Environmental Information Document

for

Hayden Lake Recreational Water and Sewer District
Wastewater Collection System

Submitted to the Hayden Lake Recreational Water and Sewer District

December 2012
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ENVIRONMENTAL INFORMATION DOCUMENT

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT WASTEWATER COLLECTION SYSTEM

PROJECT NO. 41055

SUBMITTED TO THE:

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT

PROFESSIONAL ENGINEER REGISTERED 3751 STATE OF IDAHO LARRY E. COMER

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Project Cost and Funding

Estimated Construction Costs (Phase A and B):

Sewer System Rehabilitation	$ 2,673,870
New Collector/Interceptor Sewers	$ 515,130
Total Estimated Cost	**$ 3,189,000**

Total Funding Required for All Collection System Projects (Phase A and B):

Potential Funding (Rate Increase, Future Loans, etc)	$ 4,200,000
Total Funding	**$ 4,200,000**

1. Funding shall include Engineering, Administration, and Legal-Bond; refer to the Facility Plan in Appendix A for more information.
2. Funding amount would be required to complete all collection system improvements (including the Strahorn Interceptor Line) identified in the Facility Plan in Appendix A.

Requested Funding for Collection System and Treatment Facility Upgrade:

Total DEQ Loan	$ 10,400,000
Portion of DEQ Loan for HLRWSD Collection System Projects	$ 4,200,000
Total Current REQUESTED Funding for HLRWSD Collection System	**$ 4,200,000**

1. Funding shall include Engineering, Administration, and Legal-Bond; refer to the Facility Plan in Appendix A for more information.
2. The District approved an LID in the amount of $7,000,000 to cover their share of the treatment facility ($6,200,000) and $700,000 for collection system improvements. In February 2013, the District requested DEQ consider a potential increase to their loan application to fund all collection system projects (Phase A and B). The District is proposing to amend their existing LID to include this additional funding ($3.4 million). If the LID amendment is not approved, the District is considering an increase in sewer rates to fund the projects ($3.4 million).

User Costs

Residents and commercial entities (assessed and billed per EDU) that receive sewer service from the Hayden Lake Recreational Water and Sewer District and have purchased capacity at the HARSB treatment facility will be assessed the cost of improving the collection system components. Residents and commercial entities that have purchased capacity at the HARSB treatment facility may have vacant lots which do not currently receive service but can hook-up at any time. Residents and commercial entities within the District boundary that are not currently served by the sewer system or who have not purchased treatment capacity will not be assessed the cost of these improvements. Therefore, the following fees will be assessed.

Estimated User Costs for Existing Service Area (for Total **Collection** System Project Costs – Phase A and B):

Current Average Monthly User Charge per EDU[3]	$ 44.00
Change in Operation and Maintenance Monthly Charge per EDU	$ 0.00
Change in Debt Service Monthly Charge per EDU[1,2]	$ 9.00
Future Average Monthly User Charge per EDU[4]	**$ 53.00**

1. Financing terms of 2% for 20 years, with additional 1% for reserve (interim financing) (if a DEQ loan was secured).
2. Cost per user assumes 2,600 LID assessment shares (1,922 are active users)
3. Current average monthly user charge is paid by active users (1,922 users)
4. Total estimated user cost evaluated for currently active user. Non-active users would only pay the debt service.

Estimated User Costs for Existing Service Area (for Requested Funding for ***Collection*** **System[1] and Treatment Plant** Projects):

Current Average Monthly User Charge per EDU[5]	$ 44.00
Change in Operation and Maintenance (for treatment facility) Monthly Charge per EDU *per year*[5]	$ 2.00
Change in Debt Service Monthly Charge per EDU[2,3,4]	$ 22.50
Future Average Monthly User Charge per EDU (first year)[6]	**$ 68.50**

1. Currently requested funded collection system projects consist of Phase A and B.
2. Financing terms of 2% for 20 years, with additional 1% for reserve (interim financing)
3. Cost per user assumes 2,600 LID assessment shares (1,922 are active users)
4. Financing anticipated to occur with a LID amendment (the total LID includes financing for HARSB WWTP upgrade and Collection Phase A and B). LIDs are assessed on a yearly basis, so the *monthly* change to debt service is in actuality a *yearly* change. If LID is not amended to include the additional funding, the District will consider increasing sewer rates to fund the improvements ($3.4 million).
5. These costs are paid (or will be paid) by active users (1,922 users)
6. Total estimated user cost evaluated for currently active user. Non-active users would only pay the debt service.

Abstract

The October 2012 Wastewater Collection System Facility Plan for the Hayden Lake Recreational Water and Sewer District recommends several improvements to the existing sewer collection system to meet current standards and Idaho Department of Environmental Quality (IDEQ) rules. The improvements are aimed at improving the condition of the lift stations and in addition, installing two gravity sewer interceptors to relieve flows at a major lift station in the system. This Environmental Information Document briefly addresses the expected environmental impacts of the proposed alternatives for the improvements. After receiving public input, the District selected the improvement alternatives to be included in the proposed project. The environmental impacts associated with the proposed project are assessed in this document. After consultation with environmental agencies, mitigation measures were identified to address items of concern. Mitigation measures include the following:

- Best Management Practices (BMPs) shall be developed as part of the project design and implemented during construction. Since the project will disturb more than 1 acre, those portions of the project that drain to a water of the United States will fall under the Construction General Permit and a Stormwater Pollution Prevention Plan will need to be developed.
- A floodplain development permit (from the appropriate jurisdiction) will be required for construction activities in the mapped flood hazard area.
- If artifacts (cultural and historic remains) are discovered during the course of construction, all work will stop and the Coeur d'Alene Indian Tribe and SHPO will be contacted. Mitigation may be further evaluated.
- The Contractor must mitigate fugitive dust. No burning of construction debris or vegetation will be allowed. Additional requirements will be necessary for the standby power (generator) to minimize air quality impacts.

1. BACKGROUND

1.1. SYSTEM BACKGROUND

The Hayden Lake Recreational Water and Sewer District (HLRWSD or District), Wastewater Collection System consists of multiple collection areas and lift stations in the City of Hayden Lake and unincorporated portions of Kootenai County, Idaho. The HLRWSD lift stations (17 duplex lift stations in total, due to the nature of the terrain around Hayden Lake) pump raw and septic tank effluent wastewater through a series of gravity and force mains to the H-1D lift station. From there, the wastewater is pumped through a series of force mains to the Hayden Area Regional Wastewater Treatment Facility, four miles to the northwest of the District. An interagency "joint powers" agreement for sewage treatment services was established in 1986 between the HLRWSD, City of Hayden and Kootenai County. The agreement is included in Appendix B for reference. The treatment facility currently treats to a secondary level and discharges to the Spokane River and to a reuse/land application facility.

The majority of the collection system was constructed in 1987. However, some of the pre-existing effluent sewer systems constructed before 1987 have been "taken over" by HLRWSD. Currently the wastewater collection system is operated and maintained by the HLRWSD. The District contracts with HARSB (Hayden Area Regional Sewer Board) to perform certain O&M (operation and maintenance) duties.

1.2. FACILITY PLAN INFORMATION

The HLRWSD Board of Directors has authorized Welch Comer and Associates, Inc. to prepare this wastewater system report for the HLRWSD wastewater collection system located in Kootenai County, Idaho. The purpose of the report was to identify existing and future sub-standard components of the system and to develop a facility plan to implement the capital improvements necessary to provide an adequate wastewater collection system to its users for the next 20 years, or more. The facility plan evaluates current and future compliance with current standards and Idaho Department of Environmental Quality (IDEQ) rules (which have been developed to protect public health and safety and water quality).

The analysis of the system components (lift stations and sewer lines) is based on the IDEQ requirements identified in the IDAPA 58.01.16 Wastewater Rules. These rules were used as a basis to analyze and evaluate the lift station condition and sewer lines in the Facility Plan (refer to Appendix A). Based on the analysis, the following conclusions were made:

The system has operated well and protected water quality since it was constructed in 1986 and 1987. However, some of the mechanical components of the system have worn out or depreciated due to wear and tear and natural corrosion.

a. Interior coatings on most of the 13 lift stations, which are at least 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion.

b. Electrical control panels for 13 of the lift stations, which are over 25 years old, are operational; however, they do not meet current standards for operating safety.

c. The HLRWSD has the opportunity to install gravity sewer interceptor lines in Strahorn Road and Miles Avenue over the next few years, in coordination with roadway reconstruction proposed by the City of Hayden Lake.

d. Several collection system improvements such as pressure service upgrades, ARV replacement, line sags, and other issues should be addressed.

Refer to the Facility Plan (Appendix A) for further information regarding the system deficiencies for existing and projected growth.

1.3. Purpose and Need

The purpose of the proposed project is to protect public health and safety and water quality by *proactively* addressing the deficiencies with respect to the Idaho Rules for Wastewater Systems and Water Quality. Several upgrades and repairs for the system, with respect to the Idaho Rules, were identified for system components, such as interior coatings of lift stations, electrical control panels, opportunity for gravity sewer interceptor lines, and other collection system issues (refer to Section 1.2 above). Thus the projects *proactively* address the public health and safety and water quality concerns identified with respect to Idaho Rules (which protect water quality in surface and ground water in the surrounding area and describe parameters for providing proper wastewater service to users). Specifically, the projects will address the lift station condition, collection system issues, and opportunity for gravity sewer interceptor lines, to prevent future wastewater spills and provide dependable sanitary sewer service to the HLRWSD community. The improvements (described further in Section 2) include a variety of options that include modifications to lift stations, construction of gravity sewer interceptor lines, and providing dependable sewer service.

2. PROPOSED ALTERNATIVES

Detailed descriptions of the proposed alternatives can be found in the Facility Plan (Appendix A) and have been summarized here. Detailed cost estimates for these alternatives can be found in Appendix D.

2.1. LIFT STATION ALTERNATIVES

The existing lift stations within the District's system are in need of both electrical and structural/mechanical upgrades. The proposed alternatives aim to address both categories of lift station improvements through various alternatives.

2.1.1. LIFT STATION ELECTRICAL ALTERNATIVES

Out of the 17 lift stations owned and operated by HLRWSD, 12 of these stations employ electrical control panels using relays and dialer alarm systems[1] and are 25 years old or older. The other 5 panels, which employ newer technologies, include 3 programmable logic controls (PLC) and 2 "smart panels" (Multi-Smart pump station manager hardware).

Existing Clark House Lift Station Control Panel Built in 1986

It is the goal of HARSB and its three partner entities[2] to adopt one common model for future lift station controls, in order to standardize, integrate, and automate all lift stations under the HARSB operational "umbrella".

On September 28, 2011 representatives of HARSB, HLRWSD and the City of Hayden met to hold a planning "summit" to evaluate a common approach for future lift station control improvements for HARSB and its partner agencies. The following options were discussed in detail, as presented by Terry Stulc, P.E., an electrical engineer with Trindera Engineering.

2.1.1.1. *COMMUNICATION ALTERNATIVE 1: AUTODIALER BASED SYSTEM*

This alternative would consist of an autodialer based system which includes: hardwired controls, or dedicated level controller (like Siemens/Milltronics Hydroranger) for pump control, coupled with Autodialer for remote alarming.

- Pros:
    1. Simple to implement and maintain
    2. Cost effective solution overall

[1] The control panels built in 1986 are simple and still functional; however, these panels do not meet present electrical codes for operator safety.

[2] The City of Hayden, HLRWSD, and Kootenai County

- Cons:
    1. Requires phone service (landline, cellular or Cable TV, etc.) at each site.
    2. Limited control and monitoring options
    3. No real option for telemetry/SCADA[3]
    4. Requires site visit to confirm alarms / status

2.1.1.2. *COMMUNICATION ALTERNATIVE 2: PLC/RTU BASED SYSTEM*

This alternative would consist of a PLC/RTU[4] based system which includes: programmable controller, presumably with Operator Interface for visual information and coupled with floats, or level transmitters for level monitoring. This system forces reliance on a system integrator (programmer/technician).

- Pros:
    1. Programmable- meaning customizable and relatively easily changeable
    2. Visual status and alarm information
    3. Telemetry / SCADA add-on is an option
- Cons:
    1. For remote alarming, still need an autodialer, with phone service (landline, cellular or Cable TV, etc.)
    2. Still requires site visit to confirm alarms / status
    3. Programs (in PLC and OIT[5]) still need to be maintained

2.1.1.3. *COMMUNICATION ALTERNATIVE 2A: PLC/RTU BASED SYSTEM WITH TELEMETRY*

This alternative would consist of a PLC/RTU based system, as described above, but with telemetry, which includes: programmable controller, presumably with Operator Interface for visual information and coupled with floats, or level transmitters for level monitoring, but *with telemetry radio/modem for communications to a master site.* This system would require periodic upgrades and updates.

- Pros:
    1. Same as Option 2
    2. Remote indication of status and alarms
    3. Remote control is option
    4. Data logging and historical archiving
    5. Reporting
- Cons:
    1. Same as Option 2
    2. More expensive
    3. Complicated system

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[3] SCADA: Supervisory Control and Data Acquisition

[4] RTU: Remote Telemetry Unit

[5] OIT: Operator Interface Terminal

4. Probably required continuous third party support (beyond basic options staff)

2.1.1.4. *Communication Alternative 3: "MultiTrode" Based System*

This alternative would consist of a "MultiTrode" based system which includes: configurable controller with Operator Interface for visual information and coupled with level probes and/or level transmitter for level monitoring.

- Pros:
    1. Configurable with multiple options- meaning relatively customizable but not easily changeable (options) after purchased and installed.
    2. Arguable more expensive than PLC/OIT system (Option 2 above)
    3. Visual status and alarm information
    4. Telemetry/SCADA add-on is an option
    5. Has features beyond typical PLC/OIT implementation for motoring motor status/information, continuous testing.
    6. Multiple options for level monitoring beyond typical floats
- Cons:
    1. For remote alarming, still need an autodialer, with phone service (landline, cellular or Cable TV, etc.) at each site.
    2. Still requires site visit to confirm alarms/status
    3. Configuration (program) still need to be maintained
    4. Forces reliance on one vendor

2.1.1.5. *Communication Alternative 3A: "MultiTrode" Based System With Telemetry*

This alternative would consist of a "MultiTrode" based system with telemetry, which includes: configurable controller with Operator Interface for visual information and coupled with level probes and/or level transmitter for level monitoring, but *with telemetry radio/modem for communications to master site*. However, no other local systems have similar configurations as Alternative 3A, which may prove difficult should HLRWSD want advice or suggestions from another system.

- Pros:
    1. Same as Option 3
    2. Remote indication for status and alarms
    3. Remote control is option
    4. Data logging and historical archiving
    5. Reporting
- Cons:
    1. Complicated system
    2. Probably required continuous third party and/or vendor support (beyond basic options staff)

2.1.1.6. *PHASED IMPLEMENTATION*

As with most public works improvements, there are costs, benefits and risks to consider with evaluating capital improvement options. For example, the "MultiTrode/MultiSmart" control panel option is the most expensive alternative; however, for high risk or high flow lift stations, this system provides the remote monitoring and reset capabilities, data gathering and energy conservation. Allowing operators to monitor many of the stations' functions and alarms remotely could reduce operating and labor costs.

As a result of the HARSB / HLRWSD / Hayden lift station control "summit", the following recommendations have been proposed:

A Tiered Approach to Lift Station Control

Tier I- High Flow / High Risk Stations

Implement Option 3A-

The "MultiTrode/MultiSmart" pump station management system, with radio telemetry to a base system as the HARSB treatment facility.

Tier II- Moderate Flow / Moderate Risk Stations

Implement Option 3-

Use the "MultiTrode/MultiSmart" panels and probes, with limited optional features and defer radio telemetry until a future time.

Tier III- Lower Flow / Lower Risk Stations

Implement Option 1-

For small lift stations with a low potential for growth or increased risk, a traditional hard wired control panel coupled with an autodialer for remote alarming. This approach assumes the small stations will be controlled by telemetry.

It is estimated that Tier I lift station control upgrades (for 10 lift stations determined to be high flow/high risk) would cost approximately $618,750, Tier II (for 4 lift stations determined to be moderate flow/moderate risk) would cost approximately $233,620, and Tier III (for 2 lift stations determined to be low flow/low risk) would cost approximately $90,760. The recommended improvements should reduce call-out costs and frequency. However, any savings in O&M should be applied toward future reserve and replacement. Thus, the O&M costs are expected to remain the same as those for previous years[6].

[6] Annual O&M for the entire collection system is estimated at $333,500.

2.1.1.7. *Environmental Impacts for Communication Alternatives*

The environmental impacts associated with the communication improvements would be similar for each alternative. All the alternatives will require the existing panels to be replaced with at least Tier III control panel components. The higher risk lift station communications will be replaced with Tier I or II control panel components. The difference in alternatives is within the electrical panel itself and should not have any differing environmental impacts. The primary impacts to the environment are anticipated to be higher utility use (due to changed power usage), improvement to public health (due to the reduction in risk to the operators by replacing aged components), increased energy consumption (due to changed power usage), reduction in noise (eliminating the audio/visual alarm system that emits considerable noise, due to the installation of telemetry on high risk stations), and improvement to the socioeconomic profile (due to the capacity added which will serve future growth).

2.1.1.8. *Communication "No Action" Alternative*

The primary result of the "no action" alternative for the communication component of the District's lift stations is the safety to operators (since most of the electrical panels are not up to current electrical codes). Additionally, several lift stations are located adjacent to either Hayden Lake or Avondale Lake. If the stations were to fail in some manner (electrically), there would be very serious effects to the water quality of these Lakes and to public health in the area. Improving the communication component of the lift stations would provide a quicker and more efficient method for operator response to these emergencies.

There would be minor environmental impacts due to the "no action" alternative since no replacement or upgrading would occur. The primary impact to the environment is anticipated to be potential risk to public health (due to the risk to the operators through aged components and potential for slower/less efficient operator response due to communication devices).

2.1.2. Lift Station Structural/Mechanical Alternatives

Section 4 of the Facility Plan (Appendix A) describes in detail the existing condition of each lift station. Table 2-1 provides a summary of the structural/mechanical condition of each lift station summarized through a rating system. The rating system aims to identify the lift stations with more severe repair needs.

Table 2-1: Structural/Mechanical Condition of Lift Stations, Rating

Lift Station	Age	Structural Condition	Mechanical Condition	Environmental Risk	Access/Safety	Space for Expansion	Total Score (Weighted)
Avondale	1987	1	3	2	1	3	1.9
Canterbury Cove	1984	1	3	3	3	3	2.5
Clark House	1987	2	2	2	3	3	2.3
Coopers Bay	1985	1	1	2	1	2	1.3
Country Club	1987	2	3	3	2	3	2.6
English Point	2010	1	1	1	1	1	1.0
The Falls at Hayden	2010	1	1	2	1	1	1.2
Forest Ridge	2008	1	1	1	1	1	1.0
H-1D	1999	1	1	1	1	1	1.0
Honeysuckle Beach	1987	2	3	2	1	2	2.1
Packsaddle	1981	2	3	3	1	1	2.2
Point Hayden	1982	2	3	2	3	3	2.6
Sandy Cove	1987	3	3	3	3	2	2.9
Sherwood Court	1987	1	2	2	1	2	1.6
Split Rock	1990	1	2	2	2	3	1.9
Thames Court	1987	3	3	2	3	3	2.8
Wrights Park	1987	3	3	2	1	3	2.4

Notes: good = 1, fair = 2, low = 3 for Structural Condition, Mechanical Condition, Access/Safety, Space for Expansion
low = 1, fair = 2, high = 3 for Environmental Risk
Structural Condition = 25%, Mechanical Condition = 25%, Environmental Risk = 20%, Access/Safety = 20%, Space for Expansion = 10%

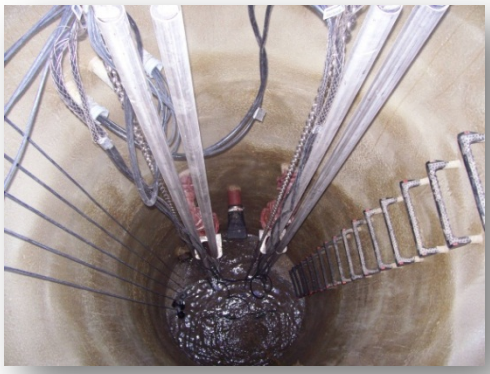
Based on the ratings in Table 2-1, the following is a list of the lift stations with a score of 2 and higher, listed from greatest score – worst condition (2.9) to lowest score – best condition (2.1):

Priority Rating	Lift Station	Condition Rating
1	Sandy Cove	2.9
2	Thames Court	2.8
3	Country Club	2.6
4	Point Hayden	2.6
5	Canterbury Cove	2.5
6	Wrights Park	2.4
7	Clark House	2.3
8	Packsaddle	2.2
9	Honeysuckle Beach	2.1

The following alternatives have been identified as potential solutions to the defects noted above.

2.1.2.1. *Structural/Mechanical Alternative A: Rehab-In-Place (Rehabilitation)*

This option would restore the existing steel lift station in-basin place (Refer to Appendix C for a figure of Option A Lift Station Rehabilitation). Restoration of the lift stations would include the following elements:



Kingston-Cataldo lift station recently rehabilitated with "spray rock" liner, 2011

a. **Re-coat Interior:** Recoat the interior of the steel lift stations by sand blasting and applying an industrial elastomeric coating, such as "spray rock". This would require temporary by-pass pumping facilities to maintain live sewage service around each lift station for at least five days.

b. **New Aluminum Lids:** The tops of each steel lift station would be removed before sand-blasting and coating the interior to facilitate access. A pre-fabricated aluminum top and access hatch would then be bolted on top of each station after re-coating the interior, including an air tight seal.

c. **Replace Interior Piping and Rails:** All interior piping would be replaced with stainless steel piping, guide rails, and pump lift chains.

d. **Replace Pumps and Pitless Fittings:** All duplex lift stations would be supplied with standardized pumps of the same manufacturer, with several standardized horsepower sizes to fit the operating criteria. The

pitless adaptors attached to the lift station bottom will also be standardized and will facilitate operator's removal of pumps without entering the lift station. FLYGT N-Type[7] pumps with semi-open impellers are recommended for reduced clogging problems due to fibrous materials such as "wipes and swifters".

e. **New Exterior Valve Vault:** All lift stations will be supplied with new isolation gate valves and check valves on the discharge force main, and will be located in a separate watertight valve vault, as required by current IDEQ design requirements. This will require maintenance accessibility and operator safety.

f. **Maintain Existing Ground Stability:** Some excavation will be necessary on the exterior of the existing steel lift stations in order to replace exterior piping and valves. However, one primary benefit of this rehabilitation option is the fact that the sub-soils and existing concrete anti-flotation pad will remain undisturbed.

g. **Site Improvements:** Each lift station site will be re-graded to improve drainage, vehicle access, and all weather accessibility, which may require additional property easements.

This alternative would cost approximately $1,806,740, if all 13 lift stations requiring upgrading (those that are 25 years or older) were upgraded using this alternative. As stated before[8], the O&M would be similar to that of previous years.

The environmental impacts associated with rehab-in-place would generally include change in topography (due to excavation and site restoration), short-term change to surface and ground water (protected by stormwater controls to prevent pollution of surface and ground water), short-term disturbance to wildlife (noise and excavation), small potential for cultural resource impact (disturbance within existing footprint, in most cases), improvement to public health (rehabilitating aging lift stations will reduce the likelihood of sewer leaks and lift station failures), positive impact to sole source aquifer (reducing likelihood of leaks and station failures), and improved socioeconomic profile (allowing for growth within the system).

2.1.2.2. *Structural/Mechanical Alternative B: Replacement*

This option would excavate, remove and dispose of the existing steel lift station and replace it with a pre-packaged fiberglass lift station. This existing concrete anti-floatation pad would remain in place and undisturbed. Refer to Appendix C for a figure of Option B Lift Station Replacement. Replacement of the steel lift station would include the following elements:

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[7] These types of pumps will be described further in Section 2.1.4.

[8] The recommended improvements should reduce call-out costs and frequency. However, any savings in O&M should be applied toward future reserve and replacement. Thus, the O&M costs are expected to remain the same as those in previous years.

a. **Excavate and Remove Steel Structure:** In order to remove the existing steel lift stations, and yet leave the existing concrete anti-floatation pads in place, excavation would be required to the bottom of each station which varies in depth from 12 ft to 16 ft. The soils at each lift station vary, however some sites may consist of saturated and unstable clay materials. The steel basin structure would be salvaged for recycling.

b. **Bypass Pumping:** as with all other options, temporary bypass pumping will be required to provide live sewage service around each lift station for at least 4 days.

c. **Pre-Fabricated Fiberglass Packaged Lift Station:** In order to minimize the cost and risk of an extended pump by-pass period, the Replacement option would include a pre-fabricated fiberglass (packaged) lift station. This fiberglass lift station would be delivered to the site on a semi-trailer, and would be pre-fabricated and tested prior to shipping, including piping, pumps, rails, and aluminum access hatch. The new fiberglass lift station structure would be bolted to the existing concrete anti-buoyancy slabs, with a supplemental concrete "donut" poured to provide stability and resistance to buoyancy of the structure.

Granite Reeder Sewer Department pre-packaged lift station, 2011

Similar to the other options, all interior piping and guide rails would be stainless steel. Pumps and pitless adaptors would be standardized. The exterior value vault would also be similar to the other options, using a watertight concrete manhole and all new isolation gate valves and check valves.

d. **Site Restoration:** This option would result in the most site disturbance during construction. In some locations, the instability of the saturated clay soils will either require a very large excavation with gradual sloping, or temporary sheet piling to support the excavation walls. The final grading will include improvements to drainage, access, and an all-weather gravel surface around the stations.

This alternative would cost approximately $3,162,640, if all 13 lift stations requiring upgrading (those that are 25 years or older) were upgraded using this alternative. As stated before, the O&M would be similar to that of previous years.

The environmental impacts associated with replacement would generally be similar to those for the rehabilitation, but with a larger area of disturbance. The impacts would generally include change in topography (due to excavation and site

restoration), short-term change to surface and ground water (protected by stormwater controls to prevent pollution of surface and ground water), short-term disturbance to wildlife (noise and excavation), small potential cultural resource impact (disturbance within existing footprint, in most cases), improvement to public health (replacing aging lift stations will reduce the likelihood of sewer leaks and lift station failures), positive impact to sole source aquifer (reducing likelihood of leaks and station failures), and improved socioeconomic profile (allowing for growth within the system).

2.1.2.3. *Structural/Mechanical Alternative C: Slip-Line*

This option is a hybrid approach, which combines elements of Options A and B. The existing steel structure and concrete bases of the lift station would be retained as a shell, and then slip-lined with a fiberglass basin, which is pre-fabricated as a packaged lift station. Refer to Appendix C for a figure of Option C Lift Station Slip-Line.

a. **Existing Steel Basing:** The existing steel basins would remain in place, but all the interior piping and penetrations would be removed. The top of the basin would be cut off, and the existing coatings would remain as-is.

b. **Fiberglass Slip Line Basin:** The inside diameter of the existing steel lift station varies among the lift stations. The new fiberglass basin would have a smaller outside diameter so it would slip inside the existing steel shell. The annular space between the steel and fiberglass basin would be filled with fiber reinforced concrete grout. The steel and fiberglass basin would have tabs in the annular space so that the concrete grout provides a structural bond between the steel and fiberglass basins.

c. **Exterior Piping and Excavation:** The exterior of the old steel lift station shell must be excavated to the invert elevations of the gravity and pressure sewer pipes, in order to re-connect the piping to the new fiberglass basin. This will require cutting through the steel basins in order to access the pipe hubs on the fiberglass basins.

d. **Fate of the Steel Basins:** Since the coatings of the existing steel basins will not be repaired, it is expected that the steel will continue to corrode in-place and eventually lose any structural stability. This would not affect the stability or water-tightness of the inner fiberglass basin which would be designed to independently resist buoyant forces. Also, the concrete grout would be fiber reinforced and would add structural strength to the basin “sandwich”.

e. **New Exterior Value Vault:** All lift stations will be supplied with new isolation gate valves and check valves on the discharge force main, and will be located in a separate watertight valve vault.

f. **Maintain Existing Ground Stability:** Similar to Option 1, some excavation will be necessary on the exterior of the existing steel lift stations in order to replace exterior piping and valves. However, another

benefit of this slip line option is the fact that the soils and existing concrete anti-flotation pad will remain undisturbed.

g. **Site Improvements:** Each lift station site will be re-graded to improve drainage, vehicle access, and all weather accessibility. This can generally be accomplished with the addition of culverts and gravel.

This alternative would cost approximately $2,113,540, if all 13 lift stations requiring upgrading (those that are 25 years or older) were upgraded using this alternative. As stated before, the O&M would be similar to that of previous years.

The environmental impacts associated with slip lining would generally include similar impacts as the replacement; but the impacts would be reduced due to the smaller disturbed area. The impacts would generally include change in topography (due to excavation and site restoration), short-term change to surface and ground water (protected by stormwater controls to prevent pollution of surface and ground water), short-term disturbance to wildlife (noise and excavation), small potential cultural resource impact (disturbance within existing footprint, in most cases), improvement to public health (rehabilitating aging lift stations will reduce the likelihood of sewer leaks and lift station failures), positive impact to sole source aquifer (reducing likelihood of leaks and station failures), and improved socioeconomic profile (allowing for growth within the system).

2.1.2.4. *STRUCTURAL/MECHANICAL "NO ACTION" ALTERNATIVE*

Several lift stations are located adjacent to either Hayden Lake or Avondale Lake. If the stations were to fail in some manner (structurally or mechanically), there would be very serious effects to the water quality of these Lakes and to public health in the area. Therefore, it is imperative that the District improve the components of each lift station that have been identified above, proactively.

The environmental impacts associated "no action" would generally include risks to public health and safety and water quality. The impacts would generally include surface and ground water (risk due to potential lift station failure and pollution to surface and ground water), public health (aging lift stations increase the likelihood of sewer leaks and lift station failures), and socioeconomic profile (small potential for growth within the system).

2.1.3. STANDBY GENERATOR IMPROVEMENTS

Several of the system's lift stations do not have standby generators. Standby generators provide operation for the lift stations during periods of power outages or in other emergencies. Many of the major lift stations (and the newer stations) have standby generators, and thus the capability to provide pumping capacity during emergency situations. Consequently, standby generators will be installed at those lift stations currently without standby generating power.

The cost of providing standby generators to the seven lift stations currently without standby generating power would cost approximately $538,300. As stated before, the O&M would be similar to that of previous years.

The environmental impacts associated with the standby generator installation are fairly minor. Generally, the impacts would consist of potential impacts to physical aspects (minor excavation for the generator); positive impacts to water quality (protection from further damage to water quality by providing pumping capacity during emergency situations); flora and fauna (minor site disturbance); air quality (minor construction emissions and longer term intermittent emissions due to operation); positive impacts to public health (improvement to existing conditions).

2.1.3.1. *STANDBY GENERATOR "NO ACTION"*

As stated above, standby generators provide pumping capacity during power outages and emergency situations. Without these generators, lift stations would have no pumping capability during these emergency situations, which can lead to potential uncontrolled, unmonitored discharges to both surface and ground water bodies.

The environmental impacts associated with the "no action" alternative would be minor since no installation would occur. The impacts would generally include surface and ground water (risk due to potential failures and pollution to surface and ground water), and public health (lack of pumping capability during emergencies increase the likelihood of sewer leaks and lift station failures).

2.1.4. SUBMERSIBLE PUMP REPLACEMENT

As lift station pumps require replacement, or when lift stations receive a major upgrade, the HLRWSD Board has adopted a policy to replace all raw sewage pumps with FLYGT N-Series semi-open impeller pumps. This style of pump has a proven design to be more reliable in pumping fibrous materials, like "wipes and swifters", without plugging.

In recent years, the marketing and use of "disposable" fibrous cleaning products have added a new problem in pumping wastewater. This fact can be seen in the increased frequency of call-outs by HARSB personnel to HLRWSD lift stations due to plugged (rags) in pump impellers. In addition, pumps, which continue to perform at high-efficiency without plugging, not only save money from labor savings and emergency response, but also cuts energy costs. Since the majority of the pumps within the system would consist of this type of pump (after structural/mechanical improvements, Section 2.1.2), purchasing back-up pumps of this type would provide more efficient pump replacement, if needed.

The cost to have four to five back-up pumps of this type is approximately $50,000. As stated before, the O&M would be similar to that of previous years.

The environmental impacts of installing these submersible pumps, as needed (back-ups) throughout the system are fairly minor due to installation within existing structures. Generally, the impacts would consist of potential positive impacts to water quality (protection from further damage to water quality by reducing potential maintenance issues, which can lead to more significant leaks); positive impacts to

public health (improvement to existing conditions, reducing likelihood of leaks by utilizing more efficient pumps); and positive impacts to socioeconomic profile (pumps potentially reduce operating costs for system due to reduction in call-outs and pump maintenance).

2.1.4.1. *Submersible Pump Replacement "No Action"*

Utilizing a consistent type of pump for replacement throughout the system allows for streamlining and efficiency in operation, especially as back-up pumps are purchased. In addition, this type of pump (FLYGT N-Series) has been proven to reduce call-outs and maintenance problems at the lift stations. Thus, while installation of these pumps is not a major improvement or necessary, they will prolong the life of the system and maintain its good working order. Thus, "no action" for this installation is not anticipated to have significant effects, but will be preventative in that it will maintain the system.

There would be minor environmental impacts due to the "no action" alternative since no replacement or upgrading would occur. The impacts would generally include surface and ground water (risk due to potential failures and pollution to surface and ground water), public health (delayed pump replacement increase the likelihood of sewer leaks and lift station failures), and socioeconomic profile (pumps maintain current operating costs for system due to call-outs and pump maintenance).

2.1.5. Lift Station Discussion

Each lift station requires different repairs based on its condition, risk, and safety. The following is a discussion of the needs for each lift station.

2.1.5.1. *Avondale Loop*

The overall condition of the lift station is good, but the mechanical components require upgrading. The electrical component for the station consists of a "smart panel", but does require upgrading for telemetry. Thus, this station would require either rehabilitation or slip-line improvements, but not a replacement. The station is at a high risk/high flow capacity and would therefore require a Tier I communication upgrade.

2.1.5.2. *Canterbury Cove*

The overall condition of this lift station is very poor. The structural condition is good, but the mechanical components are in fair condition. This lift station's location is a safety and environmental risk. Thus, this station would require a replacement and relocation. Replacing this lift station would entail providing three grinder pumps for the residences that would be below gradient of the new location for the lift station. This lift station is a low risk/low flow (once relocated) and would therefore only require a Tier III communication upgrade.

2.1.5.3. *Clark House*

The overall condition of this lift station is fair; however, access to this lift station is a safety risk since the lid of the station is below gradient and the electrical panel is under the lid (to the side of the station). Therefore, this station would require either

rehabilitation or slip-line, but not a replacement. The repair would include raising the station to grade, for ease of access. The station is a moderate flow/moderate risk capacity and would therefore require a Tier II communication upgrade. The station does not currently have a standby generator, which should be included in the improvements, but may require additional property easements to install it across the South Hayden Lake Road from the current lift station location.

2.1.5.4. *COOPERS BAY*

This lift station has been upgraded recently and does not require significant repairs. However, the station could be upgraded to new pumps (FLYGT N-Series), which would require new mechanical components. Thus, this station could be rehabilitated or slip-lined but does not require replacement. This station is a high flow/high risk capacity and would require a Tier I communication upgrade.

2.1.5.5. *COUNTRY CLUB*

The overall condition of this lift station is fair. The structural condition of the concrete is good, but the mechanical components are in poor condition. Thus, this station could be rehabilitated or slip-lined but does not require replacement. The station may require an additional pump if the sewer alignment improvements (see Section 2.2) are not included in the system improvements. This station is high flow/high risk and would therefore require a Tier I communication upgrade.

2.1.5.6. *ENGLISH POINT*

This station is in excellent condition and was constructed recently. The electrical components are sufficient, but require telemetry upgrades. Thus, the only improvement to this station would be the addition of telemetry (Tier I communication upgrade, just telemetry) and safety grates[9].

2.1.5.7. *THE FALLS AT HAYDEN*

This station is in excellent condition and was constructed recently. The electrical components are sufficient, but require telemetry upgrades. Thus, the only improvement to this station would be the addition of telemetry (Tier I communication upgrade, just telemetry) and safety grates.

2.1.5.8. *FOREST RIDGE*

This station is in good condition and was constructed recently. The electrical components are sufficient, but require telemetry upgrades. Thus, the only improvement to this station would be the addition of telemetry (Tier I communication upgrade, just telemetry) and safety grates.

[9] Safety grates would be installed on the lid of the lift station to reduce the likelihood of an operator falling into the lift station. These grates are included on the structural/mechanical options.

2.1.5.9. *H-1D*

This station is in good condition and does not require upgrades at this time. HARSB will be installing radio telemetry in 2012, so communication upgrades are also not needed.

2.1.5.10. *Honeysuckle Beach*

The lift station is in poor condition, overall. Both the structural and mechanical components of the lift station are in poor condition. Therefore, any of the three alternatives for structural/mechanical improvements could be considered. The station has a great deal of ragging due to a restroom located near the station. A macerator (Muffin Monster) or a manual screen system should be installed on the restroom inlet line, but the District may wish to request that this unit be supplied by City of Hayden, who owns the public restroom facility, which contributes to the ragging issue. The station is a moderate flow/moderate risk station, due to the lack of storage capacity, and will need a Tier II communication upgrade. The station does not currently have a standby generator, which should be included in the improvements.

2.1.5.11. *Packsaddle*

The lift station is in very poor condition, receiving raw sewage and functioning as a siphon. Therefore, replacement, installing a raw sewage grinder station, should be considered. This lift station is a low flow/low risk capacity and would only require a Tier I communication upgrade. The station does not currently have a standby generator, which should be included in the improvements.

2.1.5.12. *Point Hayden*

The overall condition of this lift station is poor. The station was recently slip-lined with a fiberglass liner, but this reduced the capacity of the lift station. Thus, this lift station does not require any of the three structural/mechanical improvements, but could be upgraded by adding an overflow basin for additional capacity[10]. This station is a high flow/high risk capacity and would therefore require a Tier I communication upgrade.

2.1.5.13. *Sandy Cove*

The overall condition of this lift station is very poor. The structural condition of the steel is in good condition, but the mechanical components require repair. Thus, this lift station would require either rehabilitation or slip-line, but may not require replacement. This station is a high flow/high risk due to a pending subdivision and would therefore require a Tier I communication upgrade. The station does not currently have a standby generator, which should be included in the improvements.

[10] It was ultimately determined that this lift station should be replaced due to capacity issues. Refer to Section 3 for a list of the selected improvements.

2.1.5.14. *SHERWOOD COURT*

The overall condition of this lift station is fair. The structural condition of the steel is in good condition, but the mechanical components are in fair condition. Thus, this lift station would require either rehabilitation or slip-line but not replacement. This station is moderate flow/moderate risk and would therefore require a Tier II communication upgrade. The station does not currently have a standby generator, which should be included in the improvements, but may require additional property easements to install.

2.1.5.15. *SPLIT ROCK*

This lift station receives raw sewage from a septic tank and is located in a high hydraulic head situation. The mechanical components of the station are in fair condition, but the routine maintenance required for the filtration system is not conducted regularly and can leave the station in poor condition. Thus, this station should be considered for replacement to eliminate the well pump and screen configuration. The high hydraulic head will be a design issue and may require larger pumps or a new location. The station is a high flow/high risk capacity and would therefore require a Tier I communication upgrade. The station does not currently have a standby generator, which should be included in the improvements.

2.1.5.16. *THAMES COURT*

The overall condition of this station is very poor. The structural condition of the steel is poor and the mechanical components are in poor condition. Thus, any of the three alternatives could be considered for this lift station. The station is a high flow/high risk capacity and would require a Tier I communication upgrade.

2.1.5.17. *WRIGHTS PARK*

The overall condition of this station is fair. The structural condition of the steel is poor and the mechanical components are in poor condition. Thus, any of the three alternatives could be considered for this lift station. The station is a high flow/high risk capacity and would require a Tier II communication upgrade. The station does not currently have a standby generator, which should be included in the improvements.

2.2. GRAVITY SEWER INTERCEPTOR LINE ALTERNATIVES

2.2.1. STRAHORN ROAD GRAVITY SEWER INTERCEPTOR LINE

A new gravity sewer main line (10-inch) is proposed along Strahorn Road between Bruce Road and Honeysuckle Avenue. The interceptor (or relief line) would ease the loading to the system and would allow for flow to be redirected by gravity flow directly to H-1D instead of going through the Country Club lift station which is adjacent to Hayden Lake. Refer to Appendix C for a figure of the Strahorn Relief Areas (map of the service areas that could be redirected from the Country Club lift station).

The sewer interceptor line would connect to an existing manhole at the intersection of Bruce Road and Strahorn Road (at the North end of the project) and continues down Strahorn Road heading south to an existing manhole on Fieldstone Drive. This proposed gravity line would have a total length of 4,600 feet. This route

would also require an additional segment along Honeysuckle Ave. in order to connect the interceptor line directly to H-1D, adding approximately 1,050 feet to the route as well as additional cost.

As an alternate to this route described above, the interceptor line could be routed down Strahorn Road and then tie-in to H-1D from the north side. This proposed gravity line would have a total length of 6,450 feet. This alternate route is less expensive and is the recommended route for the interceptor line.

The City of Hayden Lake has plans to repave Strahorn Road The District could cooperate with the City of Hayden Lake to install the interceptor line during this time with potential for cost sharing for the pavement removal and replacement. This cooperative venture between these two entities would result in significant cost savings for the public. Refer to Appendix C for a figure of the Strahorn Road Gravity Sewer Relief Line (shows the proposed sewer relief line, first route through Forest Hills), and the Strahorn Road Gravity Sewer Relief Line (Alternate) (shows the proposed sewer relief line, second route down Strahorn Road).

The estimated cost for this interceptor line is approximately $464,880[11]. As stated before, the O&M would be similar to that of previous years.

The environmental impacts associated with the Strahorn Interceptor Line would generally include excavation and site restoration for approximately 20 feet width for the length of the interceptor line, short-term change to surface and ground water (protected by stormwater controls to prevent pollution of surface and ground water), short-term disturbance to wildlife (noise and excavation), small potential cultural resource impact (disturbance within previously disturbed areas), improvement to public health (reducing loading on Country Club lift station), positive impact to sole source aquifer (reducing likelihood of leaks and station failures), and improved socioeconomic profile (allowing for growth within the system).

2.2.2. MILES AVENUE/BRUCE ROAD SEWER INTERCEPTOR LINE

Another gravity sewer interceptor line that would alleviate an additional amount of the loading on the current Country Club lift station would be a sewer line running along either Miles Avenue or Bruce Road connecting to the Strahorn Road Gravity Sewer Interceptor Line (discussed in Section 2.2.1 above). Thus, the Miles Avenue or Bruce Road interceptor lines should be constructed in conjunction with the Strahorn Road Gravity Sewer Interceptor Line, or as a separate project.

2.2.2.1. *MILES AVENUE INTERCEPTOR LINE*

This interceptor line would tie-in to a manhole that would be part of the proposed Strahorn Interceptor Line (see Section 2.2.1) and be constructed in Miles Avenue, between Strahorn Road and Lakeview Drive. The line would capture the flow from the existing Avondale and Lakeview Drive sewer lines, leaving these flows in-service while construction is taking place. Valves would be added to the connection at Lakeview Drive, providing for additional routing options for the force main from Lakeview Drive in case of breaks or repairs. Refer to Appendix C for a figure of Miles

[11] Utilizing the alternate route (6,450 feet)

and Strahorn Relief Areas (areas that will be redirected from the Country Club lift station).

Additionally, it is anticipated that Miles Avenue would be under re-construction by the City of Hayden Lake, so installing gravity sewer in Miles Avenue would not require replacing the roadway asphalt, which would be a cost savings. The two possible challenges to this interceptor line would be the additional existing lines that would be crossed (30" concrete lined, 12" steel water line, gas, and TV cable) and gaining easement/permission from Avondale Country Club. Refer to Appendix C for a figure of the Miles Avenue Relief Line.

The estimated cost for this interceptor line is approximately $170,250. As stated before, the O&M would be similar to that of previous years.

2.2.2.2. *Bruce Road Interceptor Line (Alternate Route)*

This interceptor line would tie-in to an existing manhole on Strahorn Road and run east toward Avondale Loop, running parallel to an existing sewer line. The line would capture the flow from the existing Avondale sewer lines, leaving this flow in-service while construction is taking place. This interceptor line will not capture the Lakeview Drive sewer line. Therefore the same areas (same as Strahorn relief areas) would be bypassed, but the Lakeview Bypass would not be installed as part of this interceptor line. Additionally, Bruce Road will not be under construction in the near future, so installing a sewer line would require replacing the roadway asphalt. Refer to Appendix C for a figure of the Bruce Road Relief Line. Therefore, this option is not recommended.

The estimated cost for this interceptor line is approximately $161,920. As stated before, the O&M would be similar to that of previous years.

2.2.2.3. *Environmental Impacts*

The environmental impacts associated with the either Miles or Bruce Interceptor Lines would generally include excavation and site restoration for approximately 20 feet width for the length of the interceptor line, short-term change to surface and ground water (protected by stormwater controls to prevent pollution of surface and ground water), short-term disturbance to wildlife (noise and excavation), small potential cultural resource impact (disturbance within previously disturbed areas), improvement to public health (reducing loading on Country Club lift station), positive impact to sole source aquifer (reducing likelihood of leaks and station failures), and improved socioeconomic profile (allowing for growth within the system).

2.2.3. Gravity Sewer Interceptor Line "No Action"

The gravity sewer interceptor lines would alleviate a significant amount of flow from a major lift station (Country Club lift station) and redirect it directly to the H1-D lift station. The Country Club lift station is located adjacent to Hayden Lake and if the station were to fail in some manner, there would be very serious effects to the water quality of the Lake and to the public health in the area. Therefore, installing the gravity sewer interceptor lines to alleviate the loading on a major lift station would reduce the

likelihood of uncontrolled, unmonitored discharges to impact surface and ground water bodies as well as the public health and welfare of the District's residents.

The environmental impacts associated "no action" would generally include risks to public health and safety and water quality. The impacts would generally include surface and ground water (risk due to potential Country Club lift station failure and pollution to surface and ground water), public health ("overloaded" lift stations increase the likelihood of sewer leaks and lift station failures), and socioeconomic profile (small potential for growth within the system).

2.3. GENERAL COLLECTION SYSTEM IMPROVEMENTS

There were several deficiencies identified (in the Facility Plan, refer to Appendix A) within the collection system, such as pressure service upgrades, air release valve (ARV) replacements, line sags, infiltration and inflow (I&I) issues, and root issues. The pressure service upgrades and the ARV replacements will be included in the improvements for this facility plan. It is projected that the line sags, I&I, root issues, and miscellaneous other issues will be monitored and repaired with existing O&M funds.

Since the flow data used for the facility plan was not optimal (refer to Section 3.3.3 in Facility Plan, Appendix A), an improved system for reading or monitoring flows for the District's lift stations should be implemented. The individual lift stations required draw down tests in order to utilize the pump hour information. The H-1D lift station has a flow meter, but it took several iterations before realistic values were obtained. It is unknown whether flow values that are included in this report could be erroneous. Therefore, an improved system should be implemented in order to produce more reliable and useable flow data for the District.

Lastly, as was mentioned in Section 3 of the Facility Plan (Appendix A), an updated O&M manual should be written for the District. This will help the operators maintain the system more consistently and will provide a valuable reference for the system.

The cost for the pressure service upgrades and ARV replacements is approximately $570,150. The other improvements will be covered utilizing existing reserve funds and are not included in this cost estimate. As stated before, the O&M would be similar to that of previous years.

The environmental impacts associated with the collection system improvements are fairly minor. Generally, the impacts would consist of potential impacts to physical aspects (minor excavation for replacements and installations); positive impacts to water quality (protection from further damage to water quality); flora and fauna (site disturbance); air quality (minor construction emissions); positive impacts to public health (improvement to existing conditions).

2.3.1. GENERAL COLLECTION SYSTEM "NO ACTION"

The general collection system requires improvements in terms of maintenance, safety, and prevention of significant failures. While these improvements are not major, they will prolong the life of the system and maintain its good working order. Thus, "no action" for these improvements are not anticipated to have significant effects, but will be preventative in that they maintain the system.

There would be minor environmental impacts due to the “no action” alternative since no replacement or upgrading would occur. The impacts would generally include surface and ground water (risk due to potential failures and pollution to surface and ground water), public health (delayed maintenance of system components increase the likelihood of sewer leaks and lift station failures).

2.4. Alternative Comparison

An additional comparison of the alternatives has been included in Appendix D. This comparison highlights the major impacts anticipated for each alternative discussed above.

2.5. HARSB Treatment Plant Upgrade

The HLRWSD is part of a regional facility, HARSB, as discussed in Section 1.1. The HARSB facility is proposing to update their facility in order to meet the new EPA NPDES permit for their river discharge. The improvements to their facilities include upgrades to the treatment plant, river discharge, and land application site. These improvements are discussed in a separate document.

As one of the partners in this regional facility, HLRWSD must participate in funding these improvements. The District will fund a proportionate share of the improvements, according to their purchased capacity in the system. While this is a separate project, the cost impact has been included on the Cover Sheet of this document so that the full effect of both the collection system and treatment facility improvements to the HLRWSD users can be reviewed.

3. PROPOSED ACTION/SELECTED ALTERNATIVES

3.1. SELECTED ALTERNATIVE

Based on input from the community, the Board decided to proceed with the following improvements to the wastewater collection system:

- Lift Stations: Each lift station was evaluated in terms of condition, risk, and safety to determine which capital improvement option was recommended for each lift station. From this evaluation, each lift station has a separate improvement priority and need (selecting a communication, structural/mechanical, and standby generator option for each lift station). These improvements will be included in the recommended funding for the capital improvement plan.
- Interceptor Lines: The gravity sewer interceptor lines at Strahorn and Miles were selected and will be included in the recommended funding for the capital improvement plan.
- Submersible Pumps: As recommended, 4-5 back up pumps will be purchased for the maintenance of the system. These will be included in the recommended funding for the capital improvement plan.
- General Collection System Improvements: These improvements include:
    - Pressure service upgrades
    - ARV replacement
    - Line sags
    - I&I issues
    - Root issues
    - Miscellaneous issues

  The general collection system improvements are proposed to be funded through future O&M reserves from the sewer user rates.

As mentioned above, these repairs may be funded through capital financing such as an LID, or may be funded through future O&M reserve from the sewer user rates.

The following table (Figure 3-1) shows the recommended alternatives for each lift station and the other improvements included in this capital improvement plan.

The improvement options were separated into phases: Phase A are improvements with a near-term need, Phase B are improvements with a mid-term need, and O&M are improvements with a long-term need. Phase A and B are improvements proposed to be funded through capital financing (such as an LID). O&M improvements are proposed to be funded through future O&M funds.

Figure 3-1: Capital Improvement Plan Recommended Improvements

Priority	Capital Improvement Projects	Notes	Phase
1	Thames Court Lift Station	Rehabilitation (Rehab-In-Place)	A
		Electrical Tier I	A
2	Strahorn Interceptor Line ***		A
3	Miles Interceptor Line ***		A
4	Point Hayden Lift Station	Replacement	A
		Electrical Tier I	A
5	Sandy Cove Lift Station	Replacement	A
		Electrical Tier I	A
		Generator	B
6	Canterbury Cove Lift Station *	Replacement (+3 grinders for houses)	A
		Electrical Tier III	A
7	Clark House Lift Station	Rehabilitation (Rehab-In-Place)	A
		Electrical Tier II	A
		Generator	A
7	Avondale Loop Lift Station	Rehabilitation (Rehab-In-Place)	B
		Electrical Tier I (Complete)	
8	Wrights Park Lift Station	Rehabilitation (Rehab-In-Place)	B
		Electrical Tier II	B
		Generator	B
9	Sherwood Court Lift Station	Rehabilitation (Rehab-In-Place)	B
		Electrical Tier II	B
		Generator	B
10	Split Rock Lift Station	Replacement	B
		Electrical Tier I	B
		Generator	B

Priority	Capital Improvement Projects	Notes	Phase
11	Honeysuckle Beach Lift Station **	Rehabilitation (Rehab-In-Place)	B
		Muffin monster (City of Hayden supplied)	B
		Electrical Tier II	B
		Generator	B
12	Coopers Bay Lift Station	Rehabilitation	B
		Electrical Tier I	B
12	Country Club Lift Station	Electrical Tier I	B
12	English Point Lift Station	Electrical Tier I (Telemetry)	O&M
		Safety grate	O&M
12	Falls at Hayden Lift Station	Electrical Tier I (Telemetry)	O&M
		Safety grate	O&M
12	Forest Ridge Lift Station	Electrical Tier I (Telemetry)	O&M
		Safety grate	O&M
12	H-1D Lift Station	Repairs/Improvements	O&M
		HARSB installing radio (2012)	
12	Packsaddle Lift Station	Replacement (raw sewage grinder station)	B
		Electrical Tier III	B
		Generator	B
12	Back-up Pumps	For 4-5 pump types	B
13	Pressure Service Upgrades	For 157 Services	O&M
13	ARV Replacement	For 6 Replacements	O&M
13	Line Sags	For 18 Line Sags (13 Severe)	O&M
13	I&I Identification	For 22 Locations	O&M
13	Root Issues	For 4 Locations	O&M
13	Miscellaneous Issues	For 9 Miscellaneous Issues	O&M

* Requires additional considerations

** Assumes cooperation with City of Hayden

*** Assumes cooperation with City of Hayden Lake

The recommended alternative reflects the selected option with respect to both cost and environmental impact. The recommended repair and replacement options for the lift stations and collection system improvements were chosen to address the deficiencies at each lift station while balancing cost to the user and environmental impacts. Thus, the recommended alternative is a combination of replacement, repair, and new installation (of interceptor lines) for the lift stations and collection system.

3.2. Cost Estimates for the Selected Plan

Cost estimates for the selected improvements were updated to reflect changes that occurred during the planning process and construction of multiple improvements as one project. The expected construction costs for the sewer improvement project are summarized in the following table. A detailed opinion of costs for the project is presented in Appendix D.

Table 3-1: Estimated Construction Costs

Lift Station Improvements	$2,623,900
Interceptor Lines	$515,100
Other Collection System Improvements	$50,000
Total Project Construction Cost	$3,189,000

Table 3-2: Estimated Project Costs

Construction	$3,189,000
Engineering	$1,000,000
Administration/Legal	$100,000
Interim Financing	***
Project Sub Total	$4,200,000

***Interim Financing will be collected through an additional 1% on proposed LID Assessments

4. Affected Environment and Anticipated Impacts

4.1. Service Area / Area of Potential Effect / Proposed Project Planning Area

The HLRWSD surrounds the entirety of Hayden and Avondale Lake and includes the City of Hayden Lake which is located just east of Hayden, Idaho. To the east is Kootenai County lands (Idaho Panhandle National Forest) and to the south is the City of Dalton Gardens. The District provides water and wastewater services to the residents within the water and sewer service area, respectively. The sewer system service area is covered within this document. The District boundary surrounds the full perimeter of Hayden Lake; although, the sewer service area only includes the western third of the District boundary. Thus, for this project, the Proposed Project Planning Area (PPPA) consists of the entire District boundary and the area necessary for the proposed project improvements. For this project the Area of Potential Effect (APE) is the same as the PPPA boundary; maps reference the APE, which should be considered the PPPA/APE boundary. Refer to Appendix C for an overview of the APE and PPPA for the sewer system. The majority of the connections are single-family residences which are both year-round and seasonal. The APE/PPPA is located in portions of Sections 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 34 Range 3 West, and Section 12, 13, 24, 25 Range 4 West, Township 51 North, Boise Meridian.

The project area is located along the western side of Hayden Lake and is variable in topography. The terrain is generally very steep and hilly in the eastern portions of the project area while the western portions are generally flatter with the exception of the area around Avondale Lake. The elevation of the system varies from 3,000 feet in the southeast to 2,250 near the Hayden Lake shore. The area is flat and treed in the more densely populated areas and forested in the other areas. The service area consists of varying lot sizes. There are several major creeks (Hayden Creek, Yellowbanks Creek, Mcleans Creek, Windy Creek, Harrison Creek, Colburn Creek, Mokins Creek, Nilsen Creek, Jim Creek) in addition to several smaller tributaries.

4.2. Physical Aspects

4.2.1. Affected Environment

The HLRWSD is located around Hayden and Avondale Lake and is located just east of Hayden, Idaho. The boundary of the APE and the service area is shown in a map in Appendix C.

4.2.1.1. *Topography*

The topography in the area is variable. The terrain is generally very steep and hilly in the eastern portions of the project area while the western portions are generally flatter with the exception of the area around Avondale Lake. A topographical map of the area is included in Appendix E.

4.2.1.2. *GEOLOGY*

The Geologic Map of Coeur d'Alene, Idaho Quandrangle (Lewis et. al, 2002) was consulted to determine the geologic information for the project area. This map can be found in Appendix E. In addition, Appendix E provides an enlarged version of the above map for the area within the APE/PPPA. The types of rock present are:

- Holocene Deposits – Alluvial Deposits (Holocene), Lacustrine Sediments and Alluvium (Holocene), Fluvial Gravel (Pleistocene and Holocene)
- Catastrophic Flood Deposits and Reworked Outwash – Channel Gravel, Undivided (Pleistocene), Gravel of Dalton Gardens fan (Pleistocene), Gravel of Garwood (Pleistocene), Gravel of Green Ferry, Fan Facies (Pleistocene), Gravel of Hayden Lake (Pleistocene)
- Older Sediments – Sediment (Miocene)
- Columbia River Basalt Group, Wanapum Formation – Priest Rapids Member (Miocene)
- Intrusive Rocks – Biotite Granodiorite (Cretaceous)
- Belt Supergroup – Wallace Formation, Middle and Lower Members, Undivided (Middle Proterozoic), Burke Formation (Middle Proterozoic)

Detailed descriptions of these deposits, sediments, basalt and bedrock can be found in Appendix C on the geological map. There are two high-angle faults and one normal fault in the southern portion of the District. However, the associated description of the map does not identify major, active faults in this area. The Miocene and Younger Faults in Idaho Map (included in Appendix E), was also consulted and found that the faults do not appear to be active. The Fault map also indicates that the project area is within the Lewis and Clark Fault Zone (a pre-Miocene fault zones with possible Miocene and younger strike-slip motion). Additionally, there are a few instances of "strike and dip of compositional layering interpreted as bedding" in the southern portion of the District (as indicated on the geologic map).

4.2.1.3. *SOILS*

The soils in the area are mapped primarily as loams (silt, stony, and gravelly) by the USDA Soil Survey (although large portions of the project area have not been mapped in the Idaho Panhandle National Forest). The mapped soils are generally well drained with other soils ranging from poorly drained to somewhat excessively drained. These soils also have higher shrink-swell potential, but since the excavation will occur in previously disturbed areas, this may be reduced. The majority of the soils have a low possibility of erosion due to the moderate grain size. There is a small percentage (~9 percent) of soils that have a possibility of erosion since they are loams with low portions of larger grain sizes; these soils are located near the river and creek areas as well as in the flatter portions of the project area. A Natural Resources Conservation Service, Web Soil Survey map and soil descriptions is provided in Appendix E. In

addition, the erosion potential survey and shallow excavation suitability is included in Appendix E.

4.2.2. Environmental Impacts

4.2.2.1. *Topography*

The proposed project will primarily consist of improvements within the previously disturbed areas. The gravity interceptor lines will be constructed within the roadway prism and thus are anticipated to be placed in previously disturbed areas. The lift station improvements consist of rehabilitation (in-place), replacement, or telemetry/minor repairs. The only lift station improvements that are anticipated to extend beyond the original disturbance limits (disturbance from installing the lift station 25 years ago) would be the lift station replacements. Replacement of the lift station may occur in the same location as the original, but also may be relocated to a more feasible location. Thus, there may be some new disturbance associated with the lift station relocation; however, the relocation is not anticipated to negatively impact the existing topography. The existing topography will be restored to its existing condition upon completion of the project (for all improvements).

Therefore, short-term direct impacts due to ground disturbance (gravity interceptor lines and lift station improvements) are anticipated, but no long-term, indirect, or cumulative impacts are anticipated.

4.2.2.2. *Geology*

No active fault lines or unusual geological features that may impact the proposed project were identified within the project planning area. Therefore, no impacts (short-term, long-term, direct, indirect, or cumulative) to geology are anticipated.

4.2.2.3. *Soils*

The soils in the area are mapped as silt loam to gravelly loam by the USDA Soil Survey. The soils have some possibility of erosion due to the fine grained particle size. Best Management Practices (BMPs) will be implemented during construction to minimize the potential for the soils to erode and leave the construction site.

Therefore, there will be short-term direct impacts due to ground disturbance (gravity interceptor lines and lift station improvements) are anticipated, but long-term, indirect, or cumulative impacts are not anticipated.

4.3. Climate

4.3.1. Affected Environment

The following climate information for the Hayden Lake area was obtained from weather.com, based on monthly averages:

- Average Annual Temperature High – 58° F
- Average Annual Temperature Low – 39° F
- Average Annual Precipitation – 25.8 inches

- Average Annual Snow Fall – 32.5 inches[12]

The prevailing wind in the area is North, Northeast, according to the Western Regional Climate Center. There are no known special or unusual meteorological constraints in the area.

4.3.2. ENVIRONMENTAL IMPACTS

There are no known special or unusual meteorological constraints that would affect the feasibility of the proposed project. Therefore, no impacts (short-term, long-term, direct, indirect, or cumulative) are anticipated.

4.4. POPULATION AND FLOW PROJECTIONS

4.4.1. AFFECTED ENVIRONMENT

The system currently serves 1,922 equivalent residences (ERs[13]). A total of 2,645 ERs have treatment capacity through the HARSB facility. Thus, 723 ERs are currently vacant within the District but can hook up at any time. Based on the lift stations daily pump hour readings provided by the District and lift station drawdown tests, the wastewater flows for the system were determined per ER.

The number of current ERs served by the system (2011) is based on billing information provided by the District. The following table provides the current number of ERs within the system.

Table 4-1: 2011 ER Summary

	Residential	Large/Commercial			Dormant Connections	Total Active	Total
		Country Club/Restaurant /Beach	Assisted Living	Professional Offices			
Number of ERs	1,879	34.5	5.5	3	723	1,922	2,645

1. Residential includes all units that are billed as one ER.

The current population in the District's sewer system can be estimated using the U.S. Census Bureau's estimate for average person per household in Kootenai County (2.24 for 2010) multiplied by the ERs served by the District. Thus, the population served by the District's sewer system is approximately 4,208 people (residential population).

The U.S. Census Bureau estimates the population growth rate for Kootenai County from 2000 to 2010 to be 27.4% or 2.74% annually. Many of the lift station service area basins in the District have already essentially reached their "build-out" growth. However, there are a few service areas that still have potential for growth. Therefore, a growth rate of 2% will be utilized in the growth projections in these areas.

[12] Average annual snow fall for Hayden Lake (Coeur d'Alene Station) was obtained from NOAA

[13] The term "equivalent residence" or ER will be used throughout this document as the common denominator for projecting future sewer flows or comparing flows on an equal basis. An ER is equivalent to the amount of wastewater produced by the average single-family detached housing unit within a sewer system.

The District has seen a decrease in the District hook-ups over the last few years, despite two large peaks in ERs sold (see Figure 4-1 and Figure 4-2 below). The hook-ups are generally indication of market conditions (how many residents are building out their lots) and the ERs sold can be subject to outside conditions. For example, in 2005 and 2008, a large number of lots were bought due to a development and an LID, respectively.

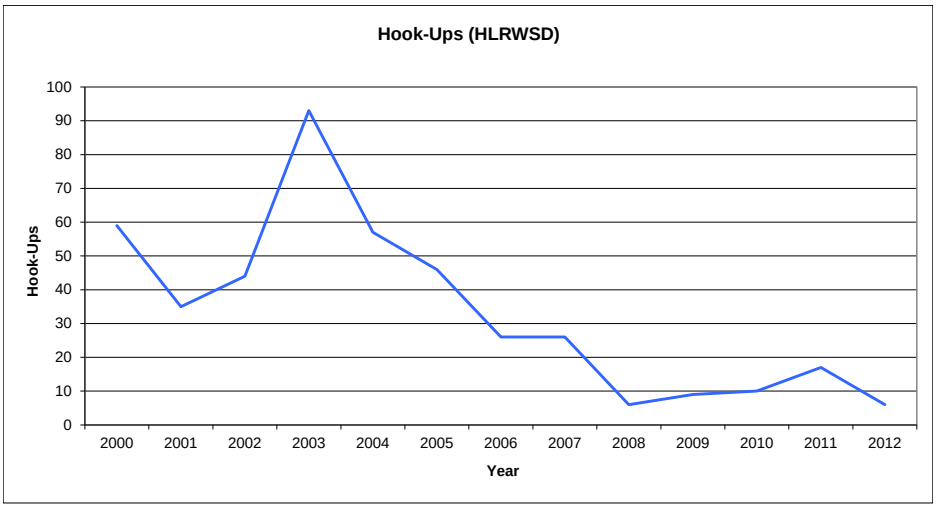

Figure 4-1: HLRWSD Hook-Ups

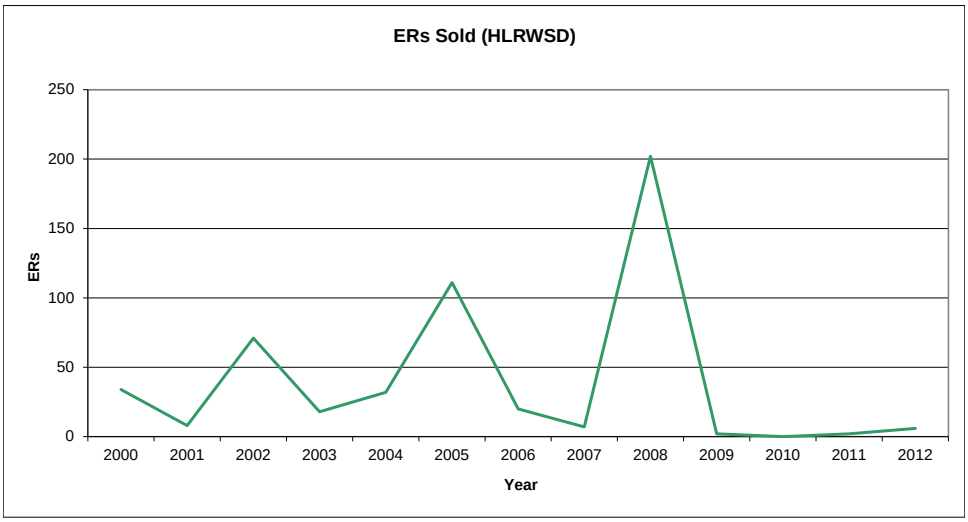

Figure 4-2: HLRWSD ERs Sold

Taking into account the recent trends, the District anticipates that over the next 20 years, growth within the sewer service area will be able to be accommodated within the existing ER allocation (2,645). This is less than the projected 2% growth (which would yield 2,856), but accounting for recent trends, may be more reasonable. If market conditions should change this assumption within the next 20 years, then any additional capacity demand within the District should be able to be provided within the

scope of the HARSB pool reserve of 391 ERs[14]. Beyond the next 20 years, the District will most likely need to negotiate additional capacity to serve growth in excess of the existing capacity and pool reserve, which would most likely occur outside the service area (growth outside the existing service area).

As was shown in the Section 3.3.3 of the Facility Plan (Appendix A), the computed flow estimates for the District's 17 duplex lift stations is highly variable due to hour readings and drawdown information that could be contributing to erroneous flow estimates. In addition, flow meter readings at H-1D could be contributing as well. Therefore, the forecast of future flows will utilize an average daily flow of 250 gallons per day per ER. The peak day can be achieved by applying a 1.5 peaking factor. The peak flow or peak instantaneous flow is estimated by multiplying the peak day flow by a peaking factor of 2.5. Table 4-2 shows the resulting flows for the projected growth. The estimated number of ERs shown in Table 4-2 was determined utilizing a mapping account of the current, vacant, and service area growth areas; as can be seen, these do not match the estimates discussed above. However, the numbers presented in Table 4-2 can provide a relative estimate for the future flows for each lift station's service area within the District. Buildout is anticipated to occur within the next 20 years, and service area growth is estimated to occur beyond the next 20 years.

[14] HARSB has established a pool reserve of 391 ERs available on a "first come – first served basis", available to all HARSB entities.

Table 4-2: Projected Wastewater Flows for HLRWSD

	No. Users (ERs)			Flow (gal/day)								
			Serv. Area	Current			Buildout			Serv. Area Growth		
Basin	Current	Buildout	Growth	Average	Peak Day	Inst. Peak	Average	Peak Day	Inst. Peak	Average	Peak Day	Inst. Peak
Avondale	56	62	62	14,000	21,000	52,500	15,500	23,250	58,125	15,500	23,250	58,125
Canterbury Cove	15	15	15	3,750	5,625	14,063	3,750	5,625	14,063	3,750	5,625	14,063
Clark House	32	32	32	8,000	12,000	30,000	8,000	12,000	30,000	8,000	12,000	30,000
Coopers Bay	177	257	279	44,250	66,375	165,938	64,250	96,375	240,938	69,750	104,625	261,563
Country Club	354	384	446	88,500	132,750	331,875	96,000	144,000	360,000	111,500	167,250	418,125
English Point	2	2	604	500	750	1,875	500	750	1,875	151,029	226,543	566,358
Falls at Hayden	3	46	46	750	1,125	2,813	11,500	17,250	43,125	11,500	17,250	43,125
Forest Ridge	6	77	83	1,500	2,250	5,625	19,250	28,875	72,188	20,750	31,125	77,813
H1D	810	961	1068	202,500	303,750	759,375	240,250	360,375	900,938	267,000	400,500	1,001,250
Honeysuckle Beach	29	30	31	7,250	10,875	27,188	7,500	11,250	28,125	7,750	11,625	29,063
Packsaddle	53	58	62	13,250	19,875	49,688	14,500	21,750	54,375	15,500	23,250	58,125
Point Hayden	74	93	95	18,500	27,750	69,375	23,250	34,875	87,188	23,750	35,625	89,063
Sandy Cove	23	33	34	5,750	8,625	21,563	8,250	12,375	30,938	8,500	12,750	31,875
Sherwood	58	58	59	14,500	21,750	54,375	14,500	21,750	54,375	14,750	22,125	55,313
Split Rock	39	46	49	9,750	14,625	36,563	11,500	17,250	43,125	12,250	18,375	45,938
Thames	98	107	109	24,500	36,750	91,875	26,750	40,125	100,313	27,250	40,875	102,188
Wrights Park	50	50	60	12,500	18,750	46,875	12,500	18,750	46,875	15,000	22,500	56,250
Commercial	31			7,750	11,625	29,063	7,750	11,625	29,063	7,750	11,625	29,063
Total	1910	2311	3134	477,500	716,250	1,790,625	585,500	878,250	2,195,625	791,279	1,186,918	2,967,296

Notes:

1. Average Daily Flow utilizing 250 gallons/day/ER
2. Peak Daily Flow utilizing 1.5*Average Daily Flow
3. Peak Instantaneous Flow utilizing 2.5*Peak Daily Flow

The 20 year population estimation (utilizing the 2,614 residential ERs estimation) is approximately 5,855 people (2,614 ERs x 2.24 people per household).

4.4.2. Environmental Impacts

The proposed improvements will support the anticipated growth for the District, and the growth is not anticipated to be excessive. The Idaho Division of Financial Management's statewide projected 2010-2030 growth rate is 1.57 percent. The projected District's estimated growth over that time period is 723 EDUs. When compared to the statewide projections for that time period (increase of 1,327 EDUs), the District's growth is smaller than the statewide projection. However, the estimated growth for the District is more than 500 EDUs over the lift of the project. Therefore, the direct and indirect impacts to the population should be positive in the long-term since the improvements will support the anticipated growth for the District. Short-term and cumulative impacts are not anticipated.

4.5. Economic and Social Profile

4.5.1. Affected Environment

The majority of the homes served by the District are primary, year-round and seasonal single family dwelling units. The wastewater collection system also serves the several country club facilities, professional offices, and restaurants in the area. Although no social-economic data is available specifically for this area, data exists for the City of Hayden Lake and Kootenai County. The U.S. Census Bureau reports that 11.9 percent of the population in Kootenai County and 4.2 percent of the population in the City of Hayden Lake is below the poverty level. The median household income in 2010 was reported as $46,336 for Kootenai County and $59,934 for the City of Hayden Lake[15].

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The HLRWSD will seek the input of all persons within the APE/PPPA through public meetings. All members of the community will be treated the same and have equal access to the District's public services and decision-making process.

The residents within the District will benefit from the proposed project by receiving service from a reliable public sewer system. The project is anticipated to reduce environmental risk to surrounding water bodies through improvement to aging facilities. In addition, the project will allow for future growth and economic expansion within this area.

4.5.2. Environmental Impacts

The residents within the District will benefit from the proposed project by receiving service from a reliable public sewer system. The project will prevent *future* compliance action/fines which could be levied to the District by improving aging

[15] U.S. Census Bureau, 2010 *State and County QuickFacts* and *American Fact Finder*

facilities. The budgeted project will increase the user rates to 1.37 percent of their monthly income (Kootenai County value), it is currently 1.14 percent. In addition, the project will allow for future growth and economic expansion within this area, which is a positive long-term impact associated with the project.

Therefore, the direct and indirect impacts to economic and social profile (allowing for future growth and economic expansion) should be positive in the long-term. Short-term and cumulative impacts are not anticipated.

4.6. LAND USE

4.6.1. AFFECTED ENVIRONMENT

The HLRWSD encompasses land use classifications from several entities. The City of Hayden Lake, City of Hayden, and Kootenai County together comprise the land use classifications for the District. The land area within the District is mainly comprised of urban/residential and rural residential. See Appendix F for land use maps from the three entities. The improvements are not anticipated to impact the existing land uses for the area. In addition, there are a few areas that are considered part of an "overlay district" zone within the Hayden Lake city limits that consists of country club facilities, professional offices, and restaurants. Table 4-3 provides a summary of all of the commercial properties within the District:

Table 4-3: Commercial Uses in HLRWSD

Name	No. of Properties
Country Club	2
Restaurant	2
Marina	1
Assisted Living	3
Beach Facility	1
Professional Offices	2
Bed and Breakfast	1

4.6.2. ENVIRONMENTAL IMPACTS

The completion of the improvements is not anticipated to negatively impact the current land use or zoning. Therefore, no impacts (short-term, long-term, direct, indirect, or cumulative) are anticipated.

4.7. FLOODPLAINS AND WETLANDS

4.7.1. AFFECTED ENVIRONMENT

Based on the Kootenai County, Idaho and Incorporated Areas Flood Insurance Rate map, dated May 3, 2010, there are some proposed improvements located within the 100 year flood hazard area. A portion of the floodplain map is provided in Appendix G. Two lift station improvements appear to be within the 100 year flood hazard area; one is a replacement and one is a rehab-in-place. The Canterbury Cove lift station

replacement will most likely be located further up on the hillside (and thus out of the flood hazard area). The Honeysuckle Beach rehabilitation (in-place) will disturb some area and may occur within the floodplain area, but disturbance is not anticipated to extend beyond the original disturbance area (from 25 years ago). The other improvements are not within the 100 year flood hazard area. All three communities (City of Hayden Lake, City of Hayden, and Kootenai County), which the HLRWSD is located within, participate in the National Flood Insurance Program.

United States Fish and Wildlife Service provided a National Wetlands Inventory database[16]. A map of wetlands (also showing the improvements) within the project area was prepared using the database and is included in Appendix G. There is only one lift station improvement (Canterbury Cove) that appears to be within the designated wetland area. The Canterbury Cove lift station replacement will most likely be located further up on the hillside (and thus out of the wetland area). The other improvements are not within the designated wetland areas.

4.7.2. ENVIRONMENTAL IMPACTS

Best management practices (BMPs) will be utilized to protect the water quality of the wetlands and floodplains and to prevent sediment from leaving the construction site.

The Idaho Department of Water Resources was consulted regarding the impact of the improvements on floodplains in the project area. According to them, the improvements may be located outside the mapped flood hazard areas around Avondale and Hayden Lakes. However, they recommended contacting the floodplain administrators in the appropriate jurisdictions (City of Hayden Lake, City of Hayden or Kootenai County) to determine whether a floodplain development permit will be required. A floodplain development permit will likely be required for construction activities in the mapped flood hazard area from the City of Hayden and the Kootenai County.

The Army Corps of Engineers also provided consultation regarding the wetland locations for this project. The Corps determined that there were no waters of the United States, including wetlands, within the Corps' regulatory jurisdiction. Therefore, both the Idaho Department of Water Resources and the Idaho Department of Lands[17] were contacted to conduct follow-up consultation regarding the wetlands. The IDWR indicated that they do not have jurisdiction over the project area. The IDL also indicated that they would only have jurisdiction if the project areas were below the elevation 2,239 on Hayden Lake. Since none of the project areas fall within this requirement, none of these agencies have jurisdiction over the areas. The District will

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[16] The geodatabase is only effective as of the date of extraction (2012). Also the dataset represents the extent, approximate location and type of wetlands and deepwater habitats in the US. Refer to http://www.fws.gov/wetlands/Data/Wetlands-Geodatabase-User-Caution.html for more information on the geodatabse.

[17] Generally, the IDWR has jurisdiction when the water body or wetland is "flowing" and the IDL has jurisdiction when the water body or wetland is "isolated".

need to employ the use of BMPs to ensure that sediment from the construction sites does not leave and enter wetlands (non-jurisdictional or otherwise).

Therefore, short-term direct impacts are anticipated for floodplains or wetlands due to potential for sediment to leave the construction site and enter wetlands and floodplains near to the proposed project sites (which will be mitigated through best management practices (BMPs). In addition, submittal of and compliance with a floodplain development permit from Kootenai County and the City of Hayden will be required for the construction activities. Indirect, long-term positive impacts are expected since existing water sources will be protected by improving the overall system reliability. Cumulative impacts are not anticipated.

4.8. WILD AND SCENIC RIVERS

4.8.1. AFFECTED ENVIRONMENT

The nearest designated Wild and Scenic River to the project area is a portion of the St. Joe River. This is approximately 60 miles from the Hayden Lake area. See Appendix H for a map of the Wild and Scenic Rivers in the area.

4.8.2. ENVIRONMENTAL IMPACTS

Since there are no designated wild and scenic rivers in the project area, no impacts (short-term, long-term, direct, indirect, or cumulative) are anticipated.

4.9. CULTURAL RESOURCES

4.9.1. AFFECTED ENVIRONMENT

A search of the Idaho sites listed on National Register of Historic Places, provided in Appendix I, shows the historic sites located in the Hayden Lake area and Kootenai County. There are two historic properties within the District service area and two others within the APE/PPPA. John A. Finch Caretaker's House is located near the Hayden Lake Country Club and the Clark House is located on Hayden Lake Road; both are within the current service area. The Jacob and Cristina Thunborg House and the East Hayden Lake School II are on the other side of Hayden Lake near Chicken Point; both are within the APE/PPPA. Appendix I also contains a map with the location of these four properties. The closest Tribal Land is the Coeur d'Alene Indian Reservation, which is approximately 15 miles south of the project area.

4.9.2. ENVIRONMENTAL IMPACTS

Since the majority improvements will be occurring within previously disturbed areas, impacts to cultural resources are not anticipated.

The State Historic Preservation Office was consulted regarding the impact to cultural resources from this project. They indicated that the lift station replacement sites (project components that would disturb previously undisturbed ground, other components will be within existing disturbed areas) would require an archeological survey. They also indicated that the project area is within an area where archeological sites may exist.

Therefore, Northwest Archeological Associates conducted an archeological survey for the project. The survey involved both a field survey and a records search in addition to correspondence with the affected Tribes. Records search revealed that cultural resource studies have been completed within one mile of the project and approximately 50 cultural sites have been identified in the area. However, due to the steep slopes and construction of roads and building sites in the lift station replacement areas, historical resources in the project area was judged relatively low. The field survey revealed no artifacts. Therefore, the project is not expected to impact cultural resources. If artifacts are discovered during the course of construction, all work will stop, the Coeur d'Alene Indian Tribe and SHPO will be contacted, and mitigation may be further evaluated.

The cultural resource assessment was completed and submitted to the Idaho Department of Environmental Quality, but is not included for confidentiality reasons. The SHPO reviewed the cultural resource assessment and documented that it meets the Secretary of the Interior's Standards. No additional investigations were recommended. Refer to Appendix P for correspondence with the SHPO.

Therefore no impacts (short-term, long-term, direct, indirect, and cumulative) to cultural resources are anticipated.

4.10. PLANTS AND WILDLIFE

4.10.1. AFFECTED ENVIRONMENT

The US Fish and Wildlife Office was consulted to determine the threatened and endangered plant and animal species in Kootenai County. A list from the Office can be found in Appendix J. According to this agency's database, there are no endangered species within the county. Threatened species include the following: Canada Lynx, Bull Trout, Spalding's Catchfly, and Water Howellia. Candidate species include the following: Yellow-billed Cuckoo and North American Wolverine. In addition, critical habitat has been identified in the Columbia River Basin for the protection of Bull Trout, but there are no designated critical habitat areas in the District area, as can be seen in Appendix J.

4.10.2. ENVIRONMENTAL IMPACTS

As mentioned above, the project area is not located in a critical habitat area and it is not anticipated that the species or habitat areas will be affected by the project.

The U.S. Fish and Wildlife Office provided consultation for this project. They indicated that no Federally listed, proposed, or candidate species are likely to occur in the vicinity of the project and thus have no concerns. In addition, the Idaho Department of Fish and Game does not anticipate that the proposed project will have a significant impact on the fish and wildlife in the project area, since the improvements will fall within existing rights-of-way.

Therefore, no impacts to plants and wildlife (short-term, long-term, direct, indirect, or cumulative) are anticipated.

4.11. Recreation and Open Space

4.11.1. Affected Environment

The project area has been recognized by many sources for its beautiful scenery and recreational uses. There are small city parks throughout the more densely populated areas, one public beach (Honeysuckle Beach), a national recreational trail (English Point), and two campgrounds/boat launches (Sportsman Park and Mokins Bay). The only improvement located within these areas is the Honeysuckle Beach lift station rehabilitation (in-place). This improvement will occur within the pre-existing lift station disturbance area. The other improvements are not located within recreational areas. Refer to Appendix K for a map showing these locations.

4.11.2. Environmental Impacts

The Honeysuckle Beach lift station improvement is not anticipated to disturb areas beyond its original disturbance (25 years ago) and thus is not anticipated to negatively impact recreational areas. Therefore, short-term, direct impacts are anticipated in association with disturbance for the Honeysuckle Beach lift station rehabilitation. No long-term, indirect, or cumulative impacts are anticipated.

4.12. Agricultural Lands

4.12.1. Affected Environment

Prime agricultural classification is provided as part of the USDA Soil Survey conducted for the soil information in Section 4.1. According to the Soil Survey, "farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops." There are several areas that are listed as areas of prime farmland (with varying classifications) and are summarized in Table 4-4 below.

Table 4-4: Prime Farmland Classifications

Classification	Percent (by acreage) of APE/PPPA
Prime farmland if irrigated	11
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	0.4
Farmland of statewide importance	0.6
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season	0.1
Farmland of statewide importance, if drained	5

The areas listed as "prime farmland if irrigated" are primarily located in golf course areas (which are irrigated). The lift station replacements are not located in these areas, but some of the lift station rehabilitations (in-place) are located in these areas. The rehabilitations are not anticipated to disturb any area beyond what was disturbed

for the original lift station (25 years ago) and thus are not anticipated to irreversibly convert classified farmland areas. Additionally, the gravity interceptor lines will be located within the roadway prism and are not anticipated to irreversible convert agricultural lands (even though they are located in these classified farmland areas).

4.12.2. Environmental Impacts

The planning area includes several areas of prime farmland (with varying classifications). The areas listed as "prime farmland if irrigated" are primarily located in golf course areas (which are irrigated). There are some improvements that are located within these classified areas but are not anticipated to irreversible convert agricultural lands (due to minimal disturbance of existing disturbed areas). Therefore short-term, direct impacts are anticipated due to ground disturbance for the improvements (lift station rehabilitations and interceptor lines). Long-term, indirect, or cumulative impacts are not anticipated.

4.13. Air Quality

4.13.1. Affected Environment

The State of Idaho has been delegated authority to regulate air quality through the Environmental Protection Agency (EPA) and the Clean Air Act. The State Implementation Plan provides the rules and regulation to maintain acceptable air quality standards within the state and site specific plans delineating areas that do not meet air quality standards. Areas that do not meet specific air quality standards are known as Nonattainment Areas. A map showing Nonattainment Areas and Areas of Concern for the State of Idaho is provided in Appendix M. The proposed project planning area is not located in a Nonattainment area or an area of concern. Additionally, Kootenai County is classified as "attainment" or "unclassified" for all Criteria Pollutants; but it is in an area of concern for particulate matter and is currently included in an "Interim Air Quality Plan" for managing particulate matter emissions in the county. Potential air quality impacts may arise from land clearing, demolition, construction and subsequent operational phases of the project[18].

Noise from the collection system only occurs when alarms activate for the lift stations. A high-pitched alarm sounds when certain conditions occur within the lift station. Residents have been bothered by this in the past, but it is the secondary notification for the District since the autodialers call the operator and/or District directly should alarms be activated. The new lift stations will have similar alarm systems to the existing system or will be operated with a radio telemetry system.

4.13.2. Environmental Impacts

The IDEQ was consulted, and they require that reasonable controls be implemented during construction and maintenance to prevent fugitive dust during all phases of the project. The project plans should also describe the proper disposal of any demolition and construction debris in accordance with solid waste regulations.

[18] Information on Kootenai County classification for Criteria Pollutants and the Interim Air Quality Plan was provided by IDEQ's agency consultation.

Open burning of demolition or construction debris is not allowed. Vegetation/land clearing should be accomplished using mechanical methods to avoid generation of smoke. Demolition and construction debris must be treated in accordance with solid waste regulations.

Additionally, the facility's standby power (generator) is exempted from permitting requirements (limited by IDAPA 58.01.01.222.02.d, shown below) if the generator meets these requirements.

> "Stationary internal combustion engines used exclusively for emergency purposes which are operated less than five hundred (500) hours per year and are fueled by natural gas, propane gas, liquefied petroleum gas, distillate fuel oils, residual fuel oils, and diesel fuel; waste oil, gasoline, or refined gasoline shall not be used".

This is a Category II exemption (according to the IDAPA referenced above). Documentation of total hours of operation per year, available to IDEQ at any time, is required for compliance.

The standby power must also meet National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE rule). After completing the web-based tool[19], the applicable federal standards are 40 CFR part 60, subpart IIII (for compression ignition) or 40 CFR part 60, subpart JJJJ (for spark ignition).

Short-term impacts are anticipated in association with construction emissions; however, the impact to air quality is not anticipated to exceed state or federal limits. Long-term, indirect or cumulative impacts are not anticipated, but documentation of exemption compliance (total hours of operation per year) must be available for IDEQ at any time.

4.14. WATER QUALITY

4.14.1. AFFECTED ENVIRONMENT

4.14.1.1. *SURFACE WATER*

The primary surface water bodies within the District are Avondale Lake and Hayden Lake as can be seen in the topographical map in Appendix E. Both of the lakes are fed by small tributaries (Hayden Creek, Yellowbanks Creek, Mcleans Creek, Windy Creek, Harrison Creek, Colburn Creek, Mokins Creek, Nilsen Creek, Jim Creek) and discharge to the Spokane Valley-Rathdrum Prairie Aquifer. Avondale Lake is of good quality. Hayden Lake currently has a TMDL (Total Maximum Daily Load, established by the EPA) for total phosphorus. The phosphorus originates from Hayden Creek, Mokins Creek, and other tributaries, atmospheric fallout, residential storm water, and shoreline septic systems (not within the District service area). The phosphorus entering the lake does not discharge to another surface water body, rather it either stays in the lake or the lake bottom sediments and eventually travel to the Spokane Valley-Rathdrum Prairie Aquifer. Since portions of the project are adjacent to Hayden Lake, excess

[19] http://www.epa.gov/ttn/atw/rice/output/quiz.html

nutrients cannot be input into the Lake from the project (due to the limitations expressed in the TMDL). For more information on the Hayden Lake TMDL[20], see Appendix N.

During construction, BMPs will be developed and implemented to protect the quality of the nearby surface water bodies from further degradation.

4.14.1.2. *Ground Water*

The Spokane Valley-Rathdrum Prairie Aquifer underlies the western portion of the District, and the District is within the source area for the Aquifer, as can be seen in the map of the Aquifer in Appendix N. The Aquifer is classified as a "Sole Source Aquifer" by the EPA. A sole source aquifer classification indicates that the aquifer supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. This aquifer is the sole source of drinking water for the majority of residents within the District and makes the protection of the source very important.

Both Hayden Lake and Avondale Lake recharge the Spokane Valley-Rathdrum Prairie Aquifer. Hayden Lake's discharge is the major contributor to the recharge flows in the aquifer. Area lakes contribute about 20 percent of the inflow into the Aquifer. Hayden Lake's inflow into the Aquifer constitutes the largest inflow from area lakes (62 cubic feet per second), contributing approximately 22 percent of the overall inflow from area lakes, which is considerable relative to Hayden Lake's size.

The project is not anticipated to affect water rights or the quantity of ground water available for private drinking water wells. Since the project will improve the existing system with sewer line improvements and new/rehabilitated lift stations, the ground water quality will be further protected from future pollution through uncontrolled untreated discharges.

During construction, BMPs will be developed and implemented to protect the quality of the ground water from further degradation from uncontrolled untreated discharges.

4.14.2. Environmental Impacts

4.14.2.1. *Surface Water*

The primary surface water bodies within the District are Avondale Lake and Hayden Lake, as can be seen in the topographical map in Appendix N. Hayden Lake currently has a TMDL for total phosphorus. Since portions of the project are adjacent to Hayden Lake, excess nutrients cannot be input into the Lake from the project (due to the limitations expressed in the TMDL).

The IDEQ was consulted, and they require the protection of surface water and control of erosion and sedimentation by the use of acceptable best management practices (BMPs). If the project disturbs an area greater than 1 acre and drains to a water of the United States, the project will need to comply with the most recent edition of the Construction General Permit, a permit administered by the EPA. The project will

[20] Sub-Basin Assessment of Total Maximum Daily Loads of Lakes and Streams Located on or Draining to the Rathdrum Prairie (17010305)

need to have a Stormwater Pollution Prevention Plan, which complies with the Construction General Permit, if it is determined that compliance is necessary.

The National Resource Conservation Service was also consulted regarding the project and inquired if there would be any possibility of wastewater contamination in the area due to the temporary by-pass of wastewater during construction of the lift stations. The stations will be drained prior to construction; the existing wastewater will be pumped through a by-pass pump, by-passing the existing station until it is operational again. The by-pass system will be set-up in order to minimize any threat of wastewater contamination.

Therefore, short-term impacts to water quality (surface water) are anticipated due to ground disturbance near surface water bodies, but the surface water bodies will be protected utilizing BMPs during construction, as required by IDEQ. Indirect, long-term positive impacts are expected since existing water sources will be protected by improving the overall system reliability. Cumulative impacts are not anticipated.

4.14.2.2. *Ground Water*

The Spokane Valley-Rathdrum Prairie Aquifer underlies the western portion of the District, and the District is within the source area for the Aquifer, as can be seen in the map of the Aquifer in Appendix N. The Aquifer is classified as a "Sole Source Aquifer" by the EPA. This aquifer is the sole source of drinking water for the majority of residents within the District and makes the protection of the source very important.

The project is not anticipated to affect water rights or the quantity of ground water available for private drinking water wells. Since the project will improve the existing system with sewer line improvements and new lift stations, the ground water quality will be further protected from future pollution through uncontrolled untreated discharges.

The EPA Sole Source Aquifer Program provided consultation for this project. They reviewed the information provided and found that the project would not have a significant adverse impact on the Spokane Valley-Rathdrum Prairie Aquifer.

Thus, short-term, long-term, direct and indirect positive impacts to water quality and sole source aquifer (ground water) are anticipated due to improvement of existing system to decrease likelihood of unmonitored, untreated discharges from entering the ground water system. Short-term impacts are anticipated due to ground disturbance but will be mitigated through the use of BMPs. Cumulative adverse impacts are not anticipated.

4.15. Public Health

4.15.1. Affected Environment

The recommended improvements to the HLRWSD collection system and lift stations will provide a better protection against sewer spills and leaks which could potentially pose a serious public health and environmental hazard, should a failure occur. If the District continues utilizing their current system, un-improved, they could be posing a potential future risk to public health and water quality if a sewer spill or leak were to occur. This would potentially subject the District to future fines for

unpermitted discharges and non-compliance.

4.15.2. Environmental Impacts

Currently, the District's wastewater collection system operates well and is maintained. Improving the system with this project will extend the life of the system reduce the potential risk to public health and water quality.

The Panhandle Health District was consulted regarding the project and provided general support of the project, due to rehabilitation of the existing system.

Thus, the impacts to public health are anticipated to be positive in the long-term, short-term, directly, indirectly, and cumulatively since the system will improve the Districts system condition, which reduces the likelihood of untreated, uncontrolled discharges.

4.16. Solid Waste/Sludge Management

4.16.1. Affected Environment

Sludge management is conducted at the HARSB facility and includes a biosolids stabilization and dewatering system (aerated sludge holding tank, sludge dewatering disposal). Since sludge management occurs at the HARSB facility, it is not covered under the scope of this document.

4.16.2. Environmental Impacts

The improvements for the system will not significantly change sludge management or solid waste handling. Therefore no impacts (short-term, long-term, direct, indirect, or cumulative) are anticipated.

4.17. Energy Production/Consumption

4.17.1. Affected Environment

Replacing the aged components with new, energy efficient components (pumps, controls, etc.) has the potential of decreasing the current energy consumption by improving efficiency. New components will be implemented and the old, aged components may be replaced to improve energy efficiency.

4.17.2. Environmental Impacts

With the replacement of aged components (pumps, controls, etc.) and the addition of new, more efficient components, the overall energy consumption is likely to be reduced as a result of these improvements. Therefore, the impact to energy consumption is anticipated to be positive in the long-term, directly since old components will be replaced with new higher efficiency components. Short-term, indirect, and cumulative negative impacts are not anticipated.

4.18. REUSE/LAND APPLICATION

4.18.1. AFFECTED ENVIRONMENT

The treatment facility discharges either through discharge to the Spokane River or to a reuse farm (alfalfa and poplars are grown utilizing the wastewater reuse). Since reuse and discharge occur at the HARSB facility, it is not covered under the scope of this document.

4.18.2. ENVIRONMENTAL IMPACTS

The improvements will not significantly impact the reuse or land application of wastewater. Therefore, impacts to reuse/land application (short-term, long-term, direct, indirect, or cumulative) are not anticipated.

4.19. REGIONALIZATION

4.19.1. AFFECTED ENVIRONMENT

The HLRWSD, City of Hayden, and Kootenai County (airport facilities) all pump wastewater to the regional HARSB Facility. Thus, HLRWSD is already a part of a regionalization facility.

4.19.2. ENVIRONMENTAL IMPACTS

The improvements to the collection system will not affect the agreement between HLRWSD, City of Hayden, or Kootenai County for the treatment of wastewater. Thus, impacts (short-term, long-term, direct, indirect, and cumulative) to regionalization are not anticipated.

5. Environmental Impact Mitigation

Section	Regulatory Agency	Mitigation
4.2 Physical Aspects 4.7 Floodplains and Wetlands 4.14 Water Quality	Idaho Department of Environmental Quality	Stormwater controls (BMPs) will need to be developed that adequately protect surface waters, ground water, and wetlands from being impacted during and after construction. If the area of disturbance is larger than 1 acre, a Stormwater Pollution Prevention Plan (complying with General Construction Permit) will be required through EPA.
4.7 Floodplains and Wetlands	Kootenai County and City of Hayden	A floodplain development permit will be required for construction activities in the mapped flood hazard area.
4.9 Cultural Resources	Idaho SHPO and Coeur d'Alene THPO	If artifacts are discovered during the course of construction, the Coeur d'Alene Indian Tribe and SHPO will be contacted and all work will stop. Mitigation may be further evaluated.
4.13 Air Quality	Idaho Department of Environmental Quality	The contractor must mitigate fugitive dust as a result of construction of this project using reasonable controls in accordance with IDEQ regulations and should be advised during the preconstruction conference of the requirements to keep dust to a minimum. The project plans should also describe the proper disposal of any demolition, construction, or cleared vegetation debris. Open burning of debris is not allowed. Demolition and construction debris must be treated in accordance with solid waste regulations. The District's standby power is exempted from permitting requirements per IDAPA 58.01.01.222.02.d. Documentation of hours of operation per year must be kept and made available to Idaho IDEQ at any time for determination of continued compliance. The standby power must also meet the applicable federal requirements: 40 CFR part 60, subpart IIII (for compression ignition) or 40 CFR part 60, subpart JJJJ (for spark ignition).

6. PUBLIC PARTICIPATION

As part of the improvement alternative selection process, public input was sought and received from the community. This section identifies the steps taken to solicit public input.

The DRAFT Facility Plan for the Wastewater Collection System was presented to the District at a public meeting held on September 5, 2012. During this meeting a presentation was given identifying and discussing the recommended improvement alternatives. Cost information for the improvements presented in Section 3 was also summarized in the presentation. Additionally, information regarding the HARSB Wastewater Treatment Facility improvements (discussed in a separate document) and costs were presented. A newsletter was direct mailed to all sewer rate payers in late August, used to notify the District of the September 5th meeting and answer questions regarding the wastewater projects (both collection and treatment facility). The public was also notified of the meeting through a legal notice in the local paper. The public's questions during the public meeting mainly consisted of the reasoning for the project, costs, and the treatment facility upgrade regulatory requirements and O&M costs. These questions were addressed by the Board, the Engineer, or the HARSB manager. Copies of the newsletter, presentation, meeting minutes, and meeting sign-in sheets are included in Appendix O.

The public was then provided a 14-day comment period to review the DRAFT document and submit written comments to the Board regarding the improvement alternatives (discussed in the August newsletter and the legal notice). One written comment was received, which is documented and included in Appendix H. This comment was largely related to an older issue (with the operation of the system); the District responded to the comment, and their written response is included in Appendix O.

At the regularly scheduled Board meeting on September 26th, the Board reviewed the public comments received (verbally during the public meeting and the written comment) and selected the recommended improvement options for the collection system (discussed in further detail in Section 2). The recommended improvement options consist of specific improvements to each lift station, interceptor lines, and other system improvements (refer to Section 2 for more information). The meeting minutes and sign-in sheet are included in Appendix O.

The Board elected to conduct two more public meetings after the September 5th meeting in order to inform the District residents about the projects and the potential funding methods. These public meetings were held on October 10th and October 12th (identical information was presented at both meetings). The public was informed of these meetings in an October newsletter and through a newspaper advertisement in the local paper. As with the first meeting, the meetings presented information on the recommended improvements, costs, and funding methods for both the collection system and the treatment facility. The public's questions during these meetings mainly consisted of the project costs, treatment facility regulatory requirements, and methods of funding the projects. Copies of the newsletter, presentation, and meeting minutes are included in Appendix O.

7. REFERENCES CONSULTED

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8. AGENCY CONSULTATION

The following table provides a list of agencies that were contacted October 15 2012 via mail to request their comments, concerns, or any potential impacts of the proposed project. The request letters and their response are located in Appendix P.

Agency	Contact	Address
US Army Corps of Engineers, Coeur d'Alene Regulatory Office	Beth Reinhart/ Shane Slate	2065 W. Riverstone Drive, Ste. 201 Coeur d'Alene, ID 83814
US Fish and Wildlife Service	State Supervisor/ Bryon Holt	11103 East Montgomery Drive Spokane, WA 99206
Idaho Department of Environmental Quality, Coeur d'Alene Regional Office	Katy Baker-Casile/ John Tindall	2110 Ironwood Parkway Coeur d'Alene, ID 83814
US EPA, Idaho Operations Office	James Werntz	1435 North Orchard Boise, ID 83706
EPA Region 10	Mike Lidgard, Manager	1200 6th Avenue, OWW 130 Seattle, WA 98101
EPA Region 10, Office of Environmental Assessment (OEA-095)	Sue Eastman, Hydrogeologist	1200 6th Avenue, OWW 136 Seattle, WA 98101
USDA-NRCS	Aubrey Woodcock, District Conservationist	7830 Meadowlark Way, Suite C1 Coeur d'Alene, ID 83815
Idaho Department of Water Resources	Mary McGown, State NFIP Coordinator / Greg Taylor (CDA office, wetlands issue)	322 East Front Street, PO Box 83720 Boise, ID 83720
Idaho Department of Fish and Game, SE Region	Regional Supervisor/ Charles Cosi	2885 Kathleen Avenue Coeur d'Alene, ID 83815
Idaho Department of Agriculture	Gary Bahr	PO Box 790, Boise, ID 83701
Panhandle District Health Department	Dale Peck, Environmental Health Director/ Dick Martindale	2195 Ironwood Court Coeur d'Alene, ID 83814
Department of Lands, Northern Operations	Roger Jansson, Operations Chief – North / Jim Brady (wetlands issue)	3780 Industrial Avenue South Coeur d'Alene, ID 83815
USDA-RD	Howard Lunderstadt, Rural Development Specialist	7830 Meadowlark Way, Suite C3 Coeur d'Alene, ID 83815
Idaho Department of Commerce	Dennis Porter, State Program Manager/Tony Tenne	700 West State Street, PO Box 83720 Boise, ID 83720
Idaho State Historical Society	Suzi Pengilly, Deputy SHPO	210 Main Street, Boise, ID 83702
Coeur d'Alene Tribe of Idaho	Jill Wagner, PhD, THPO, Cultural Resource Program	PO Box 408 Plummer, ID 83851

9. Mailing List

The mailing list for this project includes both the agencies consulted (see Section 8), and the residents who were contacted with the newsletter (see Appendix Q for list of newsletter recipients). Meeting attendees have been summarized and listed in Appendix Q as well.

APPENDIX A.

Wastewater Collection System Facility Plan for the Hayden Lake Recreational Water and Sewer District

Submitted Separately

APPENDIX B.

Joint Powers Agreement

ORIGINAL COPY

JOINT POWERS AGREEMENT

OF THE

HAYDEN AREA REGIONAL SEWER BOARD

FOR THE

HAYDEN AREA REGIONAL SEWER FACILITIES

THIS AGREEMENT is entered into this 9th day of October, 1986, between THE CITY OF HAYDEN (the "City") and THE HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT (the "Sewer District"), being governmental Entities in Kootenai County, Idaho, who are referred to herein individually as "Entity" and collectively as "Entities." The Entities desire to join together, under the authority of Idaho Code § 67-2328, to provide for the acquisition, ownership, development, operation, and maintenance of the proposed Hayden Area Regional Sewer Facility (the "Facility"), which Facility shall consist of the following:

A. Phase I: Interim Drain Field and Regional Collector;

B. Phase II: Mechanical Treatment Plant;

C. Phase IIIA: Spokane River Outfall; and

D. Phase IIIB: Mechanical Treatment Plant Expansion.

As used in this Agreement, the term "Facility" shall refer to and include all real and personal property and equipment and related rights necessary to the collection and treatment of sewage from areas within the jurisdiction of each Entity, as more fully described herein.

The parties contemplate: (i) the construction and operation, as part of the Facility, of an Interim Drainfield on land owned by Kootenai County, pursuant to the terms of an existing agreement with Kootenai County; (ii) the construction and operation of a Mechanical Treatment Plant on land to be owned by the Board; (iii) the providing of sewer service to specific Entity Service Areas within the jurisdiction of each Entity as defined herein (and the possible expansion of the Entity Service Areas); and (iv) the providing of sewer service to individuals or entities occupying land outside the Entity Service Areas but within the Kootenai County Airport Service Area as defined herein.

Attached hereto and incorporated herein as Exhibits are the following descriptions which pertain to the Facility and the operations of the Board:

Exhibit	Description
"A-1"	Schematic Map showing the Hayden Area Regional Sewer System, including the Regional Collector, the Interim Drainfield and the Treatment Plant Site (the "Facility") as presently contemplated
"A-2"	Map showing the Airport Service Area
"B"	Description of Facility Components
"C"	Legal Description of Interim Drainfield and Treatment Plant Site

Immediately following execution of this Agreement, each Entity shall execute such documents as may be necessary to convey all right, title, and interest in the Facility components to the Board.

NOW, THEREFORE, the Entities agree as follows:

1. NAME AND COMPOSITION. The entity created by this Joint Powers Agreement shall be known as the "Hayden Area Regional Sewer Board," to be referred to herein as "the Board". The members of the Board shall be the two (2) Entities described above, each of which shall appoint two (2) individual representatives, each of whom shall be fully authorized and empowered to attend all meetings and vote on all Board matters on behalf of the respective Entities. Each Entity shall designate one representative as "primary" and the other as "secondary," with the function of the secondary representative being only to act in the absence or unavailability of the primary representatives. Each Entity shall provide and maintain at the office of the Board, a duly authorized resolution of that Entity setting forth the authority of the individual representatives to bind such Entity with respect to all decisions required of or deemed appropriate by the Board. Except for the Major Decisions described in Paragraph 5 below, which must be approved by direct action of both Entities, the representatives shall have full authority to vote on behalf of the Entities with respect to Board business, and it shall be the responsibility of each Entity to provide guidelines to its representatives as to how that Entity's interests should be voted.

2. OFFICE. The principal office of the Board shall be at the Hayden City Hall, or at such other place as may be designated by the Entities. This Agreement and all records of the Board shall be maintained at the office and shall be available to all Entities and all members of the general public for inspection and/or copying (at the requesting party's expense) at reasonable business hours and on reasonable notice.

3. TERM. The term of this Agreement and of the Board shall be for so long as the Facility, or any part thereof, is required to provide sewer collection and treatment service for Users in the area to be served by the Facility.

4. PURPOSE AND POWERS.

4.1 Purpose. The purpose of the Board shall be as follows:

(a) To acquire, own, develop, operate, and maintain the Facility so as to provide the most cost-effective sewer service possible to the Users of the Facility. Users are classified as follows:

(1) Entity Users are those Users entitled to sewer service by virtue of their location within the Entity Service Areas. The Entity Service Areas are currently coextensive with the jurisdictional boundaries of the City and the Sewer District, and may be expanded in the discretion of either Entity, subject only to the provisions of Paragraph 9.2 below.

(2) Airport Users are third parties located outside the Entity Service Areas, but within the Airport Service Area, who are entitled to sewer service by virtue of a written contractual arrangement between Kootenai County and the Board, to be executed concurrently with this Agreement.

(b) To coordinate the performance of the Entities' responsibilities toward their respective constituents with respect to the provision of sewer services.

4.2 Powers. Subject to the provisions of this Agreement, and such limitations as may be imposed by law, the Board shall have the following powers:

(a) To acquire, own, develop, operate, and maintain the Facility, and to conduct and operate the business of the Board, and to execute documents and instruments relating to such business;

(b) To negotiate agreements with the Panhandle Health District, Division of Environment, and other local, state, or federal agencies, for funding, design, etc., of the initial and subsequent Phases of the Facility;

(c) To negotiate agreements for the acquisition of land, improvements, equipment, easements,

permits, or other interests in real or personal property which may become components of or otherwise be needed for the construction, operation, and/or maintenance of the Facility (including the Treatment Plant Site);

(d) To negotiate arrangements with Kootenai County for the providing of sewer service to the Airport Service Area and for the use of the Interim Drainfield;

(e) To establish and collect appropriate assessments, fees, and service charges to be levied against Users of the Facility in order to cover any necessary capital improvements and any repair, operation, and maintenance costs, including reserves therefore;

(f) To procure and maintain insurance covering the various risks to which the Board (including the Entities and the individual representatives) or its operations may be subjected;

(g) To open bank accounts in the name of the Board, designate the authorized signatures therefor, and make deposits and withdrawals from Board accounts on the signatures of one or more designated individuals;

(h) To pay expenses incurred in performing the business and purposes of the Board;

(i) To employ, discharge, and pay the compensation of the Managing Agent, accountants, contractors, engineers, laborers, Facility operators, consultants, lawyers, and others whose services are required or necessary;

(j) To perform rate analysis and establish User fees, and to provide minimum standards for sewer use, spill control, and industrial pretreatment;

(k) To monitor actual flows to the Facility and actual numbers of Equivalent Residences (ERs) connected to the Facility from all Users, and to require control of significant commercial and industrial discharges;

(l) To provide secretarial and administrative services for Board meetings, including, but not limited to, agendas, secretarial services for the meetings, and minutes;

(m) To establish billing procedures and provide for the collection of funds from all Users for repair, maintenance, and operation of the Facility, including such sinking fund reserves as may be considered necessary;

(n) To establish bookkeeping and auditing procedures for the receipt and expenditures of all funds collected by the Board;

(o) To furnish an annual status report to each Entity on the Facility, including an audit of all financial aspects and the status of actual flows and hookups from each Entity;

(p) To prosecute or defend, as the case may be, any suit, arbitration, or administrative proceedings asserted against or brought on behalf of the Board;

(q) To review and approve contracts for acquisition, design, construction management, and construction of Facility components, even though only one (1) Entity may be providing the funding or acting as the "lead" Entity with respect to the construction of any such component;

(r) To apply for and cause compliance with the requirements of any grant or loan which would be utilized to establish or increase capacity for the Facility or reduce expenses of operation of the Facility;

(s) To do all other things allowed or required by law and necessary, incidental, or convenient to the exercise of the foregoing powers and to the accomplishment of the foregoing purposes.

5. MANAGEMENT AND ACCOUNTING. The affairs of the Board shall be managed by both Entities, through their respective representatives, with all decisions to be made by a unanimous vote of the Entities at a regular or special meeting; provided, however, that the Entities may unanimously appoint a Managing Agent, who may or may not be a representative of an Entity, to manage the day to day administrative affairs of the Board, subject to such scope and limitation as may be unanimously agreed upon by the Entities.

Regardless of the appointment of a Managing Agent, or of the general authority of the Entity representatives as set forth herein, the following major decisions ("Major Decisions") shall require the written approval of both Entities (acting directly and not through their representatives):

5.1 Sale, transfer, or encumbrance of all or any part of the Facility;

5.2 Adoption or revision of an operational budget for the Board, or the incursion or payment of any obligation or contract, except as specifically contemplated in a unanimously approved budget;

5.3 Expansion or reduction of the capacity of the Facility except as specifically contemplated in Paragraph 9 below;

5.4 Modification or amendment of this Agreement;

5.5 Negotiation, amendment, or modification of agreements for the acquisition or disposition of rights in land and/or improvements, including, without limitation, the agreements for use of the Interim Drainfield and for acquisition of the Treatment Plant Site;

5.6 Negotiation, amendment, or modification of agreements with Kootenai County pertaining to the Airport Service Area;

5.7 Establishment, modification, or revision of rates to be charged Users in the Service Areas for sewer hookups, collection, or treatment services;

5.8 Appointment, dismissal, establishment, or verification of the authority of Managing Agent;

5.9 The resolution of a voting deadlock between representatives; and

5.10 The doing or causing to be done of any act which would have a material adverse effect on the Board of the Facility or which would impose a financial obligation on the Board or either Entity over and above those imposed under a duly approved budget of the Board.

The books and records of the Board shall be kept on a cash basis in accordance with generally accepted accounting principles applied on a consistent basis from year to year. The fiscal year of the Board shall be from December 1 until November 30 of the following year.

6. MEETINGS.

6.1 Regular Meetings. Regular meetings of the Board shall be conducted at least monthly at such time and place as may be fixed by the Board. Notice of the time and place of each regular meeting shall be given to each primary representative, personally, or by mail

or telephone, at least three (3) days prior to the day of the meeting, and shall be posted on the door of the Board office.

6.2 Special Meetings. A special meeting of the Board may be called by either Entity. Except in the case of an emergency, notice shall be provided and posted in the manner prescribed for notice of regular meetings, and shall include a description of the nature of any special business to be conducted by the Board.

6.3 Waiver of Notice. Before or at any meeting of the Board, either Entity may waive notice of such meeting, and such waiver shall be deemed equivalent to the giving of such notice of to that Entity.

6.4 Quorum. The presence in person of a representative of all Entities shall be required at all meetings. However, in the absence of one Entity at a duly noticed meeting, the attending Entity present may adjourn the meeting to another time, but may not transact any other business. Any such adjournment for lack of attendance shall be to a date not less than five (5) days, nor more than twenty (20) days from the original meeting date. Notice for this reconvened meeting shall be provided by the Entity in attendance, in the same manner as for regular meetings. At any such reconvened meeting, which is not attended by both Entities, the attending Entity shall be empowered to take any action on behalf of the Board which would be authorized by this Agreement, except for the Major Decisions described in Paragraph 5 above, which shall require unanimous consent in all cases.

6.5 Chairman. The Chairman of the Board will be alternated annually between the representatives of the two Entities of the Board at the first regular meeting in January. The first Chairman will be selected by the flip of a coin at the first regular meeting after the effective date of this Agreement, and shall serve until the next January meeting.

6.6 Open Meetings. Regular and special meetings of the Board shall be open to all members of the public; provided, however, that only the representatives of the Entities (or the Entities themselves) may participate in the actual decision-making.

7. SEWER SERVICE CHARGES. With respect to each ER, the Board shall be responsible for assessing and collecting from each Entity (or directly from the Entity Users, as determined by the Board) and from the Airport Users:

7.1 A discharge/hookup fee or its equivalent (sometimes referred to as a "capitalization fee") in a minimum amount as established by the Board (which shall be uniform for all Entity Users, and which shall be subject to a mandatory annual adjustment at the beginning of each fiscal year according to the Engineering News Record Index increase over the most recent year for which the Index is published). Even though the capital expense of constructing the Facility shall be paid by the initial Users, the purpose of the charge described in this subparagraph is to create a reserve fund for the construction of further improvements to expand capacity and to spread the burden of capital expenses over new Users as well as the original Users;

7.2 Periodic assessments, as established by the Board, in amounts sufficient to provide for repair, maintenance, and operation of the Facility and reserves therefor ("O&M fees") with each Entity's and User's share of costs to be computed in accordance with the general policy guidance of Article 8 below. The intent of the parties is to have O&M fees be uniform for all Entity Users, to the extent that the fees pertain to operation and management of the Facility as defined herein; however, the Board may, in its discretion, adjust fees to individual Entity Users if the Board undertakes management and operation of collection systems owned by the Entities but which are not part of the Facility;

While each Entity must collect, as a minimum, O&M fees and discharge/hookup fees established by the Board, this section in no way precludes each Entity from establishing its own O&M fees and discharge/hookup fees for the area within its jurisdiction. Minimum O&M fees and discharge/-hookup fees must be collected by each Entity and deposited in a dedicated fund maintained by the Board on a monthly or quarterly basis.

Each Entity agrees to provide, by Ordinance, that discharge/hookup fees or their equivalent will be collected for each building or structure requiring new or additional sewer service within its Service Area boundaries and to standardize its definition of an ER and the allocation of ERs to a particular property. Each Entity agrees to provide periodic reports as required by the Board giving the numbers of structures, ERs assigned, the amount of fees collected, and other relevant information requested by the Board.

8. PRORATION; INDEMNIFICATION. It is the intent of this Agreement to allocate costs equitably between the Entities on an approximate percentage of use basis. Each Entity will pay a percentage of the repair, operation, and maintenance of the Facility (including Sewer Collector Lines, Lift

Stations, and all other Facility components, as well as the Treatment Plant) based upon its number of ERs on line compared to the total of all ERs on line for the Entity Users. Arrangements with Airport Users shall similarly be made on an approximate percentage of use basis; provided, however, that the Board may, in its discretion, exclude certain components of the Facility from consideration in establishing fees to be paid by Airport Users.

Further, in the event of a federal, state or local court action, concerning the Facility, the two Entities will assume responsibility for such litigation in a direct proportion to the percentage of use of the system. This formula shall be based upon the total ERs on line and in use by that Entity to the total number of ERs on line and in use by both Entities at the time of the event on which the court action is based. Each Entity shall agree to indemnify the other Entity in the same percentage for any damages or costs suffered by the other Entity due to such court action. Any unanticipated cost of such a court action may then be charged to the Entity Users and Airport Users as a cost of operation of the Facility, to be incorporated into and amortized on a reasonable schedule, payable along with the periodic O&M charges.

9. EXPANSION OF SERVICE AND/OR CAPACITY. The parties agree that service provided by the Facility may be expanded in one or more of the following manners, and subject to the following terms and conditions:

9.1 Addition of Users Within A Service Area. The Entity Service Areas and the Airport Service Area, as defined herein, are recognized under Sewage Management Plan Agreements with the Panhandle Health District, where required. Either Entity shall have the right to expand its number of Users within its Service Area without the consent of the Board; provided, however, that any such expansion shall be subject to availability of capacity of the Facility of a "first come, first served" basis. However, the additional capacity may only be reserved by payment of the appropriate capitalization (discharge/hookup) fee set by the Board as provided herein.

9.2 Expansion of Service Areas. Either of the Entity Service Areas may be expanded, in the sole discretion of the appropriate Entity, by the lawful expansion of the City or the Sewer District, and pursuant to modification of the applicable Sewage Management Plan Agreement, where required.

9.3 Expansion of Treatment Plant Capacity. The parties acknowledge that the Facility is presently

designed to accommodate more Users than will require sewer service on completion of the Regional Treatment Plant. By collecting discharge/hookup fees as Users are added to the system, the Board will accumulate a reserve fund which can later be used to finance construction of the Spokane River Outfall, and then for additional capacity at the Treatment Plant. After construction of the Spokane River Outfall, either Entity which desires to add Users to the system, which would require expansion of the Facility for additional capacity, shall have the right to utilize any existing reserve fund for that purpose; provided that the expanding Entity shall pay any additional funds necessary to construct the complete next phase of the development of the Facility (including lift stations as well as Treatment Plant expansion and with the size and scope of the "complete next phase" being determined by the Board). The amount advanced by the expanding Entity shall then be divided by the then current ER capital assessment fee to determine the portion of the excess capacity which then belongs exclusively to the expanding Entity. All remaining capacity shall then be considered available at par to either Entity and to the Airport Users as provided herein or in the User Agreement with Kootenai County. Notwithstanding the right of either Entity to require unilaterally the expansion of the capacity, the Board shall unanimously approve and supervise the design and construction of the expansion.

10. TRANSFERS. No Entity may directly or indirectly sell, transfer, assign, pledge, or encumber all or any part of its rights or obligations in the Board or in the Facility.

11. TERMINATION AND DEFAULT. This agreement will terminate only upon agreement of both Entities or upon the entering of a court order requiring termination of the Board.

12. CONTEMPLATION OF PARTIES. Certain basic facts and/or assumptions have been contemplated by the Entities in connection with the negotiation and execution of this Agreement, and are set forth as follows to assist in the interpretation of intent, should questions later arise:

12.1 The design capacity of the Phase I Regional Pump Stations is 4,000 ERs.

12.2 The design capacity of the Phase II Treatment Plant is to be 0.75 mgd or 3333 ERs, with completion estimated in October 1987;

12.3 The design capacity of the Phase IIIB Treatment Plant is to be based on growth requirements and demand by the participating Entities. Projected total Facility capacity following construction of Phase III is 5200 ERs, or 1.2 mgd;

12.4 Treatment in Phase I will consist of septic tank effluent applied under pressure to Drainfield Module No. 1. Each User under Phase I must utilize an approved septic tank;

12.5 Treatment anticipated under Phase II will be treatment of raw sewage in a mechanical oxidation ditch treatment plant with discharge of effluent to the Interim Drainfield, Modules 1 and 2;

12.6 Subsurface land application of treated effluent may be incorporated into the Phase I and II treatment processes to provide more drainfield capacity on a temporary basis, and/or reduce nutrient loading to the Spokane River;

12.7 Each Entity has purchased through cash contribution to Phase I, the following numbers of paid-up hookups in the Phase II Treatment Plant:

Entity	ERs Paid
City	183
Sewer District	116

12.8 The Sewer District may issue a credit to LID property owners who have already paid discharge/hookup fees, since no further discharge/hookup fees will be charged until after the LID process is completed;

12.9 The Sewer District, under its LIDs 2 and 3, will design and construct the Phase II Treatment Plant as the "Lead Entity." It is estimated that the two thousand one hundred forty-one (2,141) parcels of land within LIDs 2 and 3 will be entitled to Facility capacity (including Treatment Plant and Regional Collector) as a result of the LID process, although the exact number will not be known until the LID process is complete;

12.10 In addition to the cash already contributed, as reflected in the credits allocated in Paragraph 12.7 above, the City agrees to contribute at least eight percent (8%) toward construction of Phase II Treatment Plant and/or Phase IIIB Spokane River Outfall for which it will receive credit for ERs in ratio to the discharge/-hookup fee in effect at the time of construction. These total amounts due will be turned over to the Sewer District in monthly progress payments based upon approved Pay Estimates;

12.11 Capacity in the Phase I Interim Drainfield will be allocated on a first come, first served basis, with a Three Hundred Dollar ($300.00) per ER charge, in addition to LID or discharge/hookup fees, assessed for

new subdivision lots or buildings which will contribute sewage directly to the Phase I Interim Drainfield. Money assessed under this provision will be placed in a separate account and will be used for construction of Drainfield Module No. 2 or for the Spokane River Outfall. The Interim Drainfield fee may, however, be waived in specific cases on an equitable basis, such as for existing tenants within the Airport Service Area who have already paid discharge/hookup fees to Kootenai County.

12.12 At no time will an Entity be entitled to more connections to Regional Facilities than the total number of paid-up discharge/hookup fees in terms of ERs. Additional reserve capacity will be available to either Entity on a first come, first served basis. Capacity may not be allocated or purchased above and beyond the approved design capacity of the Facility, except by Major Decision, and only if the required additional capacity is under design.

12.13 The Entities shall acquire the Treatment Plant Site, by each advancing fifty percent (50%) of the costs of acquisition, following which the Treatment Plant Site shall be purchased by the Board as an expense of the Facility.

13. MISCELLANEOUS AND PROCEDURAL.

13.1 Attorney's Fees. If legal action is required or deemed necessary to enforce or interpret any provisions of this Agreement, the prevailing party shall be entitled to recover its costs of suit, including a reasonable attorney's fee incurred in connection therewith.

13.2 Municipal Authority. Each Entity, and each individual signing on behalf of an Entity, hereby agrees that the execution of this Agreement is fully authorized by appropriate municipal action of the Entity and will be supported by an appropriate resolution to be filed at the office of the Board.

13.3 Integrated Agreement; Modification. This Agreement contains all agreements of the parties and may not be amended or modified except in writing, signed by all parties.

13.4 Termination of Interest of Kootenai County. The Entities acknowledge that this Agreement is a substantial revision of a prior Joint Powers Agreement among the Entities described herein and Kootenai County, and that Kootenai County has elected not to be represented on the Board under this Agreement, but to

obtain sewer service for Airport Users within the Airport Service Area pursuant to a separate agreement between the Board and Kootenai County. Accordingly, the effectiveness of this Agreement is hereby made contingent upon the consent of Kootenai County as set forth below. By execution of the attached Consent, the County shall agree that it is no longer a party to the Board and that further modifications of this Agreement may be adopted by the City and the Sewer District without any consent of the County.

13.5 Arbitration. Any controversy arising from this Agreement or its breach, with respect to interpretation of the provisions hereof or the intent of the parties, shall be resolved by three (3) arbitrators appointed as follows:

(a) Within ten (10) days after notice by either party to the other requesting arbitration and stating the basis of the party's claim, one (1) arbitrator shall be appointed by each party. Notice of the appointment shall be given by each party to the other when made;

(b) Two (2) arbitrators shall immediately choose a third arbitrator to act with them. If they fail to select a third arbitrator within ten (10) days of their appointment, on application by either party, the third arbitrator shall be promptly appointed by the then presiding judge of the District Court for Kootenai County, Idaho, acting as an individual.

The arbitration shall be conducted according to the then prevailing Rules of the American Arbitration Association, and any judgment upon the award rendered in the arbitration may be entered in any court having jurisdiction.

IN WITNESS WHEREOF, the parties to the Agreement have executed the same by reason of the authorization separately obtained by both parties as required by the laws governing their powers.

CITY OF HAYDEN

By Chester R. Davis

CHESTER R. DAVIS, Mayor Pro-tem

HAYDEN LAKE RECREATIONAL WATER
AND SEWER DISTRICT

By _____
HENRY HINCK, Chairman

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CONSENT OF KOOTENAI COUNTY

Kootenai County hereby consents to the execution of the above Agreement, and to the immediate termination of the prior Joint Powers Agreement among the Entities described herein and Kootenai County. The rights and obligations of Kootenai County with respect to the Facility shall be as described by separate agreements between the Board and Kootenai County, executed simultaneously with this Agreement, and the effectiveness of this Consent is specifically made contingent upon the execution of the Contract User Sewer Agreement between Kootenai County and the Board. Immediately upon execution of this Agreement and such separate agreements, Kootenai County shall execute such documents as may be necessary to convey all of its right, title and interest in all Facility components as described herein, to the Board.

Further, by execution of this Consent, the County hereby agrees that it is no longer a party to the Board and that further modifications of this Agreement may be adopted by the City and the Sewer District without any consent of the County.

BOARD OF COMMISSIONERS OF
KOOTENAI COUNTY

By_____
GLENN R. JACKSON,
Chairman

By Frank N. Henderson
FRANK N. HENDERSON
Commissioner

By Evalyn R. Adams
EVALYN R. ADAMS,
Commissioner

ATTEST:

Leah Phelps
LEAH PHELPS
Clerk
By Jennifer Lewis
Deputy Clerk

STATE OF IDAHO)
:ss.
County of Kootenai)

On this 10th day of October, 1986, before me, Marian L. Jobes, a Notary Public in and for the State of Idaho, duly commissioned and sworn, personally appeared CHESTER R. DAVIS, to me known to be the Mayor Pro-tem of THE CITY OF HAYDEN, the Entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said Entity, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said instrument on behalf of said Entity.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Marian L. Jobes
Notary Public for Idaho
Residing at Hayden Idaho
Commission Exp. 10/30/86

STATE OF IDAHO)
:ss.
County of Kootenai)

On this 2d day of October, 1986, before me, Edward F. Wroe, a Notary Public in and for the State of Idaho, duly commissioned and sworn, personally appeared HENRY HINCK, to me known to be the Chairman of the HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT, the Entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said Entity, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said instrument on behalf of said Entity.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Edward F. Wroe
Notary Public for Idaho
Residing at Hayden Lake
Commission Exp. 12/26/88

STATE OF IDAHO)
:ss.
County of Kootenai)

On this 9th day of October, 1986, before me, Teeri R. Anderson, a Notary Public in and for the State of Idaho, duly commissioned and sworn, personally appeared ~~GLENN R. JACKSON~~, FRANK N. HENDERSON, and EVALYN R. ADAMS, to me known to be ~~the Chairman and~~ Commissioners, of the BOARD OF COMMISSIONERS OF KOOTENAI COUNTY, ~~respectively~~, the Entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said Entity, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Teeri R. Anderson
Notary Public for Idaho
Residing at Coeur d'Alene
Commission Exp. 9-9-91

EFW12A/D,1 - D9/25/86

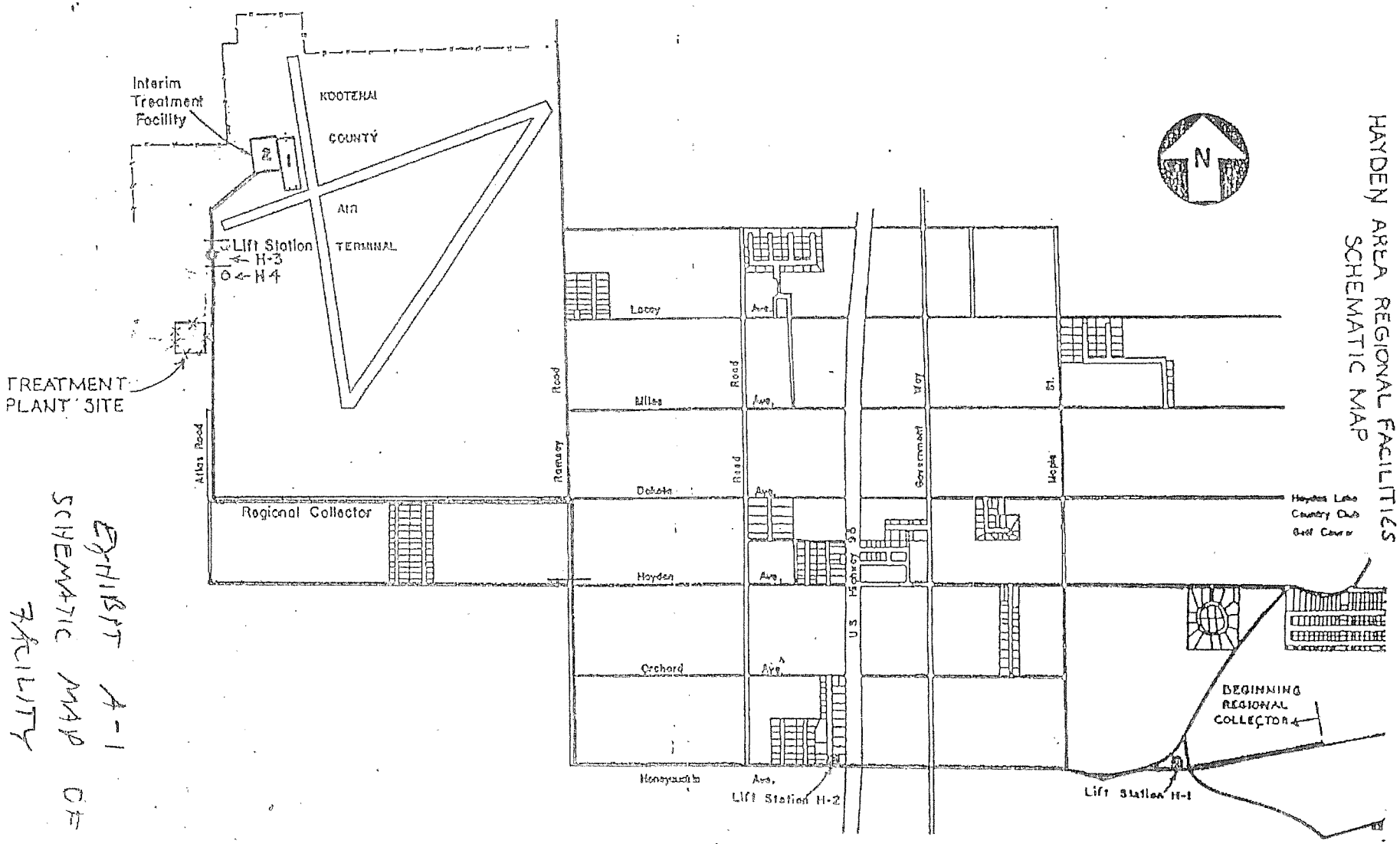


EXHIBIT A-1
SCHEMATIC MAP OF
FACILITY

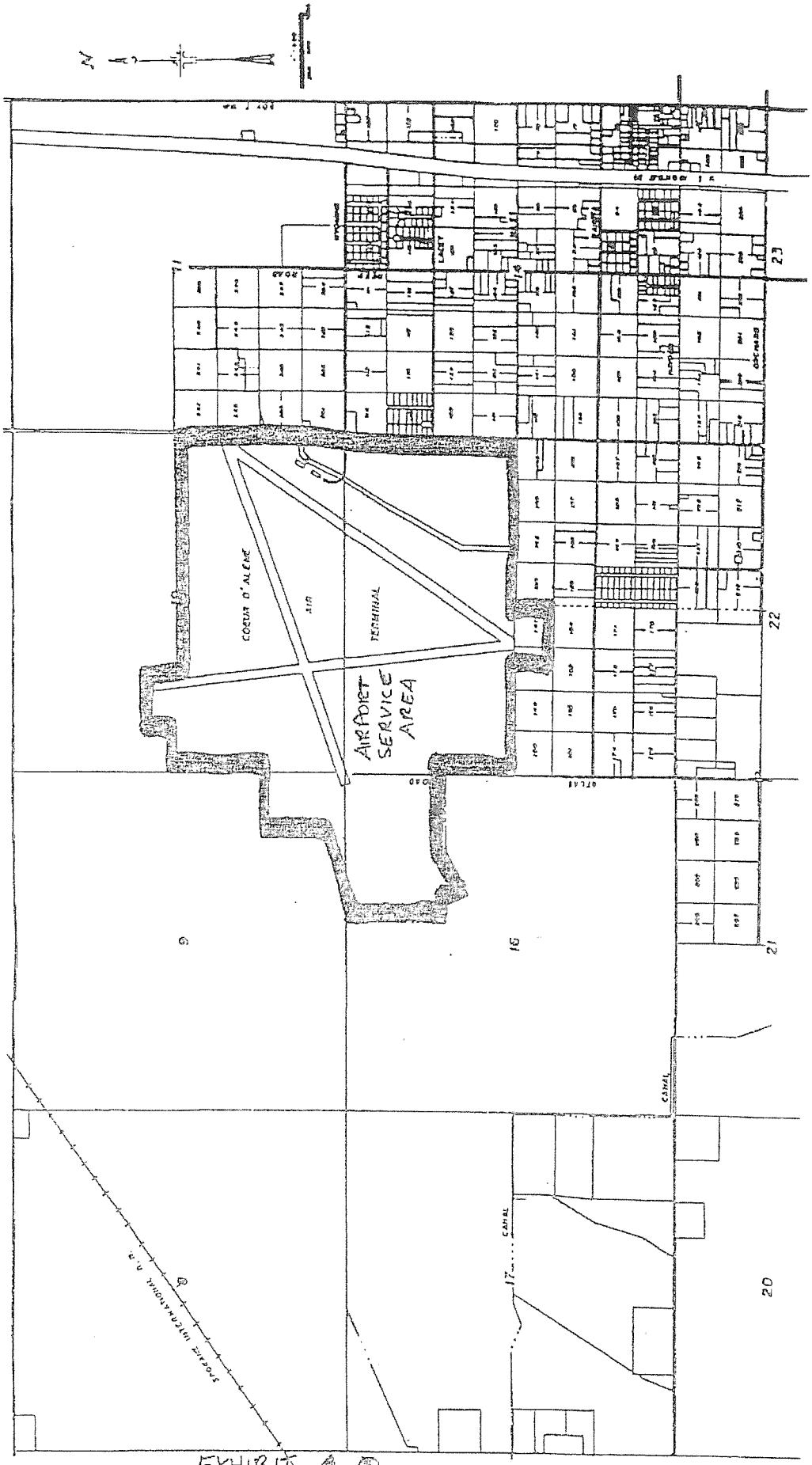


EXHIBIT A-2
AIRPORT SERVICE AREA

EXHIBIT "B" TO
JOINT POWERS AGREEMENT

[DESCRIPTION OF FACILITY COMPONENTS]

PHASE I:

The Hayden Area Regional Sewer Collector Facilities, as shown on engineering construction drawings entitled "Construction Plan, Hayden Area Regional Sewer Collector and Interim Treatment Facility", prepared by LePard & Frame, Inc., and V. David Welch Associates, Inc., dated August 29, 1985, exclusive of Schedule "I-B" and Schedule "I-BB" of those plans, all of which plans are on file at the office of the Kootenai County Commissioner. Phase I Facilities consist of thee major pumping stations and controls, pipeline, valves, one subsurface drainfield module, and related appurtenances (subject, however, to the rights of Kootenai County as fee owner of the Interim Drainfield property).

PHASE II:

Mechanical Treatment Plant, initially sized to provide sewage treatment service for 3,333 Equivalent Residences including, without limitation, screening and grit removal, oxidation ditch, clarification, disinfection, sludge handling facilities, buildings, land disposal facilities, and other related appurtenances.

PHASE III:

A. Spokane River Outfall, including, without limitation, lift stations, force mains, diffuser, and related appurtenances to convey and discharge the Treatment Plant effluent to the Spokane River;

B. Mechanical Treatment Plant Expansion, including without limitation, addition of various treatment and sludge handling components to increase capacity of Treatment Plant. Expansion is not limited to one increment or project and will be accomplished by the addition of various components over an extended time frame.

ANCILLARY RIGHTS:

Included within the description of the Facility components shall be all easements, rights of way, permits, grant applications, and other rights appurtenant to and/or necessary for the construction and operation of the Facility for its intended purpose, for which specific assignments or conveyances shall be prepared and delivered upon request.

EFW12A/D,18 - D9/25/86

EXHIBIT "C" TO
JOINT POWERS AGREEMENT

LEGAL DESCRIPTIONS OF INTERIM DRAINFIELD
AND TREATMENT PLANT SITE

INTERIM DRAINFIELD

A portion of the Southwest Quarter of Section 10, Township 51 North, Range 41 West, B.M., Kootenai County, Idaho, more particularly described as follows:

Commencing at the Southwest corner of said Section 10; thence North 0°43'15" West, 74.57 feet along the West boundary of said Southwest Quarter to a point on the extension of the Northerly boundary of Runway 23, the POINT OF BEGINNING; thence continuing North 0°43'15" West, 2587.96 feet along the West boundary of said Southwest Quarter to the Northwest corner of said Southwest Quarter (West Quarter Corner of said Section 10); thence South 89°52'29" East, 878.01 feet along the North boundary of said Southwest Quarter to a point on an extension of the Westerly boundary of airport Runway 14; thence South 15°07'00" East, 2036.28 feet along the Westerly boundary of Runway 14 extended and the Westerly boundary of Runway 14; thence 147.11 feet along the arc of a 100.00 foot radius curve right, said curve having a chord bearing South 27°01'38" West, 134.20 feet; thence South 69°10'16" West, 1407.48 feet along the northerly boundary of Runway 23 and the Northerly boundary of Runway 23 extended to the POINT OF BEGINNING.

Containing approximately 62.4 acres

TREATMENT PLANT SITE

The East 500 feet of the North 435 feet of the Northeast Quarter of the Southeast Quarter of the Northeast Quarter of Section 16, Township 51 North, Range 4 West, B.M., Kootenai County, Idaho;

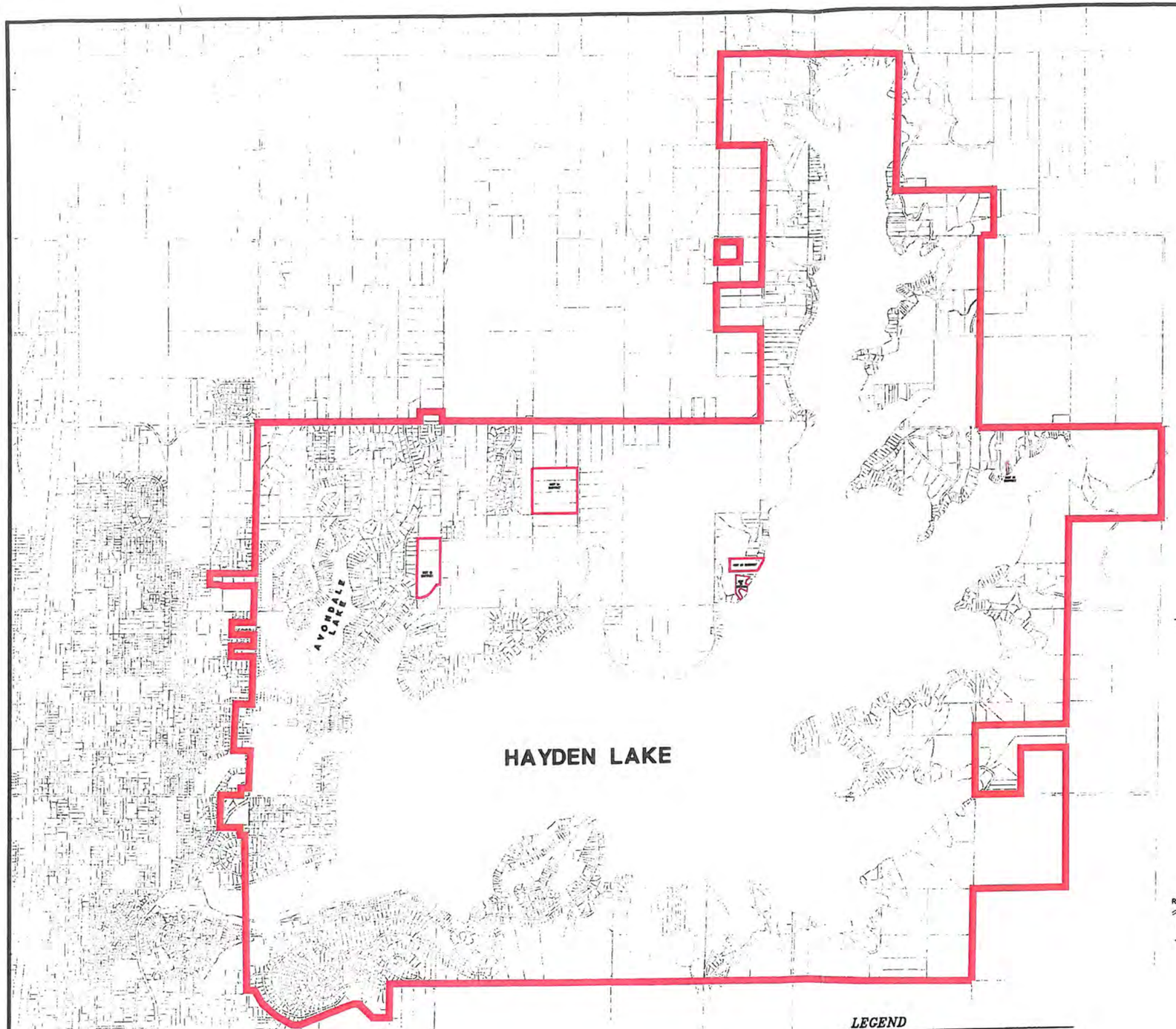
Less any recorded right-of-way.

EFW12A/D,19 - D9/25/86

APPENDIX C.

Maps of the System

- Existing System and Boundary Overview
- Growth Area Map
- Improvement Alternative Maps
  - Lift Station Structural/Mechanical Options
  - Strahorn Road Relief Areas and Options
  - Strahorn and Miles Relief Areas and Options for Miles/Bruce
- Selected Improvements Overview
- APE/PPPA Map



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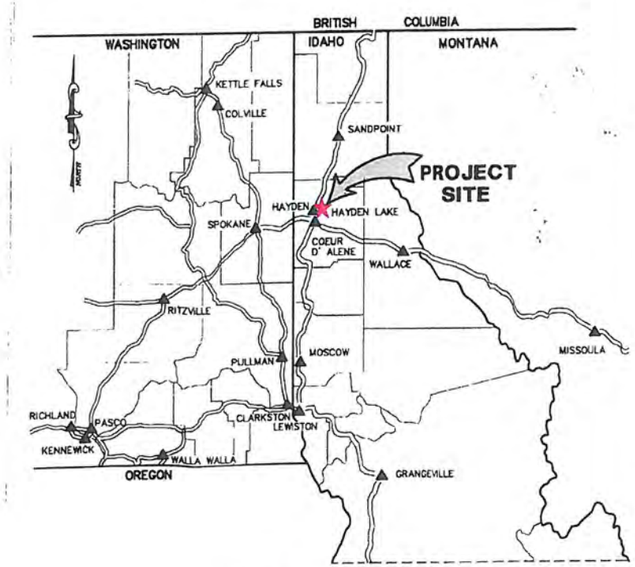

VICINITY MAP

LEGEND

HLRWSD BOUNDARY

LOT BOUNDARIES

WELCH-COMER
ENGINEERS | SURVEYORS

H.L.R.W.S.D
BOUNDARY AREA MAP

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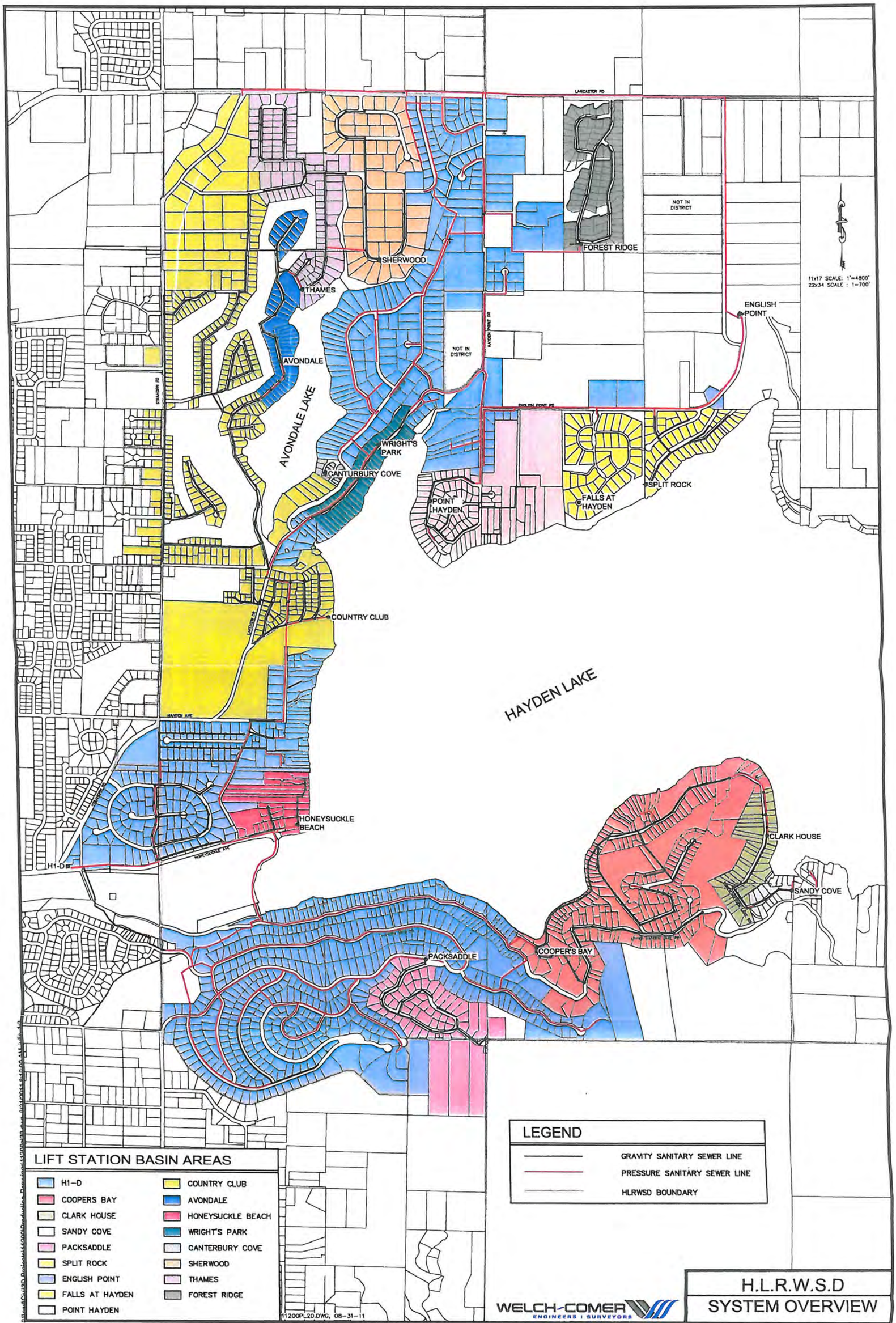
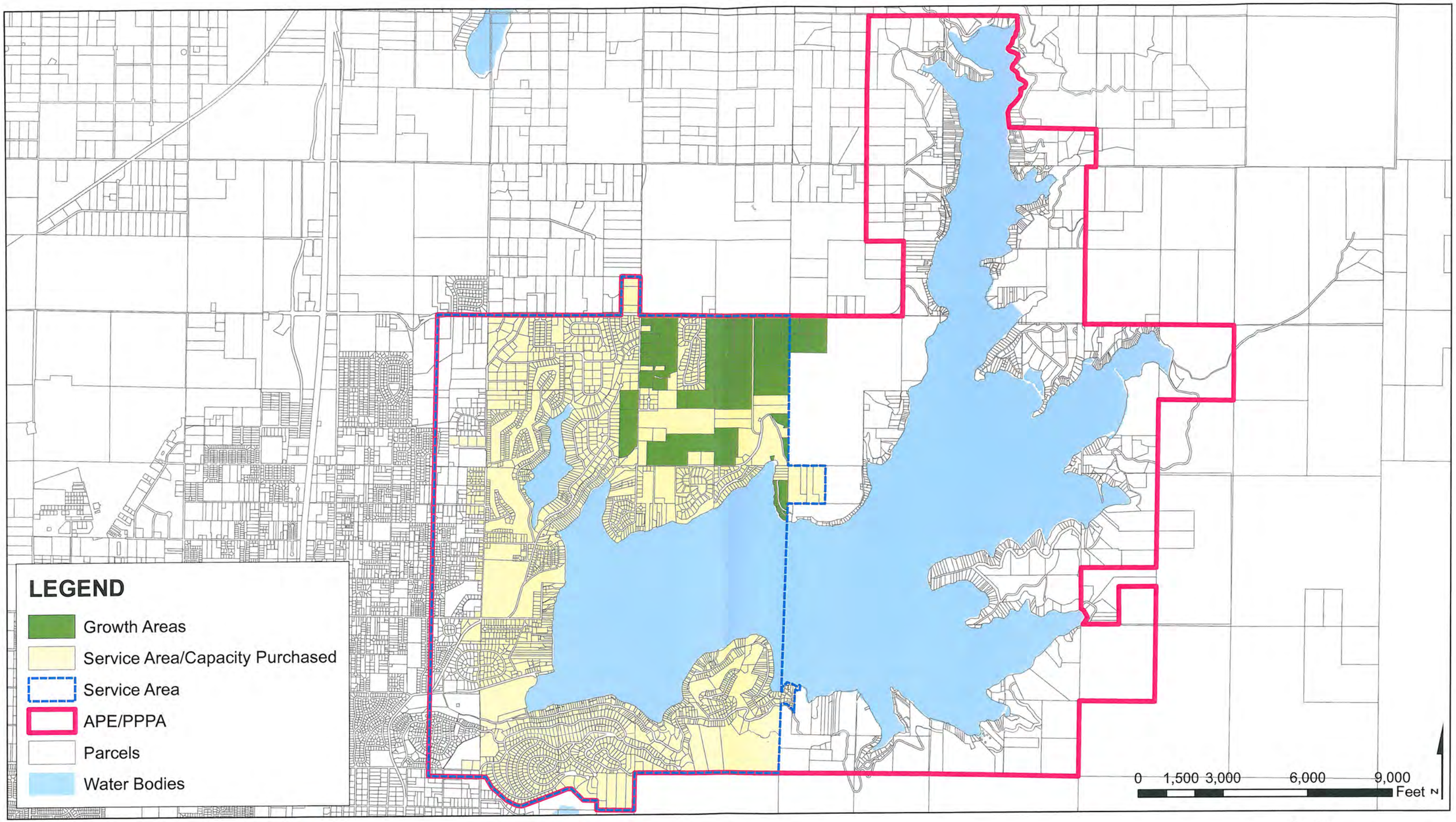

LANCASTER RD
NOT IN DISTRICT
FOREST RIDGE
SHERWOOD
THAMES
11x17 SCALE: 1"=4800'
22x34 SCALE : 1"=700'
ENGLISH POINT
NOT IN DISTRICT
HAYDEN POINT DR
AVONDALE
AVONDALE LAKE
ENGLISH POINT RD
WRIGHT'S PARK
CANTURBURY COVE
SPLIT ROCK
POINT HAYDEN
FALLS AT HAYDEN
COUNTRY CLUB
HAYDEN LAKE
HAYDEN AVE
HONEYSUCKLE BEACH
H1-D
CLARK HOUSE
SANDY COVE
COOPER'S BAY
PACKSADDLE
LIFT STATION BASIN AREAS
H1-D
COOPERS BAY
CLARK HOUSE
SANDY COVE
PACKSADDLE
SPLIT ROCK
ENGLISH POINT
FALLS AT HAYDEN
POINT HAYDEN
COUNTRY CLUB
AVONDALE
HONEYSUCKLE BEACH
WRIGHT'S PARK
CANTERBURY COVE
SHERWOOD
THAMES
FOREST RIDGE
LEGEND
GRAVITY SANITARY SEWER LINE
PRESSURE SANITARY SEWER LINE
HLRWSD BOUNDARY
11200PL20.DWG, 08-31-11
WELCH-COMER
ENGINEERS | SURVEYORS
H.L.R.W.S.D
SYSTEM OVERVIEW



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(toll free) 877-815-5762
(fax) 208-664-5946

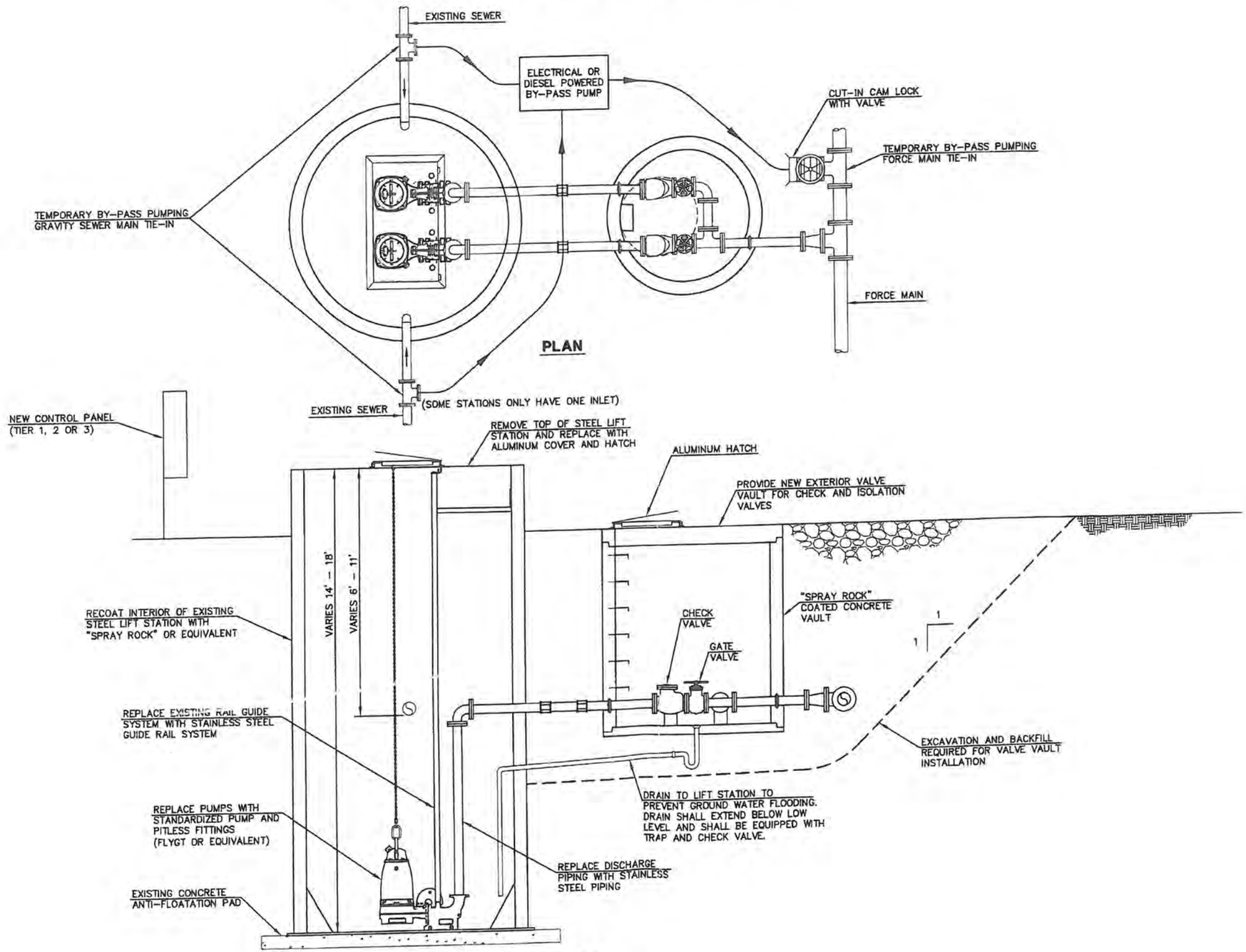
Hayden Lake Recreational Water and Sewer District

Growth Areas

Sources:
Kootenai County GIS Department

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....GrowthArea_11x17L
DATE.....11/13/12

OPTION A
LIFT STATION REHABILITATION



PROFILE

11x17 SCALE: 1"=4'
22x34 SCALE: 1"=2'

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(fax) 208-664-5946

NO.	DATE	REVISION DESCRIPTION	BY

H.L.R.W.S.D.

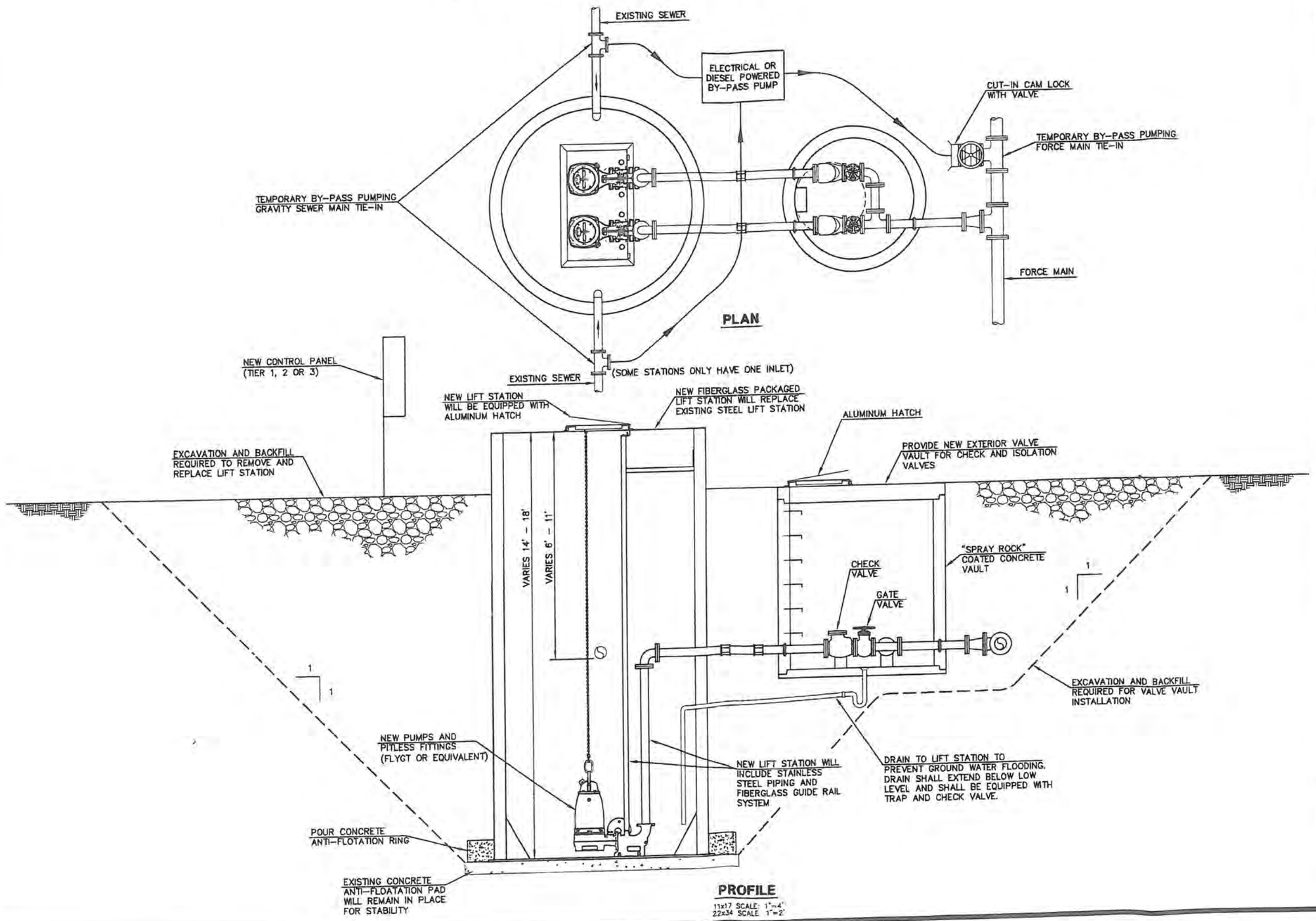
LIFT STATION FACILITIES PLAN

LIFT STATION DETAIL OPTION A REHABILITATION

PROJECT NO.:	41055
DESIGNED BY:	D.D.O.
DRAWN BY:	J.A.L.
CHECKED BY:	
DWG NAME:	43002DT02.DWG
DATE:	11-15-11
SHEET NO:	

\\Nas-01\CAD\CAD Projects\41055\dwg\43002DT02.dwg, 12/6/2011 1:14:29 PM, julie, 1:2

OPTION B
LIFT STATION REPLACEMENT



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NO.	DATE	REVISION DESCRIPTION	BY

H.L.R.W.S.D.

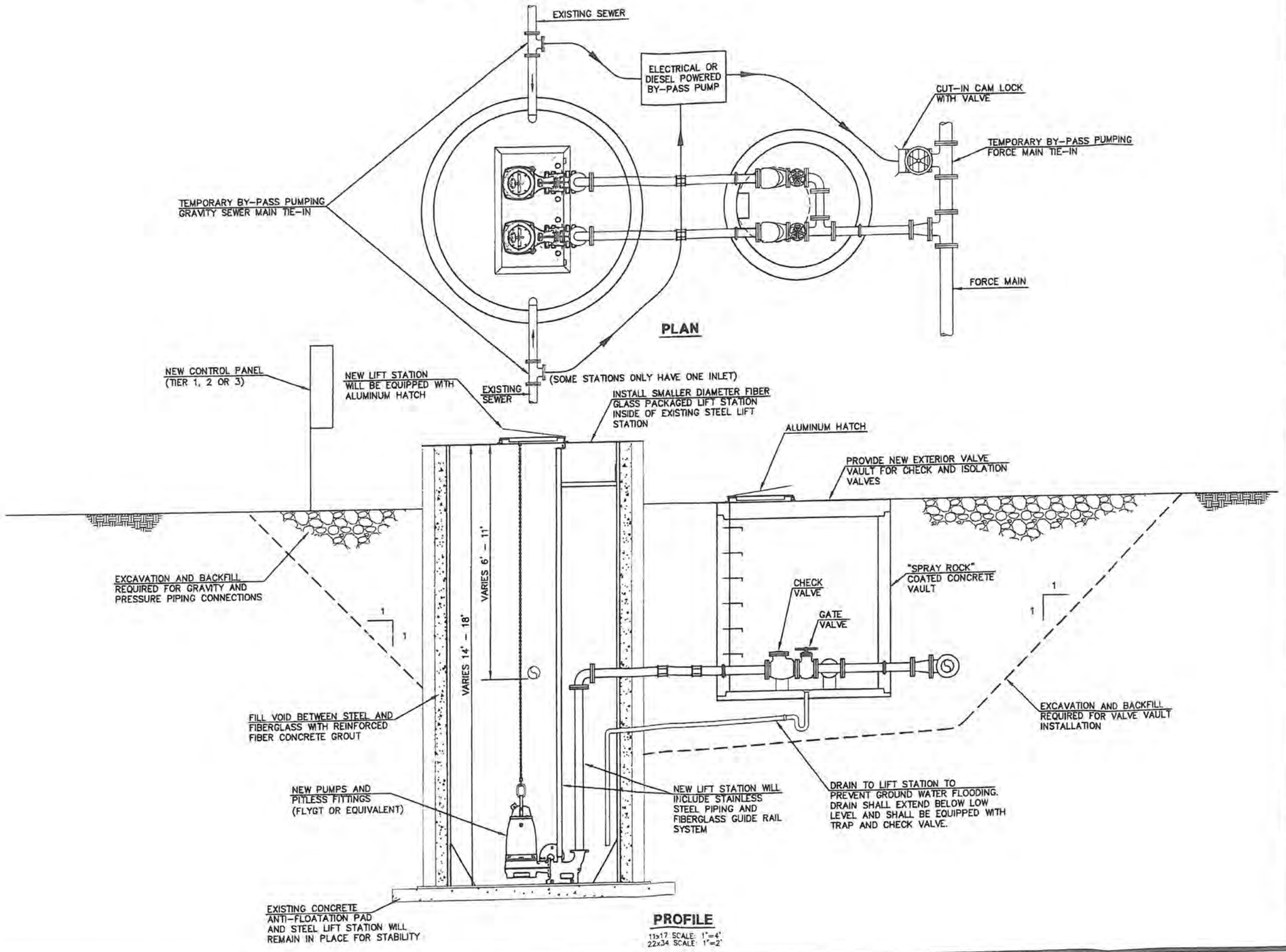
LIFT STATION FACILITIES PLAN

LIFT STATION DETAIL
OPTION B
REPLACEMENT

PROJECT NO.:	41055
DESIGNED BY:	D.D.O.
DRAWN BY:	J.A.L.
CHECKED BY:	
DWG NAME:	43002DT02.DWG
DATE:	11-15-11
SHEET NO:	

\\Has-01\CADICAD Projects\41055\dwg\43002DT02.dwg, 12/6/2011 1:14:31 PM, julie, 1:2

OPTION C
LIFT STATION SLIP-LINE



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(fax) 208-664-5946

NO.	DATE	REVISION DESCRIPTION	BY

H.L.R.W.S.D.
LIFT STATION FACILITIES PLAN

LIFT STATION DETAIL
OPTION C
SLIP-LINE

PROJECT NO.:	41055
DESIGNED BY:	D.D.O.
DRAWN BY:	J.A.L.
CHECKED BY:	
DWG NAME:	43002DT02.DWG
DATE:	11-15-11
SHEET NO:	

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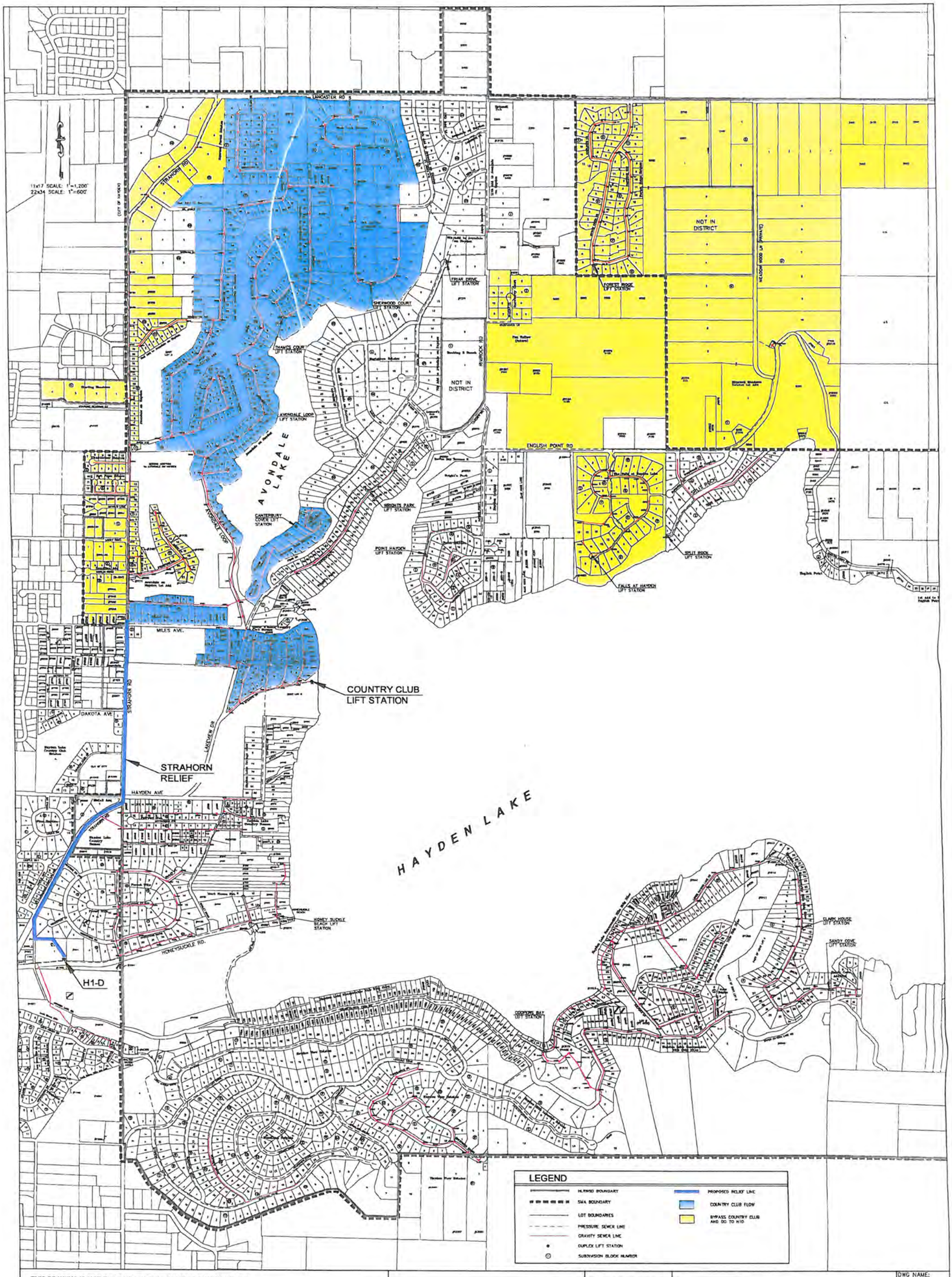

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PROJECT NO.:	11200
DESIGNED BY:	S.C.
DRAWN BY:	SDS-JAL
CHECKED BY:	

STRAHORN RELIEF AREAS

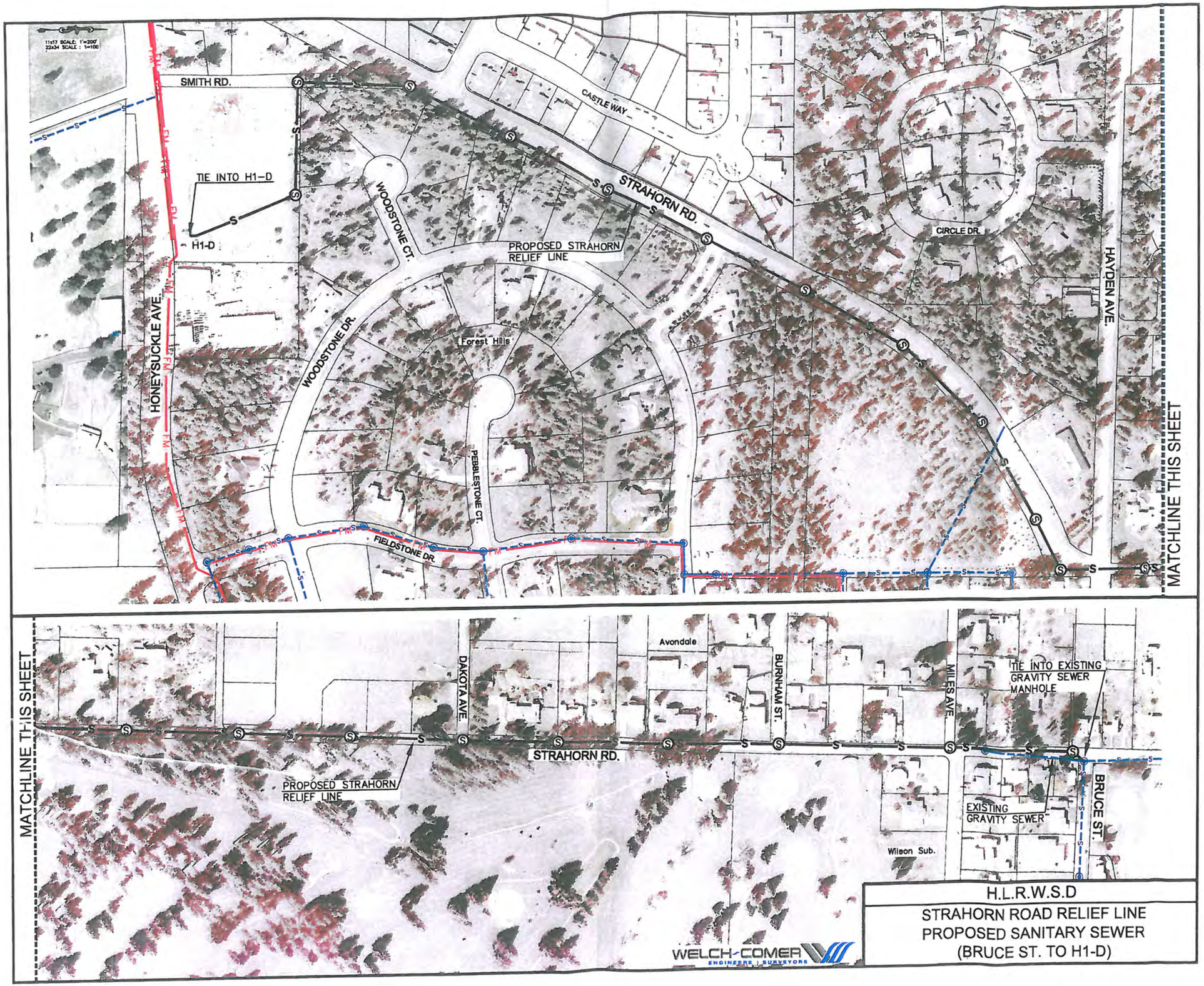
HAYDEN LAKE RECREATIONAL WATER & SEWER DISTRICT
HAYDEN LAKE, KOOTENAI COUNTY, IDAHO

DWG NAME:	11200PL30.DWG
DATE:	08-28-12
SHEET NO:	

H.L.R.W.S.D

STRAHORN ROAD RELIEF LINE
PROPOSED SANITARY SEWER
(BRUCE ST. TO HONEYSUCKLE AVE)

\\Nas-01\CAD\Civil3D Projects\111200\Production Drawings\111200PL21.dwg, 12/7/2011 8:34:56 AM, julie, 1:2



H.L.R.W.S.D

STRAHORN ROAD RELIEF LINE
PROPOSED SANITARY SEWER
(BRUCE ST. TO H1-D)

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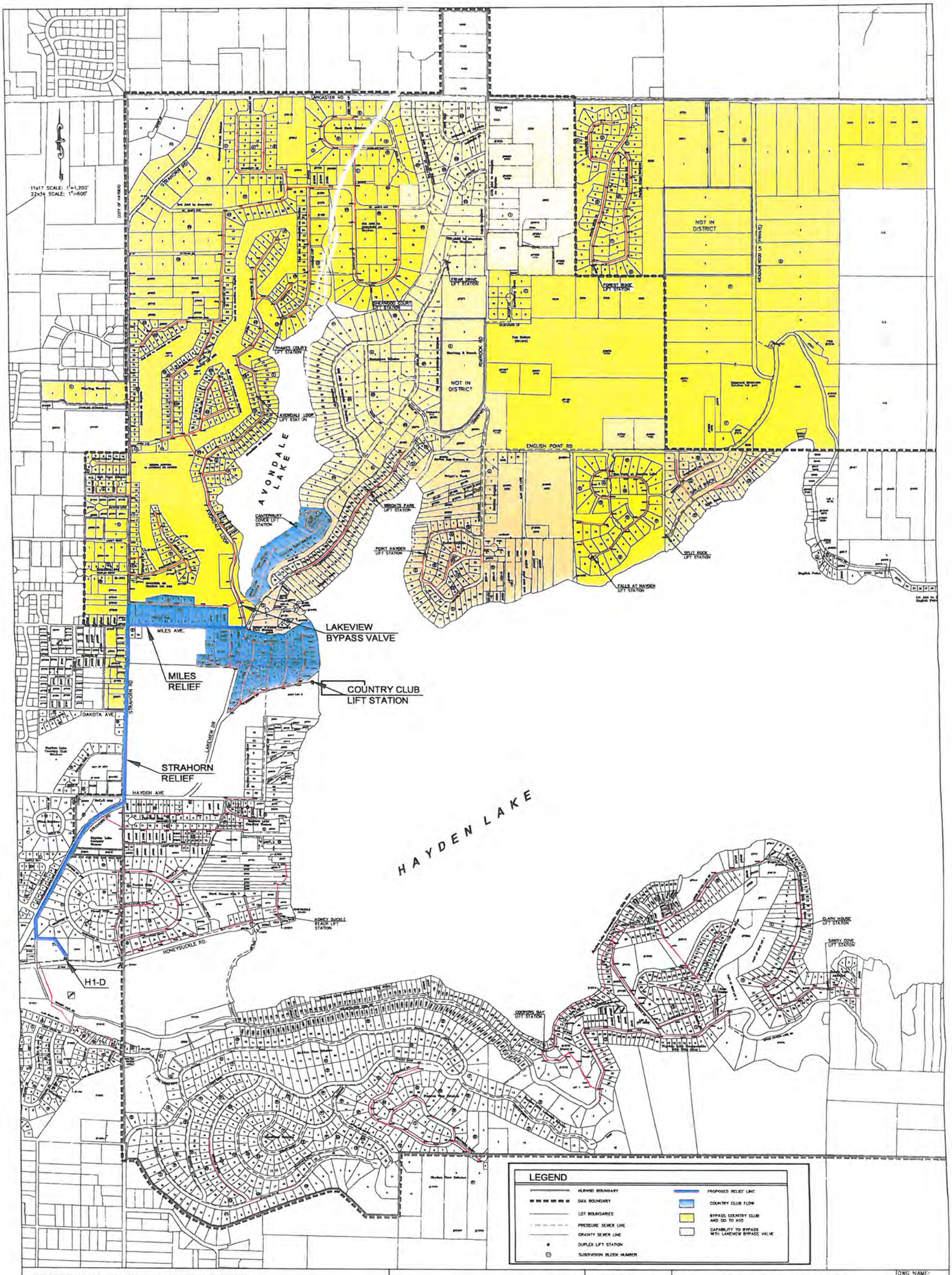

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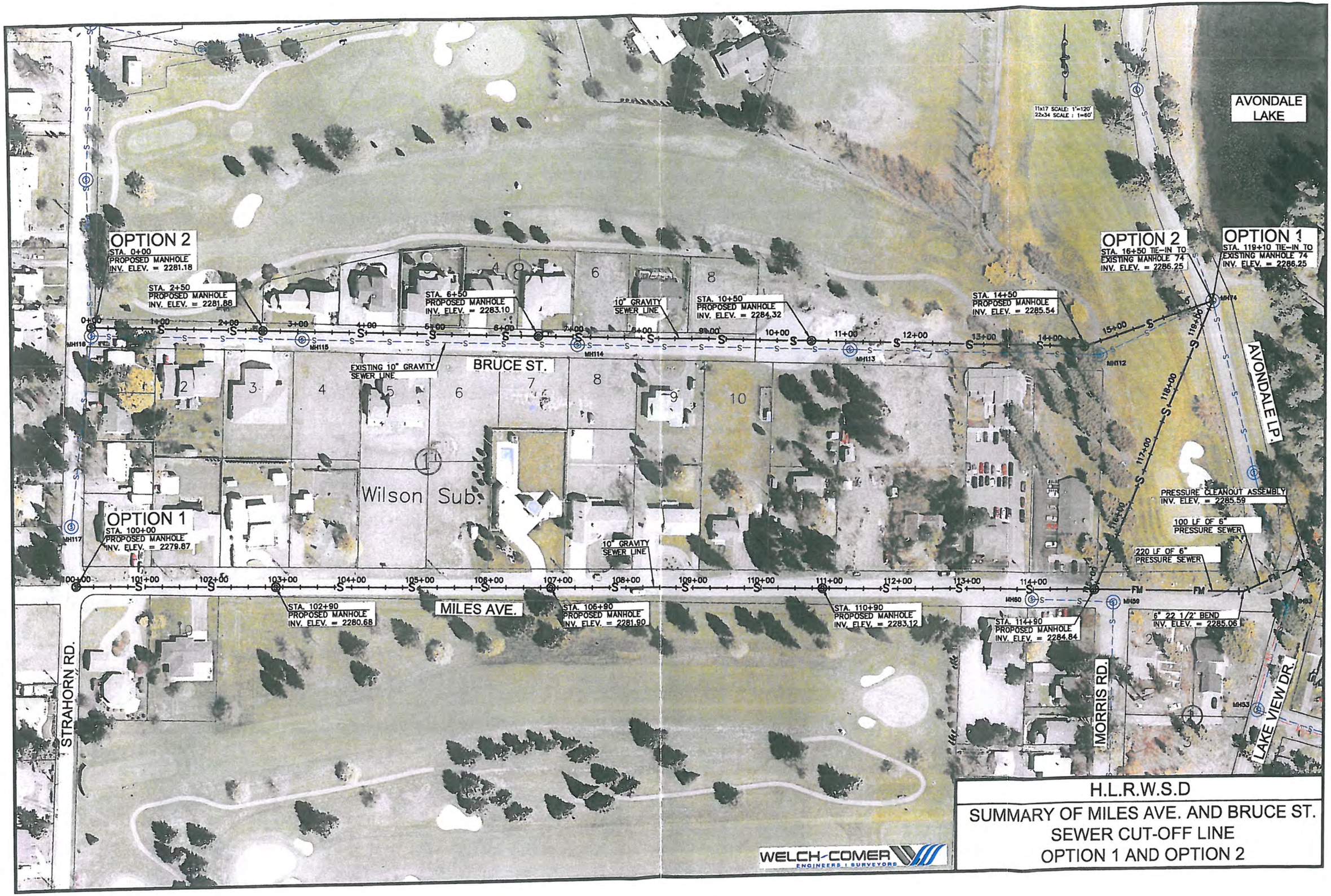
PROJECT NO.:	11200
DESIGNED BY:	S.C.
DRAWN BY:	SDS-JAL
CHECKED BY:	

STRAHORN AND MILES RELIEF AREAS

HAYDEN LAKE RECREATIONAL WATER & SEWER DISTRICT

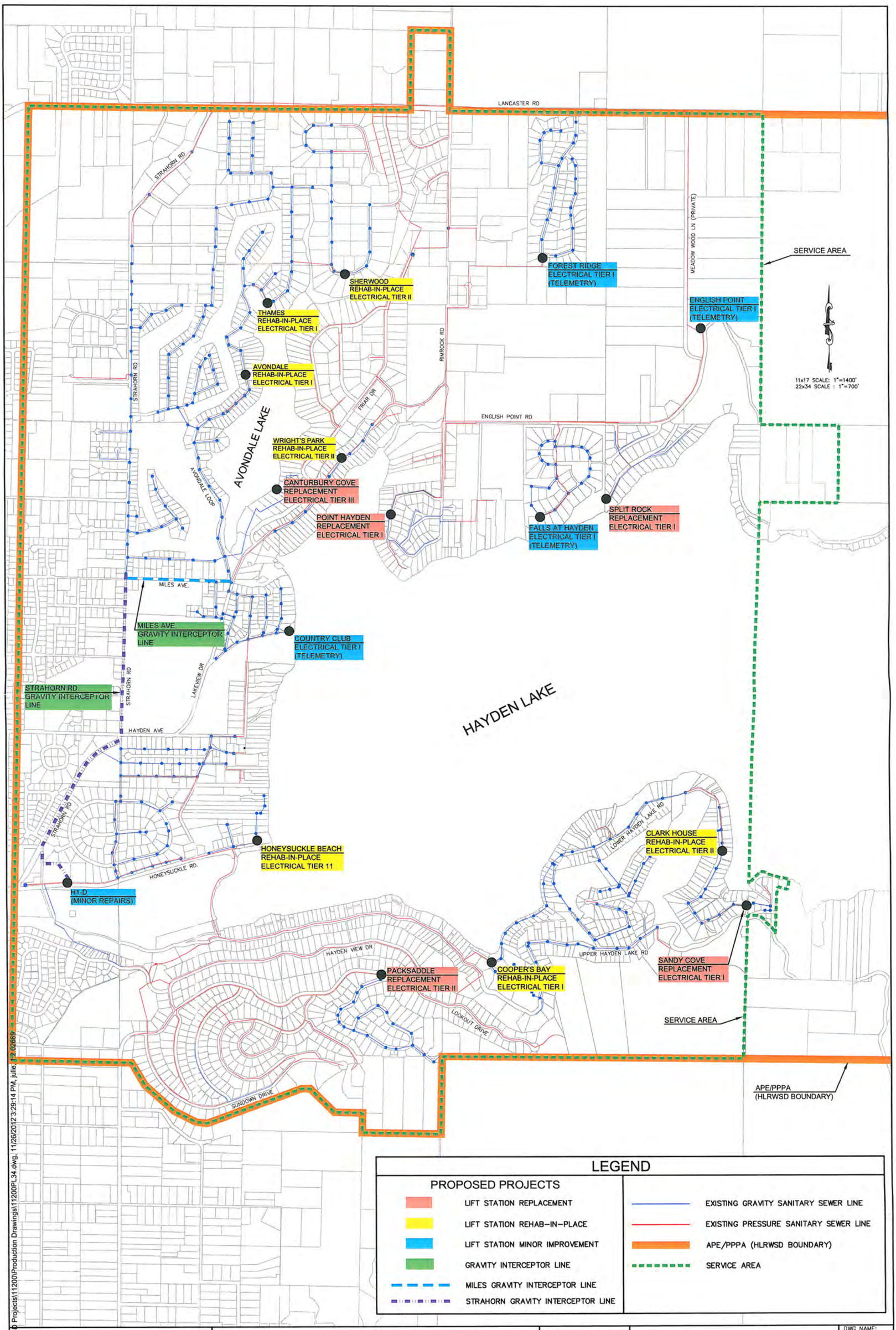
DWG NAME: 11200PL32.DWG
DATE: 08-28-12
SHEET NO:



H.L.R.W.S.D

SUMMARY OF MILES AVE. AND BRUCE ST.
SEWER CUT-OFF LINE
OPTION 1 AND OPTION 2

\\Nas-01\cad\Civil3D Projects\111200\Production Drawings\111200PL21.dwg, 9/13/2011 2:20:35 PM, julie, 1:2



LEGEND

PROPOSED PROJECTS

- LIFT STATION REPLACEMENT
- LIFT STATION REHAB-IN-PLACE
- LIFT STATION MINOR IMPROVEMENT
- GRAVITY INTERCEPTOR LINE
- MILES GRAVITY INTERCEPTOR LINE
- STRAHORN GRAVITY INTERCEPTOR LINE
- EXISTING GRAVITY SANITARY SEWER LINE
- EXISTING PRESSURE SANITARY SEWER LINE
- APE/PPPA (HLRWSD BOUNDARY)
- SERVICE AREA

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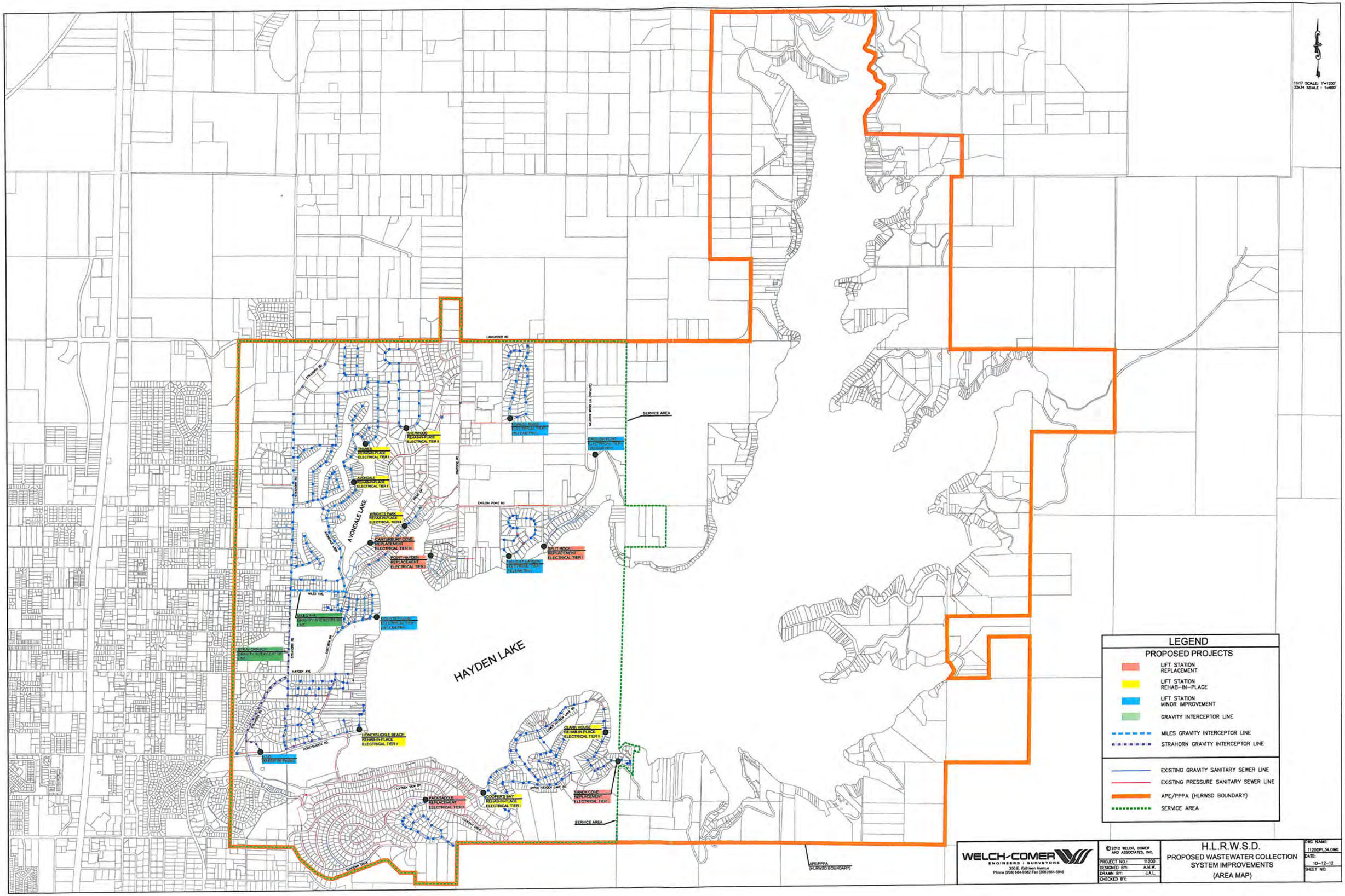
PROJECT NO.: 11200/41055
DESIGNED BY: A.M.W.
DRAWN BY: J.A.L.
CHECKED BY:

H.L.R.W.S.D.

PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

DWG NAME: 11200PL34.DWG
DATE: 10-12-12
SHEET NO:

\\Nas-01\jl3\b Projects\11200\Production Drawings\11200PL34.dwg, 11/26/2012 3:29:14 PM, julie, 12.02669


11x17 SCALE: 1"=1200'
22x34 SCALE : 1"=600'
LANCASTER RD
SERVICE AREA
MEADOW WOOD LN (PRIVATE)
OAKWOOD REHAB-IN-PLACE ELECTRICAL TIER II
THAMES REHAB-IN-PLACE ELECTRICAL TIER I
AVONDALE REHAB-IN-PLACE ELECTRICAL TIER I
WINDSTREAM REHAB-IN-PLACE ELECTRICAL TIER II
CANTERBURY COVE REPLACEMENT ELECTRICAL TIER III
POINT HAYDEN REPLACEMENT ELECTRICAL TIER I
SPLIT ROCK REPLACEMENT ELECTRICAL TIER I
AVONDALE LAKE
ENGLISH POINT RD
MILES AVE
STRAHORN RD
HAYDEN AVE
HAYDEN LAKE
HONEYSUCKLE BEACH REHAB-IN-PLACE ELECTRICAL TIER II
CLARK HOUSE REHAB-IN-PLACE ELECTRICAL TIER II
SANDY COVE REPLACEMENT ELECTRICAL TIER I
COOPERS BAY REHAB-IN-PLACE ELECTRICAL TIER I
PADDSADDLE REPLACEMENT ELECTRICAL TIER I
SERVICE AREA
APE/PPPA (HLRWSD BOUNDARY)
LEGEND
PROPOSED PROJECTS
LIFT STATION REPLACEMENT
LIFT STATION REHAB-IN-PLACE
LIFT STATION MINOR IMPROVEMENT
GRAVITY INTERCEPTOR LINE
MILES GRAVITY INTERCEPTOR LINE
STRAHORN GRAVITY INTERCEPTOR LINE
EXISTING GRAVITY SANITARY SEWER LINE
EXISTING PRESSURE SANITARY SEWER LINE
APE/PPPA (HLRWSD BOUNDARY)
SERVICE AREA
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ENGINEERS | SURVEYORS
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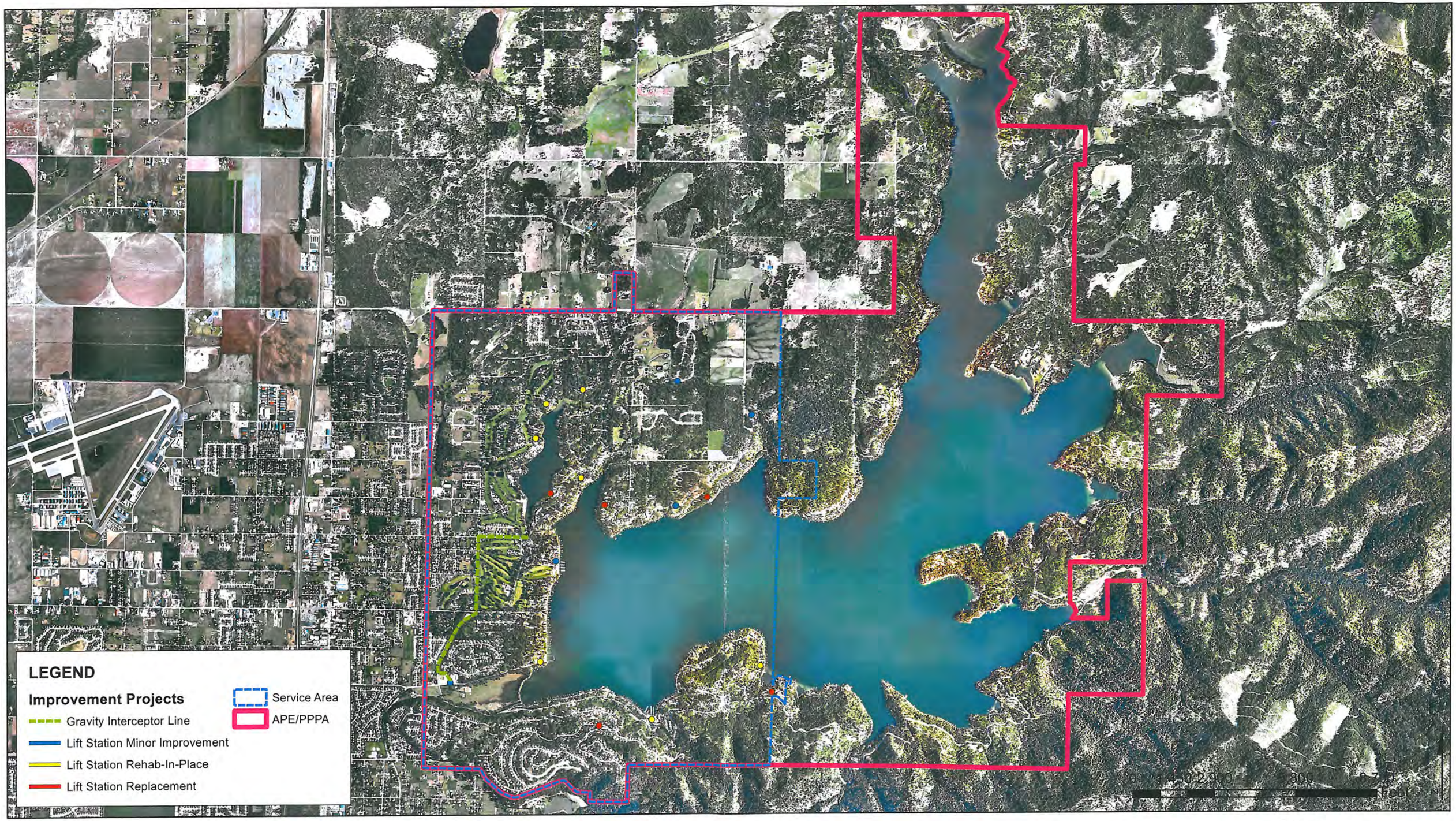
PROJECT NO.: 11200
DESIGNED BY: A.M.W.
DRAWN BY: J.A.L.
CHECKED BY:
H.L.R.W.S.D.
PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS
(AREA MAP)
DWG NAME: 11200PL34.DWG
DATE: 10-12-12
SHEET NO:



Sources:
Kootenai County GIS Department

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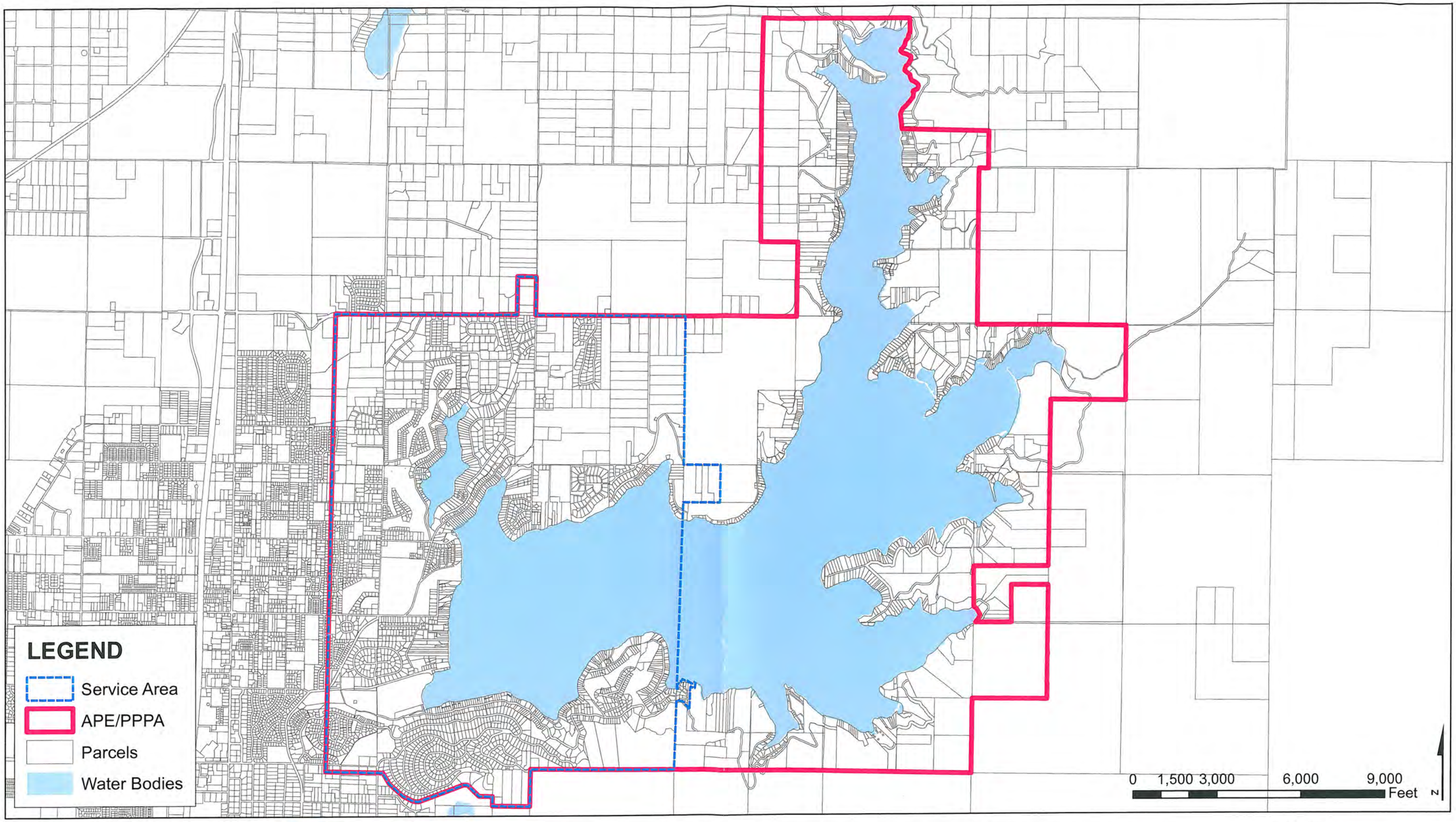
Hayden Lake Recreational Water and Sewer District

Improvement Project Overview

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....ProjectOverview_11x17L
DATE.....10/17/12



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Hayden Lake Recreational Water and Sewer District

Area of Potential Effect / Proposed Project Planning Area

Sources:
Kootenai County GIS Department

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....APE_PPPA_11x17L
DATE.....10/17/12

APPENDIX D.

Cost Information and Alternative Comparison Tables

- Alternative Cost Information
- Selected Alternative Cost Information
- Alternative Comparison Tables

HLRWSD

Lift Station Electrical Tier I (MultiTrode/MultiSmart w/ Telemetry)

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Panel Replacement	LS	1	$ 30,000.00	$ 30,000.00
	MultiTrode/MultiSmart	LS	1	$ 9,000.00	$ 9,000.00
	Configuration	LS	1	$ 750.00	$ 750.00
	Radio Telemetry	LS	1	$ 4,500.00	$ 4,500.00
				Subtotal =	$44,250.00
				10% Contingency =	$4,425.00
				Total Estimated Construction =	$48,675.00
ENGINEERING					
	Electrical Subconsultant				$7,300.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$2,400.00
ESTIMATED TOTAL PROJECT COST					**$61,875.00**

HLRWSD

Lift Station Electrical Tier II (MultiTrode/MultiSmart w/o Telemetry

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Panel Replacement	LS	1	$ 30,000.00	$ 30,000.00
	MultiTrode/MultiSmart	LS	1	$ 9,000.00	$ 9,000.00
	Configuration	LS	1	$ 750.00	$ 750.00
	Autodialer	LS	1	$ 1,800.00	$ 1,800.00
				Subtotal =	$41,550.00
				10% Contingency =	$4,155.00
				Total Estimated Construction =	$45,705.00
ENGINEERING					
	Electrical Subconsultant				$6,900.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$2,300.00
ESTIMATED TOTAL PROJECT COST					**$58,405.00**

HLRWSD

Lift Station Electrical Tier III (Traditional Hard Wired, Autodialer)

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Panel Replacement	LS	1	$ 30,000.00	$ 30,000.00
	Autodialer	LS	1	$ 1,800.00	$ 1,800.00
				Subtotal =	$31,800.00
				10% Contingency =	$3,180.00
				Total Estimated Construction =	$34,980.00
ENGINEERING					
	Electrical Subconsultant				$5,200.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$1,700.00
ESTIMATED TOTAL PROJECT COST					**$45,380.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place)

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	4	$ 800.00	$ 3,200.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 8,000.00	$ 16,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$98,800.00
				10% Contingency =	$9,880.00
				Total Estimated Construction =	$108,680.00
ENGINEERING					
	Design Phase Services				$10,900.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$10,900.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$138,980.00**

HLRWSD

Option B: Lift Station Replacement

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	4	$ 800.00	$ 3,200.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	New Fiberglass Basin	LS	1	$ 86,000.00	$ 86,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 8,000.00	$ 16,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
				Subtotal =	$177,800.00
				10% Contingency =	$17,780.00
				Total Estimated Construction =	$195,580.00
ENGINEERING					
	Design Phase Services				$19,600.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$19,600.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$243,280.00**

HLRWSD

Option C: Lift Station Slip-Line

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	4	$ 800.00	$ 3,200.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	Fiberglass Slip-Lining	LS	1	$ 30,000.00	$ 30,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 8,000.00	$ 16,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$116,800.00
				10% Contingency =	$11,680.00
				Total Estimated Construction =	$128,480.00
ENGINEERING					
	Design Phase Services				$12,800.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$12,800.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$162,580.00**

HLRWSD

Lift Station Back-Up Generator

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Generator and Installation	LS	1	$ 50,000.00	$ 50,000.00
	Site Work	LS	1	$ 8,000.00	$ 8,000.00
				Subtotal =	$58,000.00
				10% Contingency =	$5,800.00
				Total Estimated Construction =	$63,800.00
ENGINEERING					
	Design Phase Services				$6,400.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$3,200.00
ESTIMATED TOTAL PROJECT COST					**$76,900.00**

HLRWSD

Pressure Service Upgrade

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Pressure Service Upgrade	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$2,500.00
				10% Contingency =	$250.00
				Total Estimated Construction =	$2,750.00
ENGINEERING					
	Design Phase Services				$300.00
	Bidding Phase Services				$300.00
	Construction Phase Services				$100.00
ESTIMATED TOTAL PROJECT COST					**$3,450.00**

HLRWSD

Air Release Valve (ARV) Replacement

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	ARV Replacement	LS	1	$ 3,500.00	$ 3,500.00
				Subtotal =	$3,500.00
				10% Contingency =	$350.00
				Total Estimated Construction =	$3,850.00
ENGINEERING					
	Design Phase Services				$400.00
	Bidding Phase Services				$300.00
	Construction Phase Services				$200.00
ESTIMATED TOTAL PROJECT COST					**$4,750.00**

HLRWSD

Strahorn Gravity Relief Line

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 15,000.00	$ 15,000.00
	Traffic Control	LS	1	$ 6,000.00	$ 6,000.00
	SWPPP Set-Up and Close Out	LS	1	$ 1,000.00	$ 1,000.00
	SWPPP Implementation	WK	8	$ 150.00	$ 1,200.00
	Site Control and Maintenance	WK	8	$ 150.00	$ 1,200.00
	Dust Control	HR	40	$ 50.00	$ 2,000.00
	Type A3 Coarse Aggregate (3/4" Minus)	CY	1850	$ 30.00	$ 55,500.00
	Type A8 Coarse Aggregate (bedding)	LF	4930	$ 5.00	$ 24,650.00
	Trench Excavation and Backfill, 0'-6'	LF	500	$ 7.50	$ 3,750.00
	Trench Excavation and Backfill, 0'-9'	LF	500	$ 12.00	$ 6,000.00
	Trench Excavation and Backfill, 0'-12'	LF	3930	$ 13.00	$ 51,090.00
	AC Pavement Removal	SY	8070	$ 1.50	$ 12,105.00
	AC Pavement Restoration (Forest Hills)	SY	2800	$ 15.00	$ 42,000.00
	AC Pavement Restoration (Strahorn - by City of Hayden Lk)				$ -
	Directional Bore (under Hayden Ave)	LF	50	$ 650.00	$ 32,500.00
	Hydroseeding	SY	1220	$ 2.50	$ 3,050.00
	Concrete Manhole 48" Diameter	EA	17	$ 2,200.00	$ 37,400.00
	Concrete Manhole 48" Diameter, Over 10' Depth	VF	20	$ 110.00	$ 2,200.00
	10" Gravity PVC Sewer Pipe	LF	4930	$ 13.00	$ 64,090.00
	Tie-In to Existing Manhole	EA	2	$ 1,000.00	$ 2,000.00
				Subtotal =	$362,700.00
				10% Contingency =	$36,270.00
				Total Estimated Construction =	$398,970.00
ENGINEERING					
	Design Phase Services				$39,900.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$39,900.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$487,270.00**

HLRWSD

Strahorn Gravity Relief Line (ALTERNATE)

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	August 23, 2012		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 15,000.00	$ 15,000.00
	Traffic Control	LS	1	$ 6,000.00	$ 6,000.00
	SWPPP Set-Up and Close Out	LS	1	$ 1,000.00	$ 1,000.00
	SWPPP Implementation	WK	8	$ 150.00	$ 1,200.00
	Site Control and Maintenance	WK	8	$ 150.00	$ 1,200.00
	Dust Control	HR	40	$ 50.00	$ 2,000.00
STRAHORN	Type A8 Coarse Aggregate (bedding)	LF	3080	$ 5.00	$ 15,400.00
Bruce to Hayden	Trench Excavation and Backfill, 0'-6'	LF	500	$ 7.50	$ 3,750.00
	Trench Excavation and Backfill, 0'-9'	LF	500	$ 12.00	$ 6,000.00
	Trench Excavation and Backfill, 0'-12'	LF	2080	$ 13.00	$ 27,040.00
	AC Pavement Restoration (Strahorn - by City of Hayden Lk)				$ -
	Directional Bore (under Hayden Ave)	LF	50	$ 650.00	$ 32,500.00
	Concrete Manhole 48" Diameter	EA	11	$ 2,200.00	$ 24,200.00
	10" Gravity PVC Sewer Pipe	LF	3080	$ 13.00	$ 40,040.00
	Tie-In to Existing Manhole	EA	1	$ 1,000.00	$ 1,000.00
STRAHORN	Type A3 Coarse Aggregate (3/4" Minus)	CY	80	$ 30.00	$ 2,400.00
Hayden to	Type A8 Coarse Aggregate (bedding)	LF	3350	$ 5.00	$ 16,750.00
H-1D	Trench Excavation and Backfill, 0'-6'	LF	3350	$ 7.50	$ 25,125.00
	Hydroseeding/Landscape Restoration	SY	3110	$ 10.00	$ 31,100.00
	Concrete Manhole 48" Diameter	EA	9	$ 5,000.00	$ 45,000.00
	10" Gravity PVC Sewer Pipe	LF	3350	$ 13.00	$ 43,550.00
	Tie-In to H1-D	EA	1	$ 2,500.00	$ 2,500.00
	Water/Sewer Crossing	EA	1	$ 3,000.00	$ 3,000.00
				Subtotal =	$345,800.00
				10% Contingency =	$34,580.00
				Total Estimated Construction =	$380,380.00
ENGINEERING					
	Design Phase Services				$38,000.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$38,000.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$464,880.00**

HLRWSD

Miles Avenue Relief Line

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 7,500.00	$ 7,500.00
	Traffic Control	LS	1	$ 3,500.00	$ 3,500.00
	SWPPP Set-Up and Close Out	LS	1	$ 1,000.00	$ 1,000.00
	SWPPP Implementation	WK	4	$ 150.00	$ 600.00
	Site Control and Maintenance	WK	4	$ 150.00	$ 600.00
	Dust Control	HR	20	$ 50.00	$ 1,000.00
	Type A8 Coarse Aggregate (bedding)	LF	2230	$ 5.00	$ 11,150.00
	Trench Excavation and Backfill, 0'-6'	LF	1140	$ 7.50	$ 8,550.00
	Trench Excavation and Backfill, 0'-9'	LF	1090	$ 12.00	$ 13,080.00
	Landscape Restoration (Avondale Country Club)	LS	1	$ 8,000.00	$ 8,000.00
	CDF Backfill	CY	5	$ 115.00	$ 575.00
	Concrete Manhole 48" Diameter	EA	5	$ 2,200.00	$ 11,000.00
	10" C900 PVC Sewer Pipe	LF	330	$ 13.00	$ 4,290.00
	10" Gravity PVC Sewer Pipe	LF	1900	$ 13.00	$ 24,700.00
	Tie-In to Existing Manhole	EA	2	$ 1,000.00	$ 2,000.00
	6" Tee Cleanout, tie-in to existing pressure line	EA	1	$ 15,000.00	$ 15,000.00
	Diversion Vault	LS	1	$ 10,000.00	$ 10,000.00
				Subtotal =	$122,500.00
				10% Contingency =	$12,250.00
				Total Estimated Construction =	$134,750.00
ENGINEERING					
	Design Phase Services				$13,500.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$13,500.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$170,250.00**

HLRWSD

Bruce Relief Line

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 7,500.00	$ 7,500.00
	Traffic Control	LS	1	$ 3,500.00	$ 3,500.00
	SWPPP Set-Up and Close Out	LS	1	$ 1,000.00	$ 1,000.00
	SWPPP Implementation	WK	4	$ 150.00	$ 600.00
	Site Control and Maintenance	WK	4	$ 150.00	$ 600.00
	Dust Control	HR	20	$ 50.00	$ 1,000.00
	Type A3 Coarse Aggregate (3/4" Minus)	CY	238	$ 30.00	$ 7,140.00
	Type A8 Coarse Aggregate (bedding)	LF	1650	$ 5.00	$ 8,250.00
	Trench Excavation and Backfill, 0'-6'	LF	750	$ 7.50	$ 5,625.00
	Trench Excavation and Backfill, 0'-9'	LF	740	$ 12.00	$ 8,880.00
	Trench Excavation and Backfill, 0'-12'	LF	160	$ 13.00	$ 2,080.00
	AC Pavement Removal	SY	1427	$ 1.50	$ 2,140.50
	AC Pavement Restoration	SY	1427	$ 15.00	$ 21,405.00
	Hydroseeding	SY	800	$ 2.50	$ 2,000.00
	Concrete Manhole 48" Diameter	EA	5	$ 2,200.00	$ 11,000.00
	10" Gravity PVC Sewer Pipe	LF	1650	$ 13.00	$ 21,450.00
	Tie-In to Existing Manhole	EA	2	$ 1,000.00	$ 2,000.00
	Diversion Vault	LS	1	$ 10,000.00	$ 10,000.00
				Subtotal =	$116,200.00
				10% Contingency =	$11,620.00
				Total Estimated Construction =	$127,820.00
ENGINEERING					
	Design Phase Services				$12,800.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$12,800.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$161,920.00**

HLRWSD

Lift Station Rehabilitation (with Electrical) Alternative Cost

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	January 3, 2012		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
Lift Station Upgrades					
	Rehabilitation (13 lift stations)	EA	13	$ 138,980.00	$ 1,806,740.00
	Control Tier I	EA	10	$ 61,875.00	$ 618,750.00
	Control Tier II	EA	4	$ 58,405.00	$ 233,620.00
	Control Tier III	EA	2	$ 45,380.00	$ 90,760.00
	Generator (7 lift stations)	EA	7	$ 76,900.00	$ 538,300.00
Collection System Upgrades					
	Pressure Service Upgrades	EA	157	$ 3,450.00	$ 541,650.00
	ARV Replacements	EA	6	$ 4,750.00	$ 28,500.00
Relief Lines					
	Strahorn Relief Line	LS	1	$ 487,270.00	$ 487,270.00
	Miles/Bruce Relief Line (Budget for Miles)	LS	1	$ 170,250.00	$ 170,250.00
				Subtotal =	$4,515,800.00
				10% Contingency =	$451,580.00
				Total Estimated Construction =	$4,967,380.00
ENGINEERING (included)					
	Design Phase Services				$0.00
	Bidding Phase Services				$0.00
	Construction Phase Services				$0.00
	Start-Up/O&M Manuals				$0.00
	Post Construction Phase				$0.00
ESTIMATED TOTAL PROJECT COST					**$4,967,380.00**

HLRWSD

Lift Station Replacement (with Electrical) Alternative Cost

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	January 3, 2012		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
Lift Station Upgrades					
	Replacement (13 lift stations)	EA	13	$243,280.00	$ 3,162,640.00
	Control Tier I	EA	10	$ 61,875.00	$ 618,750.00
	Control Tier II	EA	4	$ 58,405.00	$ 233,620.00
	Control Tier III	EA	2	$ 45,380.00	$ 90,760.00
	Generator (7 lift stations)	EA	7	$ 76,900.00	$ 538,300.00
Collection System Upgrades					
	Pressure Service Upgrades	EA	157	$ 3,450.00	$ 541,650.00
	ARV Replacements	EA	6	$ 4,750.00	$ 28,500.00
Relief Lines					
	Strahorn Relief Line	LS	1	$487,270.00	$ 487,270.00
	Miles/Bruce Relief Line (Budget for Miles)	LS	1	$170,250.00	$ 170,250.00
				Subtotal =	$5,871,700.00
				10% Contingency =	$587,170.00
				Total Estimated Construction =	$6,458,870.00
ENGINEERING (included)					
	Design Phase Services				$0.00
	Bidding Phase Services				$0.00
	Construction Phase Services				$0.00
	Start-Up/O&M Manuals				$0.00
	Post Construction Phase				$0.00
ESTIMATED TOTAL PROJECT COST					**$6,458,870.00**

HLRWSD

Lift Station Slip-Line (with Electrical) Alternative Cost

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	January 3, 2012		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
Lift Station Upgrades					
	Slipline (13 lift stations)	EA	13	$ 162,580.00	$ 2,113,540.00
	Control Tier I	EA	10	$ 61,875.00	$ 618,750.00
	Control Tier II	EA	4	$ 58,405.00	$ 233,620.00
	Control Tier III	EA	2	$ 45,380.00	$ 90,760.00
	Generator (7 lift stations)	EA	7	$ 76,900.00	$ 538,300.00
Collection System Upgrades					
	Pressure Service Upgrades	EA	157	$ 3,450.00	$ 541,650.00
	ARV Replacements	EA	6	$ 4,750.00	$ 28,500.00
Relief Lines					
	Strahorn Relief Line	LS	1	$ 487,270.00	$ 487,270.00
	Miles/Bruce Relief Line (Budget for Miles)	LS	1	$ 170,250.00	$ 170,250.00
				Subtotal =	$4,822,600.00
				10% Contingency =	$482,260.00
				Total Estimated Construction =	$5,304,860.00
ENGINEERING (included)					
	Design Phase Services				$0.00
	Bidding Phase Services				$0.00
	Construction Phase Services				$0.00
	Start-Up/O&M Manuals				$0.00
	Post Construction Phase				$0.00
ESTIMATED TOTAL PROJECT COST					**$5,304,860.00**

HLRWSD Sewer Collection System
Capital Improvement Phasing

Priority	Capital Improvement Projects	Notes	Total Cost	LID Phase A	LID Phase B	O&M Replacement Fund
1	Thames Court Lift Station	Rehabilitation (Rehab-In-Place)	$ 151,210	$ 151,210		
		Electrical Tier I	$ 61,875	$ 61,875		
			$ 213,085			
2	Strahorn Interceptor Line ***		$ 464,880	$ 464,880		
3	Miles Interceptor Line ***		$ 170,250	$ 170,250		
4	Point Hayden Lift Station	Replacement	$ 198,810	$ 198,810		
		Electrical Tier I	$ 61,875	$ 61,875		
			$ 260,685			
5	Sandy Cove Lift Station	Replacement	$ 333,960	$ 333,960		
		Electrical Tier I	$ 61,875	$ 61,875		
		Generator	$ 76,900		$ 76,900	
			$ 472,735			
6	Canterbury Cove Lift Station *	Replacement (+3 grinders for houses)	$ 252,410	$ 252,410		
		Electrical Tier III	$ 58,405	$ 58,405		
			$ 310,815			
7	Clark House Lift Station	Rehabilitation (Rehab-In-Place)	$ 314,810	$ 314,810		
		Electrical Tier II	$ 58,405	$ 58,405		
		Generator	$ 76,900	$ 76,900		
			$ 450,115			
7	Avondale Loop Lift Station	Rehabilitation (Rehab-In-Place)	$ 150,460		$ 150,460	
		Electrical Tier I (Complete)	$ -			
			$ 150,460			
8	Wrights Park Lift Station	Rehabilitation (Rehab-In-Place)	$ 150,460		$ 150,460	
		Electrical Tier II	$ 58,405		$ 58,405	
		Generator	$ 76,900		$ 76,900	
			$ 285,765			
9	Sherwood Court Lift Station	Rehabilitation (Rehab-In-Place)	$ 140,060		$ 140,060	
		Electrical Tier II	$ 58,405		$ 58,405	
		Generator	$ 76,900		$ 76,900	
			$ 275,365			
10	Split Rock Lift Station	Replacement	$ 241,560		$ 241,560	
		Electrical Tier I	$ 61,875		$ 61,875	
		Generator	$ 76,900		$ 76,900	
			$ 380,335			
11	Honeysuckle Beach Lift Station **	Rehabilitation (Rehab-In-Place)	$ 141,580		$ 141,580	
		Muffin monster (City of Hayden supplied)	$ -			
		Electrical Tier II	$ 58,405		$ 58,405	
		Generator	$ 76,900		$ 76,900	
			$ 276,885			
12	Coopers Bay Lift Station	Rehabilitation	$ 52,860		$ 52,860	
		Electrical Tier I	$ 61,875		$ 61,875	
			$ 114,735			
12	Country Club Lift Station	Electrical Tier I	$ 61,875		$ 61,875	
			$ 61,875			
12	English Point Lift Station	Electrical Tier I (Telemetry)	$ 22,125			$ 22,125
		Safety grate	$ 600			$ 600
			$ 22,725			

HLRWSD Sewer Collection System
Capital Improvement Phasing

Priority	Capital Improvement Projects	Notes	Total Cost	LID Phase A	LID Phase B	O&M Replacement Fund
12	Falls at Hayden Lift Station	Electrical Tier I (Telemetry)	$ 22,125			$ 22,125
		Safety grate	$ 600			$ 600
			$ 22,725			
12	Forest Ridge Lift Station	Electrical Tier I (Telemetry)	$ 22,125			$ 22,125
		Safety grate	$ 600			$ 600
			$ 22,725			
12	H-1D Lift Station	Repairs/Improvements	$ 50,700			$ 50,700
		HARSB installing radio (2012)	$ -			
			$ 50,700			
12	Packsaddle Lift Station	Replacement (raw sewage grinder station)	$ 29,060		$ 29,060	
		Electrical Tier III	$ 45,380		$ 45,380	
		Generator	$ 76,900		$ 76,900	
			$ 151,340			
12	Back-up Pumps	For 4-5 pump types	$ 50,000		$ 50,000	
13	Pressure Service Upgrades	For 157 Services	$ 541,650			$ 541,650
13	ARV Replacement	For 6 Replacements	$ 28,500			$ 28,500
13	Line Sags	For 18 Line Sags (13 Severe); reserve fund	$ -			
13	I&I Identification	For 22 Locations; reserve fund	$ -			
13	Root Issues	For 4 Locations; reserve fund	$ -			
13	Miscellaneous Issues	For 9 Miscellaneous Issues; reserve fund	$ -			
	TOTAL		$ 4,778,400	$ 2,265,700	$ 1,823,700	$ 689,000

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for AVONDALE LOOP

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	5	$ 2,000.00	$ 10,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$107,600.00
				10% Contingency =	$10,760.00
				Total Estimated Construction =	$118,360.00
ENGINEERING					
	Design Phase Services				$11,800.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$11,800.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$150,460.00**

HLRWSD

Option B: Lift Station Replacement for CANTERBURY COVE

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	New Fiberglass Basin	LS	1	$ 50,000.00	$ 50,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
	Simplex Grinder Pump Stations	EA	3	$ 7,500.00	$ 22,500.00
	Type A3 Aggregate (3/4" minus)	CY	90	$ 30.00	$ 2,700.00
	Type A8 Aggregate (bedding)	LF	260	$ 5.00	$ 1,300.00
	Trench Excavation and Backfill (0-6')	LF	260	$ 7.50	$ 1,950.00
	AC Pavement Removal	SY	640	$ 1.50	$ 960.00
	AC Pavement Restoration	SY	640	$ 13.00	$ 8,320.00
	Concrete Manhole (48" Diameter)	EA	2	$ 2,200.00	$ 4,400.00
	8" Gravity Sewer Pipe	LF	260	$ 10.00	$ 2,600.00
	2" HDPE Slipline Force Main	LF	450	$ 20.00	$ 9,000.00
				Subtotal =	$184,830.00
				10% Contingency =	$18,483.00
				Total Estimated Construction =	$203,310.00
ENGINEERING					
	Design Phase Services				$20,300.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$20,300.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$252,410.00**

HLRWSD

Option B: Lift Station Replacement for CLARK HOUSE

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 10,000.00	$ 10,000.00
	Traffic Control	DAY	10	$ 2,000.00	$ 20,000.00
	New Fiberglass Basin	LS	1	$ 86,000.00	$ 86,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
	Excavation and Haul	LS	1	$ 10,000.00	$ 10,000.00
	Retaining Wall	LS	1	$ 30,000.00	$ 30,000.00
				Subtotal =	$232,100.00
				10% Contingency =	$23,210.00
				Total Estimated Construction =	$255,310.00
ENGINEERING					
	Design Phase Services				$25,500.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$25,500.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$314,810.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for COOPERS BAY

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
				Subtotal =	$33,600.00
				10% Contingency =	$3,360.00
				Total Estimated Construction =	$36,960.00
ENGINEERING					
	Design Phase Services				$3,700.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$3,700.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$52,860.00**

HLRWSD

Option A: Lift Station Rehabilitation for COUNTRY CLUB

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 2,500.00	$ 10,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 25,000.00	$ 25,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	3	$ 10,000.00	$ 30,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
Assumes:	**No Miles/Strahorn Relief Line**				
				Subtotal =	$94,100.00
				10% Contingency =	$9,410.00
				Total Estimated Construction =	$103,510.00
ENGINEERING					
	Design Phase Services				$10,400.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$10,400.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$132,810.00**

HLRWSD

Improvements for H1D

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	3-Way Valve Replacement	LS	1	$ 12,000.00	$ 12,000.00
	Pump Motor Replacement	EA	2	$ 10,000.00	$ 20,000.00
				Subtotal =	$32,000.00
				10% Contingency =	$3,200.00
				Total Estimated Construction =	$35,200.00
ENGINEERING					
	Design Phase Services				$3,500.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$3,500.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$50,700.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for HONEYSUCKLE BEACH

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	4	$ 800.00	$ 3,200.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$100,800.00
				10% Contingency =	$10,080.00
				Total Estimated Construction =	$110,880.00
ENGINEERING					
	Design Phase Services				$11,100.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$11,100.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$141,580.00**

HLRWSD

Option B: Lift Station Replacement for PACKSADDLE

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Access Upgrades	LS	1	$ 10,000.00	$ 10,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
				Subtotal =	$15,600.00
				10% Contingency =	$1,560.00
				Total Estimated Construction =	$17,160.00
ENGINEERING					
	Design Phase Services				$1,700.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$1,700.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$29,060.00**

HLRWSD

Option B: Lift Station Replacement for POINT HAYDEN

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	5	$ 2,000.00	$ 10,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	5	$ 1,500.00	$ 7,500.00
	New Fiberglass Basin	LS	1	$ 50,000.00	$ 50,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 5,000.00	$ 10,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
				Subtotal =	$144,100.00
				10% Contingency =	$14,410.00
				Total Estimated Construction =	$158,510.00
ENGINEERING					
	Design Phase Services				$15,900.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$15,900.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$198,810.00**

HLRWSD

Option B: Lift Station Replacement for SANDY COVE

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	5	$ 2,000.00	$ 10,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	New Fiberglass Basin	LS	1	$ 86,000.00	$ 86,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
	Excavation and Haul	LS	1	$ 10,000.00	$ 10,000.00
	Retaining Wall	LS	1	$ 50,000.00	$ 50,000.00
				Subtotal =	$246,600.00
				10% Contingency =	$24,660.00
				Total Estimated Construction =	$271,260.00
ENGINEERING					
	Design Phase Services				$27,100.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$27,100.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$333,960.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for SHERWOOD COURT

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	4	$ 500.00	$ 2,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$99,600.00
				10% Contingency =	$9,960.00
				Total Estimated Construction =	$109,560.00
ENGINEERING					
	Design Phase Services				$11,000.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$11,000.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$140,060.00**

HLRWSD

Option B: Lift Station Replacement for SPLIT ROCK

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	New Fiberglass Basin	LS	1	$ 86,000.00	$ 86,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
	Demolish/Dispose Existing Lift Steel Basin	LS	1	$ 10,000.00	$ 10,000.00
				Subtotal =	$176,600.00
				10% Contingency =	$17,660.00
				Total Estimated Construction =	$194,260.00
ENGINEERING					
	Design Phase Services				$19,400.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$19,400.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$241,560.00**

HLRWSD

Option A: Lift Station Rehabilitation for SPLIT ROCK

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	July 24, 2012		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 1,000.00	$ 1,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$76,600.00
				10% Contingency =	$7,660.00
				Total Estimated Construction =	$84,260.00
ENGINEERING					
	Design Phase Services				$8,400.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$8,400.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$109,560.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for THAMES COURT

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	5	$ 2,000.00	$ 10,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 3,000.00	$ 3,000.00
				Subtotal =	$108,100.00
				10% Contingency =	$10,810.00
				Total Estimated Construction =	$118,910.00
ENGINEERING					
	Design Phase Services				$11,900.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$11,900.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$151,210.00**

HLRWSD

Option A: Lift Station Rehabilitation (Coating In-Place) for WRIGHTS PARK

ENGINEER's OPINION OF PRELIMINARY PROJECT COSTS

Prepared By:	Ashley M. Williams, EIT	Date:	November 17, 2011		
Project Manager:	Larry E. Comer, PE	Date:			
Segment	Description	Unit	Quantity	Unit Price	Total
	Mobilization	LS	1	$ 5,000.00	$ 5,000.00
	Traffic Control	DAY	5	$ 2,000.00	$ 10,000.00
	Bypass Infrastructure	LS	1	$ 3,500.00	$ 3,500.00
	Bypass Pumping	DAY	4	$ 1,500.00	$ 6,000.00
	"Spray Rock" Preparation and Coating	LS	1	$ 12,000.00	$ 12,000.00
	Lift Station Mechanical Piping/Rails	LS	1	$ 15,000.00	$ 15,000.00
	Valve Vault	LS	1	$ 20,000.00	$ 20,000.00
	New Pumps	EA	2	$ 9,000.00	$ 18,000.00
	New Top/Hatch	LS	1	$ 5,000.00	$ 5,000.00
	Safety Grid	LS	1	$ 600.00	$ 600.00
	Site Improvements	LS	1	$ 5,000.00	$ 5,000.00
	Surface Restoration	LS	1	$ 5,000.00	$ 5,000.00
	Odor Control	LS	1	$ 2,500.00	$ 2,500.00
				Subtotal =	$107,600.00
				10% Contingency =	$10,760.00
				Total Estimated Construction =	$118,360.00
ENGINEERING					
	Design Phase Services				$11,800.00
	Bidding Phase Services				$3,500.00
	Construction Phase Services				$11,800.00
	Start-Up/O&M Manuals				$2,500.00
	Post Construction Phase				$2,500.00
ESTIMATED TOTAL PROJECT COST					**$150,460.00**

Environmental Criteria	No Action Alternative	Communication Tier I	Communication Tier II	Communication Tier III
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	No Impact	No Impact	No Impact
Population, Economic, and Social Profile	No Impact	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	No Impact	No Impact	No Impact	No Impact
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	No Impact	No Impact	No Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Reduction in Noise (eliminate audio/visual alarm system)	No Impact	No Impact
Energy	No Impact	Increase in Power Usage	Increase in Power Usage	Increase in Power Usage
Public Health	Continued risk to Operators due to Aged Components; Potential for Slower/Less Efficient Operator Response due to Comm. Devices	Reduction in Risk to Operators by Replacing Aged Components	Reduction in Risk to Operators by Replacing Aged Components	Reduction in Risk to Operators by Replacing Aged Components
Option Cost	$0	$618,750 (10 L.S.)	$233,620 (4 L.S.)	$90,760 (2 L.S.)

Environmental Criteria	No Action Alternative	Structural/Mechanical Option A Rehabilitation	Structural/Mechanical Option B Replacement	Structural/Mechanical Option C Slip-Line
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Lift Station Rehabilitation, Long-Term Impacts Minimal	Excavation for Lift Station Replacement (largest of 3 opt.), Long-Term Impacts Minimal	Excavation for Lift Station Slip-Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	Construction in Floodplain for CaC, CoC, HB Lift Stations, Short-Term Impact	Construction in Floodplain for CoC and HB Lift Stations, Short-Term Impact	Construction in Floodplain for CaC, CoC, HB Lift Stations, Short-Term Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health
Option Cost	$0	$1.807 million	$3.163 million	$2.114 million

1. CaC = Canterbury Cove, CoC = Country Club, HB = Honeysuckle Beach Lift Stations

Environmental Criteria	No Action Alternative	Standby Generator
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for the Generator, Long-Term Impacts Minimal
Population, Economic, and Social Profile	No Impact	No Impact
Land Use	No Impact	No Impact
Floodplain Development	No Impact	No Impact
Wetlands and Water Quality	Potential for Failures/Leaks to Water Bodies in Emergency Situations (for L.S. without Standby Pumping Capacity)	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact; Operating Emissions, Minor Long-Term Impact
Energy	No Impact	No Impact
Public Health	Potential for Failures/Leaks in Emergency Situations (for L.S. without Standby Pumping Capacity)	Protection from Future Potential Impacts to Public Health
Option Cost	$0	$538,300 (7 L.S.)

Environmental Criteria	No Action Alternative	Submersible Pump Replacement
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	No Impact
Population, Economic, and Social Profile	Maintained Current Operating Costs due to Call-Outs and Pump Maintenance	Reduction in Operating Costs due to Reduction in Pump Maintenance
Land Use	No Impact	No Impact
Floodplain Development	No Impact	No Impact
Wetlands and Water Quality	Potential for Failures/Leaks to Water Bodies	Protection from Further Damage to Water Quality, Reducing Maintenance
Wild and Scenic Rivers	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact
Flora and Fauna	No Impact	No Impact
Recreation and Open Space	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact
Air Quality	No Impact	No Impact
Energy	No Impact	No Impact
Public Health	Potential for Failures/Leaks due to Delayed Pump Replacement	Improvement to Existing Conditions, Reducing Likelihood of Failures/Leaks
Option Cost	$0	$50,000 (4-5 back-ups)

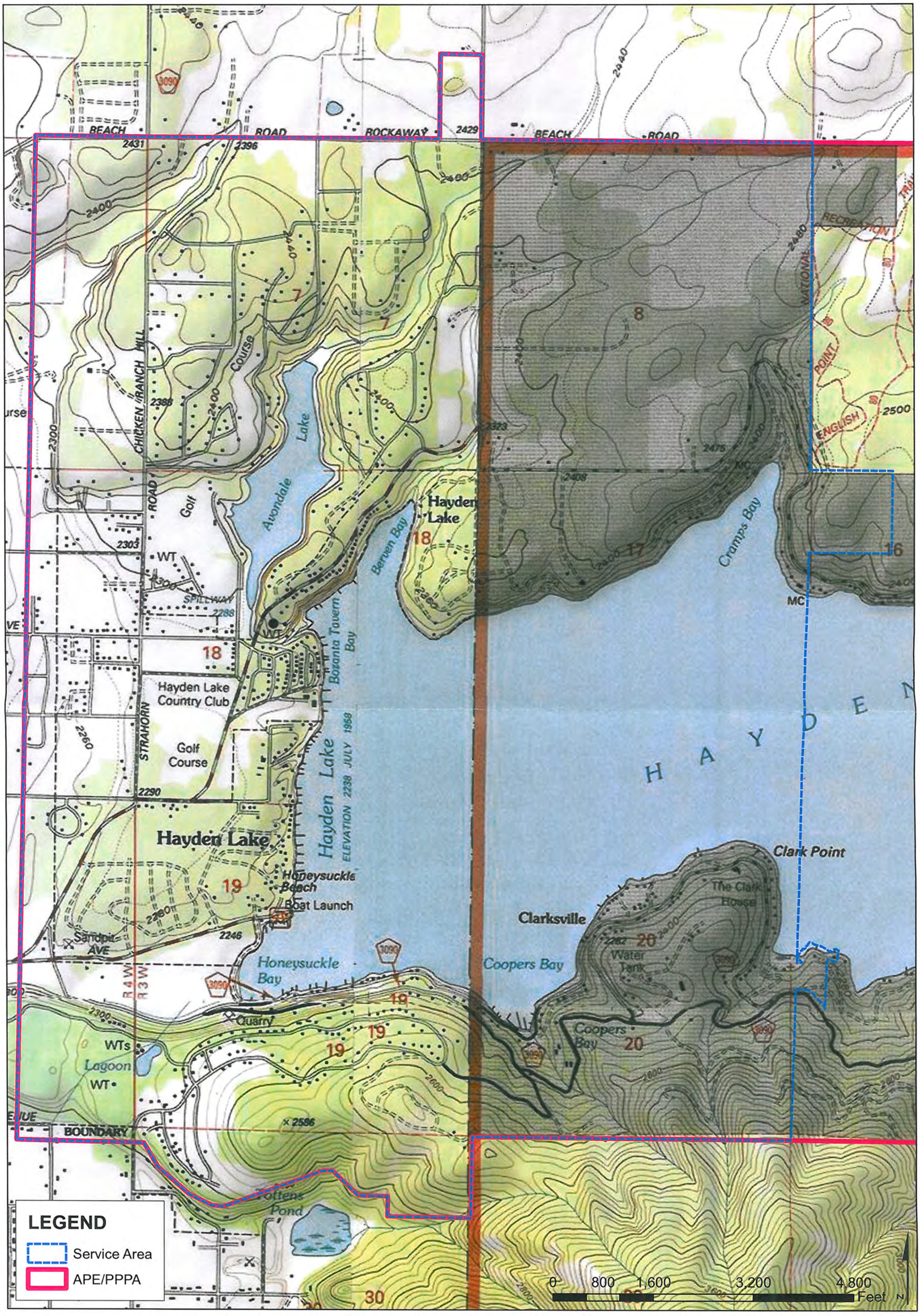
Environmental Criteria	No Action Alternative	Strahorn Relief Line	Miles Relief Line	Bruce Relief Line
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure at Country Club	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health (failure at Country Club)	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health
Option Cost	$0	$464,880	$170,250	$161,920

Environmental Criteria	No Action Alternative	General Collection System Improvements
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for the Replacements and Installations, Long-Term Impacts Minimal
Population, Economic, and Social Profile	No Impact	No Impact
Land Use	No Impact	No Impact
Floodplain Development	No Impact	No Impact
Wetlands and Water Quality	Potential for Failures/Leaks to Water Bodies	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact
Public Health	Potential for Failures/Leaks due to Delayed Maintenance of System Components	Protection from Future Potential Impacts to Public Health
Option Cost	$0	$570,150 (pressure service upgrades and ARV replacements)

APPENDIX E.

Physical Information

- Topography Map
- Geologic Information
- Soils Information



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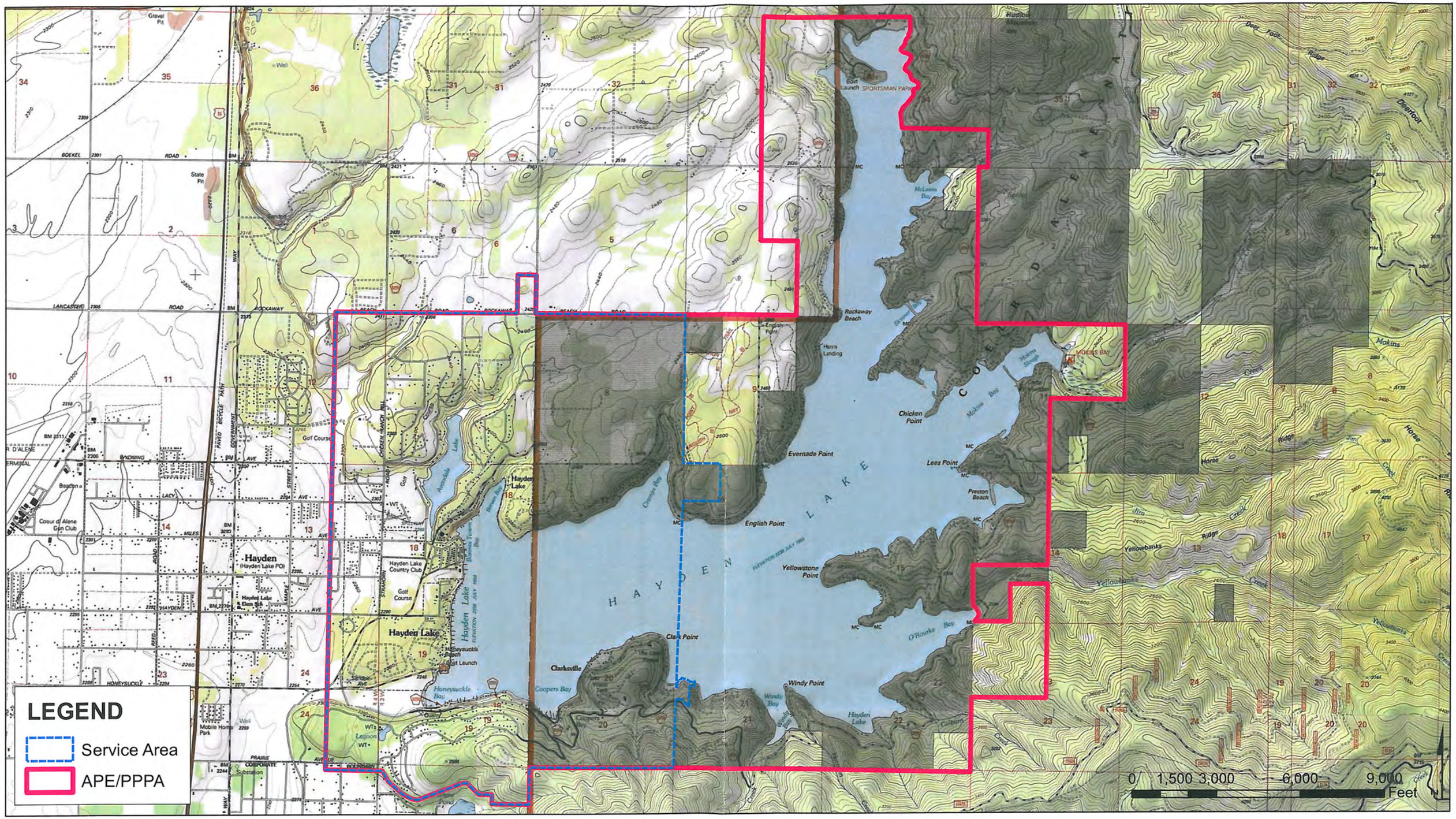

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Area Topography

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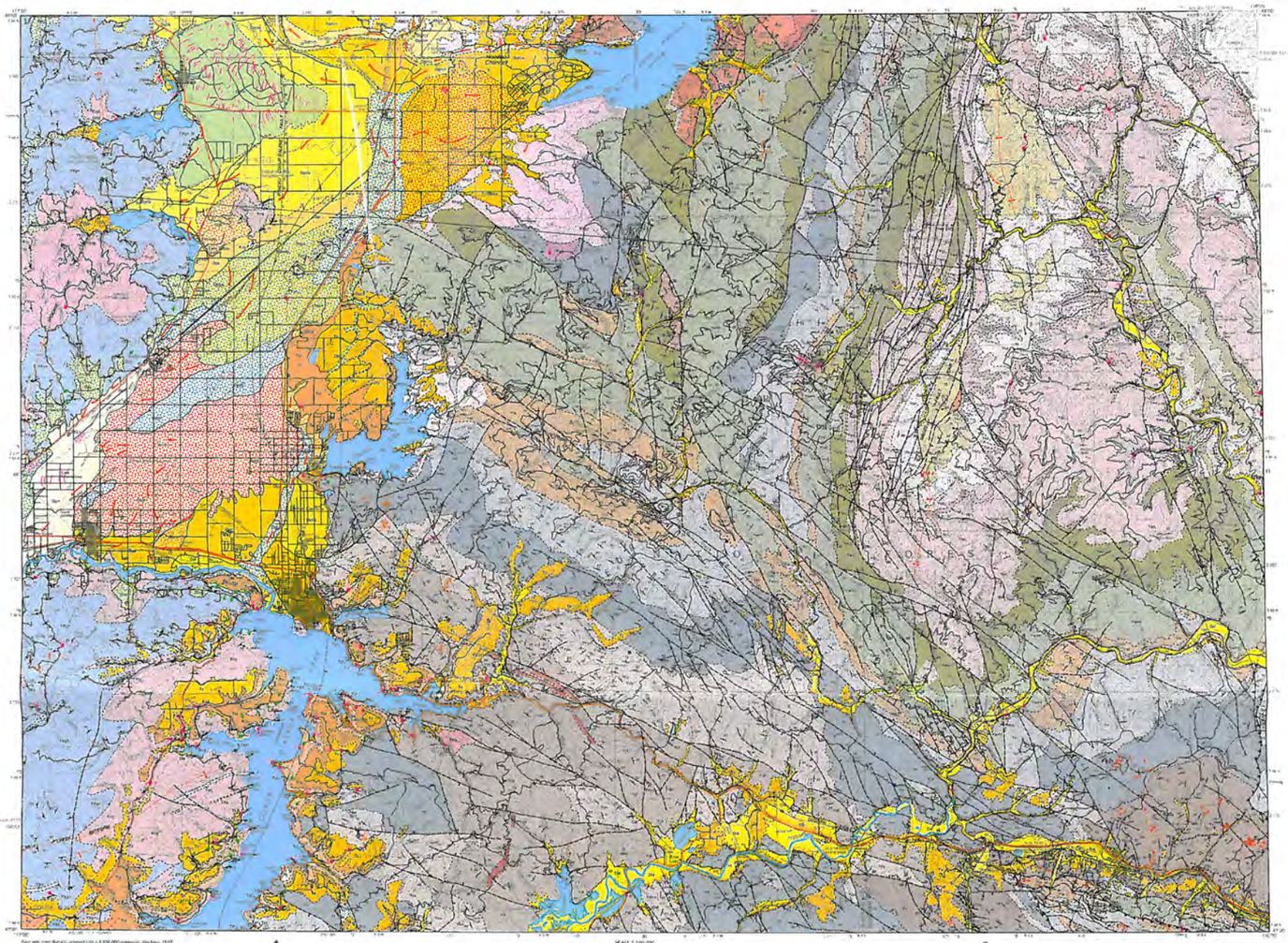
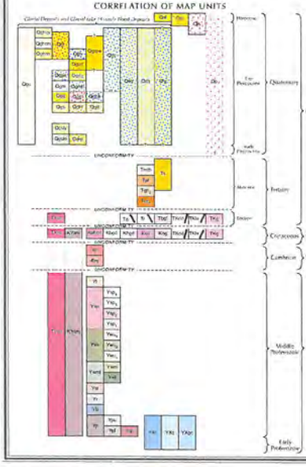


Prepared in cooperation with the U.S. Geological Survey

Geologic Map of the Coeur d'Alene 30 x 60 Minute Quadrangle, Idaho

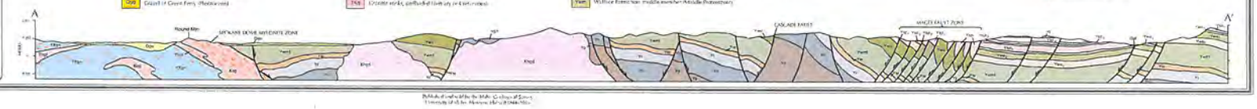
Compiled and mapped by
Reed S. Lewis, Russell F. Burmester, Roy M. Breckenridge, Mark D. McFaddan, and John D. Kauffman
2002

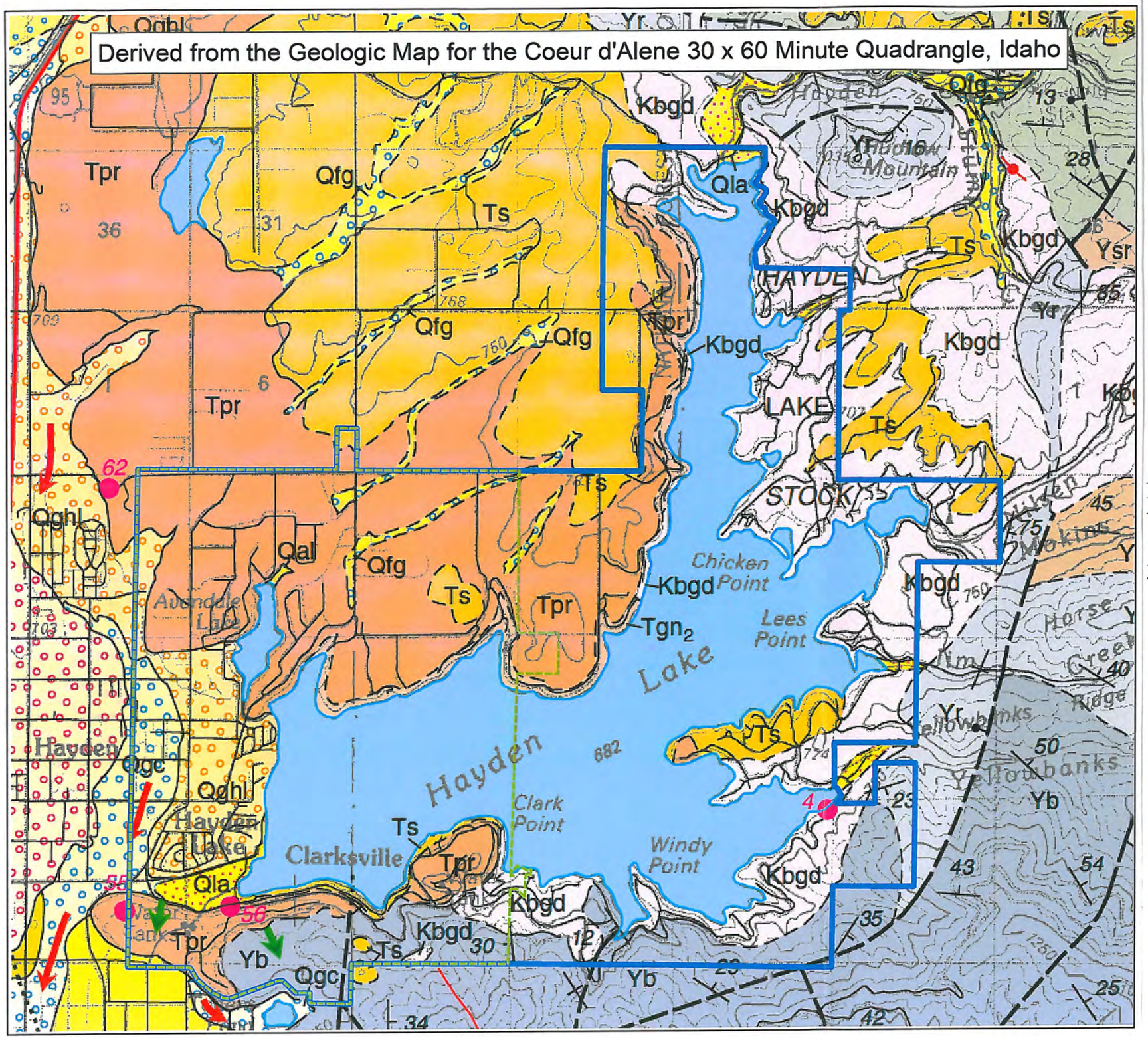
Correlation of Map Units



Map Units

Map Symbols





MAP UNITS

Unit descriptions in accompanying booklet

HOLOCENE DEPOSITS

- Qal — Alluvial deposits (Holocene)
- Qla — Lacustrine sediments and alluvium (Holocene)
- Qfg — Fluvial gravel (Pleistocene and Holocene)

CATASTROPHIC FLOOD DEPOSITS AND REWORKED OUTWASH

- Qgc — Channel gravel, undivided (Pleistocene)
- Qgdg — Gravel of Dalton Gardens fan (Pleistocene)
- Qgga — Gravel of Garwood (Pleistocene)
- Qggf — Gravel of Green Ferry, fan facies (Pleistocene)
- Qghl — Gravel of Hayden Lake (Pleistocene)

OLDER SEDIMENTS

- Ts — Sediment (Miocene)

COLUMBIA RIVER BASALT GROUP

Wanapum Formation

- Tpr — Priest Rapids Member (Miocene)

INTRUSIVE ROCKS

- Kbgd — Biotite granodiorite (Cretaceous)

BELT SUPERGROUP

- Ywml — Wallace Formation, middle and lower members, undivided (Middle Proterozoic)
- Yb — Burke Formation (Middle Proterozoic)

MAP SYMBOLS

- Contact; dashed where approximately located
- High-angle fault; dashed where approximately located; dotted where concealed
- Normal fault; dashed where approximately located; dotted where concealed; ball and bar on downthrown side
- Detachment fault; dashed where approximately located; dotted where concealed; hachures on downthrown side
- Strike-slip fault; dashed where approximately located; dotted where concealed
- Thrust fault; approximately located; dotted where concealed; teeth on upper plate; includes steep (reverse) faults
- Fold axis; dotted where concealed; arrow indicates plunge direction
- Syncline
- Anticline
- Overturned syncline
- Overturned anticline
- Strike and dip of compositional layering interpreted as bedding
- Strike of vertical bedding
- Horizontal bedding
- Strike and dip of bedding; ball indicates bedding known to be upright
- Overturned bedding
- Strike and dip of foliation
- Strike of vertical foliation
- Bearing and plunge of lineation, type unknown
- Bearing and plunge of mineral lineation
- Bearing and plunge of crenulation lineation
- Bearing and plunge of small fold axis
- Bearing and plunge of asymmetrical small fold showing counterclockwise rotation viewed down plunge
- Bearing and plunge of asymmetrical small fold showing clockwise rotation viewed down plunge
- Strike and dip of fracture cleavage
- Strike of vertical fracture cleavage
- Vein
- Sample location
- Giant current ripple field
- Abandoned channels of Glacial Lake Missoula floods drainageways
- Channels scoured in bedrock by Glacial Lake Missoula floods
- Mylonite (cross section only)

Service Area

APE/PPPA

Geologic Map of the Coeur d'Alene 30 X 60 Minute Quadrangle, Idaho

Compiled and Mapped by Reed S. Lewis, Russell F. Burmester, Roy M. Breckenridge, Mark D. McFaddan, and John D. Kauffman

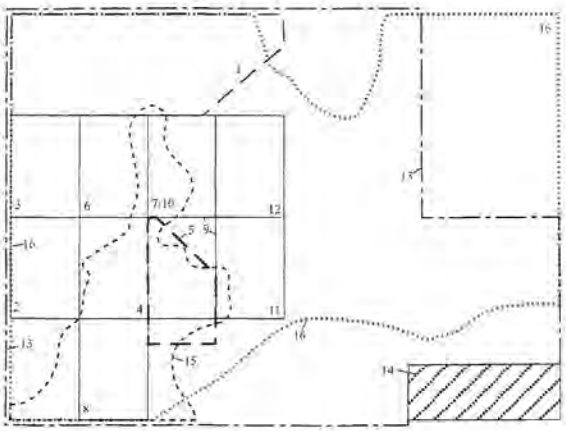
2002

INTRODUCTION

This compilation of the geology of the 1:100,000-scale Coeur d'Alene 30' x 60' quadrangle relied extensively on previous mapping. The principal sources were the seven unpublished 1:62,500-scale field maps used to prepare the 1:250,000-scale map of Griggs (1973). We supplemented Griggs' data with extensive field work in 1999, primarily in the northeast corner of the quadrangle. Basalt stratigraphy is based on the regional framework developed by Wright and others (1973) and Swanson and others (1979a, 1979b). Quaternary mapping in the Rathdrum Prairie area is based on our past unpublished and new work. The areal extent of the sources are shown on Figures 1 and 2. The geology of the Coeur d'Alene 1:100,000 quadrangle will also be published as a digital version in the Digital Data Series (see the Idaho Geological Survey's Web site: www.idahogeology.org).

The oldest and most abundant rocks in the Coeur d'Alene quadrangle are Precambrian (Figures 3 and 4). These include low-grade metasedimentary rocks of the Belt Supergroup and high-grade (amphibolite facies) metamorphic rocks whose protolith is either the Belt Supergroup or the basement rocks that predate the Belt metasedimentary rocks. The high-grade rocks are exposed in a metamorphic core complex in the western part of the map area (Priest River complex in Figure 4). Previously unmapped, deformed granitic rock (orthogneiss) of probable Cretaceous age is included in the core complex. Plutonic rocks of Cretaceous age are also present as intrusions within the low-grade Belt Supergroup. Relatively undeformed Eocene igneous rocks are exposed as plutons in the northwestern part of the map area and as a few rhyolite and dacite dikes in the central part. Flows of Miocene Columbia River basalt cover much of the western part of the quadrangle, although in places these flows are covered with Miocene sediments. Abundant Quaternary gravels in and near the Rathdrum Prairie were deposited by catastrophic floods derived from Glacial Lake Missoula.

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program.



1. R.M. Breckenridge, unpublished geologic mapping, 1995-1999
2. R.M. Breckenridge and K.L. Othberg, 1998a
3. R.M. Breckenridge and K.L. Othberg, 1998b
4. R.M. Breckenridge and K.L. Othberg, 1999a
5. R.M. Breckenridge and K.L. Othberg, 2000a
6. R.M. Breckenridge and K.L. Othberg, 1999b
7. R.M. Breckenridge and K.L. Othberg, 2000b
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13. A.B. Griggs, unpublished geologic maps of the Athol, Coeur d'Alene, Kellogg, Kingston, Lakeview, Laue, and Spirit Lake quadrangles, Idaho: U.S. Geological Survey Field Records Library, Denver, Colorado, scale 1:62,5000
14. S.W. Hobbs and others, 1965
15. J.D. Kauffman, R.M. Breckenridge, and K.L. Othberg, unpublished basalt mapping, 1998-1999
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Figure 1. *Previous mapping used as primary sources of data.*

River. Graded to the outlet of Pend Oreille Lake at Bayview at an elevation of 670 m (2,200 feet). Contains kettles from melted blocks of ice. Probably records overflow of the lake during the last phase of alpine glaciation in the region. Moraines of alpine valley glaciers in the Selkirk and Cabinet Mountains are still intact and postdate the retreat of Cordilleran ice from the southern end of the Purcell Trench. Postdates the last Cordilleran ice dam at Clark Fork about 12,000 years ago. Thickness as much as 18 m.

Qghcm—Gravel of Hoodoo channel, middle (late Pleistocene)—Poorly sorted very coarse boulder gravel with a granule and sand matrix; the gravel forms the middle terrace of Hoodoo channel and records the lowest elevation of flow through the Spirit Lake part of the Hoodoo channel. Graded to an elevation of 700 m (2,300 feet). Probably resulted from overflow of the Pend Oreille Lake basin during Cordilleran deglaciation of the Purcell Trench, or from a late ice-marginal and noncatastrophic drainage of Glacial Lake Missoula. Thickness as much as 30 m.

Qghco—Gravel of Hoodoo channel, older (late Pleistocene)—Poorly sorted, very coarse boulder gravel that forms the highest terrace of Hoodoo channel; graded to approximately 730 m (2,400 feet). Probably represents the last emptying cycle of a much diminished and shallow Glacial Lake Missoula. Thickness as much as 30 m.

Qgtow—Bouldery till and outwash deposits (late Pleistocene)—Nonsorted, bouldery clay till and boulder outwash deposits that form a modified end moraine at the south end of Lake Pend Oreille. Clay till recorded in well logs and exposed by excavations in Farragut State Park. Probably equivalent in age to the gravel of Farragut State Park and the distal facies of the oldest gravel of Hoodoo channel (*Qghco*). Thickness as much as 25 m.

CATASTROPHIC FLOOD DEPOSITS AND REWORKED OUTWASH

Qgu—Gravel, undivided (Pleistocene)—Shown only in cross section. Bouldery flood gravels of Rathdrum Prairie undivided for the purpose of the cross section. Fills a deep paleovalley between Round Mountain and Twin Lakes (Adema, 1999). Thickness as much as 180 m.

Qgf—Gravel of Farragut State Park (Pleistocene)—Poorly sorted, sandy boulder gravel at the Glacial Lake Missoula flood breakout from the south end of Lake Pend Oreille. Probably represents the last drainage from Glacial Lake Missoula and outwash from late Wisconsin glacial retreat. Includes reworked outwash facies from the bouldery till moraine (*Qgtow*) at the southern end of Lake Pend Oreille. Thickness from 10 to 30 m.

Qgc—Channel gravel, undivided (Pleistocene)—Latest Wisconsin catastrophic flood and outwash gravel and sand deposited in channelways cut into high energy fans and bars of Glacial Lake Missoula flood origin. Deposited during declining stages of last catastrophic flood event. The last overland flood event was post-"S" ash (13,000 years ago) and pre-Glacier Peak ash (11,200 years ago), perhaps 12,800 years ago (Stradling and Kiver, 1986). Moderately sorted and stratified in the lower flow regimes. The channels are commonly developed at the margin of the Rathdrum Prairie because the larger boulders armor the center of the flood path. Locally includes angular basalt columns derived from the basalt rimrock. Soil is gravelly loam of the Kootenai series (Weisel, 1981). Thickness from 3 to 12 m.

Qdg—Distal gravel deposits (Pleistocene)—Moderately sorted, sandy flood gravels. These deposits form eddy bars at the mouths of the tributary valleys to the Rathdrum Prairie. Lower energy eddy flows deposit finer facies behind the main bar form. May be mantled by post-Glacial Lake Missoula flood lacustrine silt and alluvial deposits. Thickness as much as 60 m.

Qds—Distal sand and silt deposits (Pleistocene)—Moderately sorted sand and silt with some gravel deposited in a lower energy, Glacial Lake Missoula flood regime; represents slack-water sediments in waning floodwaters or finer facies of pendant bar deposits. Includes planar medium-bedded sand of low flow regime. Overlain by postflood lacustrine silt and peat deposits in local basins. Thickness from 3 to 10 m.

Qgb—Gravel of Beck Road (Pleistocene)—Poorly sorted flood gravel graded to the lowest valley-filling episode of flooding continuous with the Spokane Valley, about 640 m (2,100 feet) at the Idaho-Washington state line. The gravel is associated with the most developed incision representing a large abandoned river channel meandering westward into Washington (Gerstel and Palmer, 1994). Two separate sets of thick-bedded foresets are exposed in deep gravel pits. Soil is very stony and includes the gravelly silt loam of the Garrison series (Weisel, 1981). Thickness in excess of 25 m.

Qgcd—Gravel of Coeur d'Alene (Pleistocene)—Mixed deposits of poorly to moderately sorted, stratified cobbly sand and sandy gravel carried by outburst floods and currents of reverse outflow from inundation of the Coeur d'Alene basin. Composes the deposits damming Coeur d'Alene Lake and forming giant current ripples on the lake bottom shown

silt loam and silt loam of the Kootenai-Rathdrum association mantled by loess and Mazama volcanic ash (Weisel, 1981). Thickness in excess of 30 m.

Qgrp—Gravel of Ross Point (Pleistocene)—Poorly to moderately sorted, coarse, stratified sandy gravel forms the highest preserved remnant flood terrace south of Spirit Lake at about 713 m (2,340 feet) in elevation. Represents the earliest of the flood deposits recognized in the area; may be equivalent to the gravel of Spirit Lake. Has the most soil development of all the Rathdrum Prairie gravel units: the gravelly and sandy silt loam of the Avonville series and the McGuire-Marble association (Weisel, 1981). Thickness in excess of 50 m.

OLDER SEDIMENTS

Ts—Sediment (Miocene)—Mostly deeply weathered yellow to orange silt and clay, but also quartzite pebbles and cobbles, and sand. Clasts derived primarily from the Belt Supergroup. Typical thickness is 5-15 m. Cobble and pebble gravels consist of mature, rounded quartzite and other rock types derived from the Precambrian Belt Supergroup and the Mesozoic-Tertiary intrusions. In the western part of the area, the unit forms a flat to gently sloping upland surface 730-790 m (2,400-2,600 feet) in elevation that is underlain by basalt of the Priest Rapids Member (Wanapum Basalt). The unit grades laterally into thick colluvium or residuum of pre-Tertiary rocks. These deposits are probably graded to high base levels formed when the Miocene plateau basalt flows blocked and diverted stream drainages (McDaniel and others, 1998). These basalt-related sediments are considered part of the Latah Formation. The age of the deposits in the eastern part of the area is unknown, and these deposits are not included in the Latah Formation. Unit includes clay-rich interbeds of sediment between flows of Columbia River Basalt Group exposed 2 km west of Coeur d'Alene. Most interbeds are too poorly exposed or too thin to show at map scale, so they are included in the basalt map units.

COLUMBIA RIVER BASALT GROUP

Saddle Mountains Formation(?)

Tmfb—Basalt of Mica Flats (Miocene)—Medium gray to dark gray, fine-grained basalt. Microphyric with abundant plagioclase laths and needles, typically < 1 mm in length; a few scattered plagioclase phenocrysts as laths as much as 4 mm in length, or as clear to waxy clots and clusters as much as 4 mm across. Diktytaxitic cavities common but irregularly distributed. Freshly broken surfaces commonly have a rough, irregular texture. Known only from outcrops along U.S. Highway 95 and in a small rock quarry west of the highway, just south of Mica, and in the Idaho Highway Department's quarry east of Mica. Stratigraphically above Priest Rapids Member (Rosalia chemical type) where exposed along the highway. Probably underlain there by an interbed containing quartzite pebbles and cobbles. Unit consists of one known flow having reverse magnetic polarity. The mean paleomagnetic direction for the basalt of Mica Flats is distinct from the mean direction for Priest Rapids' Rosalia flows from nearby locations. Chemically the unit is also distinct from Priest Rapids, as well as from other known Wanapum and Saddle Mountains Basalt chemical types. Because of its position above Priest Rapids (Rosalia chemical type), it is tentatively correlated with Saddle Mountains Basalt. Additionally, it does not appear to be time-correlative with younger Priest Rapids (Lolo chemical type), the uppermost Wanapum unit found farther to the south, because the paleomagnetic direction differs significantly from that of the Lolo unit. At least 12 m is exposed in the quarry east of Mica, although the base of the unit has not been uncovered.

Wanapum Formation

Tpr—Priest Rapids Member (Miocene)—Medium gray to dark gray basalt. Typically has a grainy, felty texture caused by abundant small plagioclase and olivine phenocrysts and by microvesicles and diktytaxitic cavities. The denser parts of the flows are dark gray to black and fine grained; they lack the grainy texture, although small plagioclase phenocrysts are apparent. Outcrops weather gray-brown to reddish brown. In thick flows, large, poorly defined basal columnar zones 3-6 m thick change upward to slabby, platy zones that are typically medium bluish gray on fresh surfaces. Above the platy zones, flows commonly have a thick blocky to hackly entablature, 15 m or more thick, and in places well-developed thin, vertical to radiating columns. The top of the entablature grades upward into an increasingly vesicular, rubbly in places, flow top. Thin flows are more vesicular throughout and generally have only weakly developed basal columns and a vesicular flow top. Pillow-palagonite complexes are locally common at the base of flows or flow units (series of chemically similar thin flows that grade laterally into a single flow). The Priest Rapids Member consists of one or more flows of Rosalia chemical type and has reverse magnetic polarity. Thicknesses of individual flow units range from 8 to 25 m for thin units and as much as 180 m for thick units.

Grande Ronde Formation

Tgn_2—Grande Ronde N_2 magnetostratigraphic unit

1940). K-Ar date on biotite is 83.8 Ma (recalculated from Miller and Engels, 1975).

Khgd—Hornblende-biotite granodiorite (Cretaceous)—Gray, medium-grained, hornblende-biotite granodiorite. Mafic mineral content varies, and unit probably is composed of multiple plutons or plutonic phases. Three typical samples contain 22-23 percent quartz, 41-43 percent plagioclase, 10-19 percent microcline, 11-13 percent biotite, and 6-15 percent hornblende (Gillson, 1927). A mafic marginal phase at Cape Horn east of Bayview contains 25 percent biotite and 5 percent hornblende (Gillson, 1927). Biotite is typically in thick euhedral books. Mafic phase mapped to the north as granodiorite of Salee Creek (Miller and others, 1999). Includes hornblende-bearing phases of the Kelso Lake pluton. Termed the Bayview batholith by Gillson, (1927) and Anderson (1940). A K-Ar date on biotite of 74.6 Ma (recalculated from Miller and Engels, 1975) is from the less mafic central part of the exposed pluton or plutons.

Kqd—Biotite-hornblende quartz diorite (Cretaceous)—Dark gray, equigranular, medium-grained quartz diorite. Rock contains about 13 percent quartz, 55 percent plagioclase, 15 percent biotite, 30 percent altered hornblende, and no potassium feldspar. Trace amounts of sphene, apatite, magnetite, and zircon; trace pyroxene in cores of hornblende. Appears to be a marginal phase to the *Khgd* unit. Extent is uncertain.

Kog—Orthogneiss (Cretaceous)—Gray, moderately to strongly foliated, moderately lineated biotite- and hornblende-biotite tonalite, granodiorite, granite, and quartz diorite. Muscovite bearing at the eastern edge of Round Mountain and magnetite-rich phase in roadcuts along U.S. Highway 95 near the mouth of Cougar Creek. Rocks mapped as *Kog* are heterogeneous and range in composition from granite to quartz diorite. Contains amphibolite bodies up to 100 m wide with contacts approximately parallel to foliation. Foliation is overprinted locally by s-c fabric (see Simpson and Schmid, 1983) with top-to-the-east sense of shear. Radiometric dates do not exist, but orthogneiss is considered to be Cretaceous based on similarities with deformed, approximately 94-Ma phases of the Cretaceous Idaho batholith near Lowell (Toth and Stacey, 1992) and to the Cretaceous Newman Lake orthogneiss exposed immediately west of the map area (Armstrong and others, 1987).

KYam—Amphibolite (Cretaceous or Proterozoic)—Black to dark gray, fine- to medium-grained, foliated to lineated hornblende-plagioclase meta-igneous rock. Present in schist considered by some workers as metamorphosed Prichard Formation (Griggs, 1973) and thus may be metamorphosed Proterozoic basaltic sills. However, those associated with *Kog* unit and those with relict pyroxene are probably Cretaceous.

PALEOZOIC ROCKS

Ꞓl—Lakeview Limestone (Cambrian)—Light to dark gray, thin- to thick-bedded, blocky limestone (Griggs, 1973). Includes blocky gray dolomite unit in upper part; contains some silty to sandy intervals and is metamorphosed to marble or hornfels adjacent to granitic intrusive rocks. Unit was mined for lime at Bayview (Savage, 1969). Thickness at least 2,000 feet (610 m), with the top eroded (Griggs, 1973).

Ꞓrg—Rennie Shale and Gold Creek Quartzite (Cambrian)—Rennie Shale is a fissile olive-colored fossiliferous shale, about 30 m (100 feet) thick, that is poorly exposed (Griggs, 1973). Underlying the shale is white to pale pink, vitreous coarse-grained quartzite. Contains some pebble conglomerate at its base. Thickness according to Griggs (1973) is about 500 feet (152 m).

BELT SUPERGROUP

Yl—Libby Formation (Middle Proterozoic)—Dark gray argillite and light gray to green siltite, green and red siltite, pink, fine-grained quartzite, and minor chert. Nonresistant and poorly exposed. Lower part is predominantly dark gray argillite and lighter-colored siltite. Coarsens upward into siltite and quartzite that contain dark green chert as thin beds and rounded clasts. Upper part eroded, but at least 200 m remain.

Ysp—Striped Peak Formation, undivided (Middle Proterozoic)—Quartzite and interbedded siltite and argillite. Probably consists largely (or entirely?) of Ysp_1. Shown only where lack of mapping prevented subdivision.

Ysp_4—Striped Peak Formation, member four (Middle Proterozoic)—Light gray to red, fine- to medium-grained arkosic quartzite and interbedded siltite and argillite. Characterized by 30- to 40-cm-thick tabular beds of flat-laminated, pink quartzite with red argillite caps and wavy laminated green siltite-green argillite in zones 10-30 cm thick. Less common are centimeter-scale-thick "apple green" argillite-siltite beds, and 1- to 2-m-thick beds of pink quartzite that locally contain large-scale, tangential cross-stratification. Thickest quartzite beds and quartzite with medium-grained sand lag deposits are present low in the unit. Mudchips are common throughout, as are conspicuous detrital muscovite flakes. Quartzite contains less potassium feldspar and more plagioclase (as much as 20 percent) than is present to the south (Lewis and others, 2000) and southeast (Lewis, 1998).

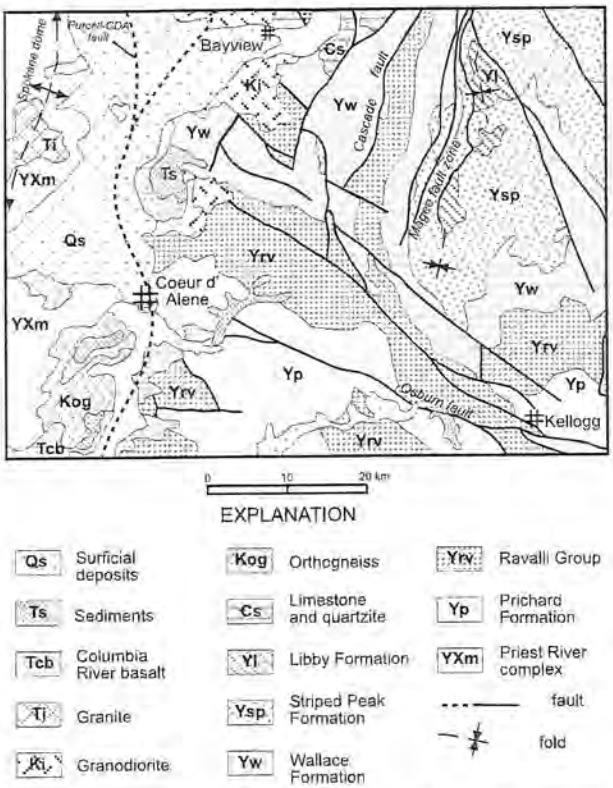

Figure 4. *Simplified geologic map of the Coeur d'Alene 30'x 60' quadrangle.*

Red chert clasts were noted at one quartzite locality on the ridge east of Calamity Creek in the northeast corner of the map area. Below this quartzite at this locality is a 20-cm-thick ash(?) bed with no internal structure and a conchoidal fracture pattern. Base of Ysp_4 is drawn at the lowest appearance of 20- to 30-cm-thick tabular light green quartzite. Upper contact is the lowest appearance of dark gray argillite and gray siltite of *Yl*. Equivalent to uppermost Striped Peak Formation (quartzite member of Harrison and Jobin, 1963) near Clark Fork and to the Bonner Quartzite (Nelson and Dobell, 1961) present in the Missoula area (Figure 3). Thickness approximately 280 m in the northeastern part of the area.

Ysp_3—Striped Peak Formation, member three (Middle Proterozoic)—Rusty weathering, wavy laminated, dark gray siltite and dark gray to black argillite, and lesser amounts of gray to greenish gray quartzite in thin beds as much as 10-cm thick. Totally black argillite is rare. Thin, dark gray argillite chips occur sparsely within some 10-cm-thick, dark gray argillite layers. Unit is equivalent to member six of the Mount Shields Formation (Figure 3) described to the northeast in the Kalispell quadrangle (Harrison and others, 1992) and to the laminated argillite and siltite member of the Striped Peak Formation in the Clark Fork area (Harrison and Jobin, 1963). Thickness approximately 120 m in the northeastern part of the area.

Ysp_2—Striped Peak Formation, member two (Middle Proterozoic)—Tan-weathering, white stromatolitic dolomite and tan-weathering, green dolomitic siltite. The dolomitic siltite is low in the unit and grades upward from carbonate-free siltite and argillite of Ysp_1. Unit weathers recessively, forming benches. Distinctive "boxwork" weathering pattern formed by resistant, millimeter-scale-thick vertical and horizontal siliceous stringers. Algal mats typically flat, rarely as scattered, low algal domes. Rare 5- to 10-cm-thick layers of ooids. This carbonate interval is mapped as the dolomite member of the Striped Peak Formation to the north near Clark Fork (Harrison and Jobin, 1963) and as members four (green dolomitic siltite) and five (boxwork dolomite) of the Mount Shields Formation (Figure 3) to the northeast in the Kalispell quadrangle (Harrison and others, 1992). Thickness approximately 100 m in the northeastern part of the area.

Ysp_1—Striped Peak Formation, member one (Middle Proterozoic)—Pale purplish red, fine-grained, flat-laminated quartzite and green and red argillite and siltite. Equivalent to the argillite, siltite, and quartzite member of the Striped Peak Formation near Clark Fork (Harrison and Jobin, 1963) and to the lower three members of the Mount Shields Formation to the northeast (Harrison and others, 1992). Lowest part (Mt. Shields member 1 equivalent; Figure 3) is characterized by fine- to very fine-grained, pink, flat-laminated quartzite in beds 20-30 cm thick, capped by red argillite layers as much as 3 cm thick. Mudcracks, mudchips, and ripple marks common. Uncommon 20-cm-thick beds of pale green quartzite are present near the base.

Middle part (Mt. Shields member 2 equivalent) is characterized by flat-laminated 0.5- to 1.0-m-thick beds of fine- to medium-grained quartzite that form 15- to 30-m-thick cliffs with blocky talus. Diffuse brown wisps of carbonate in the quartzite average a few centimeters in thickness and 10-15 cm in length. Uppermost part of this quartzite is medium grained and distinctly coarser than all other quartzite in the area except the thin sand lags in the Ysp_4 unit. Thin red argillite drapes at the tops of the quartzite beds are commonly rippled. Mudcracks and mudchips are less common than in the underlying interval. Flat-laminated to low domal stromatolites occur both near the base and at the top of this quartzite interval. The stromatolites are interbedded with centimeter-scale-thick calcitic white quartzite and locally with layers as much as 20 cm thick of cross-stratified ooids. Salt casts increase in abundance

noncalcareous white quartzite. A green dolomitic siltite and argillite interval may also be present, but it was only observed east of the map area. Alternatively, the green interval might represent the upper part of the lower member. Vertical calcite ribbons, horizontal pods, and molar tooth structures are common in some siltites over 20 cm thick. White quartzite also occurs as hummocky cross-stratified planar beds 15-30 cm thick. Quartzite contains 5-13 percent potassium feldspar and approximately 15-20 percent plagioclase. Characterized by graded beds (couplets and couples) that have the pinch and swell sediment type of Winston (1986) in which scours and loads of quartzite cut or deform the tops of subjacent black argillite. Argillite caps commonly contain ptygmatically folded siltite- or quartzite-filled cracks that taper downward. On bedding plane surfaces, the cracks are generally discontinuous and sinuous, occurring as isolated "birdsfoot" cracks, short parallel cracks, or radial cracks around loads. Relatively thin interval of green, dolomitic siltite and argillite that closely resembles the lower member may be present in the lower third of the unit. Equivalent to the middle member of Wallace as mapped by Harrison and others (1986). Mapped as part of the lower Wallace by Griggs (1973). Thickness highly uncertain but about 1,000 m.

Ywl—Wallace Formation, lower member (Middle Proterozoic)—Massive green siltite and thinly laminated green siltite-argillite couplets with varied amounts of carbonate (dolomite) and recessive-weathering calcite pods. Subdivided only in a few localities. Best exposed east of the area at the mouth of Shoshone Creek, where an orange-weathering dolomitic siltite appears to be at the top of the unit. Equivalent to the lower member of Wallace as mapped by Harrison and others (1986). Thickness highly uncertain but about 200 m.

Ysr—St. Regis Formation (Middle Proterozoic)—Pale purple to gray siltite, argillite, and quartzite. Also, light green siltite and darker green argillite or dark green siltite and light green argillite couplets. Typically mudcracked, 1-cm-thick siltite-argillite couplets but with thin (2-5 cm) and rarer thick (10-20 cm), tabular, fine-grained quartzite beds with green argillite caps similar to those of the Revett Formation. Abundant mudchips. Thickness about 250 m.

Yr—Revett Formation (Middle Proterozoic)—Quartzite with siltite and argillite. Characteristically 20-cm- to rare 1-m-thick beds of fine-grained to rare medium-grained quartzite. Some vitreous; most feldspathic with orange-brown spots. Feldspar is mostly potassium feldspar in the central and eastern part of the area (12-20 percent; 3 percent plagioclase), but two samples from the southwestern part contain subequal amounts of plagioclase and potassium feldspar. Rippled tops and ripple cross lamination more common than trough cross lamination; much is flat laminated. Thickness about 600 m.

Yb—Burke Formation (Middle Proterozoic)—Siltite and quartzite. Pale green siltite in 10- to 20-cm-thick beds, typically with macroscopic magnetite octahedra and darker green argillite partings. Includes some flat-laminated, fine-grained, gray to white quartzite in scattered beds and zones. Includes hornfelsed siltite and quartzite in the South Chilco Mountain area south of Lake Pend Oreille (Griggs, 1973) that may alternatively be a downdropped block of the Striped Peak Formation. Thickness uncertain but about 1,000 m.

Yp—Prichard Formation, undivided (Middle Proterozoic)—Gray, rusty-weathering siltite and minor quartzite. Minor discontinuous carbonate layers. Rare mudcracks. Shown where the lack of mapping or poor exposure prevents subdivision. See Hobbs and others (1965), Griggs (1973), or Cressman (1989) for more detail.

Ypu—Prichard Formation, upper part (Middle Proterozoic)—Map unit of Griggs (1973) described as dark to medium gray, very thinly bedded argillite commonly interlaminated with light gray siltite and also containing some thicker siltite beds. Grades upward into an interbedded and interzoned argillite, siltite, and quartzite sequence. Upper contact placed at highest dark gray argillite by Browne (2000a), similar to mapping by Griggs (1973), but ASARCO geologists placed contact lower than these two workers (at first light-colored quartzitic interval; Larry Appelgate, written commun., 1998). Total thickness is 2,500-3,500 feet (760-1070 m) according to Griggs (1973).

Ypl—Prichard Formation, lower part (Middle Proterozoic)—Map unit of Griggs (1973) described as predominantly medium to light gray, thin- and evenly bedded siltite, and laminated in part; some argillite laminae and beds. Some beds or zones of gray to white quartzite have been subdivided locally (*Yqp* unit). Thickness according to Griggs (1973) 7,500+ feet (2,290+ m); base not exposed.

Yqp—Quartzite of the Prichard Formation (Middle Proterozoic)—Nearly white to light gray impure to pure quartzite mapped by Hobbs and others (1965) in the southeast part of the area. Individual quartzite zones probably as much as 50 m thick are discontinuous laterally.

BELT SUPERGROUP OR PRE-BELT METAMORPHIC ROCKS

High-grade (amphibolite facies) metasedimentary rocks in

Cretaceous and refer to them as thrust faults regardless of present dip. An example is the Alhambra fault south of Kellogg. During this time, rocks in the western part of the area were deformed at deeper levels and acquired a foliation (S_2 of Rehrig and others, 1987) as well as a lineation defined by sillimanite.

Magmatism in the Cretaceous affected the western half of the quadrangle (Figure 4). The Hayden Lake stock and similar rocks to the north were intruded into the Belt Supergroup. These plutonic rocks lack significant fabric and presumably were emplaced at relatively shallow crustal levels or after much of the deformation in the area. Biotite K-Ar dates of 75 Ma and 83 Ma provide minimum emplacement ages. Even less certain are the ages of some of the other intrusive rock units (*TKdd*, *TKla*, *TKg*, *TYqd*). The greatest uncertainty is for quartz diorite dikes (*TYqd*) that were previously assigned to the Proterozoic and thought to represent sills in the Prichard Formation (Griggs, 1973). Some may indeed be Proterozoic, but because many tend to be discordant to bedding and are concentrated in areas of faulting, a Cretaceous or Eocene age seems more likely.

Orthogneiss southwest of Coeur d'Alene (*Kog*) formed from plutons that resided at deeper crustal levels than the Hayden Lake stock and related rocks. The Cretaceous age is suggested because chemically and mineralogically the orthogneiss more closely resembles the Na- and Ca-rich Idaho batholith than the K-rich Proterozoic orthogneiss in the region. Widespread K-Ar cooling ages of 46-52 Ma (Miller and Engels, 1975; Harms and Price, 1992; Doughty and Price, 1999) indicate that this orthogneiss and the surrounding amphibolite facies metasedimentary rocks of the Priest River metamorphic complex were brought to near-surface levels during the Eocene. The timing details and the role that the Purcell-Coeur d'Alene detachment fault played in this unroofing event are still being debated.

Most of the mylonites in the footwall of the Purcell-Coeur d'Alene fault may have formed during late Cretaceous compressional strain before the intrusion of the fine-grained biotite granite of Rathdrum Mountain (*Tbgf*) at about 52 Ma (Rhodes and Hyndman, 1984, 1988; Rhodes and others, 1989; Doughty and Price, 1999). Of the three foliations in the area, only the latest may have formed or been superimposed upon earlier fabrics during down-to-the-east faulting along the Purcell-Coeur d'Alene fault in the Eocene (Rehrig and others, 1987). The mylonitic fabric in the footwall of the fault has kinematic indicators that show top-to-the-east motion. This mylonitic fabric was later folded into the Spokane dome (Rhodes and Hyndman, 1984) contemporaneously with uplift.

Doughty and Price (1999) have suggested that there is a relatively steep normal fault within the Purcell Trench to the north that cuts the Spokane dome mylonite zone. One is likely to be present in the Coeur d'Alene area as well. We speculate that a relatively steep normal fault extends from north of Athol south through Coeur d'Alene Lake. It appears to intersect (and cut) the Purcell-Coeur d'Alene fault southeast of Round Mountain but is entirely covered by surficial deposits. Alternatively, the Purcell-Coeur d'Alene fault may extend the entire length of the map area and not be offset by a younger fault. The trace of the northern extension of the Purcell-Coeur d'Alene fault from Athol north to Sandpoint is uncertain, partly because of cover by glacial deposits and partly because the exposed bedrock is largely granitic rocks that have little or no fabric. We show the Purcell-Coeur d'Alene fault (mylonite zone) continuing due north from Round Mountain more or less where McCarthy and others (1993) suggested it might be located. Alternatively, it may continue as a steeper structure north of Athol.

Extension in the central and eastern part of the quadrangle was probably localized along north-northeast-striking faults such as the Cascade fault. Both the steep bedding and some faults in the Magee fault zone probably originated during contractional deformation, but the present configuration appears strongly dependent on down-to-the-west normal faulting. West-northwest faults such as the Osburn fault are thought to have had right-lateral strike-slip motion at this time and served to transfer the extension from the area of the Priest River metamorphic complex eastward into Montana (Sheriff and others, 1984; Rehrig and others, 1987). Movement on the Purcell-Coeur d'Alene fault had ended by Miocene time (about 16 Ma) when drainages in the area were invaded by Columbia River basalt. No offset of basalt is apparent across the fault. The Columbia River basalt disrupted drainages in the area and established a new base level. Drainage systems that previously had transported sediment out of the area now deposited their sediment at the margins of the basalt flows, or upstream from them. These sediments (*Ts*) are widespread in the region south of the map area.

During the Pleistocene, a lobe of the Cordilleran ice sheet moved south down the Purcell Trench from Canada into northern Idaho. Glacial Lake Missoula was formed when this lobe blocked the Clark Fork drainage near its mouth into Lake Pend Oreille. At its maximum, the lake was over 610 m (2,000 feet) deep against the ice dam. Repeated failures and re-formations of the Clark Fork ice dams resulted in catastrophic outbursts of as much as 2,000 cubic km (500 cubic miles) of water flowing across northern Idaho and into the Channeled Scabland of Washington (Waitt,

a result consistent with those of previous workers (e.g., Harrison and Grimes, 1970; Harrison and Hamilton, 1971). Concentrations of Sr are higher in the siltite-argillite and siltite samples of the Prichard Formation (111 and 76 ppm) relative to other noncarbonate-bearing siltite or argillite samples in the Belt (58 ppm or less). This distinction was originally noted by Jack Harrison (written commun., 1991). Copper concentrations are 44 ppm or less in all samples, with the exception of 99RL251, an argillite-siltite from the lower part of the Libby Formation that contains 148 ppm Cu. Zinc concentrations exceed 100 ppm in only two samples (99RL279 and 98RL052), both from the Prichard Formation. Concentrations of K_2O are highest (greater than 4 percent) in the argillite-siltite samples from the Prichard, St. Regis, lower Wallace, and Striped Peak Formations. K_2O content of siltite-argillite in the middle and upper members of the Wallace and in the Libby Formation ranges more widely (2.6 to 5.4 percent K_2O). Carbonate-bearing samples have low total oxides because CO_2 was not analyzed. These carbonate-bearing rocks also have low K_2O concentrations (0.8-3.8 percent) relative to the noncarbonate rocks and, as expected, high CaO concentrations. Quartzite samples have lower K_2O concentrations (1.4 to 3.8 percent) as a result of the high quartz sand content in these rocks. Sample 98RL176 is from the "lower green marker" in the Sunshine Mine and has an unusually high silica content (80.35%).

Seven samples of metasedimentary gneiss and schist from the Priest River metamorphic complex (units *YXgn* and *YXs*) have an expected moderate range in chemical composition. The most schistose sample (99RL244) also has the lowest SiO_2 content (62 percent) and the highest Al_2O_3 content (23 percent). This sample is from just south of the map area. Metasedimentary rocks from the Priest River metamorphic complex are compositionally similar in many respects to the Belt Supergroup. However, they typically have higher Sr concentrations (all but one sample exceed 143 ppm). This may be a metamorphic effect, as Sr is known to increase with increasing metamorphic grade in this region (Harrison and Hamilton, 1971). Alternatively, all or some of the metasedimentary rocks of the Priest River complex may predate the Belt Supergroup, as discussed in the previous section. All of the analyses of Columbia River basalt (Table 3) match well with previously published results (Griggs, 1978; Swanson and others, 1979b; Wright and others, 1973, 1979, 1980). Significant differences exist in both major and trace element contents of the different units, but variations within the units are small. One important result was from an analysis of samples collected on Mica Flat southwest of Coeur d'Alene. These samples are from a previously unknown flow with a chemical composition unlike that of the underlying Priest Rapids member.

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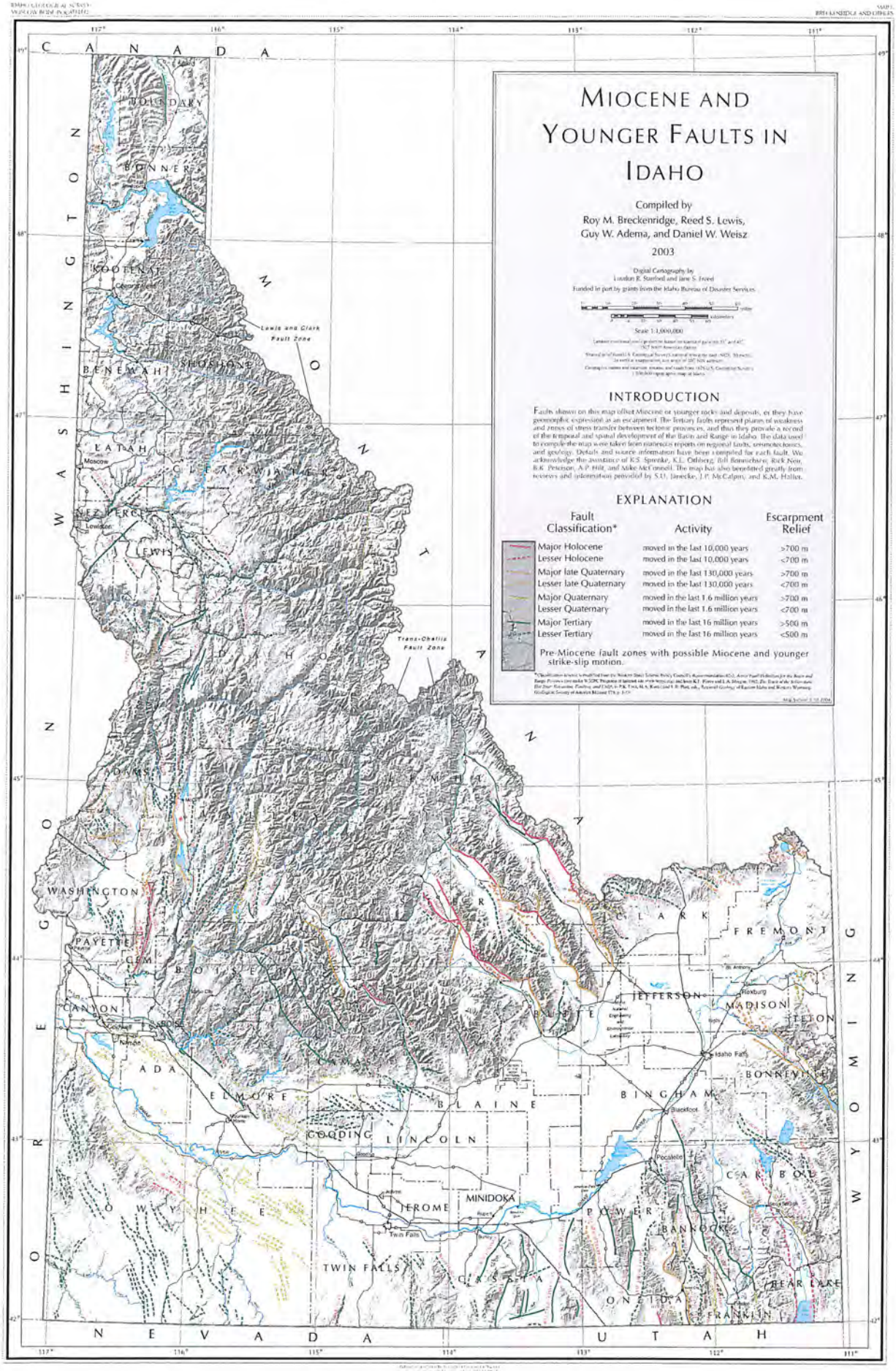
MIOCENE AND YOUNGER FAULTS IN IDAHO
Compiled by
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2003
Digital Cartography by
Landon E. Stanford and Jane S. Freed
Funded in part by grants from the Idaho Bureau of Disaster Services
Scale 1:1,000,000
INTRODUCTION
Faults shown on this map offset Miocene or younger rocks and deposits, or they have geomorphic expression as an escarpment. The Tertiary faults represent planes of weakness and zones of stress transfer between tectonic processes, and thus they provide a record of the temporal and spatial development of the Basin and Range in Idaho. The data used to compile the map were taken from numerous reports on regional faults, seismotectonics, and geology. Details and source information have been compiled for each fault. We acknowledge the assistance of K.S. Sprenke, K.L. Otnberg, Bill Bonnichsen, Rick Nein, R.K. Petersen, A.P. Hill, and Mike McConnell. The map has also benefitted greatly from reviews and information provided by S.U. Janecke, J.P. McCalpin, and K.M. Haller.
EXPLANATION
Fault Classification*
Activity
Escarpment Relief
Major Holocene moved in the last 10,000 years >700 m
Lesser Holocene moved in the last 10,000 years <700 m
Major late Quaternary moved in the last 130,000 years >700 m
Lesser late Quaternary moved in the last 130,000 years <700 m
Major Quaternary moved in the last 1.6 million years >700 m
Lesser Quaternary moved in the last 1.6 million years <700 m
Major Tertiary moved in the last 16 million years >500 m
Lesser Tertiary moved in the last 16 million years <500 m
Pre-Miocene fault zones with possible Miocene and younger strike-slip motion.
CANADA
WASHINGTON
MONTANA
IDAHO
OREGON
WYOMING
NEVADA
UTAH
BOUNDARY
BONNER
KOOTENAI
Coeur d'Alene
Lewis and Clark Fault Zone
BENEWAH
SHOSHONE
LATAH
Moscow
CLEARWATER
NEZ PERCE
Lewiston
LEWIS
Trans-Challis Fault Zone
ADAMS
VALLEY
WASHINGTON
PAYETTE
GEM
BOISE
CANYON
Nampa
ADA
ELMORE
Mountain Home
BLAINE
GOODING
LINCOLN
JEROME
MINIDOKA
Twin Falls
TWIN FALLS
CASSIA
OWYHEE
POWER
BANNOCK
ONEIDA
FRANKLIN
BEAR LAKE
CLARK
FREMONT
JEFFERSON
Rexburg
MADISON
TETON
Idaho Falls
BONNEVILLE
BINGHAM
Blackfoot
Pocatello
CAMAS
BUTTE
117°
116°
115°
114°
113°
112°
111°
49°
48°
47°
46°
45°
44°
43°
42°

Soil Map—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

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

- Gully
- Short Steep Slope
- Other

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:32,600 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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

Idaho Panhandle National Forest, Idaho (ID670)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.			
Subtotals for Soil Survey Area		—	—
Totals for Area of Interest		**4,760.9**	**100.0%**

Kootenai County Area, Idaho (ID606)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
103	Avonville fine gravelly silt loam, 0 to 7 percent slopes	361.5	7.6%
104	Avonville fine gravelly silt loam, 7 to 20 percent slopes	25.7	0.5%
105	Blinn loam, 5 to 35 percent slopes, very stony	135.7	2.9%
107	Bonner silt loam, 0 to 8 percent slopes	366.8	7.7%
108	Bonner gravelly silt loam, 0 to 8 percent slopes	12.2	0.3%
121	Pits, gravel	2.2	0.0%
126	Kootenai gravelly silt loam, 0 to 7 percent slopes	213.9	4.5%
136	Lacy-Bobbitt association, 5 to 35 percent slopes, very stony	95.3	2.0%
137	Lacy-Bobbitt association, 35 to 65 percent slopes, very stony	48.9	1.0%
148	McCrosket-Tekoa association, 35 to 65 percent slopes	1.4	0.0%
149	McGuire-Marble association, 0 to 7 percent slopes	261.8	5.5%
153	Mokins silt loam, 35 to 65 percent slopes	61.9	1.3%
158	Potlatch silt loam	14.3	0.3%
160	Ramsdell silt loam	44.6	0.9%
163	Rock outcrop	64.8	1.4%
164	Rubson-Mokins complex, 0 to 20 percent slopes	342.1	7.2%
191	Tekoa gravelly silt loam, 35 to 65 percent slopes	244.3	5.1%
205	Water	480.6	10.1%
Subtotals for Soil Survey Area		**2,777.9**	**58.3%**
Totals for Area of Interest		**4,760.9**	**100.0%**

Kootenai County Area, Idaho

103—Avonville fine gravelly silt loam, 0 to 7 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,400 feet
Mean annual precipitation: 22 to 26 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 140 to 150 days

Map Unit Composition

Avonville and similar soils: 70 percent

Description of Avonville

Setting

Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash

Properties and qualities

Slope: 0 to 7 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability (nonirrigated): 3s

Typical profile

0 to 16 inches: Fine gravelly ashy silt loam
16 to 25 inches: Very gravelly silt loam
25 to 37 inches: Extremely gravelly sandy loam
37 to 60 inches: Extremely gravelly sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

104—Avonville fine gravelly silt loam, 7 to 20 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,400 feet
Mean annual precipitation: 22 to 26 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 140 to 150 days

Map Unit Composition

Avonville and similar soils: 75 percent

Description of Avonville

Setting

Landform: Outwash terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash

Properties and qualities

Slope: 7 to 20 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability (nonirrigated): 4e

Typical profile

0 to 16 inches: Fine gravelly ashy silt loam
16 to 25 inches: Very gravelly silt loam
25 to 37 inches: Extremely gravelly sandy loam
37 to 60 inches: Extremely gravelly sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

105—Blinn loam, 5 to 35 percent slopes, very stony

Map Unit Setting

Elevation: 2,100 to 3,200 feet
Mean annual precipitation: 25 to 28 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 90 to 110 days

Map Unit Composition

Blinn, very stony surface, and similar soils: 85 percent

Description of Blinn, Very Stony Surface

Setting

Landform: Escarpments
Landform position (two-dimensional): Backslope, footslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over bedrock derived from basalt

Properties and qualities

Slope: 5 to 35 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loam
11 to 23 inches: Stony loam
23 to 32 inches: Extremely stony loam

32 to 42 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

107—Bonner silt loam, 0 to 8 percent slopes

Map Unit Setting

Elevation: 2,000 to 3,000 feet
Mean annual precipitation: 25 to 35 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 120 days

Map Unit Composition

Bonner and similar soils: 85 percent

Description of Bonner

Setting

Landform: Outwash terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/ninebark (CN506)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 10 inches: Ashy silt loam
10 to 20 inches: Gravelly silt loam
20 to 28 inches: Gravelly sandy loam

28 to 62 inches: Very gravelly loamy sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

108—Bonner gravelly silt loam, 0 to 8 percent slopes

Map Unit Setting

Elevation: 2,000 to 3,000 feet
Mean annual precipitation: 25 to 35 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 120 days

Map Unit Composition

Bonner and similar soils: 90 percent

Description of Bonner

Setting

Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/ninebark (CN506)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 10 inches: Gravelly ashy silt loam
10 to 20 inches: Gravelly silt loam
20 to 28 inches: Gravelly sandy loam

28 to 62 inches: Very gravelly loamy sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

121—Pits, gravel

Map Unit Composition

Pits, gravel: 100 percent

Description of Pits, Gravel

Interpretive groups

Land capability (nonirrigated): 8

Typical profile

0 to 60 inches: Gravel, cobbles

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

126—Kootenai gravelly silt loam, 0 to 7 percent slopes

Map Unit Setting

Elevation: 2,100 to 2,700 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 120 days

Map Unit Composition

Kootenai and similar soils: 75 percent

Description of Kootenai

Setting

Landform: Outwash terraces, moraines
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash derived from granite and/or gneiss and/or schist

Properties and qualities

Slope: 0 to 7 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability (nonirrigated): 4s
Other vegetative classification: Douglas-fir/common snowberry (CN310)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 8 inches: Gravelly silt loam
8 to 24 inches: Gravelly silt loam
24 to 28 inches: Very gravelly loam

28 to 62 inches: Extremely gravelly coarse sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

136—Lacy-Bobbitt association, 5 to 35 percent slopes, very stony

Map Unit Setting

Elevation: 1,500 to 3,200 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Lacy, very stony surface, and similar soils: 55 percent
Bobbitt, very stony surface, and similar soils: 35 percent

Description of Lacy, Very Stony Surface

Setting

Landform: Canyons, escarpments
Landform position (two-dimensional): Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess and/or colluvium over bedrock derived from basalt

Properties and qualities

Slope: 5 to 35 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 8 inches: Gravelly loam
8 to 15 inches: Stony clay loam
15 to 20 inches: Extremely stony clay loam
20 to 30 inches: Bedrock

Description of Bobbitt, Very Stony Surface

Setting

Landform: Mountain slopes, escarpments
Down-slope shape: Concave

Across-slope shape: Linear
Parent material: Volcanic ash and/or loess over colluvium over bedrock derived from basalt

Properties and qualities

Slope: 5 to 35 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Other vegetative classification: Douglas-fir/common snowberry (CN310)

Typical profile

0 to 1 inches: Moderately decomposed plant material
1 to 11 inches: Stony loam
11 to 36 inches: Very stony clay loam
36 to 46 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

137—Lacy-Bobbitt association, 35 to 65 percent slopes, very stony

Map Unit Setting

Elevation: 1,500 to 3,200 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Lacy, very stony surface, and similar soils: 55 percent
Bobbitt, very stony surface, and similar soils: 35 percent

Description of Lacy, Very Stony Surface

Setting

Landform: Canyons, escarpments
Landform position (two-dimensional): Backslope, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess and/or colluvium over bedrock derived from basalt

Properties and qualities

Slope: 35 to 65 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 8 inches: Gravelly loam
8 to 15 inches: Stony clay loam
15 to 20 inches: Extremely stony clay loam
20 to 30 inches: Bedrock

Description of Bobbitt, Very Stony Surface

Setting

Landform: Mountain slopes, escarpments
Down-slope shape: Concave

Across-slope shape: Linear
Parent material: Volcanic ash and/or loess over colluvium over bedrock derived from basalt

Properties and qualities

Slope: 35 to 65 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: Douglas-fir/common snowberry (CN310)

Typical profile

0 to 1 inches: Moderately decomposed plant material
1 to 11 inches: Stony loam
11 to 36 inches: Very stony clay loam
36 to 46 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

148—McCrosket-Tekoa association, 35 to 65 percent slopes

Map Unit Setting

Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 90 to 140 days

Map Unit Composition

Mccrosket and similar soils: 60 percent
Tekoa and similar soils: 35 percent

Description of Mccrosket

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Volcanic ash and/or loess over residuum weathered from metasedimentary rock

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 10 inches: Gravelly silt loam
10 to 48 inches: Extremely cobbly silt loam
48 to 58 inches: Bedrock

Description of Tekoa

Setting

Landform: Mountains, ridges
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Volcanic ash and loess over residuum weathered from quartzite

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 9 inches: Gravelly silt loam
9 to 16 inches: Very gravelly silt loam
16 to 32 inches: Very gravelly silt loam
32 to 42 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

149—McGuire-Marble association, 0 to 7 percent slopes

Map Unit Setting

Elevation: 1,500 to 2,500 feet
Mean annual precipitation: 15 to 26 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 110 to 150 days

Map Unit Composition

Mcguire and similar soils: 60 percent
Marble and similar soils: 30 percent

Description of Mcguire

Setting

Landform: Outwash terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Volcanic ash and loess over outwash

Properties and qualities

Slope: 0 to 7 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Other vegetative classification: ponderosa pine/common snowberry (CN170)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 9 inches: Gravelly sandy loam
9 to 23 inches: Very gravelly sandy loam
23 to 27 inches: Extremely gravelly coarse sandy loam
27 to 61 inches: Extremely gravelly coarse sand

Description of Marble

Setting

Landform: Outwash terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Reworked sandy outwash

Properties and qualities

Slope: 0 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 3 inches: Moderately decomposed plant material
3 to 9 inches: Sandy loam
9 to 63 inches: Loamy sand

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

153—Mokins silt loam, 35 to 65 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 100 days

Map Unit Composition

Mokins and similar soils: 90 percent

Description of Mokins

Setting

Landform: Lake terraces, escarpments
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Volcanic ash and loess over lacustrine deposits

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Silt loam
8 to 16 inches: Gravelly silt loam
16 to 22 inches: Silt loam
22 to 62 inches: Silty clay

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

158—Potlatch silt loam

Map Unit Setting

Elevation: 2,100 to 3,000 feet
Mean annual precipitation: 24 to 35 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 60 to 110 days

Map Unit Composition

Potlatch and similar soils: 80 percent
Minor components: 10 percent

Description of Potlatch

Setting

Landform: Stream terraces, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability (nonirrigated): 5w

Typical profile

0 to 4 inches: Silt loam
4 to 12 inches: Silt loam
12 to 22 inches: Silt loam
22 to 44 inches: Silty clay
44 to 60 inches: Silty clay loam

Minor Components

Porrett

Percent of map unit: 5 percent
Landform: Flood plains

Seelovers

Percent of map unit: 5 percent
Landform: Flood plains

Other vegetative classification: western redcedar/devil's club (CN550)

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

160—Ramsdell silt loam

Map Unit Setting

Elevation: 2,100 to 2,800 feet
Mean annual precipitation: 20 to 35 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 80 to 130 days

Map Unit Composition

Ramsdell and similar soils: 90 percent
Minor components: 10 percent

Description of Ramsdell

Setting

Landform: Flood plains, stream terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: High (about 9.7 inches)

Interpretive groups

Land capability (nonirrigated): 5w
Other vegetative classification: western redcedar/devil's club (CN550)

Typical profile

0 to 8 inches: Ashy silt loam
8 to 15 inches: Silt loam
15 to 60 inches: Silt loam

Minor Components

Cougarbay

Percent of map unit: 5 percent
Landform: Flood plains

Pywell

Percent of map unit: 5 percent

Landform: Flood plains

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

163—Rock outcrop

Map Unit Composition

Rock outcrop: 100 percent

Description of Rock Outcrop

Properties and qualities

Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability (nonirrigated): 8

Typical profile

0 to 60 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

164—Rubson-Mokins complex, 0 to 20 percent slopes

Map Unit Setting

Elevation: 2,100 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 135 days

Map Unit Composition

Rubson and similar soils: 55 percent
Mokins and similar soils: 35 percent

Description of Rubson

Setting

Landform: Terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and/or loess over glaciolacustrine deposits

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.1 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Other vegetative classification: western hemlock/oakfern (CN565)

Typical profile

0 to 6 inches: Silt loam
6 to 16 inches: Silt loam
16 to 60 inches: Silt loam

Description of Mokins

Setting

Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Volcanic ash and loess over lacustrine deposits

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change

Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Silt loam
8 to 16 inches: Gravelly silt loam
16 to 22 inches: Silt loam
22 to 62 inches: Silty clay

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

191—Tekoa gravelly silt loam, 35 to 65 percent slopes

Map Unit Setting

Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Tekoa and similar soils: 90 percent

Description of Tekoa

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Volcanic ash and loess over residuum weathered from quartzite

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 9 inches: Gravelly silt loam
9 to 16 inches: Very gravelly silt loam
16 to 32 inches: Very gravelly silt loam

32 to 42 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

205—Water

Map Unit Composition

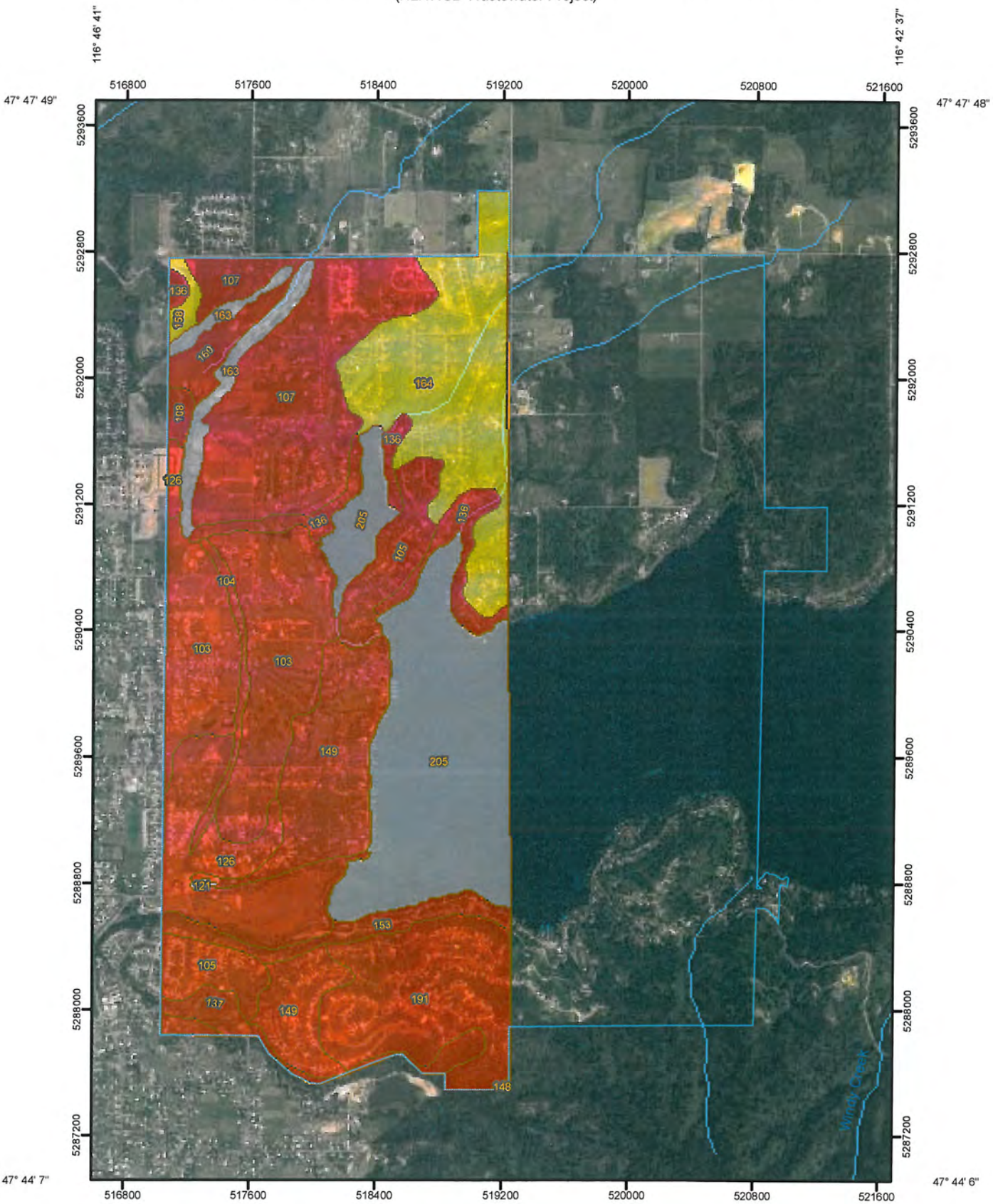
Water: 100 percent

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Shallow Excavations—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



Map Scale: 1:32,600 if printed on A size (8.5" x 11") sheet.

116° 46' 42"

116° 42' 38"

N

Meters: 0 300 600 1,200 1,800

Feet: 0 1,000 2,000 4,000 6,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Very limited

Somewhat limited

Not limited

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:32,600 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

Shallow Excavations

Shallow Excavations— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.						
Subtotals for Soil Survey Area					**—**	**—**
Totals for Area of Interest					**4,760.9**	**100.0%**

Shallow Excavations— Summary by Map Unit — Kootenai County Area, Idaho (ID606)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
103	Avonville fine gravelly silt loam, 0 to 7 percent slopes	Very limited	Avonville (70%)	Unstable excavation walls (1.00)	361.5	7.6%
104	Avonville fine gravelly silt loam, 7 to 20 percent slopes	Very limited	Avonville (75%)	Unstable excavation walls (1.00)	25.7	0.5%
				Slope (0.96)		
105	Blinn loam, 5 to 35 percent slopes, very stony	Very limited	Blinn, very stony surface (85%)	Depth to hard bedrock (1.00)	135.7	2.9%
				Slope (1.00)		
				Large stones (0.37)		
				Unstable excavation walls (0.10)		
107	Bonner silt loam, 0 to 8 percent slopes	Very limited	Bonner (85%)	Unstable excavation walls (1.00)	366.8	7.7%
108	Bonner gravelly silt loam, 0 to 8 percent slopes	Very limited	Bonner (90%)	Unstable excavation walls (1.00)	12.2	0.3%
121	Pits, gravel	Not rated	Pits, gravel (100%)		2.2	0.0%
126	Kootenai gravelly silt loam, 0 to 7 percent slopes	Very limited	Kootenai (75%)	Unstable excavation walls (1.00)	213.9	4.5%
136	Lacy-Bobbitt association, 5 to 35 percent slopes, very stony	Very limited	Lacy, very stony surface (55%)	Depth to hard bedrock (1.00)	95.3	2.0%
				Slope (1.00)		
				Unstable excavation walls (0.10)		
				Large stones (0.03)		
			Bobbitt, very stony surface (35%)	Depth to hard bedrock (1.00)		
				Slope (1.00)		
				Large stones (0.25)		
				Unstable excavation walls (0.10)		

Shallow Excavations— Summary by Map Unit — Kootenai County Area, Idaho (ID606)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
137	Lacy-Bobbitt association, 35 to 65 percent slopes, very stony	Very limited	Lacy, very stony surface (55%)	Depth to hard bedrock (1.00)	48.9	1.0%
				Slope (1.00)		
				Unstable excavation walls (0.10)		
				Large stones (0.03)		
			Bobbitt, very stony surface (35%)	Depth to hard bedrock (1.00)		
				Slope (1.00)		
				Large stones (0.25)		
				Unstable excavation walls (0.10)		
148	McCrosket-Tekoa association, 35 to 65 percent slopes	Very limited	McCrosket (60%)	Slope (1.00)	1.4	0.0%
				Unstable excavation walls (0.10)		
			Tekoa (35%)	Slope (1.00)		
				Unstable excavation walls (1.00)		
				Depth to soft bedrock (0.46)		
149	McGuire-Marble association, 0 to 7 percent slopes	Very limited	McGuire (60%)	Unstable excavation walls (1.00)	261.8	5.5%
			Marble (30%)	Unstable excavation walls (1.00)		
153	Mokins silt loam, 35 to 65 percent slopes	Very limited	Mokins (90%)	Slope (1.00)	61.9	1.3%
				Depth to saturated zone (1.00)		
				Unstable excavation walls (0.10)		
				Too clayey (0.03)		
158	Potlatch silt loam	Somewhat limited	Potlatch (80%)	Depth to saturated zone (1.00)	14.3	0.3%
				Flooding (0.80)		
				Unstable excavation walls (0.10)		
				Too clayey (0.03)		

Shallow Excavations— Summary by Map Unit — Kootenai County Area, Idaho (ID606)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
160	Ramsdell silt loam	Very limited	Ramsdell (90%)	Depth to saturated zone (1.00)	44.6	0.9%
				Flooding (0.80)		
				Unstable excavation walls (0.10)		
			Cougarbay (5%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (1.00)		
				Flooding (0.80)		
			Pywell (5%)	Depth to saturated zone (1.00)		
				Organic matter content (1.00)		
				Flooding (0.80)		
163	Rock outcrop	Not rated	Rock outcrop (100%)		64.8	1.4%
164	Rubson-Mokins complex, 0 to 20 percent slopes	Somewhat limited	Rubson (55%)	Slope (0.16)	342.1	7.2%
				Unstable excavation walls (0.10)		
191	Tekoa gravelly silt loam, 35 to 65 percent slopes	Very limited	Tekoa (90%)	Slope (1.00)	244.3	5.1%
				Unstable excavation walls (1.00)		
				Depth to soft bedrock (0.46)		
205	Water	Not rated	Water (100%)		480.6	10.1%
Subtotals for Soil Survey Area					**2,777.9**	**58.3%**
Totals for Area of Interest					**4,760.9**	**100.0%**

Shallow Excavations— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	1,873.9	39.4%
Somewhat limited	356.4	7.5%
Null or Not Rated	547.7	11.5%
Totals for Area of Interest	**4,760.9**	**100.0%**

Description

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

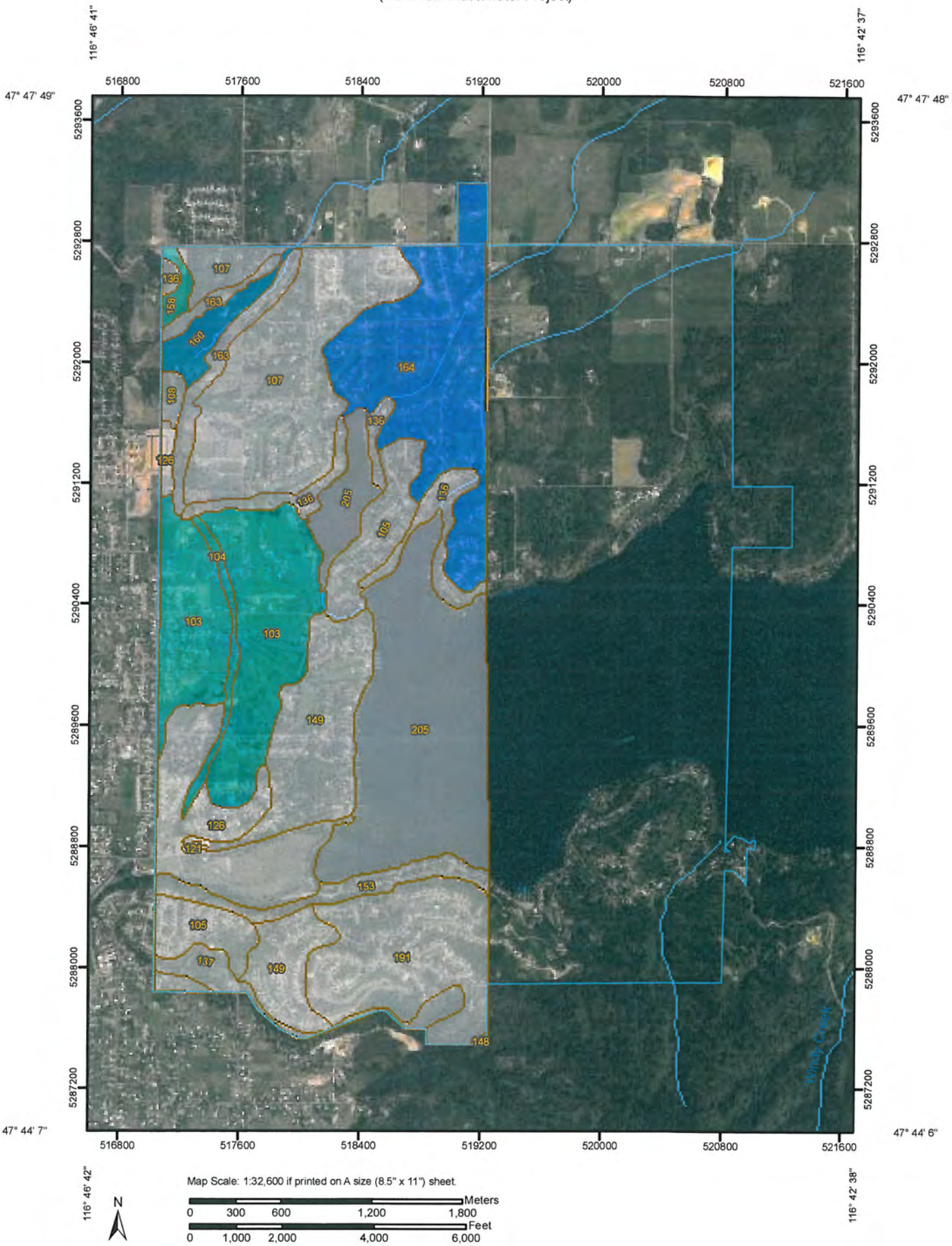
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

K Factor, Whole Soil—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

.02

.05

.10

.15

.17

.20

.24

.28

.32

.37

.43

.49

.55

.64

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:32,600 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.				
Subtotals for Soil Survey Area			**—**	**—**
Totals for Area of Interest			**4,760.9**	**100.0%**

K Factor, Whole Soil— Summary by Map Unit — Kootenai County Area, Idaho (ID606)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
103	Avonville fine gravelly silt loam, 0 to 7 percent slopes	.32	361.5	7.6%
104	Avonville fine gravelly silt loam, 7 to 20 percent slopes	.32	25.7	0.5%
105	Blinn loam, 5 to 35 percent slopes, very stony		135.7	2.9%
107	Bonner silt loam, 0 to 8 percent slopes		366.8	7.7%
108	Bonner gravelly silt loam, 0 to 8 percent slopes		12.2	0.3%
121	Pits, gravel		2.2	0.0%
126	Kootenai gravelly silt loam, 0 to 7 percent slopes		213.9	4.5%
136	Lacy-Bobbitt association, 5 to 35 percent slopes, very stony		95.3	2.0%
137	Lacy-Bobbitt association, 35 to 65 percent slopes, very stony		48.9	1.0%
148	McCrosket-Tekoa association, 35 to 65 percent slopes		1.4	0.0%
149	McGuire-Marble association, 0 to 7 percent slopes		261.8	5.5%
153	Mokins silt loam, 35 to 65 percent slopes		61.9	1.3%
158	Potlatch silt loam	.32	14.3	0.3%
160	Ramsdell silt loam	.43	44.6	0.9%
163	Rock outcrop		64.8	1.4%
164	Rubson-Mokins complex, 0 to 20 percent slopes	.49	342.1	7.2%
191	Tekoa gravelly silt loam, 35 to 65 percent slopes		244.3	5.1%
205	Water		480.6	10.1%
Subtotals for Soil Survey Area			**2,777.9**	**58.3%**
Totals for Area of Interest			**4,760.9**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

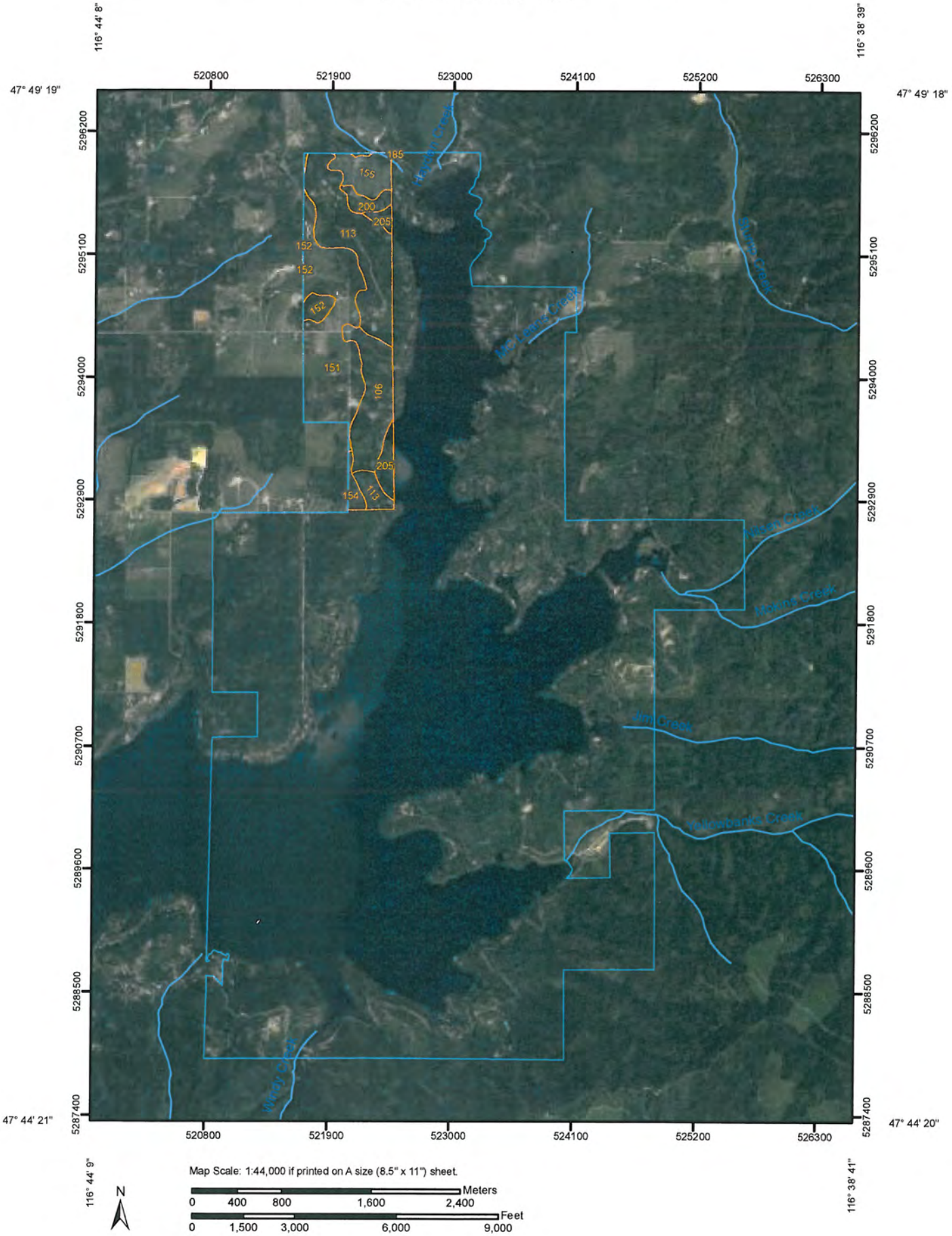
Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options: Surface Layer

Soil Map—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

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

- Gully
- Short Steep Slope
- Other

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:44,000 if printed on A size (8.5" × 11") sheet.

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

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Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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

Idaho Panhandle National Forest, Idaho (ID670)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.			
Subtotals for Soil Survey Area		—	—
Totals for Area of Interest		**6,252.1**	**100.0%**

Kootenai County Area, Idaho (ID606)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
106	Blinn loam, 35 to 65 percent slopes, very stony	90.4	1.4%
113	Chatcolet cobbly loam, 25 to 65 percent slopes	165.4	2.6%
151	Mokins silt loam, 5 to 20 percent slopes	192.8	3.1%
152	Mokins silt loam, 20 to 35 percent slopes	14.6	0.2%
154	Mokins-Chatcolet complex, 5 to 20 percent slopes	11.2	0.2%
155	Moscow loam, 5 to 35 percent slopes	41.8	0.7%
185	Spokane-Moscow association, 35 to 65 percent slopes	0.0	0.0%
200	Vassar-Rock outcrop complex, 20 to 55 percent slopes	16.1	0.3%
205	Water	25.7	0.4%
Subtotals for Soil Survey Area		**557.8**	**8.9%**
Totals for Area of Interest		**6,252.1**	**100.0%**

Kootenai County Area, Idaho

106—Blinn loam, 35 to 65 percent slopes, very stony

Map Unit Setting

Elevation: 2,100 to 3,200 feet
Mean annual precipitation: 25 to 28 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 90 to 110 days

Map Unit Composition

Blinn, very stony surface, and similar soils: 90 percent

Description of Blinn, Very Stony Surface

Setting

Landform: Escarpments
Landform position (two-dimensional): Backslope, footslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over bedrock derived from basalt

Properties and qualities

Slope: 35 to 65 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loam
11 to 23 inches: Stony loam
23 to 32 inches: Extremely stony loam

32 to 42 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

113—Chatcolet cobbly loam, 25 to 65 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 37 to 43 degrees F
Frost-free period: 70 to 90 days

Map Unit Composition

Chatcolet and similar soils: 85 percent

Description of Chatcolet

Setting

Landform: Lake terraces
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Volcanic ash and/or loess over glaciolacustrine deposits and/or lacustrine deposits

Properties and qualities

Slope: 25 to 65 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.7 inches)

Interpretive groups

Other vegetative classification: western redcedar/ladyfern (CN540)

Typical profile

0 to 8 inches: Cobbly loam
8 to 17 inches: Cobbly loam
17 to 60 inches: Silty clay loam

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

151—Mokins silt loam, 5 to 20 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 100 days

Map Unit Composition

Mokins and similar soils: 80 percent

Description of Mokins

Setting

Landform: Lake terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over lacustrine deposits

Properties and qualities

Slope: 5 to 20 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Silt loam
8 to 16 inches: Gravelly silt loam
16 to 22 inches: Silt loam
22 to 62 inches: Silty clay

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

152—Mokins silt loam, 20 to 35 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 100 days

Map Unit Composition

Mokins and similar soils: 85 percent

Description of Mokins

Setting

Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Volcanic ash and loess over lacustrine deposits

Properties and qualities

Slope: 20 to 35 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Silt loam
8 to 16 inches: Gravelly silt loam
16 to 22 inches: Silt loam
22 to 62 inches: Silty clay

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

154—Mokins-Chatcolet complex, 5 to 20 percent slopes

Map Unit Setting

Elevation: 2,200 to 2,800 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 70 to 100 days

Map Unit Composition

Mokins and similar soils: 55 percent
Chatcolet and similar soils: 35 percent

Description of Mokins

Setting

Landform: Lake terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Volcanic ash and loess over lacustrine deposits

Properties and qualities

Slope: 5 to 20 percent
Depth to restrictive feature: 20 to 40 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Silt loam
8 to 16 inches: Gravelly silt loam
16 to 22 inches: Silt loam
22 to 62 inches: Silty clay

Description of Chatcolet

Setting

Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Volcanic ash and/or loess over glaciolacustrine deposits and/or lacustrine deposits

Properties and qualities

Slope: 5 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.7 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Other vegetative classification: western redcedar/ladyfern (CN540)

Typical profile

0 to 8 inches: Cobbly loam
8 to 17 inches: Cobbly loam
17 to 60 inches: Silty clay loam

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

155—Moscow loam, 5 to 35 percent slopes

Map Unit Setting

Elevation: 2,200 to 5,000 feet
Mean annual precipitation: 18 to 30 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 120 days

Map Unit Composition

Moscow and similar soils: 80 percent

Description of Moscow

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over residuum weathered from schist and/or gneiss and/or granite

Properties and qualities

Slope: 5 to 35 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 3 inches: Moderately decomposed plant material
3 to 4 inches: Ashy loam
4 to 26 inches: Loam
26 to 29 inches: Gravelly sandy loam
29 to 39 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

185—Spokane-Moscow association, 35 to 65 percent slopes

Map Unit Setting

Elevation: 1,800 to 5,000 feet
Mean annual precipitation: 15 to 30 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 80 to 140 days

Map Unit Composition

Spokane and similar soils: 45 percent
Moscow and similar soils: 35 percent

Description of Spokane

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over residuum weathered from granite and/or gneiss and/or schist

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.5 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: Douglas-fir/common snowberry (CN310)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 9 inches: Ashy loam
9 to 28 inches: Gravelly loam
28 to 38 inches: Bedrock

Description of Moscow

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Volcanic ash and loess over residuum weathered from schist and/or gneiss and/or granite

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 3 inches: Moderately decomposed plant material
3 to 4 inches: Ashy loam
4 to 26 inches: Loam
26 to 29 inches: Gravelly sandy loam
29 to 39 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Kootenai County Area, Idaho

200—Vassar-Rock outcrop complex, 20 to 55 percent slopes

Map Unit Setting

Elevation: 2,500 to 5,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 50 to 110 days

Map Unit Composition

Vassar and similar soils: 55 percent
Rock outcrop: 35 percent

Description of Vassar

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Volcanic ash over residuum weathered from granite and/or gneiss and/or schist

Properties and qualities

Slope: 20 to 55 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Other vegetative classification: western redcedar/queencup beadlily (CN530)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 2 inches: Moderately decomposed plant material
2 to 22 inches: Ashy silt loam
22 to 62 inches: Coarse sandy loam

Description of Rock Outcrop

Properties and qualities

Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability (nonirrigated): 8s

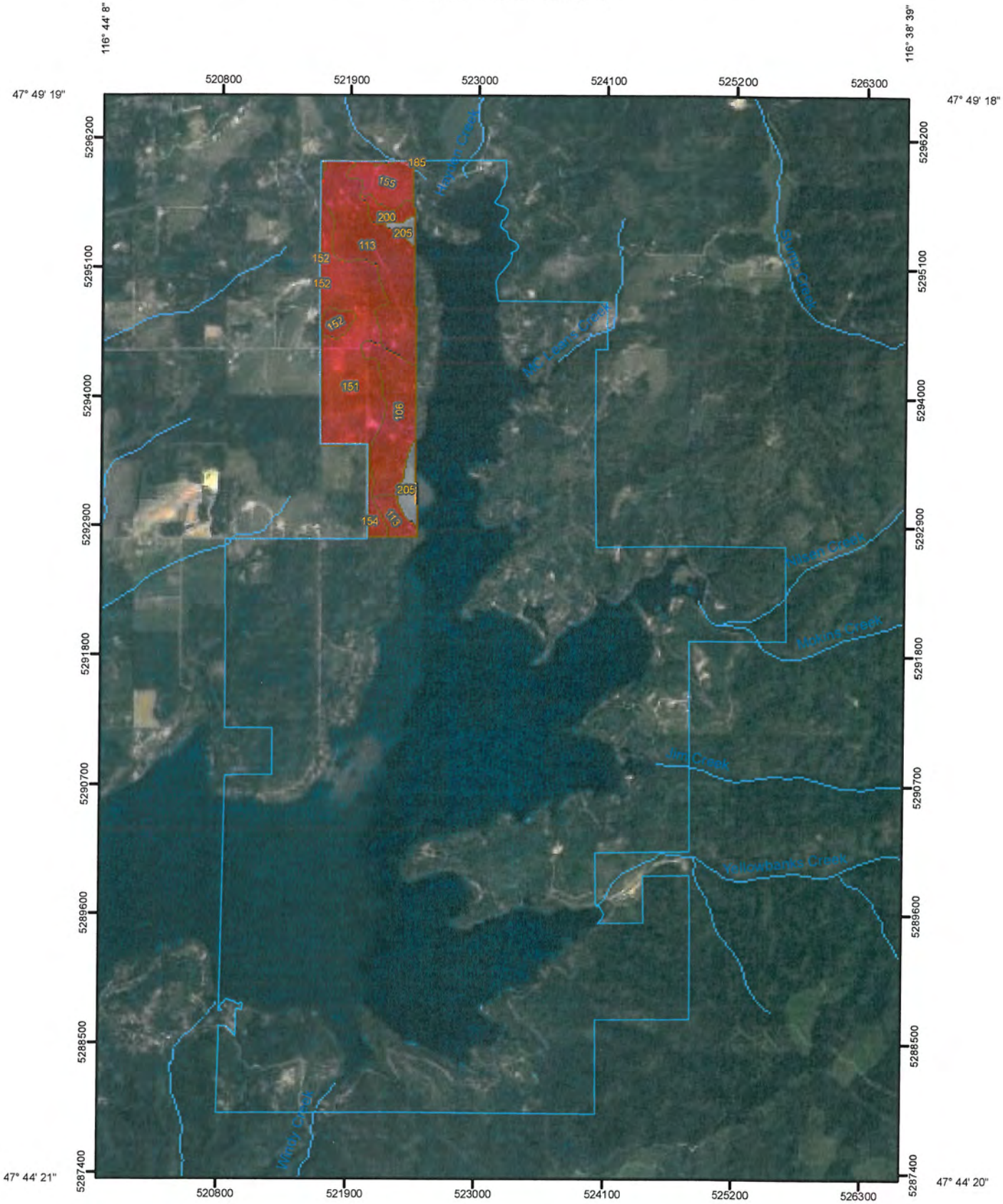
Typical profile
0 to 60 inches: Bedrock

Data Source Information

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Version 0, Jan 1, 0001

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

Shallow Excavations—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



Map Scale: 1:44,000 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 400 800 1,600 2,400

Feet: 0 1,500 3,000 6,000 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Very limited

Somewhat limited

Not limited

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:44,000 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

Shallow Excavations

Shallow Excavations— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.						
Subtotals for Soil Survey Area					—	—
Totals for Area of Interest					**6,252.1**	**100.0%**

Shallow Excavations— Summary by Map Unit — Kootenai County Area, Idaho (ID606)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
106	Blinn loam, 35 to 65 percent slopes, very stony	Very limited	Blinn, very stony surface (90%)	Depth to hard bedrock (1.00)	90.4	1.4%
				Slope (1.00)		
				Large stones (0.37)		
				Unstable excavation walls (0.10)		
113	Chatcolet cobbly loam, 25 to 65 percent slopes	Very limited	Chatcolet (85%)	Slope (1.00)	165.4	2.6%
				Unstable excavation walls (0.10)		
151	Mokins silt loam, 5 to 20 percent slopes	Very limited	Mokins (80%)	Depth to saturated zone (1.00)	192.8	3.1%
				Slope (0.84)		
				Unstable excavation walls (0.10)		
				Too clayey (0.03)		
152	Mokins silt loam, 20 to 35 percent slopes	Very limited	Mokins (85%)	Slope (1.00)	14.6	0.2%
				Depth to saturated zone (1.00)		
				Unstable excavation walls (0.10)		
				Too clayey (0.03)		
154	Mokins-Chatcolet complex, 5 to 20 percent slopes	Very limited	Mokins (55%)	Depth to saturated zone (1.00)	11.2	0.2%
				Slope (0.84)		
				Unstable excavation walls (0.10)		
				Too clayey (0.03)		
155	Moscow loam, 5 to 35 percent slopes	Very limited	Moscow (80%)	Unstable excavation walls (1.00)	41.8	0.7%
				Slope (1.00)		
				Depth to soft bedrock (0.79)		

Shallow Excavations— Summary by Map Unit — Kootenai County Area, Idaho (ID606)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
185	Spokane-Moscow association, 35 to 65 percent slopes	Very limited	Spokane (45%)	Slope (1.00)	0.0	0.0%
				Unstable excavation walls (1.00)		
				Depth to soft bedrock (0.71)		
			Moscow (35%)	Slope (1.00)		
				Unstable excavation walls (1.00)		
				Depth to soft bedrock (0.79)		
200	Vassar-Rock outcrop complex, 20 to 55 percent slopes	Very limited	Vassar (55%)	Slope (1.00)	16.1	0.3%
				Unstable excavation walls (0.10)		
205	Water	Not rated	Water (100%)		25.7	0.4%
Subtotals for Soil Survey Area					**557.8**	**8.9%**
Totals for Area of Interest					**6,252.1**	**100.0%**

Shallow Excavations— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	532.2	8.5%
Null or Not Rated	25.7	0.4%
Totals for Area of Interest	**6,252.1**	**100.0%**

Description

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

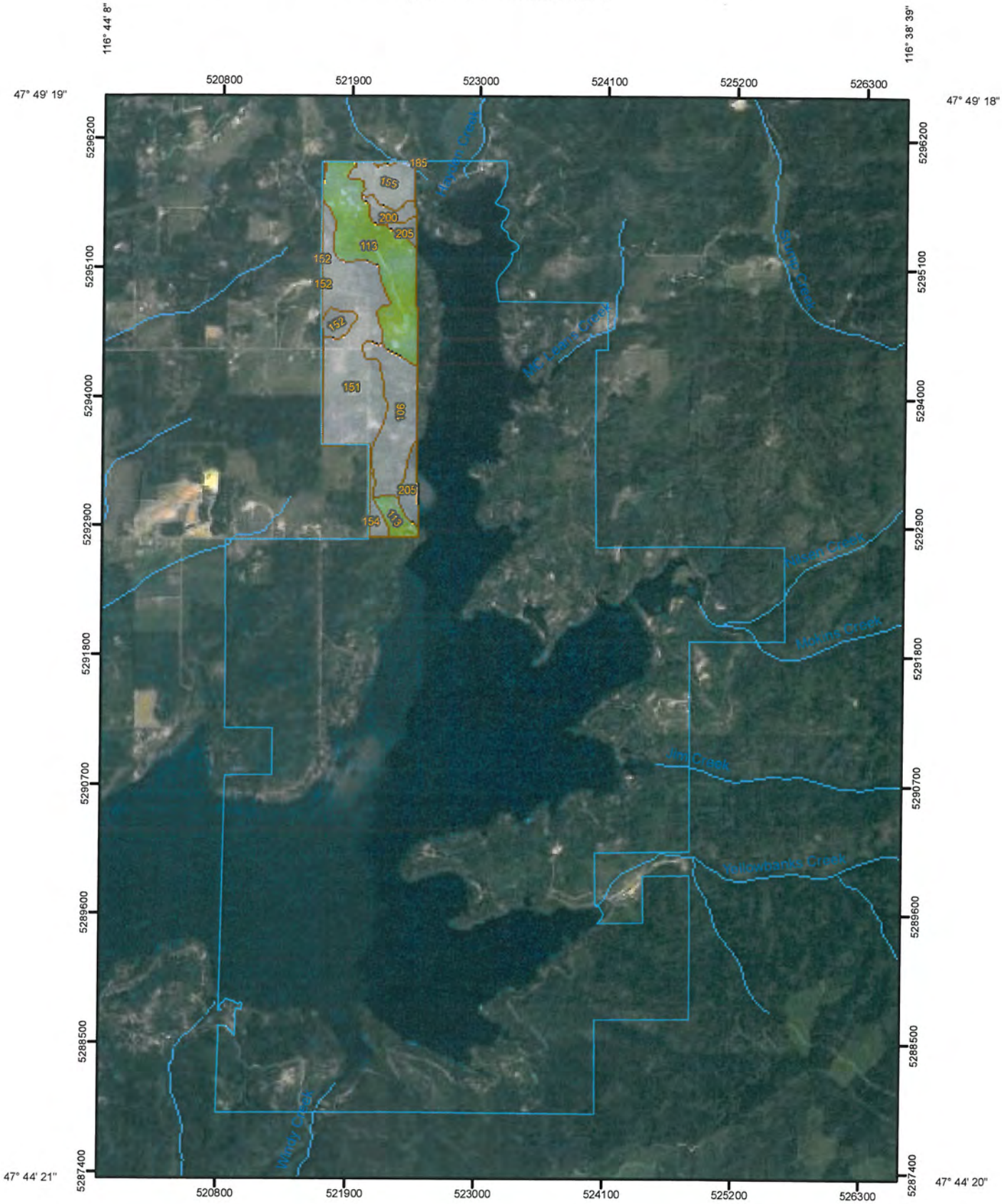
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

K Factor, Whole Soil—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



Map Scale: 1:44,000 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 400 800 1,600 2,400

Feet: 0 1,500 3,000 6,000 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

.02

.05

.10

.15

.17

.20

.24

.28

.32

.37

.43

.49

.55

.64

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:44,000 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.				
Subtotals for Soil Survey Area			**—**	**—**
Totals for Area of Interest			**6,252.1**	**100.0%**

K Factor, Whole Soil— Summary by Map Unit — Kootenai County Area, Idaho (ID606)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
106	Blinn loam, 35 to 65 percent slopes, very stony		90.4	1.4%
113	Chatcolet cobbly loam, 25 to 65 percent slopes	.24	165.4	2.6%
151	Mokins silt loam, 5 to 20 percent slopes		192.8	3.1%
152	Mokins silt loam, 20 to 35 percent slopes		14.6	0.2%
154	Mokins-Chatcolet complex, 5 to 20 percent slopes		11.2	0.2%
155	Moscow loam, 5 to 35 percent slopes		41.8	0.7%
185	Spokane-Moscow association, 35 to 65 percent slopes		0.0	0.0%
200	Vassar-Rock outcrop complex, 20 to 55 percent slopes		16.1	0.3%
205	Water		25.7	0.4%
Subtotals for Soil Survey Area			**557.8**	**8.9%**
Totals for Area of Interest			**6,252.1**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

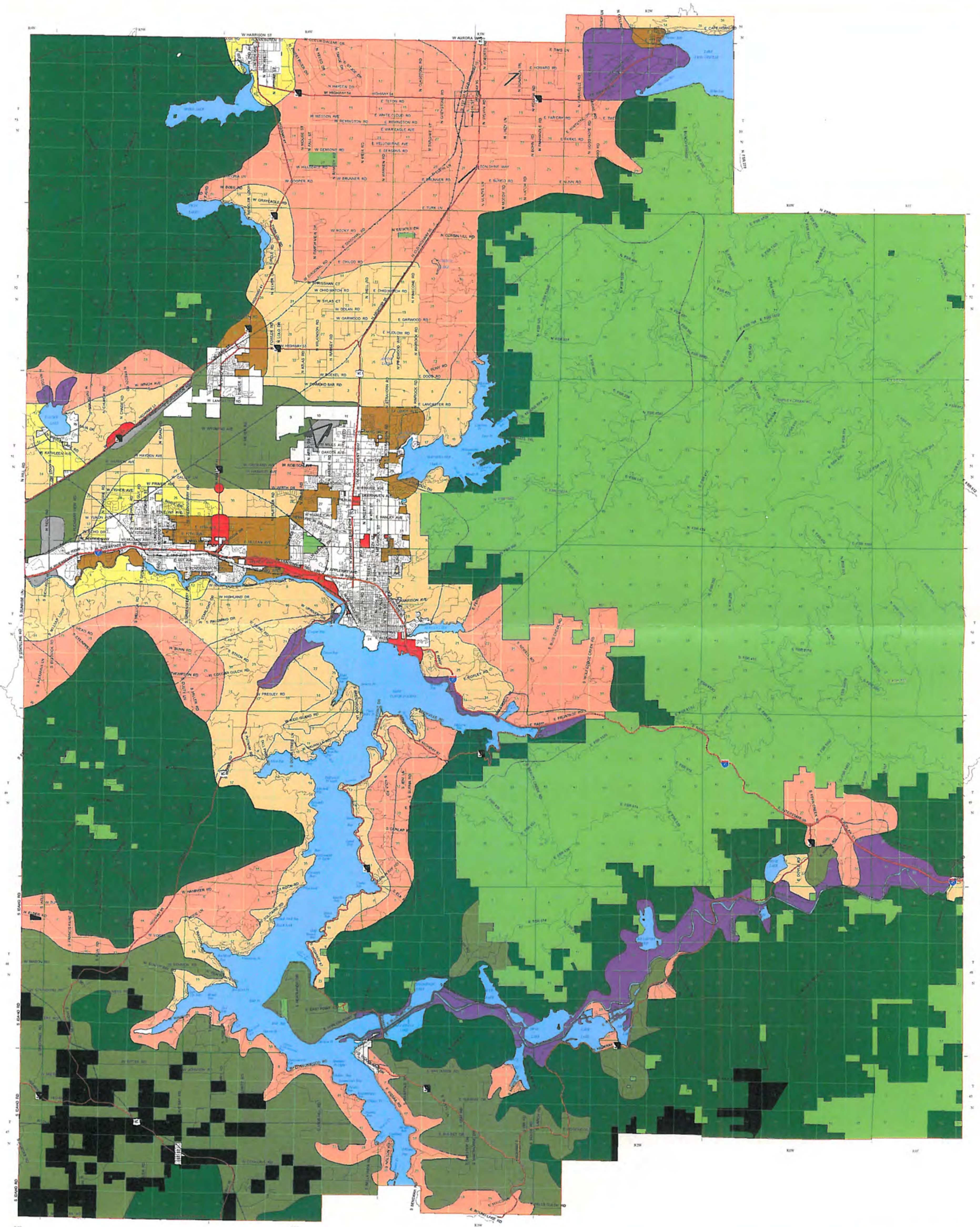
Tie-break Rule: Higher

Layer Options: Surface Layer

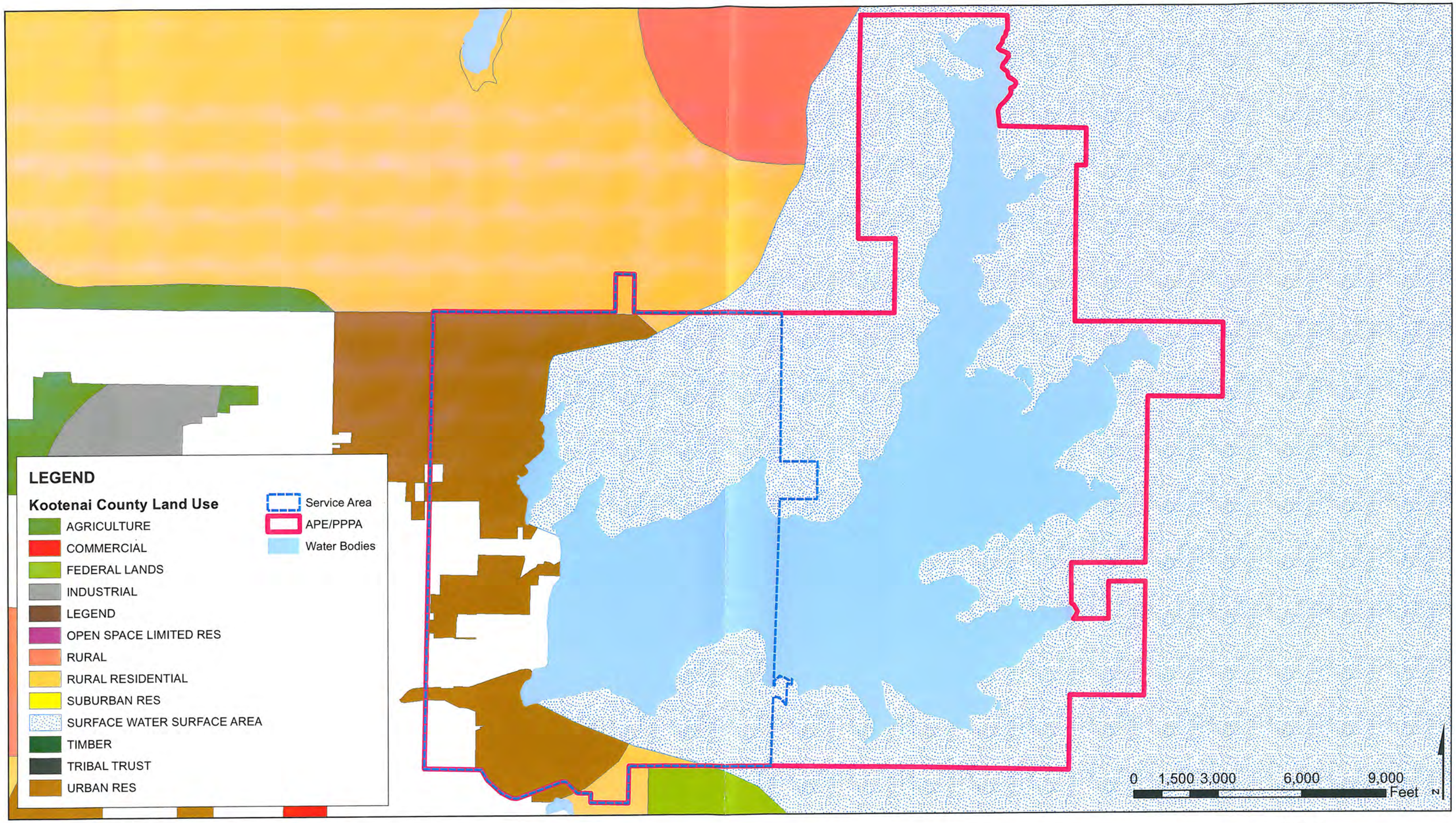
APPENDIX F.

Land Use Information

Kootenai County Comprehensive Plan
Land Use



Kootenai County Planning & Zoning Office



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Hayden Lake Recreational Water and Sewer District

Kootenai County Land Use

Sources:
Kootenai County GIS Department

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....CountyLandUse_11x17L
DATE.....10/17/12

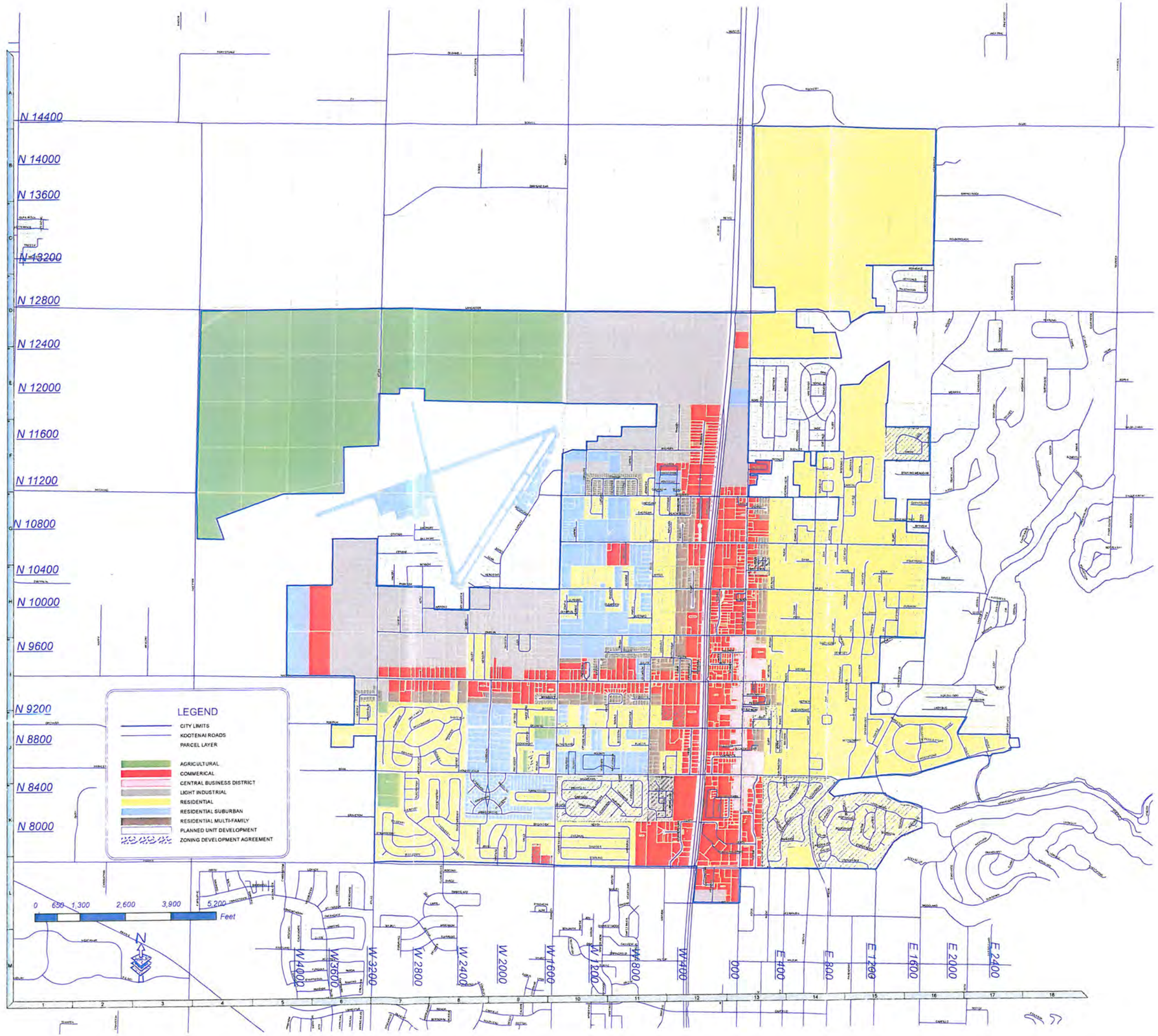
2010 ZONING CLASSES

Street Name	Location
Acro Dr	H 7
Ainsworth Dr	K 8
Alaska Loop	F 11
Arena Loop	F 14
Ash St	I 14
Ash St	G 14
Ashland Ln	J 7-8
Atlas Rd	D/K 6
Atwater St	H 10
Atwood Dr	K 13
Audubon Dr	J/K 14
Avalanche Ln	J 11
Baack St	I 13
Baldwin Ct*	J 13
Bartlett St	F 11
Bateman St	H 15
Bayberry Ct	K 7
Benoit St	G 10
Berkley Ln	J 7
Bistcum Loop*	I 10
Blackberry Loop	J 7
Blake Ct*	G 15
Bligh Ct	G 13
Blossom Dr	J 10-11
Blueberry Cir	K 7-8
Bordeaux Ave	J 8-9
Bounty Loop	J 10-11
Boyles Ave	I 9
Boysenberry Loop	J 8
Braemar St	F 12
Broadmoore Dr	I/J 7-8
Brookside Dr	K 8-9
Bruce Ln	I 11
Bruin Loop*	E/F 15
Buckles Rd	F 10-12
Burnham Ave	H 15
Buttercup Ln	I 11
Calloway Ln	H 14
Camp Ct	G/H 12
Capstone Ct	K 11
Cardinal Ave	K 10-1
Carlisa Ct	F 11
Castle Way	I/J 15
Cattle Dr	F/G 14-1
Cedar Ct	H 13
Centa Ave	K 12
Chalet Ct	I 16
Chalet Rd	I 16
Chanticleer Ct*	F 15
Chateaux Dr	I/K 8
Chateaux Dr	K 7-8
Chelsea Ct*	H 9
Chesapeake Ct	I 13
Cheyenne Ave	F 11
Clearview Ct	H 10
Cloverleaf Dr	J/K 13-1
Commerce Dr	J 12
Coolin Dr	K 9
Coopers Hawk Dr	K 10
Cornerstone Dr	K 11-12
Cornice Lane	J 11
Corsair St	F 11
Country Ridge Ct*	J 13
Country Squire Ln	I 14
Courcelles Pkwy	J/K 7
Cozy Acres Ln	H 14
Crabapple Ct	I 11
Cranberry Ave	J 7
Crimson Dr	G 14
Crusader St	F 10
Cub Ct*	E 15
Cuff Rd*	J 13
Cutlass St	F 10
Dakota Ave	H 7-15
Dana Ct	G 13-14
Danielle Rd	G 13
Davis Cir	J 11
Dee Ct	I 11
Dempsey Dr	H 14
Dike Rd*	J 16
Dogwood Ln*	J/K 10
Drawbridge Ct	I 15
Dreyer Dr	F 14
Eileen Ct	I 10
Emig Rd	G 15
Enflate Dr	I/J 9
Erica Ct*	F 15
Exra Ave	G 15
Fairview Dr*	J/K 10-1
Falkirk St	F 12
Ferrians*	I 13
Fieldstone Dr*	I/J 15
Finneane Dr	I/J 14
Fitzne Dr	J 9
Fourth St	J/K 14
Franklin St*	L 12
Frigg Ave	J 11

*Private Street

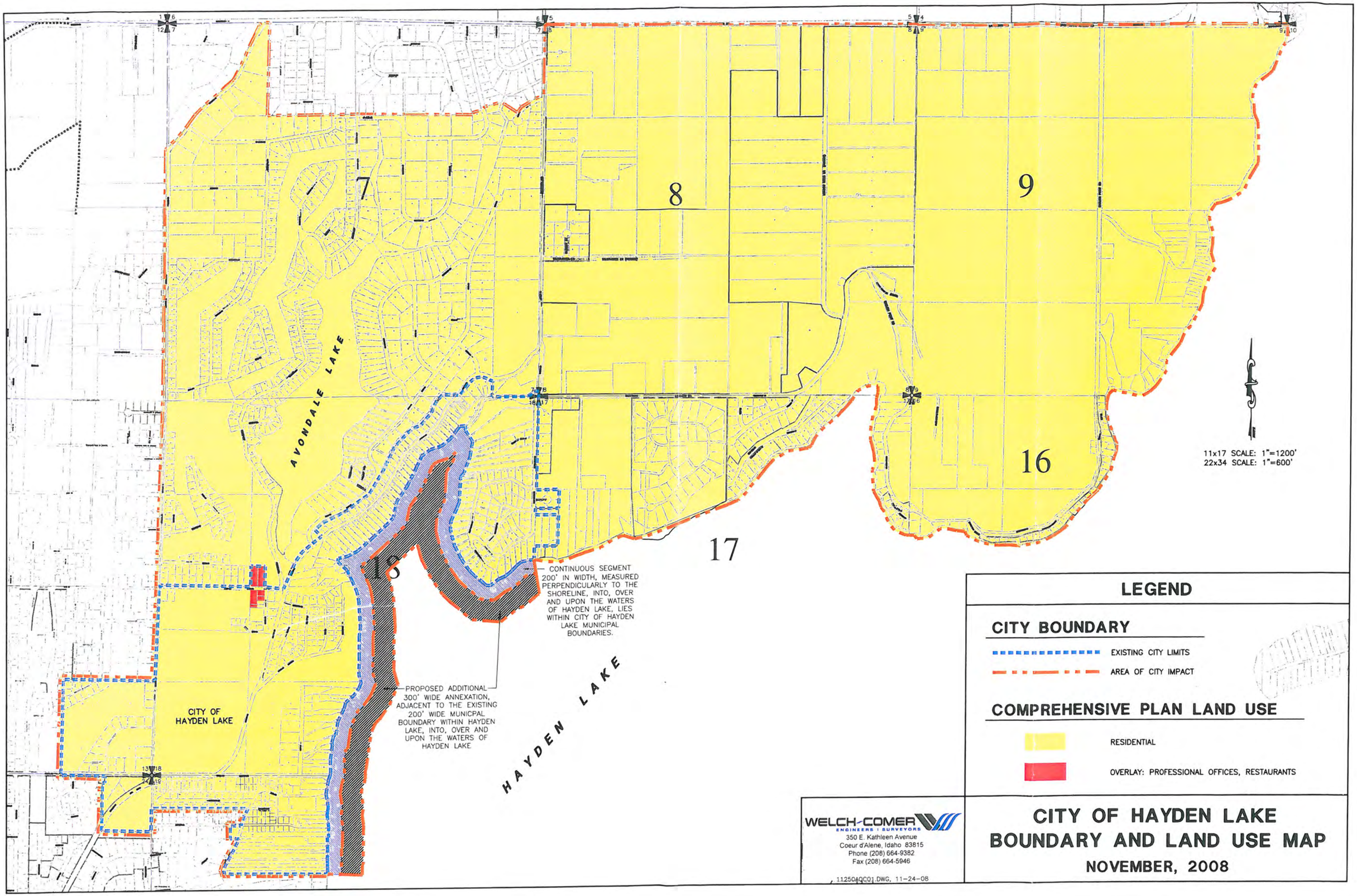
Street Name	Location
Galrioch St	G 12
Gettys Ln	I 9
Giscours Ct	J 9
Gleason Ave	I 11
Glenmore Ct	K 15
Goerig Way*	H 8
Gooseberry Ct	K 7
Governmental Way	D 13
Great Hall Dr	I 7
Green Tree Ct*	F 15
Halleberry Ct	K 8
Handler Dr	J 9
Hans	F 12
Hartford Ct	I 10
Hayden Ave	I 5-15
Hayden Pines Way*	J 12
Heather Way*	J 10
Helen Ave	E 11-12
Heron Ave	K 10-11
Hess St	J 12
Highway 95	B/K 12
Hilgras Ave	H 12
Hillview Dr	G/I 15
Honeysuckle Ave	J 7-16
House Ln*	I 17
Hubble St	E 10
Huntington Ct	J 13
Icefall Dr	J 11
Indywood Dr	J 11
Iowa Ave	H 13-14
Jadyan Ct	F 13
James Crowe Dr	K 8-9
Janis St	H 12
Jannel St	G 10
Jennifer Ln	F 11
Jensen Dr	H 13
Jewel Ave	K 8-9
Jonathan St	F 11
Joshua Ct	G 14
Juno St	I 13
Justice Way	I 6
Justin Ct	H 14
Kayla Ct	I 13
Kender Ln*	H 12
Kentucky Ave	F 11
Kirkpatrick St	I 12
Krest St	G 12
Kyler Ave	H 11-10
Lacey Ave	G 10-15
Lamson Ln	H 14
Laredo Rd	F 14
Leisure Dr*	J/K 10
Liberty Ct	J 13
Linwood Dr*	J/K 10
Little Bear*	I 13
Loch Haven Dr	J/K 14-15
Loch Lomond Ct*	J 14
Loch Maree Dr	K 14-15
Loch Wood Ct	K 14
Logarch*	G 14
Lookout Dr*	H 11
Loralee Ln	I 13
Lyle Loop	H 9
MacArthur	J 10
Macie Loop	I 10
Magistrate Loop	I 6
Maple Pl	J 14
Maple St	F/J 14
Marabou Dr	K 11
Marigold Ct	I 9
Maryanna	G 13
May	G 13
Meadow Way	H/I 8
Meadowlark Way	L 12
Medoc Ct	K 8
Melrose Ave	I 13
Melrose* Ave	I 13
Mid-town Ln	I 13
Miles Ave	G 6-16
Minnesota Ave	F 11
Monsahee Ct	J 11
Montrose Ct	K 15
Morgan Ln	I 14
Morse Rd	I 13-14
Mulberry Ct	J 7
Mustang Ave	H 11
Navion Dr	H 7
Neufeld Rd	J 10
New Castle Ln	J 7
Nita Ave	J 13
Nomad Ct*	I 10
Northwood Ct	K 14
Oak St	G 14
Oakwood Dr*	J 10-11
Oklahoma Ave	F 11
Olympus Ave	H 10
Orange Blossom Dr	J 10
Orchard Ave	I 8-14

Street Name	Location
Parkside Dr	J/K 13
Parkstone Dr*	I 15
Patriot Ct	K 13
Peachtree Dr	F/G 11-
Pearl Ave	G 14
Pebblestone Ct*	J 15-16
Pines Way*	J 12
Pinto Ln	H 11
Placer Ct	J 11
Porthill Ct	J 7
Prairie Ave	K 7-15
Prescott Dr	J 9
Progress Dr*	J 10
Ptarmigan Ave	I 14
Ramsey Rd	D/K 9
Ramsgate Ln	I J 7
Raspberry Ln	K 7-8
Reed Rd	E/K 11
Retirewood Ct*	K 11
Retreat Ln*	I 14
Riata Rd	F 14
Ridgemont Ave	J 9
Ridgewood Dr*	K 14
Rocking R Rd	F/G 14
Rosewood Ct*	J 10
Roundup Cir	F 14
Rude St	J/K 13
Rudolph Ct	J 8
Runkle Rd	J 10
Ryan Dr	I 13
Sally St	K 9
Salmonberry Loop	J/K 8
Sandpiper Way	K 10
Sarah Loop*	I 13
Sargent's Dr*	J 12
Schmidt St	I 12
Seaside St	G 11
Secretariat Ln	I 14
Selkirk Ct	K 15
Smith	J 15
Snowflake Ln	J 11
Shaw St	I 11
Sheffield Dr	I 8
Sheridan Ave	F 11
Shiloh*	K 14
Skylark Ln	G 11
Southwood Ct	K 14
Spoor	G 13
St Emillion Dr	J 8-9
St Estephe Ct	J 9
Starling Ave	K 10-1
Starr Loop	K 12
Stinson Loop	F 10-11
Stonehaven Ct	K 15
Stonehaven Dr	K 14-11
Strahorn Rd	E/J 15
Stratford Dr	G 15
Strawberry Ln	K 7
Summerfield Loop	K 13
Sundler Rd	F 10
Sunny Ln*	J 12
Sunview Ln	H 15
Sutherland Ct	J 10
Tamarindo Ln	I 10
Tanager Ave	K 10-11
Tanglewood Ct*	J 10
Tartan Dr	J/K 15
Tayne St	H 12
Tessa Way	H 11
Texas Ave	F 11
Torrey Ln	I/J 7-8
Tracey Rd	E 11
Tresdale Ct	J 10
Tumbleweed Cir	J 9
Ulysses Ave	H 10
Uplands Dr	K 15
Vail St	H 15
Valley Way	H/I 8
Vantage Dr	K 9
Vicki St	H 12
Victoria Ave	H 15
Village Dr*	K 14
Walker Rd*	H 14
Walrose Loop	F 13
Warren St	E/F 12
Warwick Ct	J 8
Wayne Dr	J/K 13
Whispering Pines	MdG 15
Woodlawn Dr*	J 10-11
Woodstone Ct*	J 15
Woodstone Dr*	I/J 15-16
Woodvine Dr	J 13
Wyoming Ave	F 10-14
Zack Ct*	H 14
Zenith St	H 10



Official Map of the City of Hayden
8930 N Government Way
Hayden, ID 83835

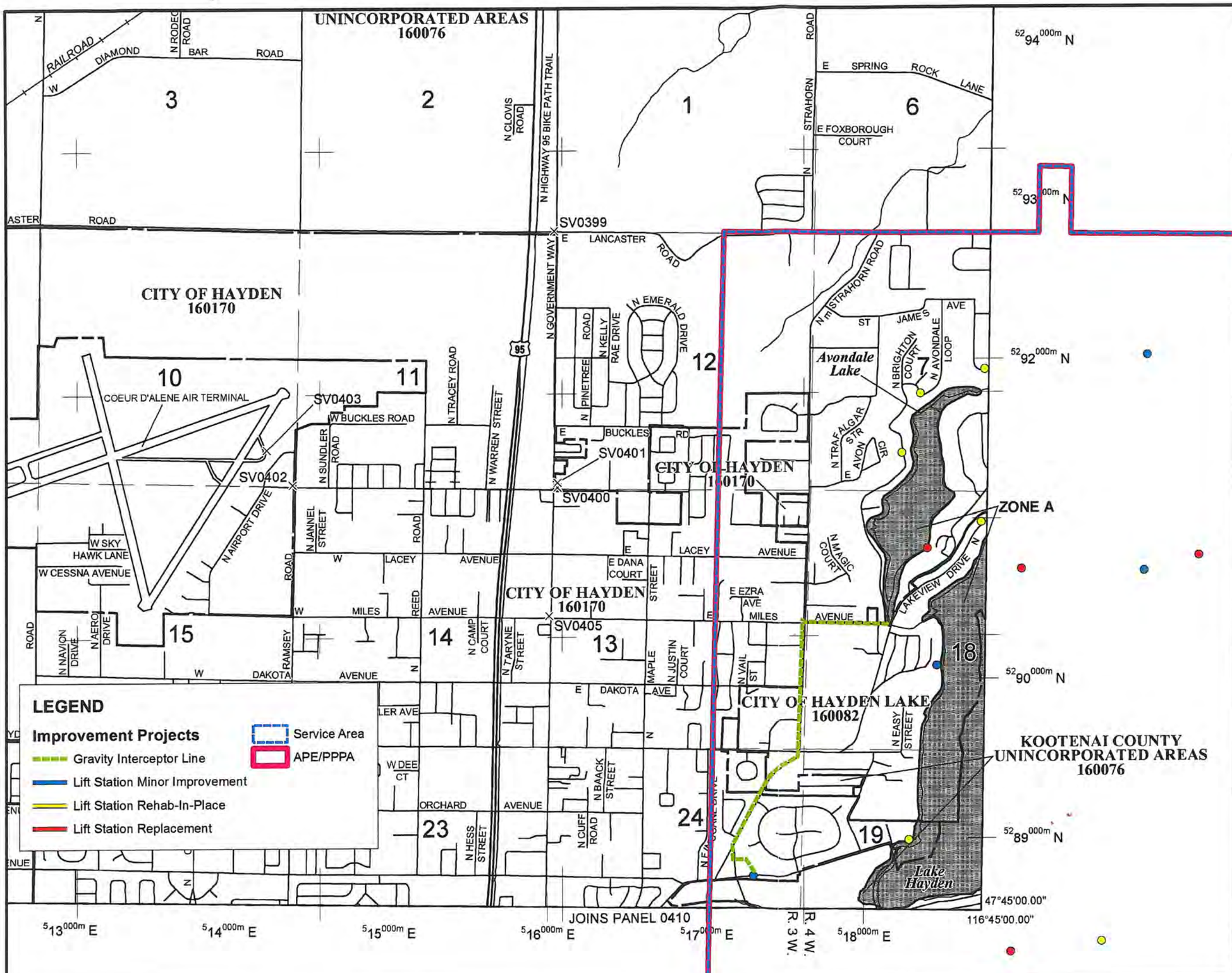
T51N R3&4 W, BM
Kootenai County
November 1, 2010



\\Nas-01\cad\CAD Projects\11250-2\DWG\Area of City Impact\11250ACI02.dwg, 8/10/2011 1:15:33 PM, julie, 1:2

APPENDIX G.

Floodplains and Wetlands Maps



MAP SCALE 1" = 2000'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0250E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 250 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0250	E
HAYDEN LAKE, CITY OF	160082	0250	E
HAYDEN, CITY OF	160170	0250	E
RATHDRUM, CITY OF	160167	0250	E

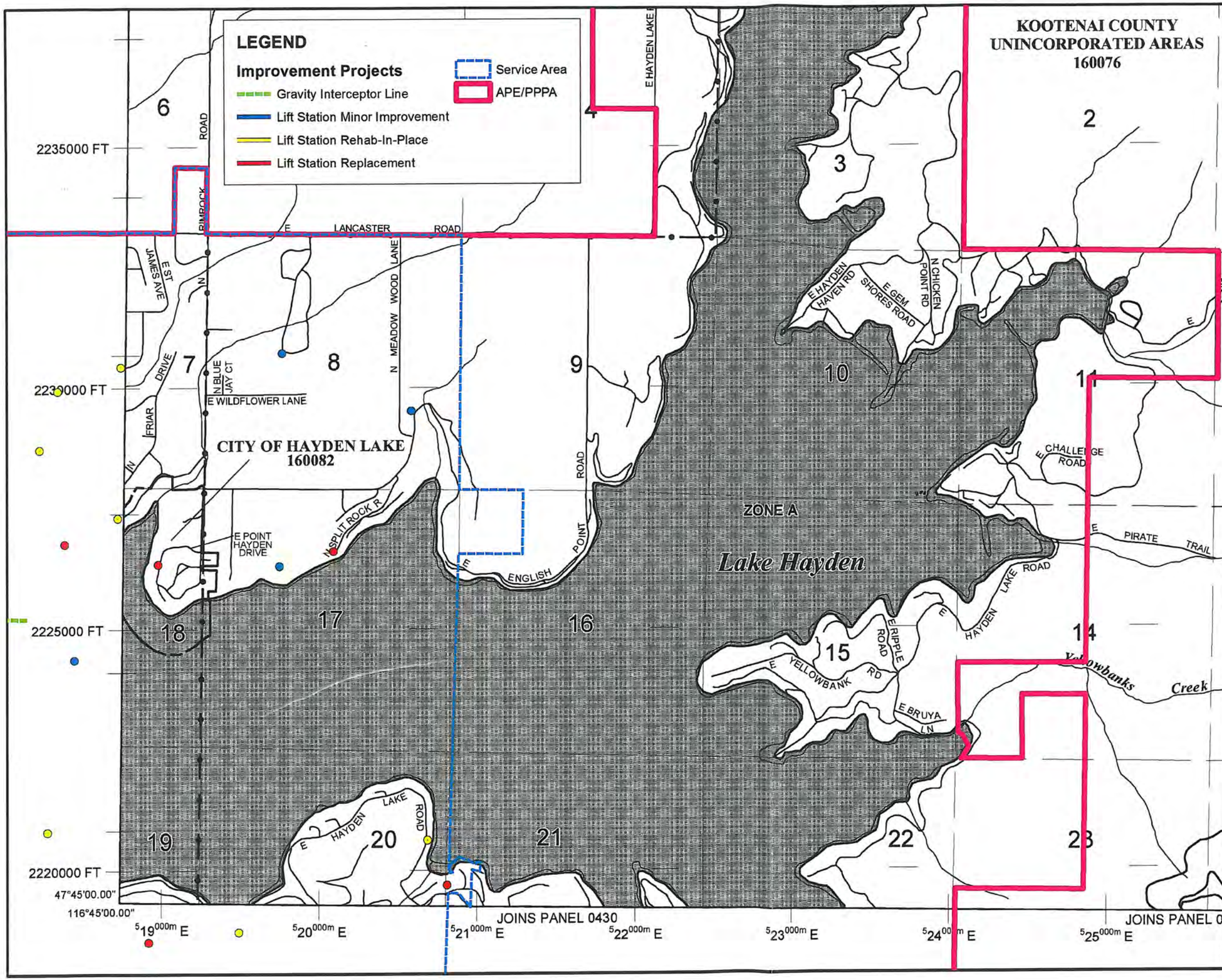
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0250E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0275E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 275 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0275	E
HAYDEN LAKE, CITY OF	160082	0275	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0275E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

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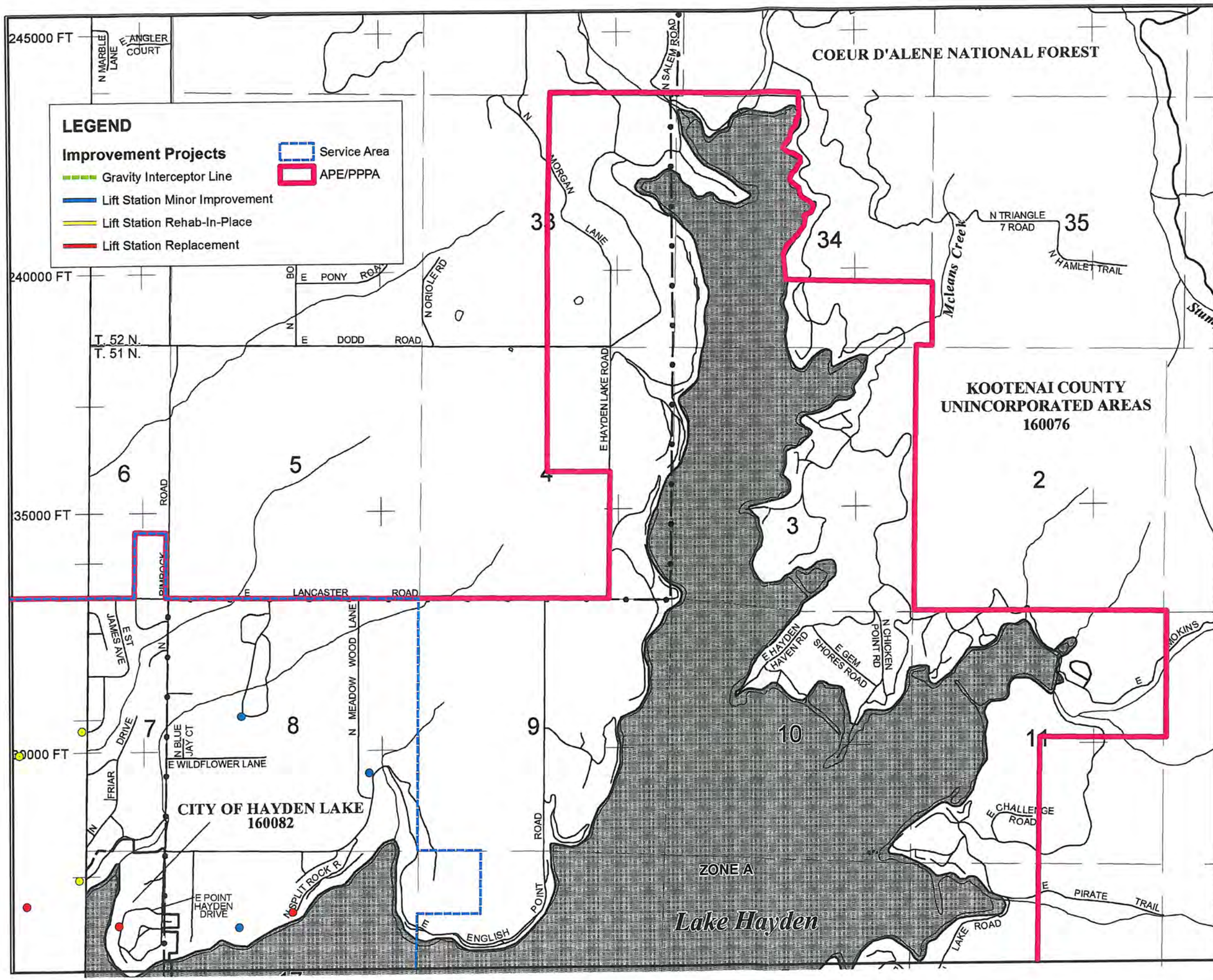

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0275E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 275 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0275	E
HAYDEN LAKE, CITY OF	160082	0275	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0275E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

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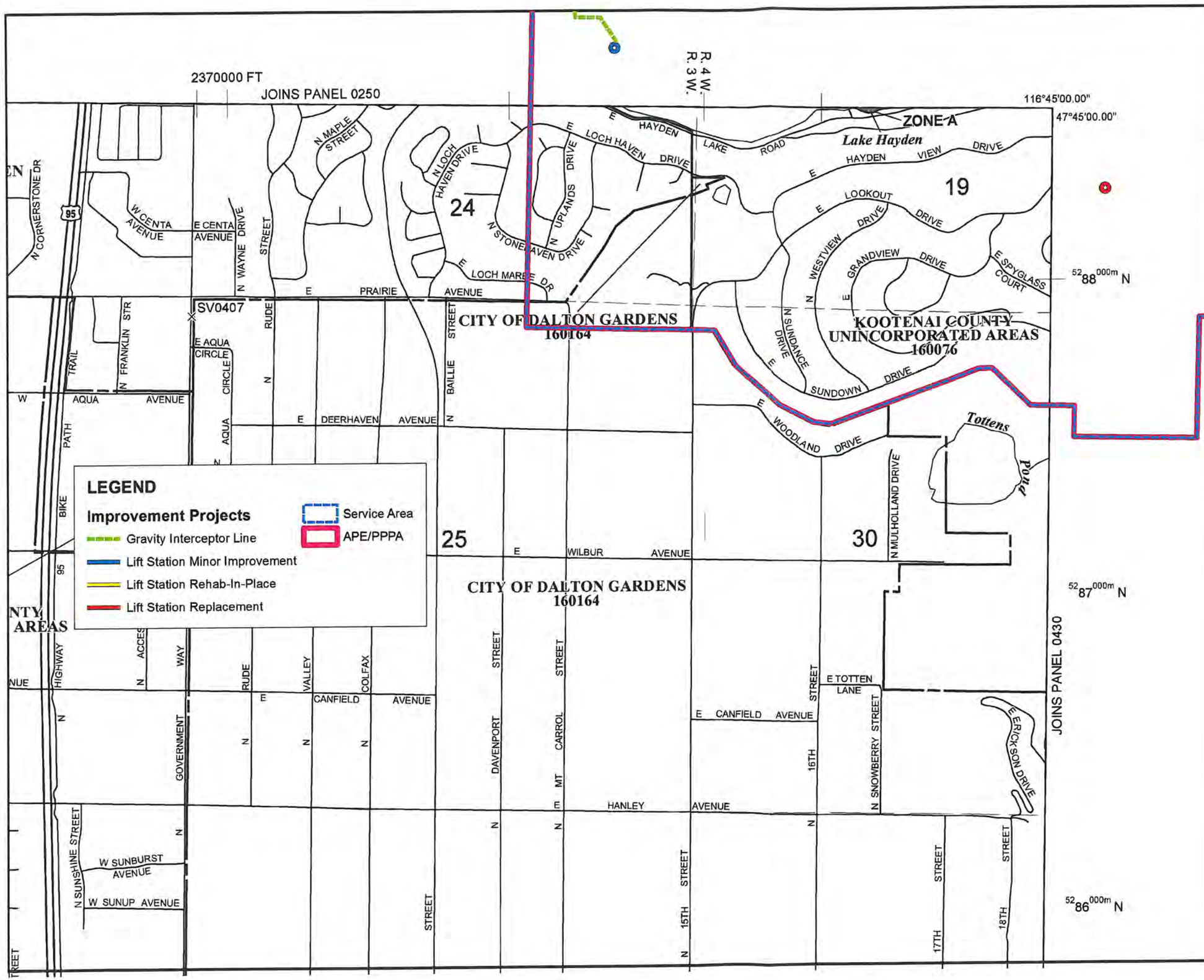


MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0410E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 410 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0410	E
COEUR D'ALENE, CITY OF	160078	0410	E
DALTON GARDENS, CITY OF	160154	0410	E
HAYDEN, CITY OF	160170	0410	E

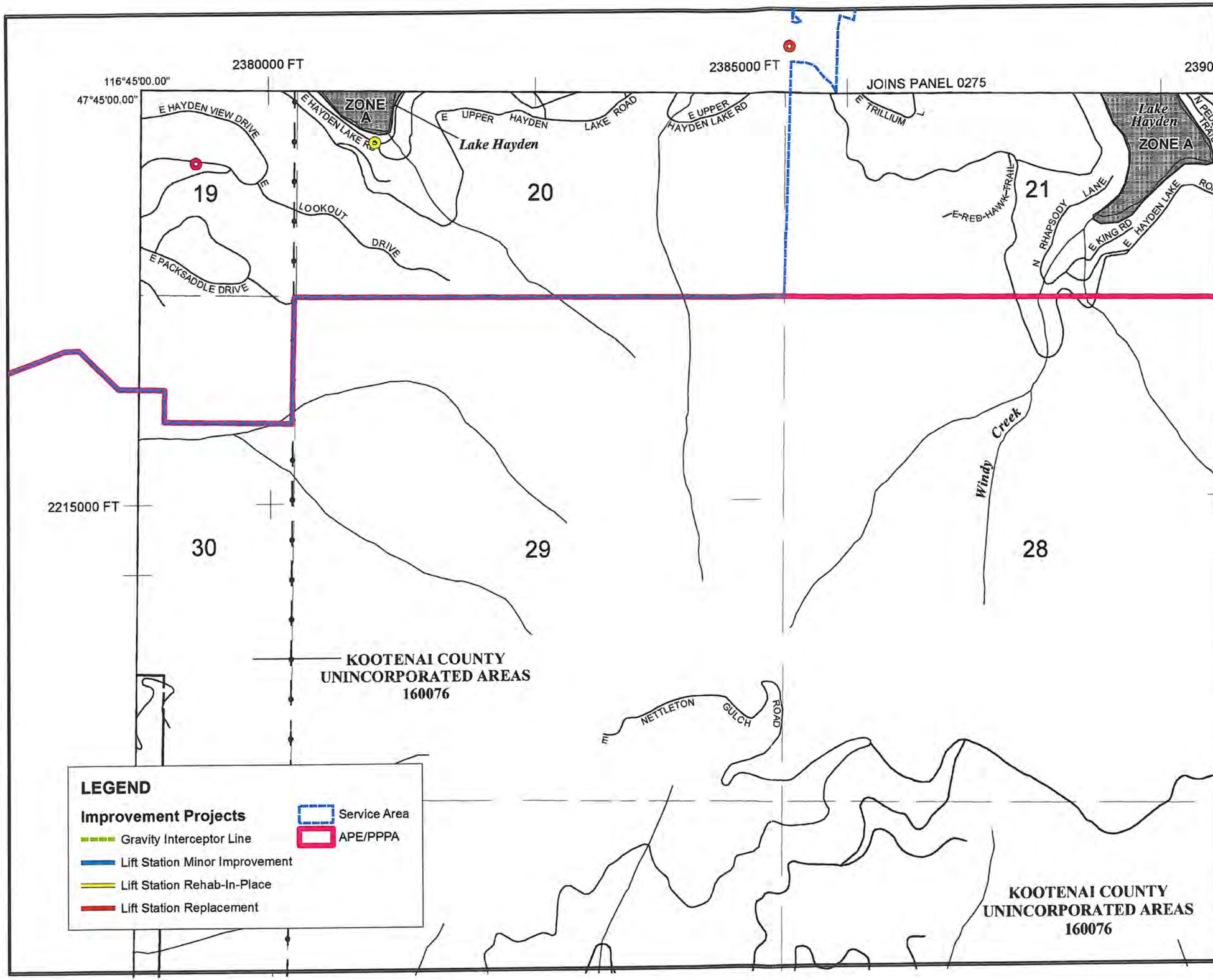
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0410E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0430E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 430 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0430	E
COEUR D'ALENE, CITY OF	160076	0430	E
DALTON GARDENS, CITY OF	160164	0430	E

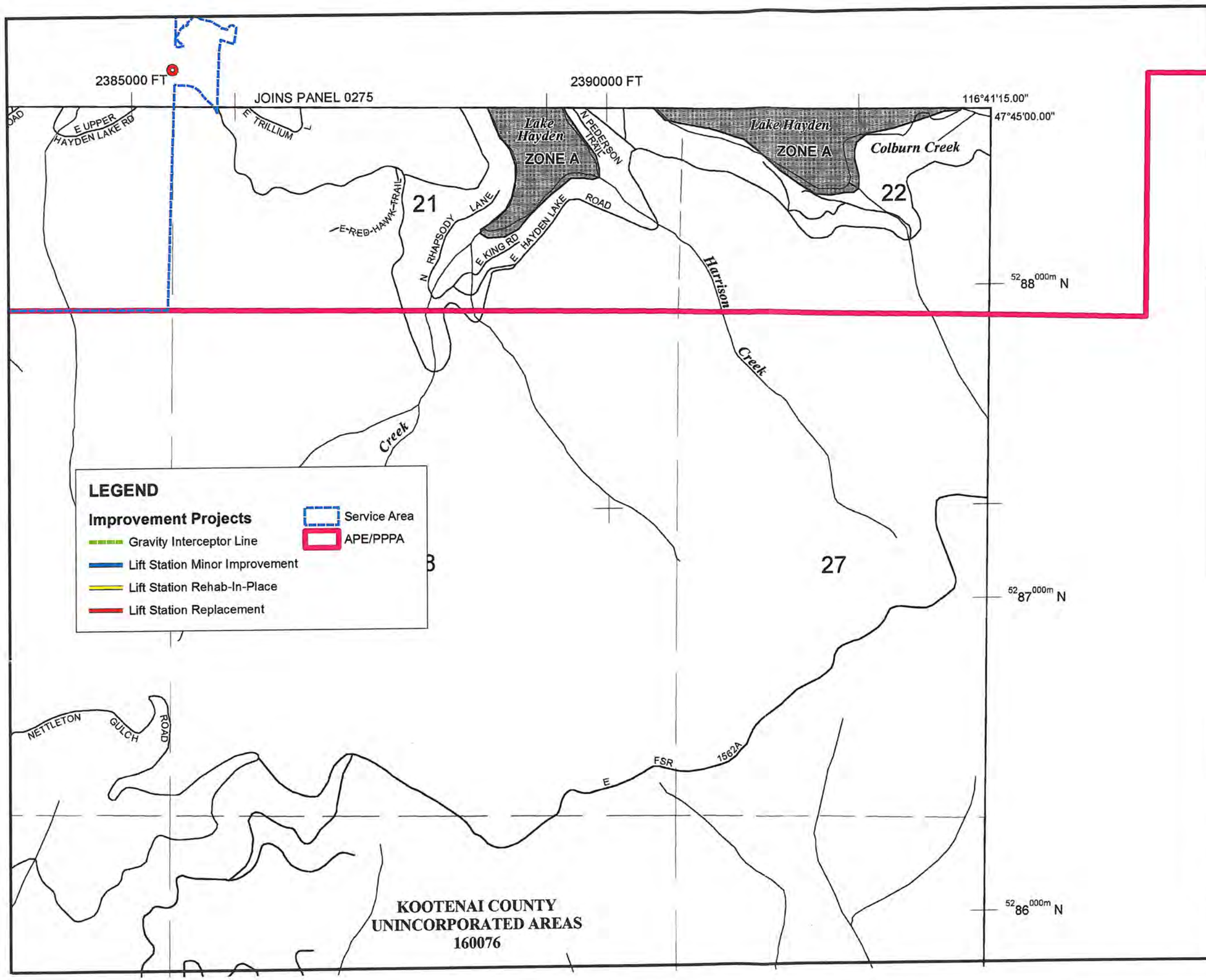
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0430E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0430E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 430 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160076	0430	E
COEUR D'ALENE, CITY OF	160078	0430	E
DALTON GARDENS, CITY OF	160164	0430	E

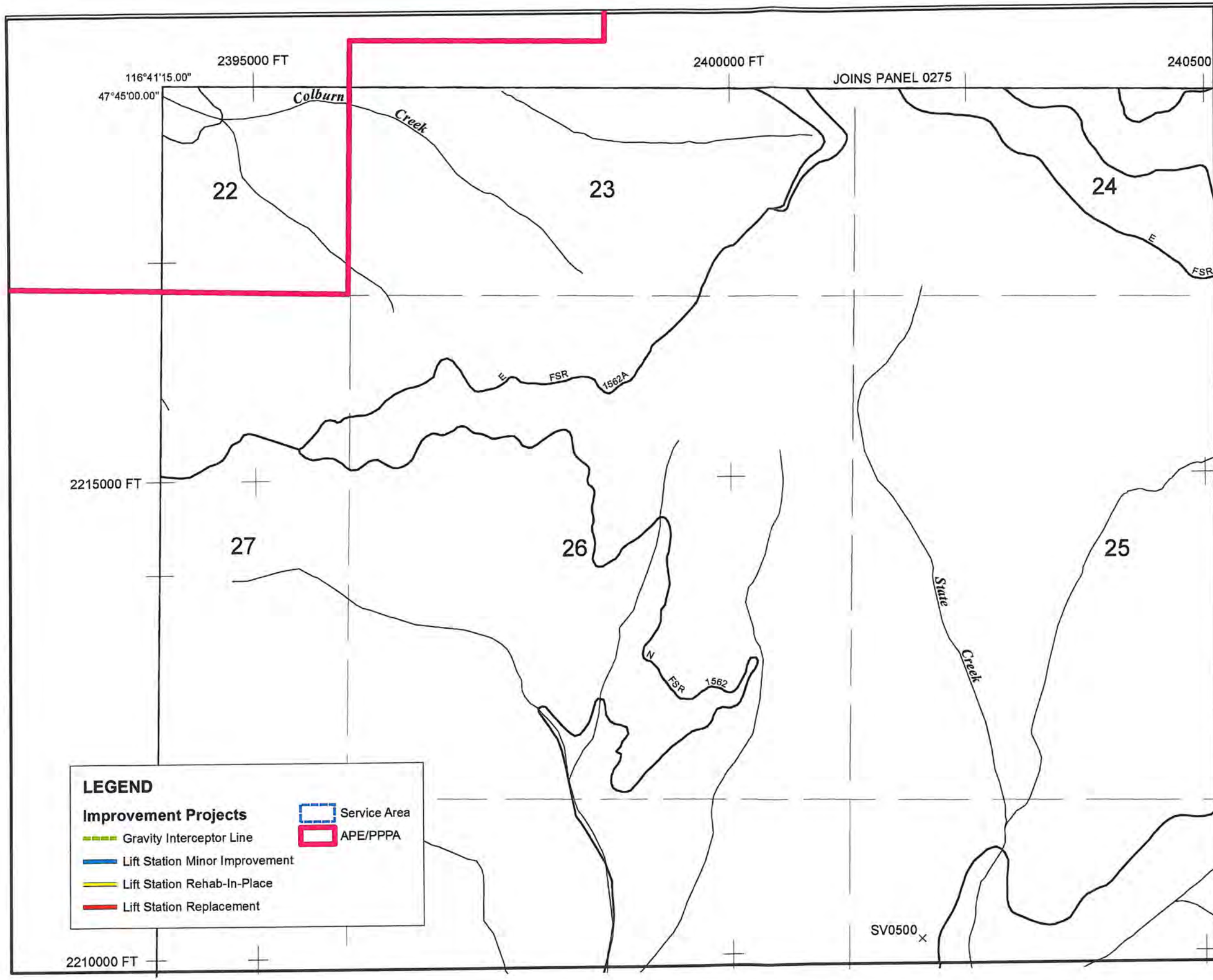
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0430E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0435E

FIRM

FLOOD INSURANCE RATE MAP

KOOTENAI COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 435 OF 975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KOOTENAI COUNTY	160078	0435	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
16055C0435E

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

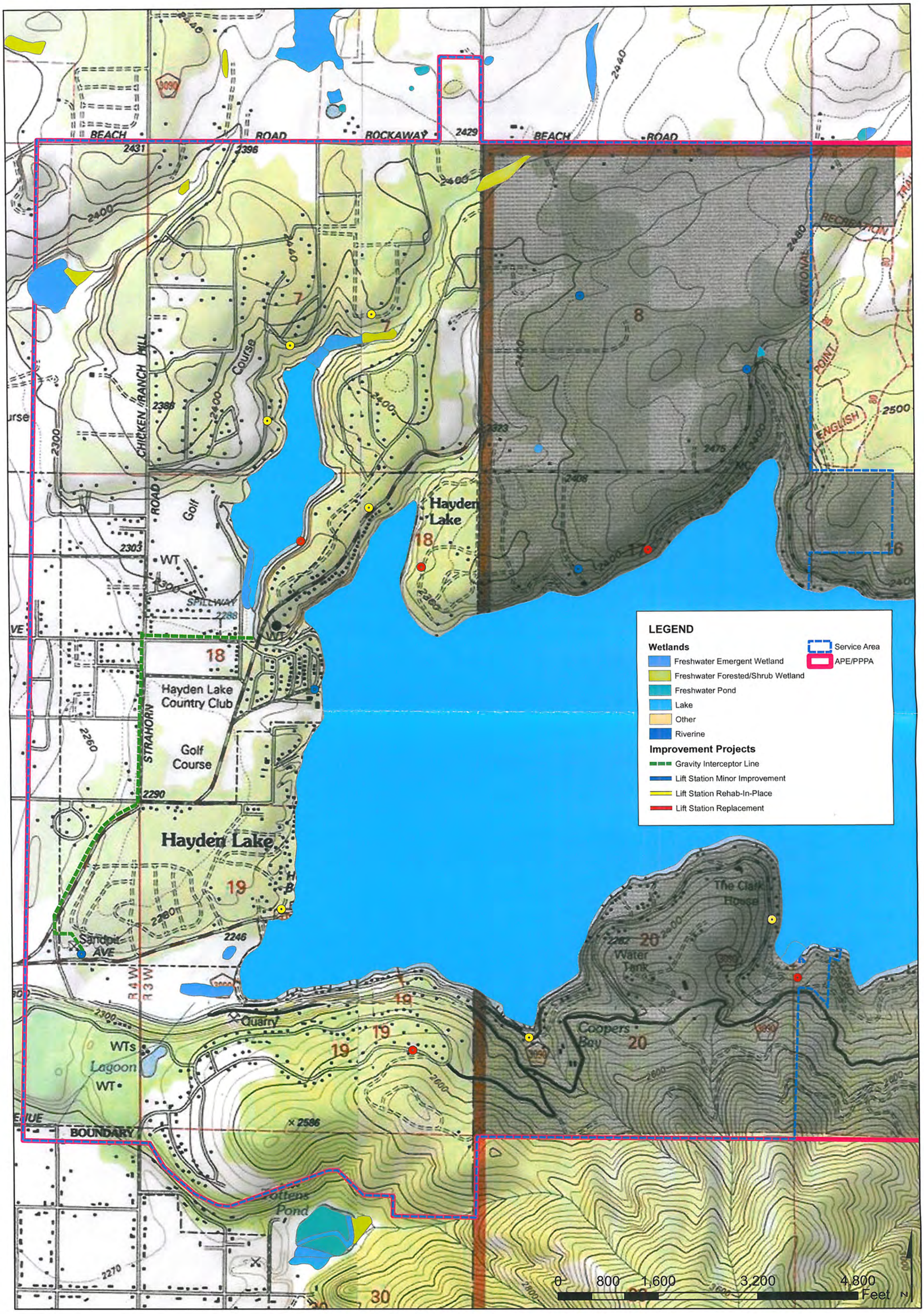
* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A	Cross section line
23 - - - - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid ticks, zone 11
6000000 FT	5000-foot grid ticks: Idaho State Plane coordinate system, west zone (FIPSZONE 1103), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 3, 2010
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



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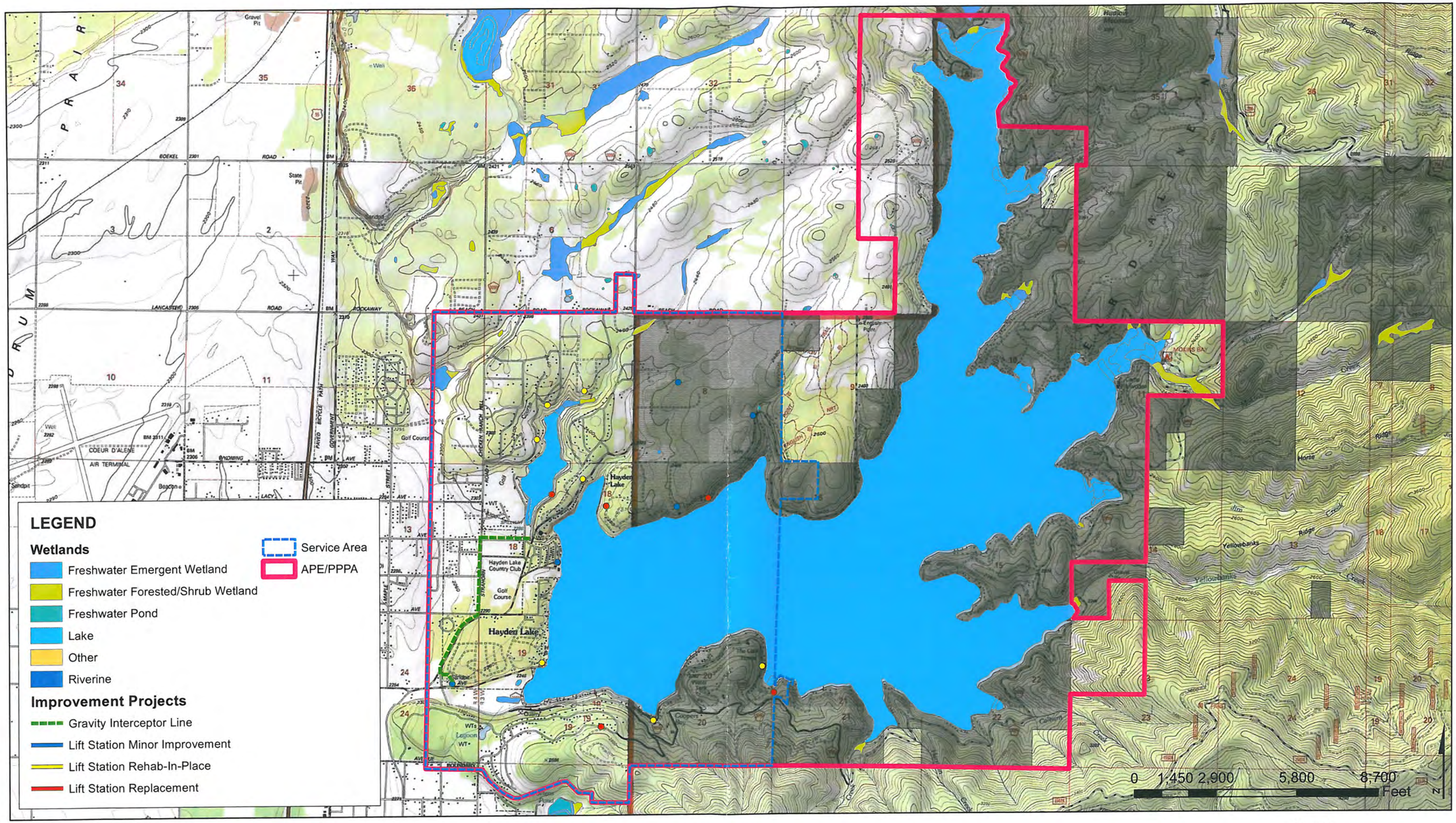
(toll free) 877-815-5762
(fax) 208-664-5946

HLRWSD

Wetlands

Sources:
USA Topo Maps
US Fish and Wildlife National Wetland Inventory

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Wetlands_11x17P
DATE.....10/17/12



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(toll free) 877-815-5762
(fax) 208-664-5946

Hayden Lake Recreational Water and Sewer District

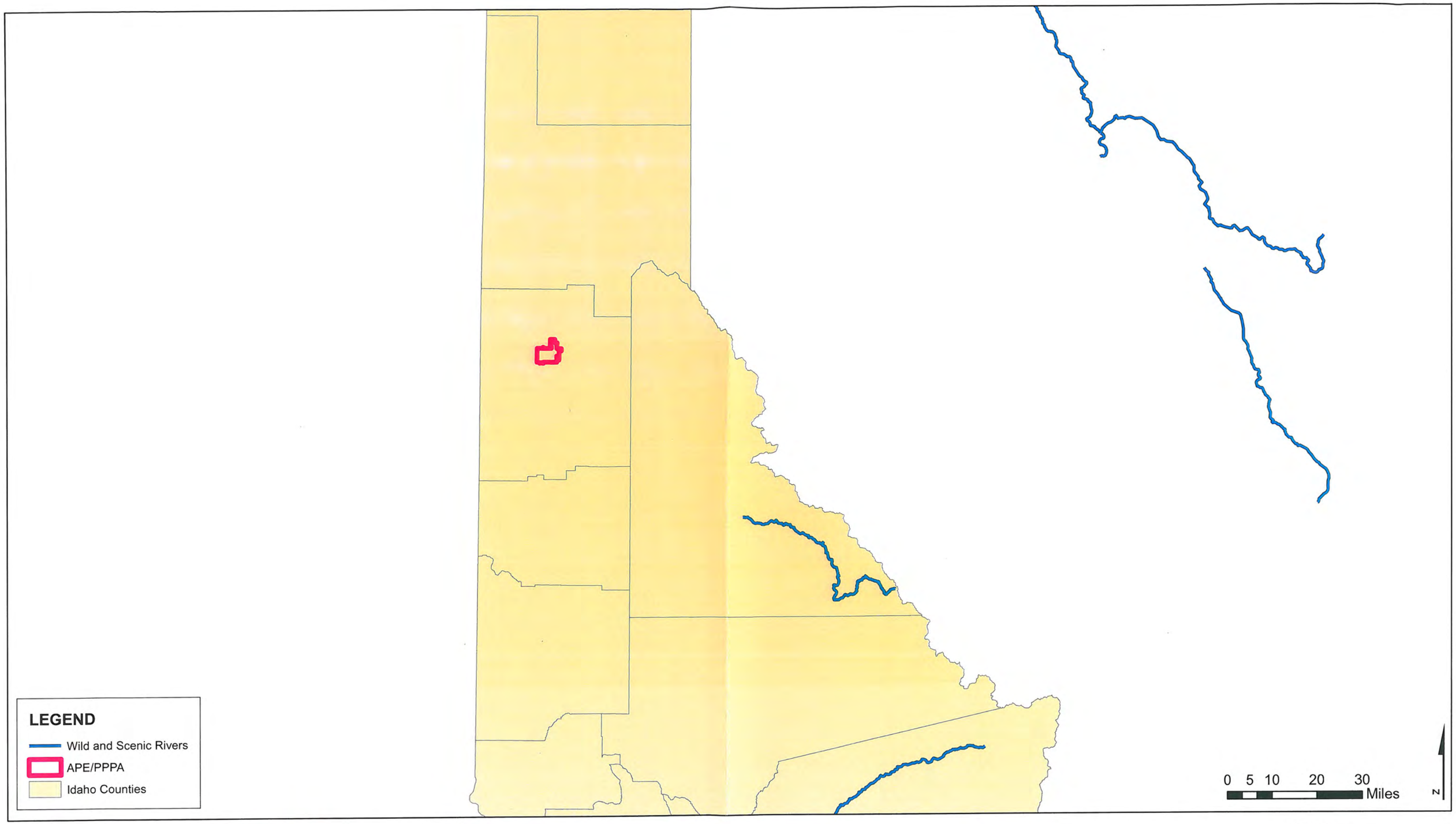
Wetlands

Sources:
USA Topo Maps
US Fish and Wildlife National Wetland Inventory

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Wetlands_11x17L
DATE.....10/17/12

APPENDIX H.

Wild and Scenic River Information



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(toll free) 877-815-5762
(fax) 208-664-5946

Hayden Lake Recreational Water and Sewer District

Wild and Scenic Rivers

Sources:
Idaho Department of Water Resources
National Wild and Scenic Rivers System

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....WildnScenic_11x17L
DATE.....10/17/12

APPENDIX I.

Historic Locations Information

National Register of Historic Places: Listed Properties as of October 1, 2011

85002090	IDAHO	Kootenai	Bayview	Bayview School II	Careywood Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
85002091	IDAHO	Kootenai	Rockford Bay	Bellgrove School II	Hamaker Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
66000312	IDAHO	Kootenai	Cataldo	Cataldo Mission	Off U.S. 10	19661015	BUILDING	
85002092	IDAHO	Kootenai	Medimont	Cave Lake School	ID 3	19850912	BUILDING	Kootenai County Rural Schools TR
85002093	IDAHO	Kootenai	Athol	Cedar Mountain School	Parks and Lewellyn Creek Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
78001070	IDAHO	Kootenai	Clarksville	Clark House	On Hayden Lake	19781212	BUILDING	
79000792	IDAHO	Kootenai	Coeur d'Alene	Coeur d'Alene City Hall	5th and Sherman Sts.	19790803	BUILDING	
77000461	IDAHO	Kootenai	Coeur d'Alene	Coeur d'Alene Federal Building	4th and Lakeside	19771216	BUILDING	
78001071	IDAHO	Kootenai	Coeur d'Alene	Coeur d'Alene Masonic Temple	525 Sherman Ave.	19780522	BUILDING	
85002094	IDAHO	Kootenai	Post Falls	Cougar Gulch School III	Cougar Gulch Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
99001476	IDAHO	Kootenai	Harrison	Crane, Silas W., and Elizabeth, House	201 S. Coeur d'Alene Ave.	19991209	BUILDING	
85001126	IDAHO	Kootenai	Coeur d'Alene	Davey, Harvey M., House	315 Wallace Ave.	19850523	BUILDING	
85002095	IDAHO	Kootenai	Camp Miyoden	East Hayden Lake School II	Hayden Lake Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
87001562	IDAHO	Kootenai	Hayden Lake	Finch, John A., Caretaker's House	2160 Finch Rd.	19870914	BUILDING	
79000793	IDAHO	Kootenai	Coeur d'Alene	First United Methodist Church	618 Wallace Ave.	19790618	BUILDING	
79000794	IDAHO	Kootenai	Coeur d'Alene	Fort Sherman Buildings	North Idaho Junior College campus	19791025	DISTRICT	
88000272	IDAHO	Kootenai	Coeur d'Alene	Gray, John P. and Stella, House	521 S. Thirteenth St.	19880331	BUILDING	
96001505	IDAHO	Kootenai	Harrison	Harrison Commercial Historic District	Roughly bounded by N. Lake Ave., W. Harrison St., N. Coeur d'Alene., and I	19961220	DISTRICT	
85002096	IDAHO	Kootenai	Medimont	Indian Springs School II	ID 3	19850912	BUILDING	Kootenai County Rural Schools TR
75000633	IDAHO	Kootenai	Coeur d'Alene	Inland Empire Electric Railway Substation	Mullan Rd. and Northwest Blvd.	19750627	BUILDING	
77000462	IDAHO	Kootenai	Coeur d'Alene	Kootenai County Courthouse	501 Government Way	19771223	BUILDING	
01000834	IDAHO	Kootenai	Rathdrum	Kootenai County Jail	802 Second St.	20010810	BUILDING	
85002097	IDAHO	Kootenai	Lane	Lane School II	Lanz Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
85002098	IDAHO	Kootenai	McGuire	McGuires School	Corbin Rd. and Old Hwy. 10	19850912	BUILDING	Kootenai County Rural Schools TR
09001163	IDAHO	Kootenai	Coeur d'Alene	Mooney-Dahlberg Farmstead	5803 Riverview Dr.	20091230	BUILDING	
90000548	IDAHO	Kootenai	Coeur d'Alene	Mullan Road	3 segments:1)between Aldar Creek and Cedar Creek;2)Fourth of July Pass I	19900405	SITE	
85002099	IDAHO	Kootenai	Pleasant View	Pleasant View School II	Pleasant View Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
84003851	IDAHO	Kootenai	Post Falls	Post Falls Community United Presbyterian Church	4th and William Sts.	19840907	BUILDING	
85002100	IDAHO	Kootenai	Coeur d'Alene	Prairie School II	Prairie Ave.	19850912	BUILDING	Kootenai County Rural Schools TR
74000742	IDAHO	Kootenai	Rathdrum	Rathdrum State Bank	1st and Mills Sts.	19741108	BUILDING	
76000676	IDAHO	Kootenai	Coeur d'Alene	Roosevelt School	1st and Wallace Sts.	19760730	BUILDING	
85002101	IDAHO	Kootenai	Rose Lake	Rose Lake School II	Queen St. and ID 3	19850912	BUILDING	Kootenai County Rural Schools TR
92000418	IDAHO	Kootenai	Coeur d'Alene	Sherman Park Addition	Bounded by Garden Ave., Hubbard St., Lakeshore Dr. and Park Dr.	19920427	DISTRICT	
79000795	IDAHO	Kootenai	Spirit Lake	Spirit Lake Historic District	Maine St.	19790208	DISTRICT	
03000124	IDAHO	Kootenai	Post Falls	Spokane Valley Land and Water Company Canal	Diverts in Falls Park, Fourth St.	20030320	STRUCTURE	
77000464	IDAHO	Kootenai	Rathdrum	St. Stanislaus Kostka Mission	McCartney and 3rd Sts.	19771117	BUILDING	
77000463	IDAHO	Kootenai	Coeur d'Alene	St. Thomas Catholic Church	919 Indiana Ave.	19771005	BUILDING	
85002156	IDAHO	Kootenai	Hayden Lake	Thunborg, Jacob and Cristina, House	Chicken Point	19850912	BUILDING	
92000420	IDAHO	Kootenai	Post Falls	Treaty Rock	N of I-90, NE of Spokane R. falls	19920430	SITE	
85002102	IDAHO	Kootenai	Silver Sands Beach	Upper Twin Lakes School	Twin Lakes Rd.	19850912	BUILDING	Kootenai County Rural Schools TR
96001507	IDAHO	Kootenai	Post Falls	Washington Water Power Bridges	.5 mi. W of jct. of Spokane and 4th Sts.	19961220	STRUCTURE	
97000765	IDAHO	Kootenai	Post Falls	Young, Samuel and Ann, House	120 4th Ave.	19970709	BUILDING	

East Hayden Lake School II
Hayden Lake Rd.

Jacob and Cristina
Thunborg House

John A. Finch
Caretaker's House
2180 Finch Rd

Clark House
5250 E. Hayden Lake Rd.

LEGEND

- Historic Locations
- Service Area
- APE/PPPA
- Parcels

Improvement Projects

- Gravity Interceptor Line
- Lift Station Minor Improvement
- Lift Station Rehab-In-Place
- Lift Station Replacement

0 1,500 3,000 6,000 9,000 Feet

N

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(fax) 208-664-5946

Hayden Lake Recreational Water and Sewer District

Historic Locations

Sources:
Kootenai County GIS Department
National Register of Historic Places (National Parks Service)

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Historic_Location_11x17L
DATE.....10/19/12

APPENDIX J.

Endangered Species and Critical Habitat Information

United States Department of the Interior
Fish and Wildlife Service
Idaho Fish And Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

U.S. Fish and Wildlife Service - Idaho Fish and Wildlife Office
Endangered, Threatened, Proposed, and Candidate Species
With Associated Proposed and Critical Habitats in Idaho

October 18, 2012

This Letter and Species List
The U.S. Fish and Wildlife Service (Service) is providing this letter in response to your inquiry regarding federally listed, proposed, and candidate species, and proposed and designated critical habitats that may occur in Idaho. Use the attached Species List to ensure compliance with Sections 7 and 9 of the Endangered Species Act (Act). As a federal agent or designated non-federal representative, use this list in conjunction with best available information to assess whether a proposed action may affect these species or their habitats. If you determine a proposed action may affect a species or their habitats, contact the Service to initiate informal or formal consultation. This list is only valid for a period of 90 days. An updated list can be obtained by downloading the PDF file: www.fws.gov/idaho/species/IdahoSpeciesList.pdf.

Candidate Species Conservation
Though Candidate species have no protection under the Act, they are included in the Species List for early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises project proponents to evaluate potential effects to Candidate species that may occur in the project area. Should the species be listed, this may expedite Section 7 consultation under the Act.

Effects Beyond Idaho
If the anticipated effects of an action extend beyond the range of Idaho, please contact the appropriate Service Contact for lists of species and habitats occurring in those adjacent states.

U.S. Fish and Wildlife Service Contacts
Idaho - Idaho Fish and Wildlife Office, Bob Kibler, bob_kibler@fws.gov, (208) 378-5255
Montana - Montana Ecological Services Field Office, (406) 449-5225
Nevada - Nevada Fish and Wildlife Office, (775) 861-6300
Oregon - LaGrande Field Office, (541) 962-8584
Utah - Utah Ecological Service Field Office, (801) 975-3330
Washington - Eastern Washington Field Office, (509) 891-6839
Wyoming - Wyoming Ecological Services Field Office, (307) 772-2374

NOAA Fisheries Species
Listed or proposed species that are under National Marine Fisheries Service's (NOAA Fisheries) jurisdiction do NOT appear on the Service's Species Lists. In Idaho, please contact NOAA Fisheries at (208) 378-5696 or visit NOAA Fisheries' webpage at http://www.nwr.noaa.gov/Species-Lists.cfm for consultation information.

Additional Information
To obtain additional information about the Act, please visit one of the Service's internet sites at http://www.fws.gov/endangered/laws-policies/index.html; http://www.fws.gov/idaho/agencies.htm; or speak with a Service Contact.

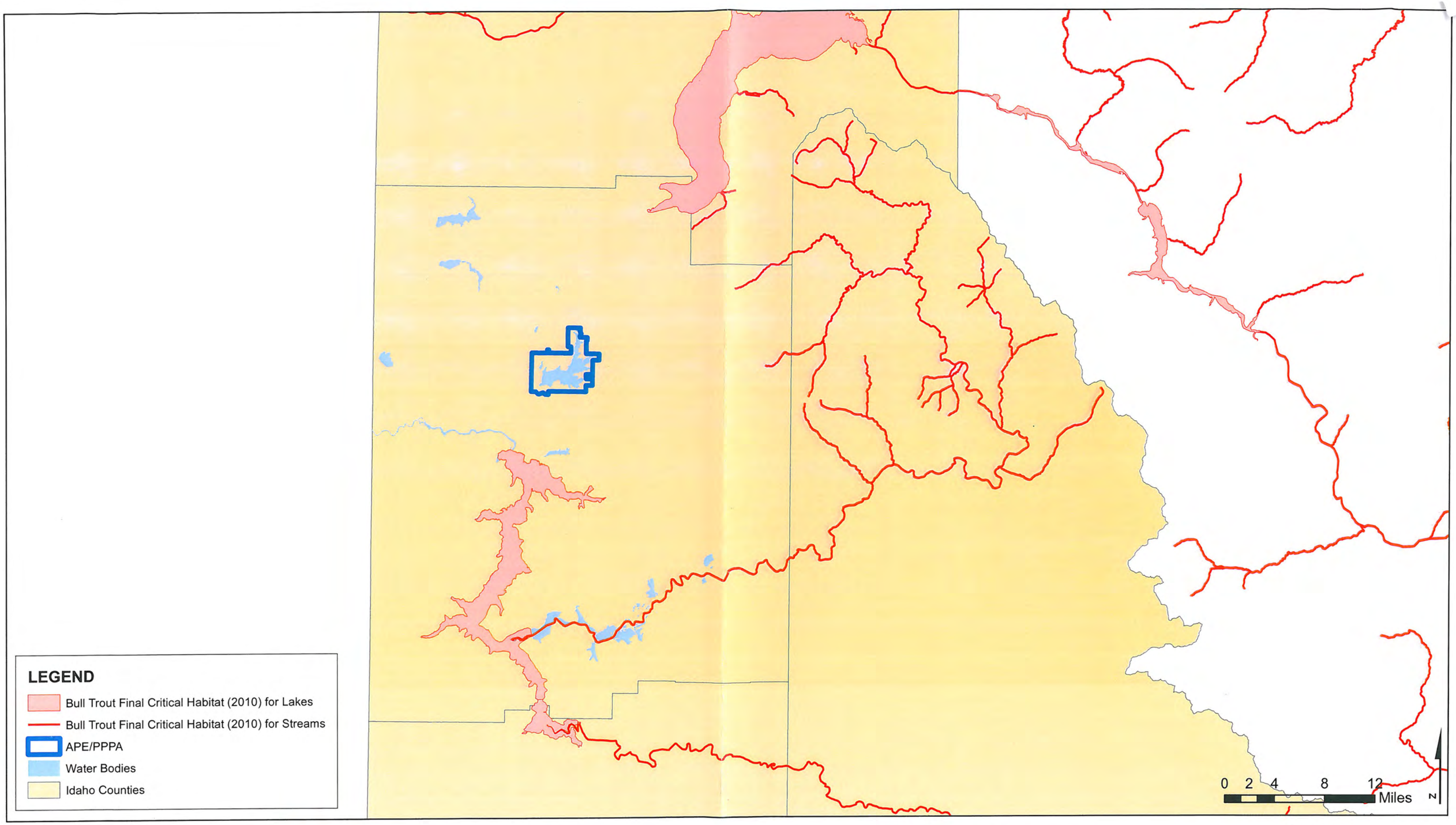
This species list was revised by the USFWS on 09/17/2012, and is valid for 90 days after .

U.S. Fish and Wildlife Service • Idaho Fish and Wildlife Office

CANDIDATE, PROPOSED AND LISTED SPECIES & PROPOSED AND DESIGNATED CRITICAL HABITAT IN IDAHO

	Herps	Birds		Mammals						Fish		Mollusks				Plants							
Common Name	Columbia Spotted Frog (Great Basin Population)	Greater Sage-Grouse	Yellow-Billed Cuckoo	Canada Lynx	Grizzly Bear	Northern Idaho Ground Squirrel	Selkirk Mountains Woodland Caribou	Southern Idaho Ground Squirrel	North American Wolverine	Bull Trout	Kootenai River White Sturgeon	Banbury Springs Lanx	Bliss Rapids Snail	Bruneau Hot Springsnail	Snake River Physa	Christ's Paintbrush	Goose Creek Milkvetch	MacFarlane's Four-O'Clock	Packard's Milkvetch	Spalding's Catchfly	Ute Ladies'-Tresses	Water Howellia	Whitebark Pine
Scientific Name	*Rana luteiventris*	*Centrocercus urophasianus*	*Coccyzus americanus*	*Lynx canadensis*	*Ursus arctos horribilis*	*Spermophilus brunneus brunneus*	*Rangifer tarandus caribou*	*Spermophilus brunneus endemicus*	*Gulo gulo luscus*	*Salvelinus confluentus*	*Acipenser transmontanus*	*Lanx* sp.	*Taylorconcha serpenticola*	*Pyrgulopsis bruneauensis*	*Haitia (Physa) natricina*	*Castilleja christii*	*Astragalus anserinus*	*Mirabilis macfarlanei*	*Astragalus cusickii var. parkardiae*	*Silene spaldingii*	*Spiranthes diluvialis*	*Howellia aquatilis*	*Pinus albicaulis*
Gooding		C							C			E	T		E								
Idaho			C	T					C	T-DCH								T		T			C
Jefferson		C	C	T					C												T		
Jerome		C											T		E								
Kootenai			C	T					C	T-DCH										T		T	
Latah			C	T					C											T		T	
Lemhi		C	C	T					C	T-DCH													
Lewis			C						C	T-DCH										T			
Lincoln		C							C														
Madison		C	C	T					C												T		
Minidoka		C	C												E								
Nez Perce				T					C	T-DCH										T			
Oneida		C																					
Owyhee	C	C	C							T-DCH				E	E								
Payette		C						C		T					E				C				
Power		C																					
Shoshone				T					C	T-DCH										T		T	C
Teton				T	T				C														C
Twin Falls	C	C	C						C				T		E								
Valley				T		T			C	T-DCH													C
Washington		C				T		C	C	T-DCH					E								C

Table Key: C = Candidate Species P= Proposed Species T=Threatened Species E=Endangered Species PCH= Proposed Critical Habitat DCH=Designated Critical Habitat



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(fax) 208-664-5946

Hayden Lake Recreational Water and Sewer District

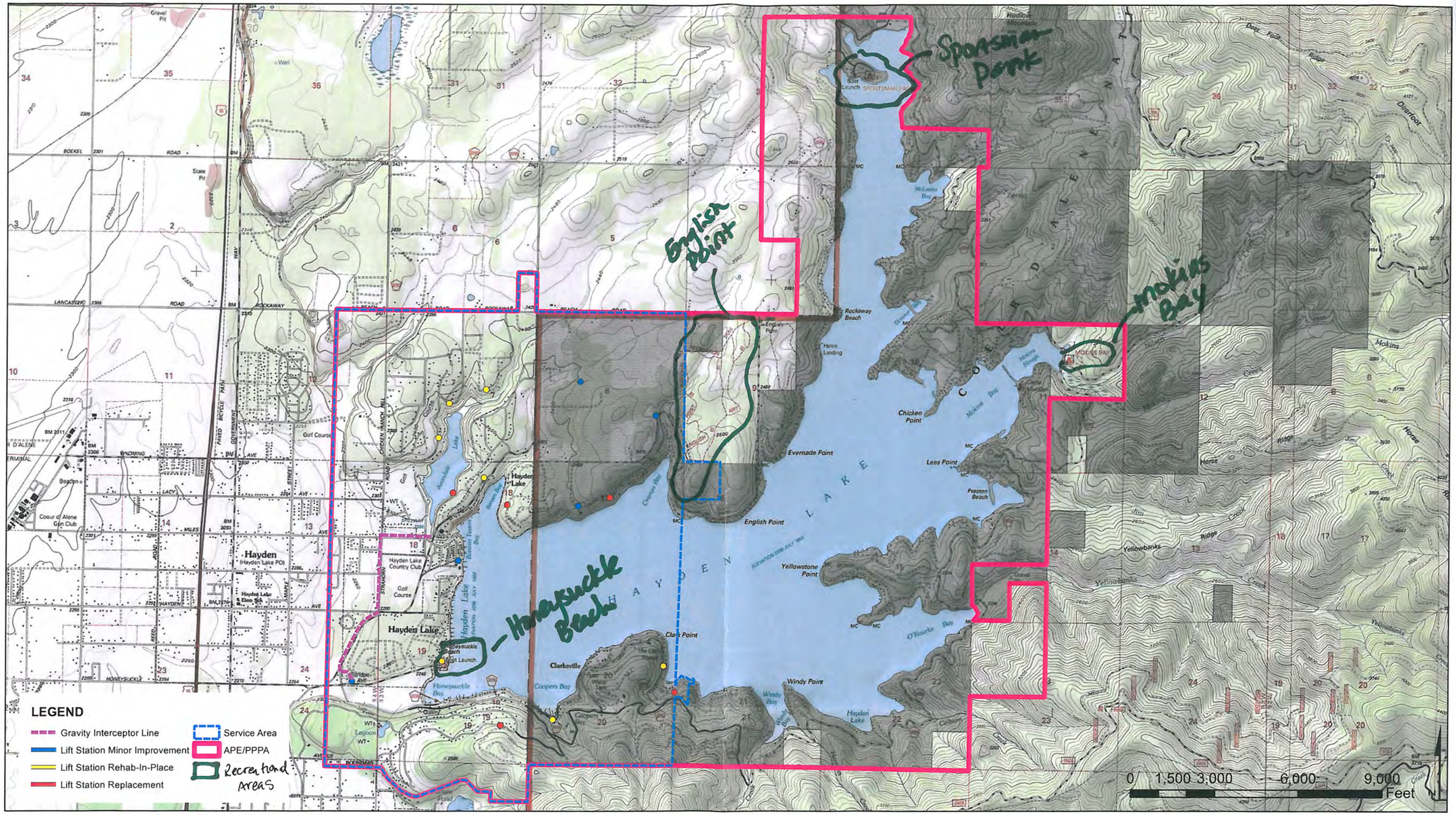
Critical Habitat (Bull Trout)

Sources:
Idaho Department of Water Resources
US Fish and Wildlife

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....CritHabitat_11x17L
DATE.....10/17/12

APPENDIX K.

Recreation and Open Spaces Map



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(fax) 208-664-5946

Hayden Lake Recreational Water and Sewer District

Recreational Areas

Sources:
USA Topo Maps

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....RecreationalAreas_11x17L
DATE.....10/23/12

APPENDIX L.

Farmland Classification Information

Farmland Classification—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:32,600 if printed on A size (8.5" × 11") sheet

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

Farmland Classification

Farmland Classification— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.				
Subtotals for Soil Survey Area			—	—
Totals for Area of Interest			**4,760.9**	**100.0%**

Farmland Classification— Summary by Map Unit — Kootenai County Area, Idaho (ID606)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
103	Avonville fine gravelly silt loam, 0 to 7 percent slopes	Prime farmland if irrigated	361.5	7.6%
104	Avonville fine gravelly silt loam, 7 to 20 percent slopes	Farmland of statewide importance	25.7	0.5%
105	Blinn loam, 5 to 35 percent slopes, very stony	Not prime farmland	135.7	2.9%
107	Bonner silt loam, 0 to 8 percent slopes	Prime farmland if irrigated	366.8	7.7%
108	Bonner gravelly silt loam, 0 to 8 percent slopes	Prime farmland if irrigated	12.2	0.3%
121	Pits, gravel		2.2	0.0%
126	Kootenai gravelly silt loam, 0 to 7 percent slopes	Prime farmland if irrigated	213.9	4.5%
136	Lacy-Bobbitt association, 5 to 35 percent slopes, very stony	Not prime farmland	95.3	2.0%
137	Lacy-Bobbitt association, 35 to 65 percent slopes, very stony	Not prime farmland	48.9	1.0%
148	McCrosket-Tekoa association, 35 to 65 percent slopes	Not prime farmland	1.4	0.0%
149	McGuire-Marble association, 0 to 7 percent slopes	Prime farmland if irrigated	261.8	5.5%
153	Mokins silt loam, 35 to 65 percent slopes	Not prime farmland	61.9	1.3%
158	Potlatch silt loam	Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season	14.3	0.3%
160	Ramsdell silt loam	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	44.6	0.9%
163	Rock outcrop		64.8	1.4%
164	Rubson-Mokins complex, 0 to 20 percent slopes	Farmland of statewide importance, if drained	342.1	7.2%

Farmland Classification— Summary by Map Unit — Kootenai County Area, Idaho (ID606)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
191	Tekoa gravelly silt loam, 35 to 65 percent slopes	Not prime farmland	244.3	5.1%
205	Water		480.6	10.1%
Subtotals for Soil Survey Area			**2,777.9**	**58.3%**
Totals for Area of Interest			**4,760.9**	**100.0%**

Description

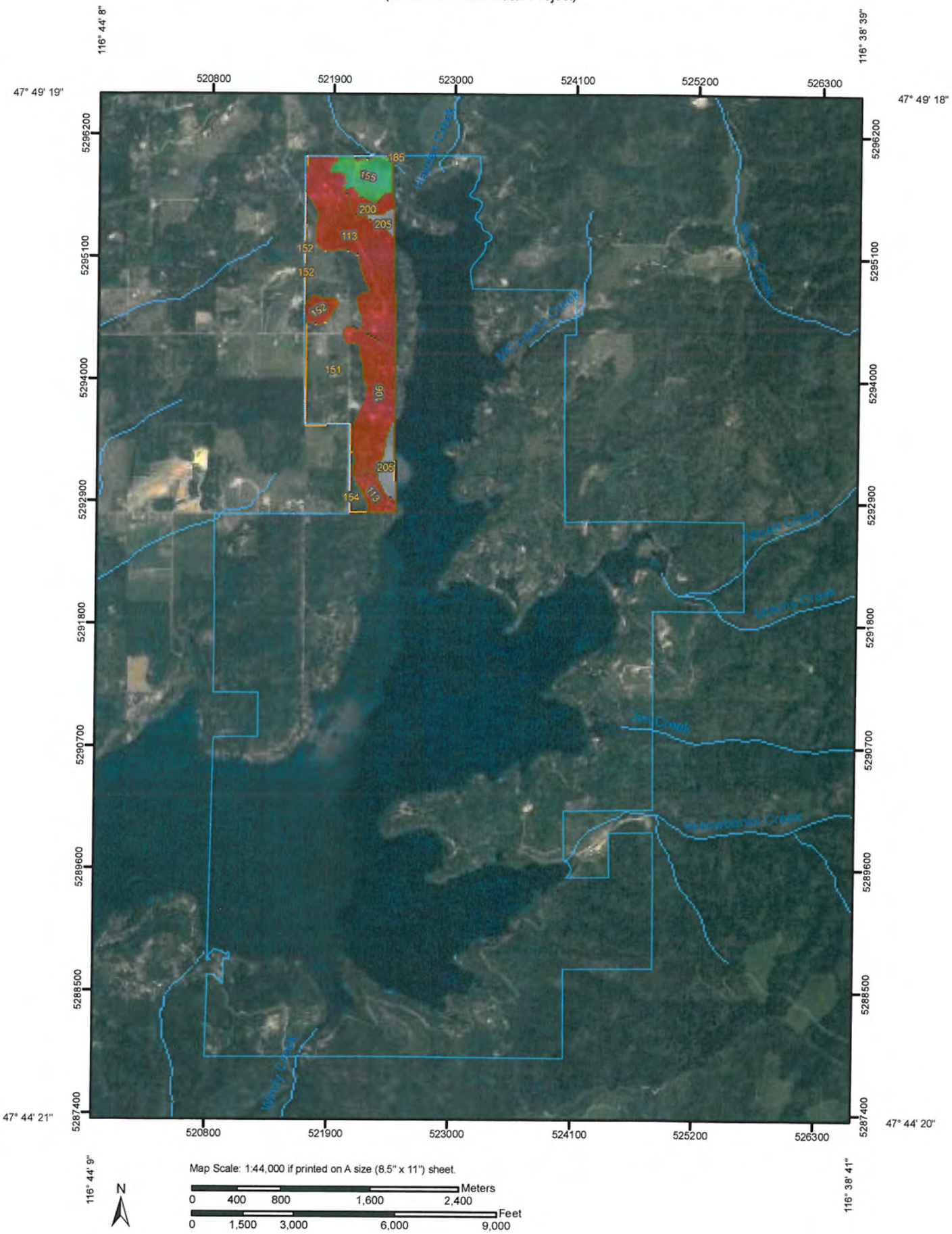
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Farmland Classification—Idaho Panhandle National Forest, Idaho, and Kootenai County Area, Idaho
(HLRWSD Wastewater Project)



USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:44,000 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

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

Soil Survey Area: Idaho Panhandle National Forest, Idaho
Survey Area Data: Not available

Soil Survey Area: Kootenai County Area, Idaho
Survey Area Data: Version 8, Sep 28, 2012

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.

Date(s) aerial images were photographed: 6/23/2004

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.

Farmland Classification

Farmland Classification— Summary by Map Unit — Idaho Panhandle National Forest, Idaho (ID670)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
No soil data available for this soil survey area.				
Subtotals for Soil Survey Area			**—**	**—**
Totals for Area of Interest			**6,252.1**	**100.0%**

Farmland Classification— Summary by Map Unit — Kootenai County Area, Idaho (ID606)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
106	Blinn loam, 35 to 65 percent slopes, very stony	Not prime farmland	90.4	1.4%
113	Chatcolet cobbly loam, 25 to 65 percent slopes	Not prime farmland	165.4	2.6%
151	Mokins silt loam, 5 to 20 percent slopes	Farmland of statewide importance, if drained	192.8	3.1%
152	Mokins silt loam, 20 to 35 percent slopes	Not prime farmland	14.6	0.2%
154	Mokins-Chatcolet complex, 5 to 20 percent slopes	Farmland of statewide importance, if drained	11.2	0.2%
155	Moscow loam, 5 to 35 percent slopes	Farmland of statewide importance	41.8	0.7%
185	Spokane-Moscow association, 35 to 65 percent slopes	Not prime farmland	0.0	0.0%
200	Vassar-Rock outcrop complex, 20 to 55 percent slopes	Not prime farmland	16.1	0.3%
205	Water		25.7	0.4%
Subtotals for Soil Survey Area			**557.8**	**8.9%**
Totals for Area of Interest			**6,252.1**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

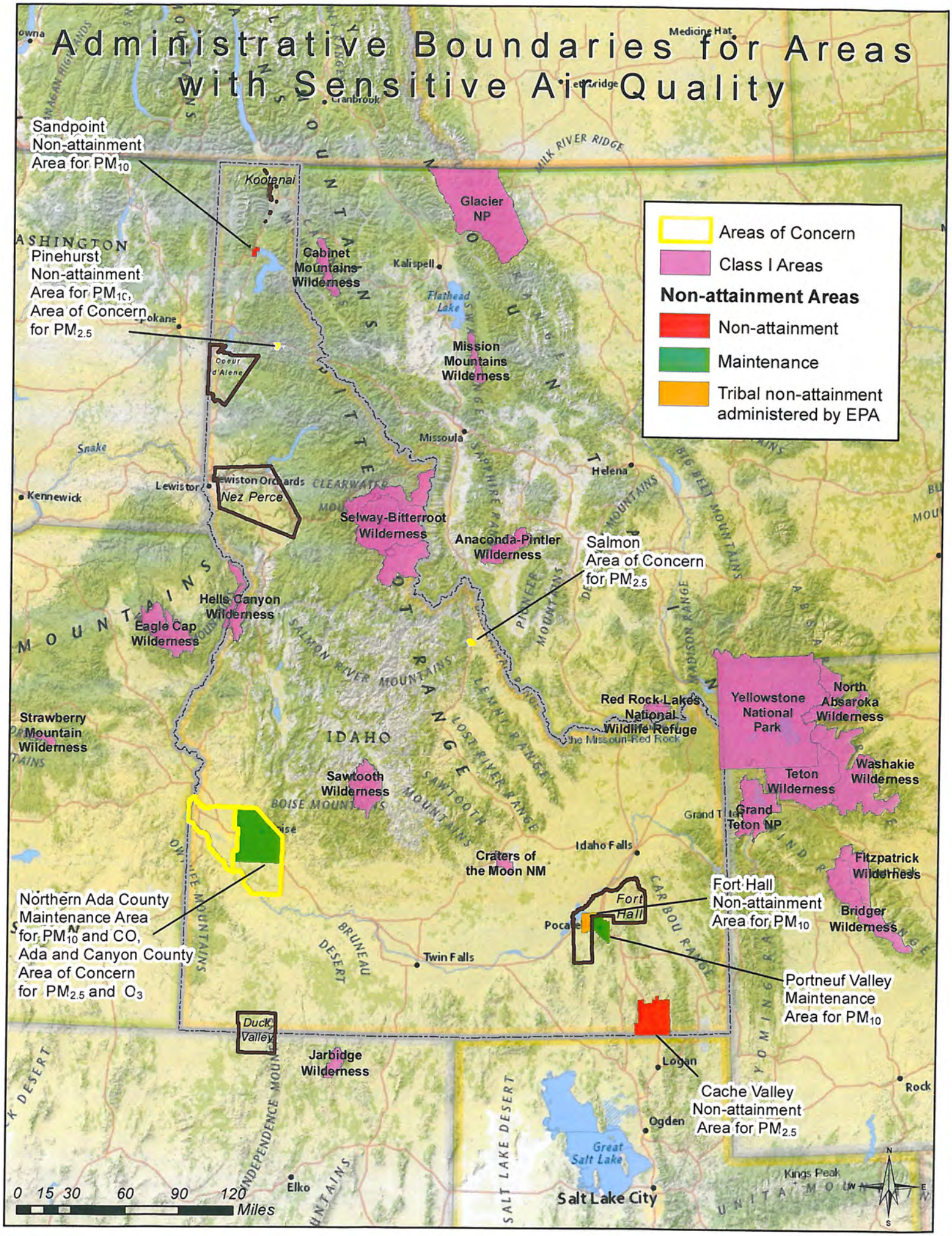
Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

APPENDIX M.

Air Quality Map

Administrative Boundaries for Areas with Sensitive Air Quality



APPENDIX N.

Water Quality Information

SUB-BASIN ASSESSMENT AND TOTAL MAXIMUM DAILY LOADS OF LAKES AND STREAMS LOCATED ON OR DRAINING TO THE RATHDRUM PRAIRIE (17010305)

November 22, 2000

Idaho Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene ID 83814

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Appendix B: Sediment Model Data Spreadsheets (not included in this document as posted to Web site)

Appendix C: Hayden Lake Total Phosphorous Data (not included in this document as posted to Web site)

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1. Executive Summary

The streams and lakes flowing or draining to the Rathdrum-Spokane Aquifer are assessed. The section 303(d) listed streams are Fish and Rathdrum Creeks. The listed lakes are Hauser, Hayden, Spirit and Twin Lakes. The sub-basin assessment reviews the existing data for the streams and lakes. The Spokane River's water temperature is assessed. Sediment model results are provided for Fish and Rathdrum Creek. The assessment finds that the temperature limitation of the Spokane River is caused by natural conditions. It recommends the river be redesignated as a seasonal cold water biota supported by a temperature standard reflecting temperatures attained during hot, dry summers. The assessment recommends nutrient total maximum daily loads (TMDLs) be developed for Hauser, Hayden and Twin Lakes. Dissolved oxygen limitation of Hauser Lake is dependent on total phosphorous reductions. The most recent monitoring data (1993-1999) indicates that Spirit Lake is meeting and is often below its total phosphorous goal of 12 ug/L. Dissolved oxygen data indicates the lake meets the standards. Biotic data and sediment modeling of Fish and Rathdrum Creeks indicate these water bodies are not water quality limited by sediment. Both water bodies are well below or near the threshold of 50% above background sedimentation rates. Bacteria analyses indicate the standards are met for Fish and Rathdrum Creeks as well as Upper Twin Lake. Although nutrient data demonstrates Fish and Rathdrum Creeks are not limited by nutrients, the nutrient TMDL developed for Twin Lakes will, by necessity, address Fish and Rathdrum Creeks.

No TMDLs are required for the Fish Creek, Rathdrum Creek and Spirit Lake. Bacteria and sediment TMDLs are not required for Twin Lakes. Sediment TMDLs are not required for Hayden, Spirit or Twin Lakes. The Department of Environmental Quality will be de-listing these segments for these pollutants as part of its 2002 303(d) listing process.

If the Spokane River is redesignated as recommended, its three segments will meet the more appropriate standards. The TMDLs for temperature of the Spokane River are deferred until the redesignation process has proceeded to its end point. The nutrient TMDL should address the dissolved oxygen limitation of Hauser Lake. The dissolved oxygen TMDL for Hauser Lake is deferred until nutrient limitation has an opportunity to reduce the lake productivity and oxygen demand. The recommendations of the sub-basin assessment for TMDL development, segment - pollutant de-listing and TMDL deferment are summarized in Table 1.

Total phosphorous total maximum daily loads (TMDLs) have been developed for Hauser, Hayden and Twin Lakes based on the goals of their respective lake management plans and nutrient loading analyses. The TMDLs allocate yearly total phosphorous loads to the sources of phosphorous to the lakes and apportions total phosphorous load reductions required of the manageable sources.

Lake management plans addressing nutrients reductions have been developed for Hauser, Hayden, and Twin Lakes. These plans will serve as the starting points for TMDL implementation plans for the three lakes.

Table 1: Results of sub-basin assessment based on application of the available data.

Water body Name and HUC Number	Assessed Support Status	Reasons segment to be de-listed for pollutant	Reason TMDL deferred
Spokane River 17010305 3552	CWB temperature standard exceeded	N.A.	TMDL deferred until temperature and/or beneficial use standards reviewed/revised
Spokane River 17010305 3553	CWB temperature standard exceeded	N.A.	TMDL deferred until temperature and/or beneficial use standards reviewed/revised
Spokane River 17010305 4554	CWB temperature standard exceeded	N.A.	TMDL deferred until temperature and/or beneficial use standards reviewed/revised
FishCreek 17010305 3561	Sediment modeling and nutrient data indicate cold water biota supported.	Sediment modeled at below 50% above background. Nutrients concentrations of Fish Creek well below stream guidelines. Twin Lakes nutrient TMDL will address Fish Creek	N.A.
Twin Lakes 17010305 7561	CWB impaired by nutrients; nutrient TMDL required.	CWB not impaired by sediment. Sediment not impacting salmonid sight feeding beneficial use directly; listing in error	N.A
Rathdrum Creek 17010305 3560	Sediment modeling and nutrient data indicate cold water biota supported. Bacteria standard not exceeded indicating secondary contact recreation supported.	Sediment below 100% above background and near lowest threshold of 50% above background. Nutrient concentrations below stream guidelines. Nutrient TMDL for Twin Lakes will address Rathdrum Creek. Bacteria standard not exceeded.	N.A.
Hauser Lake17010305 3562	CWB impaired by nutrients; nutrient TMDL required. CWB impaired by dissolved oxygen deficit created by organic matter resulting from lake productivity	N.A.	Dissolved oxygen TMDL deferred until nutrient reduction approach is assessed to determine if dissolved oxygen recovers.
Hayden Lake 17010305 7555	CWB threatened by nutrients; nutrient TMDL required.	CWB not impaired by sediment. Sediment not impacting salmonid sight feeding beneficial use directly; listing in error	N.A.
Spirit Lake 17010305 3438	CWB supported by measured dissolved oxygen, and nutrients. CWB not impaired by sediment.	Sediment not impacting salmonid sight feeding beneficial use directly; listing in error. Dissolved oxygen meeting water quality standards. Total phosphorous at or below the lake plan goals.	N.A.

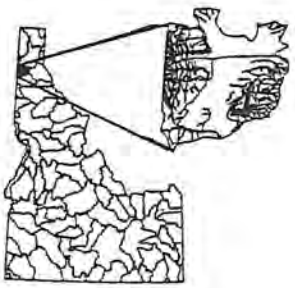
Note: N.A. - Not Applicable

2. SUB-BASIN ASSESSMENT OF LAKES AND STREAMS LOCATED ON OR DRAINING TO THE RATHDRUM PRAIRIE (17010305)

2.0 Rathdrum-Spokane Sub-basin Water Quality at a Glance

Water Quality at a Glance:

Hydrologic Unit Code..... 17010305
Water Quality Limited Segments..... Hauser Lake; Hayden Lake; Spirit Lake; Fish Creek-Twin Lakes-Rathdrum Creek
Beneficial Uses affected..... Cold Water Biota, salmonid Spawning, Primary Contact Recreation
Pollutants of Concern..... Nutrients, sediment, D.O. and bacteria
Known Land Uses..... Forestry, agriculture, urban



2.0.1 Prologue:

The impact of the trace (heavy) metals cadmium, lead and zinc on the Spokane River has been addressed in assessments of the Spokane River and the Coeur d'Alene Lake Plan (Gugliomone, 1992; IDEQ, 1996a). A total maximum daily load document has been developed for these pollutants (IDEQ, 1998a; EPA, 2000). This subbasin assessment addresses the nonmetallic pollutants of concern for the entire subbasin. For background on the Spokane River, the reader is referred to the documents cited.

2.1. Characterization of the Watershed

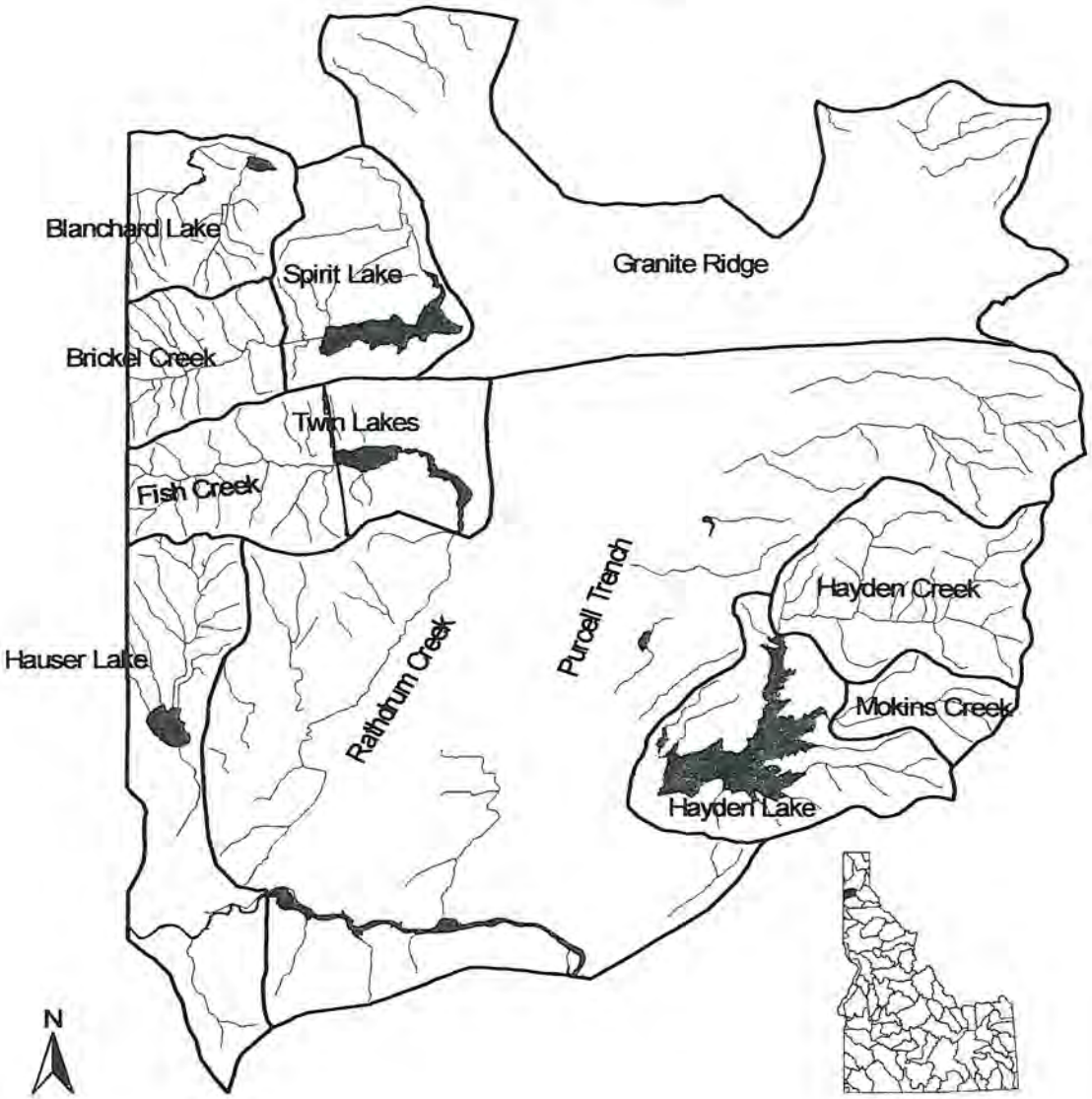
The Rathdrum Prairie is a 209 square mile area located west of the Coeur d'Alene Mountains, north of Coeur d'Alene Lake and south of Lake Pend Oreille (Figure 1). In addition to the two large lakes, five smaller lakes (Blanchard, Hauser, Hayden, Spirit and Twin) are located at the fringes of the prairie. Streams flow from the mountains adjacent to the prairie, either into the lake basins or onto the prairie, where these streams dewater rapidly to the underlying Rathdrum-Spokane Aquifer. The lakes at the margin of the prairie discharge in part, (Blanchard, Coeur d'Alene, Pend Oreille and Twin), or nearly wholly, to the aquifer (Hauser, Spirit and Hayden). The Spokane River traces the southern boundary of the watershed on its route from Coeur d'Alene Lake to the Washington border. The majority of the population of northern Idaho lives in the subbasin on or adjacent to the prairie.

2.1.1. Physical and Biological Characteristics

2.1.1.1 Climate

The Rathdrum Prairie sub-basin is located in the Northern Rocky Mountain physiographic region

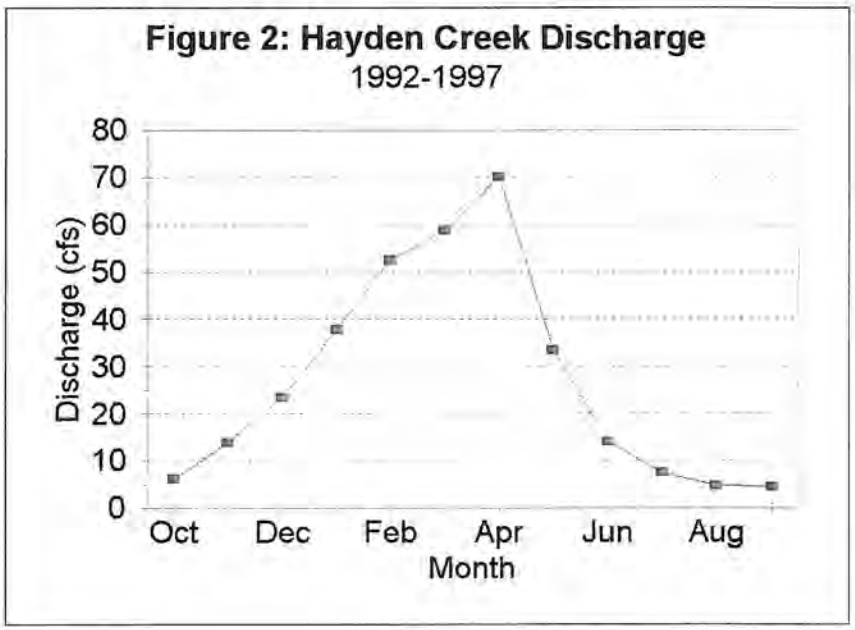
Figure 1: Rathdrum Aquifer Watershed (HUC 17010305)



to the west of the Bitterroot Mountains. The local climate is influenced by both pacific maritime air masses from the west as well as continental air masses from Canada to the north. The annual weather cycle generally consists of cool to warm summers with cold and wet winters. The relative warmth of summers or winters depends on the dominance of pacific or continental air masses. Precipitation amounts are most generous in the winter months. Precipitation takes the form of rain on the prairie and in the adjacent mountains below 3,000 feet of elevation, while it is in the form of snow in the mountains above 4,500 feet. The transitional zone between 3,000 and 4,500 feet holds a transient snow pack, which is subject to rapid melt when warm wet pacific air masses predominate. The result of these snow melt events is high discharge rain on snow events.

2.1.1.2. Hydrology

The average discharge hydrograph of Hayden Creek near its mouth is provided in Figure 2 (USGS, 1992-1997). The hydrograph is representative of streams of the sub-basin. The discharge of the streams of the sub-basin is dominated by the spring snowmelt. The streams draining the Coeur d'Alene and Selkirk Mountains have watersheds predominantly in the elevation range (3,000 - 4,500 feet) subject to winter "rain on snow" discharge events. The relative low elevation of the watersheds causes earlier maximum discharge (early-April), than from the majority of the watersheds of the Coeur d'Alene Mountains to the east or the Selkirk Mountains to the north. The lakes discharge to the aquifer with no back flow from the aquifer to the lakes. Lake levels are controlled by tributary stream discharge from their watersheds and the rate of discharge to the aquifer. The levels of Coeur d'Alene, Pend Oreille and Twin Lakes are controlled by discharge structures.



2.1.1.3 Land Forms, Geology and Soils

The Rathdrum Prairie is a large sand, gravel and cobble deposit resulting from the out wash of the Pleistocene Missoulian floods. The deposit is believed to have partially or wholly impounded Coeur d'Alene Lake as well as Hayden, Hauser, Twin and Spirit Lakes (Anderson, 1927). The prairie deposit is ringed by mountainous lands to the east (Coeur d'Alene Mountains), north, west and south (Selkirk Range). A gap in the Selkirk Range at the southwest edge of the prairie is the outlet for both the Spokane River as well as the Rathdrum-Spokane Aquifer.

The watersheds of the sub-basin draining the western flank of the Coeur d'Alene Mountains are generally underlain by rocks of the Belt Supergroup meta-sedimentary terrain. Isolated granitic intrusions and Miocene basalt flow formations are found in these watersheds as well. The Belt terrene weathers to predominantly silt size particles with rounded cobbles as the primary transitional material found in the higher gradient streams. The Selkirk Range forms the watersheds of streams flowing from the north and west to the lakes or the prairie. The range is a granitic formation. However, some remnant Belt geologies exist in some watersheds. These granitic substrates weather to sandy substrates. The predominant bedload of these streams is sand. Soils of the Coeur d'Alene Mountain watersheds are silty and stony podzols developed under predominantly cool conditions and mixed coniferous forest. Soils of the Selkirk Mountain watersheds are sandy podzols developed under predominantly cool conditions and mixed coniferous forest.

Tributaries to the lakes flowing from the mountains are high gradient streams (Rosgen B) channels. Streams flowing onto the prairie are similar. As these streams enter the prairie formation, an abrupt transition to lower gradient channels occurs in their final half miles. Streams quickly dewater into the sands and gravels. The lakes discharge to the prairie formation to feed the Rathdrum-Spokane Aquifer. Blanchard, Hauser Hayden and Spirit Lakes have either no or modest outlets which rapidly dewater. The exception is Twin Lakes, which forms Rathdrum Creek. This Creek flows at the edge of the prairie for approximately seven miles before it dewaters into the prairie gravels.

2.1.1.4. Vegetation

The predominant vegetation of the Coeur d'Alene and Selkirk Mountains, adjacent to the prairie, is mixed coniferous forest at higher elevations. Dominant conifers of the mixed forest are pines, true fir, Douglas fir, tamarack and red cedar. Cottonwood, aspen and alder are the predominant broadleaf species. Lower elevation slopes supported a dryer ponderosa pine forest, which was kept sparse by a more frequent fire occurrence. Fire suppression in the past ninety years has caused the conversion of most of these stands to Douglas fir forest. Riparian areas would be dominated by cottonwood, alder and red cedar. The prairie was grassland with a stony surface prior to European settlement. This vegetation formation was likely maintained by frequent burning practiced by the indigenous peoples. The grasslands and wooded areas would have expanded and contracted dependent on the fire cycle.

2.1.1.5. Aquatic Fauna

The native salmonids of the sub-basin's streams are cutthroat trout, whitefish and bull trout. Sculpin, shiners and bullhead catfish are also natives. The tailed frog, giant salamander and turtles completed the vertebrate species. The fish fauna of the lakes and some streams have been greatly altered by the introduction of several trouts, salmon and warm water species. A detailed discussion of the current fishery of Coeur d'Alene Lake is available in the Coeur d'Alene Lake Management Plan (IDEQ, 1996a). Similar introductions were made to the smaller lakes of the sub-basin with the collateral impact to their tributary streams. Although the lakes and some streams have highly altered aquatic fauna due to introductions, some headwater streams retain native species with the addition of rainbow and brook trout and the loss of bull trout. Although fish composition appears stable in the headwaters, fish abundance is generally believed to be reduced from historic levels observed during settlement of the area.

2.1.2 Cultural Impacts:

The watersheds of the Coeur d'Alene and Selkirk Mountains which drain to the lakes or directly to the prairie formation are managed primarily for timber production and dispersed recreation. Timber management has been moderately intense with large clear-cut areas and dense road development. Land management in this area is primarily by the U.S. Forest Service in the Coeur d'Alene Mountains. Large tracts of private industrial and private forestland exist in the Selkirk Mountains. The Inland Empire Paper Company has large timber land holdings in the watersheds of Hauser, Twin and Spirit Lakes as well as the watersheds draining south to the prairie formation. Near the population center of Coeur d'Alene, Hayden Lake and Dalton, timber management has been less intense to protect scenic values. Some forested watersheds were logged using railroad systems (Hayden and Fish Creeks).

Agriculture on the Rathdrum Prairie is primarily bluegrass seed and small grain production. No streams are present on the prairie to be affected by these practices. Agricultural burning (Falter and Hallock, 1987) has been suggested as a source of atmospheric nutrient deposition to the lakes, but the level of contribution has not been quantified. Grazing occurs on some tributaries to the lakes. Lancaster Creek, a tributary to Hayden Creek, and Fish Creek, as well as the shoreline of Upper Twin Lake, remain areas of intense cattle grazing. Grazing continues in the Brickel Creek watershed, which is the primary tributary to Spirit Lake. Cattle have been excluded from the stream by fencing.

The Rathdrum Prairie sub-basin has the largest population concentration in northern Idaho. The main population center in the sub-basin is the City of Coeur d'Alene on the northern shore of the lake. The Hayden, Hayden Lake and Dalton communities are arrayed along the eastern edge of the prairie. Many residences are located in the watersheds of tributaries to the lakes or streams flowing onto the prairie. The city of Post Falls is located along the Spokane River six miles west of Coeur d'Alene. Rathdrum is located on the western edge of the prairie. Twin Lakes Village is located at the foot of Twin Lakes, while the City of Spirit Lake is located to the north near Spirit Lake. The town of Athol is situated on the northeast edge of the prairie. Rural residences and businesses are found across the prairie and in the adjacent mountains. Lakeside residences and cabins fill the

shores of all the lakes. The cities of Coeur d'Alene, Post Falls, Hayden, Hayden Lake, Dalton and Rathdrum have centralized sewage collection and treatment. Many rural residences and lakeside homes or cabins use on-site wastewater treatment systems of varying efficiency. Lot size restrictions have been imposed on the Rathdrum Prairie to protect the Rathdrum-Spokane Aquifer from contamination. For additional information on the land use and demographics of the Coeur d'Alene Basin refer to the Coeur d'Alene Lake Management Plan (IDEQ, 1996a).

2.2. Regulatory Requirements:

2.2.1. Segments of Concern:

The stream segments listed in 1998 under Section 303(d) Clean Water Act for nonmetallic pollutants in sub-basin 17010305 are provided in Table 1. Two additional water bodies had been listed on the 1996 list. These were Mokins Creek (17010305 3557), which was listed for nutrients, sediment and habitat alteration and Brickel Creek (17010305 3437, which was listed for sediment. Mokins and Brickel Creeks were removed from the list when analysis of more recent water quality data provided scores sufficiently high for delisting (IDEQ 1996b).

Table 1: List of 1998 Section 303(d) Clean Water Act listed water bodies.

Water body Name	HUC Number	Boundaries	Pollutant(s)
Spokane River	17010305 3552	CdA Lake to Huetter	Temperature
Spokane River	17010305 3553	Huetter to Post Falls Bridge	Temperature
Spokane River	17010305 4554	Post Falls Bridge to WA Border	Temperature
Fish Creek	17010305 3561	WA Border to Twin lakes	Nutrients and sediment
Twin Lakes	17010305 7561		Bacteria, nutrients and sediment
Rathdrum Creek	17010305 3560	Twin Lks Outlet to E. Green acres Diversion	Nutrients and sediment
Hauser Lake	17010305 3562		Dissolved oxygen and nutrients
Hayden Lake	17010305 7555		Nutrients and sediment
Spirit Lake	17010305 3438		Nutrients, dissolved oxygen and sediment

2.2.2 Beneficial uses:

Of the listed water bodies, the Spokane River, Hauser, Hayden, Spirit and Twin Lakes have beneficial uses specifically designated in the Idaho Water Quality Standards (IDAPA 58.01.02.)(IDEQ, 2000). Beneficial uses of the other water bodies listed (Fish and Rathdrum Creeks) would be by interpretation of the standards, cold water biota and secondary contact recreation (IDAPA 58.01.02101.01.a).

The Spokane River (P-3, P-4) has designated uses in the Idaho water quality standards (IDAPA 58.01.02110.12.) of domestic water supply, agricultural water supply, cold water biota, primary and secondary contact recreation and salmonid spawning. Twin Lakes (P-13) have designated uses of domestic water supply, agricultural water supply, cold water biota, primary and secondary contact recreation (IDAPA 58.01.02110.12.). Hayden Lake (P-5) has designated uses of domestic water supply, agricultural water supply, cold water biota, salmonid spawning and primary and secondary contact recreation (IDAPA 58.01.02110.12.). It is designated as a special resource water as well. Hauser Lake (P-16) has designated uses of domestic water supply, agricultural water supply, cold water biota, primary and secondary contact recreation (IDAPA 58.01.02110.12.). Hauser and Twin Lakes have salmonid spawning protected for future use. Spirit Lake (P-9) has designated beneficial uses of domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary and secondary contact recreation and special resource water (IDAPA 58.01.02110.05.)

The Idaho Water Quality Standards and Wastewater Treatment Requirements are currently undergoing major revision under the Idaho Administrative Procedures Act requirements. Among the revisions are changes to the designated uses of several water bodies including those listed in Table 1. Agricultural water use would be dropped from all these water bodies. Secondary contact recreation is dropped as redundant, when primary contact recreation is designated. Primary contact recreation requires more stringent support criteria than secondary contact recreation. The protection of salmonid spawning for future use is dropped for Hauser and Twin Lakes. These changes have been adopted by the Idaho Board of Health & Welfare and approved by the Legislature. These changes are currently under review by the EPA.

2.2.3. Water Quality Criteria:

Water quality criteria supportive of the beneficial uses are stated in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDHW 1996b). The standards supporting the beneficial uses are outlined in Table 2. In addition to these standards cold water biota and salmonid spawning are supported by two narrative standards. The narrative sediment standard states:

Sediment shall not exceed quantities specified in section 250 or, in the absence of specific sediment criteria, quantities, which impair designated beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in Subsection 350.02.b. (IDAPA 58.01.02.200.08).

The excess nutrients standard states:

Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other aquatic growths impairing designated beneficial uses. (IDAPA 58.01.02.200.06).

Table 2: Water quality criteria supportive of beneficial uses.

Designated Use	Primary Contact Recreation	Secondary Contact Recreation	Cold Water Biota	Salmonid Spawning
Coliforms and pH	406 EC/100mL	576 EC/100mL	pH between 6.5 and 9.5	pH between 6.5 and 9.5
Coliforms and dissolved gas	126 EC/100mL geometric mean over 30days	126 FC/100mL geometric mean over 30 days	dissolved gas not exceeding 110%	dissolved gas not exceeding 110%
chlorine			total chlorine residual less than 19 ug/L/hr or an average 11 ug/L/4 day period	total chlorine residual less than 19 ug/L/hr or an average 11 ug/L/4 day period
toxics substances			less than toxic substances set forth in 40 CFR 131.36(b)(1) Columns B1, B2, D2	less than toxic substances set forth in 40 CFR 131.36(b)(1) Columns B1, B2, D2
dissolved oxygen			exceeding 6 mg/L D.O.	exceeding 5 mg/L intergraval D. O.; exceeding 6 mg/L surface
temperature			less than 22°C (72°F) instantaneous; 19°C (66°F) daily average	less than 13°C (55°F) instantaneous; 9°C (48°F) daily average
ammonia			low ammonia (formula/tables for exact concentration	low ammonia (formula/tables for exact concentration
turbidity			less than 50 NTU instantaneous greater than background; 25 NTU over 10 days greater than background	

2.3. Water Quality Concerns and Status:

2.3.1 Pollutant Sources

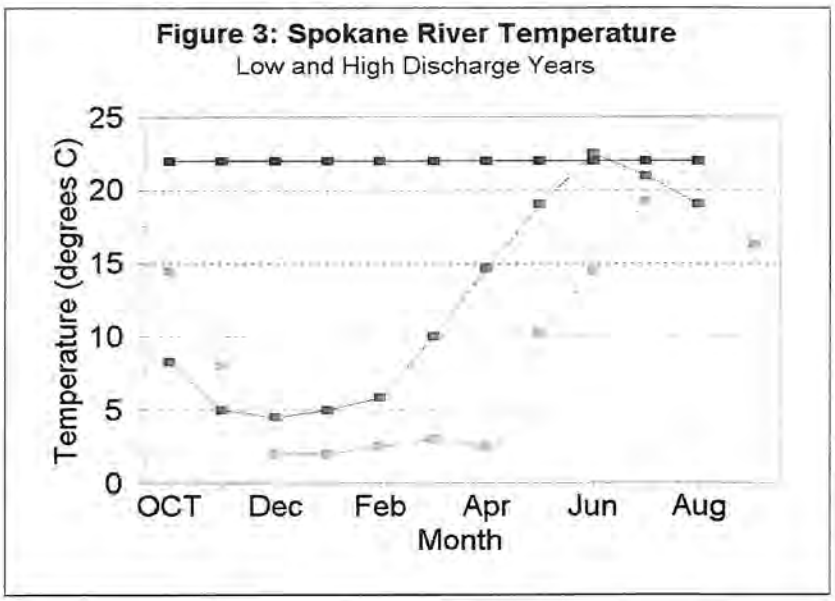
The water bodies listed in the sub-basin have reported pollutant exceedences for one or more of the following pollutants: bacteria, nutrients, sediment, dissolved oxygen and temperature. Bacterial contamination would be predominantly from livestock grazing. Some bacterial contamination may be from insufficient treatment of human wastes at lakeshore cabins. Excess nutrients normally are the result of human residential development or livestock grazing activities in the waters under assessment. Nutrients may also naturally build up in a lake over time causing a naturally eutrophic lake. Shallow lakes, which have limited water flow through the lake on an annual basis, are more likely to be eutrophic. Any water body, which has its source in a nutrient enriched lake, will itself be rich in nutrients. Sediment is a water constituent naturally yielded by watersheds to water bodies.

Excess sedimentation most often has its origin in roads developed for logging or access to a watershed. Roads may yield sediment directly from their surfaces or bed through mass wasting or their locations may cause the adjacent stream to begin bank and channel cutting. Dissolved oxygen may be deficient in lakes and some streams as the result of the presence of biological oxygen demanding materials. Often eutrophic lakes have sufficient algal and weed growth to engender dissolved oxygen problems. Dissolved oxygen deficits normally appear initially in the hypolimnetic waters of lakes, which thermally stratify. Streams often have insufficient dissolved oxygen as a result of temperature exceedences. Oxygen solubility declines with increased water temperature. Temperature exceedences in these waters are often due either to insufficient water flow, alteration of the stream structure to a broad shallow morphology or lack of riparian vegetation to supply shading. Streams which have their source in shallow warm lakes often are warm as well.

2.3.2. Available Water Quality Data:

2.3.2.1. Spokane River

Water temperature data has been collected on the Spokane River by the US Geological Survey at its Post Falls gauging station, Idaho Department of Environmental Quality, Spokane River Dischargers Group and others. Gugliomone (1992) summarized much of this data. During the late summer months of drought years, the Spokane River exceeds the temperature criteria (Figure 3) for cold water biota and salmonid spawning.



Note: Red: Low discharge year; Green: High discharge year; Blue: Temperature standard

Estimated backgrounds based on the assumption of totally forested watersheds would be 567.8 and 115 tons per year. Fish Creek sediment modeling provides a value 21.7% above the natural background, while Rathdrum Creek sediment modeling provides a value 54% above natural background. Model results for neither creek exceed the 100% above natural background and threshold indicative of water quality impairment, while Fish Creek is below the 50% above natural background lower limit and Rathdrum Creek is only 4% above this lower limit (Washington Forest Practices Board, 1995).

2.3.2.2.5 Fish Population Data:

Sedimentation can interfere with natural trout recruitment and cause the filling of pools. The impact should be reflected in the trout populations. Trout population density has been assessed in some tributaries of the lakes by DEQ beneficial use reconnaissance teams (IDEQ, 1998b). Brook and cutthroat trout are the salmonids found in Fish Creek. Trout population densities (salmonid/m^2/ hour effort) were 0.072 and 0.230 in the two reaches of Fish Creek assessed. Sculpin populations (sculpin/m^2/ hour effort) were 0.028 and 0.061. Three age classes of brook trout, the most abundant fish, were found. Fish populations were not assessed in Rathdrum Creek. Reference streams, in the Priest Lake Basin (Two Mouth and Trapper Creeks), range from 0.1 - 0.3 salmonid/m^2/hour effort and 0.1 - 0.5 sculpin/m^2/hour effort (IDEQ, 1999). It is necessary to default to these reference streams, because no appropriate references have been assessed in the sub-basin. Fish density can be affected by other factors such as harvest and disease. In this case, however, fish densities and age class distribution data support the conclusion that Fish Creek is not water quality limited by sediment.

Twin Lakes was a west slope cutthroat trout fishery prior to European settlement of the area. Trout remains an important part of the fishery with some tributary production of trout. Tributary trout production is insufficient to support the lake population under fishing pressure. The trout population is augmented by stocking. Upper Twin Lake becomes too warm to support trout during August and September of most summers. Warm water species have been introduced to the lakes. Bass, pike, crappie, sunfish and bullhead catfish make up the important warm water biota (Horner, 1999).

2.3.2.3. Hayden Lake:

2.3.2.3.1 Limnology and Nutrient Loading

The limnology of the Hayden Lake was investigated in depth by Soltero and Associates (1986) and Bellatty (IDEQ, 1990). Hayden Lake was assessed as oligotrophic bordering on mesotrophy. The assessment was based on nutrient concentration, primary productivity and chlorophyll a concentrations. Algal bioassay of an earlier eutrophication survey indicated that phosphorous was the limiting nutrient to vegetation growth. During spring and fall, while nitrogen limits growth during the summer (USEPA, 1977b). Later more detailed investigations, by Soltero and his associates (1986), Bellatty (1990) and the Panhandle Health District (PHD 1994) indicate that phosphorous is the nutrient limiting algal growth in Hayden Lake. Volunteer monitoring completed between 1990 and 1999 indicates that phosphorous, chlorophyll a and clarity have remained rather

stable at the mid lake station. The ten-year average total phosphorous concentration for the lake in its photic zone is 7.75 ug/L. The ten-year average chlorophyll a concentration in the Secchi zone is 1.4 ug/L, while the ten-year average Secchi depth is 8.4 meters (Appendix C). These values are consistent with an oligotrophic lake, limited by phosphorous concentration (Ryding and Rast, 1989). Chlorophyll a and total phosphorous are considerably higher in near shore areas (Honeysuckle Beach) and in the shallow northern arm of the lake, while Secchi depths are more shallow. (Mosier, 1999).

Soltero and associates (1986) and later data (PHD, 1994) estimated the annual phosphorous loading at 3610 kg P/yr. The source of phosphorous loadings was estimated as 33% (1,200 kg P/yr) from the Hayden Creek watershed, 7% (240 kg P/yr) from Mokins Creek, 7% (250 kg P/yr) from the other tributaries, 17% (630 kg P/yr) from atmospheric fallout, 32% (1,170 kg P/yr) from residential storm water and 3% (120 kg P/yr) from shoreline septic systems. Water leaves Hayden Lake by evaporation, discharge to the Rathdrum Prairie Aquifer or through a very limited seasonal outlet. Effectively, phosphorous entering the lake remains in the lake system primarily in the bottom sediments.

Sediment contribution to Hayden Lake is primarily from Hayden Creek. Sediment contribution from the other tributaries is minimal. Examination of Secchi measurements of the lake early in the season (May and early June) indicates a pattern of higher clarity (5-7 meters) during and shortly after the high runoff period (Appendix C). This result indicates that fine sediment delivery is not exceeding the salmonid sight-feeding standard. Fisheries population information provided by Fish and Game do not indicate that sediment impairs in lake spawning. The original listing that sediment was exceeding a water quality standard was in error. Other than the impact of sediment bound phosphorous on the phosphorous concentration of the lake, an impact of sediment to a beneficial use of the lake could not be demonstrated.

2.3.2.3.2 Fisheries

Hayden Lake was a west slope cutthroat trout fishery prior to settlement of the area. Trout remains an important part of the fishery with significant tributary production of trout. Most trout production occurs in Hayden Creek where fishing is prohibited. Tributary trout production is insufficient to support the lake population under fishing pressure. The trout population is augmented by stocking. Warm water species have been introduced to the lake. Bass, pike, crappie, sunfish and bullhead catfish make up the important warm water biota. This fishery is limited to the bays and northern arm of this cold and deep lake. The small mouth bass, largemouth bass and crappie are managed as high quality fisheries (Horner, 1999).

3.0 Total Maximum Daily Loads for the Water Quality Limited Water Bodies Located on or Draining to the Rathdrum Prairie (17010305)

3.1. Hayden Lake Total Maximum Daily Load

3.1.1. Introduction

The limnology and water quality of Hayden Lake has been investigated in depth (Soltero et. al., 1986; Bellatty, 1990). The lake has the nutrient status and biological productivity consistent with oligotrophy bordering on mesotrophy. The lake is phosphorous limited. Phosphorous entering the lake remains in the lake or its bottom sediments, because the lake discharges nearly completely to the Rathdrum-Spokane Aquifer.

The phosphorous loading budget of the lake is provided in Table 1.

Table 1: Total Phosphorous budget of Hayden Lake (Saltero et. al., 1986; PHD, 1994)

Phosphorous Source	Phosphorous Load (kg/year)	Percentage
Hayden Creek	1,200	33%
Mokins Creek	240	7%
Other Tributaries	250	7%
Atmospheric Fallout	630	17%
Residential Storm Water	1,170	32%
Shoreline Septic Systems	120	3%
Total	3,610	99%

The Hayden Lake Watershed Management Plan (PHD, 1994) has a goal for Hayden Lake of:

- Total Phosphorous at Secchi depth of 7 ug/L (10-year average)
- Average secchi depth of 10 meters
- Minimum dissolved oxygen of 6 mg/L or 90% of saturation whichever is greater.

Average total phosphorous is designated as the primary indicator of lake productivity and water quality (PHD, 1994).

The total phosphorous ten-year average in the Secchi zone is 7.75 ug/L (Mossier, 1993; CVMP, 1992-1999, Appendix C). The ten-year total phosphorous average is 10.7% above the Hayden Lake Management Plan goal.

3.1.2. TMDL Authority

Section 303(d)(1) of the Clean Water Act requires states to prepare a list of waters not meeting state water quality standards in spite of technology based pollution control efforts and the application of best management practices for nonpoint sources. This list must include a priority ranking "... taking into account severity of the pollution and the uses to be made of such waters." The prescribed remedy for these water quality limited waters is for states to determine the total maximum daily load (TMDL) for pollutants □... at a level necessary to implement applicable water quality standards with seasonal variations and a margin of safety ...□ A margin of safety is included to account for any lack of knowledge about how limiting pollutant loads will attain water quality.

Section 303(d)(2) requires both the list and any total maximum daily loads developed by the state be submitted to the Environmental Protection Agency (EPA). The EPA is given thirty days to either approve or disapprove the state's submission. If the EPA disapproves, the agency has another thirty days to develop a list or TMDL for the state. Both the list and all TMDLs, either approved or developed by EPA, are incorporated into the state's continuing planning process as required by section 303(e).

3.1.3. Loading Capacity

Based on the management plan goal of 7 ug/L in the Secchi zone and the ten-year average phosphorous of 7.75 ug/L, a 10.7% (7.75/7.0 x 100) reduction in total phosphorous is required by the plan. Since the measured load to the lake is 3,610 kilograms total phosphorous per year, the loading capacity required to meet the management plan is 3,223 kilograms total phosphorous per year ((3,610- (3,610 X 0.107). This value is the total phosphorous loading capacity of Hayden Lake. An estimated total phosphorous load reduction of 386.3 kilograms phosphorous per year is required to meet the lake plan goal.

3.1.4. Margins of Safety

The chemical measurements used to develop the ten-year total phosphorous average and nutrient loads have a precision margin of error of 5%. Discharge measurements contain a margin of error of 5%. Based on these two errors an additive margin of safety of 10% is applied. This additional total phosphorous load is deducted from the loading capacity to develop an allocable phosphorous load of 2,901 kilograms per year (3,223 - (3,223 X 0.1). An additional margin of safety is the deposition of phosphorous mineral in the lake bottom. The level of this mechanism has not been estimated and is ignored in the loading capacity calculations.

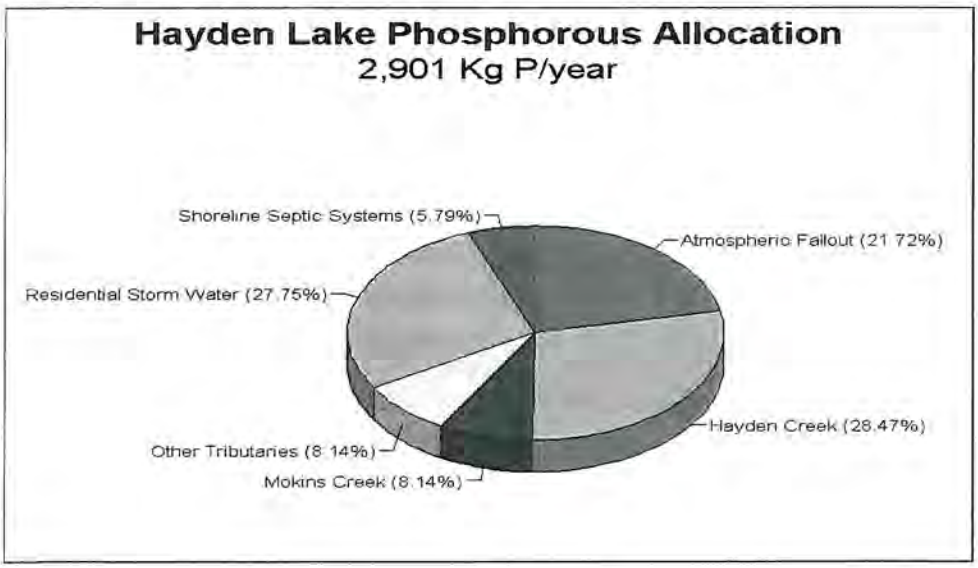
3.1.5. Total Phosphorous Load Allocation

All sources of phosphorous to Hayden Lake are nonpoint sources. Phosphorous load cannot be allocated evenly to the sources to the lake. Atmospheric fallout cannot realistically be controlled. The load allocation is constructed by removing the full load of atmospheric fallout from the allocable phosphorous load. Atmospheric fallout is 17% of the phosphorous load to the lake. Three and four-tenths percent (17%/5) is deducted from the load percentage of the five controllable sources to develop the load allocation (Table 2) (Figure 1).

Table 1: Total phosphorous allocation for Hayden Lake.

Phosphorous Source	Adjusted Percentage after Fallout Removed	Allocated Phosphorous Load (kilograms/year)	Total phosphorous load reduction required.
Atmospheric Fallout	-	630	0
Hayden Creek	36.4%	826	257
Mokins Creek	10.4%	236	74
Other Tributaries	10.4%	236	74
Residential Storm Water	35.4%	805	251
Shoreline Septic Systems	7.4%	168	53
Total	100%	2,901	709

Figure 1: Total phosphorous allocation for Hayden Lake.



3.1.6. Total Phosphorous Load Reduction Allocation

Phosphorous load reduction actions are discussed in depth in the Hayden Lake Management Plan (PHD, 1994). The sources and the responsible agencies or governments are designated in the plan's action items. The load reduction required, including the margin of safety (10%; 322 kilograms phosphorous per year) is 709 kilograms per year. The load reductions required of each source are provided in Table 2, column 4. The reductions are provided graphically in Figure 2.

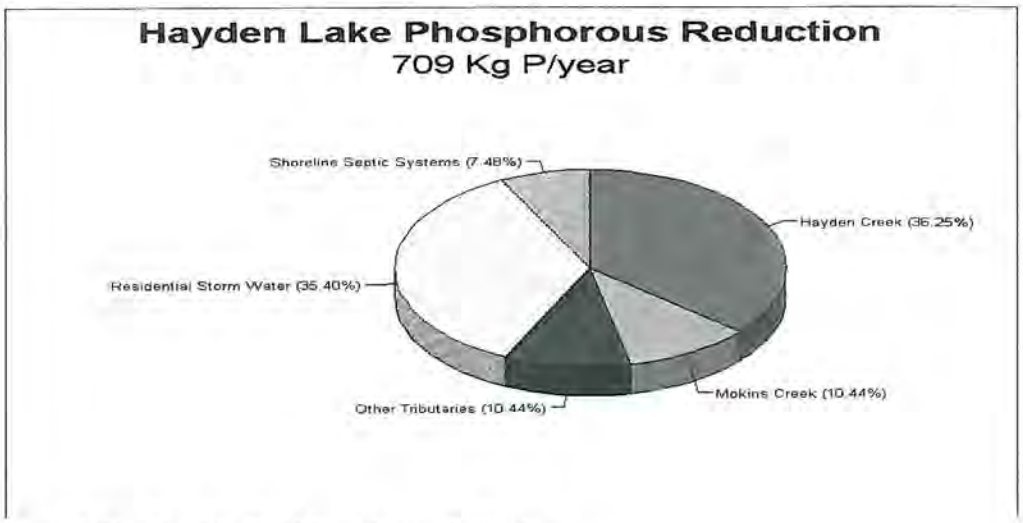


Figure 2: Hayden Lake Total Phosphorous Reductions

3.1.7. Seasonal critical conditions

The issue of critical conditions has importance in a stream which experiences radical changes in discharge (water volume) throughout the year. A lake, by its very nature as a watershed sink integrates and buffers seasonal flows. Plant growth conditions are critical during the summer months, but the growth nutrients are conserved by the lake. For this reason, lake nutrient TMDLs seek yearly reductions in the nutrient load without regard to seasonality.

3.1.8. Reasonable assurance

No point sources of nutrients are present in the watershed. The only assurance that the TMDL will be implemented is the ongoing implementation of remedial actions by Kootenai County, lakeshore owner's association and the State.

3.1.9. Monitoring Provisions

Hayden Lake has been monitored by a Citizens Volunteer Monitoring Program (CVMP) for the past ten years. The program has reliably provided phosphorous, clarity and chlorophyll a data collected during four and some years five summer months. This program will be relied upon to provide the water column data necessary to assess the effectiveness of the phosphorous load reductions required by the TMDL.

3.1.10. Feedback Provisions

Data from which the problem assessment and TMDL for Hayden Lake were developed are fairly accurate measurements. The loading analysis was completed more than a decade ago. As more up to date measurements are developed, these will be added to a revised TMDL as required.

When total phosphorous concentration declines below 7 ug/L, and remains at this level, further phosphorous load reduction will not be required of the sources. Best management practices for forest and road practices will be prescribed by a revised TMDL with erosion abatement structure maintenance provisions. Regular monitoring of the lake will be continued for an appropriate period to document maintenance of the full support.

3.1.11. References:

Bellatty, J., 1990. Hayden Lake, Kootenai County, Idaho 1987. Idaho Department of Health and Welfare, Division of Environmental Quality, Coeur d'Alene Regional Office, 2110 Ironwood Parkway, Coeur d'Alene ID 83814. 26p.

CVMP, 1992-1999. Unpublished data collected by the Citizens Volunteer Monitoring Project. Robert Black, Hayden Lake.

Mossier, J. 1993. Idaho lake water quality assessment report. Idaho Department of Health & Welfare-Division of Environmental Quality, Northern Idaho Regional Office, 2110 Ironwood Parkway, Coeur d'Alene ID 83814. Water Quality Status Report No. 105. 232p

PHD, 1994. Hayden Lake Management Plan. Panhandle Health District, 2195 Ironwood Court, Coeur d'Alene ID 83814. 88p.

Soltero, R.A., K.R. Merrill, M.R. Cather and L.M. Appel, 1986. Water quality assessment of Hayden Lake, Idaho. Department of Biology, Eastern Washington University, Cheney, WA 99004. 92p.

Falter, C.M. and D. Hallock, 1987. Limnological study and management plan for upper and lower Twin Lakes, Kootenai County, Idaho. Department of Fish and Wildlife, College of Forestry, Wildlife and Range Science. Idaho Water Resources Research Institute, University of Idaho, Moscow ID 83843. 185p.

Mossier, J. 1993. Idaho lake water quality assessment report. Idaho Department of Health & Welfare, Division of Environmental Quality, Northern Idaho Regional Office, 2110 Ironwood Parkway, Coeur d'Alene ID 83814. Water Quality Status Report No. 105. 232p

4.0 Response to Comments on the Upper Spokane (Rathdrum - Spokane Sub-basin Assessment and Hauser, Hayden and Twin Lakes TMDLs.

4.1. Introduction

The Upper Spokane (Rathdrum-Spokane) Sub-basin Assessment and the Hauser, Hayden and Twin Lakes TMDLs were submitted for a thirty-day public comment period between August 25, 2000 and September 25, 2000. The public comment period was advertised in three local newspapers: the Coeur d'Alene Press, Bonner County Daily Bee and the Spokesman Review. During the public comment period the Panhandle Basin Area Group met on September 20, 2000. The Upper Spokane Sub-basin Assessment and TMDLs were on the agenda of this meeting. The opportunity was afforded the public to comment on the documents. A copy of the documents was supplied to the EPA point of contact.

No written comment on the documents was received during the comment period. A single verbal comment was telephoned to IDEQ by Marita Little of Upper Twin Lake. This comment was followed up with a further discussion with the commenting party. A letter of comment was received from EPA on November 2, 2000. These comments are addressed in the text of the sub-basin assessment and TMDLs, where appropriate, and in the responsiveness summary.

4.2 Comment Received

4.2.1 Comment of Marita Little

Marita Little: She felt that even though livestock grazing is being managed many betters than in previous years, the cattle were still a source of bacteria at times. She also believes logging activities contribute to the sediment problems. She estimated that sedimentation has reduced the upper lake's depth by 3-5 feet over a 35-year period. She would rather not see the lake de-listed for bacteria and sediment.

Response: The filling of a lake by sediment is not a water quality impact addressed in the state standards. It may be an issue of water quantity. The sediment model applied to Fish Creek, the primary lake tributary, indicated an acceptable level of sediment yield,

below 50% above background. The cumulative watershed impact assessment made preparatory to the modeling indicated that sedimentation sources had declined in the basin since a similar assessment was completed in 1994. Sediment will be addressed in the nutrient TMDL prepared for Twin Lakes. Almost all phosphorous entering the lake will be attached to sediment particles. Phosphorous controls will, in part, necessitate sediment control in the implementation plan.

Bacteria (pathogen) exceedences were not found in the lake or the streams. Based on these data and the improvement of grazing practices, a bacterial problem was not demonstrated. In a manner analogous to sediment, bacteria contamination should be further controlled by the nutrient TMDL. Animal wastes are the source of both bacteria and nutrients. The grazing at the head of Upper Twin Lake and along lower Fish Creek has a phosphorous allocation made to it and a phosphorous reduction goal assigned. Steps taken to meet the allocation and reduction goal will limit bacterial contamination as well.

4.2.2 Comment of EPA

4.2.2.1 Comments on TMDLs

Comment 1: The relationship between the goals of the lake nutrient TMDLs and the Idaho water quality standards for nutrients is questioned.

Response: The Idaho water quality standards do not contain numeric nutrient standards. The functional standard is the nuisance weed growth standard stated in the sub-basin assessment (page 7). In the case of lakes, the nuisance weeds are phytoplankton, which initially affect water clarity and as the situation becomes more extreme can affect dissolved oxygen concentration. The standard must be applied based on the perceived trophic status of the lake and the ability to affect that trophic status. Each of the lake studies cited in the sub-basin assessment made an assessment of the lake, its limiting nutrient to plant growth and the trophic status of the lake. Hayden Lake is an oligotrophic lake, while Hauser and Lower Twin Lake are mesotrophic and Upper Twin Lake is eutrophic. Based on this information, each of the lake plans developed a nutrient reduction goal that would reduce the nuisance weed growth and was achievable in the lake addressed by the management plan. The difference in lake plan goals and TMDL goals arise from the difference in the lakes documented briefly in the sub-basin assessment and more fully in the cited lake studies and management plans.

Comment 2: Points on the TMDL checklist concerning critical periods (seasonality) and reasonable assurance were not addressed in the three TMDLs.

Response: Sections have been added to the TMDLs addressing these points. These points were overlooked because lakes integrate seasonal discharge and these lakes have no point discharges of nutrients.

Comment 3: The lake plans are provided as the implementation plans, but are not up to date with the TMDLs. A relationship between the proposed actions of the lake plans and nutrient reduction must be demonstrated.

Response: The lake plans are certainly starting points for TMDL implementation plans. The action items in each plan are designed to reduce erosion of sediment, which carries phosphorous into the lakes and nutrients from other sources. Some action items in these plans have been applied, notably the Kootenai County site grading ordinance. Others have not. In certain cases only alum treatment will achieve the goals of the TMDL. These plans will be revised after approval of the nutrient TMDLs by EPA. The relationship between action items developed. In cases where additional action items are required (alum treatment of Hauser and lower Twin Lake), these should be added.

Comment 4: Forest practices best management practices (BMPs) should be included in this TMDL.

Response: The Idaho Forest Practices Rules and Regulations are the BMPs for forest practices in Idaho and are required by law. By their very nature BMPs are preventive of water quality pollution, but are not typically remedial. The BMPs are currently prescribed. However, they should not be a part of the TMDL until such time that the beneficial use is fully supported. At that time, the BMPs' preventive role becomes important.

Comment 5: Age of the water quality studies on the lakes noted.

Response: TMDLs are to be developed with the best available data. The lake studies employed as the basis of the TMDLs are the best available data. In addition the Citizens Volunteer Monitoring Program (CVMP) results (Appendix C) link the earlier data to the present. These trends indicate that the nutrient status of the four lakes has not changed. We did not expect the nutrient loading percentages to change radically without implementation of remedial activities. The state cannot develop new water quality studies and meet the TMDL deadlines. It must abide by the rule of best available data.

Comment 6: It should be demonstrated how reduction in total phosphorous in Hauser Lake would cause increases in oxygen concentration in Hauser Lake. Regular monitoring of Hauser Lake should be implemented. The State of Washington should comment on the Hauser Lake TMDL and a discussion added on how Washington will address the TMDL.

Response: It is common limnological science that oxygen deficits in lakes are caused by increase of organic matter decomposition. It is also common knowledge that reduction in total phosphorous decreases plant biomass productivity. The Hauser Lake study, as well as its management plan, points these facts out. The text of the sub-basin assessment points out this relationship. In addition, alum treatment of a lake not only binds phosphorous into the sediments, it removes organic matter. The reduction of phosphorous inputs due to watershed management and alum treatment removal of self fertilization will result in less organic matter production and hence, less oxygen demand. A secondary benefit of alum is the binding of colloidal organic matter. The TMDL, which is a prescriptive document, does assume the reader has some knowledge of limnology from the sub-basin assessment and references.

Regular monitoring of Hauser Lake has occurred through the CVMP program through the 1990s and is expected to continue. Dissolved oxygen measurements are part of this assessment during four or five months of the spring and summer.

A good point is made concerning the across boundary nature of the Hauser Lake watershed. It is also an issue for the Twin Lakes TMDL because the upper watershed of Fish Creek is within the State of Washington. It is, however, the responsibility of EPA to address and coordinate across boundary issues between the states. The sub-basin assessment and TMDLs were supplied to EPA well in advance that this responsibility could be discharged. The State of Idaho would not write an implementation plan for that part of the watershed in the State of Washington. This is the responsibility of either the State of Washington or EPA, but certainly not the responsibility of Idaho.

Comment 7: The Twin Lakes TMDL does not address a nutrient limitation of Fish Creek or Rathdrum Creek. Dissolved oxygen limitation of lower Twin Lakes is suggested in the Twin Lakes Management Plan.

Response: Plant growth nutrients were monitored in Fish Creek during the Twin Lakes study. These levels of nutrients do not exceed the guidelines stated in the sub-basin assessment. The TMDL calls for a 47.7% reduction of phosphorous from the tributaries to Upper Twin Lake. There is only one major tributary, Fish Creek. The lower Twin lake allocation calls for a 33.4 % reduction from the tributaries, which includes the major tributary, the upper lake. These reductions dictate nutrient and sediment, to which phosphorous is attached, reductions from Fish Creek.

The sub-basin assessment demonstrates that Rathdrum Creek does not have total phosphorous concentrations above the guidelines, while on an average, nitrogen is not above the guidelines. The assessment also catalogs the possible sources along the creek. These are few. Given that the creek typically meets the nutrient guidelines for streams, we believe it safe to assume that it will after nutrients are reduced in its main source of nutrients, lower Twin Lake.

The CVMP monitoring provided in Appendix C clearly demonstrates that low dissolved oxygen concentrations are found in the hypolimnion of the lake where such departures are permitted by State standards. In any case, reduction in plant growth nutrients in this lake in a manner similar to that in Hauser Lake decreases productivity, which in turn decreases the biological demand for oxygen, hence increasing oxygen concentrations.

Editorial Comments:

Comment 1: Table 2 shows water quality criteria for streams, it would be helpful to have these for lakes.

Response: Table 2 is meant as a general summary of the standards. Dissolved oxygen standards are more complex for the oxygen level in lakes. These would be difficult to summarize. As noted earlier, dissolved oxygen standards do not apply to hypolimnetic waters.

Comment 2: Low sculpin densities contradict the conclusion that fishery not impaired.

Response: Low sculpin densities are not atypical of streams draining granitic terrane with relatively more sand bottom. Similar low levels were observed in sandy bottom streams of granitic terrane flowing from the west into Coeur d'Alene Lake, even though trout were present in densities typical of full support. The important species is the fishable species, trout.

Comment 3: Upper Twin Lake becomes too warm to support salmonids in the summer months. Should it be listed as temperature limited?

Response: In the sub-basin assessment, it is pointed out that the Upper Lake is 5 meters deep. It is a shallow eutrophic lake, which warms above cold water biota temperature standards during the summer. Records indicate it has always been shallow. A better approach is to designate the Upper Lake as seasonal cold water biota.

Comment 4: Editorial

Response: Change made

Comment 5: Editorial

Response: First error corrected; second error was not found. The second error may have been corrected earlier.

Comment 6: Editorial

Response: Correction was made.

Comment 7: Editorial

Response: Correction was made

4.2.2.2 Comments on proposed de-listings

Comment 1: Those streams recommended for de-listing should be clearly identified and the reasons clearly laid out.

Response: These points have been clarified in a revised Table 10 on pages 22 and 23. This table is also placed in the Executive Summary. The table identifies each listed segment by name and number. It provides an assessment of the support status and recommends a TMDL allocation where appropriate. It provides the reasons a stream should be de-listed for each specific pollutant. It provides a reason for the deferment of a TMDL, if appropriate.

Comment 2: The relationship between nutrients and dissolved oxygen in lakes should be further explained. However, a TMDL addressing nutrients would not cause the de-listing of the related dissolved oxygen listing.

Response: The effect of nutrients of lake productivity and hence on biological oxygen demand and dissolved oxygen concentration has been referred to in the assessment and certainly in the attached lake management plans. The dissolved oxygen limitation on Hauser Lake has not been recommended for de-listing in Table 10, but rather for deferment until the expected results of nutrient reduction on lake water oxygen concentration can be assessed.

Comment 3: In reference to the Spokane River, standard must be changed and approved before the segment can be de-listed based on the new standard.

Response: The sub-basin assessment recommends the standard be changed to seasonal cold water biota with a specific support standard based on the temperature observed during hot dry summers as 1992 and 1994. The temperature TMDL is deferred until this standard change is made or is disapproved.

Comment 4: The definition of secchi depth and what it measures requested.

Response: Secchi depths as a measure of clarity are a technique in use since the 1850s. It is understandable that its meaning in a limnological discussion would be assumed as understood. However a brief statement of the technique and what it measures has been added to page 12.

Comment 5: A CWE process explanation was requested.

Response: The Cumulative Watershed Effects process and the measurements it makes are described in Appendix A, Sediment Model Assumptions and Documentation.

4.2.2.3 Comments on individual sections

4.2.2.3.1 Impact of sediments

Comment 1: The impact of sediment or lack thereof on the lake's beneficial use is not properly documented to permit de-listing.

Response: In the three cases where sediment is listed as limiting to lakes, Hayden, Twin and Spirit Lakes, the most reasonable impacts are to the salmonid sight feeding turbidity standard or to some narrative interference with the fishery. Secchi depths were measured by CVMP volunteers during or shortly after the high flow period (May and early June) on all the lakes. These ranges are now stated in the text for each lake. These range from 3 -7 meters. The 25 NTU chronic standard would equate to a Secchi depth of less than one-half meter. The fisheries of each lake were described from Fish and Game accounts. These accounts indicate self-sustaining fisheries with the exception of fishing pressure. In neither case were the two sediment standards exceeded. The evidence indicates sediment was listed as a pollutant of concern in error. The text still notes the role of sediment as a nutrient carrier, but in all fairness this is a nutrient and not a sediment issue.

Comment 2: The WBAG process was departed from in favor of sediment modeling a fish density data.

Response: The BURP macro invertebrate data for Fish and Rathdrum Creeks have been added to the text and as Appendix D. The vast majority of the macro invertebrate biotic indices (MBIs) for Fish Creek are above the full support level of 3.5, while the one value for Rathdrum Creeks is quite low. The sub-basin assessment process is to use the BURP information as well as other pertinent data to come to support conclusions. This WBAG+ process recognizes that MBI scores are not sufficient and often misleading for purposes of listing or de-listing. Hence, the assessment has where data is available, looked at fish densities and compared them to control streams in the Priest Basin as noted in the sub-basin assessment text. It has looked at other fish species, at residual pool volume and has modeled the sediment contributions from actual sediment sources. On the weight of the evidence, the additional data

reinforces the Fish Creek MBIs. Trout densities are comparable to control streams in the Priest Basin which is also granitic even though sculpins are in lower density which is often seen in streams on granitic terrane with relatively more sand. Model results are well below the 50% above background threshold cited by the referenced Washington Forest Practices Board (1995) as the lowest threshold for sediment impacts. In the case of Rathdrum Creek, less data is available. It is a sand bottom low gradient stream over most of its length as pointed out in the text. Such a stream is a possible candidate for lower macro invertebrate species diversity and hence a lower MBI. The stream flows from a lake; hence there is not an upstream sediment source. The two sediment sources, its banks and Spring Creek are modeled. The creek models at 54% above background, which is very close to the 50% threshold discussed above. On the weight of this evidence, the assessment concludes that neither Fish nor Rathdrum Creeks is sediment limited.

The author of the comment grossly misinterprets the goal of previous sediment TMDLs developed in the Northern Region. The natural background goals of these TMDLs are clearly stated as "interim" goals, which are believed to be well below the level of sedimentation at which uses are fully supported. Verification of the sediment models clearly demonstrates that only unentered watersheds approach natural background sedimentation levels and often these do not because of forest fire impacts. For the interpretation of model sediment results, the cited reference is the Washington Forest Practices Board (1995) publication which indicates that water quality impacts from sediment are likely above at 100% of background and are not predicted below 50% above natural background. It is disingenuous to apply interim TMDL sedimentation goals, chosen specifically to be below a level where sediment impacts to water quality occur, to benchmarks by which the modeled sediment data is compared to assess sediment impacts.

4.2.2.3.2 Fish population data

Comment 1: Why was electrofishing from which fish population data could be developed not conducted on Rathdrum Creek?

Response: It was not among the subset of streams chosen to be electrofished in the BURP process. Even though it was not electrofished, BURP assessors did observe fish in the stream and fishing is conducted along the stream primarily by children.

4.2.2.3.3 Beneficial support status

Comment 1: Several issues are raised concerning the clarity and logic of Table 10.

Response: Table 10 has been revised. The boundaries column is omitted as redundant of earlier tables. The stream name and HUC number are combined into a single column. The assessed support status is stated in the second column, as is the reason for the

determination. The reason a stream is proposed for de-listing is provided in the third column. If this column is not applicable, it is so marked. The reason a TMDL is proposed to be deferred is stated in the fourth column. If this is not applicable, it is so marked. The new table addresses the issues raised in the comment except for the issue of upstream effects to Coeur d'Alene Lake.

An assessment of the impact of impoundment of Coeur d'Alene Lake is provided in the sub-basin assessment. The comment suggests human activities may have raised the temperature of the lake, presumably in its tributaries, or possibly by use (boating, swimming). The portion of the lake that feeds the Spokane River is its epilimnetic waters. This top approximately ten meters of the lake increase in temperature each summer from direct exposure to the sun. The sun's impact on the many square miles of exposed lake surface far outweighs the thermal inputs from streams or human activities on the lake. A further quantitative argument can be made if deemed necessary by EPA.

4.3 References

Washington Forest Practices Board, 1995. Board Manual: Standard Methodology for Conducting Watershed Analysis under Chapter 222-22 WAC Version 3.0 November 1995.

5.0 Implementation Plans

5.1 Background:

During the 1980's and early 1990's the large lakes (Pend Orielle, Coeur d'Alene and Priest) and many of the heavily developed smaller lakes (Cocollala, Hauser, Hayden, Spirit and Twin Lakes) received limnological study and based on these studies lake management plans were developed. This work was completed as a result of the Idaho Nutrient Management Act and legislation creating the Clean Lakes Coordinating Council. Lake plans have been in place for all the lakes listed above for several years. Implementation of these plans is in many cases well advanced. The Hayden Lake, Hauser Lake and Twin Lakes plans set nutrient goals, recognize that actions which remove phosphorous loading will remove nitrogen loading and provide concrete action items to reduce nutrient loading. These plans with minor revision in some cases are applicable TMDL implementation plans.

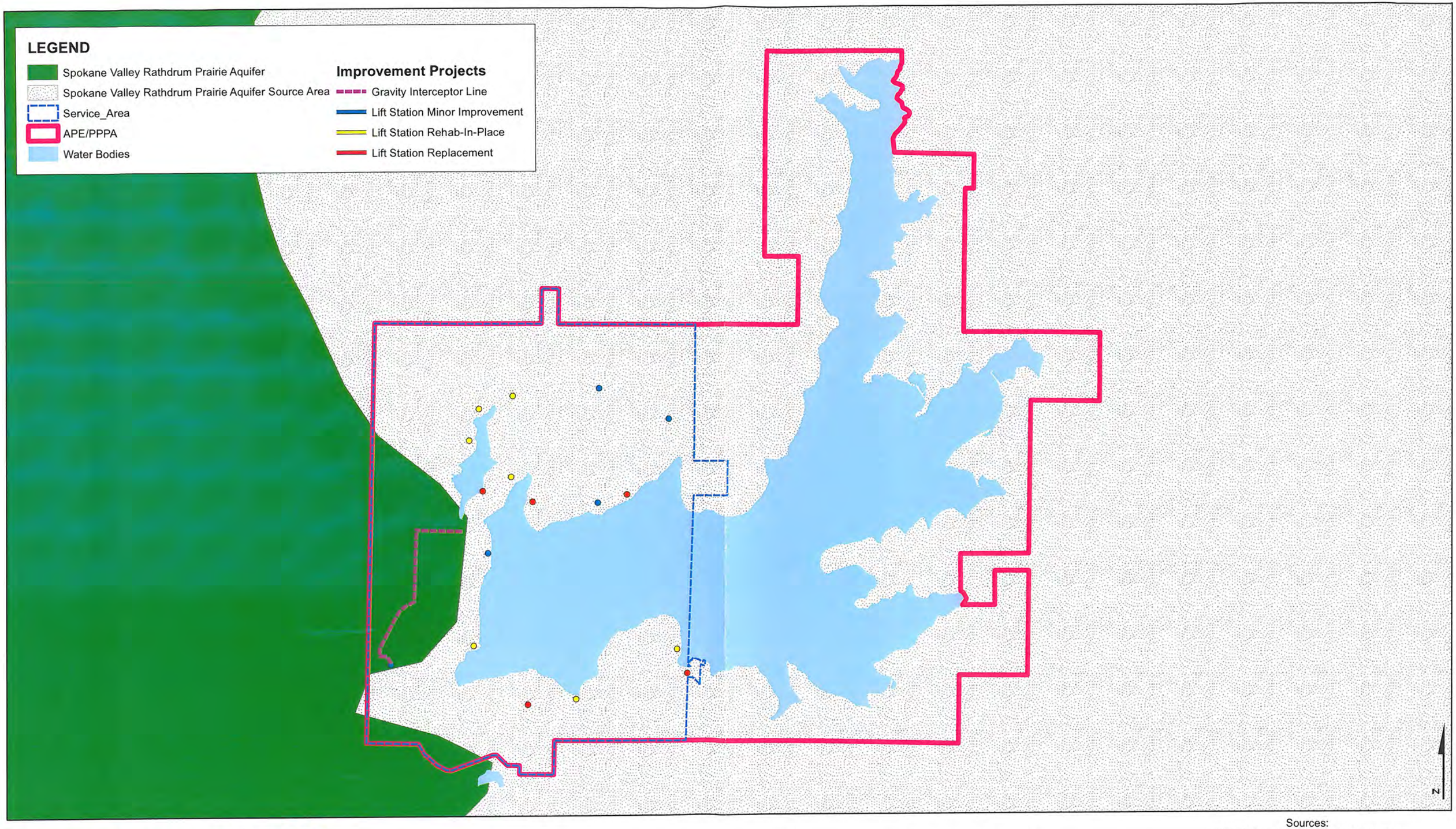
5.2 List of lake Management Implementation Plans:

Hauser Lake Management Plan (Appendix D)

Hayden Lake Watershed Management Plan (Appendix E)

Twin Lakes Management Plan (Appendix F)

Spirit Lake Watershed Management Plan (Appendix G)



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Hayden Lake Recreational Water and Sewer District

Sole Source Aquifer

Sources:
Idaho Department of Water Resources
Kootenai County GIS Department
EPA Region 10, Sole Source Aquifer Program

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Aquifer_11x17L
DATE.....10/18/12

APPENDIX O.

Public Participation Information

- August Newsletter and Legal Notice
- September 5th Meeting Presentation, Minutes, and Sign-Ins
- Public Comment and Response
- September 26th Meeting Minutes and Sign-Ins
- September Newsletter and Newspaper Advertisement
- October 10th and 12th Meeting Presentation and Minutes

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT

NEWSLETTER

August 22, 2012

SEWER COLLECTION SYSTEM FACILITIES PLAN BACKGROUND

The Hayden Lake Sewer System was constructed in 1987 and is now 25 years old. Although the facilities have been operating well and have been maintained, certain components such as the major lift stations require upgrading due to normal depreciation and use.

HLRWSD has recently completed a "Facilities Plan" engineering study which is required by the Idaho Department of Environmental Quality (IDEQ) before designing any public sewer system improvements. The purpose of a wastewater facility plan is to analyze the sewer system, identify system deficiencies, and provide improvement recommendations.

PUBLIC MEETING

The Board invites property owners in its sewer service area to attend a public meeting to discuss proposed improvements to the Districts' sewer collection system and the Hayden Area Regional Sewer Board (HARSB) treatment plant.

WEDNESDAY, SEPT. 5, 2012

6:00 PM at HLRWSD OFFICE

9393 Strahorn Rd, Hayden Lake

The findings and recommendations of the facilities plan will be presented at the public meeting on September 5th.

RECOMMENDED SEWER SYSTEM IMPROVEMENTS

The facilities plan presents options for improvements to the District's sewer collection system, including:

- Re-lining the interior of the steel lift stations with a new industrial-strength coating due to corrosion.
- Replacement of lift station pumps and interior piping to meet current demands of flow and materials.
- Upgrading of electrical controls to meet current electrical standards and improved emergency communication.
- Adding stand-by generators for certain lift stations to improve reliability.
- Constructing gravity relief sewer lines along Miles Avenue and Strahorn Road to reduce power usage, improve reliability, and reduce risks on lift stations along Hayden Lake.
- Options for financing the proposed improvements.

PUBLIC COMMENT

The Board would like to hear from you!

A copy of the facility plan will be available for public review at the District's office during normal business hours. After considering and addressing comments the Board will determine which improvement option to implement and document the selection at their regularly scheduled Board Meeting on September 26, 2012 at 5:00 p.m. A detailed environmental evaluation will then be performed based on the selected option.

In addition to comments received from property owners at the September 5th public meeting, the Board will also consider all written comments received between Sept. 5 and Sept. 19, 2012. Please mail your comments to the following address:

HLRWSD
9393 Strahorn Road
Hayden Lake, ID 83835

Funding Options

In order to meet a time sensitive application date, the District submitted a Letter of Interest to IDEQ in January for construction loan money for sewer system improvements. The District has been listed by IDEQ as eligible to receive loan funds at 2.0% interest over a 20 year term. **The District will discuss this funding option as well as others, at the public meeting.**

PENDING EPA REQUIREMENTS FOR UPGRADING TREATMENT STANDARDS

The HLRWSD is one of three partners of the Hayden Area Regional Sewer Board (HARSB) who own and operate the regional wastewater treatment facility near the County Airport. The other partners are the City of Hayden and Kootenai County. The U.S. Environmental Protection Agency (EPA) is requiring that the HARSB wastewater treatment facility meet much more stringent water quality standards for phosphorous and other constituents, in order to continue to discharge treated wastewater into the Spokane River.

The District and HARSB engaged special legal counsel to challenge unfair limits that were set by Washington State and adopted by the EPA which we felt put an unequal share of treatment requirements on Idaho discharges. Parallel to the legal challenge we have worked to negotiate a fairer allocation of treatment and discharge responsibilities. However the litigation and negotiations have made it very clear that sewer treatment standards are going up and so are costs.

The HARSB Board has prepared a wastewater facilities plan which evaluates the methods and costs of meeting these new EPA discharge requirements, which are some of the most stringent in the U.S. These improvements must be phased-in over the next 10 years, and will cost the rate-payers in our District millions of dollars.

The EPA discharge permit provides that if the HARSB should fail to comply with the new standards, the HARSB partners, including our District, could be liable for fines up to $50,000 per day. Although the Sewer District and HARSB have engaged special legal counsel to challenge these requirements, it appears that the HLRWSD must develop a plan to finance its share of these EPA mandated treatment facility upgrades.

More information on the technical background, options, and costs of the EPA mandated wastewater treatment improvements will be presented at our public meeting on September 5th at 6:00 p.m.

FAIR HOUSING ISSUES IN IDAHO

You are invited to a FREE Fair Housing Training

Sponsored by: Intermountain Fair Housing Council

When: Tuesday, September 25, 2012 7:00 p.m. to 9:00 p.m.

Where: Hayden Lake Recreational Water and Sewer District building
9393 North Strahorn Road, Hayden, Idaho 83835

Speaker: Ken Nagy, Attorney at Law

This Training Will Cover:

- Basic Protections of the Fair Housing Act
- "Best Practice" Fair Housing Principles
- In-Depth Coverage of Disability-Related Issues and Reasonable Accommodations
- New and Emerging Fair Housing Issues

For more information or to register for this workshop, please contact:

Ken Nagy
(208) 301-0126
E-mail: knagy@lewiston.com

Facilities provided by: Hayden Lake Recreational Water and Sewer District

Please note: space is limited therefore please register early

Hayden Lake Recreational
Water and Sewer District

9393 N. Strahorn Road
Hayden Lake, ID 83835

Tel: 208.772.4379
E-mail:
hlrwsdclerk@frontier.com
www.cityofhaydenlake.us

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HAYDEN LAKE RECREATIONAL WATER & SEWER DISTRICT
SEWER SYSTEM PUBLIC MEETING

The Hayden Lake Recreational Water and Sewer District will hold a public meeting on September 5, 2012 at the District office at 9393 N Strahorn Road in Hayden at 6:00 p.m. The purpose of the public meeting is to present recommendations for improvements from the Hayden Lake Recreational Water and Sewer District Wastewater Collection System Facility Plan. The meeting will: present the sewer system deficiencies, proposed improvement options, discuss the environmental impacts associated with each option, funding options, and potential financial impact to the District's customers, as well as to solicit verbal and written comments regarding the plan. Written comments will be accepted by the Board from September 5, 2012 to September 19, 2012. A copy of the facility plan will be available for public review at the District's office during normal business hours. After considering and addressing comments the Board will determine which improvement option to implement and document the selection at their regularly scheduled Board Meeting on September 26, 2012 at 5:00 p.m. A detailed environmental evaluation will then be performed based on the selected option.

AFFIDAVIT OF PUBLICATION

STATE OF IDAHO, }
County of Kootenai, } SS.

Amber Tice being first duly sworn upon oath deposes and says:

1. I am now and at all times hereinafter mentioned was a citizen of the United States, resident of the State of Idaho, over the age of twenty-one years and not a party of the above entitled action.

2. I am now and at all times hereinafter mentioned was the printer (principal clerk) of the "Coeur d'Alene Press," a newspaper printed and published daily except Sunday in Coeur d'Alene, Kootenai County, Idaho, and having a general circulation in said county.

3. The Legal Notice

of which the annexed is a printed copy, was published in the regular Friday issue of said newspaper for 1 consecutive day commencing on the 24 day of August 2012, and ending on the 24 day of August 2012, and such publication was made as often during said period as said daily newspaper was regularly issued.

4. That said newspaper has been continuously and uninterruptedly published in said Kootenai County, during a period of more than seventy-eight consecutive weeks immediately prior to the first publication of said notice. Amber Tice

On this 24 day of August in the year of 2012, before me, a Notary Public, personally appeared Amber Tice, known or identified to me to be the person whose name subscribed to the within instrument, and being by me first duly sworn, declared that the statements therein are true, and acknowledged to me that he executed the same.

Katrina George
Notary Public for the State of Idaho,
residing at Coeur d'Alene, Idaho.

KATRINA GEORGE NOTARY PUBLIC STATE OF IDAHO

MY COMMISSION EXPIRES 8/29/17

HAYDEN LAKE RECREATIONAL WATER & SEWER DISTRICT SEWER SYSTEM PUBLIC MEETING

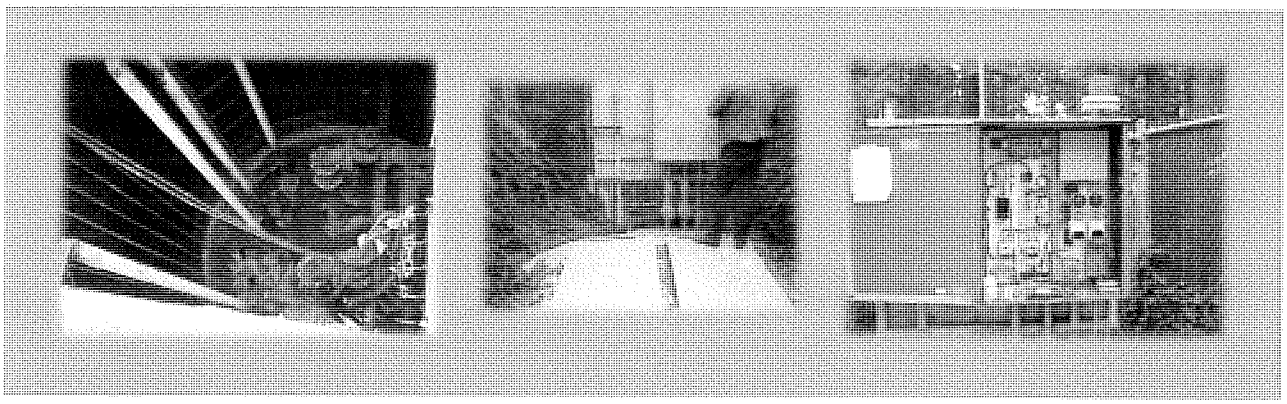
The Hayden Lake Recreational Water and Sewer District will hold a public meeting on September 5, 2012 at the District office at 9393 N Strahorn Road in Hayden at 6:00 p.m. The purpose of the public meeting is to present recommendations for improvements from the Hayden Lake Recreational Water and Sewer District Wastewater Collection System Facility Plan. The meeting will: present the sewer system deficiencies, proposed improvement options, discuss the environmental impacts associated with each option, funding options, and potential financial impact to the District's customers, as well as to solicit verbal and written comments regarding the plan. Written comments will be accepted by the Board from September 5, 2012 to September 19, 2012. A copy of the facility plan will be available for public review at the District's office during normal business hours. After considering and addressing comments the Board will determine which improvement option to implement and document the selection at their regularly scheduled Board Meeting on September 26, 2012 at 5:00 p.m. A detailed environmental evaluation will then be performed based on the selected option.

Lynn Hagman
District Administrator
Legal 6083
August 24, 2012

Hayden Lake Recreational Water and Sewer District

Sewer Collection System-

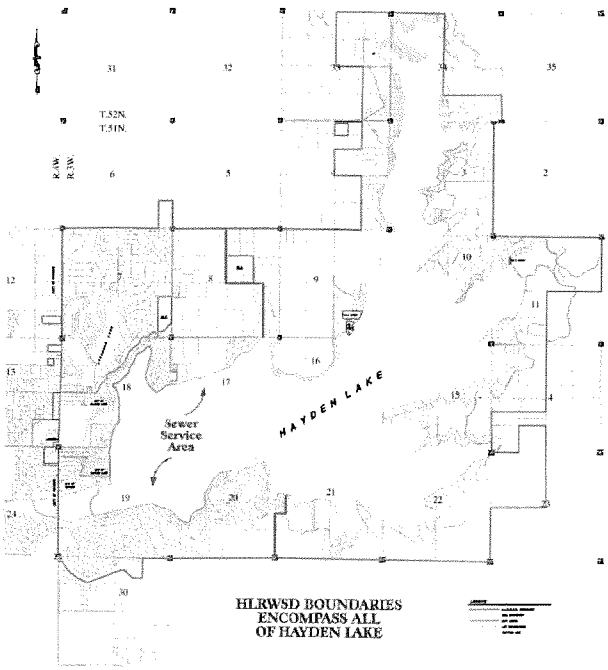
Wastewater Facility Plan Public Meeting

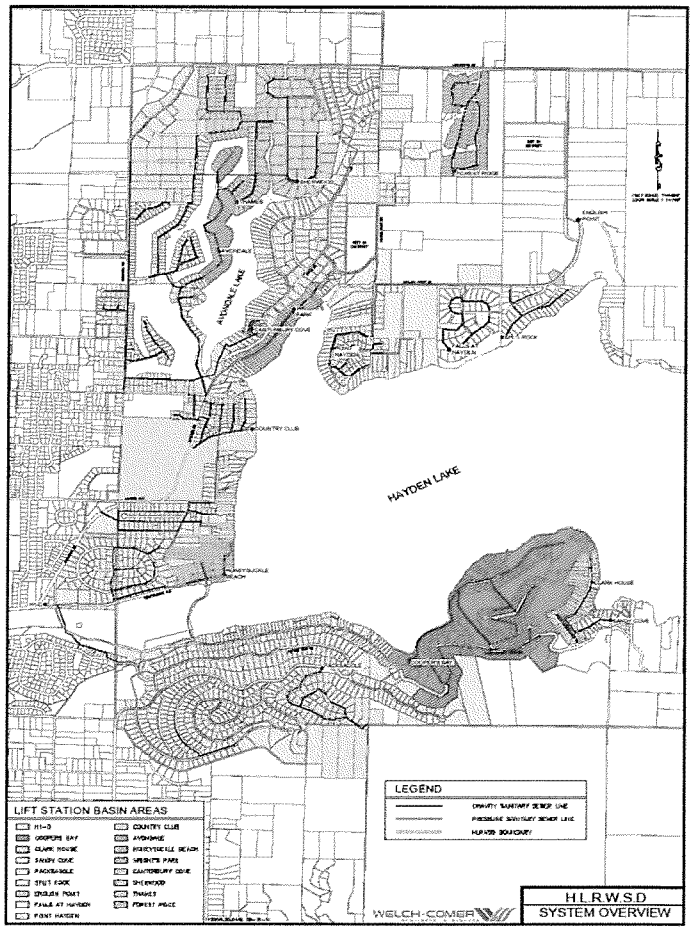


September 5, 2012

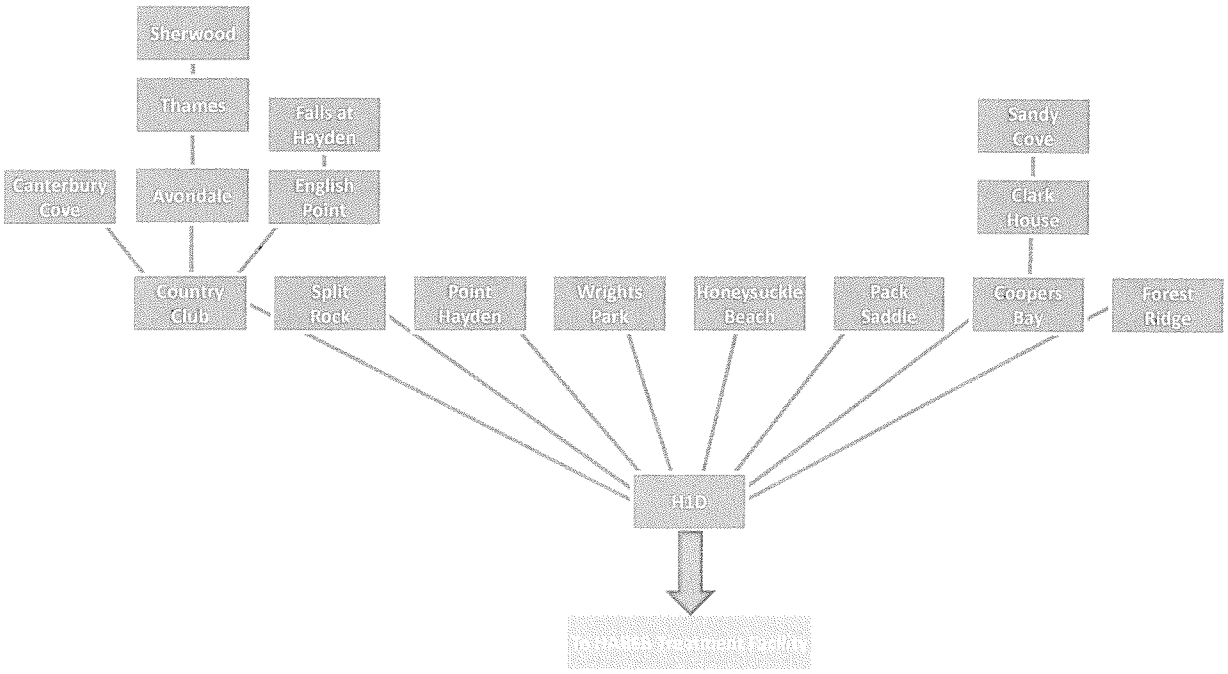
HLRWSD Background

- District formed in 1976 by Public Election
- Majority of system constructed in 1986-1987, financed through 15-year LID (has been paid off for 10 years)
- Hayden Area Regional Sewer Board (HARSB) formed in 1986
  - Regional Interagency Partnership
    - City of Hayden
    - Hayden Lake Recreational Water & Sewer District
    - Kootenai County (Airport)
  - Regional Treatment Facility Built in 1987





HLRWSD- Lift Station Basin Logic

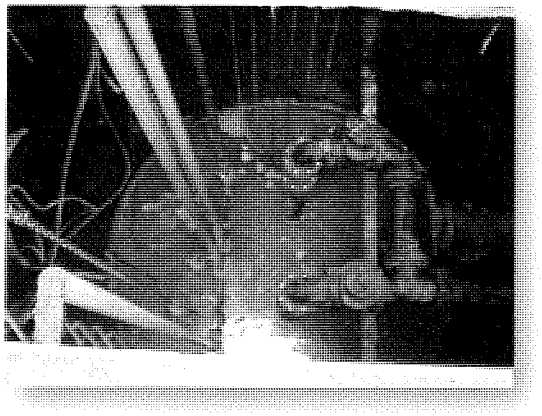


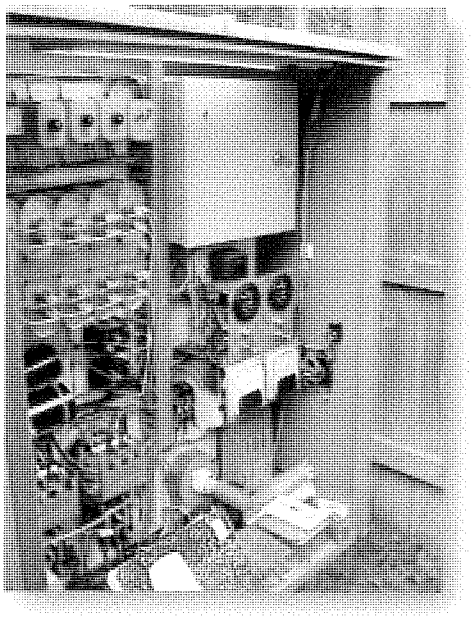
Future Growth Estimates

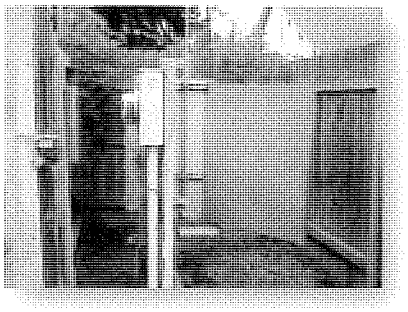
- Current billed ERs: 1,922
- ER allocation at HARSB Treatment Facility: 2,645.5
- Vacant ERs: 702

- District anticipates over the next 20 years, growth in service area accommodated by the ER allocation at HARSB

Existing Conditions







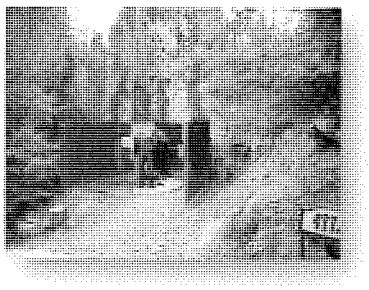
Structural/Mechanical Condition of Lift Stations, Rating

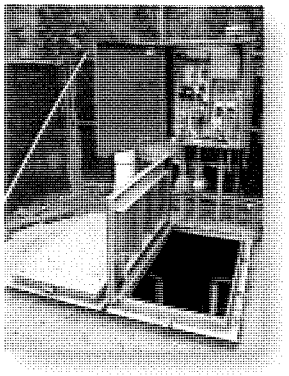
Lift Station	Age	Structural Condition	Mechanical Condition	Environmental Risk	Access/ Safety	Space for Expansion	Total Score (Weighted)
Avondale	1987	1	3	2	1	3	1.9
Canterbury Cove	1984	1	3	3	3	3	2.5
Clark House	1987	2	2	2	3	3	2.3
Coopers Bay	1985	1	1	2	1	2	1.3
Country Club	1987	2	3	3	2	3	2.6
English Point	2010	1	1	1	1	1	1.0
The Falls at Hayden	2010	1	1	2	1	1	1.2
Forest Ridge	2008	1	1	1	1	1	1.0
H-1D	1999	1	1	1	1	1	1.0
Honeysuckle Beach	1987	2	3	2	1	2	2.1
Packsaddle	1981	2	3	3	1	1	2.2
Point Hayden	1982	2	3	2	3	3	2.6
Sandy Cove	1987	3	3	3	3	2	2.9
Sherwood Court	1987	1	2	2	1	2	1.6
Split Rock	1990	1	2	2	2	3	1.9
Thames Court	1987	3	3	2	3	3	2.8
Wrights Park	1987	3	3	2	1	3	2.4

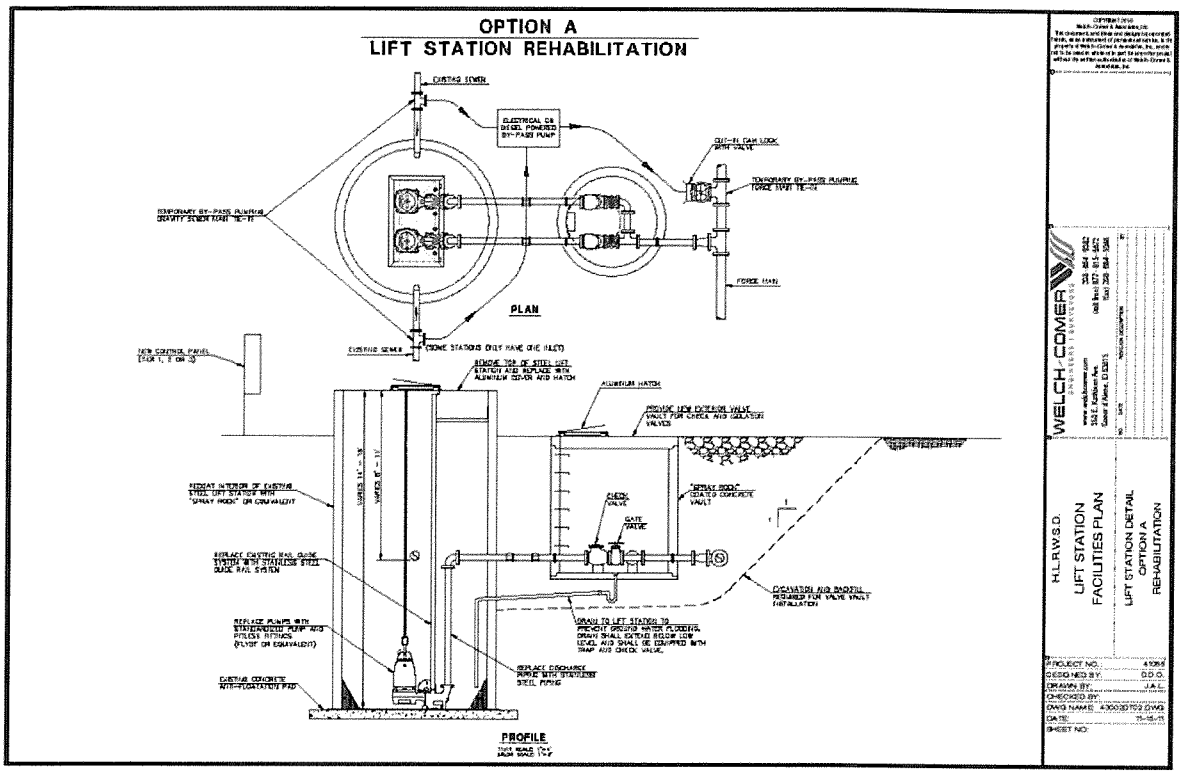
Notes: good = 1, fair = 2, low = 3 for Structural Condition, Mechanical Condition, Access/Safety, Space for Expansion ; low = 1, fair = 2, high = 3 for Environmental Risk
Structural Condition = 25%, Mechanical Condition = 25%, Environmental Risk = 20%, Access/Safety = 20%, Space for Expansion = 10%

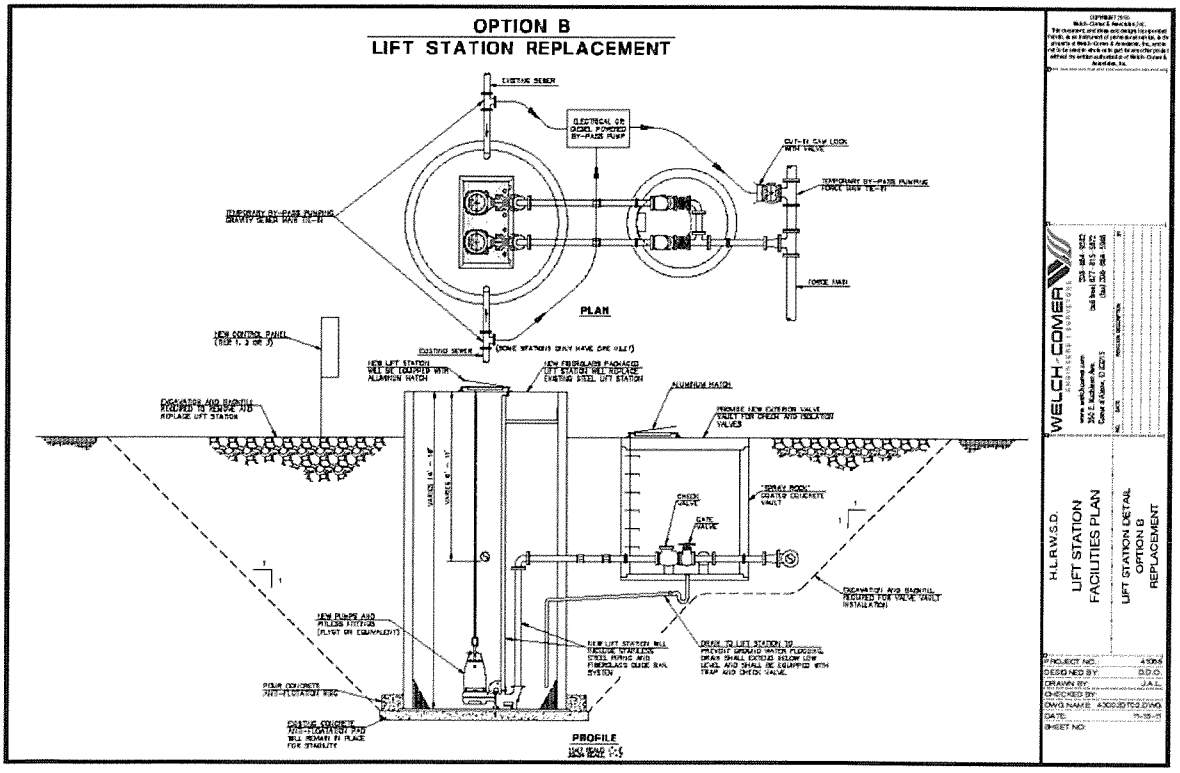
Lift Station Rating Results

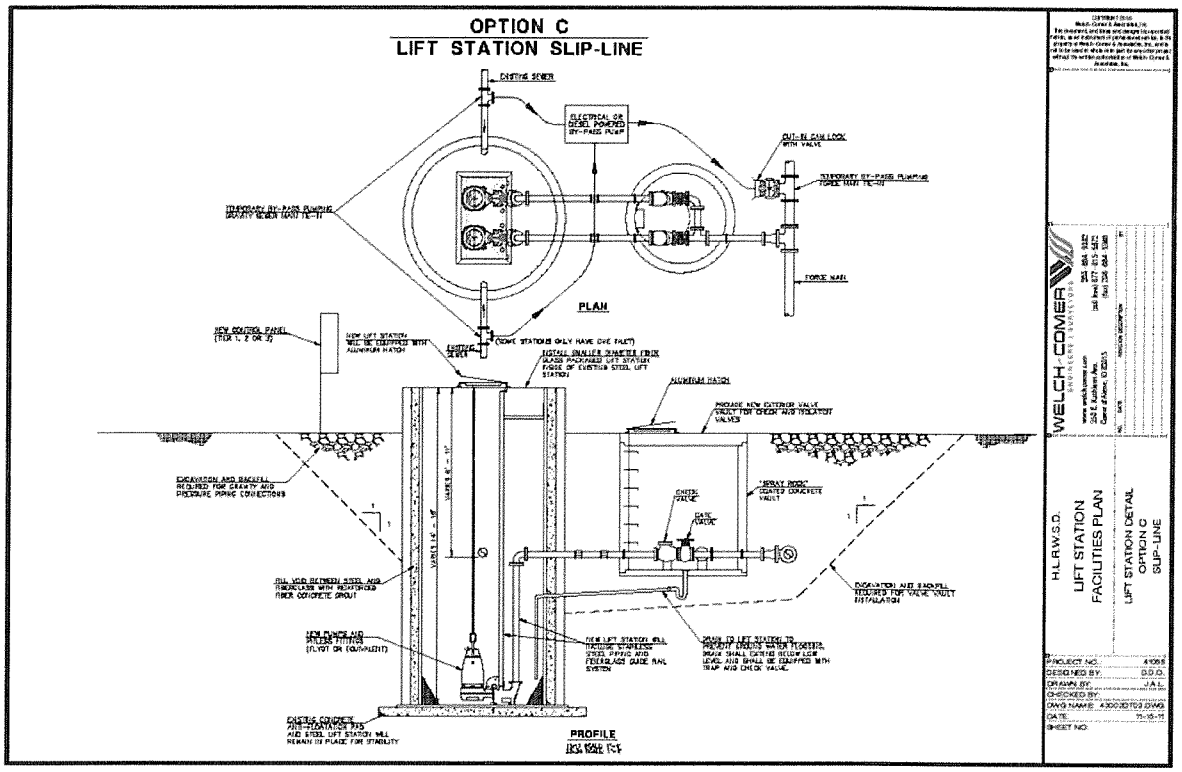
1. Sandy Cove 2.9
2. Thames Court 2.8
3. Country Club 2.6
4. Point Hayden 2.6
5. Canterbury Cove 2.5
6. Wrights Park 2.4
7. Clark House 2.3
8. Packsaddle 2.2
9. Honeysuckle Beach 2.1






OPTION A
LIFT STATION REHABILITATION
EXISTING SEWER
ELECTRICAL OR DIESEL POWERED BY-PASS PUMP
QUI-FI CAM LOCK WYE VALVE
TEMPORARY BY-PASS PUMPING FORCE MAIN TE-11
TEMPORARY BY-PASS PUMPING GRAVITY SEWER MAIN TE-11
FORCE MAIN
PLAN
EXISTING SEWER
(SOME STATIONS ONLY HAVE ONE INLET)
NEW CONTROL PANEL (SIZE 1, 2 OR 3)
REMOVE TOP OF STEEL LIFT STATION AND REPLACE WITH ALUMINUM COVER AND HATCH
ALUMINUM HATCH
PROVIDE NEW EXTERIOR VALVE VAULT FOR CHECK AND ISOLATION VALVES
REHEAT INTERIOR OF EXISTING "SPRAY POOL" OR EQUIVALENT
VARIES 14' – 18'
VARIES 6' – 11'
CHECK VALVE
GATE VALVE
"SPRAY POOL" COATED CONCRETE VAULT
REPLACE EXISTING RAIL GUIDE STATION WITH STAINLESS STEEL GUIDE RAIL SYSTEM
EXCAVATION AND BACKFILL REQUIRED FOR VALVE VAULT INSTALLATION
DRAIN TO LIFT STATION TO PREVENT GROUND WATER FLOODING. DRAIN SHALL EXTEND BELOW LOW LEVEL AND SHALL BE EQUIPPED WITH TRAP AND CHECK VALVE.
REPLACE PUMPS WITH STAINLESS PUMP AND PITLESS FITTINGS (FLYGT OR EQUIVALENT)
REPLACE DISCHARGE PIPING WITH STAINLESS STEEL PIPING
EXISTING CONCRETE ANTI-FLOTATION PAD
PROFILE
WELCH-COMER
H.L.R.W.S.D.
LIFT STATION FACILITIES PLAN
LIFT STATION DETAIL OPTION A REHABILITATION
PROJECT NO.
DESIGNED BY
DRAWN BY
CHECKED BY
DWG NAME
DATE
SHEET NO.


OPTION B
LIFT STATION REPLACEMENT
EXISTING SEWER
ELECTRICAL OR DIESEL POWERED BY-PASS PUMP
QUI-FI CAM LOCK WYE VALVE
TEMPORARY BY-PASS PUMPING FORCE MAIN TE-11
TEMPORARY BY-PASS PUMPING GRAVITY SEWER MAIN TE-11
FORCE MAIN
PLAN
NEW CONTROL PANEL (SIZE 1, 2 OR 3)
EXISTING SEWER
(SOME STATIONS ONLY HAVE ONE INLET)
NEW LIFT STATION WILL BE EQUIPPED WITH ALUMINUM HATCH
NEW FIBERGLASS PACKAGED LIFT STATION WILL REPLACE EXISTING STEEL LIFT STATION
ALUMINUM HATCH
EXCAVATION AND BACKFILL REQUIRED TO REMOVE AND REPLACE LIFT STATION
PROVIDE NEW EXTERIOR VALVE VAULT FOR CHECK AND ISOLATION VALVES
VARIES 14' – 18'
VARIES 6' – 11'
CHECK VALVE
GATE VALVE
"SPRAY POOL" COATED CONCRETE VAULT
EXCAVATION AND BACKFILL REQUIRED FOR VALVE VAULT INSTALLATION
NEW PUMPS AND PITLESS FITTINGS (FLYGT OR EQUIVALENT)
NEW LIFT STATION WILL PROVIDE STAINLESS STEEL PIPING AND FIBERGLASS GUIDE RAIL SYSTEM
DRAIN TO LIFT STATION TO PREVENT GROUND WATER FLOODING. DRAIN SHALL EXTEND BELOW LOW LEVEL AND SHALL BE EQUIPPED WITH TRAP AND CHECK VALVE.
NEW CONCRETE ANTI-FLOTATION PAD
EXISTING CONCRETE ANTI-FLOTATION PAD WILL REMAIN IN PLACE FOR STABILITY
PROFILE
WELCH-COMER
H.L.R.W.S.D.
LIFT STATION FACILITIES PLAN
LIFT STATION DETAIL OPTION B REPLACEMENT
PROJECT NO.
DESIGNED BY
DRAWN BY
CHECKED BY
DWG NAME
DATE
SHEET NO.



Environmental Analysis

Environmental Item	No Action Alternative	Rehabilitation Alternative	Replacement Alternative (largest of 3 opt.)	Slip-Line Alternative
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Lift Station Rehabilitation, Long-Term Impacts Minimal	Excavation for Lift Station Replacement (largest of 3 opt.), Long-Term Impacts Minimal	Excavation for Lift Station Slip-Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health

HLRWSD Summary of Lift Station Controls

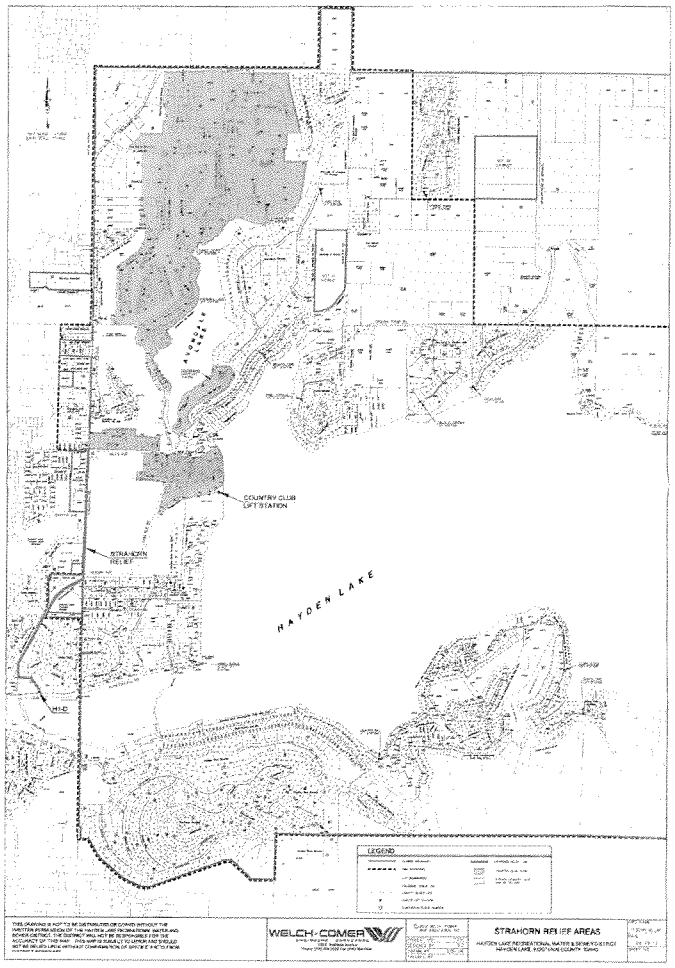
Lift Station Name	Type of Controller (e.g. PLC or relay, smart panel, etc)	Alarm (dialer, radio)	Standby Generator (Yes/No)	Missing Components?
Avondale	"smart panel"	dialer	yes	radio
Canterbury Cove	1986 with relays	dialer	yes	requires panel upgrade
Clark House	1986 with relays	dialer	no	requires panel upgrade, generator
Coopers Bay	1986 with relays	dialer	yes	requires panel upgrade
Country Club	1986 with relays	dialer	yes	requires panel upgrade
English Point	PLC	dialer	yes	radio
The Falls at Hayden	"smart panel"	dialer	yes	radio
Forest Ridge	PLC	dialer	yes	radio
H-1D	PLC	dialer	yes	radio
Honeysuckle Beach	1986 with relays	dialer	no	requires panel upgrade, generator
Packsaddle	1986 with relays	dialer	no	requires panel upgrade, generator
Point Hayden	1986 with relays	dialer	yes	requires panel upgrade
Sandy Cove	1986 with relays	dialer	no	requires panel upgrade, generator
Sherwood Court	1986 with relays	dialer	no	requires panel upgrade, generator
Split Rock	1986 with relays	dialer	no	requires panel upgrade, generator
Thames Court	1986 with relays	dialer	yes	requires panel upgrade
Wrights Park	1986 with relays	dialer	no	requires panel upgrade, generator

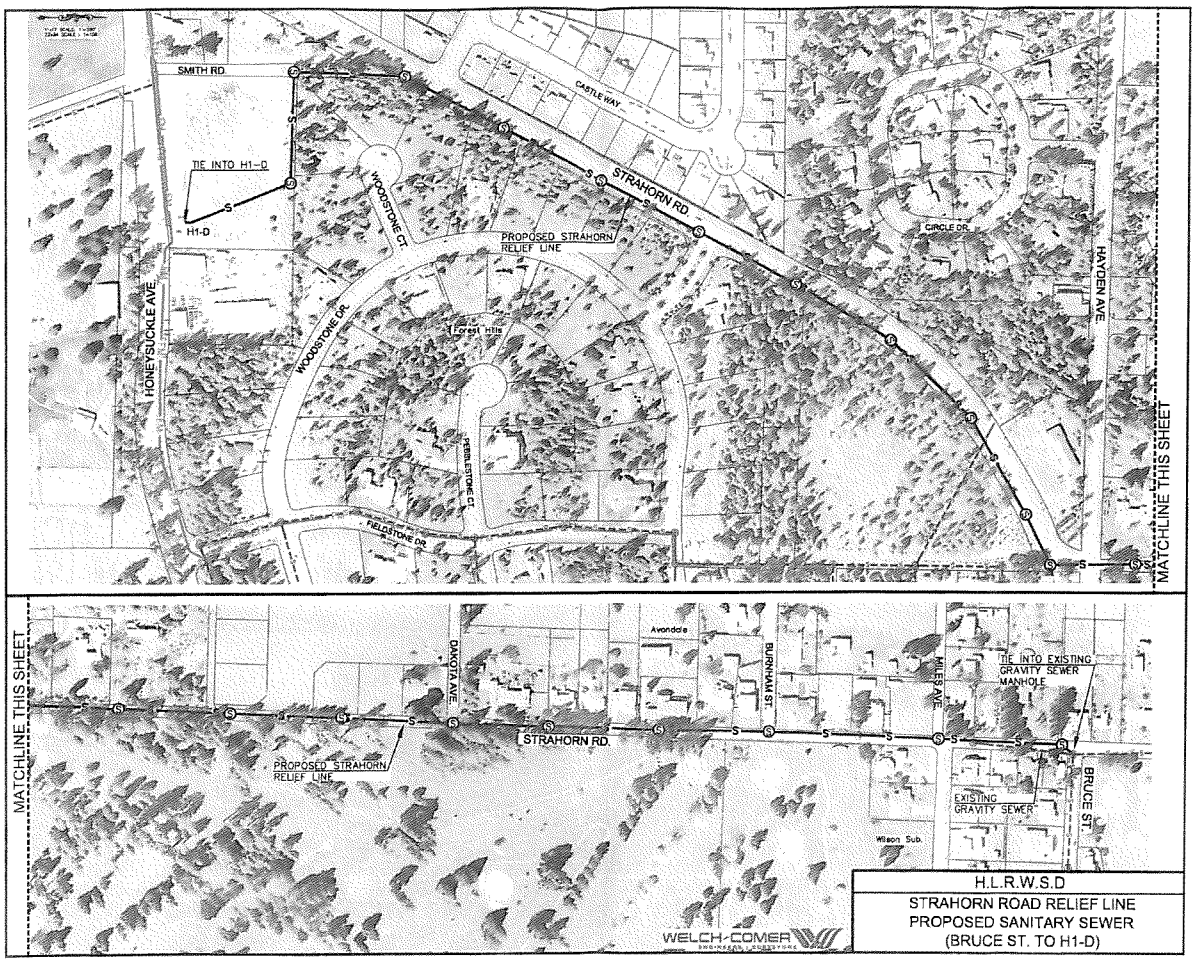
A Tiered Approach to Lift Station Control

- **Tier 1- High Flow / High Risk Stations**
  The "MultiTrode/MultiSmart" pump station management system, with radio telemetry to a base system at the HARSB treatment facility.

- **Tier 2- Moderate Flow / Moderate Risk Stations**
  Use the "MultiTrode/MultiSmart" panels and probes, with limited optional features and defer radio telemetry until a future time.

- **Tier 3- Lower Flow / Lower Risk Stations**
  For small lift stations with a low potential for growth or increased risk, a traditional hard wired control panel coupled with an autodialer for remote alarming. This approach assumes the small stations will not be controlled by telemetry.





H.L.R.W.S.D

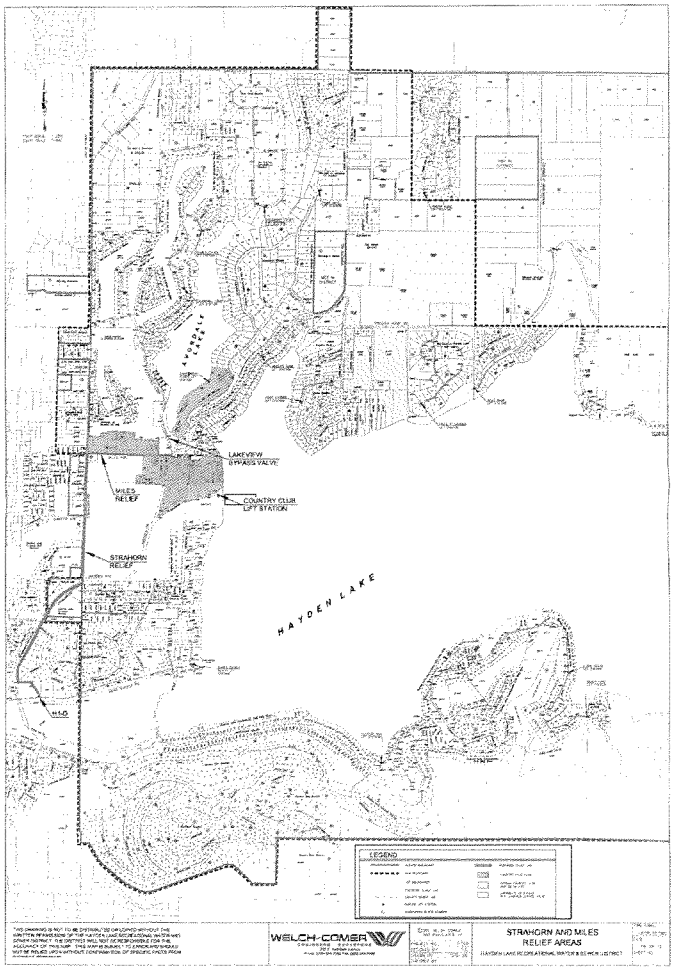
STRAHORN ROAD RELIEF LINE
PROPOSED SANITARY SEWER
(BRUCE ST. TO H1-D)

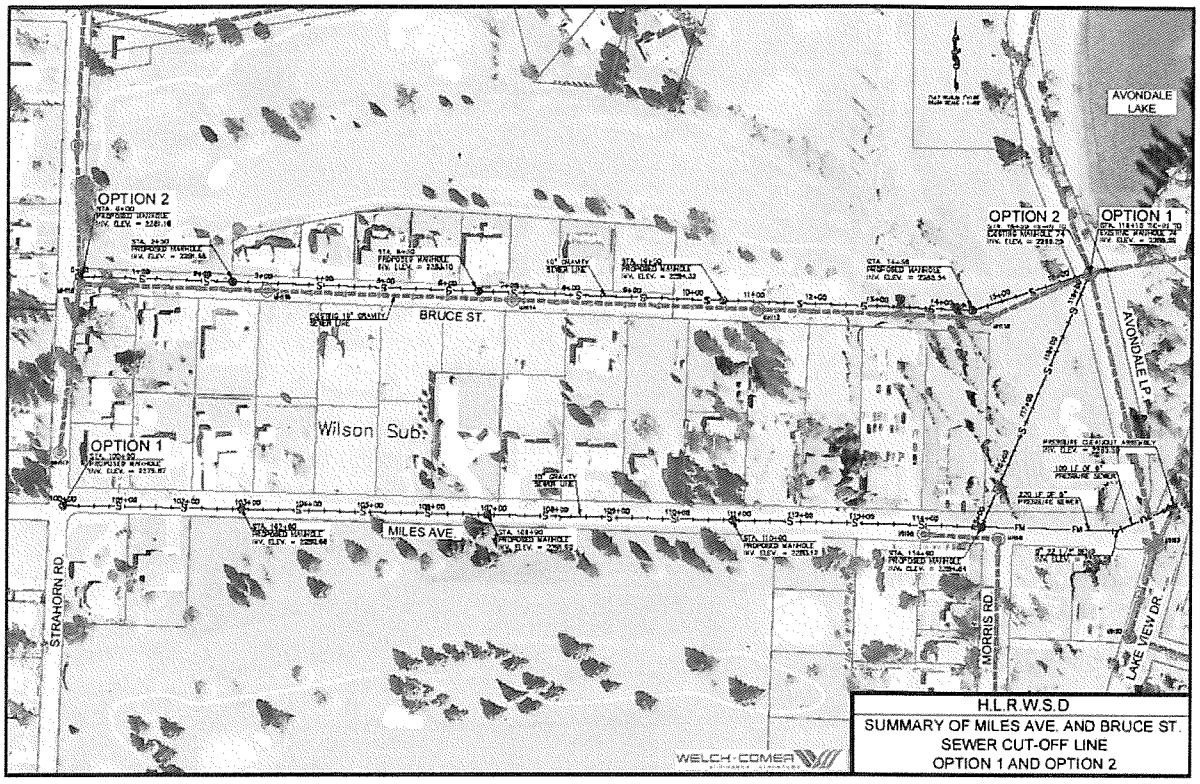
Cost/Benefit Information for Strahorn Gravity Relief Line

Strahorn Relief Line

- **Benefits:**
  1. Percent of Flow (gpd) eliminated from Country Club Lift Station
     - 17% billed flow
     - 67% vacant lot flow
     - 93% SMA growth flow
  2. Window of Opportunity (Strahorn Restoration will be complete by City of Hayden Lake, so would eliminate asphalt restoration and perhaps gravel base from cost)
  3. Higher Reliability in the new gravity sewer line

- **Challenges:**
  1. Landscaping restoration along portions Strahorn Road
  2. City of Hayden Lake would need to agree with the cost sharing





Cost/Benefit Information for Strahorn/Miles Gravity Relief Line

Strahorn and Miles Relief Lines

- **Benefits:**
  1. Percent of Flow (gpd) eliminated from Country Club Lift Station
     - 70% billed flow
     - 94% vacant lot flow
     - 99% SMA growth flow
  2. Added Value of bypass for Lakeview force main
  3. Window of Opportunity (Miles Avenue Restoration will be completed (2013 to 2015?), so would eliminate asphalt restoration from cost)
  4. Eliminates need to upgrade pumps at Country Club Lift Station

- **Challenges:**
  1. Avondale Country Club easement would need to be obtained to install sewer line across fairway
  2. City of Hayden Lake would need to agree with the cost sharing

Environmental Analysis

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure at Country Club	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health (failure at Country Club)	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health

Depreciation Analysis

- District has accumulated $10.17 million in unfunded depreciation (including collection system and 27% share in HARSB treatment facility)
- Projected deficit between accumulated depreciation and depreciation revenue is $14.92 million by 2022
- If improvements are made (recommended in facility plan), deficit in unfunded depreciation could be lowered to $7.10 million by 2022

HLRWSD Sewer Collection System Capital Improvements Options

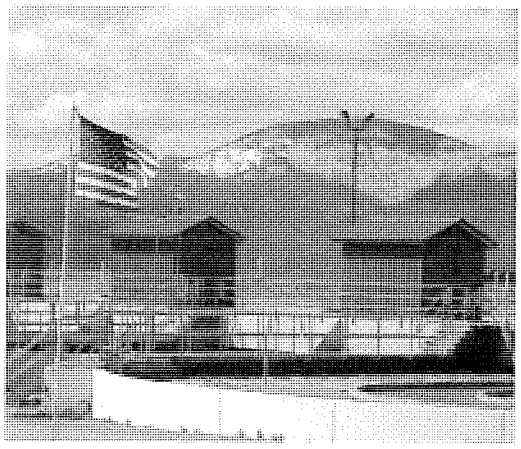
- District staff reviewed options for each lift station and formed a recommended alternative for each station
- Assembled these recommendations and divided the improvements into three parts:
  - Phase A (near-term need),
  - Phase B (mid-term need), and
  - O&M (long-term need)

HLRWSD Sewer Collection System Capital Improvement Costs

Phase	Cost
Phase A	$2,265,700
Phase B	$1,823,700
O&M Replacement Fund	$689,000
Total Proposed LID	$4,189,400 (round to $4,200,000)
Total Proposed O&M	$689,000 ($3.00 / month over 10 years)

HARSB Treatment Plant

- Existing Plant
- TMDL
- EPA Permit
- Proposed Improvements / Phasing
- Range of Costs
- Facility Plan meeting (more detail) TBD

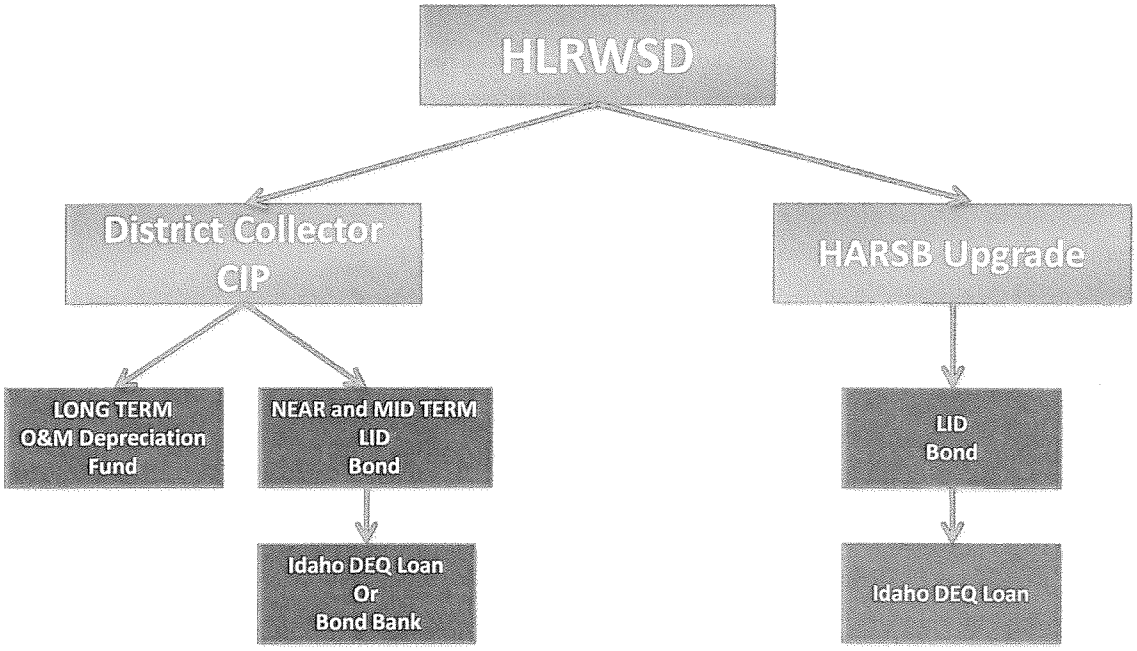


HARSB Capital Project Funding (2013 through 2023)

Project Element	Common Costs (Quality, Depreciation)	Capacity Driven Costs (Growth)
NPDES Regulatory Quality Improvements	$16.19 Million	
Replacement (Unfunded Depreciation)	$4.65 Million	
Increased Capacity		$6.66 Million
TOTAL	$20.84 Million	$6.66 Million

Hayden	HLRWSD	County	HARSB
61.46%	26.29%	1.17%	10.88%
↓	↓	↓	↓
$12.8 Million	$5.5 Million	$244,000	$2.3 Million

Financing Options



Proposed LID #7 Overview

	Estimated Cost	Funding Options
HARSB Treatment Plant Improvements	**$6,200,000**	Proposed DEQ Loan
HLRWSD Collection System Capital Improvements Plan	$4,089,400	
LID Legal, Admin, Interim Interest	$100,000	
	$4,189,400	Proposed DEQ Loan
Proposed Total LID Amount	$10,389,400	
Round Up:	**$10,400,000**	Total Proposed DEQ Loan
Estimated Number of Assessments	2,645 ER's	
Estimated LID Assessment per ER	**$4,000 per ER**	
Estimated Annual Installment – Amortized at 3% for 20 years (assumes DEQ Loan)	**$265/year/ER**	

Next Steps / Schedule

Public Comment Period	*Sept. 5 – Sept. 19, 2012*
District Board Selects Preferred Alternative	*Sept. 26, 2012*
District Board Considers Initiating LID	*Sept. 26, 2012*
HARSB Public Meeting	*Sept., 2012 (?)*
Notice of LID Hearing	*Late Oct., 2012*
Tentative LID Hearing Date	*Nov. 14, 2012*
District Board Decision on LID	*Nov. 28, 2012*
Final Application to DEQ for Loan	*Jan., 2013*
Secure DEQ Low Interest Loan	*July, 2013*

Thank you!

QUESTIONS and COMMENTS

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT
MINUTES OF LID7 PUBLIC INFORMATIONAL MEETING
SEPTEMBER 5, 2012

Chairman Sewell opened the public meeting at 6:00 p.m. Board members present were Dave Weinstein, Todd Walker and Carole Stringer. Board member Tom DePew was absent. Others present at the meeting were Larry Comer and Ashley Williams from Welch Comer & Associates, Mike Schmidt, Attorney for the District, Ken Windram, Administrator for HARSB Ken Thompson, Accountant for the District, Danielle Quade from Hawley Troxell LLP and Dustin Jacobson, District Superintendent. Administrator Lynn Hagman recorded the minutes of the meeting.

Chairman Sewell introduced the Board, Larry Comer, Attorney Schmidt and staff. Chairman Sewell explained that Mr. Comer will be giving the presentation.

Mr. Comer explained the comment period and regarding this meeting and stated that the District will take comments up to September 26, 2012. Mr. Comer discussed the history of the Sewer District and explained that the sewer treatment plant is also 25 years old. Ashley Williams addressed the Board and public with an overview of the District boundaries and lift stations. Future growth estimates were discussed; the District currently bills 1,922 ER's and has 702 vacant ER's. The District anticipates over the next 20 years, growth in the service area accommodated by the ER allocation at HARSB.

Ms. Williams explained the conditions of the existing lift stations and presented charts for structural/mechanical conditions with ratings. Rehabilitation of the lift stations were discussed with options A, B, and C. An environmental analysis was done for each option. Ms. Williams showed a tiered approach to the lift stations controls. Tier 1 is high flow/high risk, tier 2 is moderate and tier 3 is low.

Larry Comer explained the relief line on Strahorn Rd. and the cost benefit. Miles Ave. relief line was also discussed and Mr. Comer stated that this would be used for emergency use only. The benefits and challenges for both lines were reviewed by Mr. Comer. An environmental analysis and a depreciation analysis for both lines was presented to the Board and reviewed by Mr. Comer.

The collection system capital improvement options were discussed. Mr. Comer informed the Board that the District staff reviewed options for each lift station and formed a recommended alternative for each station. The improvements were divided into three parts, phase A (near-term need), and phase B (mid-term need) and O & M (long-term need). Mr. Comer reviewed a summary of costs for the collection system capital improvements.

Ken Windram, Administrator for HARSB, discussed the TMDL and the EPA permit process and new standards. Some of the proposed improvements and the phasing of them were discussed as well as a range of costs for each entity. The treatment plant will be upgraded to tertiary treatment level. The Sewer District portion will be $5.5 million. Mr. Comer informed the Board and the public that the upgrade from secondary to tertiary treatment is regulated by federal law.

Mr. Comer discussed the financing options for the Sewer District. For the District collector capital improvements there could be long-term with O & M depreciations funding or near and mid-term with LID bond with a DEQ loan or using the bond bank. The HARSB upgrades would be LID bond with the DEQ loan. Mr. Comer explained that the DEQ funding is at a very low

interest rate of 2%. Mr. Comer gave a proposed LID7 overview and explained that the Board will take public comments until September 26, 2012.

Alan Peterson questioned the cost per year for the LID7. Mr. Comer replied that it would be approximately $225.00. Mr. Peterson asked what the impact to Lake Spokane would be if these new regulations weren't there. Mr. Comer explained the draft permit and the mandated regulations.

Dana Smith questioned the treatment cost to change from chemicals to bacteria and who supplies the bugs. Mr. Windram explained that the bugs are just there and the bio is a fraction of what the chemicals are in cost. This is a natural process. Ms. Smith then questioned how deep the gravity relief line would be on Strahorn Rd. and where will it be placed. Mr. Comer explained that the work will be done in conjunction with the City of Hayden Lake doing a project at the same time and the line will be placed down the middle of the road. This will be a cost savings to the District. Ms. Smith asked if the line would come through people's property to connect. Mr. Comer replied that there will be no connections to this line.

Terry Ferris questioned the gravity relief line and why we needed it. Mr. Comer explained that the line is an interceptor and will be 10 to 12". Mr. Ferris questioned the cost to put it in. Mr. Comer replied that it will cost approximately $30.00 to $40.00 a foot and we will save on asphalt costs by working with the City of Hayden Lake. Mr. Ferris questioned if the capital improvements had to be done now. Mr. Comer stated that it did not, however the maintenance will keep the lift stations reliable.

Linda Schultz questioned if the vacant lots are paying towards the common costs. Mr. Comer explained that the District has 700 vacant lots that would not have to pay for growth. If a new sub-division were to come into the District they would pay the growth cost portion. Ms. Schultz asked if there will be an increase in the O & M fees and what would it be for and will there be future increases in the O & M. Mr. Comer explained that $3.00 of the last increase went towards depreciation.

Attorney Schmidt discussed the fight with the state of Washington Dept. of Ecology regarding the Spokane River and Lake Spokane and the new regulations. Ms. Schultz asked if there will be savings if chemicals are not used and how much per month and will it offset the total. Mr. Comer stated that the operating costs of the new facility will be higher and these costs will be discussed in further detail at future meetings.

John Schultz asked if Hayden Canyon would be involved. Mr. Comer explained the Hayden Canyon is not in our District. Mr. Schultz asked if the next thing going to be phosphorus in household products. Danielle Quade explained that the interest rate is 4% with 3% interest and 1% in reserve.

Danielle Quade explained the debt reserve that is required. Mr. Schultz asked how the depreciation would be unfunded. Mr. Comer explained how the depreciation works. Mr. Schultz asked if the $689,000 could come from the depreciation fund. Mr. Comer explained that these are real costs.

Merlin Deurkson questioned the bio process and will it work in cold weather. Mr. Windram stated that it would work in cold weather, the bugs slow down in the winter but they don't die.

Dana Smith asked if there is a provision to not upgrade the plant. Mr. Comer explained the permit process and the plant upgrades could be mandated. If they are not done DEQ could impose a large daily fine. Ms. Smith asked if the capital improvements could be done now and the plant upgrades later. Mr. Comer replied that the DEQ funding comes with a very low interest rate now.

Danielle Quade stated that the money is drawn on as needed and the District can only use the money they need for the project. Board member Stringer explained that the District is not at the point of an LID yet.

Mr. Ferris asked if the District could change the destination of the flow from the Spokane River. Mr. Windram discussed the Woodland Water project briefly and why this would not work for the District.

ADJOURN

The meeting was adjourned at 8:00 p.m.

Dave Weinstein, SECRETARY

Lynn Hagman, ADMINISTRATOR

HAYDEN LAKE RECREATIONAL WATER & SEWER DISTRICT

FACILITY PLAN MEETING ROSTER

Date: September 5, 2012 **Time:** 6:00 p.m. **Location:** HLRWSD Office

NAME	ADDRESS	PHONE	EMAIL
TERRY FERRIS	5278 Upper Hayden Lk Rd	762-3437	
DIANNE CHRISTENSON	" "	" "	
H. Allen Peterson	10849 N. Lakeview Dr	208 772-6968	
Gladys Cody	11466 N. Friar Dr HL	772-3620	
Danielle Quade	3326 Fernan Terr. CDA	208 867 4411	
~~JOHN MOFFETT~~	2931 Rd Hayden	~~208-635-5209~~	
Dale Bandy	12326 N. FRIAR	635-5064	
Sally Bohmer	12326 N. Friar	635-5064	
McMorris, J.D.	P.O. Box 754, Hayden	772-3735	
Ken Thompson	Box 2788 Hayden	769 4275	
Ken Windram	10789 N Atlas Rd Hayden	772 0672	
Ashley Williams	Welch Comer	—	
LARRY COMER	WELCH COMER		
DESTIN JACOBSON	HLRWSD	772 4379	

NAME	ADDRESS	PHONE	EMAIL
BOB & BARB CHILCUTT	10932 PT. HAYDEN DR. HAYDEN LAKE 83835	208-691-6898	CHILINPARADISE@ROADRUNNER.COM
JOHN + LINDA SHULTZ	11441 N AVONDALE LOOP RD HAYDEN LAKE 83835	208-772-3118	JJS1S10@GMAIL.COM
Rosemary & Merlyn Dickson	10790 N Blackrock Ln 83835	208 772-8381	mcdmd5@aol.com

Hayden Lake Recreational
Water and Sewer District
9393 N Strahorn Rd.
Hayden Lake, ID 83835

September 5, 2012

Dear Board Members;

Enclosed are three pages of my last cost for maintaining my septic system.

Sorry I could not attend your meeting as I was out of town. As a retired individual and living on a fixed income I am concerned about any increases. I know that things need to be replaced and repaired; I just hope that you do it prudently and with practicality in mind.

I know that you are probably aware that our bimonthly fee is only part of our total cost for our sewer system. I have lived at this residence since 1984. The enclosed bill reveals a total cost of $1287.30. This is the 4th pump that I have replaced. I am not sure if individuals on the up side of the hill have to have a separate septic tank or not, but I do know, it is getting rather expensive for an individual couple to only use the septic line for grey water. And, I may add, only for six months since we winter in Arizona.

It seems that there should be some kind of a user fee. A family of 4 or 5 living here year round without a septic tank is probably getting a pretty good deal.

I bring this to your attention and hope my comments are considered in your analysis.

Sincerely,

Joe and Laurie Venkus
2235 N Loch Haven Dr
Hayden, ID 83835
208-772-9005
autjmee@msn.com

P.S. It would also help if we could start paying our bills on line.

TOTAL
$ 1287.30

DRAINS PLUS... ROOTER SERVICE

" NO RESULTS - NO CHARGE "

P.O. BOX 2812
HAYDEN, ID 83835
(208) 683-4217 • (208) 772-0475

Joe	5-11-11
CUSTOMER	
2235 Lake Hills	DATE
Sandpoint ID	P.O.# 83914
JOB ADDRESS	

DRAIN SERVICED				SIZE (GALLONS)	EQUIPMENT USED	
MAIN SEWER		SINK		1000	M/L ROOTER MACHINE	
STACK		TUB		TANK CONDITION	R.R. JR.	
STOOL		URINAL		Good	CAMERA	
FLOOR DRAIN		SHOWER			HAND AUGER	
TRAP		GREASE TRAP		LENGTH OF HOSE	JETTER	
WASHER		SEPTIC	✓	80'		

CAUSE OF STOPPAGE

ROOTS	GARBAGE	MUD	LINT	GREASE	GENERAL	LOADED	FEM. HYGIENE PRODUCTS

OTHER _____

SEE REVERSE SIDE FOR GUARANTEE INFORMATION

IF NO GUARANTEE, EXPLAIN: Pump failed - Referred to RC wood

DESCRIPTION OF WORK:

Pump - $200.00
Enzymes - $84.00
818

Visa# 4147 3400 1444 [redacted]

Exp - 08/13

ASK ABOUT PREVENTATIVE MAINTENANCE PROGRAM

SERVICE _____
PRODUCT SOLD _____
SUB TOTAL _____
TAX _____
TOTAL AMOUNT $ 344.00

DRAIN OPEN AND RUNNING PROPERLY: YES ☑ NO ☐

CASH	CHECK	CREDIT CARD (VISA / MC)	CHARGED AMOUNT DUE
$	$	$ 344.00	$

SERVICE PERSON [signature]
APPROVED & ACCEPTED X [signature]

INVOICES NOT PAID WHEN DUE ARE SUBJECT TO A LATE CHARGE OF 1.5% PER MONTH, 18% PER ANNUM OR THE HIGHEST RATE PERMITTED BY LAW. MINIMUM FINANCE CHARGE OF $5.00 PER MONTH.

THANK YOU FOR CALLING DRAINS PLUS

R.C. Worst & Co.
EXPECT THE BEST FROM R.C.WORST
625 Best Ave, Coeur d'Alene ID 83814
Phone: 208.664.2133 Fax: 208.667.8775
www.rcworst.com

SERVICE INVOICE

Invoice No.:	216387
Invoice Date:	05/13/2011
Due Date:	05/13/2011
Custom No.:	C109140
Job No.:	7580

Bill To:
Joe Venkus
2235 Loch Haven Drive
~~Hayen~~, ID 83835
Hayden

Job Location:
Venkus Residence
2235 Loch Haven Dr.
Hayden ID 83835

Joe Venkus - 1T796-Replace the Pump, Floats & Plumbing

Item No.	Description	UOM	Qty	Price	Amount
L710.LR	Labor Job Order - Regular - Eric Halladay	HR	5.00	$87.50	$437.50
EU.JO-FUELSC	EQUIPMENT USED -- ON JOB ORDERS	MI	9.00	$0.80	$7.20

**

Ref T/S 07884 Eric Halladay Thursday 5-12-11

Labor to check the sewer system. We replaced the pump, floats and plumbing. We reset, cycled the system and everything was okay.

System Info:
Pump: SHEF 40 A1
Pipe: 1 1/4" SCH 80
Tank: 10' deep

***

HTC526080107	SHEF40A1 .4HP 115V 20C - HYDROMATIC	EA	1.00	$371.70	$371.70
PDTJN418212C	PANDUIT WIRE JOINT INS 18-12GA	EA	7.00	$0.35	$2.45
PRP1/4	POLY ROPE 1/4"	FT	10.00	$0.09	$0.90
PVC829012	PVC 80 COUPLING SS 1-1/4"	EA	1.00	$5.06	$5.06
PVC836012	PVC 80 MALE ADAPTER 1-1/4"	EA	1.00	$6.22	$6.22
PVC839212	PVC 80 BUSHING TT 1-1/2X1-1/4	EA	1.00	$5.81	$5.81
PVCP8012PE	PVC PIPE SCH80 PLAIN END 1.25"	FT	1.00	$1.20	$1.20
RCWVIAL075	VIAL PVC 3/4" X 4" W/PLUG	EA	2.00	$0.90	$1.80
RCWVIAL100	VIAL PVC 1" X 4" W/PLUG	EA	1.00	$1.08	$1.08
SJEPC30NO	SJ ELTRO 30PC NO SENSOR FLOAT	EA	1.00	$44.33	$44.33
SPRS172012	SPEARS SWG CHK UNION S 1-1/4"	EA	1.00	$18.33	$18.33
STH4B	SCOTCHCAST INSULATING RESIN	EA	1.00	$34.30	$34.30
TAPA33	TAPE ELECTRICAL A33 3/4"X66'	EA	1.00	$3.00	$3.00
MSCC	MISC SERVICE CONSUMABLES	EA	1.00	$2.50	$2.50

Subtotal:	$943.38
Sales Tax:	$29.77

Item No.	Description	UOM	Qty	Price	Amount

R.C. WORST & CO INC.
625 BEST AVE
COEUR D ALENE, ID 83814

TERMINAL ID: 005175252
MERCHANT #: 433165830889

VISA
#xxxxxxxxxxxxx1726
SALE
BATCH: 000413 INVOICE: 013950
DATE: MAY 16, 11 TIME: 08:41
SQ: 003 AV: YV AUTH NO: 93086C

TOTAL $973.15

CUSTOMER COPY

Thank you for choosing R.C. Worst & Company Inc.
for your Water and Wastewater needs

A finance charge of 1.5% per month, with a minimum of $0.50 will be applied against unpaid balances 30 days after invoice due date.

Total: $973.15

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT
9393 N. STRAHORN RD.
HAYDEN LAKE, IDAHO 83835
208-772-4379 FAX 208-772-4456

September 24, 2012

Joe and Laurie Venkus
2235 N. Loch Haven Dr.
Hayden Lake, ID 83835

Re: Wastewater Facilities Plan

Dear Mr. and Mrs. Venkus:

Thank you for your written comments dated September 5, 2012 concerning the District's Wastewater Facilities Plan.

First, as you state, our District Board of Directors are very focused on keeping our operations as efficient as possible, while also protecting water quality and the capital assets of our District. We are committed to being prudent and practical. Each of our Board Members are also sewer users, and most of us are also retired.

With respect to the fact that you and your neighbors in the Woodland Heights and Hayden View Estates area must use septic tanks and in most cases also effluent pumps, here is some background information.

1. The "pressure effluent" sewer system in Woodland Heights and Hayden View Estates was either already constructed or was master planned by the land developer, prior to the District constructing the regional sewer system in 1986-87. The District "assumed" ownership and operation of the existing sewer collection system from the developer at that time.

2. Since lot owners of Woodland Heights and Hayden View Estates already had "equity" in their own sewer collection system when the District assumed ownership, in 1987 property owners were given a significant credit for the value of the existing sewer system.

3. The District formed a separate LID in 1987 for Woodland Heights and Hayden View Estates, known as LID #3. Assessments in this area in 1987 were about $1280 per lot. Whereas, the rest of the District's western sewer service area which had new sewer lines constructed in LID #2, required an assessment of approximately $4380.

So you can see, owners of property in your area originally received a reduction in the 1987 LID assessments of about $3100 per lot in recognition that you already had equity in an effluent sewer system.

Due to the age and corrosive nature of the septic effluent sewer system in Woodland Heights/Hayden View Estates, the District does spend a considerable amount of repair and reserve funds in your area. Due to the wide variety of geography, history and age of the

many neighborhoods in our sewer service area, the District Board is not able to customize sewer service fees for each neighborhood.

We believe that all of us as neighbors benefit equally by protecting the lake, aquifer and public health or our community; as a result, we have now standardized the sewer service fees for all of our constituents.

We certainly appreciate your comments. Please join us at one of our upcoming public information meetings on either October 10th at 6:00 p.m. or October 12th at 2:00 p.m. when we will be discussing the proposed sewer improvements and costs in more detail. You should be receiving a separate newsletter about these meetings by mail very soon.

Sincerely
Hayden Lake Recreational Water and Sewer District

Kenneth Sewell
Board Chairman

cc: Board Members
Welch Comer
Mike Schmidt

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT
MINUTES OF REGULAR MEETING
SEPTEMBER 26, 2012

CALL TO ORDER

Chairman Sewell called the meeting to order at 5:00 p.m. Board members present were Dave Weinstein, Tom DePew, Todd Walker and Carole Stringer. Ken Thompson, Larry Comer, Attorney Mike Schmidt, Superintendent Dustin Jacobson, Ashley Williams and Danielle Quade were present as representatives of the Board. Administrator Lynn Hagman recorded the minutes of the meeting.

AGENDA - MINUTES

Board member Stringer made a motion to amend the agenda to add the Idaho Fair Housing Council to the agenda due to information just received and to then approve the amended agenda. Board member DePew seconded the motion. The motion carried.

Board member DePew moved to approve the minutes for September 12, 2012, seconded by Board member Stringer. The motion carried.

FINANCIAL

Ken Thompson gave a report on the financial status of the District and reviewed the invoices for payment. **Board member DePew moved to approve the financial report and pay the bills. Board member Weinstein seconded the motion. The motion carried.**

ATTORNEY

Attorney Schmidt informed the Board that the IFHC training session that was scheduled for September 25th has been postponed due to no responses to the notice. Mr. Nagy has suggested rescheduling the training. Attorney Schmidt informed the Board that this would be up to them, the obligation has been met already to hold the training at the District offices.

LID7 RESOLUTION

Danielle Quade informed the Board that the boundaries are not ready to approve the resolution at this meeting. The resolution should be ready to approve at the October 10th meeting.

Ashley William from Welch Comer & Associates discussed the Board making a decision on the collector system. Board member Weinstein questioned if the District could move forward separately between the collector system and the plant upgrades. Ms. Williams explained that the decision is mainly for the engineers report and it does not have to be the final decision. Attorney Schmidt explained that they are choosing with options to bring to the public for comment.

Board member Stringer concurred with Board member Weinstein that the collector system and the plant upgrades were merged together and should be kept separate so the public understands the difference. Ms. Quade stated that the Board did not have to make a final decision now. The process can move forward using the engineer's estimates for the reports.

Board member Stringer felt that the Board could decide today do it can be discussed at the next two public meetings in October. Attorney Schmidt stated that a decision will allow the engineers to focus in on costs. **Board member Stringer moved to endorse to option as proposed by the engineers and move forward with the plan as selected. Board member DePew seconded the motion. A roll call vote showed; board member Walker, "aye", Board member Stringer, "aye", Board member Weinstein, "aye" and Board member DePew, "aye". The motion carried.**

Ms. Williams introduced a response letter to Mr. Venkus who submitted his comments. Board member Stringer voiced her on no response to his question regarding bill pay. Administrator Hagman will call and explain the billing system.

STATUS OF HARSB PLAN

Mr. Comer informed the Board that DEQ is still reviewing the plan.

NEWS LETTER

Board member Stringer questioned using colored paper for the newsletter. Board member Weinstein voiced his concern with the wording and felt that something like "sewer costs are going up" may be more appropriate. Board member Weinstein wanted to make sure that the newsletter has wording to catch the citizen's eye so they will be sure to read it. Board member Stringer felt that the wording was good. Attorney Schmidt explained the process of approving the options, moving forward and setting dates. Following the review of the newsletter the Board approved it and gave direction to Welch Comer & Assoc. to send it out. Ms. Williams will research the stock to see what colored paper they have.

The District will hold two more public meetings, October 10th at 6:00 p.m. and October 12th at 2:00 p.m. Welch Comer & Assoc. will do the same presentation and Ken Windram from HARSB will be invited.

Mr. Comer informed the Board that the DEQ funds are available. Danielle Quade stated that the funding looks good and Hayden has approved the filing of judicial validation.

Mr. Comer updated the Board on the team meeting held on September 21, 2012. The boundary map was discussed and the table was reviewed. Some properties are outside the District boundaries and only the properties inside the District boundaries will be in LID7. Board member Stringer voiced her concern with the boundaries given by the State Tax Commission. Attorney Schmidt addressed how the boundaries are done through the State. Superintendent Jacobson disagrees with the new map and boundaries. Ms. Quade explained that it is governed by legal description not by the State's map. Mr. Comer suggested a possible LID8 for parcels outside the District. Board member Stringer is in favor of the LID8 option.

HARSB REPORT

Board member Weinstein gave a report on the HARSB meeting and informed the Board that the replacement of Nancy Stricklin as the HARSB attorney was discussed. Board member Weinstein stated that if the Board wanted to come up with some alternate names he would pass them on to HARSB. Board member Stringer questioned why an RFP (request for proposal) isn't being sent out. Attorney Schmidt voiced his concern with Ms. Stricklin being the attorney for HARSB as well as being the attorney for the City of Hayden.

Chairman Sewell recommended the Board attend the next HARSB meeting to see how Ms. Stricklin handles questions put to her. Board member Weinstein recommended a search be done for a new attorney for HARSB. Board member Stringer agreed and asked that this be put on the next HARSB agenda.

Board member Weinstein discussed the dividing of ER's and HARSB had no argument with them having the 11.5.

Administrator Hagman informed the Board that the Washington conference discussed at the last meeting is not the usual conference that some Board members attend. The Board agreed that no one should attend this conference.

ADJOURN

With no further business before the Board, at 7:20 p.m. board member DePew moved to adjourn, seconded by Board member Weinstein. The motion carried.

Dave Weinstein, SECRETARY

Lynn Hagman, ADMINISTRATOR

NAME	ADDRESS	PHONE	EMAIL
M&Manigle, James & Jan	46033 E. Hayden Lk. Rd	208-772-3735	

for HLRWSD Board meeting September 26, 2012 at 5:00pm., HLRWSD office

Hayden Lake Recreational Water and Sewer District Newsletter

September, 2012

Sewer Collection System Facilities Plan Background

The Hayden Lake Sewer System was constructed in 1987 and is now 25 years old. Although the facilities have been operating well and have been maintained, certain components such as the major lift stations require upgrading due to normal depreciation and use.

The District has recently completed a "Facilities Plan" engineering study. The purpose of a wastewater facility plan is to analyze the sewer system, identify system deficiencies, and provide improvement recommendations.

Sewer System Collection Improvements

The District Board is considering financing improvements to the sewer collection system, which includes:

- Re-lining or replacing lift stations (including replacement of pumps and interior piping)
- Upgrading of electrical controls to meet current electrical standards and improved emergency communication.
- Adding stand-by generators for certain lift stations to improve reliability.
- Constructing gravity relief sewer lines along Miles Avenue and Strahorn Road to reduce power usage, improve reliability, and reduce risks on lift stations along Hayden Lake.

PUBLIC INFORMATION MEETING NOTICE

• • •

The Board invites property owners in its sewer service area to attend one of two public meetings (identical information will be presented at both). The purpose of the meeting is to discuss proposed sewer improvements and funding options (including financial impacts on sewer service bills) for the Districts' sewer collection system and the Hayden Area Regional Sewer Board (HARSB) treatment plant.

WEDNESDAY, OCT. 10, 2012 at 6:00 PM and FRIDAY, OCT. 12, 2012 at 2:00 PM

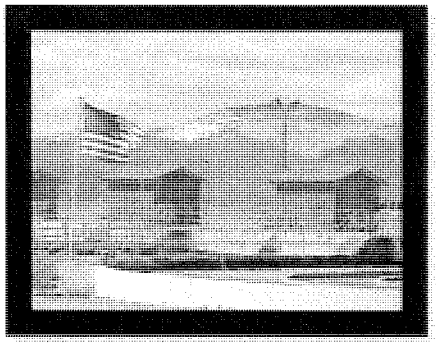
at the
HLRWSD OFFICE
9393 Strahorn Rd
Hayden Lake, ID

Pending EPA Requirements for Upgrading Treatment Standards

The District is one of three partners (City of Hayden and Kootenai County are the others) of the Hayden Area Regional Sewer Board (HARSB) who operates the regional wastewater treatment facility near the County Airport.

The U.S. Environmental Protection Agency (EPA) is requiring that the HARSB wastewater treatment facility meet much more stringent water quality standards for phosphorous and other constituents, in order to continue to discharge treated wastewater into the Spokane River under its federal discharge permit.

The HARSB has prepared a wastewater facilities plan which evaluates the methods and costs of meeting these new EPA discharge requirements, which are some of the most stringent in the U.S. These improvements must be phased-in over the next 10 years, and will cost the rate-payers in our District millions of dollars.



HARSB Treatment Plant

Funding Sewer System Improvements

Both collection system and treatment system improvements consist of multi-million dollar improvement projects. In order to fund these improvements, the District is considering forming a Local Improvement District (LID) and utilizing Idaho Department of Environmental Quality (IDEQ) loan monies for the projects. The District has been listed by IDEQ as eligible to receive low-interest loan funds (2.0 % over 20 years), which appears to be the best funding option available.

Public Information Meeting

The Board would like to invite you to attend one of two public meetings (identical information will be presented at both) which will discuss the proposed improvements and funding options for the District's sewer collection system and the HARSB treatment plant. The IDEQ loan option and the financial impact to your sewer service bill will be discussed as well. These meetings will be held on October 10th at 6:00 pm and October 12th at 2:00 pm at the HLRWSD office. Please attend whichever meeting is most convenient for you.

HLRWSD
9393 Strahorn Rd
Hayden Lake, ID
Tel: 208.772.4379
E-mail:
hlrwsdclerk@frontier.com
www.cityofhaydenlake.us

Board of Directors
Ken Sewell, Chairman
Tom DePew, Vice-Chairman
Dave Weinstein, Secretary
Todd Walker, Director
Carole Stringer, Director

Hayden Lake Recreational Water & Sewer District
9393 Strahorn Road
Hayden Lake, ID 83835

PRSRT STD
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HAYDEN, ID
PERMIT NO. 101

PUBLIC INFORAMATION MEETING OCTOBER 10TH AT 6:00PM AND OCTOBER 12TH AT 2:00PM AT HLRWSD OFFICE

M MORRISEY
12 SABRINA RD
WELLESLEY, MA 02482

Information on the financial impact to your sewer bill included inside this newsletter.

PUBLIC MEETING

The Hayden Lake Recreational Water & Sewer District values your opinion. That's why we want you to attend a public meeting to discuss the recent sewer system facility plan and EPA's required improvements to the wastewater treatment plant and collection system.

The purpose of this meeting is to solicit public comments and answer questions regarding the project scope, costs, and impacts on sewer rates.

WHEN: Wednesday, October 10, 2012
at 6:00 pm

AND

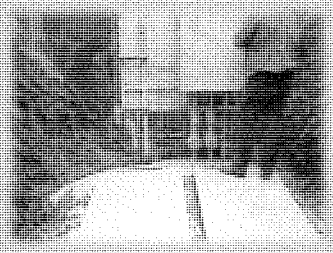
Friday, October 12, 2012
at 2:00 pm

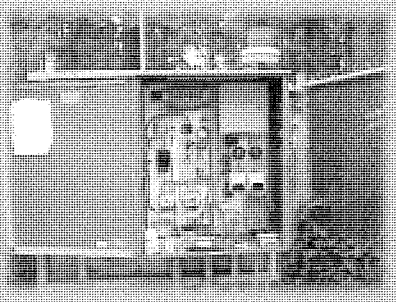
WHERE: HLRWSD Office at
9393 Strahorn Road,
Hayden Lake, ID

Information will be available upon request in Braille, audio tape or by interpreter in accordance with the Americans with Disabilities Act. Please call the District at 208-772-4379 for details

Hayden Lake Recreational Water and Sewer District

Sewer System Public Meeting

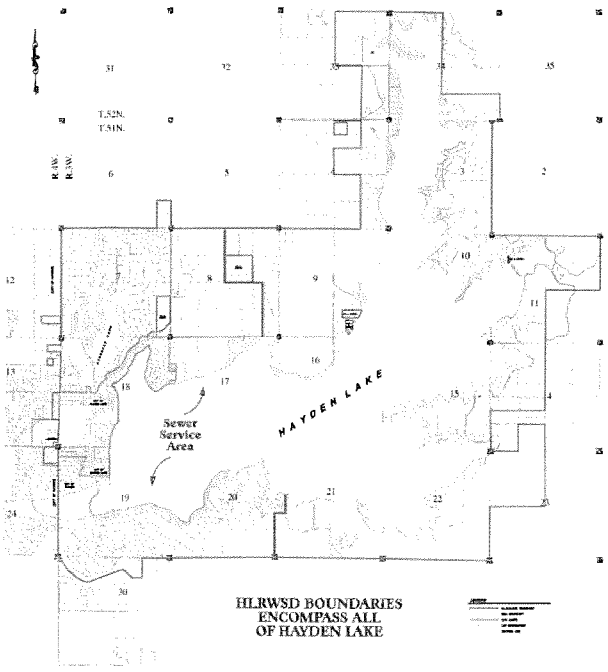




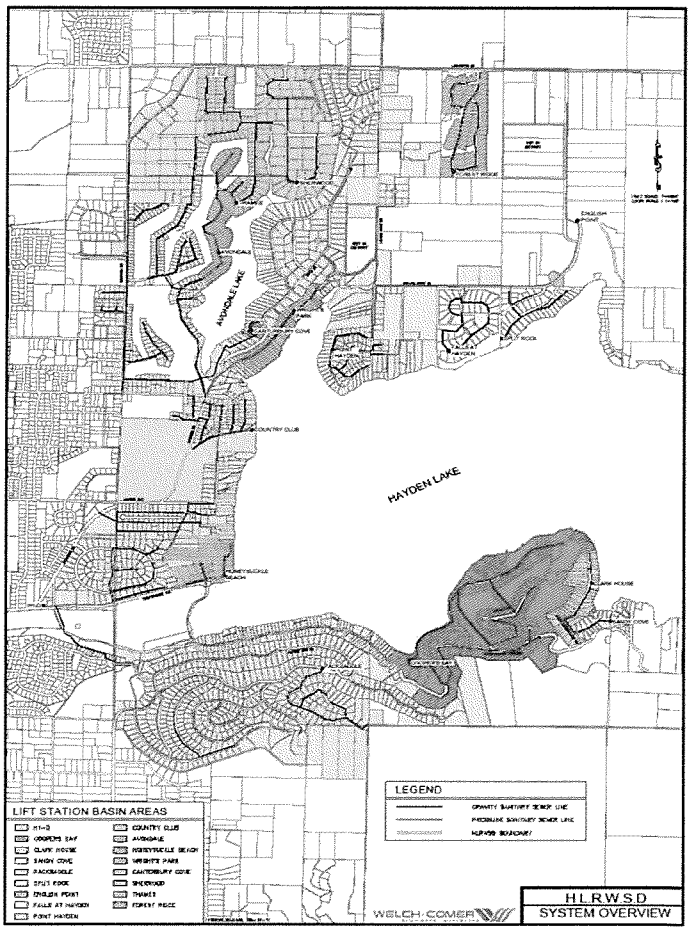
October 10 and 12, 2012

HLRWSD Background

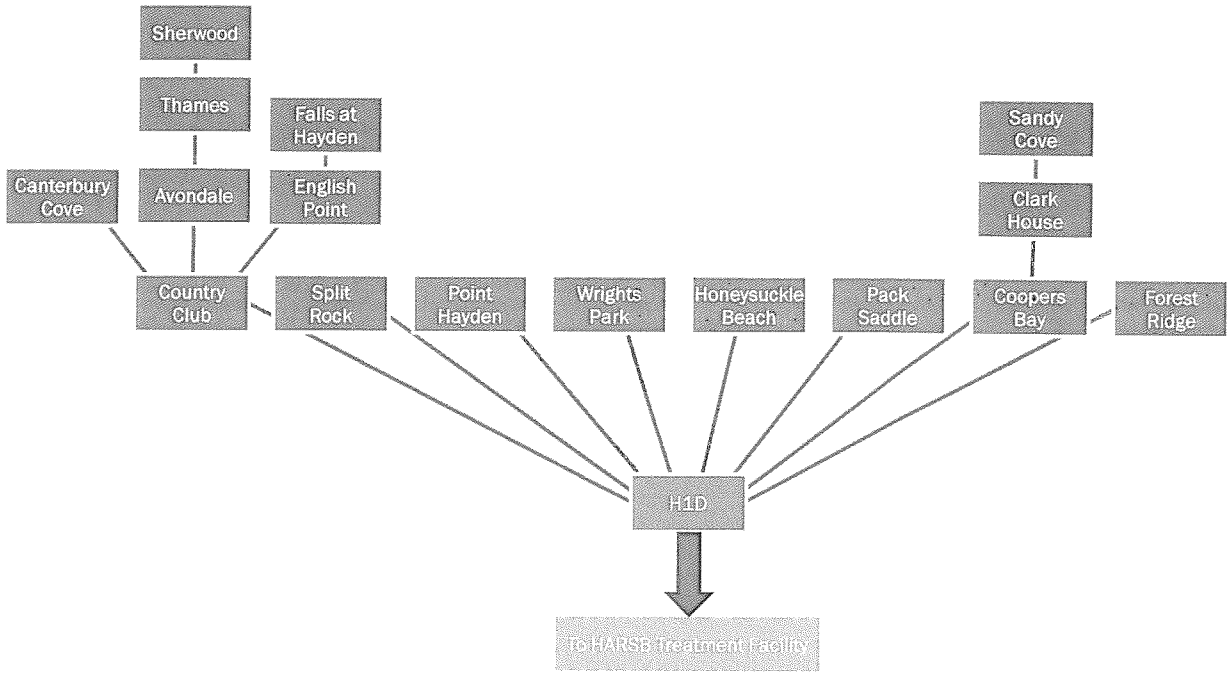
- District formed in 1976 by Public Election
- Majority of system constructed in 1986-1987, financed through 15-year LID (has been paid off for 10 years)
- Hayden Area Regional Sewer Board (HARSB) formed in 1986
  - Regional Interagency Partnership
    - City of Hayden
    - Hayden Lake Recreational Water & Sewer District
    - Kootenai County (Airport)
  - Regional Treatment Facility Built in 1987



Collection System



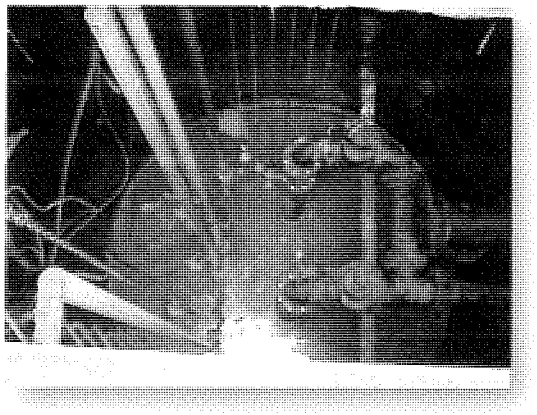
HLRWSD- Lift Station Basin Logic

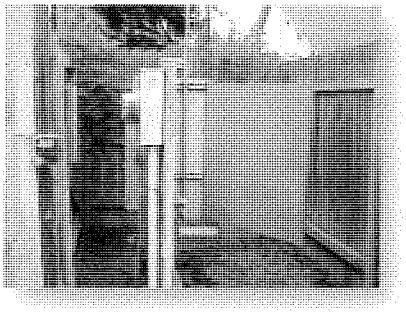


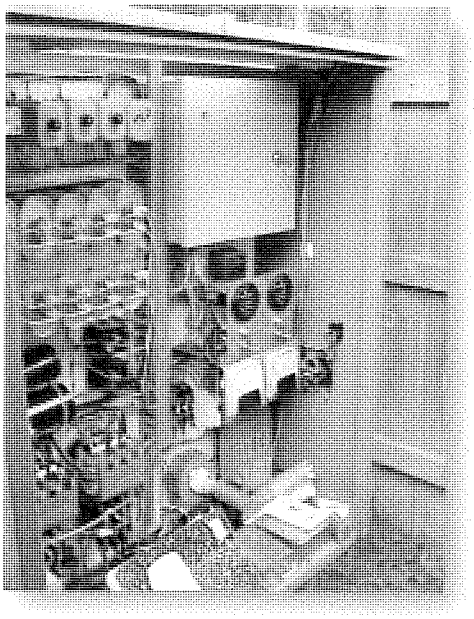
Future Growth Estimates

- Current billed ERs: 1,922
- ER allocation at HARSB Treatment Facility: 2,645.5
- Vacant Parcel ERs: 702
- District anticipates over the next 20 years, growth in service area accommodated by the ER allocation at HARSB

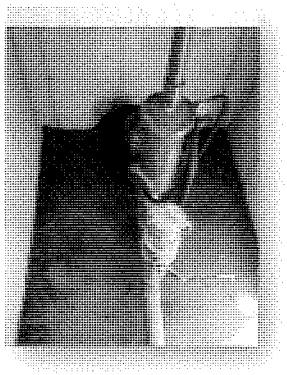
Existing Conditions

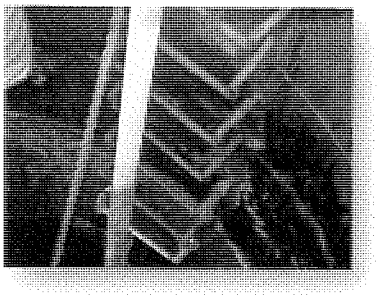


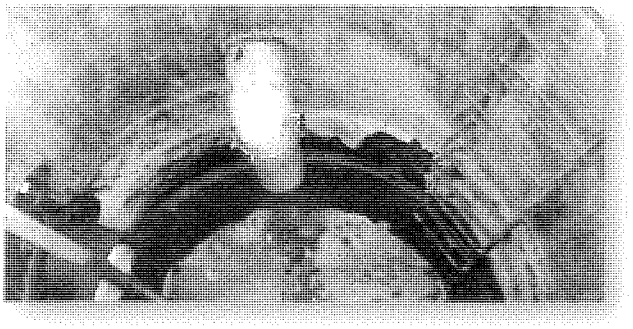




Existing Conditions







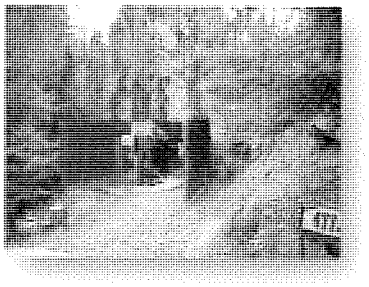
Structural/Mechanical Condition of Lift Stations, Rating

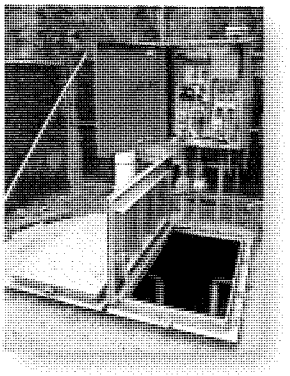
Lift Station	Age	Structural Condition	Mechanical Condition	Environmental Risk	Access/ Safety	Space for Expansion	Total Score (Weighted)
Avondale	1987	1	3	2	1	3	1.9
Canterbury Cove	1984	1	3	3	3	3	2.5
Clark House	1987	2	2	2	3	3	2.3
Coopers Bay	1985	1	1	2	1	2	1.3
Country Club	1987	2	3	3	2	3	2.6
English Point	2010	1	1	1	1	1	1.0
The Falls at Hayden	2010	1	1	2	1	1	1.2
Forest Ridge	2008	1	1	1	1	1	1.0
H-1D	1999	1	1	1	1	1	1.0
Honeysuckle Beach	1987	2	3	2	1	2	2.1
Packsaddle	1981	2	3	3	1	1	2.2
Point Hayden	1982	2	3	2	3	3	2.6
Sandy Cove	1987	3	3	3	3	2	2.9
Sherwood Court	1987	1	2	2	1	2	1.6
Split Rock	1990	1	2	2	2	3	1.9
Thames Court	1987	3	3	2	3	3	2.8
Wrights Park	1987	3	3	2	1	3	2.4

Notes: good = 1, fair = 2, low = 3 for Structural Condition, Mechanical Condition, Access/Safety, Space for Expansion ; low = 1, fair = 2, high = 3 for Environmental Risk Structural Condition = 25%, Mechanical Condition = 25%, Environmental Risk = 20%, Access/Safety = 20%, Space for Expansion = 10%

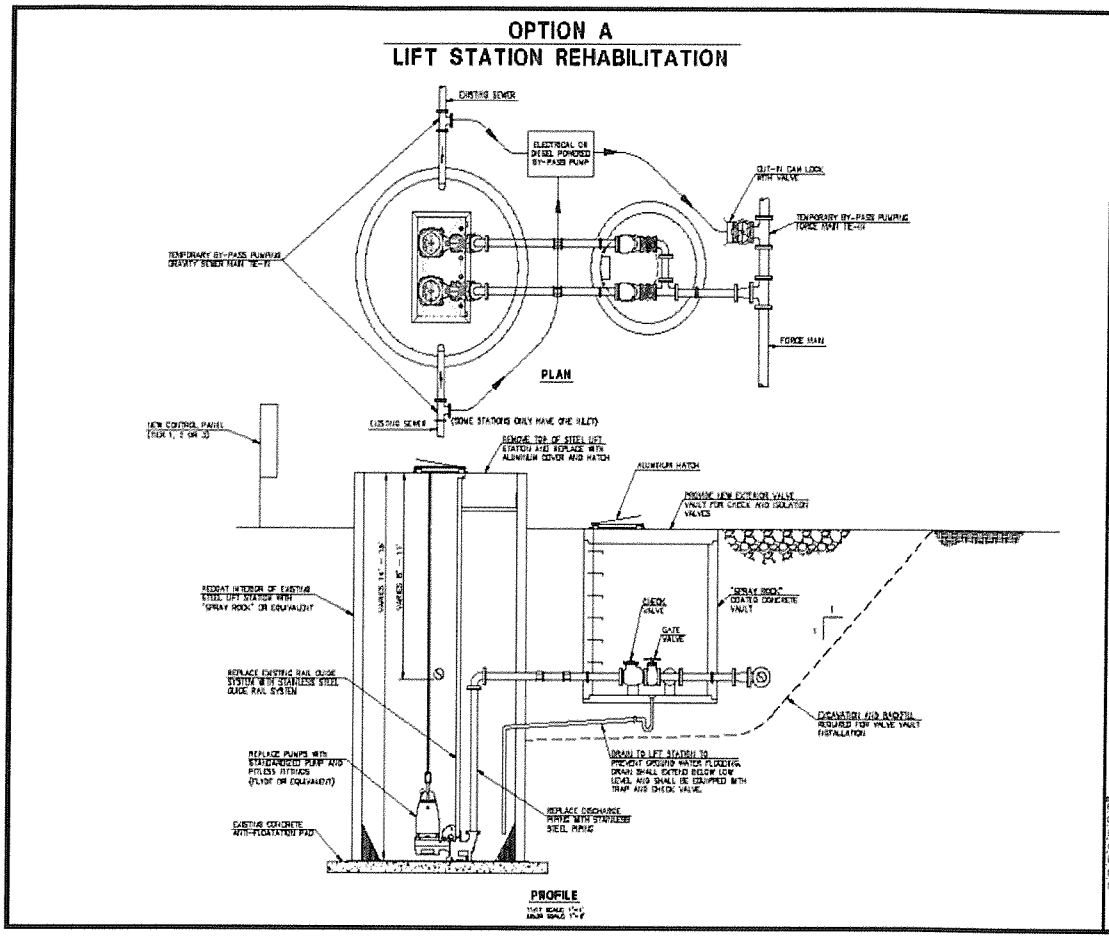
Lift Station Rating Results

1. Sandy Cove 2.9
2. Thames Court 2.8
3. Country Club 2.6
4. Point Hayden 2.6
5. Canterbury Cove 2.5
6. Wrights Park 2.4
7. Clark House 2.3
8. Packsaddle 2.2
9. Honeysuckle Beach 2.1





OPTION A
LIFT STATION REHABILITATION



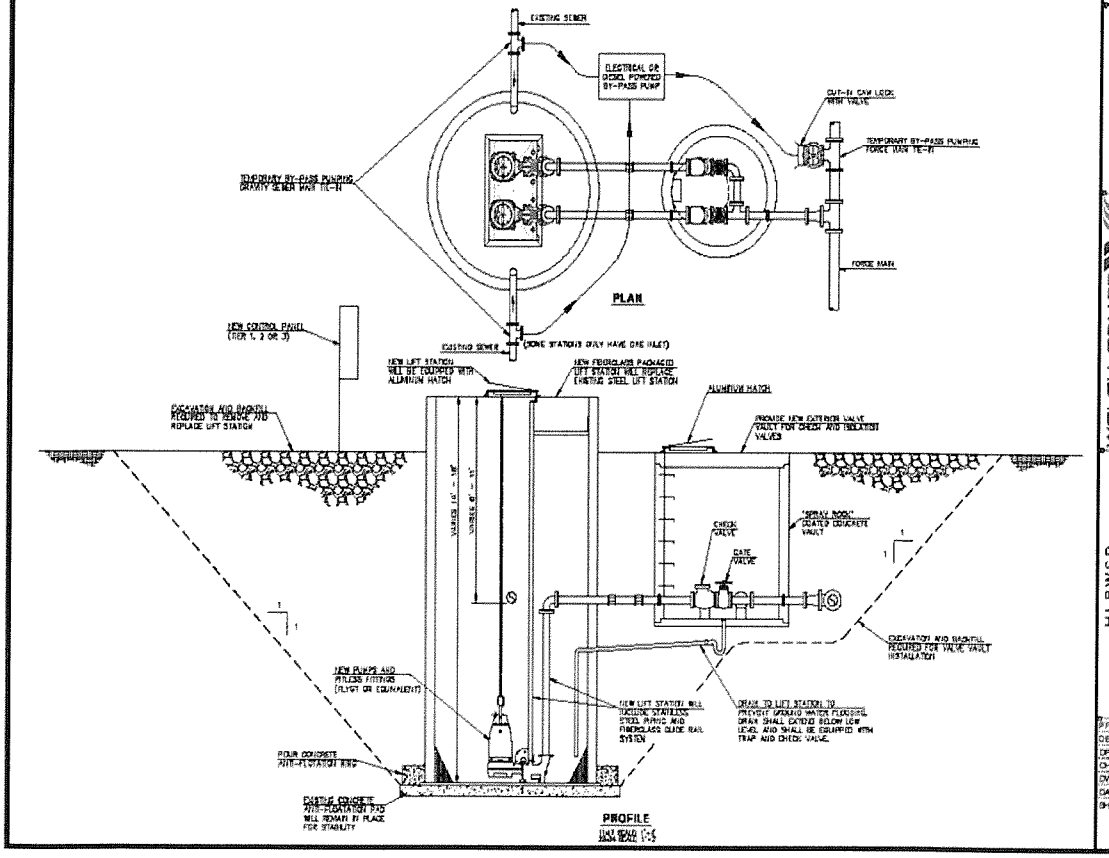
WELCH-COMER ENGINEERS / SURVEYORS

H.L.R.W.S.D.
LIFT STATION FACILITIES PLAN

LIFT STATION DETAIL OPTION A REHABILITATION

PROJECT NO.: 41055
DESIGNED BY: D.D.O.
DRAWN BY: J.A.L.
CHECKED BY:
DWG NAME: 4305ZDT02.DWG
DATE: 11-15-11
SHEET NO:

OPTION B
LIFT STATION REPLACEMENT



WELCH-COMER ENGINEERS / SURVEYORS

H.L.R.W.S.D.
LIFT STATION FACILITIES PLAN

LIFT STATION DETAIL OPTION B REPLACEMENT

PROJECT NO.: 41055
DESIGNED BY: D.D.O.
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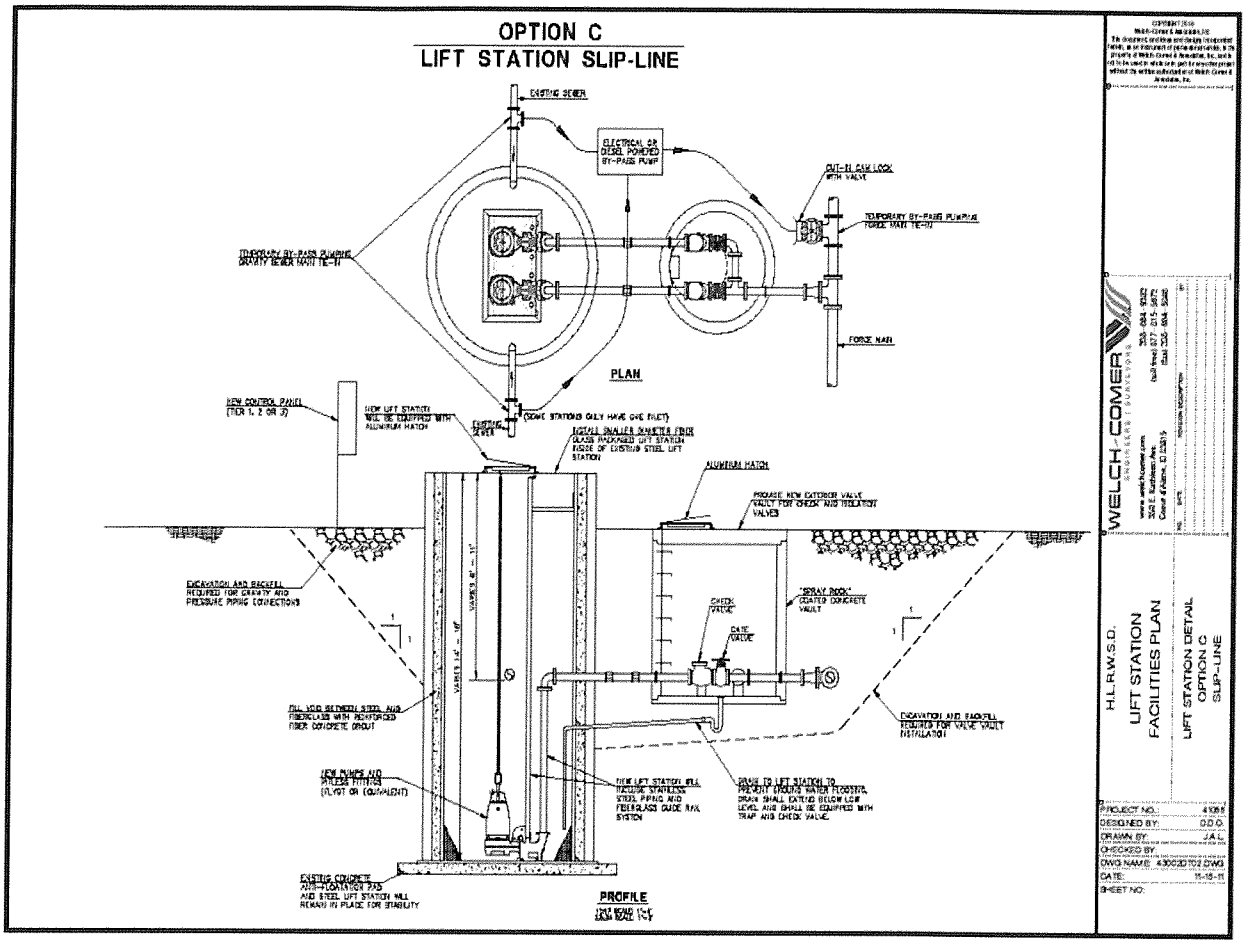


Environmental Analysis

Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Lift Station Rehabilitation, Long-Term Impacts Minimal	Excavation for Lift Station Replacement (largest of 3 opt.), Long-Term Impacts Minimal	Excavation for Lift Station Slip-Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health

HLRWSD Summary of Lift Station Controls

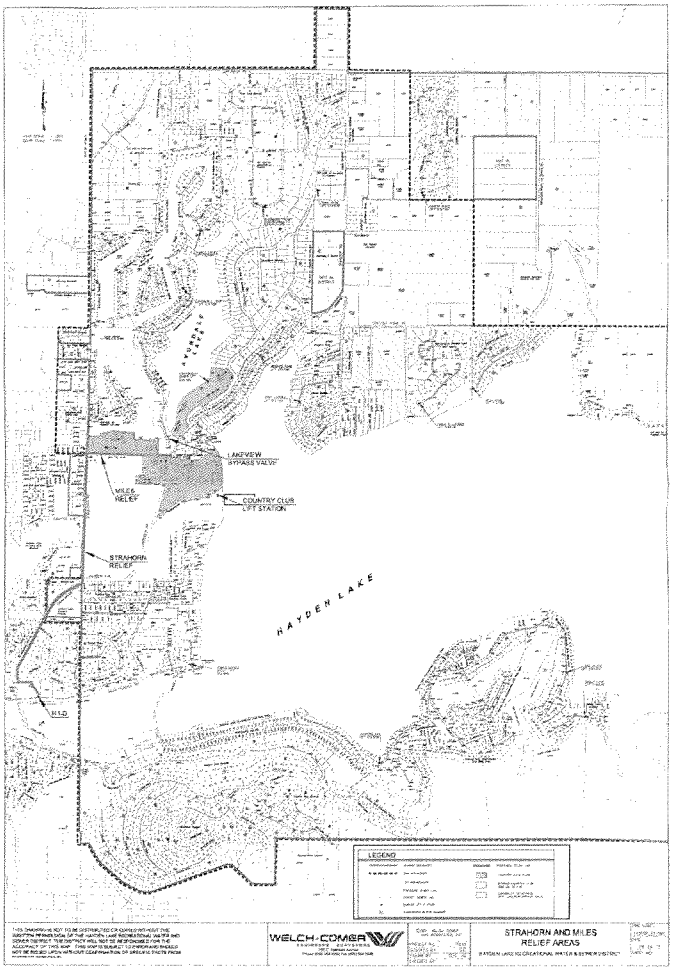
Lift Station Name	Type of Control (e.g. PLC, relay, smart panel, etc)	Alarm (e.g. dialer)	Standby Generator (yes/no)	Missing Components
Avondale	"smart panel"	dialer	yes	radio
Canterbury Cove	1986 with relays	dialer	yes	requires panel upgrade
Clark House	1986 with relays	dialer	no	requires panel upgrade, generator
Coopers Bay	1986 with relays	dialer	yes	requires panel upgrade
Country Club	1986 with relays	dialer	yes	requires panel upgrade
English Point	PLC	dialer	yes	radio
The Falls at Hayden	"smart panel"	dialer	yes	radio
Forest Ridge	PLC	dialer	yes	radio
H-1D	PLC	dialer	yes	radio
Honeysuckle Beach	1986 with relays	dialer	no	requires panel upgrade, generator
Packsaddle	1986 with relays	dialer	no	requires panel upgrade, generator
Point Hayden	1986 with relays	dialer	yes	requires panel upgrade
Sandy Cove	1986 with relays	dialer	no	requires panel upgrade, generator
Sherwood Court	1986 with relays	dialer	no	requires panel upgrade, generator
Split Rock	1986 with relays	dialer	no	requires panel upgrade, generator
Thames Court	1986 with relays	dialer	yes	requires panel upgrade
Wrights Park	1986 with relays	dialer	no	requires panel upgrade, generator

A Tiered Approach to Lift Station Control

- **Tier 1- High Flow / High Risk Stations**
  The "MultiTrode/MultiSmart" pump station management system, with radio telemetry to a base system at the HARSB treatment facility.

- **Tier 2- Moderate Flow / Moderate Risk Stations**
  Use the "MultiTrode/MultiSmart" panels and probes, with limited optional features and defer radio telemetry until a future time.

- **Tier 3- Lower Flow / Lower Risk Stations**
  For small lift stations with a low potential for growth or increased risk, a traditional hard wired control panel coupled with an autodialer for remote alarming. This approach assumes the small stations will not be controlled by telemetry.



Cost/Benefit Information for Strahorn/Miles Gravity Relief Line

Strahorn and Miles Relief Lines

- **Benefits:**
  1. Percent of Flow (gpd) eliminated from Country Club Lift Station
     - 70% billed flow
     - 94% vacant lot flow
     - 99% SMA growth flow
  2. Added Value of bypass for Lakeview force main
  3. Window of Opportunity (Proposed Miles Avenue and Strahorn Road Restoration will be completed (2013 to 2015?), so would eliminate asphalt restoration from cost)
  4. Eliminates need to upgrade pumps at Country Club Lift Station

- **Challenges:**
  1. Avondale Country Club easement would need to be obtained to install sewer line across fairway
  2. City of Hayden Lake would need to agree with the cost sharing

Environmental Analysis

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Climate and Physical Aspects (Topography, Geology, and Soils)	No Impact	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal	Excavation for Relief Line, Long-Term Impacts Minimal
Population, Economic, and Social Profile	Small Potential for Growth	Potential for Growth	Potential for Growth	Potential for Growth
Land Use	No Impact	No Impact	No Impact	No Impact
Floodplain Development	No Impact	No Impact	No Impact	No Impact
Wetlands and Water Quality	Impact to Existing Water Quality due to Potential Station Failure at Country Club	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality	Protection from Further Damage to Existing Water Quality
Wild and Scenic Rivers	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Flora and Fauna	No Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact	Site Disturbance, Short-Term Impact
Recreation and Open Space	No Impact	No Impact	No Impact	No Impact
Agricultural Lands	No Impact	No Adverse Impact	No Adverse Impact	No Adverse Impact
Air Quality	No Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact	Construction Emissions, Short-Term Impact
Energy	No Impact	No Impact	No Impact	No Impact
Public Health	Potential Detriment to Public Water Supply and General Public Health (failure at Country Club)	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health	Protection from Future Potential Impacts to Public Health

HLRWSD Sewer Collection System Capital Improvements Options

- District staff reviewed options for each lift station and formed a recommended alternative for each station
- Assembled these recommendations and divided the improvements into three parts:
  - Phase A (near-term need),
  - Phase B (mid-term need), and
  - O&M (long-term need)

HLRWSD Sewer Collection System Capital Improvement Costs

Phase	Cost
Phase A	$2,265,700
Phase B	$1,823,700
O&M Replacement Fund	$689,000
Total Proposed Capital Funding	$4,189,400
	(round to $4,200,000)
Total Proposed O&M Funding	$689,000
	($3.00 / month over 10 years)

Treatment Facility

New Treatment Plant Effluent Limits

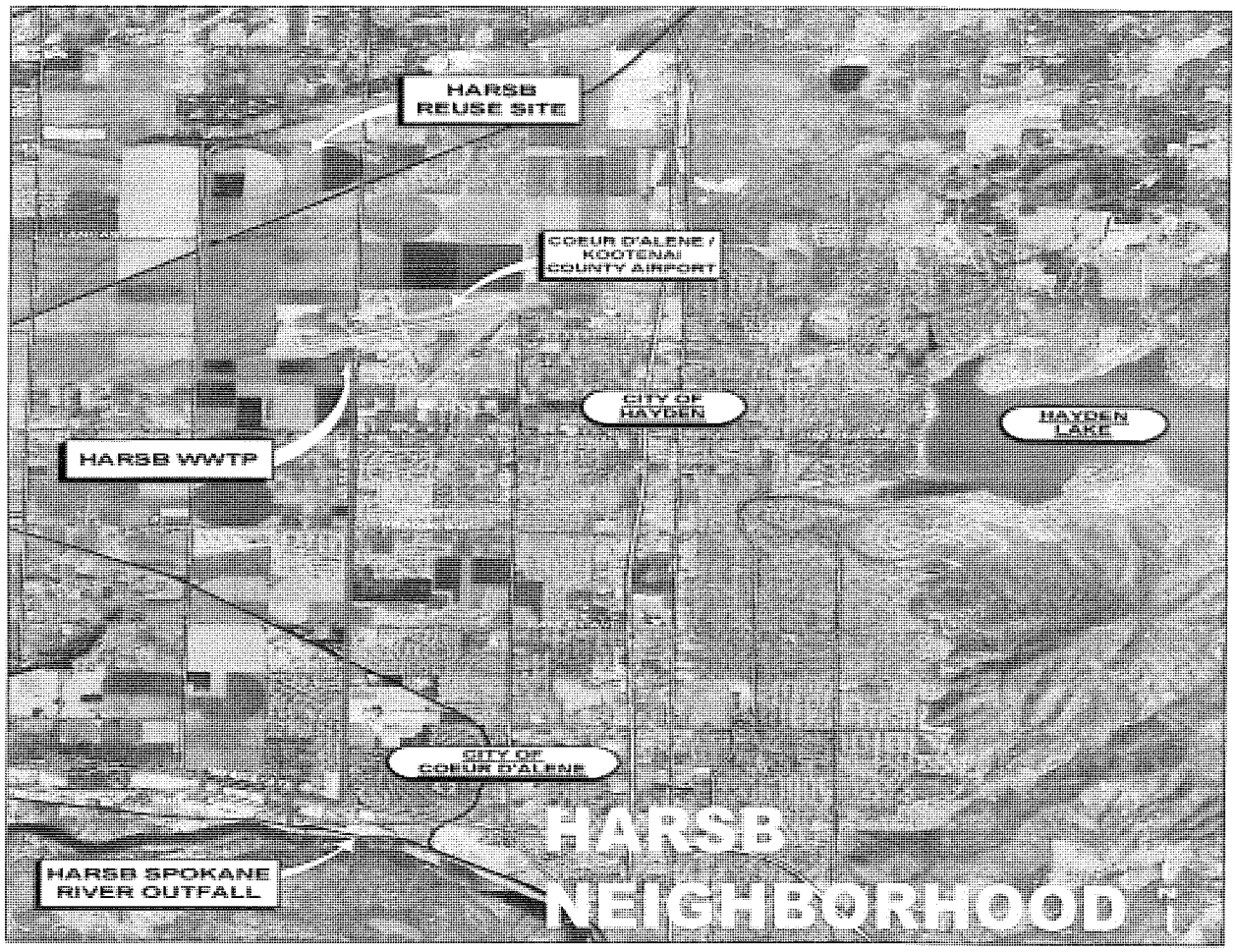
- WA Department of Ecology (DOE) set a Dissolved Oxygen (D.O) standard for Lake Spokane based on Washington Dissolved Oxygen TMDL
- The Lake Spokane D.O. standard isn't being met.
  - Biological Oxygen Demand (BOD)& Phosphorus.
- WA DOE used a model to set BOD &Phosphorus Waste Load Allocations for each discharger.
- The BOD & Phosphorus Waste Load Allocation are incorporated in the New NPDES Permit. (EPA)

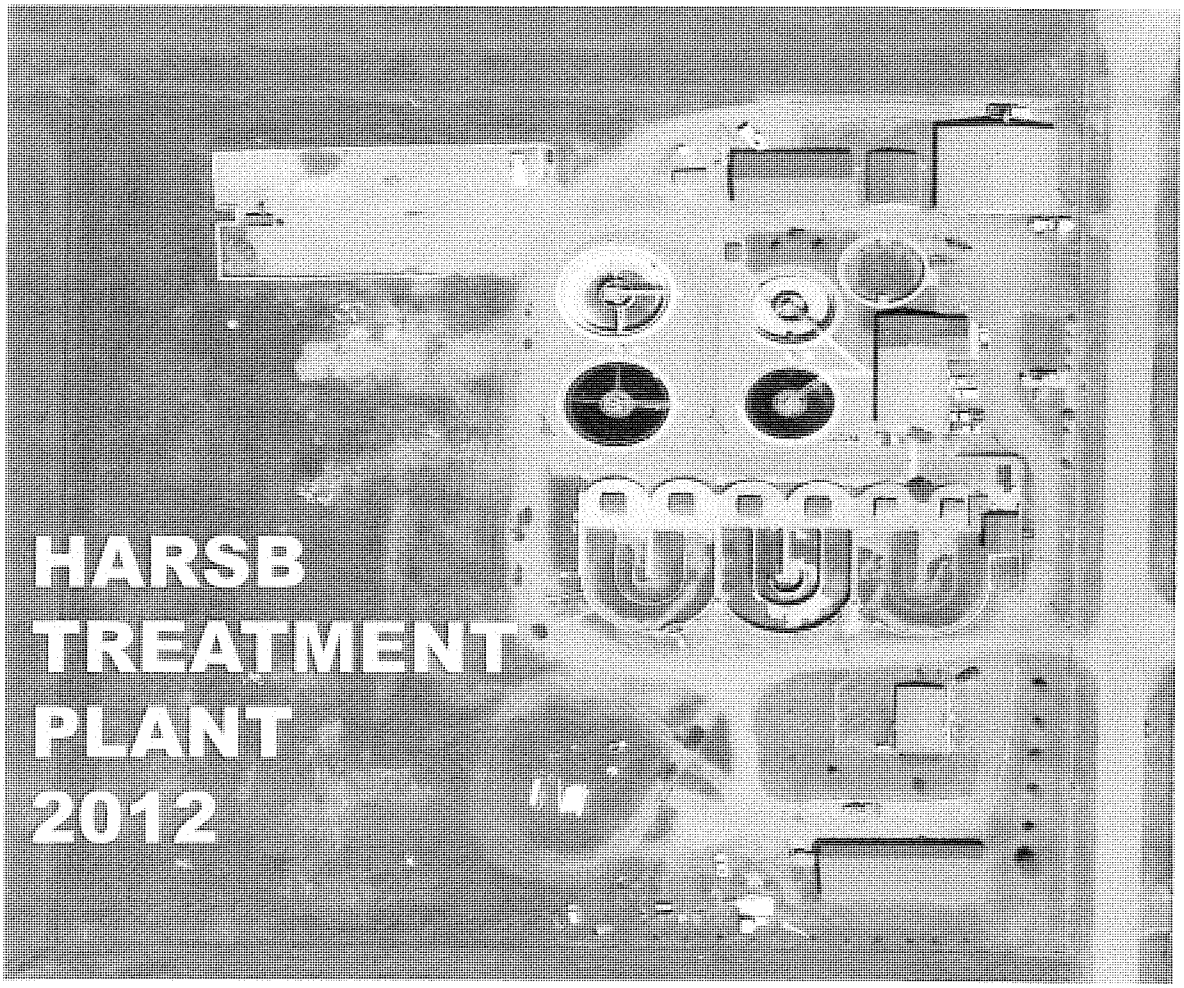
Treatment Plant Upgrades / TMDL Impact

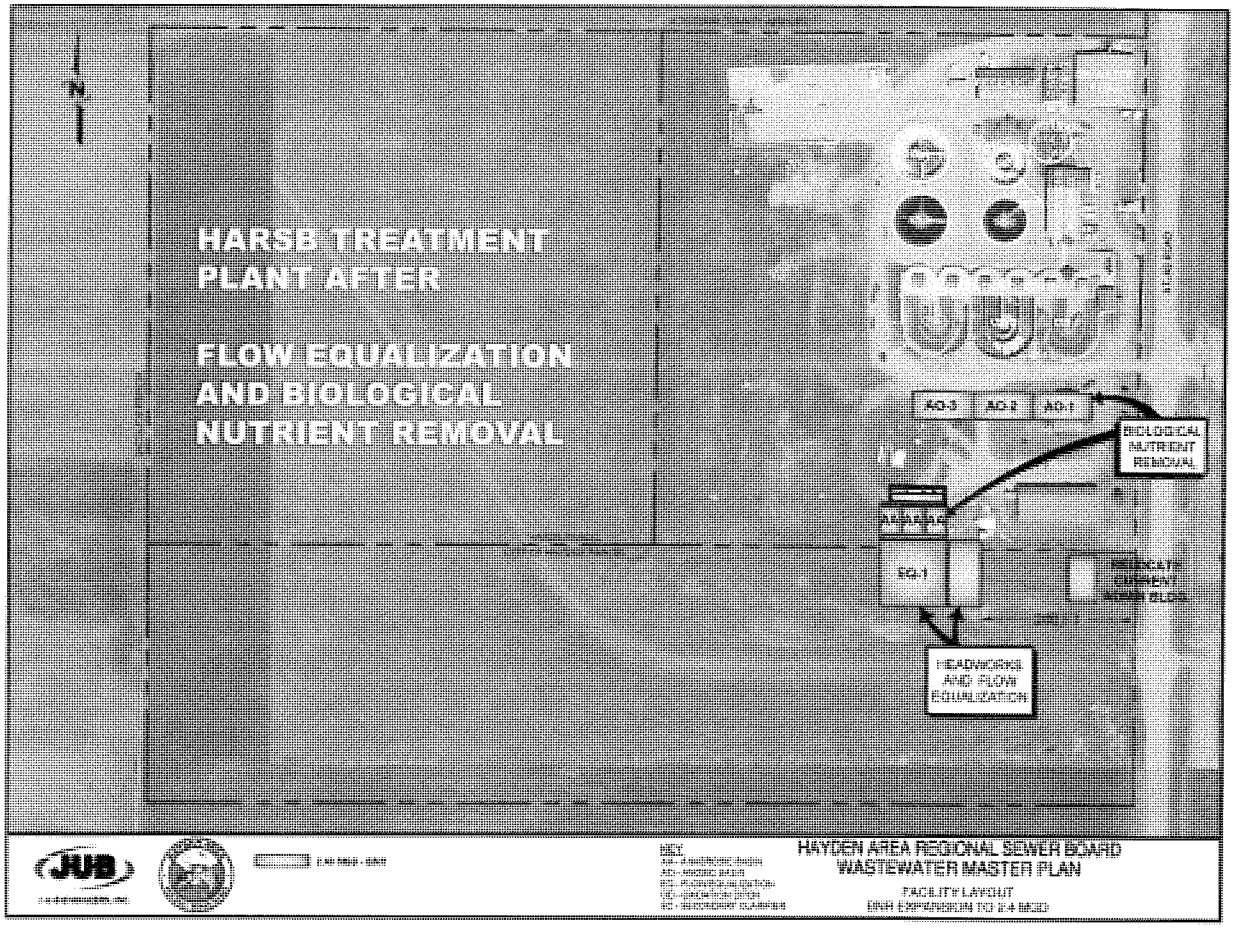
- The treatment upgrade phases for Phosphorus < 0.05 mg/l, Total Nitrogen <4.0 mg/l, TSS <1.0 mg/l, CBOD < 4.0 mg/l
- Today's plant effluent permit conditions are 30 mg/l TSS and 30 mg/l CBOD.
- Must meet limit within 10 years.

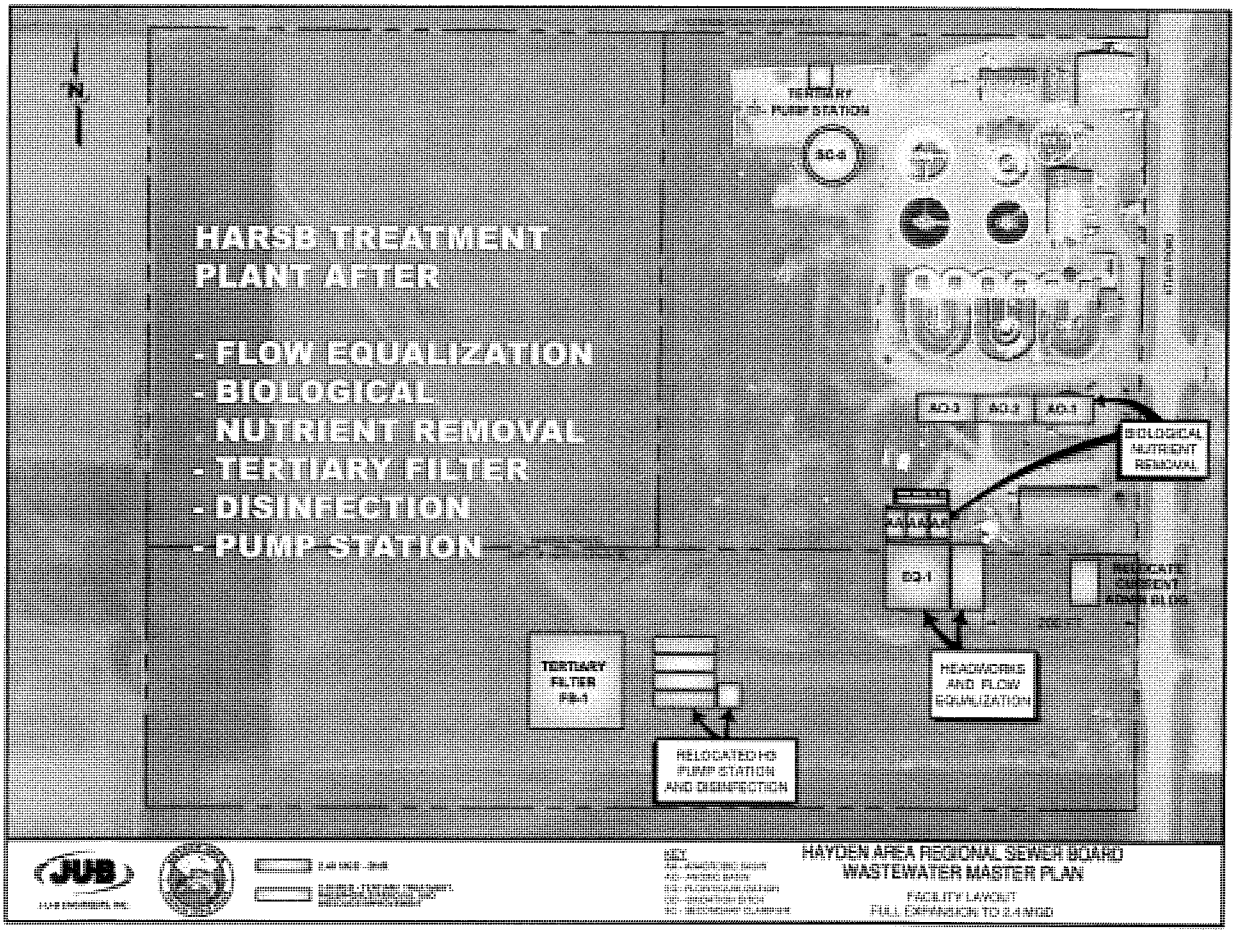
How Much Phosphorus to Remove?

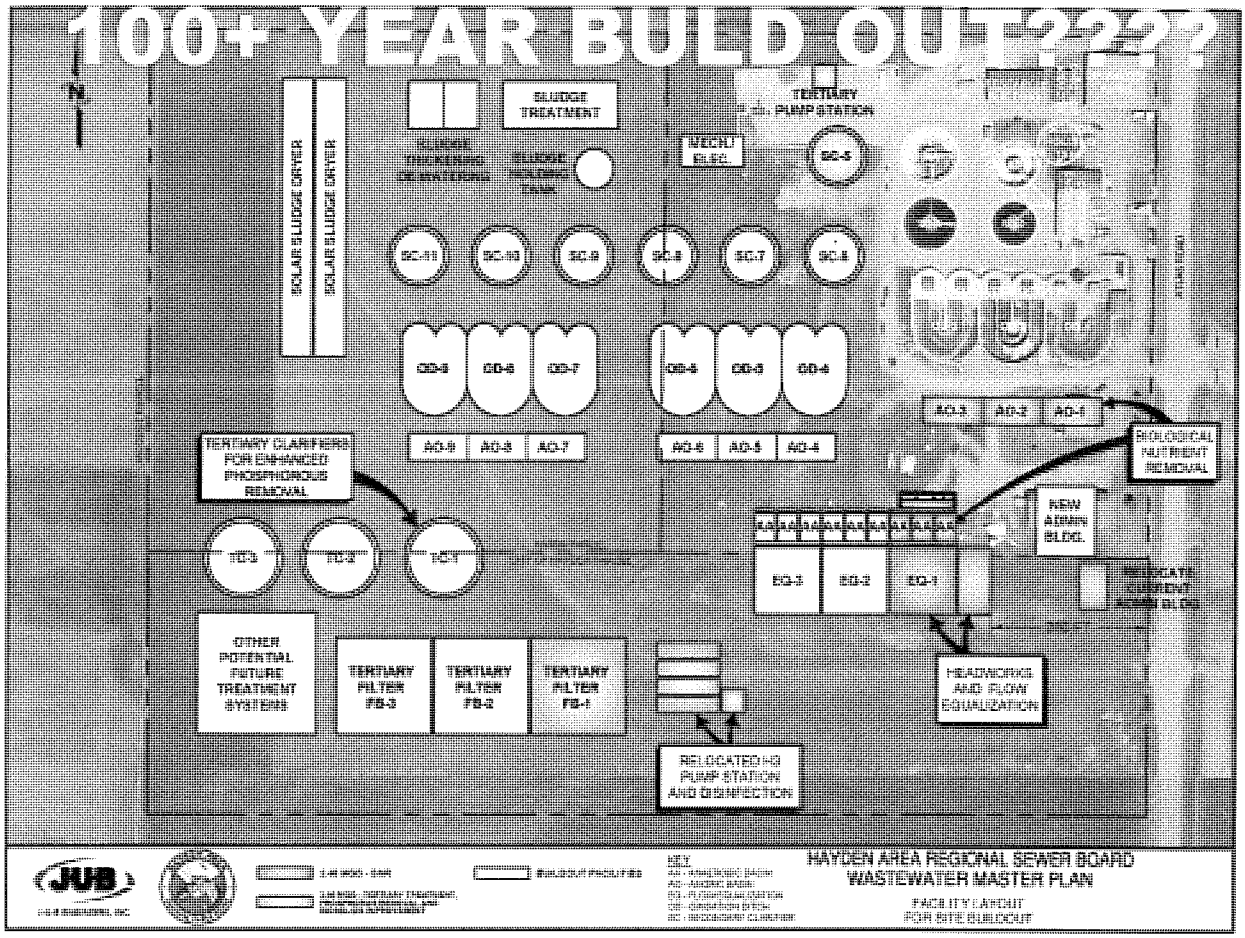
- Today the treatment plant influent is about 6,000 to 8,000 parts per billion.
- Today's treatment plant effluent 4,000 to 5,000 parts per billion.
- Within 10 years the plant effluent must be less than 50 parts per billion. (about 99.9% Phosphorus removal)


HARSB REUSE SITE
COEUR D'ALENE / KOOTENAI COUNTY AIRPORT
CITY OF HAYDEN
HAYDEN LAKE
HARSB WWTP
CITY OF COEUR D'ALENE
HARSB SPOKANE RIVER OUTFALL
HARSB NEIGHBORHOOD


HARSB TREATMENT PLANT 2012


N
HARSB TREATMENT PLANT AFTER
FLOW EQUALIZATION AND BIOLOGICAL NUTRIENT REMOVAL
AO-3
AO-2
AO-1
BIOLOGICAL NUTRIENT REMOVAL
EQ-1
HEADWORKS AND FLOW EQUALIZATION
HAYDEN AREA REGIONAL SEWER BOARD
WASTEWATER MASTER PLAN
FACILITY LAYOUT


N
TERTIARY PUMP STATION
SO-4
HARSB TREATMENT PLANT AFTER
- FLOW EQUALIZATION
- BIOLOGICAL NUTRIENT REMOVAL
- TERTIARY FILTER
- DISINFECTION
- PUMP STATION
AO-3
AO-2
AO-1
BIOLOGICAL NUTRIENT REMOVAL
EQ-1
HEADWORKS AND FLOW EQUALIZATION
TERTIARY FILTER
RELOCATED HS PUMP STATION AND DISINFECTION
HAYDEN AREA REGIONAL SEWER BOARD
WASTEWATER MASTER PLAN
FACILITY LAYOUT
FULL EXPANSION TO 2.4 MGD



HARSB Capital Project Funding

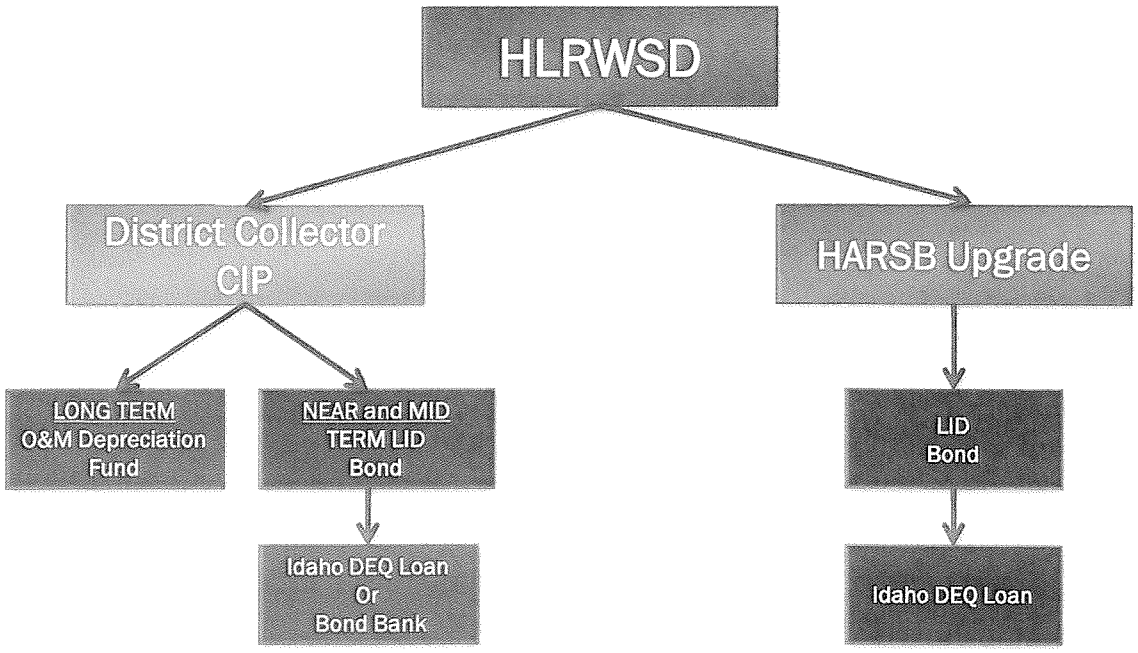
(All Through 2043)

Project Element	Common Costs (Quality, Depreciation)	Capacity Driven Costs (Growth)
NPDES Regulatory Quality Improvements	$16.35 Million	
Replacement (Unfunded Depreciation)	$5.16 Million	
Increased Capacity		$6.66 Million
TOTAL	$21.51 Million	$6.66 Million

Hayden	HLRWSD	County	HARSB
61.57%	26.29%	1.17%	10.97%
↓	↓	↓	↓
$13.24 Million	$5.65 Million	$251,000	$2.36 Million

Financing Options

Financing Options



Proposed Capital Funding Overview

	Estimated Cost	Funding Options
HARSB Treatment Plant Improvements (2013-2023)	$6,200,000	Proposed DEQ Loan
HLRWSD Collection System Capital Improvements Plan	$4,089,400	
Legal, Admin, Interim Interest	$100,000	
	$4,189,400	Proposed DEQ Loan
Proposed Total Capital Funding Amount	$10,389,400	
Round Up:	**$10,400,000**	Total Proposed DEQ Loan
Estimated Number of Assessments	2,645 ER's	
Estimated Assessment per ER	**$4,000 per ER**	
Estimated Annual Installment – Amortized at 3% for 20 years (assumes DEQ Loan)	**$265/year/ER**	

Looking Ahead to Future HARSB Upgrade Requirements

- HLRWSD share of future upgrades (year 2023-2032):
  - $**1.5 million**

- Funding options for this future capital expense:
  A. Begin a dedicated reserve fund (sinking fund) to be accumulated over 10 years through a rate increase

$1.5 million ÷ (10 years x 12 months x 1922 ERs) =
$6.50/month/ER

  B. Defer this expense to a future Board for a future LID(?) in 10 years

Monthly Cost Projections

	Current Monthly O&M Fees	Future Changes to Monthly Fees
HLRWSD	$19.00 / month / ER	(CCI Adjustments Likely)
To HARSB	$25.00 / month / ER	$1.67 / month / ER / year
Dedicated Sinking Fund?		$6.50 / month / ER ?
TOTAL Current O&M	$44.00 / month / ER	
Proposed/Potential LID		$4,000 / ER
		$265 / year / ER
		$22 / month / ER

Next Steps / Schedule

HLRWSD First Public Meeting	*Sept. 5, 2012*
HLRWSD Second Round of Public Meetings	*Oct. 10 and 12, 2012*
HARSB Public Comment Period	*Oct. 17 to Nov. 1, 2012*
HARSB Public Meeting	*Nov. 1, 2012 (3:00pm)* *(Hayden City Hall)*

IF LID IS INITIATED:

Notice of LID Hearing	*Late Oct., 2012*
Tentative LID Hearing Date	*Nov. 14, 2012*
District Board Decision on LID	*Nov. 28, 2012*
Final Application to DEQ for Loan	*Jan., 2013*
Secure DEQ Low Interest Loan	*July, 2013*

Thank you!

QUESTIONS and COMMENTS

HAYDEN LAKE REREATIONAL WATER AND SEWER DISTRICT
MINUTES OF PUBLIC INFORMATIONAL MEETING
OCTOBER 10, 2012

At 6:00 p.m. Chairman Sewell opened the public meeting. Board members present were Tom DePew, Todd Walker and Carole Stringer. Larry Comer and Ashley Williams from Welch Comer & Associates, Attorney Mike Schmidt, Ken Windram from HARSB, Stephanie Schulman and Attorney Danielle Quade were also present as representatives of the Board. Administrator Lynn Hagman recorded the minutes of the meeting.

Chairman Sewell introduced the panel who would speak and then turned the meeting over to Larry Comer. Mr. Comer discussed the Hayden Lake Recreational Water and Sewer District background and then turned the presentation over to Ashley Williams to talk about the collection system.

Ms. Williams Informed the audience that a facility plan has been done for the collection system and for the plant. Ms. Williams explained that the District has 17 lift stations with pressure and gravity lines. Future growth estimates were discussed and the ER allocation at HARSB treatment facility was explained as well as how many ER's the District is billing and how many ER's we have on vacant lots. Slides were shown of the existing conditions of some of the lift stations and Ms. Williams then explained the ratings that were done on the structural/mechanical condition of the lift stations as well as the lift station rating results.

There are three options for the lift stations, option A is rehabilitation, option B is replacement and option C is slip line. Ms. Williams explained what each of the options would entail. An Environmental Analysis was done on each of these options as well as an option of doing nothing.

Ms. Williams discussed the summary of lift stations controls and how it works and what is missing for each lift station. Ms. Williams explained the tiered approach to the lift station controls. Tier 1 would be high flow/high risk stations, tier 2 would be moderate flow/moderate risk stations and tier 3 would be lower flow/lower risk stations. Ms. Williams then discussed the cost/benefit information for the Strahorn R. and Miles Ave. gravity relief lines. Some of the benefits would be percent of flow would be eliminated from the Country Club lift station which would also eliminate the need to upgrade the Country Club lift station. Added value of bypass for Lakeview Dr. force main and the window of opportunity to share costs with City of Hayden Lake.

The challenges would be obtaining an easement from the Avondale Country Club and the City of Hayden Lake agreeing to share costs. Ms. Williams explained the environmental analysis done on the relief lines. The sewer collection system capital improvement options were explained. There are three phases, phase A would be near term need, phase B would be midterm need and O & M would be long term need. Ms. Williams discussed the costs for each phase with phase A being $2,265,700, phase B being $1,823,700 and O & M being $689,000. This would round down to $4,200,000 for phase A and B and the O & M amount of $689,000 would come from O & M funding.

process for funding. Mr. Erickson questioned what will happen if we don't get the DEQ funding. Mr. Comer explained that the next step would be to go out to sell bonds. Mr. Erickson questioned how an ER is determined. Mr. Comer stated that each house equals one ER.

Board member Walker explained that the Board has been waiting for numbers and that the District put their name in for this loan a year ago and we are now close to the top position on the list for the funds. Mr. Erickson questioned why some of the homes with a large number of bathrooms were not charged more. Board member DePew explained that the charge is not based on bathrooms. Board member Stringer stated that the Board will always be looking for creative solutions.

Mr. Steve Caiden asked the Board if there were no other options. Attorney Mike Schmidt explained the litigation is on-going and he explained the history of the lawsuit. Ken Windram stated that the TMDL structure that was issued got a stay in court which gave us more flexibility with the phosphorus. Mr. Caiden questioned if the LID was a majority vote or was it decided by the Board. Attorney Danielle Quade explained that the Board can take action. Mr. Caiden voiced his concern with the extra monthly costs being very hard on people with fixed incomes.

Mr. Art Brown felt that the presentation did not do justice to the fact of what people will be paying. Mr. Brown asked the Board to get the cost down as low as possible. The presentation did not show the monthly costs. Mr. Brown asked that the Board look at future costs and make sure they are in the numbers. Mr. Brown would also like to see a breakout of costs for maintenance of the upgrades and the upgrades to meet environmental standards.

Mr. Comer informed the audience that HARSB will hold a public meeting on November 1st on the facility plan and comments will be taken there as well.

ADJOURN

The public meeting was adjourned at 7:30 p.m.

Kenneth Sewell, CHAIRMAN

Lynn M. Hagman, ADMINISTRATOR

HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT
MINUTES OF PUBLIC INFORMATIONAL MEETING
OCTOBER 12, 2012

Chairman Sewell opened the meeting at 2:00 p.m. Board members present were Todd Walker, Carole Stringer and Tom DePew. Board member Dave Weinstein was absent. Larry Comer and Ashley Williams from Welch Comer & Associates, Attorney Mike Schmidt, Attorney Danielle Quade, Ken Thompson, Ken Windram from HARSB, Laurie Robb and Chris Seward were all present as representatives of the Board. Administrator Lynn Hagman recorded the minutes of the meeting.

Chairman Sewell introduced the panel who would speak and then turned the meeting over to Larry Comer. Mr. Comer discussed the Hayden Lake Recreational Water and Sewer District background and then turned the presentation over to Ashley Williams to talk about the collection system.

Ms. Williams Informed the audience that a facility plan has been done for the collection system and for the plant. Ms. Williams explained that the District has 17 lift stations with pressure and gravity lines. Future growth estimates were discussed and the ER allocation at HARSB treatment facility was explained as well as how many ER's the District is billing and how many ER's we have on vacant lots. Slides were shown of the existing conditions of some of the lift stations and Ms. Williams then explained the ratings that were done on the structural/mechanical condition of the lift stations as well as the lift station rating results.

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Mr. Ken Windram from the Hayden Area Regional Sewer discussed the treatment facility and what the State of Washington Department of Ecology has set for the standard for Lake Spokane for dissolved oxygen and how this affects the new NPDES permit from EPA. Mr. Windram explained the new treatment plant upgrades and that it will be done in phases. The new limits on phosphorus, total nitrogen, TSS and CBOD will need to be met within 10 years. The phosphorus removal will be 99.9%. Mr. Windram explained the re-use farm and what time of year it is used. The first phase will be flow equalization and biological nutrient removal and then a tertiary filter, disinfection and pump station.

Larry Comer addressed the audience and explained the HARSB capital project funding. Mr. Comer explained that there are three categories of costs, the NPDES regulatory quality improvement with a cost of $16.35 million, replacement (unfunded depreciation) with a cost of $5.16 million and Increased capacity with a cost of $6.66 million. Mr. Comer explained that the increased capacity would be growth driven and only the new comers would pay for this. The NPDES permit and the replacement would come to $21.51 million and would be split between the City of Hayden, the Sewer District, the County and HARSB. The Sewer District share would be $5.65 million

Mr. Comer went on to discuss the funding options for the District collector system and the HARSB upgrades. The District collector system would be $4.2 million and the HARSB upgrades would be $6.2 million for a total of $10.4 million. Mr. Comer explained the long term for the collector system would come from O & M depreciation fund, the near and mid - term would be an LID bond with a DEQ loan or Bond Bank. The HARSB upgrade would be LID bond with DEQ loan.

Mr. Comer discussed the DEQ funds and the low interest of 2%. If the District were to receive the DEQ loan for the $10.4 million the estimated assessments would be $4,000 per ER which would equate to $265.00 per year. Mr. Comer explained possible future upgrade requirements for the years 2023 – 2032. The upgrades could be up to $1.5 million which would be funded by a dedicated reserve fund to be accumulated over 10 years through a rate increase. The monthly operations and maintenance cost projections were discussed. The Sewer District currently pays $44.00 per month with $19.00 a month going to the District for operations and maintenance and $25.00 going to HARSB. In the future a suggested $6.50 per month would need to go to the reserve fund. This would mean an increase.

Mr. Comer went over the proposed schedule if an LID is initiated. A notice of LID hearing would go out in late October with a hearing date of November 14, 2012. The District Board would make their decision on forming and LID on November 28th. Final application to DEQ for the loan would be January, 2013 and to secure the DEQ low interest loan would be July, 2013. This being the end of the presentation, Mr. Comer turned the meeting over to Chairman Sewell and the Board for questions and comments.

Ken Haagenson questioned Mr. Comer on how thick the slip line would be. Mr. Comer replied that the slip line is not one of the recommendations. Rock coating would be recommended because it is much cheaper and can do many of the lift stations at the same time.

Caron Miller asked if there will be more people who will hook to the sewer that are past the Clark House. Mr. Comer explained the District service area and it ends at Sandy Cove and this has not changed. Mr. Comer explained that it is a density issue and there is no plan to extend the sewer.

Ken Haagenson questioned the costs. Mr. Comer reviewed the LID costs and pointed out the assessment per ER and the dollar amount of the annual payment as well as what it would be on a monthly basis. Mr. Haagenson asked if the new standards were from the EPA. Mr. Comer explained that there are two parts to the LID, the plant upgrades and the collection system. Mr. Haagenson asked when the new regulations took effect. Mr. Windram explained the US Supreme Court ruling. Attorney Schmidt discussed the on-going law suit regarding the new regulations. Mr. Haagenson asked if the lift stations could be done on an as needed basis. Mr. Comer explained the low interest loan from DEQ and it would be less cost to do more than one at a time. Attorney Schmidt discussed the 2% interest rate on the DEQ loan and the flexibility with fees that we would not have to pay. The money is a draw down, we only use what we need, when we need it and we only pay interest on what we use.

Ken Windram discussed the relief on phosphorus that we got on a seasonal average. Elaine Haagenson questioned borrowing the money all at once. Attorney Danielle Quade explained that the funds are only spent as it is used and the rest stays with DEQ until we need it.

Mary Ann McCleary asked about payments on the LID. Larry Comer explained that the assessment can be paid off at any time. Board member Walker explained that the District has been looking at this for the last year and put our name on the list for the low interest DEQ loan. Board member Walker assured the citizens that the Board has researched this issue very carefully and has been put on the list for the DEQ loan to save money. Board member Stringer stated that if things change over the next ten years, the DEQ money could change also.

Mrs. Haagenson felt that the costs should be indicated in the next newsletter that is sent out. Mr. Comer replied that it will be for the public hearing notice.

Caron Miller asked if other land comes into the District, what they will pay. Mr. Comer explained the current vacant lots that have an ER are being included in the LID and vacant land that comes in after would pay the current capitalization fee plus the LID costs and interest.

With no further questions for the Board, the public meeting was adjourned at 3:35 p.m.

Kenneth Sewell, CHAIRMAN

Lynn M. Hagman, ADMIISTRATOR

APPENDIX P.

Agency Consultation Correspondence

- Example Agency Consultation Letter and Attachments
- Agency Responses

WELCH-COMER
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877-815-5672 (toll free)
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

example

Katy Baker-Casile
Department of Environmental Quality, Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Katy Baker-Casile:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
- Gravity Interceptor Lines: Gravity sewer interceptor lines will be constructed along Strahorn Road and Miles Avenue to reduce wastewater flows into the Country Club lift station (a major lift station in the system), which is located near the Hayden Lake shore. This work will also provide an alternate route for certain pressurized sewer lines (in case of emergency) within the District.

The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

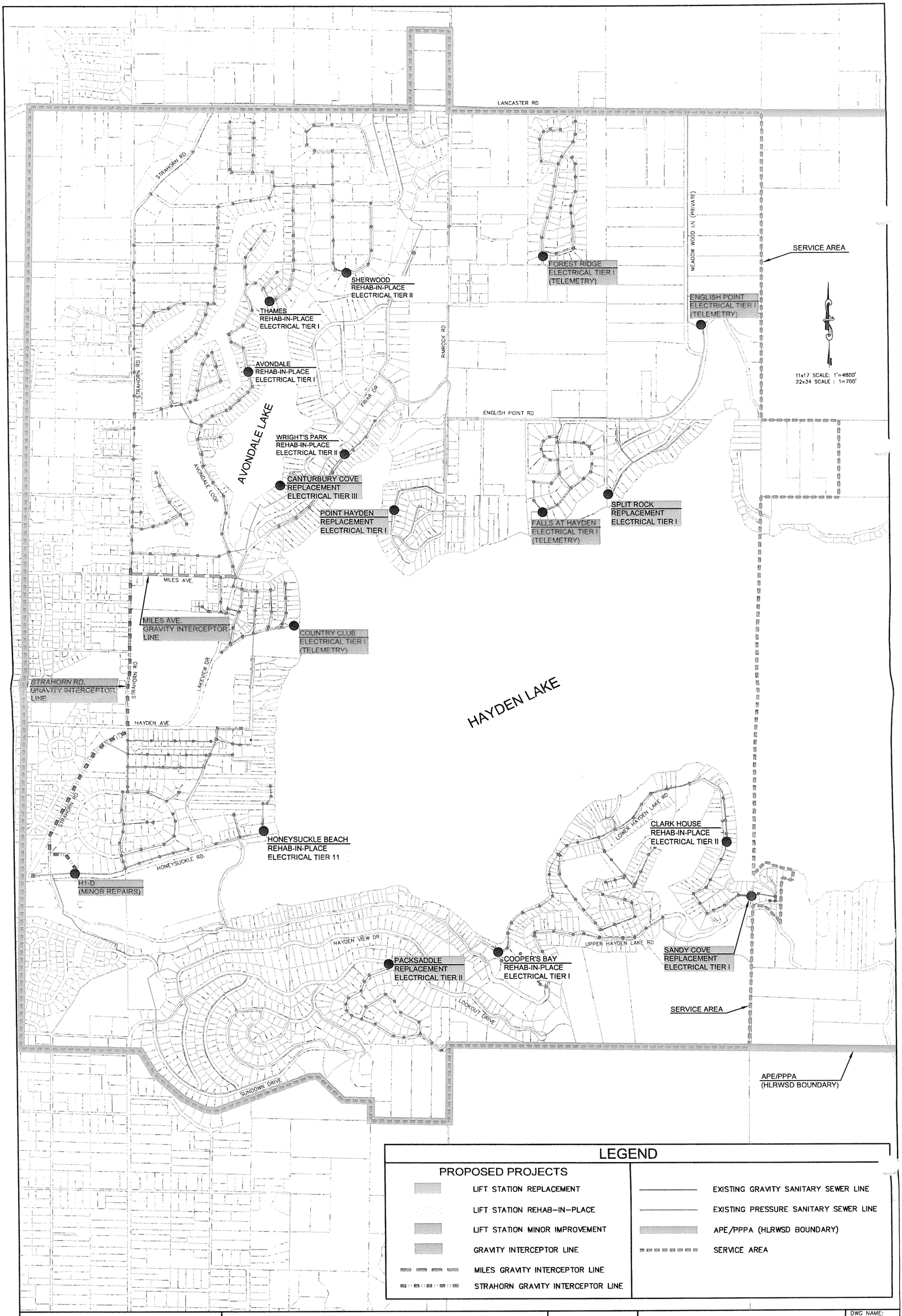
We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com



WELCH-COMER
ENGINEERS | SURVEYORS
350 E. Kathleen Avenue
Phone (208) 664-9382 Fax (208) 664-5946

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PROJECT NO.:	11200
DESIGNED BY:	A.M.W.
DRAWN BY:	J.A.L.
CHECKED BY:	

H.L.R.W.S.D.

PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

DWG NAME: 11200PL34.DWG
DATE: 10-12-12
SHEET NO:

11x17 SCALE: 1"=1200'
22x34 SCALE : 1=600'

LANCASTER RD

SERVICE AREA

SHERWOOD REHAB-IN-PLACE ELECTRICAL TIER II

THAMES REHAB-IN-PLACE ELECTRICAL TIER I

AVONDALE REHAB-IN-PLACE ELECTRICAL TIER I

AVONDALE LAKE

WRIGHTS PARK REHAB-IN-PLACE ELECTRICAL TIER I

CANTURBURY COVE REPLACEMENT ELECTRICAL TIER III

POINT HAYDEN REPLACEMENT ELECTRICAL TIER I

SPLIT ROCK REPLACEMENT ELECTRICAL TIER I

ENGLISH POINT RD

MILES AVE

HAYDEN LAKE

HAYDEN LAKE

HONEYSUCKLE BEACH REHAB-IN-PLACE ELECTRICAL TIER II

CLARK HOUSE REHAB-IN-PLACE ELECTRICAL TIER II

COOPERS BAY REHAB-IN-PLACE ELECTRICAL TIER I

SANDY COVE REPLACEMENT ELECTRICAL TIER I

BACKSADDLE REPLACEMENT ELECTRICAL TIER II

SERVICE AREA

APE/PPPA (HLRWSD BOUNDARY)

LEGEND

PROPOSED PROJECTS

- LIFT STATION REPLACEMENT
- LIFT STATION REHAB-IN-PLACE
- LIFT STATION MINOR IMPROVEMENT
- GRAVITY INTERCEPTOR LINE
- MILES GRAVITY INTERCEPTOR LINE
- STRAHORN GRAVITY INTERCEPTOR LINE
- EXISTING GRAVITY SANITARY SEWER LINE
- EXISTING PRESSURE SANITARY SEWER LINE
- APE/PPPA (HLRWSD BOUNDARY)
- SERVICE AREA

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Phone (208) 664-9382 Fax (208) 664-5946

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PROJECT NO.:	11200
DESIGNED BY:	A.M.W.
DRAWN BY:	J.A.L.
CHECKED BY:	

H.L.R.W.S.D.
PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS
(AREA MAP)

DWG NAME: 11200PL34.DWG
DATE: 10-12-12
SHEET NO:

Williams, Ashley

From: Williams, Ashley
Sent: Monday, November 26, 2012 11:46 AM
To: werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation
Attachments: S45C-212101809050.pdf

Dear Agency Contacts,

We are writing you one final time regarding the HLRWSD wastewater project consultation; the consultation period has ended. We are hoping to finalize the Environmental Information Document in the next week or two and wanted to contact you one more time to request any comments you may have.

Please let me know if you have any comments (or "no comment") as soon as possible so that we can include your comments in the document.

Feel free to call or email if you have any questions or need any more information.

Thank you,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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From: Williams, Ashley
Sent: Monday, November 12, 2012 9:56 AM
To: mary.e.reinhart@usace.army.mil; Bryon_Holt@fws.gov; Katy.Baker-Casile@deq.idaho.gov; werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; mary.mcgown@idwr.idaho.gov; rjansson@idl.idaho.gov; howard.lunderstadt@id.usda.gov; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

41055

October 15, 2012

Beth Reinhart
US Army Corps of Engineers, Coeur d'Alene Regulatory Office
2065 W. Riverstone Drive, Ste. 201
Coeur d'Alene, ID 83814

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Beth Reinhart:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
COEUR D' ALENE REGULATORY OFFICE
2065 W Riverstone Drive, Suite 201
Coeur d'Alene, ID 83814

COPY
RECEIVED NOV 29 2012 By

November 28, 2012

Regulatory Division

SUBJECT: NWW-2012-600, HLRWSD Wastewater System Improvements

Ashley Williams, EIT
Welch-Comer
350 E Kathleen Ave
Coeur d'Alene, ID 83815

Dear Ms. Williams:

Enclosed is our Department of Army (DA) Approved Jurisdictional Determination (AJD) that there are no waters of the United States, including wetlands, within the Hayden Lake Recreational Water and Sewer District's (HLRWSD) proposed project impact area. Therefore, no DA authorization is required. This decision is based upon our review of the information you provided and additional information available to our office. This project is located within HLRWSD's service area, in Kootenai County, in Hayden, Idaho. Your request has been assigned file number NWW-2012-600, which should be referred to in future correspondence with our office regarding this site.

The DA exerts regulatory jurisdiction over waters of the United States (U.S.), including wetlands, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Section 404 of the Clean Water Act requires a DA permit be obtained prior to discharging dredged or fill material into Waters of the U.S., which includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, irrigation and drainage canals and ditches that are tributaries to other waters, and wetlands. Section 10 requires that a DA permit be obtained prior to building structures or conducting work in or affecting navigable waters of the U.S.

The proposed project impact areas, as shown on the attached map, dated November 1, 2012, are upland land that does not contain waters of the U.S., including wetlands, under the Corps' regulatory jurisdiction. Therefore, a DA authorization is not required to develop the upland property.

This approved JD is valid for a period of 5-years from the date of this letter, unless new information supporting a revision is provided to this office before the expiration date. Also enclosed, you will find the Approved Jurisdictional Determination Form addressing wetlands and

waters of the U.S. located within the JD review area, and a *Notification of Administrative Appeals Options and Process and Request for Appeal Form* (RFA) regarding this DA Approved Jurisdictional Determination. Should you disagree with certain terms and/or conditions this Approved JD, the Notification of Administrative Appeal Options form outlines the steps to take to file your objection. Please note, the RFA form must be received by the Northwest Division Office no later than **January 27, 2013**.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, state, or local statutes, ordinances or regulations which may affect this work.

We are interested in your thoughts and opinions concerning the quality of service you received from the Walla Walla District, Corps of Engineers Regulatory Division. If you have Internet access, please visit our web site at http://per2.nwp.usace.army.mil/survey.html and complete an electronic version of our Customer Service Survey form, which will be automatically submitted to us. Also, for additional information about the Walla Walla District Regulatory program, please visit us on-line at our website at http://www.nww.usace.army.mil/BusinessWithUs/RegulatoryDivision.aspx .

If you have any questions about this determination, please contact me by telephone at 208-765-8961, by mail at the address in the above letterhead, or via e-mail at shane.p.slate@usace.army.mil. We appreciate your cooperation with the Corps of Engineers' Regulatory Program.

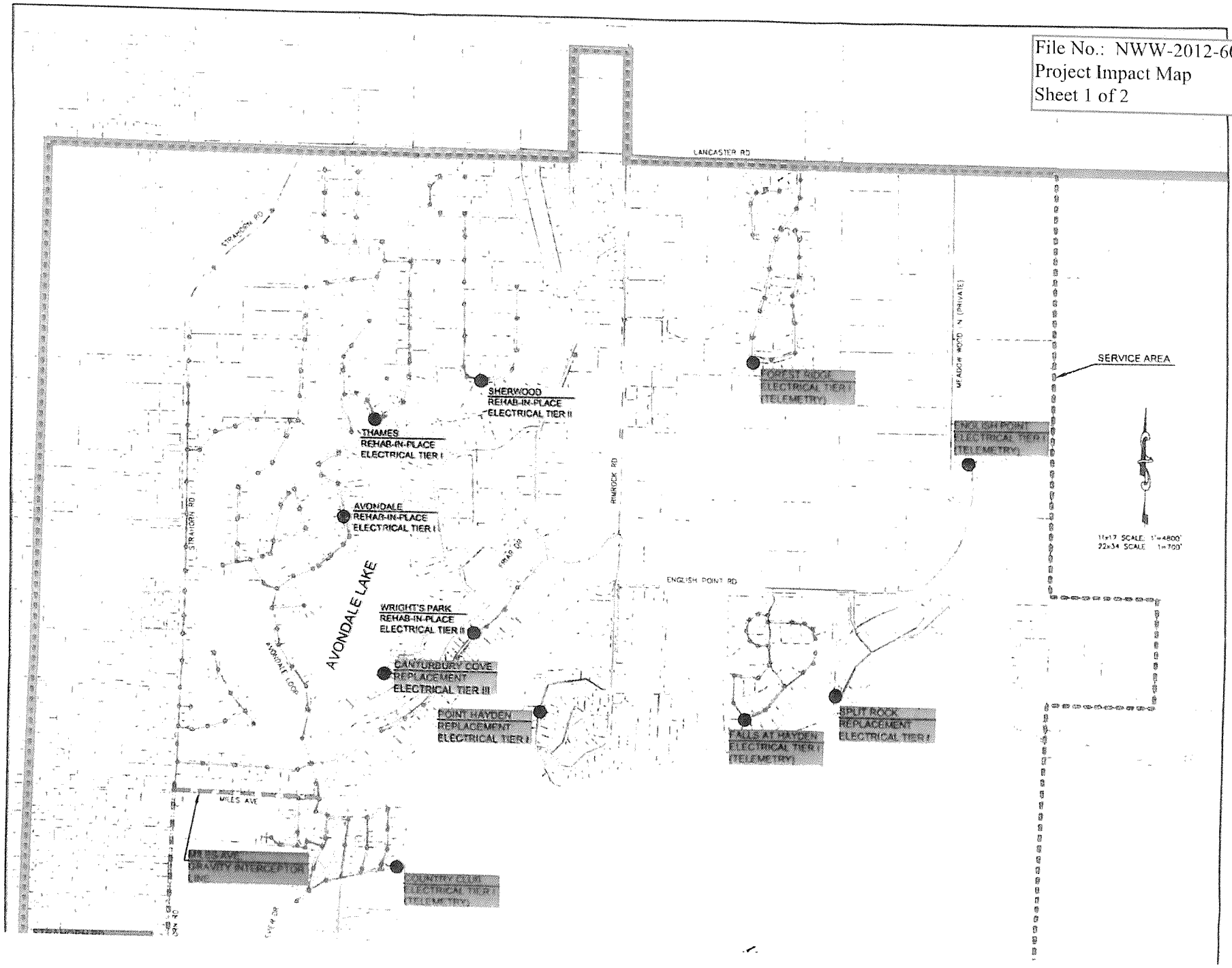
Sincerely,

Shane Slate

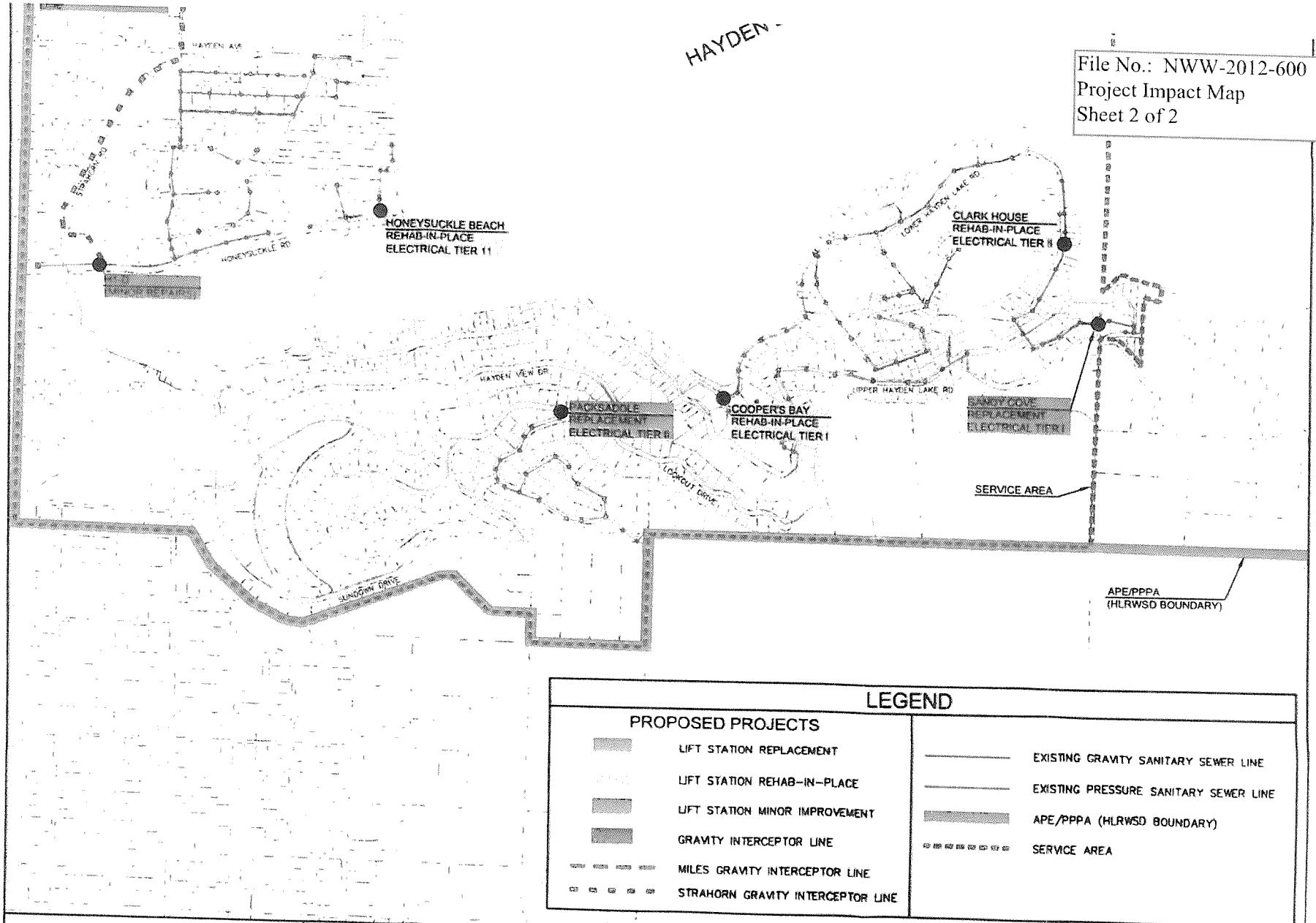
Shane Slate
Project Manager, Regulatory

Enclosures:
Project Map
Approved JD Form
Appeal Form

File No.: NWW-2012-600
Project Impact Map
Sheet 1 of 2



File No.: NWW-2012-600
Project Impact Map
Sheet 2 of 2



LEGEND

PROPOSED PROJECTS

- LIFT STATION REPLACEMENT
- LIFT STATION REHAB-IN-PLACE
- LIFT STATION MINOR IMPROVEMENT
- GRAVITY INTERCEPTOR LINE
- MILES GRAVITY INTERCEPTOR LINE
- STRAHORN GRAVITY INTERCEPTOR LINE
- EXISTING GRAVITY SANITARY SEWER LINE
- EXISTING PRESSURE SANITARY SEWER LINE
- APE/PPPA (HLRWSD BOUNDARY)
- SERVICE AREA

WELCH-COMER
ENGINEERS | SURVEYORS
350 E. Kathleen Avenue
Phone (208) 664-9382 Fax (208) 664-5946

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PROJECT NO.:	11200
DESIGNED BY:	A.M.W.
DRAWN BY:	J.A.L.
CHECKED BY:	

H.L.R.W.S.D.
PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

DWG NAME:	11200PL34.DWG
DATE:	10-12-12
SHEET NO:	

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 27, 2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Walla Walla District; NWW-2012-00600, Hayden Lake Recreational Water & Sewer District - Wastewater System Improvements

C. PROJECT LOCATION AND BACKGROUND INFORMATION: .

State: Idaho County/parish/borough: Kootenai City: Hayden
Center coordinates of site (lat/long in degree decimal format): 47.7594° Lat. -116.7614° Long.
Universal Transverse Mercator: Zone Northing **N**, Easting **E**.
Name of nearest waterbody: Hayden Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Hayden Lake
Name of watershed or Hydrologic Unit Code (HUC): 17010305

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☒ Office (Desk) Determination. Date: October 29, 2012
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☐ Non-RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: linear feet: width (ft) and/or acres.
   Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) **General Area Conditions:**
   Watershed size: **square miles**
   Drainage area: **acres**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) **Physical Characteristics:**
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

---

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain: .
- ☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

- ☐ Silts
- ☐ Sands
- ☐ Concrete
- ☐ Cobbles
- ☐ Gravel
- ☐ Muck
- ☐ Bedrock
- ☐ Vegetation. Type/% cover:
- ☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
- ☐ Dye (or other) test performed: .

Tributary has (check all that apply):
- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. **ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]**
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:10-12-12 Map of Proposed Wastewater Collection System Improvements..
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1:24k, ID-HAYDEN .
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☒ National wetlands inventory map(s). Cite name:Online NWI Maps retrieved 29-Oct-12.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☐ Photographs: ☐ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: No Waters of the US are located within the potential impact areas of the overall Water & Sewer District.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Hayden Lake Recreational Water & Sewer District	File Number: NWW-2012-00600	Date: 28 NOV 2012

Attached is:		See Section Below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit,

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMT

REASONS FOR APPEAL OR OBJECTIONS:

Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

District Engineer
ATTN: David B. Barrows
Regulatory Division Walla Walla District
201 North 3rd Avenue
Walla Walla, Washington 99362-1876
Telephone (509) 527-7150

If you only have questions regarding the appeal process you may also contact:

U.S. Army Corps of Engineers
Northwestern Division
Attn: Mary Hoffman, Appeal Review Officer
P.O. Box 2870
Portland, Oregon 97208-2870
Telephone (503) 808-3825

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent:	*Date:*	*Telephone:*

Williams, Ashley

From: Williams, Ashley
Sent: Friday, December 07, 2012 12:32 PM
To: 'Jim Brady'
Subject: Hayden Wetlands
Attachments: S45C-212120712110.pdf

Jim,

Thanks for calling me today to discuss the wetlands within the HARSB (Hayden Area Regional Sewer Board) and HLRWSD (Hayden Lake Recreational Water and Sewer District) project areas.

I have attached the wetlands map for each project. Please let me know if you need anything else from me.

Thanks!

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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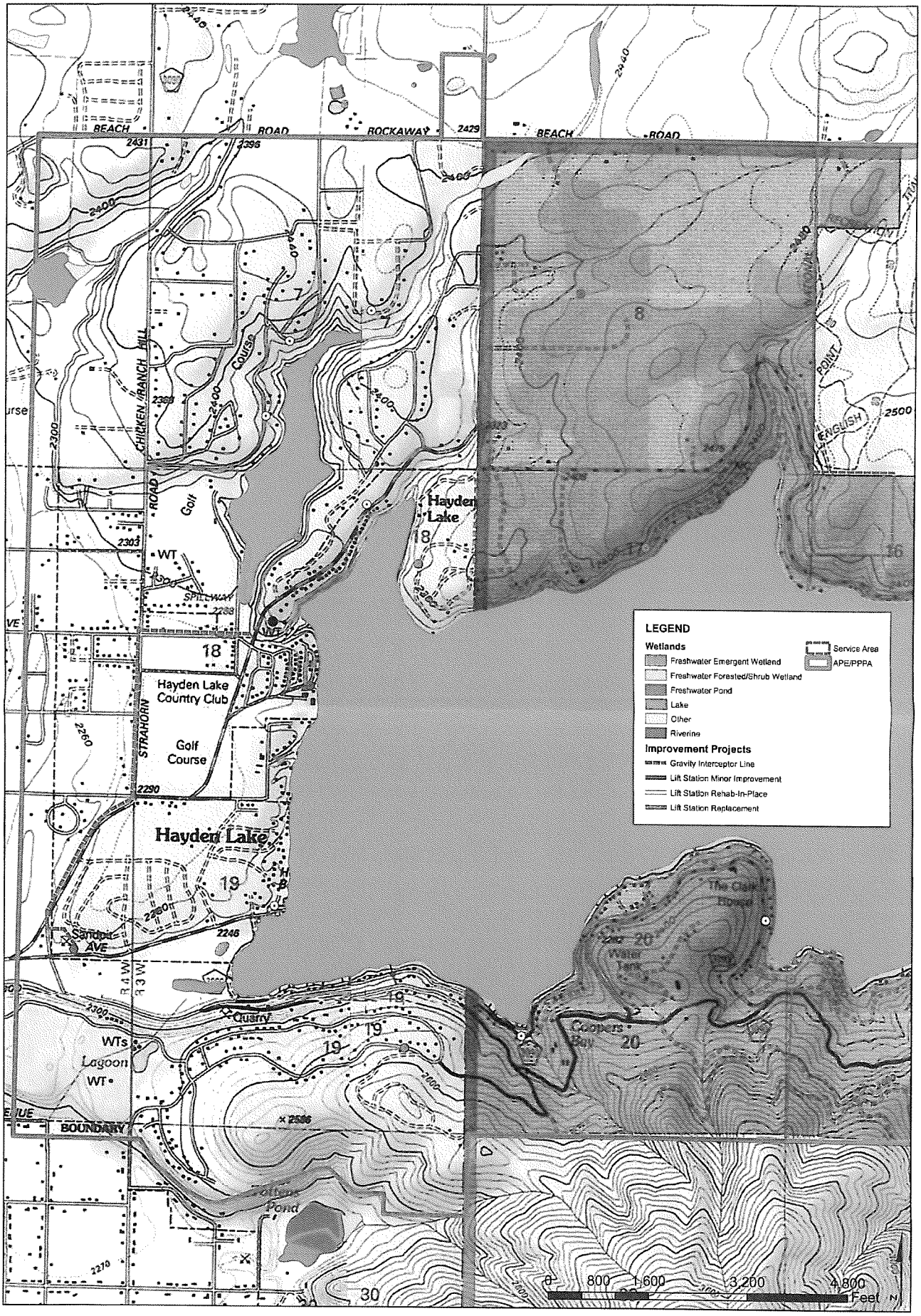

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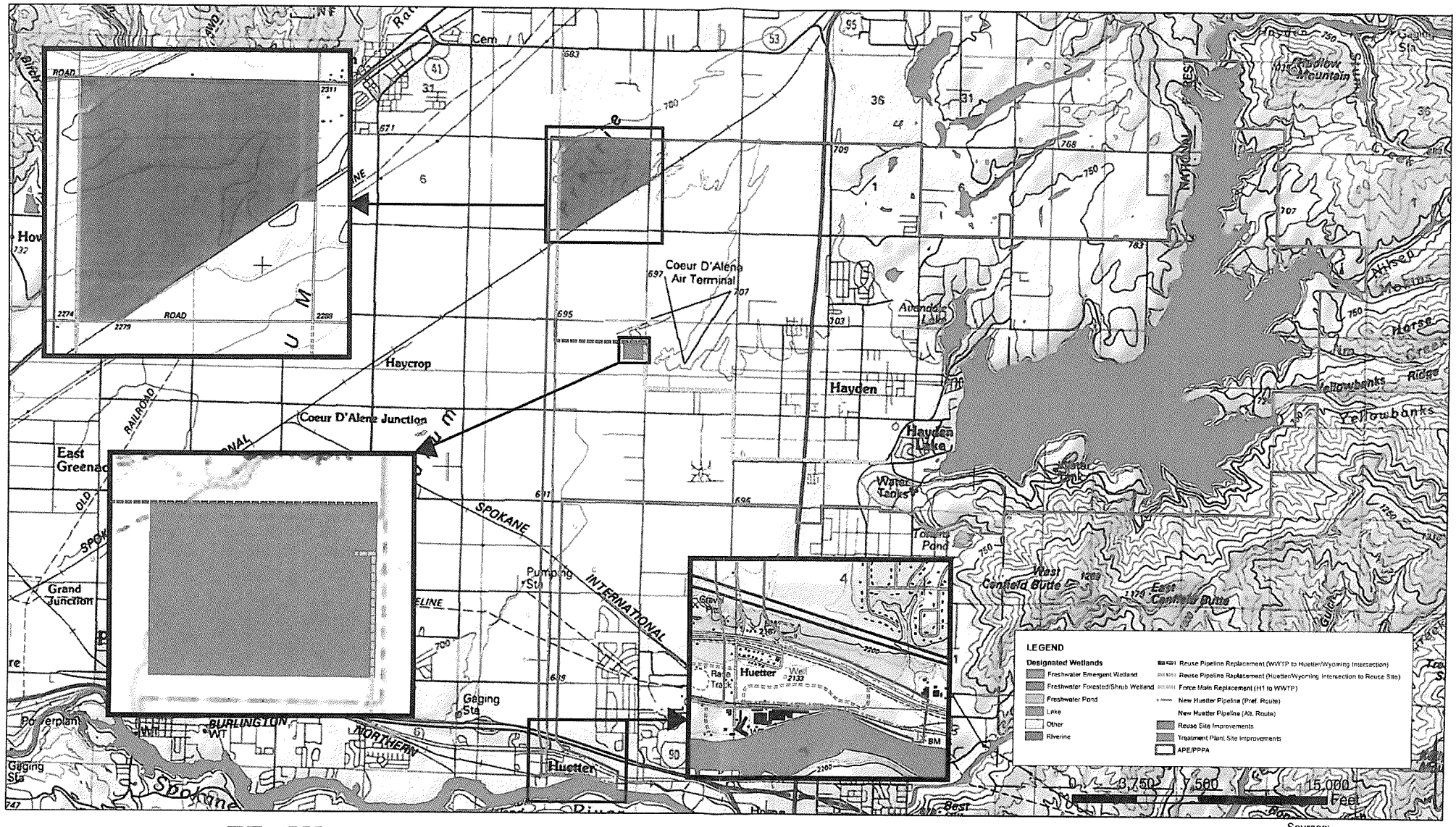
(toll free) 877-815-5762
(fax) 208-664-5946

HLRWSD

Wetlands

Sources:
USA Topo Maps
US Fish and Wildlife National Wetland Inventory

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Wetlands_11x17P
DATE.....10/17/12



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(fax) 208-664-5946

HARSB

Wetlands

Sources:
Idaho State Tax Commission
Kootenai County GIS Department
US Fish and Wildlife National Wetland Inventory, 2012

PROJECT NO.....41104
DRAWN BY.....AW
FILENAME.....Wetlands_11x17L
DATE.....11/14/12

WELCH, COMER & ASSOCIATES, INC.
CONSULTING ENGINEERS & SURVEYORS

PHONE LOG

DATE: 12/7/12 TIME: 1:00 pm (approx.)

PROJECT NAME: HURWSD Environmental Doc. / HARSB Environmental Doc.

PROJECT NUMBER: 41055 141104

WELCH-COMER REPRESENTATIVE: Ashley Williams

WHO INITIATED COMMUNICATION: Ashley Williams

NAME: Jim Brady (IDL) PHONE NUMBER: 208-769-1577

ADDRESS: 3258 W. Industrial Loop Coeur d'Alene, ID 83815

SUBJECT: wetlands (jurisdiction) for proposed project

The maps provided have such a small scale, Jim couldn't tell what might be in his jurisdiction.

Normally, within Hayden Lake IDL will have jurisdiction if it is below 2239. If it is below 2128 in Spokane River, IDL will have jurisdiction (as well as Corps). IDL does not have jurisdiction on the smaller lakes in the project area.

WELCH-COMER FOLLOW-UP REQUIRED? ☐ YES ☒ NO

FOLLOW-UP COMMUNICATION REQUIRED? ☐ YES ☒ NO

NOTES:

WELCH, COMER & ASSOCIATES, INC.
CONSULTING ENGINEERS & SURVEYORS

PHONE LOG

DATE: 12/6/12 TIME: 3:00pm (approx.)

PROJECT NAME: HLRWSD Environmental Doc. / MARSB Environmental Doc.

PROJECT NUMBER: 41055 / 41104

WELCH-COMER REPRESENTATIVE: Ashley Williams

WHO INITIATED COMMUNICATION: Ashley Williams

NAME: Greg Taylor (IDWR) PHONE NUMBER: 208-762-2805

ADDRESS: 7600 Mineral Drive, Suite 100, Coeur d'Alene, ID 83815

SUBJECT: Wetlands (Jurisdiction) for proposed projects

IDWR does not have jurisdiction over waters in Idaho unless they are continuously flowing, and below OHWM. Typically a lake is jurisdiction by IDL.

Thus, they have no jurisdiction or comment.

WELCH-COMER FOLLOW-UP REQUIRED? ☐ YES ☒ NO

FOLLOW-UP COMMUNICATION REQUIRED? ☐ YES ☒ NO

NOTES:

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Coeur d'Alene, ID 83815

October 15, 2012

State Supervisor
US Fish and Wildlife Service
11103 East Montgomery Drive
Spokane, WA 99206-4779

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear State Supervisor:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
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The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

Williams, Ashley

From: Bryon_Holt@fws.gov
Sent: Tuesday, November 13, 2012 1:19 PM
To: Williams, Ashley
Subject: Re: HLRWSD Wastewater Collection System Project Consultation
Attachments: S45C-212101809050.pdf

Ashley,

Due to the scope and location of the project described in the attached letter, no Federally listed, proposed, or candidate species are likely to occur in the vicinity of the project.

If I can be of further assistance, please let me know.

****
Bryon Holt
U.S. Fish and Wildlife Service
Northern Idaho Field Office, Spokane, WA
Telephone: (509) 893-8014
Fax: (509) 891-6748
email: bryon_holt@fws.gov
****

"Williams, Ashley" <awilliams@welchcomer.com>

"Williams, Ashley"
<awilliams@welchcomer.com>

11/12/2012 09:55 AM

To"mary.e.reinhart@usace.army.mil" <mary.e.reinhart@usace.army.mil>, "Bryon_Holt@fws.gov" <Bryon_Holt@fws.gov>, "Katy.Baker-Casile@deq.idaho.gov" <Katy.Baker-Casile@deq.idaho.gov>, "werntz.james@epa.gov" <werntz.james@epa.gov>, "Lidgard.michael@Epamail.epa.gov" <Lidgard.michael@Epamail.epa.gov>, "Eastman.Susan@epamail.epa.gov" <Eastman.Susan@epamail.epa.gov>, "mary.mcgown@idwr.idaho.gov" <mary.mcgown@idwr.idaho.gov>, "rjansson@idl.idaho.gov" <rjansson@idl.idaho.gov>, "howard.lunderstadt@id.usda.gov" <howard.lunderstadt@id.usda.gov>, "dennis.porter@commerce.idaho.gov" <dennis.porter@commerce.idaho.gov>

cc

SubjectHLRWSD Wastewater Collection System Project Consultation

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
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Coeur d'Alene, ID 83815
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(See attached file: S45C-212101809050.pdf)

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October 15, 2012

Katy Baker-Casile
Department of Environmental Quality, Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Katy Baker-Casile:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
- Gravity Interceptor Lines: Gravity sewer interceptor lines will be constructed along Strahorn Road and Miles Avenue to reduce wastewater flows into the Country Club lift station (a major lift station in the system), which is located near the Hayden Lake shore. This work will also provide an alternate route for certain pressurized sewer lines (in case of emergency) within the District.

The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814 (208) 769-1422

C. L. "Butch" Otter, Governor
Curt A. Fransen, Director

November 26, 2012

Ashley Williams, EIT
Welch Comer Engineers
350 E Kathleen Ave
Coeur d'Alene, ID 83815
awilliams@welchcomer.com
via: smacdonald@welchcomer.com

Subject: **Hayden Lake Recreational W&S District, Wastewater System Improvement Projects,** Idaho DEQ Comments on Environmental Impacts

Dear Ashley:

In your letter dated October 15, 2012, you requested comments from the Idaho Department of Environmental Quality (DEQ) on the environmental impacts from the proposed wastewater system improvements listed in the letter. The proposed projects are needed to improve the existing wastewater system owned and operated by the Hayden Lake Recreational Water and Sewer District (HLRWSD). The proposed projects are the following:

1. Rehabilitate seven (7) of the 17 HLRWSD lift stations;
2. Replace in the same location five (5) lift stations;
3. Upgrade the electrical controls in 16 lift stations;
4. **Strahorn Road Interceptor** - Construct about 6,500 feet of 10-inch gravity sewer in Strahorn Road between Miles Avenue and Honeysuckle Road to reduce the flows into the Hayden Lake Country Club Lift Station;
5. **Miles Avenue Interceptor** - Construct about 2,000 feet of 10-inch gravity sewer in Miles Avenue between Lakeview Drive and Strahorn Road to reduce the flow into the Hayden Lake Country Club Lift Station.

DEQ is supportive of these projects which will improve the reliability of the 25-year old system. The following are the DEQ comments on the proposed wastewater improvements and the potential environmental impacts from the proposed projects related to surface water quality/storm water control and air quality issues:

Wastewater

DEQ has received the report titled "Draft Wastewater Collection Facility Plan for Hayden Lake Recreational Water and Sewer District, February 2012" prepared by Larry Comer, P.E. of Welch Comer Engineers. This report provides the basis for the proposed improvement projects listed above. DEQ has provided comments on this report in an email dated June 5, 2012. The facility plan, Environmental Information Document, and plans and specifications will need to be approved by DEQ prior to starting construction on any of these improvements.

Surface Water Quality and Storm Water Control

Storm water controls will need to be developed that adequately protect surface waters and ground water from being impacted during and after construction. The local stormwater control authority should be contacted for details on the appropriate collection/treatment/disposal requirements. Control of sedimentation and erosion

during construction activities must be achieved by the use of acceptable best management practices (BMPs) and is considered the responsibility of the owner/developer/contractor for the project. The project may require compliance with the Construction General Permit, a program administered by the U.S. Environmental Protection Agency. This requirement is designed to prevent pollution of waters of the U.S. during construction projects. More information on this requirement can be found at: http://yosemite.epa.gov/R10/WATER.NSF/NPDES+Permits/Region+10+CGP+resources/

Air Quality

Kootenai County is classified as "Attainment" or "Unclassified" for all Criteria Pollutants; however, it is an area of concern for particulate matter and currently includes the "Interim Air Quality Plan" for managing particulate matter emissions in the county. Potential air quality impacts may arise with land clearing, demolition, construction and the subsequent operational phases of the project.

The project plans must incorporate reasonable controls on fugitive dust sources during all phases of the project. All reasonable precautions shall be taken to prevent particulate matter (dust) from becoming airborne, as required in IDAPA 58.01.01.651. A project specific dust control plan that incorporates adequate levels of control measures is encouraged.

The project plan should describe the proper disposal of demolition and construction debris. Open burning of demolition or construction debris is not an allowable form of open burning as defined by IDAPA 58.01.01.600. Demolition and construction debris must be treated in accordance with solid waste regulations.

Depending on the facility's standby (emergency) power installations, the operation is likely exempt from permitting requirements and limited per IDAPA 58.01.01.222.02.**d.** "*Stationary internal combustion engines used exclusively for emergency purposes which are operated less than five hundred (500) hours per year and are fueled by natural gas, propane gas, liquefied petroleum gas, distillate fuel oils, residual fuel oils, and diesel fuel; waste oil, gasoline, or refined gasoline shall not be used.*" Additionally, proposed EPA MACT standards may apply to your standby generator. The web-based tool at: http://www.epa.gov/ttn/atw/rice/output/quiz.html may be able to assist you in determining applicable federal requirements.

If you have any questions about air quality issues, please call Mark Boyle at 769-1422 or email him at mark.boyle@deq.idaho.gov. Thank you for the opportunity to provide input on these projects.

Sincerely,

John Tindall

John C. Tindall, P.E.
John.tindall@deq.idaho.gov

File: WW HLRWSD Collection System Improvements TRIM
c: Katy Baker-Casile, P.E., DEQ, Coeur d'Alene katy.baker-casile@deq.idaho.gov
Ester Ceja, DEQ State Office, Boise ester.ceja@deq.idaho.gov

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

No response after 2 emails (12/14/12)

James Werntz
U.S. EPA, Idaho Operations Office
1435 North Orchard
Boise, ID 83706

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear James Werntz:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

NO response after 2 emails (12/14/12)

Mike Lidgard, Manager, NPDES Unit
EPA Region 10
1200 6th Avenue, OWW 130
Seattle, WA 98101

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Mike Lidgard:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

Williams, Ashley

From: Eastman.Susan@epamail.epa.gov
Sent: Wednesday, January 02, 2013 10:25 AM
To: Williams, Ashley
Subject: Re: HLRWSD Wastewater Collection System Project Consultation

Thank you for submitting your project for review. We have reviewed the information provided and find that the project will not have a significant adverse impact on the Spokane Valley Rathdrum Prairie Sole Source Aquifer and therefore the funding may proceed.

EPA reviews federally financially assisted projects that are proposed in federally designated Sole Source Aquifer review areas to determine if the projects have a potential to contaminate the aquifer through a recharge zone so as to create a significant hazard to public health. Such projects are submitted to EPA by federal, state, and local governments, and by the public.

This correspondence only addresses the Sole Source Aquifer Program, any other federal environmental requirements are your responsibility to ensure compliance. Please retain this email for your records.

Susan Eastman, Environmental Scientist
EPA Region 10
1200 Sixth Ave. Suite 900, OWW-136
Seattle, WA. 98101
SDWA Tribal & CWA Indian Set Aside Program, Sole Source Aquifer Program, Source Water Protection and ID 106

206-553-6249
EASTMAN.SUSAN@EPA.GOV

"Williams, Ashley" ---11/12/2012 09:58:18 AM---Dear Agency Contacts, We are writing to remind you that the 30 day period for agency consultation is

From: "Williams, Ashley" <awilliams@welchcomer.com>
To: "mary.e.reinhart@usace.army.mil" <mary.e.reinhart@usace.army.mil>, "Bryon_Holt@fws.gov" <Bryon_Holt@fws.gov>, "Katy.Baker-Casile@deq.idaho.gov" <Katy.Baker-Casile@deq.idaho.gov>, James Werntz/R10/USEPA/US@EPA, Michael Lidgard/R10/USEPA/US@EPA, Susan Eastman/R10/USEPA/US@EPA, "mary.mcgown@idwr.idaho.gov" <mary.mcgown@idwr.idaho.gov>, "rjansson@idl.idaho.gov" <rjansson@idl.idaho.gov>, "howard.lunderstadt@id.usda.gov" <howard.lunderstadt@id.usda.gov>, "dennis.porter@commerce.idaho.gov" <dennis.porter@commerce.idaho.gov>,
Date: 11/12/2012 09:58 AM
Subject: HLRWSD Wastewater Collection System Project Consultation

---

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

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********** ATTACHMENT NOT DELIVERED **********

This Email message contained an attachment named
image001.jpg
which may be a computer program. This attached computer program could contain a computer virus which could cause harm to EPA's computers, network, and data. The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced into the EPA network. EPA is deleting all computer program attachments sent from the Internet into the agency via Email.

If the message sender is known and the attachment was legitimate, you should contact the sender and request that they rename the file name extension and resend the Email with the renamed attachment. After receiving the revised Email, containing the renamed attachment, you can rename the file extension to its correct name.

For further information, please contact the EPA Call Center at (866) 411-4EPA (4372). The TDD number is (866) 489-4900.

********** ATTACHMENT NOT DELIVERED **********

[attachment "S45C-212101809050.pdf" deleted by Susan Eastman/R10/USEPA/US]

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208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

Sue Eastman, Hydrogeologist
EPA Region 10, Office of Environmental Assessment (OEA-095)
1200 6th Avenue, OWW 136
Seattle, WA 98101

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Sue Eastman:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
- Gravity Interceptor Lines: Gravity sewer interceptor lines will be constructed along Strahorn Road and Miles Avenue to reduce wastewater flows into the Country Club lift station (a major lift station in the system), which is located near the Hayden Lake shore. This work will also provide an alternate route for certain pressurized sewer lines (in case of emergency) within the District.

The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

Sole Source Aquifer Checklist

1. Location of Project and name of Sole Source Aquifer.

   Hayden Lake, Idaho (Hayden Lake Recreational Water and Sewer District); Spokane Valley-Rathdrum Prairie Aquifer

2. Project description and federal funding source (e.g., Federal Highway Administration, Housing and Urban Development etc)

   The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

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   All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

   The project will be funded through the Clean Water State Revolving Fund, which is a federally-funded program (through Idaho Dept. of Environmental Quality).

3. Is there any increase of impervious surface? If so, what is the area?

   No

4. Describe how storm water is currently treated on the site?

   There is no storm water treatment facility; the storm water is collected in culverts and ditches, but is not treated through a treatment facility. These drainage systems are not owned by HLRWSD.

5. How will storm water be treated on this site during construction and after the project is complete?

   Best Management Practices (BMPs) will be utilized during construction to minimize/eliminate effect of storm water to surface and ground water. The project will not involve treatment of storm water on-site after the project is complete, as this project manages sanitary sewer only.

6. Are there any underground storage tanks present or to be installed? Include details of such tanks.

   No

7. Will there be any liquid or solid waste generated? If so how will it be disposed of?

   There will be no liquid or solid waste generated as part of the project. The collection system transports liquid and solid waste through sewer lines and lift stations to a regional treatment facility in Hayden, Idaho.

8. What is the depth of excavation?

   Excavation depth for the lift stations will vary from 14 to 18 feet, depending on the lift station and extent of repair. Excavation for the sewer lines will also vary from 4 to 10 feet depending on location in the proposed alignment.

9. Are there any wells in the area that may provide direct routes for contaminates to access the aquifer and how close are they to the project?

   Yes, there are wells in the vicinity of the District. The closest well to the project is 850 feet. There are wells adjacent to the project, but they are located more than 850 feet away from the project. The attached map from the Idaho Department of Water Resources gives approximate locations of other wells in the area. During construction, BMPs will be used to protect the water quality.

10. Are there any hazardous waste sites in the project area....especially if the waste site has an underground plume with monitoring wells that may be disturbed? Include details.

    No

11. Are there any deep pilings that may provide access to the aquifer?
    No

12. Are Best Management Practices planned to address any possible risks or concerns?

    Yes

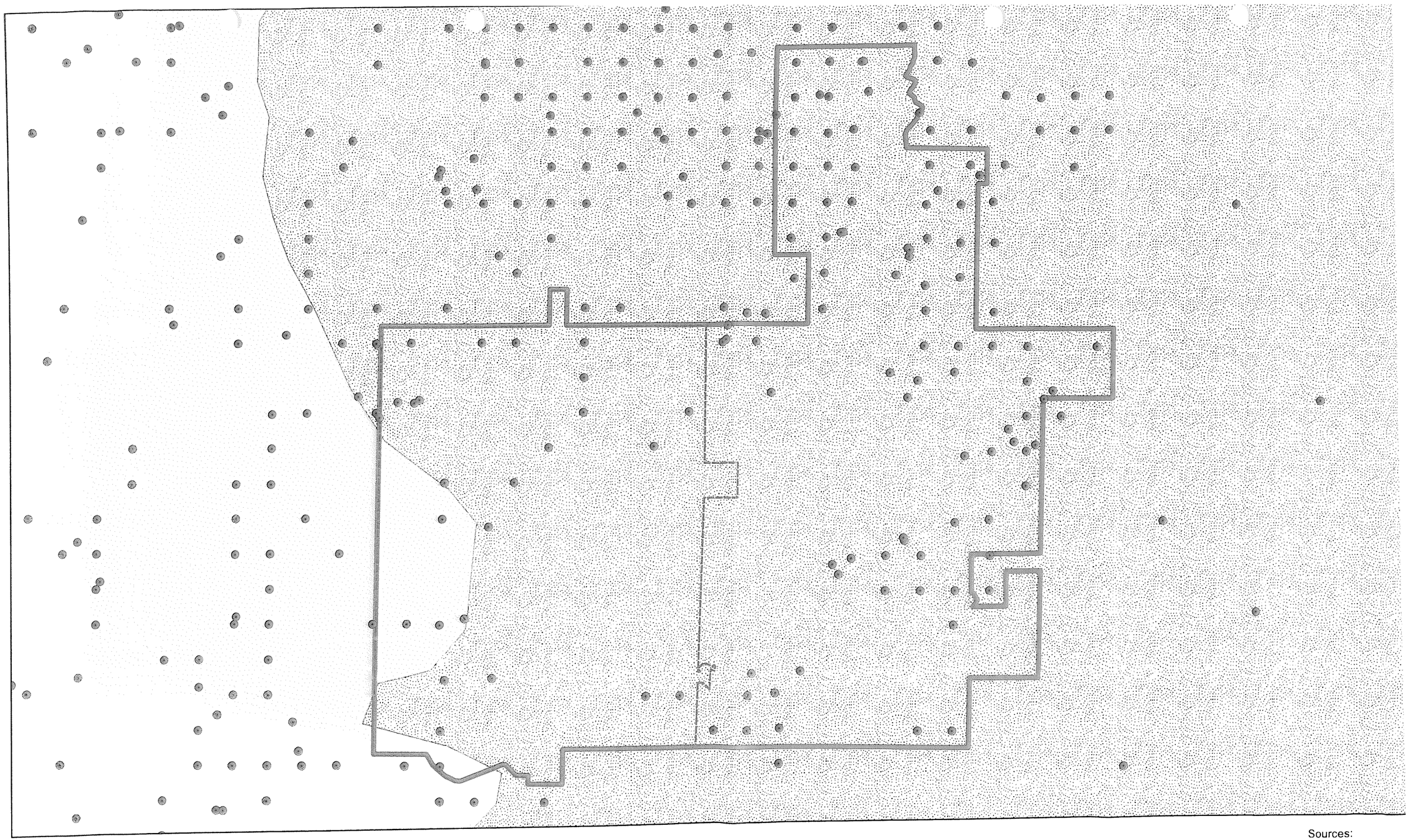
13. Is there any other information that could be helpful in determining if this project may have an affect on the aquifer?

    BMPs will be utilized during the construction phase to protect the quality of the aquifer and surface water bodies (Avondale Lake and Hayden Lake) nearby.

14. Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan?

    All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD). Reliability and longevity of these facilities will reduce the likelihood of unmonitored, uncontrolled discharges of wastewater into the aquifer or the surface water bodies nearby. The entire purpose of the HLRWSD sewer system is to protect the quality of the Sole Source Aquifer and Hayden Lake (by providing a centralized system as opposed to individual septic systems).

The EPA Sole Source Aquifer Program may request additional information if impacts to the aquifer are questionable after this information is submitted for review.



Sources:
Idaho Department of Water Resour
Kootenai County GIS Departmen

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(toll free) 877-815-5762
(fax) 208-664-5946

HLRWSD Wastewater Project

Sole Source Aquifer and Well Location Map

PROJECT NO.....41055
DRAWN BY.....AW
FILENAME.....Aquifer\
DATE.....10/9/12

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Coeur d'Alene, ID 83815

October 15, 2012

Aubrey Woodcock, District Conservationist
USDA-NRCS
7830 Meadowlark Way, Suite C1
Coeur d'Alene, ID 83815

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Aubrey Woodcock:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
7830 Meadow lark Way, Suite C-1
Coeur d'Alene, Id 83815
Phone: 208-762-4939
Fax: 208-762-9859

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By

November 7, 2012

Ashley M Williams, E.I.T.
Welch-Comer Engineers
350 E Kathleen Ave
Coeur d'Alene, ID 83815

Dear Ashley,

I have recently reviewed the Hayden Lake Recreational Water and Sewer District Wastewater Collection System Project and was curious as to the process of the rehabilitating the lift stations. Will those lift stations be drained of wastewater before construction and if so, where will the excess water be deferred to? Will there be any threat of wastewater contamination in the area?

Sincerely,

Aubrey Woodcock
DISTRICT CONSERVATIONIST

Williams, Ashley

From: Williams, Ashley
Sent: Monday, November 12, 2012 9:11 AM
To: Woodcock, Aubrey - NRCS, Coeur d Alene, ID <Aubrey.Woodcock@id.usda.gov> (Aubrey.Woodcock@id.usda.gov)
Subject: HLRWSD Project Consultation

Aubrey,

Thank you for responding to my request for agency consultation on the HLRWSD wastewater collection system project.

In your letter, you asked about the rehabilitating the lift stations. Yes, the stations will be drained prior to construction; the existing wastewater will be pumped through a by-pass pump, by-passing the existing station until it is operational again. The by-passing will be set-up in order to minimize any threat of wastewater contamination in the area. We will also be utilizing BMPs throughout the project to minimize the threat of stormwater from reaching nearby water bodies.

Let me know if you have any other concerns or questions.

Thanks!

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

Mary McGown, State NFIP Coordinator
Idaho Dept. of Water Resources
322 East Front Street PO Box 83720
Boise, ID 83720-0098

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Mary McGown:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

Williams, Ashley

From: McGown, Mary <Mary.McGown@idwr.idaho.gov>
Sent: Tuesday, November 13, 2012 7:51 AM
To: Williams, Ashley
Cc: jbowes@cityofhaydenid.us; larryb@kootenaifire.com
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

Ms. Williams,

Based on the maps and information you provided about the sewer improvements it appears all of the construction may be outside the mapped flood hazard areas around Avondale and Hayden Lakes. However, before construction begins, please check with the floodplain administrators of the local jurisdictions to get their determinations on whether floodplain development permits will be required. I am not sure where city boundaries intersect this project. If in the City of Hayden, please contact Jill Sixt Bowes, jbowes@cityofhaydenid.us, 209-1079. If the project is in the City of Hayden Lake, please contact Larry Boatwright, larryb@kootenaifire.com, 772-4456.

Mary G. McGown, Ph.D., CFM
State Floodplain Coordinator
Idaho Department of Water Resources
322 E. Front Street
P.O. Box 83720
Boise, ID 83720-0098
(208) 287-4928
(208) 830-4174 mobile
(208) 287-6700 fax

From: Williams, Ashley [mailto:awilliams@welchcomer.com]
Sent: Monday, November 12, 2012 10:56 AM
To: mary.e.reinhart@usace.army.mil; Bryon_Holt@fws.gov; Katy.Baker-Casile@deq.idaho.gov; werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; McGown, Mary; rjansson@idl.idaho.gov; howard.lunderstadt@id.usda.gov; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
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Williams, Ashley

From: Williams, Ashley
Sent: Monday, November 26, 2012 1:46 PM
To: 'jbowes@cityofhaydenid.us'; jseier@kcgov.us
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

Jill and Justin,

I was wondering if you had a chance to review the information that I sent a couple of weeks ago regarding the HLRWSD project. I'm hoping to discuss the potential for any permits with you prior to finishing the EID (in the next week or two).

Please let me know if you would be available to discuss the project or if you have any questions.

Thank you,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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From: Williams, Ashley
Sent: Tuesday, November 13, 2012 2:03 PM
To: jbowes@cityofhaydenid.us; larryb@kootenaifire.com; jseier@kcgov.us
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

Jill, Larry, and Justin:

We are working with the Hayden Lake Recreational Water and Sewer District, who is preparing a facility plan for their wastewater collection system. As part of the environmental information document development, we contacted Mary McGown with IDWR (refer to the attached information; it is addressed to DEQ, but an identical letter was sent to Mary) to gather any comments or required activities with respect to floodplains. She forwarded your information onto me to determine if floodplain development permits would be needed for any of the improvements shown in the attached map (in any of your three jurisdictions).

Please review the attached information and let me know if you have any questions or concerns or believe that a floodplain development permit would be needed for any of the improvements. As a note, I believe that the Canterbury Cove and Honeysuckle Beach lift stations may be currently located in a flood hazard area (based on preliminary review). But, the Canterbury Cove lift station will most likely be re-located out of its current location (moved further uphill from the current location), and the Honeysuckle Beach lift station will be rehabilitated in-place.

Let me know if you have any questions or need any further information.

Thanks!

Ashley Williams, E.I.T.
Staff Engineer
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From: McGown, Mary [mailto:Mary.McGown@idwr.idaho.gov]
Sent: Tuesday, November 13, 2012 7:51 AM
To: Williams, Ashley
Cc: jbowes@cityofhaydenid.us; larryb@kootenaifire.com
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

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Mary G. McGown, Ph.D., CFM
State Floodplain Coordinator
Idaho Department of Water Resources
322 E. Front Street
P.O. Box 83720
Boise, ID 83720-0098
(208) 287-4928
(208) 830-4174 mobile
(208) 287-6700 fax

From: Williams, Ashley [mailto:awilliams@welchcomer.com]
Sent: Monday, November 12, 2012 10:56 AM
To: mary.e.reinhart@usace.army.mil; Bryon_Holt@fws.gov; Katy.Baker-Casile@deq.idaho.gov; werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; McGown, Mary; rjansson@idl.idaho.gov; howard.lunderstadt@id.usda.gov; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

December 10, 2012

Ms. Jill Sixt-Bowes
City of Hayden
8930 N. Government Way
Hayden, Idaho 83835

Re: Hayden Lake Recreational Water and Sewer District Proposed Wastewater Projects

Dear Jill:

We are working with the Hayden Lake Recreational Water and Sewer District, who is preparing a facility plan for their wastewater collection system. As part of the environmental information document development, we contacted Mary McGown with Idaho Department of Water Resources (refer to the attached information that was sent to her) to gather any comments or required activities with respect to floodplains. She forwarded your information onto me to determine if floodplain development permits would be needed for any of the improvements shown in the attached map (in the City of Hayden's jurisdiction).

Please review the attached information and let me know if you have any questions or concerns or believe that a floodplain development permit would be needed for any of the improvements. As a note, I believe that the Honeysuckle Beach lift station may be currently located in a flood hazard area (based on preliminary review). The Honeysuckle Beach lift station will be rehabilitated in-place.

I had tried contacting you through email (November 13, 2012 and November 26, 2012) and through phone (December 6, 2012) regarding this issue and have had no response. Please let me know if you have any questions or need any further information.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW/ems
Enclosure

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Coeur d'Alene, ID 83815

October 15, 2012

Mary McGown, State NFIP Coordinator
Idaho Dept. of Water Resources
322 East Front Street PO Box 83720
Boise, ID 83720-0098

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Mary McGown:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
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The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

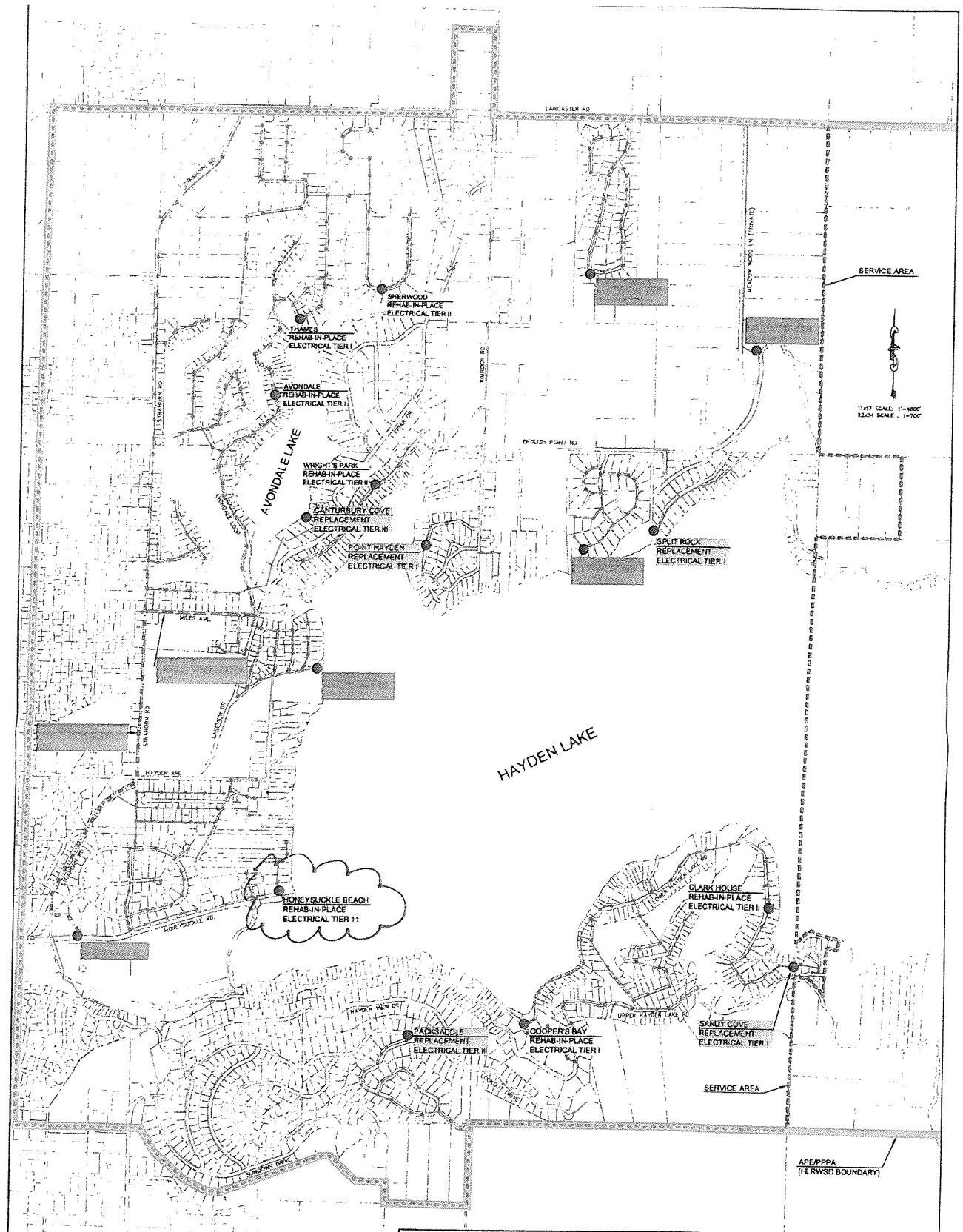
Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map



LEGEND

PROPOSED PROJECTS

- LIFT STATION REPLACEMENT
- LIFT STATION REHAB-IN-PLACE
- LIFT STATION MINOR IMPROVEMENT
- GRAVITY INTERCEPTOR LINE
- MILES GRAVITY INTERCEPTOR LINE
- STRAHORN GRAVITY INTERCEPTOR LINE
- EXISTING GRAVITY SANITARY SEWER LINE
- EXISTING PRESSURE SANITARY SEWER LINE
- APE/PPPA (HLRWSD BOUNDARY)
- SERVICE AREA

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ENGINEERS | SURVEYORS
350 E. Kathleen Avenue
Phone (208) 664-9382 Fax (208) 664-5946

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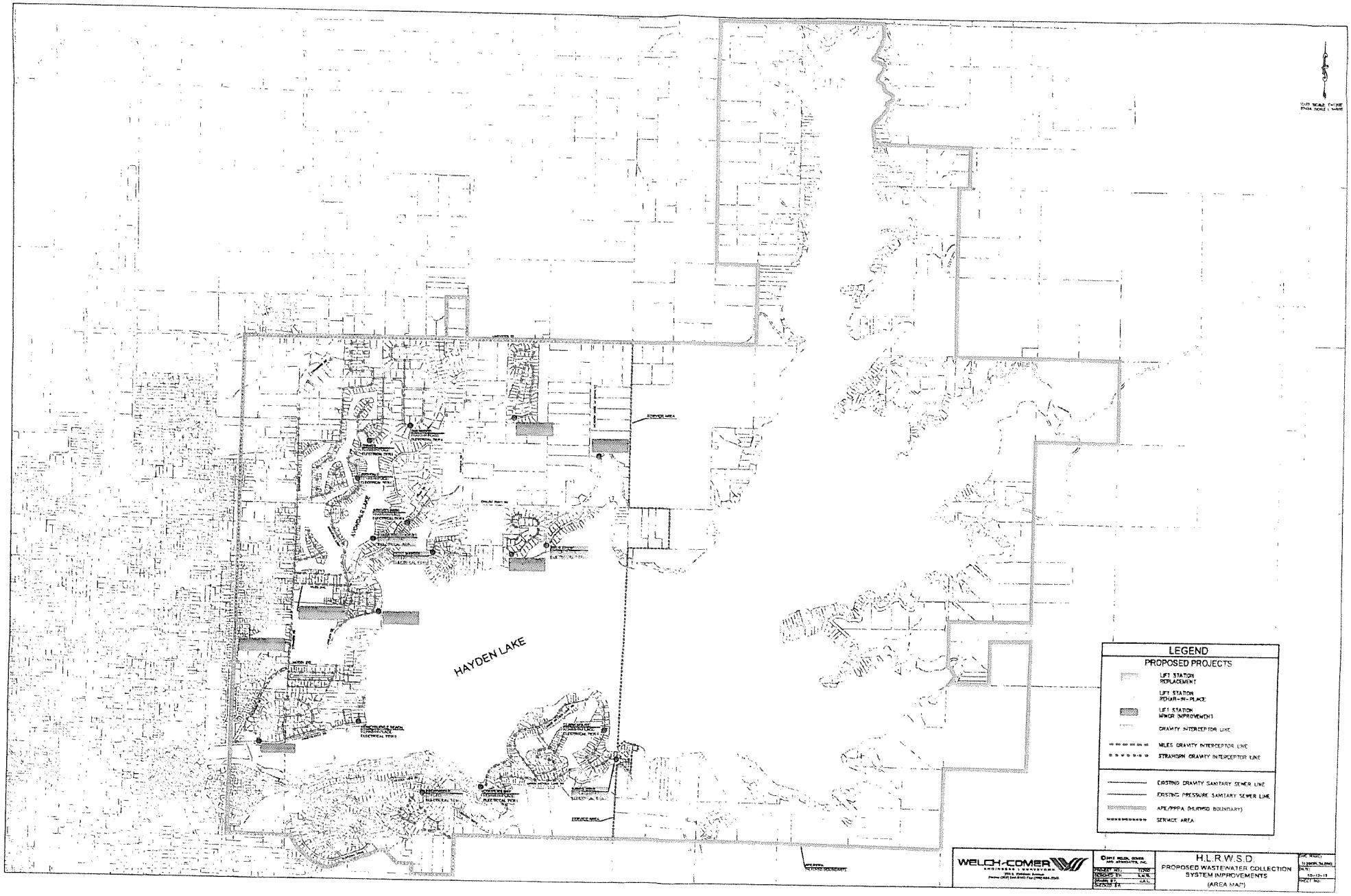
PROJECT NO.:	11200
DESIGNED BY:	A.W.W.
DRAWN BY:	J.A.L.
CHECKED BY:	

H.L.R.W.S.D.

PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

DWG NAME: 11200PL34.DWG
DATE: 10-12-12
SHEET NO:


HAYDEN LAKE
LEGEND
PROPOSED PROJECTS
LIFT STATION REPLACEMENT
LIFT STATION REPAIR-IN-PLACE
LIFT STATION MINOR IMPROVEMENTS
GRAVITY INTERCEPTOR LINE
MILES GRAVITY INTERCEPTOR LINE
STRAHORN GRAVITY INTERCEPTOR LINE
EXISTING GRAVITY SANITARY SEWER LINE
EXISTING PRESSURE SANITARY SEWER LINE
APE/PPPA (MURMED BOUNDARY)
SERVICE AREA
WELCH-COMER
H.L.R.W.S.D.
PROPOSED WASTEWATER COLLECTION SYSTEM IMPROVEMENTS
(AREA MAP)

KOOTENAI COUNTY
FLOOD DAMAGE PREVENTION ORDINANCE NO. 441
CASE NO. OA-145-10

AN ORDINANCE OF KOOTENAI COUNTY, IDAHO, A POLITICAL SUBDIVISION OF THE STATE OF IDAHO, RELATING TO FLOOD DAMAGE PREVENTION PROVIDING FOR TITLE, AUTHORITY, APPLICABILITY, PURPOSE, METHODS OF REDUCING FLOOD LOSSES, AND BASIS FOR ESTABLISHING AREAS OF SPECIAL FLOOD HAZARD; PROVIDING DEFINITIONS OF TERMS; PROVIDING FOR FLOOD HAZARD REDUCTION VIA REGULATION OF DEVELOPMENT IN AND ALTERATION OF FLOODPLAINS AND FLOODWAYS; PROVIDING FOR ENFORCEMENT AND ADMINISTRATION; PROVIDING PROCEDURES FOR VARIANCES AND APPEALS; PROVIDING FOR AMENDMENTS; REPEALING ALL PREVIOUSLY ENACTED ORDINANCES RELATED TO FLOOD DAMAGE PREVENTION, INCLUDING, BUT NOT LIMITED TO, ORDINANCE NOS. 285, 311, 333, AND 381; PROVIDING FOR SEVERABILITY; PROVIDING THAT ADOPTION OF THIS ORDINANCE SHALL HAVE NO EFFECT ON PROSECUTIONS MADE UNDER ANY PREVIOUSLY EFFECTIVE ORDINANCE; AND ESTABLISHING AN EFFECTIVE DATE.

BE IT ORDAINED by the Board of County Commissioners of Kootenai County, Idaho, as follows:

SECTION 1. That Title 11, Chapter 1, Kootenai County Code, shall be, and is hereby repealed.

SECTION 2. That Title 11, Kootenai County Code, be, and the same is hereby amended by the addition thereto of a **NEW CHAPTER**, to be known and designated as Title 11, Chapter 1, Kootenai County Code, and to read as follows:

11-1-1: GENERAL PROVISIONS:

A. Title. This chapter shall be known as the "KOOTENAI COUNTY FLOOD DAMAGE PREVENTION ORDINANCE."

B. Authority. In addition to the general authorities set forth in section 1-1-2 of this code, these regulations are authorized pursuant to Idaho Code §§46-1020 through 46-1024.

C. Applicability.

1. The provisions of this chapter shall apply to all of the unincorporated area of Kootenai County.

2. Basis for Area of Special Flood Hazard. The Special Flood Hazard Areas identified by FEMA in its Flood Insurance Study (FIS) for Kootenai County, Idaho, and Incorporated Areas, dated May 3, 2010, with accompanying Flood Insurance Rate Maps (FIRM) and/or Digital Flood Insurance Rate Maps (DFIRM), and other supporting data, are

f. For each project, if a public entity will not be responsible for maintenance, a maintenance entity, such as a homeowners association or utility corporation, shall be established. If maintenance requirements are not met, the County may contract to have the maintenance done at the expense of the responsible party(s). The County may also take enforcement measures as provided by law.

7. *Placement of Fill in Areas of Special Flood Hazard.*

a. Fill used to elevate structures or any other fill must be placed and compacted in accordance with the requirements of the International Building Code and of the Kootenai County Site Disturbance Ordinance, Title 11, Chapter 2 of this code. Such fill must be compacted for at least 15 feet beyond the limits of any structure placed on it, and;

b. After placement and compaction, fill must be protected from erosion and scour by rip rap or sod forming grass or equivalent vegetation.

8. *Floodways.* Located within areas of special flood hazard are areas designated as floodways. The floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential. Therefore, encroachments including, but not limited to fill, new construction, substantial improvements and other development are prohibited. Exceptions to this prohibition shall be as follows:

a. (1) Access roads to cross the floodway where there are no alternative access ways which do not encroach on the floodway provided that a No-rise Certification has been submitted, demonstrating through hydrologic and hydraulic analyses prepared by a qualified professional engineer licensed by the State of Idaho in accordance with standard engineering practice (with supporting technical data) that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

b. (2) New construction for the replacement or substantial improvement of an existing residential or commercial structure and accessory buildings in conjunction with an existing residential or commercial use provided the following criteria are met:

(1) A No-rise Certification has been submitted, demonstrating through hydrologic and hydraulic analyses prepared by a qualified professional engineer licensed by the State of Idaho in accordance with standard engineering practice (with supporting technical data) that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. If so certified, all fill, new construction for the replacement of existing residential or commercial structures, accessory buildings in conjunction with existing residential or commercial uses and substantial improvements must comply with all other provisions for flood hazard reduction;

(2) All foundations for new construction and substantial improvement shall be designed by a qualified engineer licensed by the State of Idaho and constructed to withstand the hydrodynamic and hydrostatic pressures during the discharge of the

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Coeur d'Alene, ID 83815

October 15, 2012

Regional Supervisor
Idaho Dept. of Fish and Game, Panhandle Region
2885 Kathleen Avenue
Coeur d'Alene, ID 83815

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Regional Supervisor:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

The proposed project consists of rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station.

- Lift Stations: Twelve of the District's 17 lift stations will be rehabilitated in this project: 7 will be rehabilitated in place, and 5 will be fully replaced on-site. Rehabilitation (either in place or full replacement) includes new internal components (pumps, rails, etc), structural repairs or replacement, and site improvements. Electrical components (control panels and/or telemetry) for 16 lift stations will be improved to meet existing code and/or provide for increased communication capabilities. Electrical improvements were separated into tiers (or levels) of improvements, based on the risk and flow of each lift station (e.g. Tier I improvements are for high flow/high risk stations, Tier II improvements are for moderate flow/moderate risk stations, etc).
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The project is being proposed due the age and condition of the District's system. The majority of the system was constructed in 1987 and thus some of the components of the system have worn out, depreciated due to wear and tear and natural corrosion. Specifically, the interior coatings on most of the 13 lift stations, which are over 25 years old, are beginning to fail in areas and expose the lift station steel structure to corrosion. Additionally, the electrical control panels of the 25 year-old lift stations are operational but do not meet current standards for operating safety. All of these project elements will improve the reliability and longevity of the existing public wastewater collection facilities presently serving the HLRWSD sewer service area (western portion of the HLRWSD).

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Area (APE/PPPA) includes the entire District boundary, but the improvements will only take place in the District's current sewer service area.

We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

IDAHO DEPARTMENT OF FISH AND GAME
PANHANDLE REGION
2885 West Kathleen Avenue
Coeur d' Alene, Idaho 83815

COPY
RECEIVED
NOV 7 2012
By

C.L. "Butch" Otter/Governor
Virgil Moore/Director

November 7, 2012

Philip Boyd
Welch, Comer and Associates, Inc.
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

Dear Mr. Boyd:

REFERENCE: HAYDEN LAKE RECREATIONAL WATER AND SEWER DISTRICT

We have reviewed the information you provided regarding the proposed Hayden Lake Recreational Water and Sewer District. According to your document, the project involves rehabilitating lift stations and installing gravity sewer interceptor lines to reduce wastewater flows to a major lift station. All of the improvements fall along road right-of-ways in the project planning area.

Given the brief description and maps provided, IDFG does not anticipate that the proposed project will have significant impacts to fish or wildlife.

Thank you for the opportunity to comment.

Sincerely,

Charles E. Corsi
Regional Supervisor

CEC:MTB

C: Sharon Kiefer, IDFG Boise

File: Welch Comer Hayden Lake W&S collection system

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Coeur d'Alene, ID 83815

October 15, 2012

Gary Bahr
Idaho Department of Agriculture
P.O. Box 790
Boise, ID 83701

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Gary Bahr:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

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BY

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STATE OF IDAHO

C. L. "BUTCH" OTTER
GOVERNOR
CELIA R. GOULD
DIRECTOR

November 6, 2012

Ashley Williams, EIT
Welch-Comer
350 E. Kathleen Ave.
Coeur d Alene, Idaho 83815

Dear Ashley Williams:

Thank you for inquiring with the Idaho State Department of Agriculture (ISDA) with regards to your work with the Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project. The public works project being proposed will be an important project for the citizens of that area.

We have reviewed the planning documents provided to us. Your documents appear to be professional and informative. At this time we do not have comments or questions related to this project.

Thank you for contacting our agency. Feel free to contact us in the future (main number - 208-332-8500, my number - 208-332-8597).

Sincerely,

Gary Bahr

Gary Bahr

Water Quality Programs

PC: Water Program File

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October 15, 2012

Dale Peck, Environmental Health Director
Panhandle District Health Department
8500 N. Atlas Road
Hayden, ID 83835

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Dale Peck:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

WELCH, COMER & ASSOCIATES, INC.
CONSULTING ENGINEERS & SURVEYORS

PHONE LOG

DATE: 10/18/12 TIME: 9:45 am

PROJECT NAME: HLPWSD Environmental Document

PROJECT NUMBER: 41055

WELCH-COMER REPRESENTATIVE: Ashley Williams

WHO INITIATED COMMUNICATION: Dick Martindale (Panhandle Health Dist.)

NAME: Dick Martindale PHONE NUMBER: 208 - 415-5100

ADDRESS: 8500 N. Atlas Road Hayden, ID 83835

SUBJECT: HLPWSD EID comments.

No comments other than general support.

WELCH-COMER FOLLOW-UP REQUIRED? ☐ YES ☒ NO

FOLLOW-UP COMMUNICATION REQUIRED? ☐ YES ☒ NO

NOTES:

350 E. Kathleen Avenue, Coeur d'Alene, ID 83815 · (208) 664-9382 · Fax (208) 664-5946

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Coeur d'Alene, ID 83815

October 15, 2012

Roger Jansson, Operations Chief - North
Department of Lands, Northern Operations
3780 Industrial Avenue South
Coeur d'Alene, ID 83815

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Roger Jansson:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Enclosed are maps of the proposed project area that depict the proposed improvements. The District Boundary includes the entirety of Hayden and Avondale Lake; however, the sewer service area includes the western portion of the District. Thus, the Area of Potential Effect and Proposed Project Planning

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We request that you advise us of any comments that you may have regarding this project within *30 days*, so that Hayden Lake Recreational Water and Sewer District can proceed with the completion of the Environmental Information Document. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at Welch, Comer & Associates, Inc. at (208) 664-9382 at your convenience.

Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

Williams, Ashley

From: Roger Jansson <RJansson@idl.idaho.gov>
Sent: Thursday, November 15, 2012 10:00 AM
To: Williams, Ashley
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

Dear Ms. Ashley,

The Idaho Department of Lands is supportive of this project.

Roger Jansson
Operations Chief North
Phone: (208)-666-8605
Fax: (208)-769-1524
rjansson@idl.idaho.gov

From: Williams, Ashley [mailto:awilliams@welchcomer.com]
Sent: Monday, November 12, 2012 9:56 AM
To: mary.e.reinhart@usace.army.mil; Bryon_Holt@fws.gov; Katy.Baker-Casile@deq.idaho.gov; werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; mary.mcgown@idwr.idaho.gov; Roger Jansson; howard.lunderstadt@id.usda.gov; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation

Dear Agency Contacts,

We are writing to remind you that the 30 day period for agency consultation is ending on November 14th (Wednesday) for the HLRWSD wastewater project. I have not heard from you yet and wanted to make sure you didn't have any questions or need any further information from me. For your reference, I have attached the letter that was sent to you last month (the example is addressed to DEQ, but you received an identical letter addressed to you).

Please provide any comments (or "no comment") to us as soon as possible so that we can proceed with the Environmental Information Document development.

Feel free to call or email if you have any questions or comments.

Thanks,

Ashley Williams, E.I.T.
Staff Engineer
WELCH-COMER
208-664-9382
208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815
www.welchcomer.com

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

Howard Lunderstadt, Rural Development Specialist
USDA-RD
7830 Meadowlark Way, Suite C3
Coeur d'Alene, ID 83815

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Howard Lunderstadt:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

awilliams@welchcomer.com

Williams, Ashley

From: Lunderstadt, Howard - RD, Coeur d' Alene, ID <Howard.Lunderstadt@id.usda.gov>
Sent: Tuesday, November 13, 2012 3:05 PM
To: Williams, Ashley
Subject: RE: HLRWSD Wastewater Collection System Project Consultation

Ashley,

We have no comment.

Howard R. Lunderstadt | Area Specialist (Community Programs)
Rural Development
U.S. Department of Agriculture
7830 Meadowlark Way, Suite C3 | Coeur d'Alene, ID 83815
(208) 762-4939 ext 126 | Fax# (208) 762-9799
www.rurdev.usda.gov

"Committed to the future of rural communities"
"Estamos dedicados al futuro de las comunidades rurales"

From: Williams, Ashley [mailto:awilliams@welchcomer.com]
Sent: Monday, November 12, 2012 9:56 AM
To: mary.e.reinhart@usace.army.mil; bryon_holt@fws.gov; Katy.Baker-Casile@deq.idaho.gov; werntz.james@epa.gov; Lidgard.michael@Epamail.epa.gov; Eastman.Susan@epamail.epa.gov; mary.mcgown@idwr.idaho.gov; rjansson@idl.idaho.gov; Lunderstadt, Howard - RD, Coeur d' Alene, ID; dennis.porter@commerce.idaho.gov
Subject: HLRWSD Wastewater Collection System Project Consultation

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350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

October 15, 2012

No response after 2 emails (12/14/12)

Dennis Porter, State Program Manager
Idaho Dept of Commerce
700 West State Street, PO Box 83720
Boise, ID 83720

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Dennis Porter:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

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Coeur d'Alene, ID 83815

October 15, 2012

Suzi Pengilly, Deputy SHPO
Idaho State Historical Society
210 Main Street
Boise, ID 83702

Re: Hayden Lake Recreational Water and Sewer District Wastewater Collection System Improvement Project – Request for Comments for Preparation of an Environmental Informational Document

Dear Suzi Pengilly:

The Hayden Lake Recreational Water and Sewer District (HLRWSD) is preparing a facility planning document to identify and make necessary improvements to their municipal wastewater collection system that are cost effective and environmentally sound. The project is being funded by a Department of Environmental Quality (DEQ) wastewater loan which requires compliance with the Rules for Administration of Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant rule carries DEQ State Environmental Review Process requirements which mirror those of the National Environmental Policy Act (NEPA).

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Sincerely,

Ashley M. Williams, E.I.T.
Staff Engineer

AMW
Enclosure: Proposed Improvements Map

www.history.idaho.gov

Idaho • State Historical Society

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

State Historic Preservation Office and Historic Sites
Archeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Statewide Sites:
• Franklin Historic Site
• Pierce Courthouse
• Rock Creek Station and
• Stricker Homesite

Old Penitentiary
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Idaho State Archives
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

October 22, 2012

Ashley Williams
Welch Comer
350 E. Kathleen Ave..
Coeur d'Alene, Idaho 83815

RE: Hayden Lake Wastewater Collection System Improvements, Kootenai County, Idaho

Dear Ashley:

Thank you for requesting our views on the proposed improvements to the wastewater system for the Hayden Lake Recreational Water and Sewer District in Kootenai County, Idaho. Work will involve the rehabilitation of twelve lift stations and construction of gravity inceptor lines along Strahorn Road and Miles Avenue.

Our records show that the project is located in an area where archaeological sites may exist. We are therefore recommending an archaeological survey of all project components that will disturb previously undisturbed ground. The survey should be conducted when ground visibility is good and a report sent to our office for review. Depending upon the results, we may recommend avoiding sensitive areas, archaeological testing or monitoring, or proceeding with the project as planned.

A list of archaeological consultants can be found on Preservation Idaho's website (www.preservationidaho.org) under Resources.

We appreciate your cooperation. If you have any questions, please feel free to contact me at 208-334-3847, ext. 107.

Sincerely,

Susan Pengilly

Susan Pengilly
Deputy SHPO

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Governor of Idaho

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Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

DATE: November 21, 2012
TO: Ashley Williams, Welch-Comer
FEDERAL AGENCY: EPA
PROJECT NAME: Hayden Lake Recreational Water and Sewer District Wastewater Collection Improvements, Kootenai County, Idaho; Archaeological Report by Ann Sharley and Lorelea Hudson, SWCA Environmental Consultants, Seattle, Washington, dated 14 November 2012

Section 106 Evaluation

X	The field work and documentation presented in this report meet the Secretary of the Interior's Standards.
X	No additional investigations are recommended. Project can proceed as planned.
	Additional information is required to complete the project review. (See comments below.)
	Additional investigations are recommended. (See comments below).

Identification of Historic Properties (36 CFR 900.4):

X	No historic properties were identified within the project area.
	Property is not eligible. Reason:
	Property is eligible for listing in the National Register of Historic Places.
	Criterion: _ A _ B _ C _ D Context for Evaluation:
X	*No historic properties* will be affected within the project area.

Assessment of Adverse Effects (36 CFR 800.5):

Project will have *no adverse effect* on historic properties.
Property will have an *adverse effect* on historic properties. Additional consultation is required.

Comments:
Your archaeological consultant should be notified if archaeological remains are discovered during project activities.

Susan Pengilly

Susan Pengilly, Deputy SHPO
State Historic Preservation Office

November 21, 2012
Date

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Williams, Ashley

From: Ester.Ceja@deq.idaho.gov
Sent: Friday, November 30, 2012 8:01 AM
To: Williams, Ashley
Subject: Hayden Lake Rec. W&SD

Ashley,

The 30 day consultation period ended on November 20th. I have since followed up with the CDA THPO and have not received a response. Please consider this documentation for the THPO consultation of the Hayden Lake Recreational Water & Sewer District.

Let me know if you have any questions.

Thank you,

Ester Ceja
Sr. Water Quality Analyst
1410 North Hilton
Boise, Idaho 83706
Phone (208) 373.0585
Fax (208) 373.0576
Ester.Ceja@deq.idaho.gov

APPENDIX Q.

Mailing List and Meeting Attendee Summary

Hayden Lake Recreational Water and Sewer District
Meetings September 5th, September 26th, October 10th and 12th, 2012

List of Public Attendees from 9/5/12 Public Meeting

Spoke - Alan Peterson, 10849 N. Lakeview Dr, Hayden, ID 83835

Spoke - Dana Smith, 11584 N Strahorn Rd, Hayden, ID 83835

Spoke - Terry Ferris, 5278 Upper Hayden Lake Rd, Hayden, ID 83835

Spoke - Linda and John Schultz, 11441 N Avondale Loop, Hayden, ID 83835

Spoke - Merlyn and Rosemary Deurkson, 10790 N. Bluerock Ln, Hayden, ID 83835

Bob and Barb Chilcutt, 10932 Pt. Hayden, Hayden, ID 83835

Diane Christensen, 5278 Upper Hayden Lake Rd, Hayden, ID 83835

Gladys Cody, 11466 N. Friar Dr, Hayden, ID 83835

John Moffett, 2931 Pt. Hayden, Hayden, ID 83835

Dale Bandy, 12326 N. Friar Dr, Hayden, ID 83835

Sally Schneider, 12326 N. Friar Dr, Hayden, ID 83835

James and Jan McMonigle, 4603 E. Hayden Lake Rd, Hayden, ID 83835

Ken Thompson, P.O. Box 2788, Hayden, ID 83835

List of Public Attendees from 9/26/12 Board Meeting

James and Jan McMonigle, 4603 E. Hayden Lake Rd, Hayden, ID 83835

List of Public Attendees from 10/10/12 Public Meeting

Spoke - Mr. Erickson (did not sign in, there are several Erickson's that own property in the district)

Spoke - Steve Caiden (did not sign in, no record at the District)

Spoke - Art Brown, P.O. Box 1290, Hayden, ID 83835

List of Public Attendees from 10/12/12 Public Meeting

Spoke - Ken and Elaine Haagenson, 3133 E Lancaster Rd, Hayden, ID 83835

Spoke - Caron Miller (did not sign in, there are several Miller's that own property in the district)

Spoke - Mary Ann McCleary, 9440 N. Chalet Rd, Hayden Lake, ID 83835