existing assets.

Wastewater Rate Projections

The District currently charges a flat wastewater rate of $24/month/EDU for both Tamarack and non-Tamarack users. With the significant increase in system replacement costs, the 1-year wastewater rate increase alternative requires a $24/month/EDU rate increase with a 5% rate increase each following year. A summary of the rate impacts is provided in Table 11.

TABLE 11: 1-YEAR WASTEWATER RATE INCREASE

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
Wastewater Rate[1]	$ 24.00	$ 48.00	$ 50.40	$ 53.00	$ 55.70	**$ 58.50**
% Rate Increase	-	100%	5%	5%	5%	5%
Total Revenues	$ 1,181,800	$ 1,806,300	$ 1,897,600	$ 1,995,400	$ 2,097,300	$ 2,199,000
Total Expenditures[2]	$ 1,356,000	$ 2,310,300	$ 3,034,500	$ 2,304,300	$ 2,099,800	$ 2,229,000
Ending Account Balance[3]	**$ 3,918,900**	**$ 3,414,900**	**$ 2,278,000**	**$ 1,969,100**	**$ 1,966,600**	**$ 1,936,600**

[1]Rate per EDU per month

[2]Assuming debt financing of the solid handling facility construction costs

[3]Basis on an initial account balance provided in the 2019 Financial Audit

The 2-year wastewater rate increase alternative requires a $13/EDU/month rate increase in both FY 2021 and 2022. The 2-year rate increase also includes a 5% annual rate increase starting FY 2023. A summary of the 2-year wastewater rate alternative is shown in Table 12. Additional details on both the 1-year and 2-year scenarios are found in Attachment D.

TABLE 12: 2-YEAR PHASED WASTEWATER RATE INCREASE

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
Wastewater Rate[1]	$ 24.00	$ 37.00	$ 50.00	$ 52.50	$ 55.20	**$ 58.00**
% Rate Increase	-	54.2%	50.0%	5%	5%	5%
Total Revenues	$ 1,181,800	$ 1,486,500	$ 1,885,900	$ 1,980,700	$ 2,082,500	$ 2,184,100
Total Expenditures[2]	$ 1,356,000	$ 2,310,300	$ 3,034,500	$ 2,304,300	$ 2,099,800	$ 2,229,000
Ending Account Balance[3]	**$ 3,918,900**	**$ 3,095,100**	**$ 1,946,500**	**$ 1,622,900**	**$ 1,605,600**	**$ 1,560,700**

[1]Rate per EDU per month

[2]Assuming debt financing of the solid handling facility construction costs

[3]Basis on an initial account balance provided in the 2019 Financial Audit

For both the 1 and 2-year wastewater rate models, the expenses in FY 2021, 2022, and 2023 are much higher than the estimated revenues. The difference in expenses and revenue is due to using the cash reserve to fund the wastewater capital improvement projects identified in Table 8. It is important to note that projected user rate revenues do not provide enough revenue to fully fund capital expenses (i.e. solid handling facility) in FY 2023. The solids handling facility is anticipated to be debt-financed. Keller Associates recommends that the user rate models be updated once the facility planning study is completed and preliminary planning for the solid handling facility has been completed.

It is also recommended that the District maintain a minimum of a 6-month cash reserve. Using the FY 2025 expenses, a 6-month reserve of $1 million is recommended for the wastewater system. Both the 1- and 2-year wastewater rate increase provide at least a 6-month minimum cash reserve; however, the 1-year rate model results in a cash reservice almost $400,000 greater than the 2-year rate increase.

RECOMMENDATIONS

Keller Associates recommends that the District move forward with user rate increases. Failure to increase user rates will make it more difficult to fund ongoing replacement needs, putting the District more at risk of system failures, permit violations, and disruptions to service. The 1-year rate increase provides the District with the required revenue to begin funding system replacement next year (FY 2021). In addition, the 1-year wastewater rate increase results in a cash reserve that is approximately $400,000 more than the 2-year wastewater rate increase. Keller Associates recommends user rate adjustments be put in place as soon as possible, and that the District actively work toward fully funding system replacements.

Currently, the District maintains a single account with all water and wastewater system funds combined. It is recommended that the District manages the water and wastewater system accounts separately. This will allow for easier accounting for system revenues and expenses. Additionally, managing the accounts separately will prevent revenue from one system from subsidizing the other system. Finally, tracking replacement and capital expansion/upgrade related expenses separately will make it easier for the District to assess whether user rates are sufficiently funding operations, maintenance, and replacement needs.

As noted in the water usage and wastewater flow analysis, the Tamarack system appears to be highly influenced by infiltration and inflow resulting in larger wastewater flows (Attachment A). It is recommended that the District focus on reducing the infiltration and inflow in the Tamarack wastewater system.

Although this study provides reasonable insight into the required rate increases for the water and wastewater system, it is recommended that the District proceed with master planning efforts to define future capital needs and their potential impact on user rates. The master planning will allow the District to identify additional capital projects that may be required.

In the future, the District could consider alternative rate structures. Currently, the District charges a flat water and wastewater rate regardless of usage. A potential future rate structure could include the implementation of individual, meter-based billing. A meter-based rate structure encourages individuals to conserve and use less water and could result in a more equitable allocation of costs among individual users.

ATTACHMENTS

ATTACHMENT A – Water Usage and Wastewater Flow Analysis

ATTACHMENT B – Detailed Financial Summary

ATTACHMENT C – Water and Wastewater System Replacement Budgets

ATTACHMENT D – Water and Wastewater Rate Models

ATTACHMENT A

Water Usage and Wastewater Flow Analysis

KELLER
ASSOCIATES

Attachment A – Water Usage and Wastewater Flow Analysis

An analysis of the water usage and wastewater flows was completed to compare the water usage and wastewater flows per EDU by Tamarack users to non-Tamarack users.

Water Usage Analysis

An analysis of the water usage by the District was based on well production data. The District currently operates eight potable water wells. Each well is equipped with a flow meter to measure the volume of water pumped from the well. Two of the wells are used to provide water to the Tamarack potable water system. Using this information, the average day (Table A-1), maximum day (Table A-2), and maximum month (Table A-3) water usage per EDU was calculated for the Tamarack and non-Tamarack users.

TABLE A-1: AVERAGE DAY WATER USAGE PER EDU

Year	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
2018	212	220	215
2019	264	242	255

TABLE A-2: MAX DAY WATER USAGE PER EDU

Date	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
8/11/2018	464	1,094	718
7/12/2019	858	923	884

TABLE A-3: MAX MONTH WATER USAGE PER EDU

Date	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
8/2018	455	799	594
7/2019	664	788	714

This analysis shows that, on average, the Tamarack and non-Tamarack users consume the similar amounts of water per EDU except in the summer months when non-Tamarack users consume almost 100% more water (2018, Tables A-2 and A-3). To better understand the differences in water usage between Tamarack and non-Tamarack users, the average daily water usage per EDU is presented in Figure A-1.

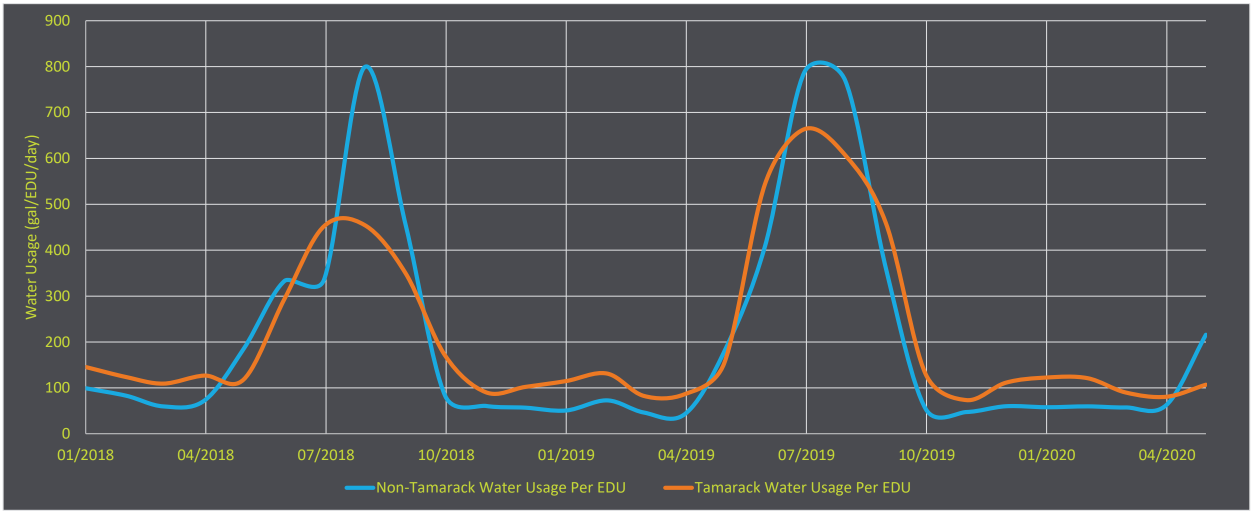

FIGURE A-1: AVERAGE DAILY WATER USAGE PER EDU

The average daily water usage shown in Figure 1 shows that non-Tamarack users consume more water in the summer months and less water in the winter months than the Tamarack users. This results in the average daily water usage per EDU by Tamarack users and non-Tamarack users being similar. It should be noted, however, that this comparison is for the potable water use only, and that Tamarack usage does not account for the irrigation usage from Tamarack's irrigation wells. The irrigation wells are owned and operated by Tamarack and not the District.

Wastewater Flow Analysis

An analysis of wastewater flows was completed using data collected at the wastewater treatment plant (WWTP) and the Poison Creek Lift Station. The Poison Creek Lift Station pumps all the wastewater produced by the Tamarack users to the WWTP. Poison Creek has a flow meter to measure the volume of wastewater that is pumped to the WWTP. The WWTP also has a flow meter at the headworks to measure the total wastewater that is collected at the plant. The non-Tamarack wastewater flows were calculated by subtracting the Poison Creek flow data from the WWTP flow data. Using this information, the average day (Table A-4), maximum day (Table A-5), and maximum month (Table A-6) water usage was calculated for the Tamarack and non-Tamarack users.

TABLE A-4 AVERAGE DAY WASTEWATER FLOW PER EDU

Year	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
2018	133	78	88
2019	150	88	99

TABLE A-4: AVERAGE DAY WASTEWATER FLOW PER EDU

Date	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
4/9/2018	505	163	223
4/9/2019[1]	1,492	547	713

TABLE A-6: MAX MONTH WASTEWATER FLOW PER EDU

Date	Tamarack (gal/day/EDU)	Non-Tamarack (gal/day/EDU)	Total System (gal/day/EDU)
4/2018	334	112	151
4/2019	600	207	276

This wastewater flow analysis shows that, on average, the Tamarack users produce approximately 70% more wastewater than the non-Tamarack users (Table A-4); however, the max day and max month wastewater flows indicate that Tamarack users produce significantly higher flows per EDU. To better understand the differences in wastewater flows between Tamarack and non-Tamarack users, the average daily wastewater flows are plotted in Figure A-2.

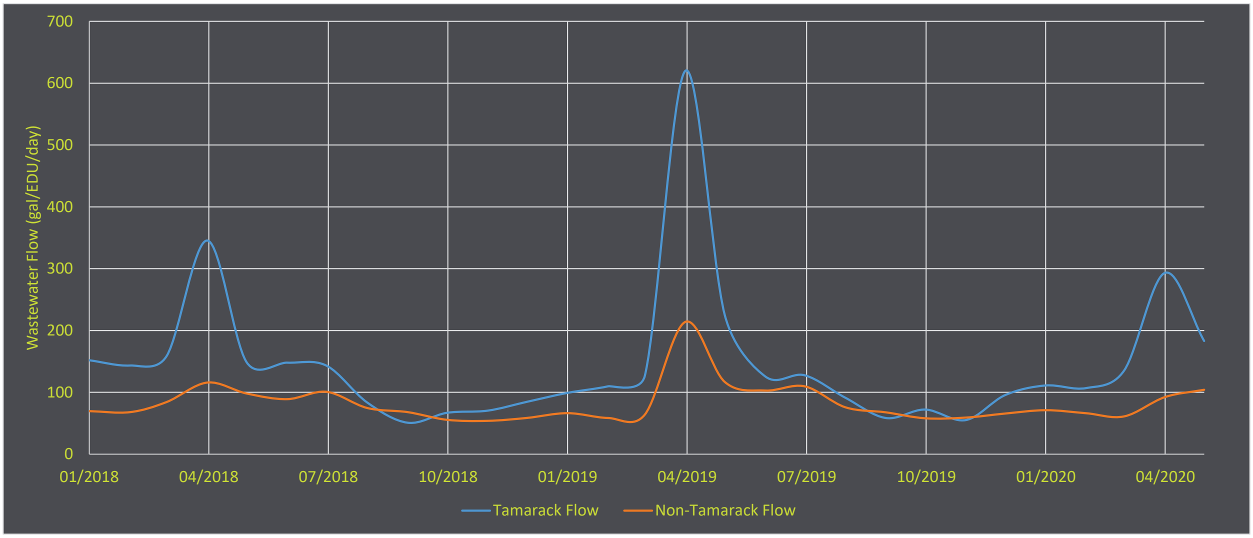

FIGURE A-2: AVERAGE DAILY WASTEWATER FLOW PER EDU

The average daily flows presented in Figure 2 shows large wastewater flow spikes in April each year in Tamarack. April is typically when large portions of the snowpack melt and infiltrate into the ground. This data and notes from the District's employees, indicate that the Tamarack wastewater collection is significantly influenced by infiltration and inflow into the collection system resulting in higher wastewater flows.

ATTACHMENT B

Detailed Financial Summary

KELLER ASSOCIATES

North Lake Recreational Sewer and Water District

User Rate Study: Water Usage Rates

2020 Water Revenues Summary

Fiscal Year Dec. 1, 2019 To Nov 30, 2020

Fund 1: Operating Funds

Water Revenue Source	2020 Budget	Revenue through 6/30/2020	Anticipated 2020 Revenue[1]	Baseline Revenues[2]
Water Usage Revenue	$ 86,400	$ 47,328	$ 81,134	$ 82,368
Water Usage Revenue - Tamarack	$ 181,440	$ 110,846	$ 190,022	$ 192,888
Tax Revenue - Valley County	$ 50,472	$ 38,236	$ 50,000	$ 50,000
LID Administrative Fees	$ 40,027	$ 642	$ 1,100	$ 40,027
Inspection Fees - Water	$ 1,125	$ 765	$ 1,311	$ 1,000
Water Turn On/Off Fee	$ 200	$ 100	$ 171	$ 200
Interest Income-Fund 01,02,03	$ 6,274	$ 2,704	$ 4,636	$ 4,000
Annexation / Plan Review Fee	$ 546	$ 818	$ 1,403	$ 1,000
New Development Plan & Study Fees	$ 5,001	$ -	$ -	$ -
Total Operating Water Revenue (rounded)	**$ 371,500**	**$ 201,400**	**$ 329,800**	**$ 371,500**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Baseline revenues calculated base on the current user rate fees and the number of EDUs and were developed with input form District staff.

Fund 2: Capital Funds

Water Revenue Source	2020 Budget	Revenue through 6/30/2020	Anticipated 2020 Revenue[1]	Baseline Revenues[2]
Water Service Availability Fees	$ 30,000	$ 24,000	$ 41,143	$ 30,000
Water Interceptor/Line Capacity Fees	$ 7,500	$ 3,000	$ 5,143	$ 7,500
Total Capital Water Revenue (rounded)	**$ 37,500**	**$ 27,000**	**$ 46,300**	**$ 37,500**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Anticipating 5 additional EDUs based on input from District Staff.

Total District Operating and Capital Revenue (rounded)	**$ 409,000**	**$ 228,400**	**$ 376,100**	**$ 409,000**

North Lake Recreational Sewer and Water District
User Rate Study: Water Usage Rates
2020 Water Expenses Summary
Fiscal Year Dec. 1, 2019 To Nov 30, 2020

Water Capital and Operating Expenses

Expense Category	2020 Budget	Expenses through 6/30/2020	Anticipated 2020 Expenses[1]	Baseline Expenses[2]	Baseline Comments
Admin Expenses[3]	$ 15,650	$ 5,340	$ 9,155	$ 10,000	Per District input
Auto Expenses[3]	$ 3,635	$ 2,179	$ 3,736	$ 3,700	Per District input
Miscellaneous Equipment Expense[3]	$ 10,405	$ 369	$ 634	$ 5,000	Per District input
Minor Equipment[3]	$ 398	$ 177	$ 304	$ 400	Per District input
Office Building Expenses[3]	$ 2,751	$ 1,386	$ 2,377	$ 2,500	Per District input
Board Expenses[3]	$ 1,705	$ 659	$ 1,131	$ 1,500	Per District input
Wages[3,4]	$ 87,585	$ 49,957	$ 85,641	$ 103,500	Staff wages proportioned to sewer and water based on EDUs
Payroll Taxes[3,4]	$ 8,519	$ 3,906	$ 6,697	$ 10,100	Assumes appoximately 10% of wages (based the 2020 Budget)
Employee Health Insurance[3,4]	$ 17,600	$ 14,570	$ 24,977	$ 20,800	Assumes appoximately 20% of wages (based the 2020 Budget)
Contract Labor[3]	$ 10,788	$ 2,562	$ 4,393	$ 12,700	Per District input
Professional Services[3]	$ 10,457	$ 4,253	$ 7,291	$ 10,000	Per District input
Engineering Services[3]	$ 227	$ 192	$ 329	$ 20,000	Per District input
Office Replacements[3]	$ 12,610	$ 2,147	$ 3,680	$ 5,000	Most of the budget is included in the replacement below
Water System Repair and Maintenance	$ 24,328	$ 4,703	$ 6,271	$ 8,000	Per District input
Tamarack Water Repair and Maintenance	$ 19,107	$ 1,083	$ 1,444	$ 8,000	Per District input
Water System Utilities	$ 10,197	$ 4,947	$ 6,596	$ 7,000	Per District input
Water System Replacements	$ 18,025	$ -	$ -	$ 188,500	From the phased water system replacement budget
Capital Purchases of Property/Equipment	$ -	$ -	$ -	$ -	Per District input
Principle Debt Payments	$ -	$ -	$ -	$ -	Per District input
Total Water System Expenses	**$ 253,987**	**$ 98,431**	**$ 164,656**	**$ 416,700**	

Water Capital and Operating Expenses Summary (rounded)

Expense Category	2020 Budget	Expenses through 6/30/2020	Anticipated 2020 Expenses[1]	Baseline Expenses[2]
Total Operating Expenditures	$ 223,400	$ 96,284	$ 160,976	$ 223,200
Total Replacement Expenditures	$ 30,600	$ 2,147	$ 3,680	$ 193,500
Total Debt Expenditures	$ -	$ -	$ -	$ -
Total Capital Improvements	$ -	$ -	$ -	$ -
Total Water System Expenses	**$ 254,000**	**$ 98,431**	**$ 164,656**	**$ 416,700**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Baseline expenses were developed based on input from District staff with considerations for existing and historical expenses.

[3]Expenses was proportioned to the water and sewer system based on the number of EDUs services.

[4]Wages are assumed to increase by $70k in FY 2021 and FY 2022 as the District hires additional staff.

Legend

Operating and Maintenance Items
Asset Replacement Items
Debt Expenditures
Capital Improvement Expenditures

North Lake Recreational Sewer and Water District

User Rate Study: Wastewater Usage Rates

2020 Wastewater Revenues Summary

Fiscal Year Dec. 1, 2019 To Nov 30, 2020

Fund 1: Operating Funds

Wastewater Revenue Source	2020 Budget	Revenue through 6/30/2020	Anticipated 2020 Revenue[1]	Baseline Revenues[2]
Sewer Usage Revenue - Other	$ 511,776	$ 367,008	$ 629,157	$ 514,656
Sewer Usage Revenue - Donnelly	$ 57,600	$ 33,600	$ 57,600	$ 57,600
Sewer Usage Revenue - Tamarack	$ 121,824			$ 121,824
Tax Revenue - Valley County	$ 171,563	$ 129,970	$ 222,806	$ 170,000
LID Administrative Fees	$ 41,747	$ 642	$ 1,100	$ 41,747
Sewer Inspection Fees	$ 3,150	$ 2,430	$ 4,166	$ 3,000
Septage Fees	$ 50,000	$ 21,493	$ 36,844	$ 80,000
Lift Station Operating Fee	$ 1,500	$ 1,000	$ 1,714	$ 1,500
Interest Income-Fund 01,02,03	$ 21,326	$ 9,193	$ 15,759	$ 15,000
Annexation / Plan Review Fee	$ 1,854	$ 2,782	$ 4,769	$ 2,000
New Development Plan & Study Fees	$ 16,999	$ -	$ -	$ -
Total Wastewater Revenue (rounded)	**$ 999,300**	**$ 568,100**	**$ 973,900**	**$ 1,007,300**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Baseline revenues calculated based on the current user rate fees and the number of EDUs and were developed with input from District staff.

Fund 2: Capital Funds

Wastewater Revenue Source	2020 Budget	Revenue through 6/30/2020	Anticipated 2020 Revenue[1]	Baseline Revenues[2]
Sewer Service Availability Fees - General	$ 72,000	$ 84,000	$ 144,000	$ 72,000
Sewer Service Availability Fees - City of Donnelly	$ 6,000	$ -	$ -	$ 6,000
Sewer Interceptor Fees / Sewer Line Capacity Fees	$ 18,000	$ 16,500	$ 28,286	$ 18,000
Sewer Interceptor/Line Capacity Fees - City of Donnelly	$ 1,500	$ -	$ -	$ 1,500
Septage Receiving Facility	$ 85,000	$ -	$ -	$ -
Total Wastewater Revenue (rounded)	**$ 182,500**	**$ 100,500**	**$ 172,300**	**$ 97,500**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Anticipating 13 additional EDUs based on input from District staff.

Total District Operating and Capital Revenue (rounded)	**$ 1,181,800**	**$ 668,600**	**$ 1,146,200**	**$ 1,104,800**

North Lake Recreational Sewer and Water District
User Rate Study: Wastewater Usage Rates
2020 Wastewater Expenses Summary
Fiscal Year Dec. 1, 2019 To Nov 30, 2020

Wastewater Capital and Operating Expenses

Expense Category	2020 Budget	Expenses Through (6/30/2020)	Anticipated 2020 Expenses[1]	Baseline Expenses[2]	Baseline Comments
Admin Expenses[3]	$ 53,197	$ 18,152	$ 31,117	$ 35,000	Per District input
Auto Expenses[3]	$ 12,355	$ 7,407	$ 12,698	$ 13,000	Per District input
Miscellaneous Equipment Expense[3]	$ 35,370	$ 1,255	$ 2,152	$ 5,000	Per District input
Minor Equipment[3]	$ 1,353	$ 602	$ 1,031	$ 1,500	Per District input
Office Building Expenses[3]	$ 9,351	$ 4,712	$ 8,078	$ 9,000	Per District input
Board Expenses[3]	$ 5,795	$ 2,241	$ 3,841	$ 5,000	Per District input
Wages[3,4]	$ 297,715	$ 169,811	$ 291,105	$ 351,800	Staff wages proportioned to sewer and water based on EDUs
Payroll Taxes[3,4]	$ 28,957	$ 13,277	$ 22,761	$ 34,200	Assumes appoximately 10% of wages (based the 2020 Budget)
Employee Health Insurance[3,4]	$ 59,825	$ 49,524	$ 84,899	$ 70,700	Assumes appoximately 20% of wages (based the 2020 Budget)
Contract Labor[3]	$ 36,672	$ 8,710	$ 14,932	$ 43,300	Per District input
Professional Services[3]	$ 35,543	$ 14,456	$ 24,782	$ 30,000	Per District input
Engineering Services[3]	$ 773	$ 653	$ 1,119	$ 40,000	Per District input
Office Replacements[3]	$ 42,865	$ 7,298	$ 12,510	$ 15,000	Most of the budget is included in the replacement below
WWTP Operation and Maintenance	$ 227,356	$ 76,956	$ 131,924	$ 125,000	Per District input
Sewer Lift Station O&M	$ 128,690	$ 51,457	$ 88,211	$ 75,000	Per District input
Sewer Collection System O&M	$ 32,410	$ 3,019	$ 5,176	$ 15,000	Per District input
Sewer System Replacements	$ 172,755	$ 123,375	$ 211,500	$ 710,400	From the phased wastewater system replacement budget
Capital Purchases of Property/Equipment	$ 175,000	$ 108	$ 184	$ -	Per District input
Principle Debt Payments	$ -	$ -	$ -	$ -	Per District input
Total Wastewater System Expenses	**$ 1,355,981**	**$ 553,012**	**$ 948,021**	**$ 1,578,900**	

Wastewater Capital and Operating Expenses Summary (rounded)

Expense Category	2020 Budget	Expenses Through (6/30/2020)	Anticipated 2020 Expenses[1]	Baseline Expenses[2]
Total Operating Expenditures	$ 965,400	$ 422,200	$ 723,800	$ 853,500
Total Replacement Expenditures	$ 215,600	$ 130,700	$ 224,000	$ 725,400
Total Debt Expenditures	$ -	$ -	$ -	$ -
Total Capital Improvements	$ 175,000	$ 100	$ 200	$ -
Total Wastewater System Expenses	**$ 1,356,000**	**$ 553,000**	**$ 948,000**	**$ 1,578,900**

[1]Calculated by multiplying the revenue through 6/30/2020 by (12/7) where applicable.

[2]Developed based on input from District staff with considerations for existing budget and historical expenses

[3]Expenses was proportioned to the water and sewer system based on the number of EDUs services.

[4]Wages are assumed to increase by $70k in FY 2021 and FY 2022 as the District hires additional staff.

Legend

Operating and Maintenance Items
Asset Replacement Items
Debt Expenditures
Capital Improvement Expenditures

North Lake Recreational Sewer and Water District
User Rate Study: Wastewater Usage Rates
LID Summary

LID Summary

LID	System	Maturity Date	Billing Fee
Mountain Meadows/West Mountain Estates	Sewer	2022	$ 490.68
Lake Cascade Ranch	Sewer	2022	$ 368.64
Wagon Wheel 6,7, & 8	Sewer	2023	$ 1,124.64
West Side Sewer	Sewer	2025	$ 12,270.84
Tamarack Phase 1 Sewer	Sewer	2024	$ 5,821.73
Tamarack Phase 2 Sewer	Sewer	2028	$ 3,058.44
Tamarack Phase 3 Sewer	Sewer	2034	$ 18,612.00
Tamarack Water	Water	2025	$ 39,102.71
Day Star Water	Water	2023	$ 924.60

Water LID Admin Fee Retirement Schedule[1]

LID	2020	2021	2022	2023	2024	2025
Tamarack Water	$ 39,103	$ 39,103	$ 39,103	$ 39,103	$ 39,103	$ 39,103
Day Star Water	$ 925	$ 925	$ 925	$ 925	$ -	$ -
Total Water LID Admin Fees	**$ 40,027**	**$ 40,027**	**$ 40,027**	**$ 40,027**	**$ 39,103**	**$ 39,103**

Sewer LID Admin Fee Retirement Schedule[1]

LID	2020	2021	2022	2023	2024	2025
Mountain Meadows/West Mountain Estates	$ 491	$ 491	$ 491	$ -	$ -	$ -
Lake Cascade Ranch	$ 369	$ 369	$ 369	$ -	$ -	$ -
Wagon Wheel 6,7, & 8	$ 1,125	$ 1,125	$ 1,125	$ 1,125	$ -	$ -
West Side Sewer	$ 12,271	$ 12,271	$ 12,271	$ 12,271	$ 12,271	$ 12,271
Tamarack Phase 1 Sewer	$ 5,822	$ 5,822	$ 5,822	$ 5,822	$ 5,822	$ -
Tamarack Phase 2 Sewer	$ 3,058	$ 3,058	$ 3,058	$ 3,058	$ 3,058	$ 3,058
Tamarack Phase 3 Sewer	$ 18,612	$ 18,612	$ 18,612	$ 18,612	$ 18,612	$ 18,612
Total Sewer LID Admin Fees	**$ 41,747**	**$ 41,747**	**$ 41,747**	**$ 40,888**	**$ 39,763**	**$ 33,941**

[1] LID payments are a pass through cost to the District and were not included in the rate analysis. However, LID administration fees were included as a source of revenue. These fees will retire as the LID retires.

ATTACHMENT C

Water and Wastewater System Replacement Budgets

KELLER ASSOCIATES

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Water Replacement Budget Summary

Annual Water System Replacement Budget	
Category	**Annual Replacements**
Vehicles and Equipment	$ 7,000
Pipelines[1]	$ 67,300
Fire Hydrants	$ 20,400
PRVs	$ 2,200
Water Meters	$ 10,500
Small Wells	$ 41,000
Large Wells	$ 112,000
Storage Tank	$ 5,000
Total Annual Replacement Budget (rounded)	**$ 265,400**

[1]Annual costs are calculated by estimating replacing 1% of piping per year

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Vehicle Replacement Budget

Vehicle Replacement Budget	
Item	**Annual Cost**
Annual Vehicle Replacement Costs	$ 30,000
Water System Vehicles	$ 7,000
Sewer System Vehicles	$ 23,000

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Pipeline Replacement Budgets

Water Pipe Length Summary									
Service Area	3" PVC (ft)	6" PVC (ft)	8" PVC (ft)	10" PVC (ft)	12" PVC (ft)	8" DIP (ft)	12" DIP (ft)	16" DIP (ft)	Total Pipe Length (ft)
Fir Grove		4,535		2,320	4,560				11,415
Hawks Bay			13,638						13,638
Day Star		825	12,609						13,434
Tamarack	500		15,704		19,985	430	5,283	2,378	44,280
Total Pipe Length (ft)	**500**	**5,360**	**41,951**	**2,320**	**24,545**	**430**	**5,283**	**2,378**	**82,767**
PVC = polyvinyl chloride		DIP = ductile iron pipe							

Water Pipe Replacement Budget												
Pipe	Total Length	1% of Length	Replacement Cost (per LF)	Half Lane Road Repair (per LF)	Utility Protection (per LF)	Reconnect Services (per LF)	Traffic Control Without Flagging (per LF)	Mobilization	Contingency	Engineering & CMS	Total Cost (per LF)	1% of System Cost
3" PVC	500	5	$ 23	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 53	$ 300
6" PVC	5,360	54	$ 32	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 59	$ 3,200
8" PVC	41,951	420	$ 39	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 64	$ 26,700
10" PVC	2,320	23	$ 81	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 91	$ 2,100
12" PVC	24,545	245	$ 98	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 102	$ 25,000
8" DIP	430	4	$ 75	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 87	$ 400
12" DIP	5,283	53	$ 113	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 112	$ 5,900
16" DIP	2,378	24	$ 181	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 156	$ 3,700
									Annual Water Pipe Replacement Cost (rounded)			**$ 67,300**
PVC = polyvinyl chloride		DIP = ductile iron pipe										

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Fire Hydrant Replacement Budget

Fire Hydrant Replacement Budget	
Service Area	**# Hydrants**
Day Star	30
Hawks Bay	20
Fir Grove	32
Tamarack	81
Total Number of Hydrants	163
Typical Life (yrs)	50
Hydrants replaced per year	4
Typical cost/Hydrants	$ 5,100
Annual Hydant Replacement Budget (Rounded)	**$ 20,400**

North Lake Recreational Sewer and Water District
User Rate Study: Water Replacement Budgets
Pressure Reducing Valve Replacement Budget

PRV Replacement Budget			
Item	**Quantity**	**Unit Cost**	**Total Cost**
3" PRV	1	$ 3,000	$ 3,000
4" PRV	3	$ 4,500	$ 13,500
6" PRV	1	$ 5,500	$ 5,500
10" PRV	3	$ 7,000	$ 21,000
		Total Cost	*$ 43,000*
		Typical PRV Life (yrs)	*20*
Total Annual Replacement Cost (rounded)			**$ 2,200**

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Water Meter Replacement Budget

Water Meter Replacement Budget	
Service Area	**# Meters**
Day Star	151
Hawks Bay	139
Fir Grove	121
Tamarack	286
Total Number of Meters	697
Typical Life (yrs)	20
Meters replaced per year	35
Typical cost/meter	$ 300
Annual Meter Replacement Budget (Rounded)	**$ 10,500**

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Small Well Replacement Budget

Small Well Summary				
Well	**Service Area**	**Pumps (hp)**	**Capacity (gpm)**	**CS or VFD[1]**
Well 1	Day Star	10	150	VFD
Well 2	Day Star	25	450	VFD
Well 1	Hawks Bay	unk	200	VFD

[1]CS: Constant Speed; VFD: Variable Frequency Drive

Small Well Replacement Budget			
Typical Replacement Activities	**Frequency (years)**	**Unit Cost**	**Cost/year**
Electrical	20	$ 45,000	$ 2,300
Pump and motor	15	$ 60,000	$ 4,000
SCADA	15	$ 21,000	$ 1,400
Building	40	$ 80,000	$ 2,000
Site	30	$ 20,000	$ 700
Chlorination / treatment	20	$ 15,000	$ 800
Valves / meter /piping	30	$ 30,000	$ 1,000
Well Hole Rehabilitation	15	$ 20,000	$ 1,300
		Total per Facility	*$ 13,500*
		# Wells On line	*3*
Recommended Annual Budget (rounded)			**$ 41,000**

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Large Well Replacement Budget

Large Well Summary				
Well	Service Area	Pumps (hp)	Capacity (gpm)	CS or VFD[1]
Well 4	Tamarack	125	500	CS
Well 7	Tamarack	175	700	CS
Well 1	Fir Grove	unk	1000	VFD
Well 2	Fir Grove	unk	800	VFD
Well 2	Hawks Bay	unk	800	VFD

[1]CS: Constant Speed; VFD: Variable Frequency Drive

Large Well Replacement Budget			
Typical Replacement Activities	**Frequency (years)**	**Unit Cost**	**Cost/year**
Electrical/Generator	20	$ 85,000	$ 4,300
Pump and motor	15	$ 100,000	$ 6,700
SCADA	15	$ 28,000	$ 1,900
Building	40	$ 120,000	$ 3,000
Site	30	$ 35,000	$ 1,200
Chlorination / treatment	20	$ 35,000	$ 1,800
Valves / meter /piping	30	$ 50,000	$ 1,700
Well Hole Rehabilitation	15	$ 25,000	$ 1,700
		Total per Facility	*$ 22,300*
		# Wells On line	*5*
Recommended Annual Budget (rounded)			**$ 112,000**

North Lake Recreational Sewer and Water District

User Rate Study: Water Replacement Budgets

Water Storage Tank Replacement Budget

Water Storage Tank Summary			
Tank	**Service Area**	**Size (MG)**	**Type**
North Reservoir	Tamarack	1.25	Concrete

Water Storage Tank Replacement Budget			
Typical Replacement Activities	**Frequency (years)**	**Unit Cost**	**Cost/year**
New Hatch	25	$ 12,000	$ 500
New Vent	25	$ 10,000	$ 400
New Ladder	25	$ 20,000	$ 800
Site	30	$ 20,000	$ 700
Inspection	7	$ 6,000	$ 900
Clean	7	$ 12,000	$ 1,700
Recommended Annual Budget (rounded)			**$ 5,000**

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Replacement Budgets

Sewer Replacement Budget Summary

Annual Sewer System Replacement Budget		
Category	**Annual Replacements**	
Vehicles and Equipment	$	23,000
Gravity Sewer Pipelines[1]	$	367,600
Pressure Sewer Pipelines[1]	$	302,800
Manholes	$	55,500
Collection System Piping Subtotal	*$*	*748,900*
Small Lift Stations	$	165,000
Medium Lift Stations	$	74,000
WWTP	$	387,900
Lift Station and WWTP Subtotal	*$*	*626,900*
Total Annual Replacement Budget	**$**	**1,375,800**

[1]Annual costs are calculated by estimating replacing 1% of the total sewer piping per year

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Replacement Budgets

Vehicle Replacement Budget

Vehicle Replacement Budget	
Item	**Annual Cost**
Annual Vehicle Replacement Costs	$ 30,000
Water System Vehicles	$ 7,000
Sewer System Vehicles	$ 23,000

North Lake Recreational Sewer and Water District
User Rate Study: Sewer Replacement Budgets
Pipeline Replacement Budgets

Gravity Sewer

Pipe Diameter (in)	Total Length (ft)	1% of Length (ft)	Replacement Cost (per LF)	Half Lane Road Repair (per LF)	Utility Protection (per LF)	Reconnect Services (per LF)	Traffic Control Without Flagging (per LF)	Mobilization	Contingency	Engineering & CMS	Total Cost (per LF)	1% of System Cost
8	145,339	1454	$ 73	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 224	$ 326,400
10	17,611	177	$ 78	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 233	$ 41,200
Annual Gravity Sewer Pipe Replacement Cost (rounded)												$ 367,600

Raw Pressure Sewer

Pipe Diameter (in)	Total Length (ft)	1% of Length (ft)	Replacement Cost (per LF)	Half Lane Road Repair (per LF)	Utility Protection (per LF)	Reconnect Services (per LF)	Traffic Control Without Flagging (per LF)	Mobilization	Contingency	Engineering & CMS	Total Cost (per LF)	1% of System Cost
4	21,750	218	$ 31	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 156	$ 33,900
6	73,540	735	$ 42	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 173	$ 127,300
8	25,200	252	$ 52	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 190	$ 47,900
10	27,300	273	$ 62	$ 26	$ 4	$ 29	$ 4	10%	35%	20%	$ 207	$ 56,600
Annual Pressure Sewer Pipe Replacement Cost (rounded)												$ 265,700

WWTP Effluent Pressure Sewer

Pipe Diameter (in)	Total Length (ft)	1% of Length (ft)	Replacement Cost (per LF)	Half Lane Road Repair (per LF)	Utility Protection (per LF)	Traffic Control Without Flagging (per LF)	Mobilization	Contingency	Engineering & CMS	Total Cost (per LF)	1% of System Cost
8	160	2	$ 52	$ 26	$ 4	$ 4	10%	35%	20%	$ 142	$ 200
12	16	0	$ 73	$ 26	$ 4	$ 4	10%	35%	20%	$ 176	$ -
14	17,503	175	$ 93	$ 26	$ 4	$ 4	10%	35%	20%	$ 211	$ 36,900
Annual WWTP Effluent Pressure Sewer Pipe Replacement Cost (rounded)											$ 37,100

Manhole Rehabilitation Budget

Total Manholes	Manholes Rehab Annually	Manhole Rehab (each)	Annual Rehab Budget	% Cost from Tamarack
711	15	$ 3,700	$ 55,500	$ 13,270.04

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Replacement Budgets

Small Lift Station Replacement Budgets

Small Lift Station Summary (< 400 gpm pumping capacity)				
Lift Station	**Service Area**	**Pumps**	**Firm Capacity[1]**	**Generator?**
P-1	Hillhouse	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-3	Edwards	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-5	Big Smoky	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-7	Wagon Wheel	5.4 hp (330 gpm) 5.4 hp (330 gpm)	330 gpm	No, quick connect for portable generator
P-8	Wagon Wheel	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-9	Day Star	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-10	Day Star	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-11	Day Star	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-12	Day Star	6 hp (180 gpm) 6 hp (180 gpm)	180 gpm	No, quick connect for portable generator
P-13	Edwards	3.7 hp (80 gpm) 3.7 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-14	Hillhouse	6.2 hp (80 gpm) 6.2 hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-15	Edwards	unk hp (80 gpm) unk hp (80 gpm)	80 gpm	No, quick connect for portable generator
P-16	Wagon Wheel	unk hp (80 gpm) unk hp (80 gpm)	80 gpm	No, quick connect for portable generator
Discovery Drive	Tamarack	unk hp (80 gpm) unk hp (80 gpm)	80 gpm	No, quick connect for portable generator
Hawks Bay	Hawks Bay	unk hp (80 gpm) unk hp (80 gpm)	80 gpm	No, quick connect for portable generator
Fir Grove	Fir Grove	unk hp (120 gpm) unk hp (120 gpm)	120 gpm	No, quick connect for portable generator

[1]Largest pump offline

Small Lift Station Replacement Budget			
Typical Replacement Activities	**Frequency (years)**	**Unit Cost**	**Cost/year**
Electrical	20	$ 32,000	$ 1,600
Pump and motor	15	$ 42,000	$ 2,800
SCADA	15	$ 15,000	$ 1,000
Site	30	$ 10,000	$ 400
Instrumentation	15	$ 9,000	$ 600
Odor control	15	$ 10,000	$ 700
Wet Well (rehab)	20	$ 37,000	$ 1,900
Building / structure	40	$ 32,000	$ 800
Valves / meter	30	$ 15,000	$ 500
		Total per Facility	*$ 10,300*
		# Pump Stations	*16*
Recommended Annual Budget (rounded)			**$ 165,000**

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Replacement Budgets

Medium Lift Station Replacement Budgets

Medium Lift Station (> 400 gpm pumping capacity)				
Lift Station	**Service Area**	**Pumps**	**Firm Capacity[1]**	**Generator?**
P-2	Edwards	47 hp (320 gpm) 47 hp (320 gpm)	320 gpm	No, quick connect for portable generator
P-4	Big Smoky	58 hp (500 gpm) 58 hp (500 gpm)	500 gpm	No, quick connect for portable generator
P-6	Wagon Wheel	9.4 hp (440 gpm) 9.4 hp (440 gpm)	440 gpm	No, quick connect for portable generator
Poison Creek	Tamarack	unk hp (575 gpm) unk hp (575 gpm)	575 gpm	Yes

[1]Largest pump offline

Medium Lift Station Replacement Budget			
Typical Replacement Activities	**Frequency (years)**	**Unit Cost**	**Cost/year**
Electrical	20	$ 32,000	$ 1,600
Generator	30	$ 75,000	$ 2,500
Pump and motor	15	$ 73,000	$ 4,900
SCADA	12	$ 21,000	$ 1,800
Site	30	$ 10,000	$ 400
Instrumentation	15	$ 9,000	$ 600
Odor control	15	$ 16,000	$ 1,100
Wet Well (rehab)	20	$ 52,000	$ 2,600
Building / structure	40	$ 68,000	$ 1,700
Valves / meter	30	$ 40,000	$ 1,400
		Total per Facility	*$ 18,600*
		# Pump Stations	*4*
Recommended Annual Budget (rounded)			**$ 74,000**

North Lake Recreational Sewer and Water District
User Rate Study: Sewer Replacement Budgets
Wastewater Treatment Plant Replacement Budgets

WWTP Short Lived Assets Summary and Costs					
Equipment Description	**Replacement Items**	**Unit Cost**	**Units**	**Life (Yr)**	**Annual Cost**
Headworks	8" Magnetic Flow Meter	$ 3,400	2	20	$ 340
	12" Magnetic Flow Meter	$ 5,200	2	20	$ 520
	Drum Screen	$ 173,000	2	20	$ 17,300
	Screening Washer/Compactor	$ 56,000	1	20	$ 2,800
	Odor Control Equipment	$ 103,200	1	15	$ 6,880
	HVAC	$ 110,600	1	15	$ 7,373
Aeration Basins	Diffusers	$ 30,000	1	10	$ 3,000
	Submersible Mixers	$ 25,000	4	7	$ 14,286
	Sensors	$ 7,400	4	10	$ 2,960
MBR System	Membranes and Accessories	$ 300,000	4	10	$ 120,000
	Membrane Blowers	$ 250,300	3	20	$ 37,545
	Process Blowers	$ 250,300	3	20	$ 37,545
	Chemical Tanks (2,500 gal)	$ 7,400	3	30	$ 740
	Air Compressor	$ 7,400	2	15	$ 987
	Turbidity Meters	$ 4,500	2	6	$ 1,500
	Hydropneumatic Tank	$ 7,400	2	30	$ 493
	Sodium Hypochlorite Pump	$ 7,400	1	15	$ 493
	Citric Acid Pump	$ 7,400	1	15	$ 493
	Sodium Hydroxide Pump	$ 7,400	1	15	$ 493
	Alum Pump	$ 7,400	1	15	$ 493
	Utility Water Pump	$ 22,200	1	20	$ 1,110
	Permeate Pump	$ 67,800	4	20	$ 13,560
	RAS Pump	$ 67,800	4	20	$ 13,560
	WAS Pumps	$ 25,000	2	20	$ 2,500
	Scum Pumps	$ 29,500	1	15	$ 1,967
	Drain Pump	$ 29,500	1	15	$ 1,967
	HVAC	$ 110,600	1	15	$ 7,373
UV System	Lamp Replacement	$ 200	128	1.5	$ 17,067
	Ballast and Enclosures	$ 108,200	4	15	$ 28,853
	UV Sensors	$ 4,500	4	10	$ 1,800
Electrical/SCADA	PLC / Instrumentation	$ 110,600	1	15	$ 7,373
Lagoons	Blowers (15 and 25 hp)	$ 50,000	2	20	$ 5,000
	Effluent Pumps	$ 100,000	2	20	$ 10,000
Clorination	Gas Chlorinator (Regal Model 216)	$ 30,000	1	20	$ 1,500
	Chlorine Detector (FX 1502)	$ 1,300	1	10	$ 130
	Portable Air Pack	$ 3,000	1	20	$ 150
Irrigation System	Aurora 530 Submersible Pumps	$ 20,000	2	20	$ 2,000
	4" Risers	$ 210	42	20	$ 441
	6" Risers	$ 230	15	20	$ 173
	40-ft Wheel Line Sections	$ 500	70	20	$ 1,750
	Wheel Line Mover	$ 5,000	3	20	$ 750
	20ft Handline Sections	$ 100	3	20	$ 15
	40ft Handline Sections	$ 180	38	20	$ 342
Miscellaneous Equipment	Bridge Crane	$ 88,500	1	20	$ 4,425
	Generator	$ 191,600	1	30	$ 6,387
	Composite Samplers	$ 10,900	2	15	$ 1,453
Total Annual Cost for Existing Short-Lived Assets (rounded)					**$ 387,900**

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Replacement Budgets

Unit Prices

Unit Prices		
ITEM	UNIT	UNIT PRICE
PVC Pipe (Gravity)		
8-inch Pipe - Excavation, Backfill	LF	$73
10-inch Pipe - Excavation, Backfill	LF	$78
PVC Pipe (Pressure)		
4-inch Pressure Pipe - Excavation, Backfill	LF	$31
6-inch Pressure Pipe - Excavation, Backfill	LF	$42
8-inch Pressure Pipe - Excavation, Backfill	LF	$52
10-inch Pressure Pipe - Excavation, Backfill	LF	$62
12-inch Pressure Pipe - Excavation, Backfill	LF	$73
14-inch Pressure Pipe - Excavation, Backfill	LF	$93
Manhole Rehabilitation	EA	$3,700
Existing Utility Protection	LF	$4
Reconnect Services	LF	$29
Traffic Control - Without Flagging	LF	$4
Traffic Control - With Flagging	LF	$8
Full Lane Pavement Repair	LF	$47
Half Lane Pavement Repair	LF	$26
Gravel Repair	LF	$10
Miscellaneous Surface Repair	LF	$3
Mobilization - Percent of Item Cost Sum	%	10%
Contingency - % of construction costs	%	35%
Engineering and CMS - % of construction costs	%	20%

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

ATTACHMENT D

Water and Wastewater Rate Models

North Lake Recreational Sewer and Water District
User Rate Study: Water Usage Rates
1-Year Water Rate Model

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
User Rate % Annual Increase		**26% - 42%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**
Non-Tamarack Water Usage Fee per EDU	**$ 24.00**	**$ 34.00**	**$ 35.70**	**$ 37.50**	**$ 39.40**	**$ 41.40**
Tamarack Water Usage Fee per EDU	**$ 38.00**	**$ 48.00**	**$ 49.70**	**$ 51.50**	**$ 53.40**	**$ 55.40**
Non-Tamarack EDUs	**286**	**291**	**296**	**301**	**306**	**311**
Tamarack EDUs	**423**	**423**	**423**	**423**	**423**	**423**
Operating Revenues						
Non-Tamarack Usage Fee	$ 86,400	$ 118,700	$ 126,800	$ 135,500	$ 144,700	$ 154,500
Tamarack Usage Fee	$ 181,400	$ 243,600	$ 252,300	$ 261,400	$ 271,100	$ 281,200
Other Charges [1]	$ 63,600	$ 56,200	$ 59,000	$ 62,000	$ 65,100	$ 68,400
LID Billing Revenue [2]	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 39,100	$ 39,100
Total Operating Revenues	**$ 371,400**	**$ 458,500**	**$ 478,100**	**$ 498,900**	**$ 520,000**	**$ 543,200**
Operating Expenditures						
Operations [3]	$ 223,400	$ 229,900	$ 236,800	$ 243,900	$ 251,200	$ 258,700
Replacements [3,4,5]	$ 30,600	$ 194,200	$ 211,400	$ 229,700	$ 248,700	$ 268,600
Debt Payments [6]	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Expenditures	**$ 254,000**	**$ 424,100**	**$ 448,200**	**$ 473,600**	**$ 499,900**	**$ 527,300**
Capital Revenues						
Water Service Availability Fee [7]	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Water Interceptor/Line Capacity Fee [7]	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500
Total Capital Revenues	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**
Capital Expenditures						
Capital Improvements [8]	$ -	$ 584,000	$ -	$ -	$ -	$ -
Total Capital Expenditures	**$ -**	**$ 584,000**	**$ -**	**$ -**	**$ -**	**$ -**
Account Balances						
Total Initial Funds [9]	$ 1,204,200	$ 1,359,100	$ 847,000	$ 914,400	$ 977,200	$ 1,034,800
Net Operating Revenue [10]	$ 117,400	$ 34,400	$ 29,900	$ 25,300	$ 20,100	$ 15,900
Net Capital Revenue [11]	$ 37,500	$ (546,500)	$ 37,500	$ 37,500	$ 37,500	$ 37,500
Ending Account Balance	**$ 1,359,100**	**$ 847,000**	**$ 914,400**	**$ 977,200**	**$ 1,034,800**	**$ 1,088,200**

Notes:

1. Other charges include: Tax Revenue for Valley County, Water Inspection Fees, Water Turn on/off fees, Interest Income, Annexation/Plan Review Fees, and New Development Plan and Study Fees.
2. Billing fees for the Day Star Water and Tamarack Water LIDs.
3. 3.0% annual inflation of costs is assumed.
4. Replacement costs include: vehicles and equipment, pipelines, fire hydrants, PRVs, water meters, wells, and the storage tank.
5. Pipeline and manhole replacements are 10% funding in FY 2021. Funding increases by 10% each year until the pipeline and manhole replacements are fully funded in in FY 2030. All other items are fully funded in FY 2021.
6. The District currently only has LID debt payments. These payments are made by the customers and are directly passed from the District to the LID holders. These payments are not included in this estimate.
7. Revenue estimated based on 5 new EDUs per year
8. FY 2021 capital improvements include a system master plan, GIS mapping, and updating/replacing the Tamarack SCADA system.
9. FY 2020 initial fund from the 2019 Audit.
10. Total operating revenues minus total operating expenditures.
11. Total capital revenues minus total capital expenditures.

North Lake Recreational Sewer and Water District

User Rate Study: Water Usage Rates

2-Year Water Rate Model

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
User Rate % Annual Increase		**16% - 25%**	**14% - 20%**	**5.0%**	**5.0%**	**5.0%**
Non-Tamarack Water Usage Fee per EDU	**$ 24.00**	**$ 30.00**	**$ 36.00**	**$ 37.80**	**$ 39.70**	**$ 41.70**
Tamarack Water Usage Fee per EDU	**$ 38.00**	**$ 44.00**	**$ 50.00**	**$ 51.80**	**$ 53.70**	**$ 55.70**
Non-Tamarack EDUs	**286**	**291**	**296**	**301**	**306**	**311**
Tamarack EDUs	**423**	**423**	**423**	**423**	**423**	**423**
Operating Revenues						
Non-Tamarack Usage Fee	$ 86,400	$ 104,800	$ 127,900	$ 136,500	$ 145,800	$ 155,600
Tamarack Usage Fee	$ 181,400	$ 223,300	$ 253,800	$ 262,900	$ 272,600	$ 282,700
Other Charges [1]	$ 63,600	$ 56,200	$ 59,000	$ 62,000	$ 65,100	$ 68,400
LID Billing Revenue[2]	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 39,100	$ 39,100
Total Operating Revenues	**$ 371,400**	**$ 424,300**	**$ 480,700**	**$ 501,400**	**$ 522,600**	**$ 545,800**
Operating Expenditures						
Operations[3]	$ 223,400	$ 229,900	$ 236,800	$ 243,900	$ 251,200	$ 258,700
Replacements[3,4,5]	$ 30,600	$ 194,200	$ 211,400	$ 229,700	$ 248,700	$ 268,600
Debt Payments[6]	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Expenditures	**$ 254,000**	**$ 424,100**	**$ 448,200**	**$ 473,600**	**$ 499,900**	**$ 527,300**
Capital Revenues						
Water Service Availability Fee[7]	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Water Interceptor/Line Capacity Fee[7]	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500
Total Capital Revenues	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**
Capital Expenditures						
Capital Improvements[8]	$ -	$ 584,000	$ -	$ -	$ -	$ -
Total Capital Expenditures	**$ -**	**$ 584,000**	**$ -**	**$ -**	**$ -**	**$ -**
Account Balances						
Total Initial Funds[9]	$ 1,204,200	$ 1,359,100	$ 812,800	$ 882,800	$ 948,100	$ 1,008,300
Net Operating Revenue[10]	$ 117,400	$ 200	$ 32,500	$ 27,800	$ 22,700	$ 18,500
Net Capital Revenue[11]	$ 37,500	$ (546,500)	$ 37,500	$ 37,500	$ 37,500	$ 37,500
Ending Account Balance	**$ 1,359,100**	**$ 812,800**	**$ 882,800**	**$ 948,100**	**$ 1,008,300**	**$ 1,064,300**

Notes:

1. Other charges include: Tax Revenue for Valley County, Water Inspection Fees, Water Turn on/off fees, Interest Income, Annexation/Plan Review Fees, and New Development Plan and Study Fees.
2. Billing fees for the Day Star Water and Tamarack Water LIDs.
3. 3.0% annual inflation of costs is assumed.
4. Replacement costs include: vehicles and equipment, pipelines, fire hydrants, PRVs, water meters, wells, and the storage tank.
5. Pipeline and manhole replacements are 10% funding in FY 2021. Funding increases by 10% each year until the pipeline and manhole replacements are fully funded in in FY 2030. All other items are fully funded in FY 2021.
6. The District currently only has LID debt payments. These payments are made by the customers and are directly passed from the District to the LID holders. These payments are not included in this estimate.
7. Revenue estimated based on 5 new EDUs per year
8. FY 2021 capital improvements include a system master plan, GIS mapping, and updating/replacing the Tamarack SCADA system.
9. FY 2020 initial fund from the 2019 Audit.
10. Total operating revenues minus total operating expenditures.
11. Total capital revenues minus total capital expenditures.

North Lake Recreational Sewer and Water District

User Rate Study: Wastewater Usage Rates

1-Year Wastewater Rate Model

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
User Rate % Annual Increase		**100.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**
Wastewater Rate per EDU	**$ 24.00**	**$ 48.00**	**$ 50.40**	**$ 53.00**	**$ 55.70**	**$ 58.50**
Number of EDUs[1]	**2410**	**2423**	**2436**	**2449**	**2462**	**2475**
Operating Revenues						
Sewer Usage Fee	$ 691,200	$ 1,395,600	$ 1,473,300	$ 1,557,600	$ 1,645,600	$ 1,737,500
Septage Fees	$ 50,000	$ 80,000	$ 84,000	$ 88,200	$ 92,600	$ 97,200
Other Charges [2]	$ 216,400	$ 191,500	$ 201,100	$ 211,200	$ 221,800	$ 232,900
LID Billing Revenue[3]	$ 41,700	$ 41,700	$ 41,700	$ 40,900	$ 39,800	$ 33,900
Total Operating Revenues	**$ 999,300**	**$ 1,708,800**	**$ 1,800,100**	**$ 1,897,900**	**$ 1,999,800**	**$ 2,101,500**
Operating Expenditures						
Operations[4]	$ 965,400	$ 879,100	$ 905,500	$ 932,700	$ 960,700	$ 989,500
Replacements[5,6]	$ 215,600	$ 731,800	$ 817,700	$ 908,500	$ 1,003,800	$ 1,104,200
Total Operating Expenditures	**$ 1,181,000**	**$ 1,610,900**	**$ 1,723,200**	**$ 1,841,200**	**$ 1,964,500**	**$ 2,093,700**
Capital Revenues						
Sewer Service Availability Fees - General[7]	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000
Sewer Service Availability Fees - City of Donnelly[8]	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000
Sewer Interceptor Fees / Sewer Line Capacity Fees[7]	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 18,000
Sewer Interceptor/Line Capacity Fees - City of Donnelly[8]	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500
Septage Receiving Facility[9]	$ 85,000	$ -	$ -	$ -	$ -	$ -
Total Capital Revenues	**$ 182,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**
Capital Expenditures						
Capital Improvements	$ 175,000	$ 699,400	$ 1,311,300	$ 327,800	$ -	$ -
Debt Payments[10,11]	$ -	$ -	$ -	$ 135,300	$ 135,300	$ 135,300
Total Capital Expenditures	**$ 175,000**	**$ 699,400**	**$ 1,311,300**	**$ 463,100**	**$ 135,300**	**$ 135,300**
Account Balances						
Total Initial Funds[12]	$ 4,093,100	$ 3,918,900	$ 3,414,900	$ 2,278,000	$ 1,969,100	$ 1,966,600
Net Operating Revenue[13]	$ (181,700)	$ 97,900	$ 76,900	$ 56,700	$ 35,300	$ 7,800
Net Capital Revenue[14]	$ 7,500	$ (601,900)	$ (1,213,800)	$ (365,600)	$ (37,800)	$ (37,800)
Ending Account Balance	**$ 3,918,900**	**$ 3,414,900**	**$ 2,278,000**	**$ 1,969,100**	**$ 1,966,600**	**$ 1,936,600**

Notes:

1. A growth of 13 EDUs per year is estimated.
2. Other charges include: Tax Revenue for Valley County, Sewer Inspection Fees, Lift Station Operating Fee, Interest Income, Annexation/Plan Review Fees, and New Development Plan & Study Fees.
3. Billing fees for the Mountain Meadow, Lake Cascade Ranch, Wagon Wheel 6, 7, and 8, West Side Sewer, and Tamarack Sewer Phases 1, 2, and 3.
4. 3.0% annual inflation of costs are assumed.
5. Replacement costs include: vehicles and equipment, gravity pipelines, pressure pipelines, manholes, lift stations, and the WWTP.
6. Pipeline and manhole replacements are 10% funding in FY 2021. Funding increases by 10% each year until the pipeline and manhole replacements are fully funded in in FY 2030. All other replacement items are fully funded in FY 2021
7. Revenue estimated based on 12 new EDUs per year
8. Revenue estimated based on 1 new EDU per year
9. The septage receiving revenue was a grant that the District received in 2020. No additional funds from the grant will be awarded in future years.
10. The District currently only has LID debt payments. These payments are made by the customers and are directly passed from the District to the LID holders. These payments are not included in this estimate.
11. The debt payments shown are estimated from financing the construction of the future solids handling facility with a 20 year, 3.5% interest loan.
12. Initial fund balance as shown in the 2019 Audit.
13 Total operating revenues minus total operating expenditures.
14. Total capital revenues minus total capital expenditures.

North Lake Recreational Sewer and Water District

User Rate Study: Sewer Usage Rates

2-Year Wastewater Rate Model

	Budget FY 2020	Forecast FY 2021	Forecast FY 2022	Forecast FY 2023	Forecast FY 2024	Forecast FY 2025
User Rate % Annual Increase		**54.2%**	**50.0%**	**5.0%**	**5.0%**	**5.0%**
Wastewater Rate per EDU	**$ 24.00**	**$ 37.00**	**$ 50.00**	**$ 52.50**	**$ 55.20**	**$ 58.00**
Number of EDUs[1]	**2410**	**2423**	**2436**	**2449**	**2462**	**2475**
Operating Revenues						
Sewer Usage Fee	$ 691,200	$ 1,075,800	$ 1,461,600	$ 1,542,900	$ 1,630,800	$ 1,722,600
Septage Fees	$ 50,000	$ 80,000	$ 84,000	$ 88,200	$ 92,600	$ 97,200
Other Charges [2]	$ 216,400	$ 191,500	$ 201,100	$ 211,200	$ 221,800	$ 232,900
LID Billing Revenue[3]	$ 41,700	$ 41,700	$ 41,700	$ 40,900	$ 39,800	$ 33,900
Total Operating Revenues	**$ 999,300**	**$ 1,389,000**	**$ 1,788,400**	**$ 1,883,200**	**$ 1,985,000**	**$ 2,086,600**
Operating Expenditures						
Operations[4]	$ 965,400	$ 879,100	$ 905,500	$ 932,700	$ 960,700	$ 989,500
Replacements[5,6]	$ 215,600	$ 731,800	$ 817,700	$ 908,500	$ 1,003,800	$ 1,104,200
Total Operating Expenditures	**$ 1,181,000**	**$ 1,610,900**	**$ 1,723,200**	**$ 1,841,200**	**$ 1,964,500**	**$ 2,093,700**
Capital Revenues						
Sewer Service Availability Fees - General[7]	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000	$ 72,000
Sewer Service Availability Fees - City of Donnelly[8]	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000
Sewer Interceptor Fees / Sewer Line Capacity Fees[7]	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 18,000
Sewer Interceptor/Line Capacity Fees - City of Donnelly[8]	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500
Septage Receiving Facility[9]	$ 85,000	$ -	$ -	$ -	$ -	$ -
Total Capital Revenues	**$ 182,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**	**$ 97,500**
Capital Expenditures						
Capital Improvements	$ 175,000	$ 699,400	$ 1,311,300	$ 327,800	$ -	$ -
Debt Payments[10,11]	$ -	$ -	$ -	$ 135,300	$ 135,300	$ 135,300
Total Capital Expenditures	**$ 175,000**	**$ 699,400**	**$ 1,311,300**	**$ 463,100**	**$ 135,300**	**$ 135,300**
Account Balances						
Total Initial Funds[12]	$ 4,093,100	$ 3,918,900	$ 3,095,100	$ 1,946,500	$ 1,622,900	$ 1,605,600
Net Operating Revenue[13]	$ (181,700)	$ (221,900)	$ 65,200	$ 42,000	$ 20,500	$ (7,100)
Net Capital Revenue[14]	$ 7,500	$ (601,900)	$ (1,213,800)	$ (365,600)	$ (37,800)	$ (37,800)
Ending Account Balance	**$ 3,918,900**	**$ 3,095,100**	**$ 1,946,500**	**$ 1,622,900**	**$ 1,605,600**	**$ 1,560,700**

Notes:

1. A growth of 13 EDUs per year is estimated.
2. Other charges include: Tax Revenue for Valley County, Sewer Inspection Fees, Lift Station Operating Fee, Interest Income, Annexation/Plan Review Fees, and New Development Plan & Study Fees.
3. Billing fees for the Mountain Meadow, Lake Cascade Ranch, Wagon Wheel 6, 7, and 8, West Side Sewer, and Tamarack Sewer Phases 1, 2, and 3.
4. 3.0% annual inflation of costs are assumed.
5. Replacement costs include: vehicles and equipment, gravity pipelines, pressure pipelines, manholes, lift stations, and the WWTP.
6. Pipeline and manhole replacements are 10% funding in FY 2021. Funding increases by 10% each year until the pipeline and manhole replacements are fully funded in in FY 2030. All other replacement items are fully funded in FY 2021.
7. Revenue estimated based on 12 new EDUs per year
8. Revenue estimated based on 1 new EDU per year
9. The septage receiving revenue was a grant that the District received in 2020. No additional funds from the grant will be awarded in future years.
10. The District currently only has LID debt payments. These payments are made by the customers and are directly passed from the District to the LID holders. These payments are not included in this estimate.
11. The debt payments shown are estimated from financing the construction of the future solids handling facility with a 20 year, 3.5% interest loan.
12. Initial fund balance as shown in the 2019 Audit.

13 Total operating revenues minus total operating expenditures.

14. Total capital revenues minus total capital expenditures.

APPENDIX K

Fire Flow Letter

Donnelly Rural Fire Protection District
P.O. Box 1178 Donnelly, Idaho 83615
208-325-8619 Fax 208-325-5081

April 17, 2020

Gold Fork Bay LLC
ATTN. Jim Fronk
P.O. Box 576
McCall, Idaho 83638

RE: P.U.D. 04-02 Gold Fork Bay Village

After review, The Donnelly Rural Fire Protection District will require the following:

- All prior requirements shall remain in effect
- In accordance with **Section 507.2.2 IFC 2015**. Private fire service mains and appurtenances shall be installed in accordance with NFPA 24
- The Donnelly Rural Fire Protection District (DRFPD) requires a minimum fire flow of 1,125 gallons per minute for the duration of not less than two hours. Water system shall have redundant power supply and redundant pumping capability. All systems shall be inspected and approved. Hydrants shall be flow tested and approved by DRFPD personnel prior to final plat
- In lieu of 1,125 gallons per minute residential fire sprinklers may be installed in all residences within the subdivision. If installing residential fire sprinklers the Donnelly Rural Fire Protection District shall not accept less than 560 gallons per minute of fire flow for the duration of not less than two hours for homes less than 3600 square feet. For homes greater than 3601 square feet the Donnelly Rural Fire Protection District shall not accept less than 750 gallons per minute of fire flow for the duration of not less than two hours
- All sprinkler system plans shall be submitted for review prior to installation

Please call 208-325-8619 with any questions.

Jess Ellis

Fire Marshal
Donnelly Fire Department

KELLER ASSOCIATES

100 E Bower St., Suite 110 | Meridian, ID 83642 | (208) 288-1992