PRELIMINARY ENGINEERING REPORT
for the
WATER AND SEWER EXTENSION TO THE
ALBENI AREA 2012 – PHASE I
WEST BONNER WATER & SEWER DISTRICT
OLDTOWN, IDAHO

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ERIC J. ELDENBURG

RELEASE FOR AGENCY REVIEW

PRELIMINARY ENGINERING REPORT
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WATER AND SEWER SYSTEM EXTENSION TO THE ALBENI AREA 2012 – PHASE I
WEST BONNER WATER & SEWER DISTRICT
OLDTOWN, IDAHO

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A. INTRODUCTION

1. Purpose and Need

The purpose of the proposed project is to develop a water supply, storage, and distribution system and a sewer collection and transmission system within the Albeni area of the West Bonner Water & Sewer District (WBWSD), which is located on the east side of the Pend Oreille River within the City of Oldtown, Idaho. Currently, the businesses and residents within this area are served water through individual wells and sewer through individual on-site sewer systems. Historically, limitations have developed with on-site sewer systems due to native fine grained soils, areas of high ground water and setbacks to critical areas. The Panhandle Health District records indicate 14 of the 20 on-site sewage permits issued for this area since 1972 have been to replace existing failed systems. Surfacing sewage from failing on-site sewage greatly jeopardizes the drinking water supply in the area. The presence of high ground water, fine grained soils and failing septic systems leads to contamination of the individual residential water wells. This project will protect the existing groundwater supply by installing a sewage collection system to replace the existing on-site sewer systems.

Another need for this project is the WBWSD's existing water storage and distribution facilities. The storage tank has suffered severe cracking due to poor quality concrete used in the tank wall construction. Leaks within the existing concrete water storage tank and the existing water transmission line have caused the combined City of Newport/WBWSD water system to run dangerously low on water during peak demand periods. The WBWSD has experienced several failures in the distribution lines that have required a complete shutdown of the system.

This project will develop a secondary water source and storage reservoir for the WBWSD system. The existing water system is served water via springs and a reservoir located to the south and east of the City of Oldtown. The proposed secondary source will provide a backup water supply in the event the mainline from the springs fails.

The project includes two phases. The first phase includes improvements to the existing water and sewer facilities on the west side of the Pend

Oreille River. These improvements will accommodate water and sewer service to the east side of the Pend Oreille River. Two river crossings are planned in the initial phase; one for water and one for sewer. The initial phase also includes development of a well, water storage reservoir and water distribution system along with a sewer collection system and pumping station on the east side of the river. The second phase of the project would include expansion of the water and sewer facilities on the east side of the river to serve the remaining properties within the WBWSD boundaries.

The majority of the project work will occur on the east side of the Pend Oreille River. Some work will be performed on the west side of the river to connect the proposed water and sewer systems with the existing systems located on the west side of the river. The work for the project will occur within the boundaries shown on the maps below. The proposed project includes water and sewer service to the east side of the Pend Oreille River. Figure B.2 is a quad map and aerial photo created from Google Earth showing; the river, which is the southern boundary, the State Highway 2, which intersects the project area from east to west, Albeni Falls Dam, which is just beyond the eastern City limits of Oldtown, and the bridge over the river, which is the westernmost area of the project.

2. OWNER RESPONSIBILITY

The WBWSD has obtained the services of James A. Sewell and Associates, LLC (JAS) for all design and project management duties. JAS has successfully designed and managed many projects of similar size and scope for over 50 years. In addition to the services provided by JAS, the WBWSD also has a full time permanent clerk on staff. The clerk, Sheila Gormley, has been employed by the WBWSD for 17 years. The WBWSD contracts with an outside consulting firm to prepare the financial records for the WBWSD in preparation of audits. Under the supervision of Sheila and the consulting firm the WBWSD has had no issues related to their financial audits.

The WBWSD has obtained all necessary easements to construct the proposed improvements to be located on private property. The WBWSD has also obtained a special use permit from the City of Oldtown to construct the improvements to be located within the existing City of Oldtown right-of-ways

B. EXISTING CONDITIONS

1. Project Site

The majority of the project area has historically been a lumber mill site and older established businesses. The area has slowly transformed from the historic usage as a lumber mill to development of additional commercial businesses located along the state highway. The mill site still exists and is currently operated by Tri-Pro Cedar Products. The working facilities of the Tri-Pro Cedar Products mill are located in the area shown in gray on Figure B.3 and are positioned just south of the existing railroad tracks.

Past development in the project area has typically been under the jurisdiction of Bonner County. The existing parcels are generally self- sufficient in that they contain individual wells for water supply and on-site sewer systems for wastewater disposal. Public water and sewer utilities do not currently exist in the project area.

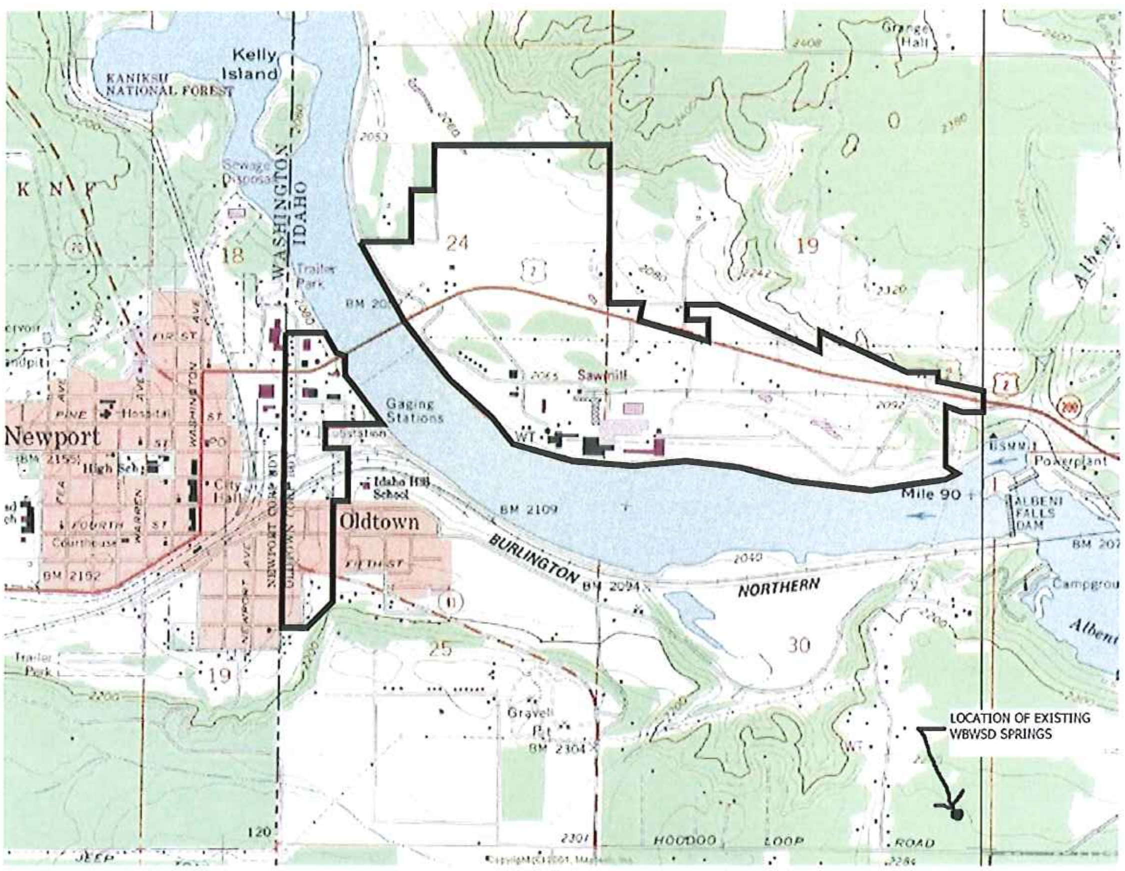


Figure B.1 – Project Location

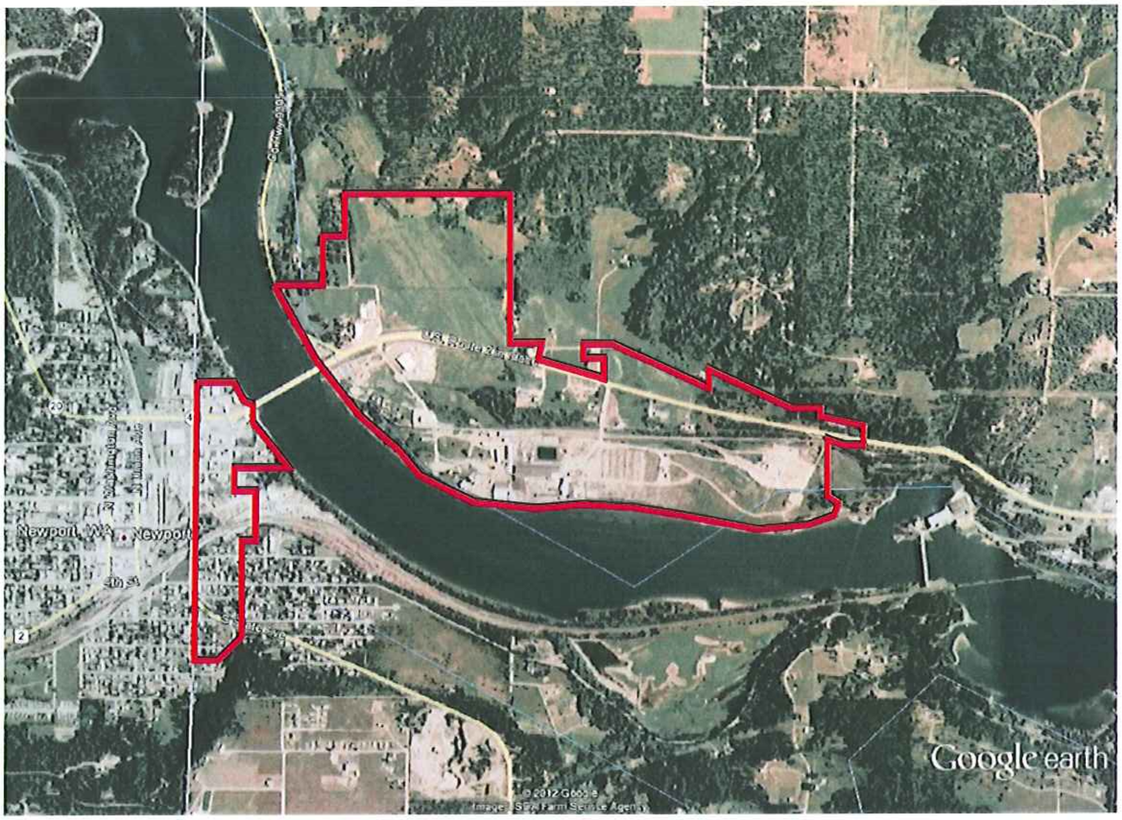


Figure B.2 – Google Earth Image of the Project Area

The project area is also shown on the City of Oldtown Zoning map for the east side of the river in the following Figure B.3. The zoning map identifies the areas zoned for commercial development, public recreation, residential and industrial.

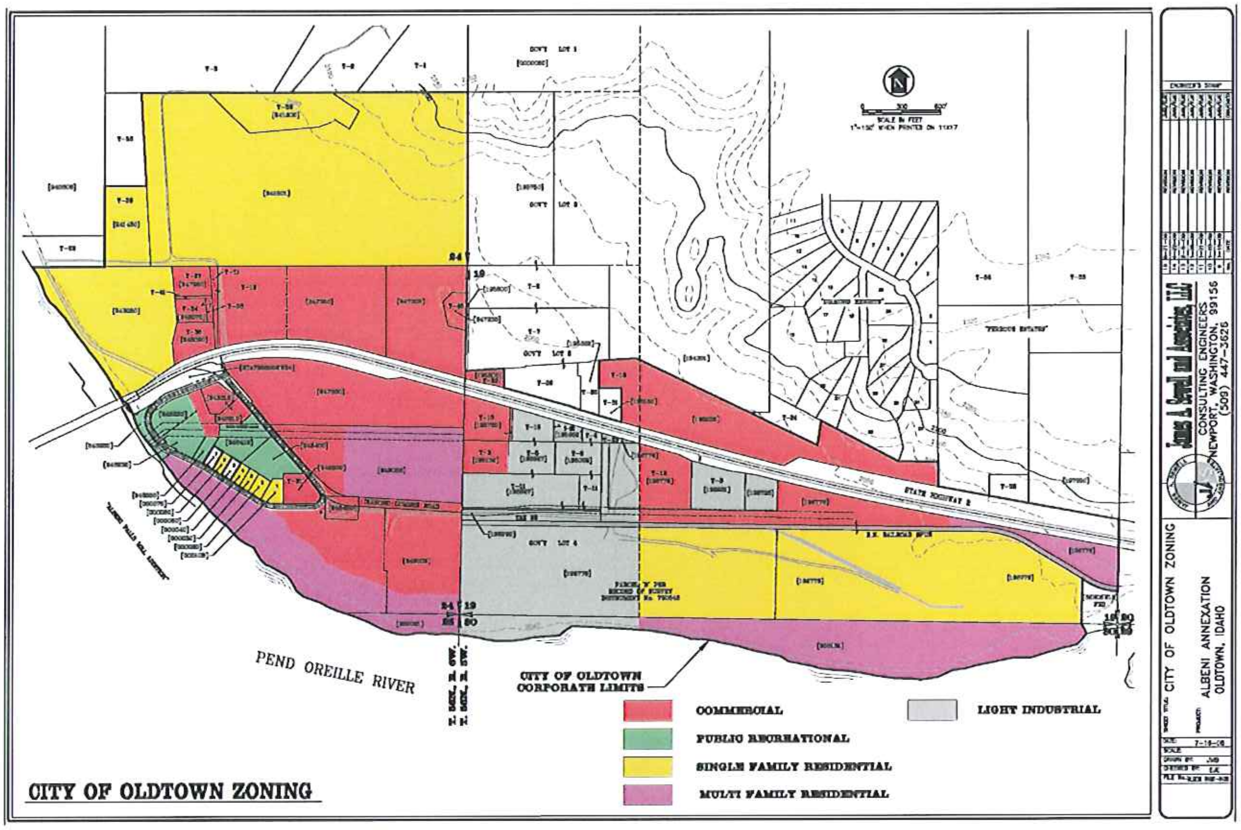


Figure B.3 – City of Oldtown Zoning Map for East Side of the river

2. Existing Environmental Conditions

a. Physiography, Topography, Geology, and Soils

The proposed project is located within the City of Oldtown, Bonner County, Idaho. Water and sewer service is provided by the WBWSD. The proposed improvements occur in sections 24 and 25 of Township 56 north, Range 6 west, Boise Meridian, and in sections 19 and 30 of Township 56 north, Range 5 west, Boise Meridian, which is generally known as the "Albeni Area". The project elevation ranges from an approximate elevation of 2035 feet above mean sea level near the river to an approximate elevation of 2200 feet above mean sea level north and east of the current US Highway 2 Bridge crossing the Pend Oreille River. North and east of the project area, the ground elevation quickly increases too approximately 2400 feet above mean sea level. South and west of the project area are the existing City of Oldtown and areas currently served by the WBWSD.

In 1984 the Idaho Transportation Department (ITD) conducted a geotechnical investigation of the Pend Oreille River bed as part of construction for the new US 2 bridge over the Pend Oreille River. A total of 6 tests were performed where the existing highway 2 bridge crosses the river. Test hole 1 is located on top of the west bank of the river, test holes 2-5 are located in the river channel, and test hole 6 is located on top of the east bank. The test results indicate that the subsurface soils range from silt to gravelly silty sand with no rock encountered to an approximate elevation of 1930'. In 2010, Budinger and Associates was retained to perform a geotechnical evaluation of the river bed. This geotechnical investigation indicated silt, sand, and gravel materials suitable for directional drilling and is included in Appendix E. There is no reason to suspect that the soils encountered elsewhere in the project will contain materials that will hinder construction of buried utilities.

According to the Natural Resource Conservation Service (NRCS) soil survey the majority of the soils located within the project site are Mission Silt Loam, 0-2 percent slopes. The Mission Silt Loam located at the project site is a partially hydric soil with a saturated hydraulic conductivity of 15.93 micrometers per second. The NRCS soil survey indicates that there are no listed prime farmlands within the project site.

A large majority of the project area has historically been used as a lumber mill. Past residential development has reduced the overall footprint of the mill site. Today a large portion of the City of Oldtown on the east side of the river is still considered industrial usage. This property is not currently considered rangeland or forestland.

The project site is fairly level with slopes typically less than 5%. With such a flat area, surface water has ponded in the various wetlands in the project area. It is not unreasonable to expect that a high water table will cause groundwater intrusion into open trenches. Construction of buried utilities will be delayed until the drier months of the year to minimize the affects of high water tables.

The major construction challenges within the project location are crossing the Pend Oreille River with a water and sewer transmission mainline. A limited portion of the work will occur on the west side of the river in the older established areas of the WBWSD. The remainder of the project will take place on the east side of the river as shown hereinafter.

b. Surface and Ground Water Hydrology

The Pend Oreille River runs adjacent to the project site. The river normally flows at approximately 10,000 – 20,000 cfs but during the spring runoff, flows can exceed 80,000 cfs and during the winter the flow can be less than 10,000 cfs. The river is utilized for electrical power generation using hydroelectric dams by the United States Army Corps of Engineers approximately 2 miles upstream from the project and by the Pend Oreille County PUD approximately 50 miles downstream of the project. The river is also used by the City of Sandpoint, City of Dover, City of Priest River and the City of Newport to dispose of the municipal wastewater treatment plant effluent through their NPDES permits. The river is used throughout the year for recreation in the form of boating, swimming, fishing, and hunting.

The Tri-Pro Cedar Products lumber mill is located within the project boundary. The mill utilizes a 6" diameter ground water well to supply drinking water to the mill. This well produces approximately 50 gpm and is located approximately 200 feet from the Pend Oreille River. The well is approximately 120 feet deep with the pump set at approximately 80 feet. The IDEQ source water assessment for this well has been included in Appendix I.

The mill also utilizes a ground water well to supply water for their fire suppression lagoon. This well produces approximately 500 gpm and is located at the southwest corner of the fire suppression lagoon approximately 700 feet from the Pend Oreille River. According to mill personnel the water from the well was tested and found meet drinking water standards.

The old mill main well is located near the old boiler building approximately 150 feet from the Pend Oreille River. This well was previously used to supply water to the mill but the property the well is located on is no longer owned by the mill. The mill cut and capped the line from the well to the mill at the property line. Now, according to mill personnel, the well is used to supply water to a single residential building. A source water assessment, well log, and a letter from the IDEQ indicating that the well is not under the influence of surface water has been included in Appendix I.

The well logs for the several other wells in the area and a micro particulate analysis for the Rotary Visitors Center have also been included in Appendix I.

Based on the production and quality of the wells located in the Albeni area, it appears that a high producing, good quality aquifer is located at approximately 100' below the surface.

c. Fauna, Flora, and Natural Communities

There are a variety of species of terrestrial vegetation, fish and wildlife present within the project area that may be temporarily impacted by the construction process. Permanent impacts to local flora and fauna will be limited to the specific footprints of the proposed structures and water tank access road. Vegetation, fisheries and wildlife, and threatened and endangered species have been addressed in the Environmental Information Document prepared by James A. Sewell & Associates, LLC and submitted to and approved by the IDEQ.

d. Housing, Industrial, and Commercial Development

The project area is currently part of the incorporated City of Oldtown and includes light commercial areas in the Albeni area, residential areas, and rural areas, as shown on the City of Oldtown Zoning map. The majority of the project area contains privately owned and previously developed areas, such as the Tri-Pro Cedar Mill property. The Tri-Pro Mill site has been in use for over 100 years, so the majority of the area on the Tri-Pro Mill property has various uses related to that industry.

The zoning in the project area consists of single family residential, multi-family residential, light commercial, light industrial and public recreational areas. The proposed project is expected to facilitate land use that will be compatible with the established zoning areas.

The existing development in the Albeni area is limited to a few residences and businesses. Development in the Albeni area has been stunted due to the lack of water and sewer service in the area.

e. Cultural Resources

We have attached a list of all historical sites within the State of Idaho as indicated by the State Historical Preservation Organization in Appendix C. As evidenced by this list, there are no historical structures listed by the National Register of Historic Places in the project area. We have also contacted the Kalispel Tribe of Indians (KTOI) to ascertain the location of any sites of tribal significance within the project area. As evidenced by the attached correspondence with the KTOI, there are two areas of historical significance within the project area (See Appendix C). Because the KTOI determined one of the historically significant sites to be a Tradition Cultural Property (TCP), an archaeological study and report was deemed necessary to ensure all historically significant structures and sites were protected. James A. Sewell and Associates, LLC contracted for an archaeological study to be conducted by Northwest Archaeological Associates, Inc. (See Appendix C for additional information). Northwest Archaeological Associates (NWAA) found that four cultural resources are within or partially within the project area. All of the indicated cultural resource sites are located within the Tri-Pro Mill property, south of U.S. Highway 2, outside of the proposed construction area. The archaeologists found that the proposed project will not negatively affect any of the cultural resources identified.

We have submitted the archaeological study to, and received correspondence from, the Idaho State Historical Society. They have reviewed and accepted the archaeological study. The correspondences can be found in Appendix C

f. Utility Use

Existing utilities within the project boundary include electrical transmission lines owned and maintained by the Bonneville Power Administration, electrical transmission lines owned and maintained by Avista, fiber optic lines, phone lines, and cable lines. The location of the electrical transmission lines is shown on the project drawing in Appendix A. Currently there are no natural gas lines located within the project boundary. Construction of this project is not expected to adversely impact any of the existing utilities within the project boundary.

g. Floodplains and Wetlands

Portions of the project area south of U.S. Highway 2 are positioned within a Special Flood Hazard Area. These Special Flood Hazard Areas are indicated on the attached FEMA Flood Insurance Map of the project area included in Appendix B. The majority of the Special Flood Area is located southerly of the east end of the U.S. Highway 2 Bridge over the Pend Oreille River. This area is currently developed with light commercial and residential structures. These areas have a 1% chance of a 100 year flood event. Northerly of U.S. Highway 2 there are no areas indicated as Special Flood Areas within the project area. The 100 year flood elevation or base flood elevation (BFE) in the project area is 2056.5 feet above sea level. Refer to the map attached in Appendix B that shows areas at or below 100 year flood elevation within the project area. In contrast, the River surface elevation normally varies from 2036 to 2038 at high water level. The City of Oldtown is participating in the National Flood Insurance Program, as shown in Appendix B.

Northerly of U.S. Highway 2 there will be no impacts on areas at or below the 100-year flood elevation. Existing and future businesses and residences located southerly of U.S. Highway 2 in areas below the BFE will be at risk to flooding. However, the City of Oldtown has adopted a floodplain ordinance that restricts development within the floodplain, which will minimize the potential for future adverse impact from floods. The proposed water and sewer systems project will have no effect on environmental impacts to existing development from a 100 year flood event. The proposed water system will facilitate development in the Albeni area, which could include those areas lying within the floodplain; however, the City Floodplain Ordinance will restrict development within the floodplain to avoid or minimize the environmental impacts to future development from a 100 year flood event. Any future structures that may be constructed within these areas will be required by the City to have a finished floor elevation above the BFE, and construction below the BFE will be required to be flood-proofed. Areas significantly below the 100 year flood elevation are located on or near the river banks where no construction or development are expected. All water and sewer facilities will be constructed either above the 100 year flood elevation or have access located above the 100 year flood elevation.

North of U.S. Highway 2 there are identified wetlands that will be impacted by the installation of the proposed 12 inch water line extending from the U.S. Highway 2 ROW to the proposed water tank, and the construction of a proposed 16' wide water tank access road. The wetland area locations shown in Appendix D are the result of a wetlands delineation study completed in August, 2010 for the WBWSD by James A. Sewell & Associates, LLC. The wetlands delineation concluded that there is a palustrine emergent persistent seasonally flooded wetland at the proposed project water tank access road area. The proposed 16' wide water tank access road will permanently cover approximately 534 linear feet of the existing wetland indicated in the delineation report as "Wetland B". The WBWSD has submitted a "joint application" to the United States Army Corps of Engineers and has recieved Nationwide Permit-12 and 14 verification and preconstruction notice authorization. Three 12" culverts will be installed within the proposed water tank access road at the "Wetland B" crossing location in order to maintain wetland connectivity. The proposed erosion mitigation measures for the access road at the wetland area conform to the requirements of the IDEQ Stormwater Best Management Practices and include ditch line check dams, grass infiltration areas and silt fencing at the access road edge.

Between U.S. Highway 2 and the Pend Oreille River there are several sites that are classified as wetlands. The wetland area locations within the Tri-Pro property are the result of a wetlands delineation study completed in July 2008 for Tri-Pro Cedar Products by Environmental Inc, which can be found in the Environmental Information Document submitted to the IDEQ by James A. Sewell and Associates, LLC. This wetlands delineation concluded that there are small areas of emergent freshwater wetlands and freshwater ponds within the project area. The wetlands determined by these two delineation studies can be seen in the wetland comparison drawing in Appendix D showing the existing wetland areas adjacent to and within the project area. As is evident in the attached project wetland comparison drawing, there is one wetland area which will have a water line trench pass near the south edge of the wetland area located southerly of Albeni Falls Building Supply. The proposed water line in this area will be constructed along the centerline of the existing road in order to reduce impacts on the adjacent wetland, and ensure that the wetland is not drained as a result of project construction.

No wetland areas to the south and west of the Pend Oreille River have been identified within the project area. Additionally, no impacts to any wetland areas that may exist within the City of Newport or Oldtown are anticipated.

h. Wild and Scenic Rivers

The project area does not contain a wild and scenic river and the Pend Oreille River is not in the Wild and Scenic River System.

i. Public Health and Water Quality Considerations

Due to the shallow water table and the predominate existence of soils having poor moisture transmissivity within the Albeni area, many of the existing drainfields have failed. According to the Panhandle Health records, 20 permits have been issued in the Albeni area since 1972, 14 of these permits were issued for drainfield replacement. Since the Albeni area has no centralized water or sewer, water wells are in close proximity to drainfields. Drainfield failures typically result in surfacing effluent, which creates a high potential for nearby domestic well water contamination.

j. Important Farmlands protection

According to the NRCS there is no land currently classified as important farmland, important forestland, or important rangeland within the project construction area, see Appendix E. Much of the project construction area north of the Pend Oreille River is not classified by the NRCS, however the project is not expected to impact land classifications north and east of the Pend Oreille River. Proposed project areas to the south and west of the Pend Oreille River, including the city limits of Oldtown and Newport, have various types of prime farmland if drained and where slopes are 0 to 10 percent, see Appendix E. However, the project is not expected to impact lands in these areas. Thus, no mitigation action is needed to protect important farmland, important forestland, or important rangeland.

k. Proximity to a Sole Source Aquifer

According to the USEPA, the proposed wells are not located within a sole source aquifer or stream flow source area.

I. Land Use and Development

The project area north of the Pend Oreille River is currently part of the incorporated City of Oldtown and includes light commercial, residential, and rural areas, as shown on the City of Oldtown Zoning map, Bonner County Zoning Map, and the Bonner County Projected Land Use Map in Appendix H. The majority of the project area contains privately owned and previously developed areas, such as the Tri-Pro Cedar Mill property. The Tri-Pro Mill site has been in use for over 100 years, so the majority of the area on the Tri-Pro Mill property has various uses related to that industry. The zoning in the project area consists of single family residential, multi-family residential, light commercial, light industrial and public recreational areas. The proposed project is expected to facilitate land use as indicated in the attached zoning maps and is not expected to be incompatible in any of the established zoning areas. The proposed project will improve access to a safe domestic water supply and fire flow to existing residences and businesses in the project area while providing standby and supplemental water for the neighboring areas of Oldtown and the City of Newport. Since the area in which the proposed project is to be constructed is already within the incorporated area of the City of Oldtown, and there are virtually no forest land or rangeland within the incorporated area, there will not be any adverse effects on existing forest land or rangeland.

The public recreational land is located southerly of, and adjacent to, the U.S. Highway 2 right-of-way (ROW) and adjacent to the Pend Oreille River. This area includes a boat launch and parking area. This area is classified by the Idaho State Fish and Wildlife Service as public land, and is the only formally public classified land in proximity of the project construction area.

As shown in Appendix H, areas enclosed by Diamond Mill Loop Road have been zoned as recreational areas. The proposed water line will cross the currently undeveloped park area. As the park area is undeveloped, the proposed project is not expected to have an impact on the park area. Replacement of the proposed water line may have a future impact on the park area, in the event that this area is developed into a park before the useful life of the water main has expired. The proposed project will not impact recreation and open space in areas north of U.S. Highway 2 and areas south and west of the Pend Oreille River.

The project is also not expected to impact any recreational or open space areas south and west of the Pend Oreille River.

Development of the park area is not a part of the proposed water system project due to financial limitations.

m. Precipitation, Temperature and Prevailing Winds

The Western Regional Climate Center lists the following climate information for the project area, from the Newport Station:

- Average Maximum Temperature: 85.2 °F (July)
- Average Minimum Temperature: 17.9 °F (Jan)
- Average Annual Total Precipitation: 25.96 inches
- Average Total Snowfall: 58.1 inches

The prevailing winds for the project area come from the southwest.

n. Air Quality and Noise

The Environmental Protection Agency (EPA) has outlined six criteria pollutants which include: ozone, lead, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Individual counties are monitored for each of these ambient air pollutants and when a county is found to be free of a specific pollutant, it is referred to as "attainment" for that pollutant. Based on information provided by the EPA for Bonner County, Kootenai County and the City of Spokane, it appears that the project area is located in an attainment county for ozone, particulate matter, carbon monoxide, and nitrogen dioxide. The EPA also indicates that Idaho has no areas of non-attainment for the air quality pollutants lead and sulfur dioxide. Of the primary pollutants listed by the EPA, large particulate matter will be the primary air pollutant discharged during the proposed project construction. Particulate Matter approximately 10 micrometers in size, or PM_{10}, includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air that are by sources such as construction activity, fires and natural windblown dust. PM_{10} contributions due to the proposed project would generally be the result of equipment operation during the construction process and would generally be limited to dust. Techniques to minimize PM_{10} particles would be employed during construction activities. Mitigation measures that may be taken include wetting of the construction area and avoidance of extended periods of idling construction equipment. With these mitigation techniques, any construction related impacts to air quality are not expected to be significant.

o. Energy Production and Consumption

Replacement of the existing and future individual water system well pumps within the Albeni area with two high efficiency submersible well pumps is expected to reduce power consumption within the Albeni area. However, the addition of the two high efficiency wastewater pumps will increase the power consumption within the Albeni area. The proposed project will provide the most efficient use of power to operate the pumps in the Albeni area at current and projected development. The proposed water and sewer systems will be managed by the WBWSD, and water conservation measures will include the use of source water meters at the proposed pumphouse site and individual water meters at the residences and businesses within the Albeni area.

p. Socioeconomic Profile of the Affected Community

According to the U.S. Census Bureau, the estimated median household income in 2010 for Bonner County was $41,943 and the residents of the City of Oldtown and WBWSD have a median annual household income of $30,417 which is well below the average median annual household income for any county in the State of Idaho. As a result, the WBWSD intends to create minimal financial impact to the current WBWSD customers as a result of this project.

The proposed project will indirectly facilitate light industrial and commercial business establishment and the construction of new homes within multiple income brackets. For these reasons, the proposed project is anticipated to provide an overall improvement of the socio-economic status in the Albeni area.

3. Existing Water Facilities

1. Existing Drinking Water Sources

Currently, the WBWSD obtains its drinking water from springs located southeast of the City of Oldtown. The existing concrete water storage tank is located adjacent to the springs. Figure A.1 shows the location of the existing WBWSD water supply springs and the existing storage tank.

2. Existing Drinking Water Storage and Distribution

The WBWSD owns and operates a 275,000 gallon concrete water storage tank. The tank is approximately 30 years old, and has suffered severe cracking due to poor quality concrete used in the tank wall construction. Leaks within the existing concrete water storage tank and the existing water transmission line have contributed to the combined City of Newport/WBWSD water system running dangerously low on water during peak demand periods. The existing water supply main extends approximately 9000' between the existing springs and the City of Oldtown. The transmission line is cement asbestos and was installed in the late 1940's. The WBWSD has experienced several failures in this line that have required a complete shutdown of the line. Sanitary Surveys conducted by Idaho DEQ since 1998 have recommended the continued maintenance on an existing crack within the concrete tank wall and has recommended replacing the existing transmission line. Currently the water system is in compliance with the Idaho Rules for Public Drinking Water Systems. The sanitary surveys are attached in Appendix J.

3. Existing Drinking Water Treatment Facilities

The WBWSD does not currently own any water treatment facilities.

4. Existing Water System Use Records

The historical water system usage for the customers of the WBWSD can be found in Table B.1 below.

TABLE B.1 – HISTORICAL WATER USAGE FOR WBWSD			
Year	Residential Water Used (gal)	Residential Water Connections (ERU)	Average Daily Demand (gpd/eru)
2008	19,718,732	227	238
2007	18,101,110	227	218
2006	13,444,240	227	162
2005	15,745,436	222	194

5. Cross-connection Control Program

The WBWSD adopted ordinance 2001-1 as their cross-connection control program. The ordinance adopted the IDEQ regulations applicable to cross-connection control. The ordinance can be found in Appendix O.

6. Sanitary Surveys

   The WBWSD has received several sanitary surveys on their water system since 1998. The surveys indicate that the water system is being operated in compliance with the Idaho Rules for Public Drinking Water Systems. Copies of the sanitary surveys can be found in Appendix J.

4. Water System Test Results

The WBWSD currently utilizes fresh water springs located southeast of the City of Oldtown to provide the users within the boundaries of the WBWSD and the City of Newport with drinking water. The water collected from the springs contains very little contaminants and the only treatment required is chlorination. Water quality tests conducted on the water have been included in Appendix I.

5. Water System Hydraulic Analysis

The existing WBWSD water distribution system capacity was analyzed as part of the City of Newport 2009 Update to the City Water System and Sanitary Sewer System Capacity Analysis Report by James A. Sewell and Associates, LLC. The report indicated that the existing combined WBWSD and City of Newport water supply and storage facilities are barely sufficient to supply the required amounts of water to the system during times of peak usage.

6. Drinking Water Violations

The water obtained from the WBWSD springs contains very little contaminants. The WBWSD also has on staff a certified water operator and a certified back up operator to maintain and repair the system when necessary. The WBWSD has adopted the IDEQ regulations pertaining to cross-connection control and the WBWSD maintains minimum separations between potable and non-potable water lines. Therefore, the WBWSD has not had any violations in regards to their water system.

7. Drinking Water Budget

The WBWSD will adopt the current water service rate schedule, which is shown below, on June 16, 2012.

Table B.2 – West Bonner Water and Sewer – Water Rate Schedule

Water Usage (gallons per month)	Rate (per month)
0 – 12,000	$ 24.00
12,001 – 15,000	$ 2.50/1000 gal + $ 24.00
15,001 – 25,000	$ 3.00/1000 gal + $ 31.50
25,001 – 50,000	$ 3.50/1000 gal + $ 61.50
50,001 – 150,000	$ 3.75/1000 gal + $ 149.00
Over 150,000	$ 4.00/1000 gal + $ 524.00

The WBWSD currently includes 238 residential users and 22 commercial users. The total revenue generated from water and sewer user fees between October 2008 and September 2009 was $165,167. The total revenue for the WBWSD during the same period was $183,871, which includes connection fees, sales and property tax, sludge hauling fees, etc. Expenses associated with operation, maintenance, repairs and administration from October 2008 through September 2009 totaled $237,610.

Currently both the City of Oldtown and the WBWSD have no formal capital improvement programs, no existing debt, and no required reserve accounts. A detailed accounting of the WBWSD budget and expenses between the years 2006-2009 is included in Appendix G of this report.

8. Pressure Deficiencies

Currently the WBWSD is able to supply water to all of its users at a minimum pressure of 40 psi. The vast majority of the WBWSD can be supplied water at 40 psi using the gravity distribution system. There is one area on the south end of the WBWSD that requires the use of a booster pump station to supply water at 40 psi to approximately 12 users.

9. Existing Sewer Facilities

1. Existing Sewer Collection System

The WBWSD owns and operates the gravity sewer collection system within the City of Oldtown. The existing collection system is located exclusively on the west side of the river and consists of gravity sewer mains of various types and sizes connected at alignment and/or grade changes by concrete manholes. There is no public sewer collection facilities located on the east side of the river. The wastewater generated by the residents of the City of Oldtown generally flows from the southern end of the City to the northern end of the City where it enters the City of Newport wastewater treatment plant for treatment and disposal.

2. Existing Wastewater Treatment System

The WBWSD currently owns 30% of the capacity of the City of Newport wastewater treatment plant. The WWTP consists of a headworks/screening facility, primary clarification, secondary treatment with disinfection as well as solids processing and dewatering. The WWTP is designed for an average flow of 500,000 gallons per day. The current average flows received at the WWTP are shown in Table B.3.

3. Existing Sewer Flows Received at WWTP

The following table illustrates the flows generated by the users of the WBWSD existing sewer collection system. Flows are recorded by a flow meter located upstream of the manhole where the existing City of Newport sewer main and the existing WBWSD sewer main meet.

TABLE B.3 – HISTORIC WASTEWATER FLOWS FOR WBWSD

Year	Wastewater Flows (gpd)	Total Sewer Connections (ERU)	Average Daily Flow (gpd/ERU)
2008	48,000	286	168
2007	52,000	286	182
2006	49,000	286	171
2005	40,000*	281	142

*Estimated flow due to incomplete meter data for a portion of 2005

4. Sewer Operation and Maintenance Records

Generally the WBWSD's gravity sewer collection system is maintenance free. Typical duties for the system operators include inspecting the sewer mains for leaks or blockages, inspecting manholes for damage, connecting residential services to the mainlines. Currently, the operators are not required to keep records of the routine maintenance performed on the sewer collection system.

10. Wastewater Treatment Plant Effluent Test Results

The City of Newport owns and operates the wastewater treatment plant that treats the residential wastewater from the residents of the City of Newport and the WBWSD. The WBWSD owns 30% of the capacity of the WWTP. The City of Newport WWTP is able to treat and dispose of the wastewater from the City of Newport and the WBWSD with no violations of the NPDES permit.

11. Sewer Hydraulic Analysis

The wastewater flow data shown in Table B.3 was obtained from the City of Newport 2009 Update to the City Water and System and Sanitary Sewer System Capacity Analysis Report prepared by James A. Sewell and Associates, LLC. The table shows the amount of wastewater generated from a typical residential connection within the WBWSD.

The gravity sewer lines from the proposed interconnection at manhole #9 located at the intersection of Montana Street and Second Street downstream to the diversion manhole located upstream of the WWTP have been analyzed to determine if the pipe's size and slope are adequate to accommodate both the existing flows and the flows from the project. The pipe capacities were determined using Manning's Equation with a Manning's N of 0.013. It was also assumed that the pipes were flowing full. The number of existing ERUs were determined using a plat map and aerial photographs of the City of Oldtown. The number of buildout ERUs were also determined using a plat map and aerial photographs of the City of Oldtown. The existing and future peak flows were calculated from the existing ERU assuming a peaking factor of 4 and 200 gpd/ERU. The number of ERUs for the 20 year projection were calculated using the existing number of ERUs and assuming a growth rate of 2% and using the simple interest formula. The City of Newport has 87 obligated lots within it's service area. It was assumed that all 87 lots had been developed for the 20 year projection and the buildout calculations. Table B.4 indicates that none of the pipes between manhole #9 and the diversion manhole will require upgrading to accommodate the flows from the existing WBWSD ERUs for the 20 year projection. However, Table B.5 shows the majority of the pipes between manhole #9 and the diversion manhole will require upgrading to accommodate the buildout flows from the existing WBWSD and the buildout within the Albeni area.

TABLE B.4 – EXISTING SEWER LINE HYDRAULIC ANALYSIS – 20 YEAR PROJECTION								
MANHOLE	PIPE DIAMETER (INCH)	LINE CAPACITY (GPM)	CURRENT PEAK FLOW FROM WEST SIDE OF RIVER (GPM)	TOTAL ANTICIPATED PEAK FLOW FROM 20 YEAR PROJECTION WEST SIDE OF RIVER (GPM)	ANTICIPATED FLOW FROM ALBENI AREA 15 HP PUMPSTATION AT 20 YEAR PROJECTION (GPM)	TOTAL ANTICIPATED 20 YEAR PEAK FLOW (GPM)	RESERVE CAPACITY (GPM)	SEWER LINE UPGRADE REQUIRED (Y/N)
Diversion MH - WA								
MH-1 - WA	18	1820.50	877	996	140	1136	684.94	NO
MH-2 - WA	18	1902.53	877	996	140	1136	766.97	NO
MH-3 - WA	18	1966.58	877	996	140	1136	831.02	NO
MH-1	12	623.10	174	244	140	384	238.88	NO
MH-2	12	464.53	141	197	140	337	127.76	NO
MH-2A	12	1157.33	132	185	140	325	832.22	NO
MH-2B	12	487.08	132	185	140	325	161.97	NO
MH-2C	12	891.54	132	185	140	325	566.43	NO
MH-METER	12	497.04	132	185	140	325	171.93	NO
MH-3	12	667.56	132	185	140	325	342.45	NO
MH-4	12	666.46	132	185	140	325	341.35	NO
MH-5	12	2365.01	127	178	140	318	2,046.90	NO
MH-6	10	368.32	116	162	140	302	66.55	NO
MH-7	10	435.09	111	156	140	296	139.54	NO
MH-8	10	501.27	111	156	140	296	205.72	NO
MH-9	10	443.47	108	152	140	292	151.81	NO

TABLE B.5 – EXISTING SEWER LINE HYDRAULIC ANALYSIS – BUILDOUT CONDITION

MANHOLE	PIPE DIAMETER (INCH)	LINE CAPACITY (GPM)	CURRENT PEAK FLOW FROM WEST SIDE OF RIVER (GPM)	TOTAL ANTICIPATED PEAK FLOW FROM BUILDOUT WEST SIDE OF RIVER (GPM)	ANTICIPATED BUILDOUT FLOW FROM ALBENI AREA 40 HP PUMPSTATION (GPM)	TOTAL ANTICIPATED BUILDOUT PEAK FLOW (GPM)	RESERVE CAPACITY (GPM)	SEWER LINE UPGRADE REQUIRED (Y/N)
Diversion MH - WA								
MH-1 - WA	18	1820.50	877	1205	507	1712	108.50	NO
MH-2 - WA	18	1902.53	877	1205	507	1712	190.53	NO
MH-3 - WA	18	1966.58	877	1205	507	1712	254.58	NO
MH-1	12	623.10	174	454	507	961	-337.79	YES
MH-2	12	464.53	141	420	507	927	-462.47	YES
MH-2A	12	1157.33	132	412	507	912	238.66	NO
MH-2B	12	487.08	132	412	507	912	-431.59	YES
MH-2C	12	891.54	132	412	507	912	-27.13	YES
MH-METER	12	497.04	132	412	507	912	-421.63	YES
MH-3	12	667.56	132	412	507	912	-251.10	YES
MH-4	12	666.46	132	412	507	912	-252.21	YES
MH-5	12	2365.01	127	400	507	907	1458.01	NO
MH-6	10	368.32	116	356	507	863	-494.79	YES
MH-7	10	435.09	111	352	507	859	-423.57	YES
MH-8	10	501.27	111	323	507	830	-329.06	YES
MH-9	10	443.47	108	318	507	825	-381.30	YES

12. WWTP NPDES Violations

The City of Newport owns and operates the WWTP that treats and disposes of the wastewater generated by the residents of the City of Newport and the WBWSD. The City of Newport has not violated the conditions of the WWTP NPDES permit.

13. Existing Sewer Budget

The WBWSD will adopt the following sewer rate schedule on June 16, 2012. The sewer rates are based on an equivalent user (EU). An EU is based on a water usage of 12,000 gallons per month.

Table B.6 – West Bonner Water and Sewer – Sewer Rate Schedule

Type of User	Rate (per month)
Residential	$ 27.00
Trailer Parks	$ 27.00 / trailer
Commercial	$ 54.00 + $ 27.00 / 12,000 gallons of water usage above 24,000 gallons.

The WBWSD currently includes 238 residential users and 22 commercial users. The total revenue generated from water and sewer user fees between October 2008 and September 2009 was $165,167. The total revenue for the WBWSD during the same period was $183,871, which includes connection fees, sales and property tax, sludge hauling fees, etc. Expenses associated with operation, maintenance, repairs and administration from October 2008 through September 2009 totaled $237,610.

Currently both the City of Oldtown and the WBWSD have no formal capital improvement programs, no existing debt, and no required reserve accounts. A detailed accounting of the WBWSD budget and expenses between the years 2006-2009 is included in Appendix G of this report.

14. Existing Collection System Deficiencies

The existing WBWSD gravity sewer collection can currently transport all of the wastewater generated by the existing residents in the WBWSD to the WWTP with no deficiencies.

C. FUTURE CONDITIONS

1. Growth Areas and Population Trends

Development within the project area has historically been under the jurisdiction of Bonner County. The County's development regulations typically set the guidelines for maximum lot densities assuming individual on-site sewer disposal, individual wells for water supply, and limited fire protection. Densities in excess of those recommended by the County had been unattainable in the past because each lot did not have access to public water and sewer service. With the installation of municipal water and sewer, the population density can now be increased consistent with the City's development regulations.

The growth of the WBWSD is limited by the Washington/Idaho border to the west and the Pend Oreille River to the north and east. To the south the topography rises sharply. Any development to the south would require a separate water system pressure tier. The addition of the proposed water and sewer utilities across the river would correct the potential groundwater contamination issues associated with failing individual sewer systems and then further provide a community collection system which will effectively allow growth.

To better understand realized population growth within the project area, the following table presents a summary of the populations listed for Oldtown, Priest River, Newport and Bonner County as presented by the U.S. Census Bureau.

Table C.1 - Population Per US Census Bureau

	2008	2000	1990	Growth Rate
Oldtown, Id	207	190	151	1.75%
Priest River, Id	1,913	1,754	1,560	1.15%
Bonner County, Id	41,168	36,835	26,622	2.45%
Newport, WA	2,126	1,921	1,691	1.28%
Average				1.66%

From the above table the population growth realized by the nearby towns and cities has been less than 2%. Extension of water and sewer to the project area will eliminate several development constraints that have restricted growth in the past. Those limitations include issues associated with on-site sewage disposal, fire protection and development of individual wells for water supply.

Planning for future growth within the project area will assume a growth rate of 4%, which is in excess of the historical average. A higher growth rate is selected to accommodate the development opportunities realized by public water service, sewer service and fire protection. In addition, this portion of the WBWSD includes areas that could be developed as recreational properties. Those areas are expected to develop quicker than non-recreational lots.

A review of the project area zoning was completed in order to determine the total number of equivalent residential units that might be served when the project reaches complete buildout. The current Oldtown City Zoning map of the project area has been included as Figure A.3.

Table C.2 – Projected Project Buildout In Residential Equivalents

Land Use	Area Within Project (acre)	Available Area for Development (80%) – (acre)	Equivalent Residential Units (ERU/Acre)	TOTAL ERUs at Buildout
Commercial	112	89	4	356
Public Recreation	8		0	0
Single Family Residential	148	118	2.5	295
Multi Family Residential	55	44	5	220
Light Industrial	51	41	1	41
Total	**374**	**292**		**912**

An assessment of the future buildout of the project area reveals that a total of 912 equivalent residential units will likely be served within the project area. Understanding that buildout will most likely occur over several decades, and not within the next 20 years, the project intends to accommodate a 20 year growth projection with planning for the long term buildout condition. Table C.3 is a list of the existing development within the project area and the estimated ERU count associated with each commercial facility.

Table C.3 – Existing Development Within Project Area	
Service Type/Facility	Estimated ERUs
Residential Houses – 14 ea	14
Rotary Park / Boat Launch	1
Albeni Falls Building Supply	5
Mary's Farm and Feed	1
3-Dog Night	2
Riversong Landscape	1
Jerry's Auto Clinic	2
Johnson Equipment Company	1
Selkirk Supply	3
Cornerstone Supply	4
Pend Oreille Vet Clinic	3
Tri-Pro Cedar Mill	41
TOTAL	**78**

Considering these 78 existing ERUs and a growth rate of 4%, the projected population to be serviced in 20 years would be 171 ERUs.

2. Forecast of Water and Sewer Demand

WATER

Water Demand

The following water use data was used to define the average daily demand (ADD) and maximum day demand (MDD) for the water system:

The average ADD for the years 2005 through 2008 was found to be 203 gpd/eru. For the purpose of designing the water supply, storage, and distribution systems an ADD of 250 gpd/ERU was used. According to the City of Newport 2009 Update to the City Water System and Sanitary Sewer System Capacity Analysis Report by James A. Sewell & Associates, LLC, the peaking factor realized from the average day use to the maximum day use was found to be approximately 3. It is assumed that the same peaking factor can be used to determine the MDD for the WBWSD, = 3 x 250 gpd/ERU = 750 gpd/ERU. Using the MDD, the peak hourly demand for the WBWSD can be determined using the equation obtained from the Washington State Department of Health's (DOH) water system design manual. The calculation is listed below:

PHD = (MDD/1440)[C x N +F] + 18

Where:
MDD = Maximum Daily demand (gpd/ERU)
C = Coefficient associated with ranges of ERUs = 1.6
N = Number of ERUs in system
F = Factor associated with ranges of ERUs = 225

For project buildout condition of 912 ERUs:
PHD = (750/1440) x [1.6 x 912+225] + 18 = 895 gpm

For 20 year growth of 171 ERUs
PHD = (750/1440) x [1.6 x 171 + 225] + 18 = 277 gpm

Source

The water source must be capable of supplying enough water to refill the fire suppression storage (FSS) within 72 hours while meeting the system maximum daily demand from the system users. The required FSS volume is 2,500 gpm for 2 hours or 300,000 gallons. Replenishment of the FSS in 72 hours will require 69 gpm continuously. The proposed wells will be connected to the 12" PVC mainlines extending from the proposed water storage reservoir.

The total source capacity required for the 20 year future condition is 69 gpm to replenish the fire suppression storage plus 750 gpd (171 eru) or 89 gpm to meet MDD for a total of 158 gpm. For the buildout condition, the total source capacity needs to be 69 gpm (FSS replenish) plus 750 gpd (912 ERU) or 475 gpm for a total of 544 gpm.

Distribution System

The distribution system must be capable of supplying the fire flow for the project, 2,500 gpm for 2 hours, and simultaneously supplying the maximum daily demand (MDD) while not allowing the system pressure to drop below 20 psi during fire flow conditions. For the 20 year growth of 171 ERUs the MDD is expected to be 89 gpm and for the project buildout of 912 ERUs the MDD is expected to be 475 gpm. During non-fire flow conditions, the distribution system must also be capable of supplying the peak hourly demand (PHD) while not allowing the system pressure to drop below 40 psi. For the 20 year growth of 171 ERUs the PHD is expected to be 277 gpm and the for the project buildout of 912 ERUs the PHD is expected to be 895 gpm. The maximum pressure allowed in the distribution system is 100 psi. In this case, the required fire flow of 2,500 gpm requires the use of 12" diameter mainlines for even and adequate distribution. In order to prevent against pipe damage due to freezing, the top of the waterlines will be located a minimum of 5 feet below finish grade. All horizontal and vertical separation requirements between water and sewer lines as outlined by the Idaho Department of Environmental Quality will be observed. Fire hydrants are to be installed as indicated on the construction drawings. The proposed 12", 10", and 8" PVC mains are sized to provide the indicated system fire flows simultaneous with system maximum daily demand without dropping the pressure within the system below 20 psi. The WBWSD map in Appendix A shows the location of the water facilities proposed.

<u>Storage</u>

Listed below are the hydraulic calculations used to determine the total volume of the proposed storage tank:

<u>Equalization Storage</u>

ES = (PHD-Qs)(150 min) but in no case less than zero

Where:

ES = Equalizing storage component, in gallons
PHD = Peak hourly demand, in gpm, as determined in chapter 5 of the Manual (for this report we determined the PHD using historical data from the WBWSD)
Qs = Sum of all installed and active supply sources capacities except emergency supply, in gpm.

The equalization storage for the project buildout condition of 912 ERUs is calculated as follows:
ES = (895 gpm – 1000 gpm)(150 min) = -15,750 gallons

ES = 0 gallons

The equalization storage for the 20 year growth condition of 171 ERUs is calculated as follows:
ES = (277 gpm – 1000 gpm)(150 min) = -108,450 gallons

ES = 0 gallons

<u>Standby Storage</u>

It is proposed to install two 12" wells to supply water to the project. It is anticipated that each well will be capable of producing 500 gpm, for a total production of 1000 gpm when both wells are operating. According to the Manual, standby storage for water systems using multiple sources is determined using the following equation:

SB_{tms} = (2 days) [(ADD)(N) – tm(Q_s – Q_l)
Where:
SB_{tms} = Total standby storage component for a multiple source water system; in gallons
ADD = Average day demand for design year in gpd/ERU (for this report we determined the ADD using historical data from the WBWSD)
N = Number of ERUs
Q_s = Sum of all installed and continuously available supply source capacities, except emergency sources, in gpm
Q_l = The largest capacity source available to the water system, in gpm
Tm = Time the remaining sources are pumped on the day when the largest source is not available, in minutes. Unless restricted otherwise, assume 1,440 minutes.

The standby storage for the project buildout condition of 912 ERUs is calculated as follows:
SB = (2 days) [(250 gpd/ERU)(912) – 1,440 min (1,000 gpm – 500 gpm)
= -984,000 gallons

The standby storage for the 20 year growth condition of 171 ERUs is calculated as follows:
SB = (2 days) [(250 gpd/ERU)(171) – 1,440 min (1,000 gpm – 500 gpm)
= -1,354,500 gallons

The minimum recommendation for standby storage is not less than 200 gallons/ERU. In this case the ADD of 250 gpd/ERU was used.

The standby storage for the project buildout condition is calculated as follows:
SB = (250 gallons/ERU)(912) = 228,000 gallons

The standby storage for the 20 year growth condition is calculated as follows:
SB = (250 gallons/ERU)(171) = 42,750 gallons

<u>Fire Suppression Storage</u>

Fire flows were determined based on the type of construction of the largest un-sprinklered existing building that will be served by the proposed water system, Albeni Falls Building Supply. This building is approximately 32,400 square feet and according to the International Building Code, is Type IB construction. The International Fire Code (2006) states that fire flows for Type IB construction for a building between 30,201-38,700 square feet shall be 2,000 gpm for 2 hours. According to the local fire chief, the water distribution system is to be designed based on a fire flow

of 2,500 gpm for 2 hours. According to the Manual, fire suppression storage is determined using the following equation:
FSS = FF(tm)

Where:

FSS = Fire suppression storage volume, expressed in gallons
FF = Required fire flow rate, expressed in gpm, as specified by fire protection authority
Tm = Duration of fire flow rate, expressed in minutes, as specified by fire protection authority

FSS= (2,500 gpm)(120 min) = 300,000 gallons

Dead Storage

According to the Manual, dead storage is the volume of water not available to all users of the system at the required pressures. The only anticipated dead storage in the tank will result from a 6" tall silt ring around the drain in the bottom of the 60' diameter tank. The dead storage was calculated as follows:

DS = (At)(Hs)/(0.1336)

Where:

At = cross sectional area of the tank in square feet
Hs = height of the silt ring in feet

DS = (2,827 sf)(0.5')/0.1336 = 10,582 gallons

Operational Storage

Operational storage is the volume of water stored between the source pump on elevation and the source pump off elevation. For the design of this water system an operating range of 4' was used to minimize the start-stop cycles of the well pumps. The operational storage was calculated as follows

OS = (At)(OR)

Where:

At = cross sectional area of the tank in square feet
OR = operating range in feet
OS = (2,827 sf)(4') = 84,654 gallons

Water systems can exclude the standby storage or the fire suppression storage, which ever is smaller, from a water system's total storage requirement unless such practice is prohibited by: (1) a locally developed and adopted coordinated water system plan, (2) local ordinance, (3) the local fire protection authority or county fire marshal. In this case, the standby storage can be nested within the FSS in the final tank volume calculation.
The final storage tank volume is calculated as follows:

The total storage tank volume required for the project buildout condition of 912 ERUs is calculated as follows:
Total Volume = ES + SB + FSS + DS + OS
= 0 gal + 0 gal + 300,000 gal + 10,582 gal + 84,654 gal
= 395,236 gallons

The total storage tank volume required for the 20 year growth condition of 171 ERUs is calculated as follows:
Total Volume = ES + SB + FSS + DS + OS
= 0 gal + 0 gal + 300,000 gal + 10,582 gal + 84,654 gal
= 395,236 gallons

Although 395,236 gallons of storage are required, a 500,000 gallon storage tank is being proposed as the well production has not yet been proven. In the event that the wells are temporarily inoperable the standby storage volume in the tank is large enough to provide the ADD to the system for a period of approximately two days.

TABLE C.4 – WATER SYSTEM DESIGN CRITERIA		
Component	20 year – 171 ERU	Buildout – 912 ERU
Source	2 Each at 500 gpm	2 Each at 500 gpm
Distribution	12" Distribution Lines	12" Distribution Lines
Storage	395,236	395,236

SEWER

For the 20 year projection, the proposed project will add approximately 171 ERUs at 200 gpd/ERU or 34,200 gpd. At buildout, a total of 912 ERUs producing 200 gpd/ERU will add approximately 182,400 gpd. The WBWSD will reach their capacity at the City of Newport wastewater treatment plant when they add a total of 505 ERUs at 200 gpd to the system. This will bring the total flow generated by the WBWSD to roughly 150,000 gpd. When the wastewater treatment plant reaches approximately 85% of its capacity, or 425,000 gpd, the City of Newport and the WBWSD will be required to prepare and implement a plan for expansion.

The maximum distance between manholes on the gravity collection system is 350 feet. All horizontal and vertical separation requirements between water and sewer lines as outlined by the Idaho Department of Environmental Quality will be observed. The minimum slopes for gravity sewer lines as recommended by the Recommended Standards for Wastewater Facilities – 2004 Edition are listed in the following table:

The average daily flow for the years 2006 through 2008 is 174 gpd/ERU. For the purpose of designing the sewer collection piping and pumpstation and average daily flow of 200 gpd/ERU was used.

TABLE C.5 – GRAVITY SEWER LINE CAPACITY			
Pipe Size	Minimum Slope (ft/ft)	Flow Capacity (gpm)	ERU Capacity at 200 GPD/Connection and Peaking Factor of 4
8 Inch	0.004	297	535
10 Inch	0.0028	451	812
12 Inch	0.0022	650	1,171
15 Inch	0.0015	1125	2,026

The main wastewater pumpstation within the project will be designed to pump the amount of wastewater generated by the estimated buildout connections multiplied by a peaking factor of 4. For the 20 year buildout of 171 ERUs the minimum capacity of each pump will be 95 gpm. For the total project buildout of 912 ERUs, the minimum capacity of each pump will be 507 gpm. The pumpstation must also be able to produce a minimum flow velocity of 2 ft/s within the pressure sewer line. For a 4" line 2 ft/s equates to approximately 65 gpm, and for a 6" line 2 ft/s equates to approximately 140 gpm. Table C.6 below lists the minimum operating parameters of each pump

TABLE C.6 – PUMP STATION DESIGN CRITERIA					
ERU	Pipe Diameter (in)	Minimum Flow Based on ERU (gpm)	Minimum Flow Based on Scour Velocity (gpm)	Controlling Minimum Flow (gpm)	Total Dynamic Head (feet)
171	4	95	65	95	94
171	6	95	140	140	78
912	4	507	65	507	465
912	6	507	140	507	150

The wetwell size and operating levels in the wet well will be determined to allow a maximum of 6 starts per hour per pump.

3. Treatment Facilities

No drinking water or wastewater treatment facilities are required for the project. The water provided by the proposed well is anticipated to be free of contaminants and to require only chlorination. The wastewater generated by the future residents will be sent to the existing City of Newport WWTP for treatment and disposal.

4. Future Conditions Without the Project

Without the proposed project no capital improvements or expansion of the existing water and sewer systems to the newly annexed areas will be undertaken. Without centralized water distribution systems and sewer collection systems in the Albeni area, residences and businesses will be forced to depend upon existing on-site water and sewer systems for their potable water supply and wastewater disposal. Due to fine textured soils and high groundwater, permits for new on-site sewer systems may be difficult to obtain and will be required to be quite large and expensive to install. Without the proposed water and sewer utilities the WBWSD will risk contamination to groundwater through failing on-site sewage systems, and risk water shortages during periods of peak demand. The interconnected WBWSD water system and the City of Newport water system currently have no reserve water supply capacity. With no capital improvements performed to the existing system, the WBWSD and the City of Newport will continue to run short of water during peak usage periods. A new water supply is required to provide water to the Albeni area, to provide reserve capacity for the existing water systems, and to provide reliability to the existing interconnected water systems.

5. Land Use Plans

The lands served by existing and future water and sewer facilities by the WBWSD are primarily zoned residential and commercial. Those sites within the boundaries of the WBWSD that have not been developed will eventually be developed with residential or commercial buildings as appropriate according to the City of Oldtown zoning and building ordinances.

6. Proposed Water System Analysis

The proposed water system was analyzed using Bentley's WaterCad program Version 8i. The system map and results can be found in Appendix K. The results indicate that the proposed distribution system can supply fire suppression flows and supply the maximum day demand to the entire project at a minimum pressure of 20 psi. The results also indicate that the proposed distribution system can supply the peak hourly demand to the entire project at a minimum pressure of 40 psi.

D. DEVELOPMENT AND INITIAL SCREENING OF ALTERNATIVES

1. Water Distribution System

The existing water distribution system within the boundary of the WBWSD is located exclusively on the west side of the Pend Oreille River and is incapable of delivering water to the proposed project site. The installation of the proposed distribution system with the project will allow water to be distributed to the residences and businesses.

It is proposed to install a water distribution system to serve the WBWSD area east of the Pend Oreille River. The size of the water distribution mainlines are based on achieving a required fire flow at 20 psi. For this project it is assumed that there will be multi-family structures constructed. The exact location of these structures is not known at this time; therefore the system was analyzed to provide fire flow throughout the water distribution system assuming that 2,500 gallons per minute would be required everywhere in the system. This will allow a sprinklered multifamily structure to be constructed anywhere within the project. In order to achieve the 2,500 gallons per minute, 12" trunk lines are required through out the project. These 12" trunk lines will supply water to the smaller water mains that transport water to the residences and businesses, with the minimum water main diameter being 8". The option of using smaller trunk lines was also analyzed but the smaller lines did not produce the required fire flow throughout the project.

Water Distribution Alternative #1 – No Action

A No Action alternative would mean no connectivity between the proposed wells, water storage tank, and existing water system, which is unacceptable for this project. For this reason the No Action alternative is not the recommended preferred alternative and is not included in the alternatives cost analysis.

Water Distribution Alternative #2 – Routing of Water Line Through Rotary Parking Area

This alternative involves the installation of approximately 1,070 feet of 12" PVC water main around the western section of Diamond Mill Loop Road. The proposed water main will extend from the proposed northwest water system bore location northerly and westerly along Diamond Mill Loop

Road to the intersection of Diamond Mill Loop Road and U.S. Highway 2 where it will connect to the proposed 12" water line extending from the water storage tank to the proposed well site.

The proposed water line construction would take place within the Diamond Loop Road right-of-way and paved parking areas adjacent to the existing Rotary Park Visitor Center Building. As the construction would remain within existing right-of-way, environmental impacts are negligible.

This alternative requires excavation in areas that are paved and requires a longer length of water main be placed when compared to the recommended preferred alternative. Due to the additional expense associated with this alternative, this alternative not recommended as the preferred alternative.

Water Distribution Alternative #3 – Routing of Water Line Through Vacant Land South of Rotary Building

This alternative involves the installation of a 12" PVC waterline northerly across property owned by the City of Oldtown. The proposed water main will extend approximately 626' from a point approximately 112' southwest of the proposed northwest water system bore location northerly and westerly along the western edge of a privately owned lot and across an existing utility easement to the proposed water main located within Diamond Mill Loop Road.

The proposed water line construction would take place within an existing vacant area. The land is zoned as a park by the City of Oldtown, but has not been developed. This alternative would cause minor and temporary impacts on local plants; however the impact is not expected to be significant.

Since this alternative has only temporary environmental impacts and has the lowest anticipated costs associated with water main installation, this alternative is recommended as the preferred alternative.

Water Storage

A new water storage reservoir is proposed to serve the users on the east side of the river. A new water storage tank is required to store water for use during times of unusually high water usage, fire suppression, and for use during power outages. The water storage tank will be located on a hill to the north of the proposed project. In order to achieve the elevation needed to provide the required flows, an above ground tank is required. The proposed storage tank overflow will be located at the same elevation as the overflow on the existing WBWSD storage tank.

There are typically three types of above ground water reservoirs that could be used in this situation. An above ground concrete tank would consist of a circular tank constructed of steel reinforced cast in place concrete with a steel reinforced lid that is either cast in place or pre-cast. The second is an above ground steel tank which would be circular in shape and consist of welded steel plates. The last is an above ground steel tank that consists of bolted together steel plates. The WBWSD currently utilizes an above ground concrete tank and they are not pleased with the performance. The tank is cracked and leaks badly. A welded steel tank is constructed of heavy gauge steel and all seams are welded to produce a water tight structure. A bolted steel tank uses thinner gauge steel and all seams are bolted together to make a water tight structure. Generally a bolted steel tank is less expensive to construct than a welded steel tank, but due to the thinner gauge metal used, may not last as long as a welded tank.

The proposed water storage tank is sized based on the requirements listed in the Washington State Department of Health's Water System Design Manual. This Manual takes into account volumes for equalization storage (ES), standby storage (SB), fire suppression storage (FSS), dead storage (DS), and operational storage (OS) to calculate an appropriate volume for a water storage tank. We have included the hydraulic calculations in section C.2 of this report. The total storage volume required for the storage tank is 395,236 gallons. Although 395,236 gallons of storage are required, a 500,000 gallon storage tank is being proposed due to the uncertainty in the proposed well production.

<u>Alternative #1 – No Action</u>

Established Fire Codes and Idaho DEQ design guidelines mandate that proposed centralized water systems have the capacity to provide fire suppression flow while meeting the future maximum daily demands within the design period. Addressing fire flow prevention without the use of a water storage tank would require the proposed wells and well pumps produce large volumes of water on demand, and that standby power be provided. The fire flows required for the proposed water system would require installation of larger or more wells and water system pressurization equipment. The no action water storage alternative is impractical and far too costly for the reasons indicated above, and is therefore not the recommended preferred alternative. Since this alternative is impractical and expensive it has not been included in the cost comparison analysis.

Alternative #2 – Upgrade Existing Tri-Pro Water Storage Tank

The Tri-Pro Cedar Mill previously used an elevated steel tank to store drinking and process water for the mill. This tank is privately owned, has not been in service for over 10 years, and is not located at the correct elevation to allow convenient connection to the existing water system on the west side of the river. The tank also would need to be upgraded to meet current standards and thoroughly rehabilitated. This existing water storage tank has a capacity of 100,000 gallons, which is not adequate to provide the required fire flow and standby storage. It is calculated that an additional 400,000 gallon storage tank would have to be constructed to meet the necessary storage requirements. The costs associated with rehabilitating the existing tank, constructing a new 400,000 gallon tank, and installing the necessary control equipment such as an altitude valve, would make this alternative highly impractical.

This alternative would require removal of the existing coating on the existing tank. Experience with similar tanks of this age and type indicate that the existing coating may contain lead. Lead paint is very difficult to safely remove and dispose of creating a significant environmental risk. Because an additional 400,000 gallon water tank would have to be constructed, presumably at the same location as the proposed 500,000 gallon water storage tank, additional environmental impacts would be similar to the preferred alternative.

The environmental complications and costs associated with renovating and rehabilitating the existing water tank combined with the cost of construction of an additional water storage tank make using the existing tank a significant environmental risk as well as highly impractical. For these reasons, this alternative is not recommended as the preferred alternative and is not included in the alternatives cost analysis.

Alternative #3 – Above Ground Concrete Tank

An above-ground concrete water storage tank would be constructed of steel reinforced cast-in-place concrete or precast concrete, and would be located north of U.S. Highway 2, at the water tank site indicated in the construction drawings. The WBWSD currently operates an above ground concrete storage tank and is not satisfied with its performance. The concrete walls are cracked and leaking badly, as indicated in the Sanitary Surveys. The WBWSD will not consider using a concrete storage tank because of past poor performance of their existing tank.

This alternative would require an access road to the proposed tank site be constructed and the tank site cleared and grubbed all as documented in the preferred alternative. The environmental impacts of clearing the area for the proposed tank and access road construction are discussed in the Environmental Information Document prepared by James A. Sewell & Associates, LLC and submitted to and approved by the IDEQ.

Due to their experience with the existing water system concrete tank, the WBWSD has refused to accept this alternative. For this reason constructing an above ground concrete storage tank is not the recommended preferred alternative.

Alternative #4 – Above Ground Bolted Steel Tank

An above ground bolted steel water storage tank would be constructed of steel plates bolted together supported on a cast-in-place concrete foundation, and would be located at the water tank site indicated in the construction drawings. Several local municipalities have had problems with their bolted steel tanks. Ice forming inside the water tanks can shear or pull out steel bolts connecting the steel plates, overflow assembly, and interior column support brackets. Bolted steel water tanks generally cannot be welded to repair leaks due to their thin metal walls and specialized coating systems. Although initial costs can be less expensive, bolted steel tanks are constructed with thinner/lighter steel plates as compared to a welded steel tank, which results in a potentially shorter design life for this type of tank.

This alternative would require the construction of an access road to the proposed tank site and clearing and grubbing of the tank site and access road as documented in the preferred alternative. The environmental impacts of the clearing of area for the proposed tank and access road construction are discussed in the Environmental Information Document prepared by James A. Sewell & Associates, LLC and submitted to and approved by the IDEQ.

Due to the maintenance problems realized by other municipalities, the unpredictable future costs, and the shorter design life when compared to the welded steel tank, construction of a bolted steel tank is not the recommended preferred alternative.

Alternative #5 – Above Ground Welded Steel Tank

An above ground welded steel water storage tank would be constructed of steel plates welded together and supported on a cast-in-place concrete foundation. The tank would be located at the water tank site indicated in the construction drawings. The above ground welded steel water tank is expected to have a minimum 100-year useful life but will require recoating on a 20-25 year interval.

This alternative is not expected to have significant environmental impacts. In each water tank alternative discussed above, the proposed tank site will be cleared and grubbed for facilities installation. This alternative would require the construction of an access road to the proposed tank site and clearing and grubbing the tank site and access road. The environmental impacts of the clearing and grubbing for the proposed tank and access road construction are discussed in the Environmental Information Document prepared by James A. Sewell & Associates, LLC and submitted to and approved by the IDEQ.

The welded steel water tank is expected to have a significantly longer design life compared to a bolted steel tank. Because the welded steel tank is constructed of thicker steel, fewer maintenance issues are expected resulting in a lower overall life cycle cost when compared to the bolted steel tank alternative. For these reasons a 500,000 gallon welded steel water tank is the preferred alternative for water storage.

Water Source

A new water source is proposed to supply drinking and fire suppression water to the Albeni area. A new water source developed to serve the Albeni area would also serve as a reserve water supply to the existing WBWSD and City of Newport water systems. The WBWSD and the City of Newport would benefit from another water source as the current sources can barely meet demand during times of peak usage.

<u>Alternative #1 – No Action</u>
The No Action water supply alternative consists of taking no action to construct or locate a water supply for the proposed Albeni area water system.

Without the development of a large singular water source the Albeni area will be required to rely on individual water well creating a greater potential for public health hazard. As continued growth takes place within the Albeni area, additional individual water and sewer systems will continue to increase the potential for contamination of individual water supplies. The high density of individual on-site sewer systems has a negative impact on the local aquifer in the form of increasingly higher concentration of contaminants, including nitrates and harmful Coliform bacteria.

Due to the increasing potential for public health hazard, this alternative does not meet the water system reliability criteria established by the City of Oldtown. Consequently, the No Action Alternative is not recommended as the preferred alternative and is not included in the alternatives cost analysis.

Alternative #2 – Install Individual Drinking Water Wells

This alternative proposes that no municipal system be installed in the Albeni area. Residences and businesses would be required to provide their own individual water source in accordance with local and State regulations as growth takes place. Due to the density of existing lots and the density allowed by current zoning regulations, maintaining the required sanitary setbacks from new wells to existing and proposed septic systems would not be possible without increasing the size of the existing and proposed lots. The existing lot density in the currently developed areas makes this alternative impractical.

This alternative would create a greater potential for a public health hazard. As continued growth takes place within the Albeni area, additional individual water and sewer systems will increase the potential for contamination of individual water supplies through increased nitrates and harmful Coliform bacteria within the underlying aquifer. The density of individual on-site sewer systems has a negative impact on the local aquifer in the form of increasingly higher concentration of contaminants, including nitrates and harmful Coliform bacteria.

This alternative would also create potential conflicts between groundwater well cones of influence. Water wells placed too close together reduce the groundwater level within their interacting cone of influence. When the groundwater level is reduced too much, the affected water wells are required to be drilled deeper after initial installation and the existing well pump to be placed at a lower depth. These potential conflicts make the increased use of individual water wells a less viable alternative.

Due to the potential negative environmental impacts and high estimated cost of this alternative, installing individual wells is not the preferred alternative.

Alternative #3 – Upgrade the Existing Old Mill Main Well

The old mill main well is located in the southern portion of the Albeni area adjacent to the existing Tri-Pro water tank. The well produces approximately 500 gpm of good quality water. According to mill personnel the well is no longer connected to the mill water system and is used to supply water to a single residential building. This well is privately owned and would need to be upgraded to meet Idaho DEQ standards for drinking water wells, which would include replacement of the well casing. Replacement of the well casing would require drilling a new well and abandoning the existing well, which makes this alternative more expensive than drilling a new WBWSD owned well, and consequently financially non-viable. Due to the increased costs associated with purchase and rehabilitation of this well, upgrading the old mill main well is not the preferred alternative and is not included in the alternatives cost analysis.

Alternative #4 – Draw Water from the Pend Oreille River

The Albeni area is located on the east bank of the Pend Oreille River. In order to use the river as a drinking water source, a supply line and pump would have to be installed on the river bottom. The water drawn from the River would require extensive treatment to meet current surface water treatment standards. As shown in the water source alternative cost comparison in Appendix F, the high cost of this alternative when compared with the proposed preferred alternative would make using the river as a drinking water source financially impractical.

This alternative would require placing a water intake line along the bottom of the Pend Oreille River. As the Pend Oreille River has been designated as critical habitat for the bulltrout in the project area, disturbing the river bottom with a water supply line could be detrimental to the local bulltrout populations and would directly affect their habitat.

The section of the river bordering the Albeni area is approximately 5 feet to 11 feet deep at the summer water level conditions, which could leave the supply line vulnerable to damage by boats and debris.

The water filtration and treatment process would create waste sludge requiring disposal in an environmental manner. Disposal of waste sludge increases the cost of this alternative and increases the potential for negative environmental impacts from this alternative.

Due to the potential negative environmental impacts, the high initial construction cost, and the high operational cost of a water treatment facility, drawing water from the river is not recommended as the preferred alternative.

Alternative #5 - Pipe Water across the Pend Oreille River from the Existing Water System

The existing WBWSD water system is located on the southwesterly side of the Pend Oreille River on the opposite side of the river from the Albeni area. Currently, the WBWSD and the City of Newport obtain drinking water from springs located southeasterly of the City of Oldtown. The City of Newport also owns and operates several wells located within the City of Newport. The springs historically produce roughly 400 GPM. Their production directly relates to the normal water cycle. In late summer, the production begins to decrease when peak demand is realized. The snow pack and amount of precipitation received throughout the year effect the spring production. In late summer the spring water supply is not sufficient to serve both the WBWSD and the City of Newport's needs during the high demand summer months. During times of continued high demand, the City of Newport augments the supply of water by activating their series of groundwater wells. The WBWSD and the City of Newport have been imposing irrigation rationing during the past several years. There is little current reserve capacity beyond the maximum daily use during the summer period.

This alternative would require the construction of a high capacity water source and a transmission line to connect the source to the existing system. A new source would provide reserve water supply capacity as well as supply water to the Albeni area. Past hydro-geologic investigation indicates that the most promising location for high producing groundwater wells in the area is the Albeni area (within the WBWSD boundaries), or an area located south of Newport (which is outside of the Newport City Limits). The availability of water in areas south of the City of Newport has not been ascertained. Areas within the City of Newport and the WBWSD on the southwesterly side of the Pend Oreille River do not contain high producing groundwater well potential, as evidenced by existing well construction and past hydrogeologic investigations. The potential well site located southerly of the City of Newport would be a great distance from the nearest water system waterline; thus installation of the water transmission line would require the disturbance of a large area. As a result, this alternative would increase the environmental impacts associated with construction of the water transmission line when compared to the preferred alternative. The preferred alternative places the proposed well site much closer to the proposed system, which results in minimal environmental impact.

Due to the negative environmental impacts of this alternative, the uncertainty of the availability of adequate groundwater supply, and the expense of additional transmission lines from possible outlying wells to the existing system, piping water from the existing WBWSD water system is not recommended as the preferred alternative and is not included in the alternatives cost analysis.

<u>Alternative #6 – Install New Wells in the Albeni Area</u>

This alternative includes the installation of two 12 inch diameter groundwater wells within the project area, at the locations indicated on the drawings. The wells would provide domestic water supply for the proposed water improvement project. Based on available well driller's reports for existing Albeni area wells, it is expected that each well will be capable of producing approximately 500 GPM. The proposed water wells and pumphouse site is currently owned by the Tri-Pro Mill. The WBWSD and Tri-Pro Mill have agreed that when project funding is available, the Mill will transfer the ownership of the proposed well site property to the WBWSD.

The existing Tri-Pro Mill 12" diameter main well is located near the proposed water well location and is approximately 125' deep. This well was tested at the time of installation for 4 hours and produced 500 GPM with very little drawdown. The Tri-Pro Mill main well has been in use many years and has consistently produced the water supply necessary for mill operations and has consistently passed water quality tests for a public water system. Based on this information, coupled with the decommissioning of the majority of the existing individual water wells in the Albeni area, it is anticipated that the proposed 12" diameter wells will be capable of equal production without adversely affecting the quantity or quality of the existing aquifer. Using two large wells versus numerous smaller wells located throughout the Albeni area will provide less potential for public health hazard. Therefore, this alternative is more environmentally attractive and entails less environmental impact than other alternatives considered.

As indicated in the following alternatives cost analysis, this alternative is expected to be the most economical with the least potential for negative environmental impacts. Therefore this is the recommended alternative.

2. Sewer Collection System

Alternative #1 – No Action

Currently within the project boundary there are only individual wastewater collection and treatment systems, there are no community wastewater collection systems. The No Action alternative would allow the existing and future residents in the Albeni area to construct and use their own collection, treatment, and disposal systems. Due to the restrictive soil conditions, restrictive ground water conditions, and required set backs to wells, many of the lots will not be able to construct wastewater facilities. A means to collect the wastewater generated by the residents of the Albeni area and transport it to a treatment and disposal plant is required for this project, therefore, the No Action Alternative is not the preferred option.

Alternative #2 – Community Gravity Collection System with Lift Station

The second alternative reviewed consisted of installing a community wide gravity sewer collection system. A gravity wastewater collection system would consist of 10", 12", 15" and 18" diameter sewer mainlines. Branching out from these mainlines would be smaller 8" diameter laterals. The residences and businesses will be connected to the mainlines and laterals with 4" or 6" diameter PVC sewer service lines. The wastewater generated by the residences and businesses will flow downslope through the service lines into the laterals and mainlines. From the mainlines, the wastewater will flow to a main pump station that will pump the wastewater across the river where it will proceed to the existing wastewater treatment facility for treatment and final disposal.

The proposed sewer line construction would take place within existing easements throughout the project site. This alternative would cause minor and temporary impacts on local plants; however the impact is not expected to be significant.

Since this alternative has only temporary environmental impacts, has the lowest anticipated costs associated with sewer collection system installation, and has the least amount of maintenance for the WBWSD, this alternative is recommended as the preferred alternative.

Alternative #3 – Community Pressure Collection System

The third alternative reviewed consisted of installing a community wide pressure sewer collection system. A pressure wastewater collection system would consist of collection mains and laterals sized to allow a minimum head loss for the wastewater pumps while also maintaining a minimum flow velocity of 2 feet/second. A flow velocity of 2 feet/second is desired to scour any solids or bacteriological growth off the inner pipe walls. The pressure mains may be constructed of high density polyethylene or schedule 40 PVC. The wastewater generated by the residences and business within the project will be directed via gravity sewer lines to individual grinder pumpstations. These pumpstations are equipped with grinders that grind all the solids in the wastewater into a slurry and pump the slurry to its final destination. The grinder pumps will be connected to the mainlines and laterals with 1"-2" diameter pipes depending on the grinder pumps used. Sewage collected in the collection system would be pumped across the river into the existing collection system where it would flow to the wastewater treatment plant.

The proposed sewer line construction would take place within existing easements throughout the project site. This alternative would cause minor and temporary impacts on local plants; however the impact is not expected to be significant.

Although this alternative has only temporary environmental impacts it has the higher anticipated costs associated with sewer collection system installation, and requires more maintenance by the WBWSD, this alternative is not recommended as the preferred alternative.

Alternative #4 – Upgrade Existing Collection System

The third alternative reviewed consisted of upgrading the existing sewer collection system. Currently there is no sewer collection system within the project boundaries. All existing residences and businesses dispose of their wastewater through individual on-site sewer systems; therefore this alternative is not recommended as the preferred alternative and is not included in the alternatives cost analysis.

Sewer Treatment

Alternative #1 – No Action

Currently within the project boundary there are only individual wastewater treatment systems, there are no community wastewater treatment systems. The No Action alternative would allow the existing and future residents in the Albeni area to construct and use their own treatment and disposal systems. Due to the restrictive soil conditions, restrictive ground water conditions, and required set backs to wells, many of the lots will not be able to construct wastewater facilities. A means to treat and dispose the wastewater generated by the residents of the Albeni area is required for this project, therefore, the No Action Alternative is not the preferred alternative.

Alternative #2 – Install Individual On-Site Sewer Systems

The first alternative reviewed consisted of installing individual on-site sewer systems. Individual on-site sewer systems would consist of a septic tank connected to the residence or business with a 4" PVC service line. The septic tank will provide primary treatment to the wastewater. The septic tank effluent would be directed to a drainfield by either gravity or pressure lines. Once in the drainfield the effluent would be allowed to percolate through the soils. Due to the lot density within the project, the fine texture of site soils, proximity to wetlands, and the possibility of high ground water it will be impractical to install individual sewer systems to each residence or business. Appropriate sanitary setbacks will be impossible to achieve.

This alternative has the highest potential to cause the most harm to the environment. On-site sewer systems (OSS) constructed in the tight soils located within the project area have failed within a few years of being put into service. Failure of an OSS is indicated by sewage surfacing in the area of the OSS or sewage backing up into the residence. Failure of an OSS presents the opportunity for sewage to be washed into surface waters causing an increase in nutrients, negatively impacting aquatic life.

Due to the restrictive site conditions and the high potential for environmental contamination, installing individual on-site sewer systems is not the preferred alternative and is not included in the alternatives cost analysis.

Alternative #3 – Construct New Community Treatment System

The second alternative reviewed consists of installing a community mechanical wastewater treatment system. A community wastewater treatment system would most reasonably consist of an activated sludge treatment facility. In general, wastewater would be treated in four individual steps. Step one would involve removing inorganic wastes via a screening system. The second step would be the biological breakdown of the organic portion of the wastewater. This is accomplished in an aerated reactor basin. The third step is separation of the solids from the treated effluent through clarification or membrane technology. The fourth step is disinfecting the treated wastewater prior to final disposal. Final disposal would consist of either sub-surface disposal of the treated effluent or discharging the treated effluent to the Pend Oreille River. As stated in the individual on-site sewer systems analysis, the site soils are not suitable for sub-surface disposal. In order to discharge effluent to the river a National Pollutant Discharge Elimination System permit will be required. These permits are extremely difficult and time-consuming to obtain.

The construction of a community treatment system would permanently impact the environment within the footprint of the system with the addition of treatment, laboratory, and storage structures. The system would also produce treated effluent and sludge that would have to be disposed of in accordance with IDEQ regulations. As stated above, permits for disposal of effluent and sludge are extremely difficult to obtain.

Due to the high cost of constructing a new community treatment system and the potential environmental impacts, this alternative is not the preferred alternative.

Alternative #4 – Transport Wastewater to City of Newport WWTP

The third alternative reviewed consisted of transporting the wastewater across the river to the existing City of Newport wastewater treatment plant. Transporting the wastewater to the existing City of Newport Wastewater Treatment Plant (WWTP) would consist of directing all the wastewater from the project to a pumpstation capable of pumping the wastewater across the river and into the existing gravity collection system in the City of Oldtown. Once discharged to the existing gravity collection system, the wastewater would flow to the existing City of Newport WWTP. The WBWSD currently owns 30% of the capacity of the City of Newport Wastewater Treatment Plant. This equates to approximately 150,000 gallons per day. WBWSD is currently contributing approximately 49,000 gallons per day to the Newport WWTP and therefore has a reserve capacity of approximately 101,000 gallons per day or an approximate additional 505 ERUs.

The proposed lift station will permanently impact the environment with the construction of the wetwell, valve vault, and control building; however the overall foot print of the facilities will be relatively small. The wet well will be sized to allow the operators ample time to respond to any issues with the pumpstation before raw sewage overflows the wet well. The wet well will also be constructed water tight and will be tested to ensure there are no leaks in the wet well and associated piping. The existing City of Newport WWTP has an outstanding treatment record with no violations of their NPDES permit providing minimal environmental impact with the disposal of the treated effluent and sludge.

Because the WBWSD already owns 30% of the capacity of the existing City of Newport WWTP and this alternative provides the least opportunities for environmental contamination, this alternative is the preferred alternative.

Water/Sewer River Crossing

Alternative #1- No Action

Installing water and sewer mains across the Pend Oreille River is necessary to complete an interconnection of the proposed Albeni water system with the existing WBWSD/City of Newport joint water system in order to provide a standby water supply and a supplemental water supply to the existing water system. The crossing is also needed to transport the wastewater generated by the residents and businesses of the Albeni area to the existing City of Newport WWTP. The No Action alternative for the proposed water and sewer system river crossing would result in the removal of the proposed interconnection and thus elimination of a standby and supplemental water supply for the existing water system which is a secondary incentive for this project. The no action alternative would also require the residents and businesses of the Albeni area to continue to rely on their poorly performing on-site sewer systems. For these reasons the No Action alternative is not the recommended preferred alternative and is not included in the alternatives cost analysis.

Alternative #2- Mount Water and Sewer Lines to Highway 2 Bridge

This alternative consists of crossing the Pend Oreille River via the US 2 Bridge. The Idaho Transportation Department currently owns the 4 lane bridge spanning the Pend Oreille River. Pipelines could be attached to the underside of the bridge deck to transport wastewater and drinking water from the proposed project to the existing WBWSD water and sewer lines. Idaho Department of Transportation was contacted about the possibility of using the bridge as a pipeline support structure and they indicated that they would not allow any pipelines to be attached to the bridge, as the bridge was not designed for these additional loads.

<u>Alternative #3- Lay Pipelines on River Bottom</u>

This alternative would require that the water main be anchored on the bed of the Pend Oreille River. The advantage to laying a water line on the River bottom is that less specialized equipment is required for installation, making the installation simpler. However, several items make this alternative impractical:

1. The pipeline would cross the river approximately 1.5 miles downstream of Albeni Falls Dam. This section of the river is flowing quickly and due to the shallow depth, damage from debris or a shifting riverbed is a concern.
2. In order to lay a pipeline on the riverbed, a streambed alteration permit would need to be obtained from the Idaho Department of Water Resources and the Army Corps of Engineers.
3. The Pend Oreille River has been designated as critical habitat for bulltrout in the area that the water main would be placed on the river bed. Permitting requirements would consequently be excessive. The anticipated high cost associated with safely excavating debris at the water main location and excavating the river bank on each side of the river, and the associated permit requirements, including a Biological Assessment, make this alternative highly impractical.

This alternative could potentially affect the Pend Oreille River bed in the following ways:

1. The Pend Oreille River has been designated as critical habitat for bull trout in the area that the water main would be placed on the river bed. Impacts to the bull trout could be significant due to excavation of debris at the water main location and excavating the river bank on each side of the river. Required maintenance to the water line after initial construction also creates potential impacts to the bull trout.
2. The river bed at the water main location will have to be excavated in order to remove any deposited debris, and to minimize any localized high or low points within the river bed. The installation will require pipe anchors to prevent movement due to the buoyancy of the pipe and the river current. These requirements will have a negative impact on the overall river water quality.
3. Continual changes in the river bed topography due to sedimentation or scouring caused by spring runoff currents create a potential for damage to the pipeline, which would require

maintenance for repairs. On-going maintenance requirements create a negative impact on the river water quality.

A stream bed alteration permit and a biological assessment will be required for this alternative as the project would be directly impacting critical habitat. Both the permit process and biological assessment are costly and time consuming, and the permit requirements would be excessive. The potential impacts to critical habitat make this alternative impractical.

Due to the inherent potential for damage to the water line, excessive permitting requirements, expected high costs associated with environmentally acceptable excavation and water main installation, and the high potential for environmental impacts to an endangered species within a critical habitat, this alternative is not the recommended preferred alternative.

<u>Alternative #4 – Trenching Across River</u>

This alternative would require that a trench within the river bed be excavated to an average depth of approximately 6 ft, the pipeline would then be installed within the trench and backfilled. This will allow the pipeline to be installed in a manner that will prevent flotation and prevent damage from boats, barges or debris within the river. The river depth in this section, during low water conditions, ranges from 7' to 11'. Excavating a trench 11' below the water surface of a moving river would be extremely difficult. In order to perform this alternative, a streambed alteration permit would need to be obtained from the Idaho Department of Water Resources, the Army Corps of Engineers, and the Idaho Department of Lands. The construction process would require the installation of silt fence upstream and downstream of the pipeline trench to avoid sediment and silt migration beyond the limits of excavation.

The primary advantages to laying the pipe in a trench on the River bottom include:

1. Burying the pipe in the river bed will eliminate the need for pipe anchors.
2. The water main will not be susceptible to potential damage from boats or debris.

The primary disadvantages of this alternative are a very high construction cost to complete this construction due to the significant silt fencing requirements, and that it represents an extremely challenging environmental process in order to be successfully completed.

During the construction process, sediments and silts will be suspended within the water at the location of the pipeline excavation. It is also possible that silt and sediments could move beyond the silt fence, which would additionally impact areas declared to be critical bulltrout habitat by the USFWS. Additionally, the pipeline trenches could cause a reshaping of the river bed in the area near the pipeline route. The potential for significant negative environmental impacts is great. Environmentally safe construction of this alternative would be extremely challenging and costly, which makes this alternative highly impractical.

Due to the high costs associated with trench excavation and water main installation, the high potential for significant negative environmental impacts, and potential for river bed alterations, this alternative is not recommended as the preferred alternative.

Alternative #5 – Directionally Drill Pipe Under River

This alternative proposes the installation of a 12" HDPE 200 psi water main under the Pend Oreille River using horizontal directional boring. This alternative also proposes the installation of a 12" HDPE 200 psi casing pipe and a 6" HDPE 200 psi sewer line. The bore holes would be located at depths varying from 20 feet to 30 feet below the river bed, and would extend to points lying approximately 100 ft beyond the banks of the river at normal summer pool. This alternative would require no excavation within the river, and this alternative is expected to have no environmental impact on the river. The HDPE pipes will provide a means to transport drinking water and wastewater from the proposed water distribution and sewer collection system to the existing City of Oldtown water distribution and sewer collection system. While the costs for this alternative are quite high, the environmental impacts are nearly non-existent, making this alternative a highly practical alternative.

The proposed 12" boring for the pipes crossing at the Pend Oreille River will have sufficient depth to ensure no disturbance or vibration at the river channel while allowing the proposed pipes to be embedded within native soil. This alternative will cause the least environmental impact to the critical habitat of bull trout, while allowing for the interconnection of the proposed water and sewer system with the existing water and sewer system on the south side of the Pend Oreille River.

Since this alternative does not impact critical bulltrout habitat and has the lowest anticipated costs associated with pipe installation across the Pend Oreille River, this alternative is recommended as the preferred alternative.

E. FINAL SCREENING OF ALTERNATIVES

1. Evaluation of Costs

1. Operation and Maintenance Costs

The WBWSD is required to have on staff two certified water and sewer operators. The WBWSD also has on staff one clerk to perform all the clerical duties for the WBWSD.

Operation and Maintenance cost for the following alternatives were evaluated:

1. Water Distribution
   - Route water line through Rotary parking area
   - Route water line through vacant land south of Rotary building
2. Water Storage
   - Above ground concrete tank
   - Above ground bolted steel tank
   - Above ground welded steel tank
3. Water Source
   - Draw water from the Pend Oreille River
   - Install new wells in the Albeni area
4. Sewer Collection
   - Community gravity collection system
   - Community pressure collection system
5. Sewer Treatment
   - Construct new community treatment system
   - Transport wastewater to City of Newport WWTP via lift station
6. River Crossing
   - Lay pipelines on river bottom
   - Lay pipelines in trench on river bottom
   - Directionally drill pipes under Pend Oreille River

The capital costs of each of the options in conjunction with the life cycle operation and maintenance costs comprise the economic comparison of the options.

Discounting is used when future costs are to be incurred. Discounting is applied to make these future costs comparable to current costs to appropriately compare the initial capital costs with recurring operational costs. Since about 1975 inflation adjusted average wages have been about flat (Bureau of Labor Statistics), so although nominal wages have increased, real wages have not. Since most of the operation components involve labor, we will use a lower discount of 2% to not underestimate the impact of recurring operational costs over the next 20 years. This also is close to the yield on a 10 year Treasury.

The estimated annual operation and maintenance costs are listed below.

- **Water Distribution – Route Waterline Through Rotary Parking Area**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – 0
  Testing – 0
  Administration – 0
  Total of $300

- **Water Distribution – Route Waterline Through Vacant Area**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – 0
  Testing – 0
  Administration – 0
  Total of $300

- **Water Storage – Above Ground Concrete Tank**
  Labor – $300
  Supplies – $1,000
  Utilities – 0
  Repair and Maintenance – $1,000
  Testing – 0
  Administration – 0
  Inspection Every 10 Years – $5,000 or $500 per year
  Total of $2,800

- **Water Storage – Above Ground Bolted Steel Tank**
  Labor – $300
  Supplies – $1,000
  Utilities – 0
  Repair and Maintenance – $1,000
  Testing - 0
  Administration – 0
  Inspection Every 10 Years - $5,000 or $500 per year
  Total of $2,800

- **Water Storage – Above Ground Welded Steel Tank**
  Labor – $300
  Supplies – $1,000
  Utilities – 0
  Repair and Maintenance – $1,000
  Testing - 0
  Administration – 0
  Inspection Every 10 Years - $5,000 or $500 per year
  Total of $2,800

- **Water Source – Draw Water from the Pend Oreille River**
  Labor – $40,000
  Supplies – $5,000
  Utilities – $10,000
  Repair and Maintenance – $10,000
  Testing - $5,000
  Administration – $5,000
  Total of $75,000

- **Water Source – Install New Wells in Albeni Area**
  Labor – $500
  Supplies – $2,000
  Utilities – $2,000
  Repair and Maintenance – $1,000
  Testing - $2,000
  Administration – $1,000
  Total of $8,500

- **Sewer Collection – Community Gravity Collection System**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – $1,000
  Testing - 0
  Administration – 0
  Total of $1,300

- **Sewer Collection – Community Pressure Collection System**
  Labor – $600
  Supplies – $5,000
  Utilities – 0
  Repair and Maintenance – $1,000
  Testing - 0
  Administration – 0
  Total of $6,600

- **Sewer Treatment – Construct New Community Treatment System**
  Labor – $40,000
  Supplies – $5,000
  Utilities – $10,000
  Repair and Maintenance – $10,000
  Testing - $5,000
  Administration – $5,000
  Total of $75,000

- **Sewer Treatment – Transport Wastewater to City of Newport WWTP Via Lift Station**
  Labor – $300
  Supplies – $1,000
  Utilities – $3,500
  Repair and Maintenance – $1,000
  Testing - 0
  Administration – 0
  Total of $5,800

- **River Crossing – Lay Pipelines on River Bottom**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – $5,000
  Testing - $1,000
  Administration – 0
  Inspection Every Year - $5,000
  Total of $11,300

- **River Crossing – Lay Pipelines in Trench on River Bottom**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – $5,000
  Testing - $1,000
  Administration – 0
  Inspection Every 10 Years - $5,000 or $500 per year
  Total of $6,800

- **River Crossing – Directionally Drill Pipes Under Pend Oreille River**
  Labor – $300
  Supplies – 0
  Utilities – 0
  Repair and Maintenance – $0
  Testing - $1,000
  Administration – 0
  Total of $1,300

2. Present Worth Analysis

Table E.1 - Water Distribution 20 Year Life Span at 2% Discount Rate		
Description	Installation of Entire Distribution System with Routing of Water Line Through Rotary Parking Area	Adjusted Present Value
Initial Capital Cost	$608,672	$608,672
Annual O&M Cost	$300	$4,905
Total		**$613,577**

Table E.2 - Water Distribution 20 Year Life Span at 2% Discount Rate		
Description	Installation of Entire Distribution System with Routing of Water Line Through Vacant Land South of Rotary Building	Adjusted Present Value
Initial Capital Cost	$583,700	$583,700
Annual O&M Cost	$300	$4,905
Total		**$588,605**

Table E.3 – Water Storage 100 Year Life Span at 2% Discount Rate		
Description	Above Ground Concrete Tank	Adjusted Present Value
Initial Capital Cost	$654,875	$654,875
Annual O&M Cost	$2,800	$120,680
Replacement Cost	N/A	N/A
Replace Coating Every 20 years	N/A	N/A
Total		**$775,555**

Table E.4 – Water Storage 100 Year Life Span at 2% Discount Rate		
Description	Above Ground Bolted Steel Tank	Adjusted Present Value
Initial Capital Cost	$692,875	$692,875
Annual O&M Cost	$2,800	$120,680
Replacement Cost – Tank Only (replace at 50 years)	500,000 to replace in 50 years in today's dollars	$500,000
Replace Coating Every 20 years	N/A	N/A
Total		**$1,313,555**

Table E.5 – Water Storage 100 Year Life Span at 2% Discount Rate		
Description	Above Ground Welded Steel Tank	Adjusted Present Value
Initial Capital Cost	$792,875	$792,875
Annual O&M Cost	$2,800	$120,680
Replacement Cost	0	0
Replace Coating Every 20 years	60,000 every 20 years in today's dollars	$240,000
Total		**$1,153,555**

Table E.6 – Water Source 20 Year Life Span at 2% Discount Rate		
Description	Draw Water from the Pend Oreille River	Adjusted Present Value
Initial Capital Cost	$10,800,000	$10,800,000
Annual O&M Cost	$75,000	$1,226,250
Total		**$12,026,250**

Table E.7 – Water Source 20 Year Life Span at 2% Discount Rate		
Description	Install New Wells in the Albeni Area	Adjusted Present Value
Initial Capital Cost	$411,800	$411,800
Annual O&M Cost	$8500	$138,975
Total		**$550,775**

Table E.8 – Sewer Collection 20 Year Life Span at 2% Discount Rate		
Description	Community Gravity Collection System	Adjusted Present Value
Initial Capital Cost	$416,730	$416,730
Annual O&M Cost	$1,300	$21,255
Total		**$437,985**

Table E.9 – Sewer Collection 20 Year Life Span at 2% Discount Rate		
Description	Community Pressure Collection System	Adjusted Present Value
Initial Capital Cost	$1,937,250	$1,937,250
Annual O&M Cost	$6,600	$107,910
Total		**$2,045,160**

Table E.10 – Sewer Treatment 20 Year Life Span at 2% Discount Rate		
Description	Construct New Community Treatment System	Adjusted Present Value
Initial Capital Cost	$3,420,000	$3,420,000
Annual O&M Cost	$75,000	$1,226,250
Total		**$4,646,250**

Table E.11 – Sewer Treatment 20 Year Life Span at 2% Discount Rate		
Description	Transport Wastewater to City of Newport WWTP Via Lift Station	Adjusted Present Value
Initial Capital Cost	$402,802	$402,802
Annual O&M Cost	$5,800	$94,830
Total		**$497,632**

Table E.12 – River Crossing 20 Year Life Span at 2% Discount Rate		
Description	Lay Pipelines on River Bottom	Adjusted Present Value
Initial Capital Cost	$1,749,150	$1,749,150
Annual O&M Cost	$11,300	$184,755
Total		**$1,933,905**

Table E.13 – River Crossing 20 Year Life Span at 2% Discount Rate		
Description	Lay Pipelines in Trench on River Bottom	Adjusted Present Value
Initial Capital Cost	$3,172,750	$3,172,750
Annual O&M Cost	$6,800	$111,180
Total		**$3,283,930**

Table E.14 – River Crossing 20 Year Life Span at 2% Discount Rate		
Description	Directionally Drill Pipes Under Pend Oreille River	Adjusted Present Value
Initial Capital Cost	$1,069,250	$1,069,250
Annual O&M Cost	$1,300	$21,255
Total		**$1,290,200**

We have also included a discount rate of 5% to demonstrate that the annual costs are not as heavily weighted in benefit/cost analyses when a higher discount rate is used. EPA currently uses a discount rate of about 5% to evaluate recurring costs in the evaluation of wastewater treatment plant alternatives. This is normally done when there are a multitude of cost items that cannot be easily quantified.

Table E.15 - Water Distribution 20 Year Life Span at 5% Discount Rate		
Description	Installation of Entire Distribution System with Routing of Water Line Through Rotary Parking Area	Adjusted Present Value
Initial Capital Cost	$774,722	$774,722
Annual O&M Cost	$300	$3,732
Total		**$778,454**

Table E.16 - Water Distribution 20 Year Life Span at 5% Discount Rate		
Description	Installation of Entire Distribution System with Routing of Water Line Through Vacant Land South of Rotary Building	Adjusted Present Value
Initial Capital Cost	$749,750	$749,750
Annual O&M Cost	$300	$3,732
Total		**$753,482**

Table E.17 – Water Storage 100 Year Life Span at 5% Discount Rate		
Description	Above Ground Concrete Tank	Adjusted Present Value
Initial Capital Cost	$654,875	$654,875
Annual O&M Cost	$2,800	$55,552
Replacement Cost	N/A	N/A
Replace Coating Every 20 years	N/A	N/A
Total		**$710,427**

Table E.18 – Water Storage 100 Year Life Span at 5% Discount Rate		
Description	Above Ground Bolted Steel Tank	Adjusted Present Value
Initial Capital Cost	$692,875	$692,875
Annual O&M Cost	$2,800	$55,552
Replacement Cost (replace at 50 years)	$500,000 to replace in 50 years in today's dollars	$500,000
Replace Coating Every 20 years	N/A	N/A
Total		**$1,248,427**

Table E.19 – Water Storage 100 Year Life Span at 5% Discount Rate		
Description	Above Ground Welded Steel Tank	Adjusted Present Value
Initial Capital Cost	$792,875	$792,875
Annual O&M Cost	$2,800	$55,552
Replacement Cost	0	0
Replace Coating Every 20 years	$60,000 every 20 years in today's dollars	$240,000
Total		**$1,088,427**

Table E.20 – Water Source 20 Year Life Span at 5% Discount Rate		
Description	Draw Water from the Pend Oreille River	Adjusted Present Value
Initial Capital Cost	$10,800,000	$10,800,000
Annual O&M Cost	$75,000	$933,000
Total		**$11,733,000**

Table E.21 – Water Source 20 Year Life Span at 5% Discount Rate		
Description	Install New Wells in the Albeni Area	Adjusted Present Value
Initial Capital Cost	$411,800	$411,800
Annual O&M Cost	$8500	$105,740
Total		**$517,540**

Table E.22 – Sewer Collection 20 Year Life Span at 5% Discount Rate		
Description	Community Gravity Collection System	Adjusted Present Value
Initial Capital Cost	$416,730	$416,730
Annual O&M Cost	$1,300	$16,172
Total		**$432,902**

Table E.23 – Sewer Collection 20 Year Life Span at 5% Discount Rate		
Description	Community Pressure Collection System	Adjusted Present Value
Initial Capital Cost	$1,959,250	$1,959,250
Annual O&M Cost	$6,600	$82,104
Total		**$2,041,354**

Table E.24 – Sewer Treatment 20 Year Life Span at 5% Discount Rate		
Description	Construct New Community Treatment System	Adjusted Present Value
Initial Capital Cost	$3,420,000	$3,420,000
Annual O&M Cost	$75,000	$933,000
Total		**$4,353,000**

Table E.25 – Sewer Treatment 20 Year Life Span at 5% Discount Rate		
Description	Transport Wastewater to City of Newport WWTP Via Lift Station	Adjusted Present Value
Initial Capital Cost	$402,802	$402,802
Annual O&M Cost	$5,800	$72,152
Total		**$474,954**

Table E.26 – River Crossing 20 Year Life Span at 5% Discount Rate		
Description	Lay Pipelines on River Bottom	Adjusted Present Value
Initial Capital Cost	$1,749,150	$1,749,150
Annual O&M Cost	$11,300	$140,572
Total		**$1,889,722**

Table E.27 – River Crossing 20 Year Life Span at 5% Discount Rate		
Description	Lay Pipelines in Trench on River Bottom	Adjusted Present Value
Initial Capital Cost	$3,172,750	$3,172,750
Annual O&M Cost	$6,800	$84,592
Total		**$3,257,342**

Table E.28 – River Crossing 20 Year Life Span at 5% Discount Rate		
Description	Directionally Drill Pipes Under Pend Oreille River	Adjusted Present Value
Initial Capital Cost	$1,069,250	$1,069,250
Annual O&M Cost	$1,300	$16,172
Total		**$1,285,117**

According to the previous present worth tables the most cost effective alternatives are:

Collection System - Routing of Water Line Through Vacant Land South of Rotary Building

Water Storage - Above Ground Concrete Tank

Water Source - Install New Wells in the Albeni Area

Wastewater Collection - Community Gravity Collection System

Wastewater Treatment - Transport Wastewater to City of Newport WWTP Via Lift Station

River Crossing - Directionally Drill Pipes Under Pend Oreille River

3. Capital Costs and Financing Plan

Design

The WBWSD obtained a U.S. Army Corps of Engineers Section 595 grant in the amount of $234,000 to partially fund the design of the Phase I Water and Sewer Extension to the Albeni Falls Area. The Corps of Engineers grant was supplemented with $78,000 from the Oldtown Urban Renewal Agency (OURA) to fund the remainder of the design. The Oldtown Urban Renewal District includes the Albeni area, which was recently annexed into the City of Oldtown and the WBWSD, and was created in 2009 to provide tax incremental funding for the water and sewer improvements to the Albeni area.

Construction

The WBWSD has been approved for a loan through the State Revolving Loan program as promulgated by the Idaho Department of Environmental Quality (DEQ) in the amount of $2,420,000 and $997,511 for a total of $3,302,464, to fund Phase 1 water system construction, including mobilization, stormwater and erosion control, new water wells and pumphouse, welded steel water storage tank and tank access road, a water main crossing of the Pend Oreille River, and a water distribution system throughout the Phase 1 portion of the project. DEQ funding also includes the installation of water meters at the proposed water well pumphouse and at service connections within the Albeni area. Water meters and disinfection equipment have been included in the construction cost estimates below. Funding to be obtained from the DEQ SRL program will finance the majority of construction of the items indicated below on the Construction Cost Summary.

Table E.29 – DEQ IRL Water System Construction Cost Summary

Item	**Cost**
Transmission and Distribution System (Mobilization, Water System Construction, River Crossing, Construction Engineering)	$2,097,788.75
Treatment (Pumphouse Electrical and Piping)	$229,000.00
Storage (Welded Steel Water Tank)	$792,875.00
Source (New Water Wells and Water Line to Pumphouse)	$182,800.00
Total Estimated Construction Cost	**$3,302,463.75**

It is anticipated that the DEQ SRL funding will be sufficient to fund the entire Phase 1 water system improvements. The project will be bid as seven separate bid schedules, which will allow individual bid schedules to be awarded separately. Thus, individual schedules will be awarded up to the amount of funding secured at that time.

Additional Funding

The WBWSD is in the process of applying for additional funds in order to allow construction of the entire Phase 1 water and sewer system improvements. Other funding sources include:

- U.S. Army Corps of Engineers Section 595 Grant; construction grant in the amount of $284,000 for the proposed water system extension construction. The WBWSD is in the process of the securing this grant from the ACOE.
- State of Idaho Department of Commerce Block Grant; in the amount of $500,000, which will be used to re-construct the roads after the Phase 1 utility improvements are installed.
- The OURA would also be requested to fund any shortfall in Phase 1 water system construction.

DEQ SRL Repayment

The WBWSD passed a Water Revenue Bond in 2010 in the amount of $2,420,000. This bond issue provides the ability of the WBWSD to raise water rates to the WBWSD customers as necessary to provide funds to make the required payments on the DEQ State Revolving Loan. The WBWSD currently has a Reimbursement Agreement in place with the OURA that provides for all tax increment revenues to the OURA (other than those required for OURA administrative purposes) to be distributed (reimbursed) to the WBWSD to be used for making the required loan payments for the DEQ State Revolving Loan. A copy of this Agreement is included in Appendix M.

The WBWSD also has a Revenue Bond Payment Guaranty Agreement with the West Bonner Investment Company, LLC that guarantees to fund that portion of the WBWSD debt service obligation for the DEQ SRL repayment that is not covered by the OURA tax increment reimbursement. A copy of the Revenue Bond Payment Guaranty Agreement is included in Appendix N.

The combination of the preceding DEQ SRL repayment funding mechanisms guarantees the loan repayment, while minimizing the financial impact on existing WBWSD water customers. The residents of the City of Oldtown and WBWSD have one of the lowest median annual household income levels in the State of Idaho, and it is desired to create minimal financial impact to the current WBWSD customers as a result of this project.

4. Operations and Maintenance Costs

The estimated Operation and Maintenance costs associated with the existing facilities and the proposed project are attached in Appendix G. Historical revenue data provided by the WBWSD was used to estimate the revenue to be generated by the customers within the Albeni area, operating in conjunction with the existing water system customers the first year. The attached estimate for the projected water system revenue does not include overage charges for water usage. In order for the WBWSD to generate positive revenues when compared with the increased operation and maintenance expenses, it is estimated that the WBWSD will have to raise the monthly water user rates to $24 per month per ERU. It is also estimated that the WBWSD will have to raise the monthly sewer user rates to $27 per month per ERU.

5. Cost Escalation Factors for Energy Use

Due to the installation of electric powered pumps, operational costs for the WBWSD are expected to increase. Only the most efficient electric motors will be specified for use and the anticipated cost increase due to pumping drinking and wastewater are listed below.

<u>Wastewater Pump Electrical Use</u>

20 year projection
171 ERUs = 1,040,250 gallons wastewater/month
1,040,250 gallons per month @ 140 gpm = 124 hrs/month
124 hrs/month of 15hp pump operation = 1,387 kW-hr
1,387 kW-hr @ $0.0858/kw-hr = $119/month

Buildout Condition
912 ERUs = 5,548,000 gallons wastewater/month
5,548,000 gallons per month @ 507 gpm = 182 hours/month
182 hours/month of 40hp pump operation = 5,429 kW-hr
5,429 kW-hr @ $0.0858/kW-hr = $466/month

<u>Well Pump Electrical Use</u>

20 Year Projection
171 ERUs = 1,300,312 gallons water/month
1,300,312 gallons per month @ 500 gpm = 43 hrs/month
43 hrs/month of 60hp pump operation = 1,924 kW-hr
1,924 kW-hr @ $0.0858/kw-hr = $165/month

Buildout Condition
912 ERUs = 6,935,000 gallons water/month
6,935,000 gallons per month @ 500 gpm = 231 hours/month
231 hours/month of 60hp pump operation = 10,335 kW-hr
10,335 kW-hr @ $0.0858/kW-hr = $887/month

6. Comparison of Costs of Alternatives

Detailed cost estimates for each of the viable alternatives can be found in Appendix F. The tables listed below compare the construction totals for the viable construction alternatives.

Table E.30 - Cost Comparison - Water Distribution			
Alternative	No Action	Installation of Entire Distribution System with Routing of Water Line Through Rotary Parking Area	Installation of Entire Distribution System with Routing of Water Line Through Vacant Land South of Rotary Building
Total Construction Cost	N/A	$608,672	$583,700

TableE.31 – Cost Comparison - Water Storage					
Alternative	No Action	Upgrade Existing Tri-Pro Water Storage Tank	Above Ground Concrete Tank	Above Ground Bolted Steel Tank	Above Ground Welded Steel Tank
Total Construction Cost	N/A	N/A	$654,875	$692,875	$792,875

Table E.32– Cost Comparison - Water Source						
Alternative	No Action	Install Individual Drinking Water Wells	Upgrade the Existing Tri-Pro Well	Draw Water from the Pend Oreille River	Pipe Water Across the Pend Oreille River from Oldtown	Install New Wells in the Albeni Area
Total Construction Cost	N/A	N/A	N/A	$10,800,000	N/A	$411,800

Table E.33 – Cost Comparison - Sewer Collection

Alternative	No Action	Community Gravity Collection System	Community Pressure Collection System	Upgrade Existing Collection System
Total Construction Cost	N/A	$416,730	$1,959,250	N/A

Table E.34 – Cost Comparison - Sewer Treatment

Alternative	No Action	Install Individual On-site Sewer Systems	Construct New Community Treatment System	Transport Wastewater to City of Newport WWTP
Total Construction Cost	N/A	N/A	$3,420,000	$402,802

Table E.35 – Cost Comparison - River Crossing

Alternative	No Action	Mount Water and Sewer Lines to Highway 2 Bridge	Lay Pipelines on River Bottom	Lay Pipes in Trench Across River	Directionally Drill Under River
Total Construction Cost	N/A	N/A	$1,749,150	$3,172,750	$1,069,250

2. Evaluation of Environmental Impacts

The environmental impacts for each alternative have been discussed in depth in the Environmental Information Document prepared by James A. Sewell & Associates, LLC and submitted to and approved by the IDEQ. James A. Sewell & Associates, LLC also submitted an Environmental Assessment to the United States Army Corps of Engineers (USACE). The USACE concurred with the Environmental Assessment and issued a Finding of No Significant Impact for the project. Correspondence with USACE can also be found in the Environmental Information Document

3. Impacts to Existing Systems

The proposed water system facilities have been designed to be self sufficient and not divert any water from the existing City of Oldtown water system. The proposed water system will be interconnected to the existing system but it is expected that the interconnection will remain closed during normal operations.

The proposed sewer system will be interconnected to the existing WBWSD collection system and will affect the existing system. The existing WBWSD and the City of Newport collection system downstream of the interconnection manhole were analyzed to ensure that the gravity sewer lines had enough capacity to transport the flow from the existing city residents and the additional flow from the project. Table E.36 below from the City of Newport 2009 Update to the City Water System and Sanitary Sewer System Capacity Analysis Report prepared by James A. Sewell & Associates illustrates the capacity of the City of Newport WWTP to treat and dispose of the existing and proposed flows. Table B.4 shows that none of the existing sewer lines between the interconnection manhole at 2nd and Montana and the WWTP will need to be upgraded as a result of increased flows from the existing WBWSD users and the future users from the Albeni area during the first 20 years after completion of the project. Table B.5 shows that the majority of the sewer lines between the interconnection manhole at 2nd and Montana and the WWTP will need to be upgraded as a result of increased flows from the existing WBWSD users and the future users from the Albeni area sometime after the first 20 years after the project is completed.

TABLE E.36 – WASTEWATER PLANT CAPACITY OVERVIEW			
Parameter	City of Newport	WBWSD	Total
Capacity Owned %	70%	30%	100%
Capacity Owned, GPD	350,000	150,000	500,000
Current Flow, GPD	209,000	49,000	258,000
Reserve Capacity	141,000	101,000	242,000
Current Flows, % of Owned Capacity	60%	33%	52%
85% Prompt Facility Plan For Expansion	297,500	127,500	425,000
Reserve ERU to 85% (170 gpd/eru)	521	462	983
Reserve ERU to 100% (170 gpd/eru)	829	594	1,423
Reserve ERU to 85% (200 gpd/eru)	443	393	836
Reserve ERU to 100% (200 gpd/eru)	705	505	1,210

Table E.36 shows that the existing WWTP has enough reserve capacity to treat the existing flows and the proposed flows from the project's 20 year projection of 171 ERUs. However, the City of

Newport will likely have to expand in order to treat and dispose of the future flows from the project buildout.

4. Reliability

The proposed water system will consist of two ground water wells to provide redundancy in the event of a well pump failure. The water system also consists of a water storage tank that will provide drinking water and fire flows in the event of a power outage. The wells will be located adjacent to the Pend Oreille River and it is expected that the aquifer supplying the water will be continually recharged by the river.

The proposed sewer system will include a backup generator to ensure pumping capability in the event of a power outage. The proposed pump station will also consist of two pumps to ensure pumping capabilities in the even of a pump failure. The collection system will be a gravity collection system thereby ensuring transport of the wastewater regardless of the power status.

5. Comparison of Alternatives

A decisions matrix was used to assist in the process of selecting an alternative for final design. A decision matrix is a list of values in rows and columns that enable the user to systematically identify, analyze, and rate the performance of relationships between sets of values and information. Elements of a decision matrix show evaluation factors based on certain decision criteria. The matrix is useful for looking at competing decision factors and assessing each factor's relative significance.

The matrix allows the user to weight the factors relative to their importance. The matrix is useful where quantitative analysis indicates two or more alternatives are close in importance.

For this project, we have included evaluation factors which are often considered qualitative such as complexity, ease of operation, as well as other factors which were included in the economic analysis. These factors have been given weights based on what we feel, in our experience, are important. A score was assigned to each of the factors for each of the alternatives to indicate how well the alternative addressed the issue. The scores had a possible range of 1 to 5, with a low score indicating a more favorable alternative. A total score for each alternative was obtained by multiplying the individual scores by the weight factors and summing the results. Tables E.37 – E.42 below shows the evaluation matrix for all of the viable alternatives.

Table E.37 - Decision Matrix - Water Distribution

	Installation Difficulty	Capital Cost	Present Value Cost	System Completion	Operational Cost	Ease of Operation	Accessibility for Future Development	Even Fire Flow Distribution	Total Weighted Score
Weight Factor	40	30	30	10	20	20	30	10	
Routing of Water Line Through Rotary Parking Area	4	3	2	2	2	2	3	2	520
Routing of Water Line Through Vacant Land South of Rotary Building	2	1	1	2	2	2	2	3	330

Notes:
1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

Table E.38 – Decision Matrix - Water Storage

	Installation Difficulty	Capital Cost	Present Value Cost	Operational Costs	Ease of Operation	Longevity	WBWSD Past Performance	Ease of Repair	Total Weighted Value
Weight Factor	20	20	30	10	20	40	50	40	
Above Ground Concrete Tank	3	2	4	3	1	2	5	4	760
Above Ground Bolted Steel Tank	3	1	5	2	3	4	3	5	820
Above Ground Welded Steel Tank	4	3	2	3	3	1	1	1	420

Notes:
1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

Table E.39 – Decision Matrix - Water Source

	Source Capacity	Installation Difficulty	Capital Cost	Present Value Cost	Operational Cost	System Complexity	Ease of Operation	Water Quality Challenges	Future Compliance Risk	Total Weighted Score
Weight Factor	30	30	20	20	20	30	30	50	50	
Draw Water from the Pend Oreille River	1	4	5	5	5	5	5	5	5	1250
Pipe Water Across the Pend Oreille River from Oldtown	5	5	3	2	2	1	1	1	1	600
Install New Wells in the Albeni Area	2	3	2	2	3	1	2	2	1	530

Notes:
1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

Table E.40 – Decision Matrix - Sewer Collection

	Installation Difficulty	Capital Cost	Operational Cost	Ease of Operation	System Complexity	Longevity	Total Weighted Score
Weight Factor	30	40	20	20	30	20	
Community Gravity Collection System with Lift Station	5	3	2	1	2	1	410
Community Pressure Collection System	3	4	2	2	3	2	460

Notes:

1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

Table E.41 – Decision Matrix - Sewer Treatment

	Installation Difficulty	Capital Costs	Operational Costs	Ease of Operation	System Complexity	Permitting	Water Quality Challenges	Future Compliance Risk	Total Weighted Score
Weight Factor	20	30	30	20	40	50	50	50	
Install Individual On-site Sewer Systems	5	1	1	1	1	4	4	5	870
Construct New Community Treatment System	2	5	5	5	5	5	5	5	1390
Transport Wastewater to City of Newport WWTP	4	3	2	1	2	2	1	1	530

Notes:
1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

Table E.42 – Decision Matrix - River Crossing

	Permitting	Installation Difficulty	Capitol Cost	Operating Costs	Ease of Operation	System Complexity	R/W Easement	Total Weighted Score
Weight Factor	50	30	20	20	10	20	30	
Mount Water and Sewer Lines to Highway 2 Bridge	2	3	3	4	3	4	5	590
Lay Pipelines on River Bottom	5	5	4	3	3	2	1	640
Lay Pipes in Trench Across River	5	5	5	3	2	2	1	650
Directionally Drill Under River	2	4	3	1	1	1	1	360

Notes:
1. A high score indicates more negative factors
2. A low score indicates a more favorable alternative

6. Evaluation of Public Input

A public notice was published in the Priest River Times newspaper on August 17, 2011 notifying the general public of a public hearing to be held at the Rotary Park Visitor Center located at 68 Old Diamond Mill Road in Oldtown on August 31, 2011. The purpose of the public meeting was to inform the public of the project preferred alternatives, and request comments concerning the project alternatives to the proposed action. This allowed the required 14 days of advertising time required for the public hearing. The public notice included a summary of the general scope and objectives for the water system extension into the Albeni Area. The public notice also indicated that written comments will also be accepted. A copy of the text of the public notice and the project alternatives summary sheet which was made available are attached in Appendix L. The public meeting was later moved to the City of Oldtown City Hall building located at 215 North Washington Avenue, Oldtown, Idaho, due to a schedule conflict at the Rotary Park Visitor Center. A representative of the City was present at the initial meeting location to redirect any members of the public to the alternate meeting place.

The public notice published on August 17, 2011 states that project alternatives will be presented to the board for official adoption at the meeting which was held 14 days after the public notice was published. While the West Bonner Water and Sewer Board did not adopt the preferred alternative at this meeting, the official public comment period was deemed concluded as no comments were made by the public regarding the project in the 14 days prior to the meeting, and no members of the general public were present for the meeting. The West Bonner Water and Sewer Board adopted the preferred alternatives presented at the August 31 public meeting at the subsequent regular monthly meeting, which took place on September 14, 2011.

The meeting minutes documenting their acceptance of the recommend preferred alternative is attached in Appendix L.

Prior to the public meeting hearing, the project was discussed at several of the WBWSD monthly meetings which are open to the public. Minutes from these meetings are also presented in Appendix L. The names of the attendees at these public meetings are listed in the minutes. No comments were made by the public regarding the project, thus none have been addressed by the WBWSD.

7. Cost Effectiveness Analysis

The initial capital cost and the present worth cost of each viable alternative was analyzed and used to select the preferred alternatives. Generally, the alternative with the lowest capital and present worth cost is selected as the preferred alternative. There are times when an alternative with higher costs is selected due to environmental impacts, ease of installation, or ease of operation. All three factors described above were considered when selecting the preferred alternatives listed below.

F. SELECTED ALTERNATIVE

1. Selection Justification

Water Distribution System

<u>No-Action Alternative</u>
Due to the fact that a water distribution system is needed to transport water to the residents and businesses of the Albeni area the No-Action alternative is not the preferred alternative.

<u>Route Water Line Through Rotary Parking Area</u>
Due to the higher installation costs associated with this alternative, routing the water line through the rotary parking area is not the preferred water distribution alternative.

<u>Route Water Line Through Vacant Land South of the Rotary Building</u>
Due to the lower installation costs associated with this alternative, routing the water line through vacant land south of the rotary building is the preferred alternative.

Water Storage

<u>No-Action Alternative</u>
Due to the fact that water storage facilities are needed to store water for use during peak demand period and to supply fire suppression flows for the residents and businesses of the Albeni area, the No-Action alternative is not the preferred alternative.

<u>Install New Concrete Water Storage Tank</u>
Although the above ground concrete tank has lower capital and life cycle costs the WBWSD is very dissatisfied with the performance of their current concrete tank and is unwilling to utilize a new concrete tank. Due to the fact that the WBWSD does not want to utilize a concrete water storage

tank, constructing a concrete water storage tank is not the preferred alternative.

<u>Install New Bolted Steel Tank</u>
Although the bolted steel tank has a lower capital cost it does have a higher life cycle cost due to a lack of maintenance that can be performed. The materials used in bolted steel tank construction are not as robust as those used for welded steel tank construction and can not be recoated. This requires replacement of the entire tank rather than recoating or welded repairs which greatly increases the life cycle cost of a bolted steel tank. Therefore, installation of a bolted steel tank is not the preferred alternative.

<u>Install New Welded Steel Tank</u>
Although welded steel tanks have a higher capital cost than bolted steel tanks, the ability to perform repairs and recoat the steel greatly increases the life span of the tank and reduces the life cycle cost of the tank. Due to the fact that the materials used in welded steel tanks are very robust and that welded steel tanks can be repaired and recoated, installation of a new welded steel tank is the preferred alternative.

Water Supply

<u>No-Action Alternative</u>
Due to the fact that a water source is needed to supply water to the residences and businesses of the Albeni area the No-Action alternative is not the preferred alternative.

<u>Install New Community Well(s)</u>
The installation of new community wells provides the most economical source for drinking water, the simplest installation, and the lowest maintenance for the WBWSD and is therefore the preferred alternative.

<u>Individual Residential Wells</u>
Due to the fact that sanitary setbacks are impossible to achieve and that individual wells will not be able to supply fire flows to the Albeni area, the installation of individual wells is not the preferred alternative.

<u>Draw and Treat Water from the Pend Oreille River</u>
Due to the enormous expense of constructing and maintaining a water treatment facility, drawing and treating water from the Pend Oreille River is not the preferred alternative.

Pipe Water Across River from Existing Oldtown Sources

Due to the fact that the City of Oldtown does not currently have the capacity to adequately serve its existing users, piping water across the river from existing WBWSD sources is not the preferred alternative.

Sewer Collection

No-Action Alternative

Due to the fact that a sewer collection system is needed to transport wastewater from the residents and businesses of the Albeni area the No-Action alternative is not the preferred alternative.

Install New Gravity Sewer Collection System

Due to the lower installation cost and minimal operation and maintenance costs, the installation of a new gravity sewer collection system is the preferred alternative.

Install New Pressure Sewer Collection System

Due to the increased installation and operation and maintenance costs, installation of a new pressure sewer collection system is not the preferred alternative.

Sewer Treatment

No-Action Alternative

Due to the fact that a sewer treatment system is needed to treat and dispose of the wastewater from the residents and businesses of the Albeni area the No-Action alternative is not the preferred alternative.

Individual On-site Sewer Systems

Due to the fact that the site conditions of the Albeni area are too restrictive to allow installation of on-site sewer systems, installation of individual on-site sewer systems is not the preferred alternative.

Community Wastewater Treatment System

Due to the enormous construction, operation, and maintenance costs associated with a community wastewater treatment plant, the community wastewater treatment system is not the preferred alternative.

Transport Wastewater to Existing City of Newport WWTP

Although a river crossing will be required to transport the wastewater to the WWTP, transporting the wastewater across the river is still the most economical and least damaging to the environment. Also, the WBWSD currently owns 30% of the capacity of the City of Newport WWTP and the WWTP has an outstanding record of treating and disposing of the wastewater generated by the WBWSD and the City of Newport. Therefore, transporting wastewater to the existing City of Newport WWTP is the preferred alternative.

Water/Sewer River Crossing

No-Action Alternative
Due to the fact that a water/sewer river crossing is needed to transport the wastewater from the residents and businesses of the Albeni area to the City of Newport WWTP and the WBWSD needs a back up water supply, the No-Action alternative is not the preferred alternative.

Lay Pipe on River Bottom
Due to the vulnerability of an exposed pipe on the river bottom and the complexity of obtaining a stream bed alteration permit, laying the pipe on the river bottom is not the preferred alternative.

Lay Pipe in Trench on River Bottom
Due to the complexity of obtaining a stream bed alteration permit and the complexity and expense of constructing this alternative, laying the pipe in a trench on the river bottom is not the preferred alternative.

Bore Under River
Due to the fact that this alternative will not disturb the river bottom, no stream bed alteration permit is required, and the pipes will be located a minimum of 20' below the river bottom to prevent damage to the pipes, boring the pipes under the river is the preferred alternative.

2. Preliminary Design

a. Description of Major Features

Water Supply
It is proposed to install two groundwater wells to provide water for the proposed project. Each well will be 12" in diameter and will contain a submersible well pump. It is expected that each well will be capable of producing approximately 500 gpm using a 60 hp submersible well pump.

Treatment
Following development of the ground water source, water quality testing will be completed in accordance with Idaho Department of Environmental Quality requirements. It is expected that the water being supplied from the wells will not require treatment aside from disinfection. Disinfection will be achieved using a liquid chlorine injection system designed to operate as each well operates.

Storage
It is proposed to construct a 500,000 gallon welded steel water tank to store drinking water for domestic use and fire protection.

According to the calculations presented in this report, a total of 395,236 gallons of storage is required. A 500,000 gallon storage tank is being proposed in the event that the wells do not actually produce 500 gpm each.

Pumping Stations

The current project layout does not require any booster pump stations to supply domestic water. A pumping system will be included with each well, and those pumps will deliver water to a water storage reservoir.

Distribution Layout

It is proposed to install a water distribution network that consists of 12" main trunk lines with 8" distribution laterals for even distribution of fire flows throughout the project. Fire hydrants will be located approximately 300' on center within the developed areas. The distribution system will include an intertie to the existing system located on the west side of the river via a 12" river crossing to provide backup and redundancy.

Sewer Collection System Layout

It is proposed to install a gravity sewage collection system that will extend from the pump station at the river crossing area and proceed easterly, potentially collecting sewage flows generated as far east as the Albeni Falls Dam area. The gravity sewage system depth has been calculated to show gravity flow throughout the project area. All flow generated on the east side of the river will discharge into a main pumping facility that will deliver wastewater across the river into the existing gravity collection system on the west side of the river. The proposed gravity collection system will include piping sizes between 8" to 15" diameter which connect pre-cast manholes at horizontal bends or changes in grade.

Sewer Pumping Stations

It is proposed to install a sewer pump station within the project area near the Pend Oreille River. The pumpstation will consist of an 8' diameter, 23 foot deep pre-cast concrete wet well. An 8' diameter wet well will provide ample room for pump installation and maintenance. An 8' diameter wet well will also provide greater flexibility in the control float settings allowing the WBWSD operator to maximize the capacity of the pump station.

Located inside the wet well will be two non clog pumps rated for pumping wastewater. At the 20 year buildout of 171 ERUs a 15hp pump is required to produce the minimum flow of wastewater. At the total project buildout of 912 ERUs a 40hp pump is required to produce the minimum flow of wastewater. It is expected that the 15hp pump will be capable of serving the residents on the east side of the Pend Oreille River until the population reaches approximately 270 ERUs. By this time the pump will most likely be close to mechanical failure and replacement will be warranted. Due to the large cost difference between the 15hp and the 40hp pumps and the long expected service life of the 15hp pump, it is recommended to install the 15hp pumps.

The pumpstation will pump wastewater generated within the project from the east side the river to the west side of the river through a 6" 200 psi HDPE pipe. Once across the river, the wastewater will enter the existing WBWSD gravity sewer collection system and flow to the Newport wastewater treatment plant. At the 20 year buildout of 171 ERUs a 4" 200 psi HDPE pipe will be sufficient to transport wastewater across the river. But, at the total project buildout of 912 ERUs the size of pump that will be required to pump 507 gpm through a 4" pipe will be impractical and the 4" line will have to be replaced with a 6" line. Therefore, it is recommended to install the 6" 200 psi HDPE pipe.

Sewer Treatment

Currently the WBWSD owns 30% of the treatment capacity of the City of Newport WWTP. This equates to approximately 150,000 gallons, of which WBWSD is currently using approximately 49,000 gallons. It is proposed to pump all the wastewater generated within the project across the river to the existing WBWSD gravity sewer collection piping where it will flow to the Newport WWTP for treatment and final disposal.

Water/Sewer River Crossing

It is proposed to install two 12" HDPE 200 psi pipes under the Pend Oreille River using directional boring. One 12" pipe will provide a means to transport drinking water from the proposed water distribution system to the existing WBWSD water distribution system and vice versa. The remaining 12" pipe will be used as a casing for the 6" HDPE 200 psi pressure sewer line. The 6" line will transport raw wastewater generated by the proposed subdivision to the existing WBWSD gravity collection. The proposed pressure sewer line will connect to the existing collection system at manhole #9 located at 2nd Street and Montana Avenue. The existing collection system has a minimum reserve capacity of approximately 250 gpm. Once an additional 250 gpm is flowing through the existing lines upgrades to the existing gravity sewer collection system in the existing WBWSD system on the west side of the river will be required.

b. Present Worth Considerations

Wastewater Pumps for River Crossing

There are two options for pump sizes for pumping wastewater across the river: 15hp and 40hp pumps. The pump size is based on the total number of ERUs served on the east side of the river. Initially the wet well, piping, valve configuration, and electrical building will be constructed to facilitate the entire buildout of the entire Albeni area. Because the buildout condition may not occur for decades, it is planned to install smaller pumps to serve the Albeni area through the initial construction and development. This period may last 20 to 30 years before enough flow is being generated that the pump will need to be upgraded in size, at which time the 15hp pumps will be replaced with 40hp pumps.

The material cost for two 15hp pumps and control panel is approximately $25,000 and the material cost for two 40 hp pumps and control panel is approximately $50,000. These prices do not reflect installation costs, it is expected that installation costs will be minor. The 15hp pumps are expected to adequately serve the project until the number of ERUs reaches approximately 270. At this point the 40hp pump will be required to serve the project. It is expected that by the time the project reaches 270 ERUs the 15hp pumps will be nearing mechanical failure and will require replacement. Due to the large cost difference it is recommended that the WBWSD install the 15hp pumps and utilize them until the project population exceeds the pump capacity. The capacity of the pump is affected by the transport piping size and this recommendation is based on the assumption that the WBWSD installs a 6" diameter transport line across the river.

Pipe Diameters for River Crossing

There are two options for pipe diameters for transporting sewage across the river; 4" and 6" diameter. The material cost of the 4" diameter pipe is approximately $5,500 and the material cost of the 6" diameter pipe is approximately $12,000. These prices do not reflect installation costs, it is expected that the difference in installation costs will be minor. Both pipe diameters will allow the WBWSD to pump wastewater across the river but the 6" pipe costs approximately twice as much as the 4". However, if the WBWSD chooses to initially install the 4" diameter pipe it will require replacement when the project reaches approximately 494 ERUs. When the project reaches 494 ERUs the required volume of wastewater that will be pumped through the 4" line will generate excessive head loss and the pump required to overcome the head loss will be far too expensive. If the WBWSD chooses to initially install the 6" line it will adequately transport wastewater from 0-912 ERUs and avoid the additional cost of 4" pipe material, installation, removal, and disposal. Installation of the 6" line will also increase the capacity of the 15hp pumps prolonging their expected usefulness. Therefore it is recommended that the WBWSD install the 6" diameter pipe.

Steel Water Storage Tank

It is estimated that installation cost of constructing a welded steel water storage tank will be approximately $792,875 and constructing a bolted steel tank will be approximately $692,875. Welded steel tanks are constructed of thicker steel than bolted steel tanks to accommodate the welding process and the welds are inspected for water tightness. Because the welded steel tanks are constructed of thicker steel they generally have a much longer service life than bolted steel tanks. Bolted steel tanks are constructed of thinner steel than welded steel tanks and rely on gaskets to provide watertight seal between panels. The thicker steel on a welded steel tank allows leak repairs to be done easily in the field and the coatings can also be repaired. Many of the coatings used on bolted steel tanks can not be repaired and as such a new panel must be installed if a leak develops or the coating is damaged. The welded seams allow the tank coatings to be applied continuously over the entire tank surface while the coating on bolted steel tanks is interrupted at the panel seams. Because the bolted steel tanks have a much longer service life, can be repaired in the field, and have a continuous coating it is recommended that the WBWSD install a welded steel water storage tank.

c. Design Criteria

At buildout, the project is expected to generate approximately 912 ERUs. For the purpose of designing water distribution and sewer collection systems, the long term buildout condition was analyzed versus the cost to construct facilities for a 20 year growth condition and then reconstruct to accommodate growth beyond the 20 year assumption. The 20 year expected growth is 171 ERUs.

d. Design and Construction Schedule

At the direction of the WBWSD, the design for this project has been completed and submitted to IDEQ for review. It is expected to advertise for bids in July 2012, select bids in August 2012, and begin construction in August 2012. Construction completion depends on amounts of funding available and which bid schedules are selected to be constructed.

e. Maps

Maps for the project can be found in Appendix A.

3. Selected Alternative Total Construction Cost Estimate

Table F.1 below shows the cost estimates for each viable alternative. Detailed cost estimates have been prepared and are included in Appendix F. All costs are based on 2011 construction costs and must be adjusted for inflation if construction is delayed.

TABLE F.1 – PROJECT COST ESTIMATES	
Project Alternative	Alternative Cost
Construct New Water Distribution System	$ 583,700.00
Construct New Welded Steel Water Storage Tank	$ 792,875.00
Construct New Drinking Water Wells	$ 411,800.00
Construct New Gravity Sewer Collection System	$ 416,730.00
Construct New Wastewater Pump Station	$ 402,801.00
Bore Water and Sewer Lines Under Pend Oreille River	$ 1,069,250.00

Annual Operations and Maintenance

An operating and maintenance budget for the first year after construction completion has been prepared and is included in Appendix G

4. Financial Capability

<u>Income</u>

The majority of the income for the WBWSD comes from water and sewer user fees. Other sources of income include property and sales tax, hook-up fees, and sludge handling. During the years 2006-2009 the total revenues for WBWSD averaged $201,199.65.

The annual operating revenue and expense spread sheet for the WBWSD and the City has been included in Appendix G

<u>Expenses</u>

The majority of the expenses experienced by the WBWSD are from wages paid to employees, sewer plant fees, and operating lease. Other sources of expense for the WBWSD include insurance, taxes, state and professional fees, and utilities. During the years 2006-2009 the total expenses for WBWSD averaged $208,042.69.

The annual operating revenue and expense spread sheet for the WBWSD has been included in Appendix G

<u>Debt Repayments</u>
Currently the WBWSD is debt free.

<u>Reserves</u>
Currently the WBWSD does not have any reserve accounts that require regular deposits. They do have active reserve accounts that they deposit money in when they can on a voluntary basis. The WBWSD reserve account for the years 2006 – 2008 are shown below in Table F.2.

Table F.2 - WBWSD Reserve Account Totals	
2006	$239,545
2007	$264,265
2008	$270,663

5. Land Requirements

Most of the proposed water line and sewer line routes will require an easement from the property owner to the WBWSD. Fortunately most of the water line and sewer line routes are located on land owned by the project proponents. Some areas of installation that will require an easement are listed below.

An easement has been acquired where the water and sewer lines cross land owned by Poles, Inc. on the west side of the Pend Oreille River.

An easement has been acquired from Jim Ward where the water and sewer lines will be installed on his property north of and parallel to Highway 2, outside of the highway right of way, from approximate Highway 2 station 38+25 to 50+40. An easement has also been acquired where the water line crosses Jim's property heading north to the water tank. An easement has also been acquired for the water storage tank that will be located on Jim's property.

There is approximately 350' of water and sewer lines that will be installed in the existing City of Oldtown right-of-way on the west side of the river. There will also be installation of approximately 600 feet of 12" PVC waterline through a vacant city owned lot. The drilling equipment used for the river crossing will also be temporarily set up on this vacant lot. The WBWSD has acquired a special use permit allowing all the work in the existing city right-of-way.

A right of way encroachment permit from the Idaho Transportation Department has been acquired for the water and sewer line crossing of Highway 2. The sewer line crosses Highway 2 at approximate Highway 2 station 38+45 and the water line crosses Highway 2 at approximate Highway 2 station 38+25.

An easement from the Idaho Department of Lands has been acquired for the river crossing.

6. Environmental Information

A copy of the FEMA FIRM map for the area (Panel #16017C0850E) is included in Appendix B. As shown on the map, part of the project is located within the 100 year flood plain. It is not proposed to perform any activities that would adversely affect the 100 year flood plain. A detailed project map of the 100 year flood plain is also included in Appendix B

There are several wetland areas located within the project as shown on the wetlands delineation map included in Appendix D. It is not proposed to perform any activities that would adversely affect any of the wetlands.

None of the land in the project area is classified as important farmland, important forestland, or important rangeland. The public recreational land is located east of and adjacent to the Highway 2 right-of-way. This area includes a boat launch and parking area. This area is classified by the Idaho State Fish and Wildlife Service as public land and is the only formally classified land within the project area.

According to the State Historical Preservation Organization there are no historical sites located in the project area. We have contacted the Kalispel Tribe of Indians (KTOI) to ascertain the location of any sites of tribal significance with the project area. According to the KTOI, there are two areas of tribal significance within the project area. A thorough archeological study of the sites has been conducted to ensure that significant cultural resources are not disturbed during construction.

There are currently 22 endangered or threatened species in the state of Idaho. According to information provided the U.S. Fish and Wildlife Service the only critical habitat near the project area is the Pend Oreille River which has been designated as critical Bulltrout habitat. Our project will not adversely affect the riverbed and therefore will not affect the Bulltrout habitat.

A detailed description of the environmental impacts, resulting mitigations, and correspondence with the various environmental agencies can be found in the Environmental Information Document prepared by James A. Sewell and Associates, LLC and submitted to and approved by the IDEQ.

G. CONCLUSIONS AND RECOMMENDATIONS

The final project recommendation for the water and sewer extensions to the Albeni area is as follows:

1. **Water Supply**
   Install two groundwater wells to provide water for the proposed project. Each well will be 12" in diameter and contain a submersible well pump. Based on the production capacities of existing wells in the area, it is expected that each well will be capable of pumping approximately 500 gpm utilizing a 60hp submersible pump. Following development of the ground water source, water quality testing will be completed in accordance with IDEQ requirements. It is expected that the water being supplied from the wells will not require treatment aside from disinfection. Disinfection will be achieved using a chlorine injection system designed to operate as each well operates.

2. **Drinking Water Storage**
   Construct a 500,000 gallon welded steel water tank to store drinking water for domestic use and fire protection.

3. **Water Distribution**
   Install a water distribution network consisting of 12" distribution trunk lines with 10" and 8" distribution laterals for even distribution of fire flows throughout the project.

4. **Sewer Collection System Layout**
   Install a gravity sewage collection system consisting of 8" to 15" diameter pipes that connect the manholes. The gravity sewage collection system will extend from the pump station at the river crossing area and proceed easterly, potentially collecting sewage flows generated as far east as the Albeni Falls Dam area. All flows generated on the east side of the river will discharge into a main pumping facility that will deliver wastewater across the river into the existing gravity collection system on the west side of the river. The existing gravity sewer system beginning at manhole #9 located at 2nd

Street and Montana Avenue has a sufficient reserve capacity to transport the wastewater from the existing WBWSD and the proposed 20 year projection population from the west side of the river and the Albeni area. The collection system does not have the capacity to transport the wastewater from the buildout population peak flows. Once the flows from the WBWSD users reaches approximately 600 gpm the sewer lines upstream from manhole MH-3 WA will require upgrading.

5. **Wastewater Pumping Stations**

It is proposed to install a wastewater pump station within the project area near the Pend Oreille River. The pumpstation will consist of an 8' diameter, 23 foot deep pre-cast concrete wet well. An 8' diameter wet well will provide ample room for pump installation and maintenance. An 8' diameter wet well will also provide greater flexibility in the control float settings allowing the WBWSD operator to maximize the capacity of the pump station.

Located inside the wet well will be 2 non clog pumps rated for pumping wastewater. At the 20 year buildout of 171 ERUs a 15hp pump is required to produce the minimum flow of wastewater. At the total project buildout of 912 ERUs a 40hp pump is required to produce the minimum flow of wastewater.

The pumpstation will pump wastewater generated within the project from the east side the river to the west side of the river through a 6" 200 psi HDPE pipe. Once across the river the wastewater will enter the existing Oldtown gravity sewer collection system and flow to the Newport wastewater treatment plant.

6. **Sewer Treatment**

Currently the WBWSD owns 30% of the treatment capacity of the City of Newport WWTP. This equates to approximately 150,000 gallons per day, of which Oldtown is currently using approximately 49,000 gallons per day. It is estimated that each ERU in the proposed subdivision will generate 200 gpd. The WBWSD owns enough capacity of the existing WWTP to treat and dispose of the wastewater flows from ERUs within the WBWSD boundaries until approximately 505 additional ERUs are being served sewer service. It is proposed to pump all the wastewater generated within the project across the river to the existing Oldtown gravity sewer collection piping where it will flow to the Newport WWTP for treatment and final disposal.

7. Water/Sewer River Crossing

Install two 12" HDPE 200 psi pipes under the Pend Oreille River using directional boring. One 12" pipe will provide a means to transport drinking water from the proposed water distribution system to the existing WBWSD water distribution system and vice versa. The remaining 12" pipe will be used as a casing for the 6" HDPE 200 psi pressure sewer line. The 6" line will transport raw wastewater generated by the proposed subdivision to the existing WBWSD gravity collection.

APPENDIX A

PROJECT MAP

LEGEND

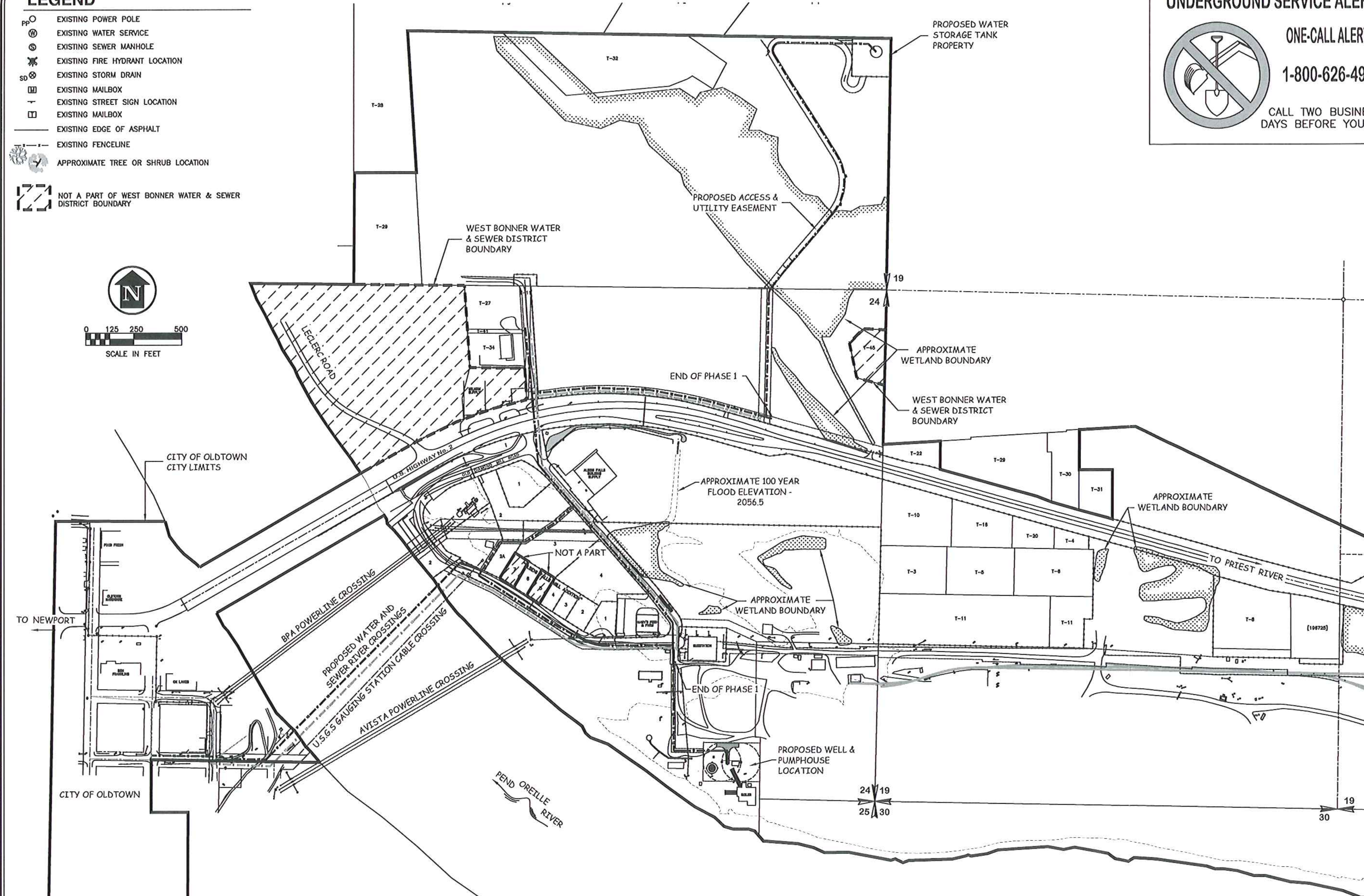
- PP — EXISTING POWER POLE
- W — EXISTING WATER SERVICE
- S — EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT LOCATION
- SD — EXISTING STORM DRAIN
- M — EXISTING MAILBOX
- EXISTING STREET SIGN LOCATION
- EXISTING MAILBOX
- EXISTING EDGE OF ASPHALT
- EXISTING FENCELINE
- APPROXIMATE TREE OR SHRUB LOCATION
- NOT A PART OF WEST BONNER WATER & SEWER DISTRICT BOUNDARY

UNDERGROUND SERVICE ALERT

ONE-CALL ALERT

1-800-626-4950

CALL TWO BUSINESS DAYS BEFORE YOU DIG



4.1 OVERALL LAYOUT - WATER SYSTEM, PHASE 1

SCALE: AS SHOWN

RELEASE FOR AGENCY REVIEW

ENGINEER'S STAMP

PROFESSIONAL ENGINEER 3998 STATE OF IDAHO ERIC J. ELDENBURG

No.	DATE	REVISION	DRN/CHK
4	3-28-12	100 YEAR FLOOD REVISIONS	JMB/KAK
3	6-9-11	STORMWATER AND EROSION UPDATES	SJF/KAK
2	3-8-11	DRAWINGS UPDATED	JMB/KAK
1	9-3-10	RELEASE FOR AGENCY REVIEW	JMB/KAK

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE: WATER SYSTEM OVERALL PLAN VIEW

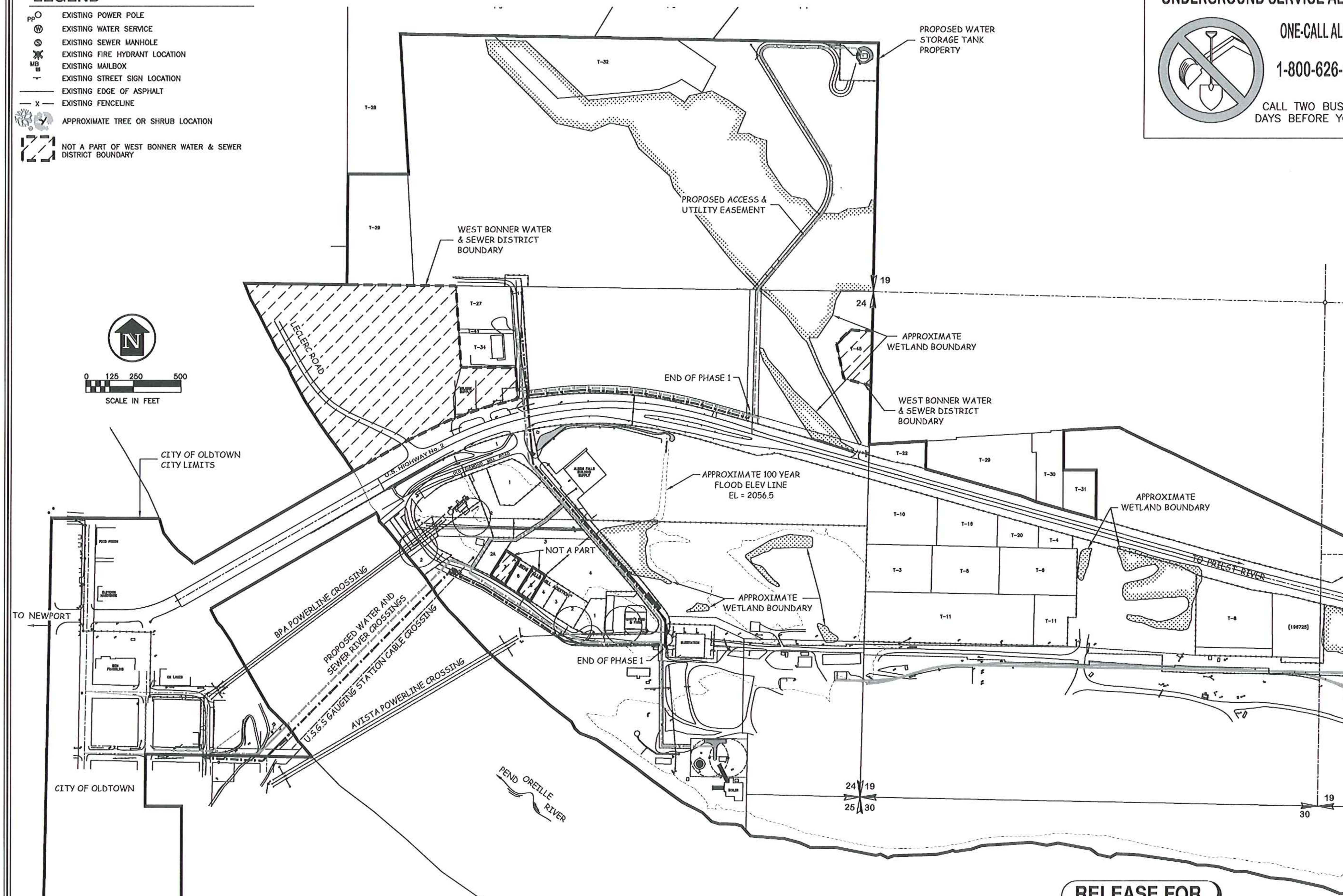
PROJECT: WATER & SEWER SYSTEM EXTENSIONS, 2012
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

DATE:	8-11-10
SCALE:	AS SHOWN
DRAWN BY:	JMB
CHECKED BY:	EJE
FILE NAME:	ALBENI-W&S-3510
DATA No.:	23072-09-002

SHEET 2 OF 59

LEGEND

- PP ○ EXISTING POWER POLE
- Ⓦ EXISTING WATER SERVICE
- Ⓢ EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT LOCATION
- MB EXISTING MAILBOX
- EXISTING STREET SIGN LOCATION
- EXISTING EDGE OF ASPHALT
- — X — EXISTING FENCELINE
- APPROXIMATE TREE OR SHRUB LOCATION
- NOT A PART OF WEST BONNER WATER & SEWER DISTRICT BOUNDARY



4.1 **OVERALL LAYOUT - SEWER SYSTEM, PHASE 1**
SCALE: AS SHOWN

UNDERGROUND SERVICE ALERT
ONE-CALL ALERT
1-800-626-4950
CALL TWO BUSINESS DAYS BEFORE YOU DIG

PROFESSIONAL ENGINEER REGISTERED 3898 STATE OF IDAHO ERIC J. ELDENBURG
ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK
4	3-28-12	100 YEAR FLOOD REVISIONS	JMB/KAK
3	6-9-11	STORMWATER AND EROSION UPDATES	SJF/KAK
2	3-8-11	DRAWINGS UPDATED	JMB/KAK
1	9-3-10	RELEASE FOR AGENCY REVIEW	JMB/KAK

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
SEWER SYSTEM OVERALL PLAN VIEW

PROJECT:
WATER & SEWER SYSTEM EXTENSIONS, 2012
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

DATE:	8-11-10
SCALE:	AS SHOWN
DRAWN BY:	JMB
CHECKED BY:	EJE
FILE NAME:	ALBENI-W&S-3510
DATA No.:	23072-09-002

RELEASE FOR AGENCY REVIEW

APPENDIX B

FEMA FLOOD INSURANCE RATE MAPS AND 100 YEAR FLOOD ELEVATION MAP

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 Areas 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.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

N

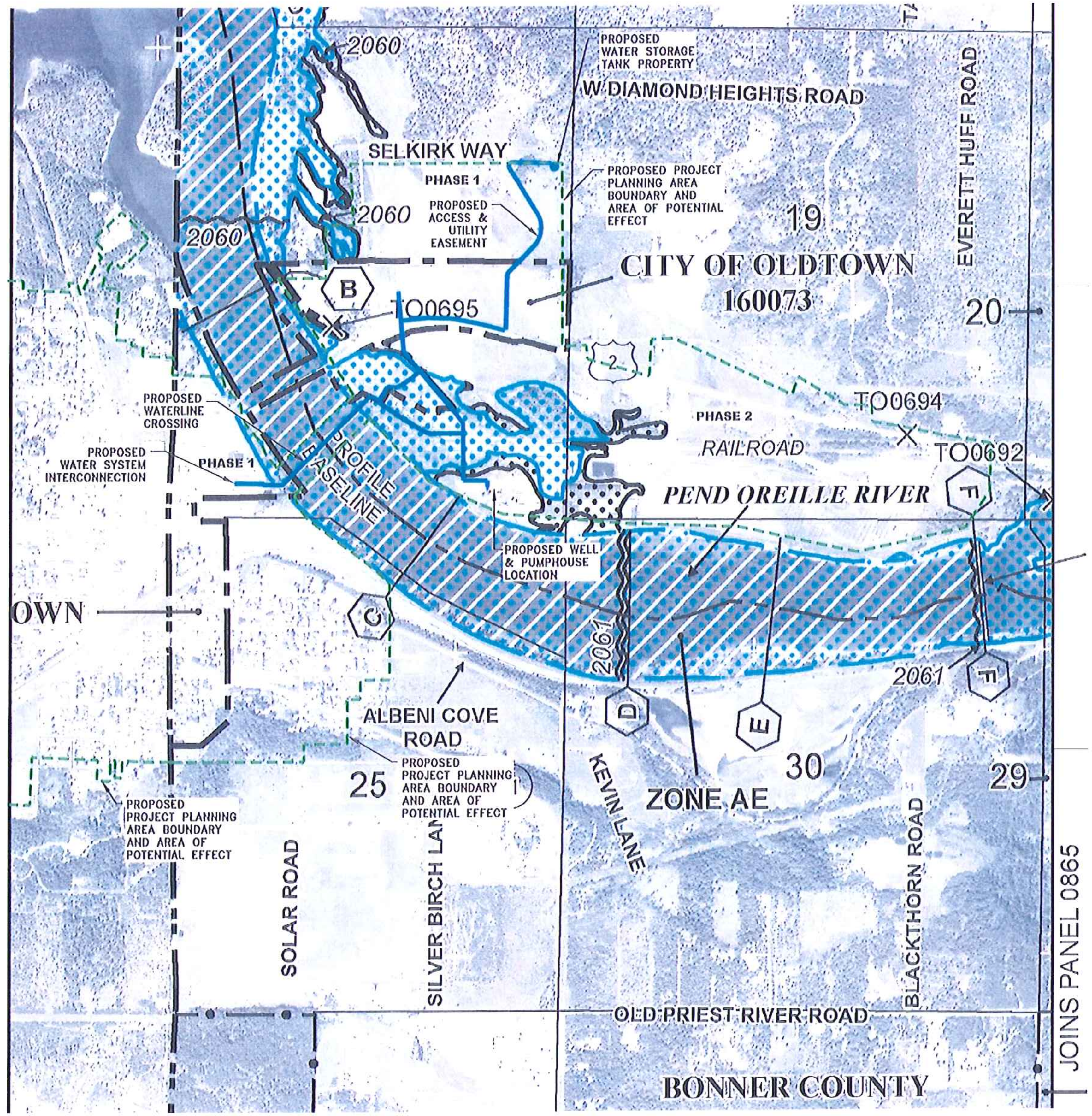
SCALE: NTS

NOTE:
THE PROPOSED PROJECT PLANNING AREA AND THE AREA OF POTENTIAL EFFECT COINCIDE AT ALL LOCATIONS.

LINETYPE LEGEND

PROPOSED C900 CLASS 150 WATER DISTRIBUTION SYSTEM

PROPOSED PROJECT PLANNING AREA AND AREA OF POTENTIAL EFFECT



PROFESSIONAL ENGINEER
3998
ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
PROPOSED PROJECT PLANNING AREA
BONNER COUNTY FEMA FIRMETTE
MAP NUMBER 16017C0850E
PROJECT:
WATER & SEWER SYSTEM EXTENSIONS, 2011
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

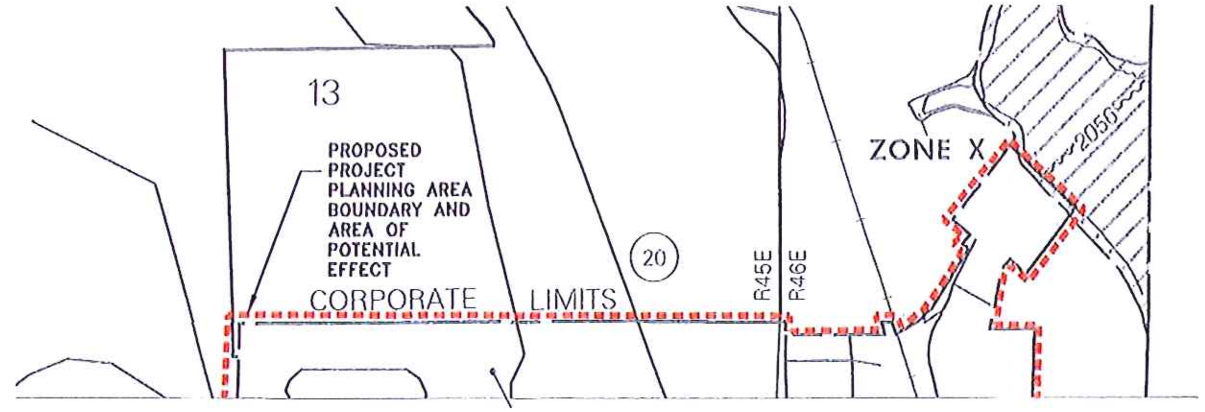
DATE:	9-26-11
SCALE:	AS SHOWN
DRAWN BY:	SJF
CHECKED BY:	EJE
FILE NAME:	Project Map
DATA No.:	23072-09-002

SHEET 1 OF 1

LINETYPE LEGEND

PROPOSED PROJECT PLANNING AREA AND AREA OF POTENTIAL EFFECT

NOTE:
THE PROPOSED PROJECT PLANNING AREA AND THE AREA OF POTENTIAL EFFECT COINCIDE AT ALL LOCATIONS.



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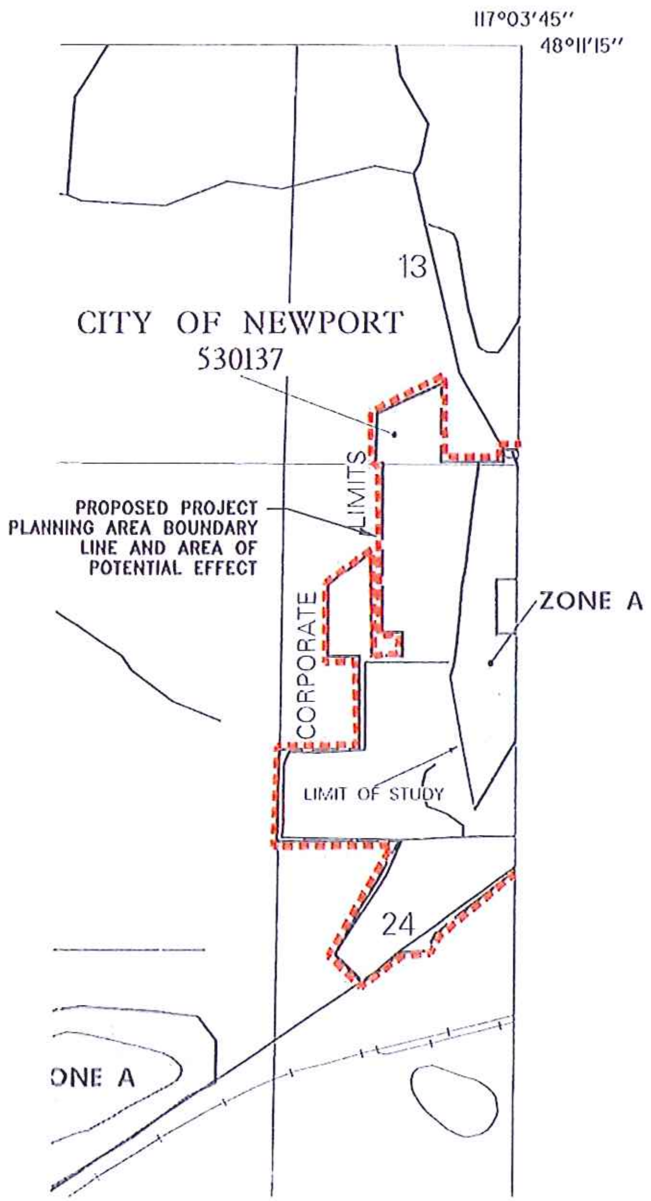
SCALE: NOT TO SCALE



MAP NO. 53051C0890C
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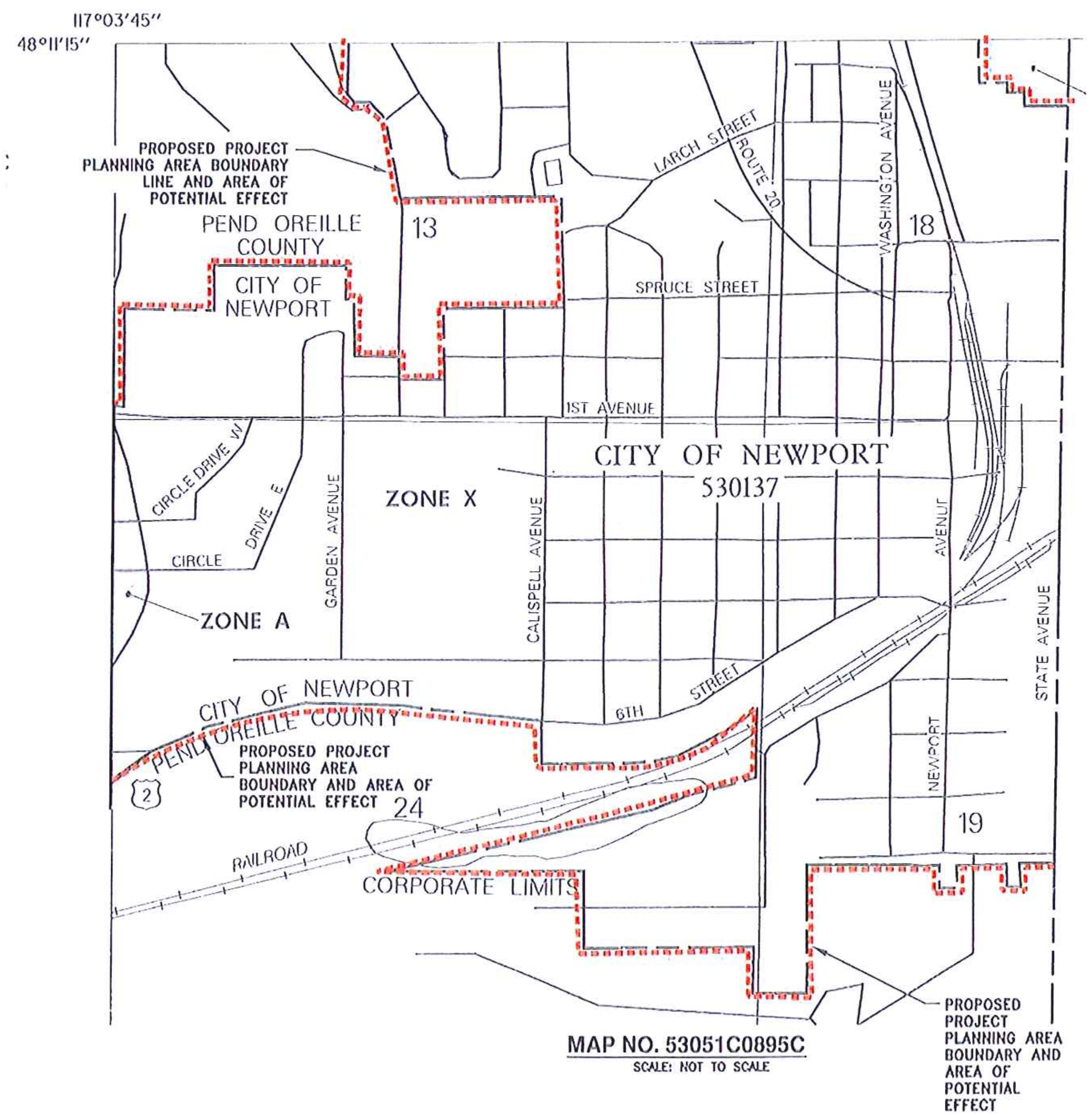


MAP NO. 53051C0895C
SCALE: NOT TO SCALE

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR 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 A99	To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined
ZONE V	Coastal flood with velocity hazard (wave action); no base flood elevations determined
ZONE VE	Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X	Areas determined to be outside 500-year floodplain
ZONE D	Areas in which flood hazards are undetermined

UNDEVELOPED COASTAL BARRIERS

Identified 1983 — Identified 1990 — Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum

D — D Cross Section Line

(EL 987) Base Flood Elevation in Feet

N
SCALE: NTS

PROFESSIONAL ENGINEER
REGISTERED
3998
STATE OF IDAHO
ERIC J. ELGENBURG

ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK

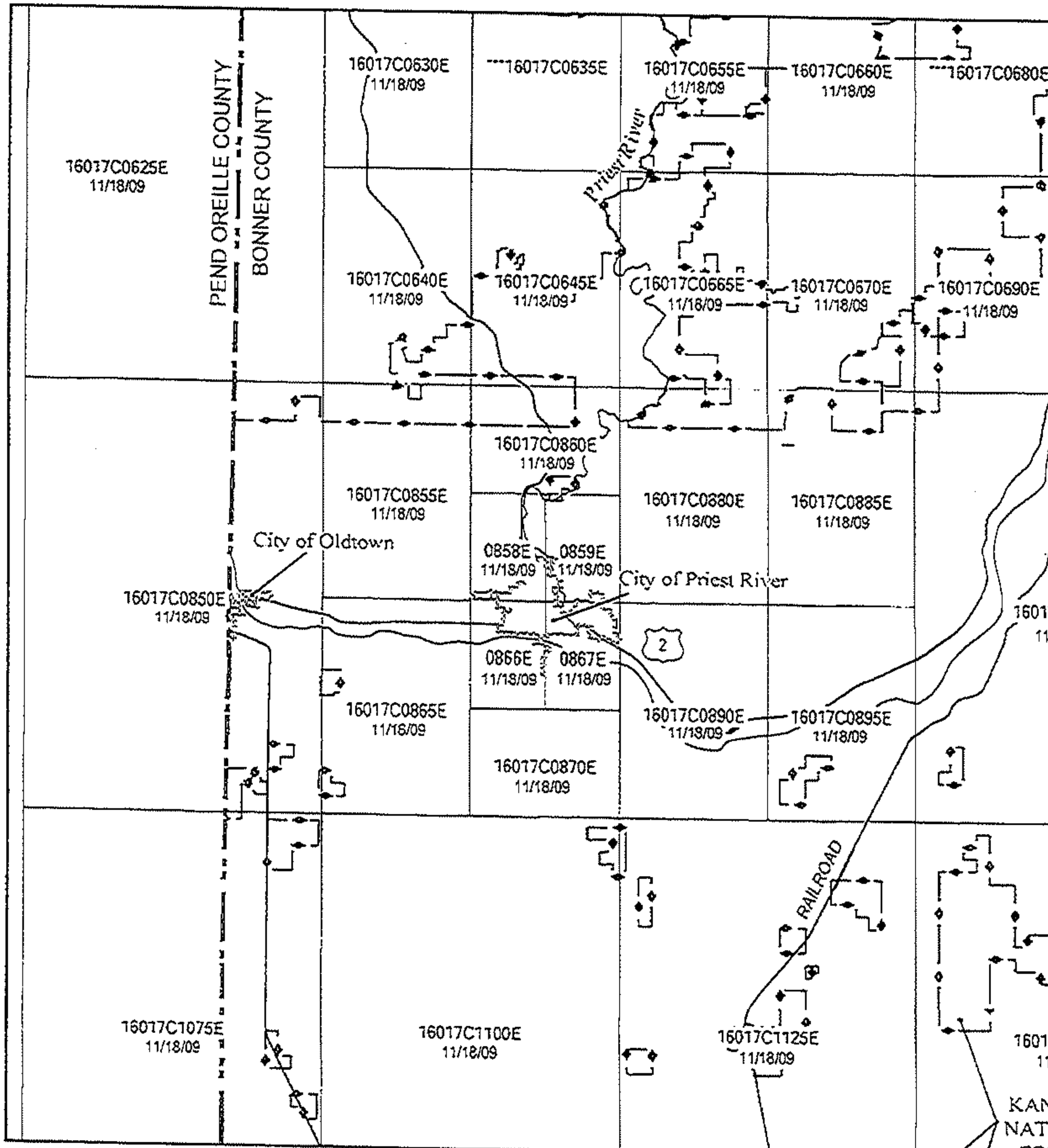
James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
PROPOSED PROJECT PLANNING AREA
PEND OREILLE COUNTY FEMA FIRMETTE
MAP NO.S 53051C0890C, 53051C0895C, 53051C0885C

PROJECT:
WATER SYSTEM EXTENSION, 2012
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

DATE:	9-26-11
SCALE:	AS SHOWN
DRAWN BY:	SJF
CHECKED BY:	EJE
FILE NAME:	Project Map
DATA No.:	23072-09-002

SHEET 1 OF 1



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

BONNER COUNTY, IDAHO

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

PANELS PRINTED: 50, 75, 150, 225, 250, 275, 300, 400, 405, 410, 415, 420, 430, 435, 440, 445, 475, 480, 485, 490, 495, 505, 510, 515, 520, 530, 535, 540, 545, 575, 625, 630, 640, 645, 655, 660, 665, 670, 685, 690, 695, 705, 710, 714, 715, 716, 718, 720, 730, 735, 750, 755, 760, 775, 850, 855, 858, 859, 860, 865, 866, 867, 870, 880, 885, 890, 895, 925, 950, 975, 981, 1000, 1005, 1010, 1014, 1015, 1016, 1018, 1019, 1050, 1075, 1100, 1125, 1150, 1175, 1230, 1235, 1255, 1260, 1300, 1325, 1375, 1400

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
16017CIND0A

EFFECTIVE DATE
NOVEMBER 18, 2009

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

Federal Emergency Management Agency
Community Status Book Report
IDAHO
Communities Participating in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
160158#	ABERDEEN, CITY OF	BINGHAM COUNTY	06/27/75	08/15/79	08/15/79	08/15/79	No
160001#	ADA COUNTY *	ADA COUNTY	06/28/77	12/18/84	10/02/03	12/18/84	No
160204#	ADAMS COUNTY*	ADAMS COUNTY		11/20/00	11/20/00	11/20/00	No
160042#	ALBION, TOWN OF	CASSIA COUNTY	01/10/75	08/15/83	08/15/83	08/15/83	No
160109#	AMERICAN FALLS, CITY OF	POWER COUNTY	05/24/74	06/30/76	01/19/82(M)	06/30/76	No
160028#	AMMON, CITY OF	BONNEVILLE COUNTY	10/26/73	07/19/82	04/02/02	06/30/76	No
160034#	ARCO, CITY OF	BUTTE COUNTY	06/28/74	09/24/84	09/24/84(M)	09/24/84	No
160040#	BANCROFT, CITY OF	CARIBOU COUNTY	08/16/74	09/14/90	09/14/90	09/14/90	No
160009#	BANNOCK COUNTY *	BANNOCK COUNTY	01/17/75	09/05/79	07/07/09	09/05/79	No
160225	BEAR LAKE COUNTY *	BEAR LAKE COUNTY			01/01/50	05/09/11(E)	No
160021#	BELLEVUE, CITY OF	BLAINE COUNTY	11/23/73	08/01/78	11/26/10	08/01/78	No
160014#	BENEWAH COUNTY*	BENEWAH COUNTY	01/10/75	07/16/79	09/25/09	07/16/79	No
160018#	BINGHAM COUNTY *	BINGHAM COUNTY	06/20/78	11/15/79	10/20/98	11/15/79	No
160019#	BLACKFOOT, CITY OF	BINGHAM COUNTY	01/23/74	09/05/79	10/20/98	09/05/79	No
165167#	BLAINE COUNTY *	BLAINE COUNTY	09/18/73	03/16/81	11/26/10	03/16/81	No
160205#	BOISE COUNTY*	BOISE COUNTY	09/14/82	09/14/82	04/05/88	04/05/88	No
160002#	BOISE, CITY OF	ADA COUNTY	06/21/74	04/17/84	10/02/03	04/17/84	No
160206#	BONNER COUNTY*	BONNER COUNTY	10/25/77	08/01/84	11/18/09	08/01/84	No
160031#	BONNERS FERRY, CITY OF	BOUNDARY COUNTY	06/28/74	04/22/77	08/19/85(M)	04/22/77	No
160027#	BONNEVILLE COUNTY *	BONNEVILLE COUNTY	10/18/74	11/04/81	04/02/02	11/04/81	No
160207#	BOUNDARY COUNTY*	BOUNDARY COUNTY	08/02/77	08/02/82	08/02/82	11/13/84	No
160202#	BOVILL, CITY OF	LATAH COUNTY	07/02/76	12/18/79	12/18/79	12/18/79	No
160043#	BURLEY, CITY OF	CASSIA COUNTY	05/24/74	03/09/82	03/09/82(M)	03/09/82	No
160033#	BUTTE COUNTY*	BUTTE COUNTY		06/03/86	06/03/86(M)	06/03/86	No
160036#	CALDWELL, CITY OF	CANYON COUNTY	11/19/76	09/03/80	05/24/11	09/03/80	No
160199#	CAMBRIDGE, CITY OF	WASHINGTON COUNTY	08/08/75	02/19/87	06/16/09	02/19/87	No
160208#	CANYON COUNTY *	CANYON COUNTY	05/24/77	09/28/84	05/24/11	09/28/84	No
160234#	CAREY, CITY OF	BLAINE COUNTY		04/20/00	11/26/10	03/22/06	No
160209	CARIBOU COUNTY*	CARIBOU COUNTY			01/01/50	08/20/99(E)	No
160161#	CASCADE, CITY OF	VALLEY COUNTY	09/19/75	09/15/89	09/15/89	09/15/89	No
160041#	CASSIA COUNTY *	CASSIA COUNTY	08/16/77	08/15/83	08/15/83	08/15/83	No
160053#	CHALLIS, CITY OF	CUSTER COUNTY	12/05/75	09/24/84	03/04/88	09/24/84	No
160162#	CHUBBUCK, CITY OF	BANNOCK COUNTY		07/07/09	(NSFHA)	07/07/09	No
160210#	CLARK COUNTY *	CLARK COUNTY	04/10/79	09/24/84	09/24/84(M)	09/24/84	No
160132#	CLARK FORK, CITY OF	BONNER COUNTY	09/19/75	03/15/82	11/18/09	03/15/82	No
160046#	CLEARWATER COUNTY *	CLEARWATER COUNTY	12/20/74	05/15/80	05/15/80	05/15/80	No
160078#	COEUR D'ALENE, CITY OF	KOOTENAI COUNTY	03/29/74	05/03/10	05/03/10	09/02/82	No
160067#	COTTONWOOD, CITY OF	IDAHO COUNTY	05/17/74	05/01/85	05/01/85(M)	05/01/85	No
160005#	COUNCIL, CITY OF	ADAMS COUNTY	05/03/74	11/20/00	11/20/00	11/20/00	No
160163#	CRAIGMONT, CITY OF	LEWIS COUNTY	06/25/76	02/05/86	02/05/86(M)	02/05/86	No
160102#	CULDESAC, CITY OF	NEZ PERCE COUNTY	10/18/74	01/20/82	01/20/82	01/20/82	No
160211#	CUSTER COUNTY*	CUSTER COUNTY		03/04/88	03/04/88	09/05/85	No
160164#	DALTON GARDENS, CITY OF	KOOTENAI COUNTY		05/03/10	(NSFHA)	04/07/11	No
160133#	DEARY, CITY OF	LATAH COUNTY	01/17/75	06/05/85	06/05/85(M)	06/05/85	No
160044#	DECLO, CITY OF	CASSIA COUNTY	09/06/74	08/15/83	08/15/83	08/15/83	No
160121	DONNELLY, CITY OF	VALLEY COUNTY	09/06/74	04/15/77	04/15/77(M)	04/15/77	No
160006#	DOVER, CITY OF	BONNER COUNTY		11/18/09	11/18/09	01/16/07	No
	The City has adopted Bonner County (160206)FIRM dated 8/4/1987 panel #1602060300C.						
160165#	DOWNEY, CITY OF	BANNOCK COUNTY	01/09/79	09/16/81	07/07/09	02/08/85	No
160166#	DRIGGS, CITY OF	TETON COUNTY		08/04/88	01/01/50	04/15/11	No

160215	LEWIS COUNTY *	LEWIS COUNTY		(NSFHA)	02/12/86	No

Federal Emergency Management Agency
Community Status Book Report
IDAHO
Communities Participating in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
160104#	LEWISTON, CITY OF	NEZ PERCE COUNTY	08/16/74	01/20/82	01/20/82	01/20/82	No
160216#	LINCOLN COUNTY*	LINCOLN COUNTY		02/05/86	02/05/86	02/05/86	No
160177#	MACKAY, CITY OF	CUSTER COUNTY	05/02/75	09/24/84	03/04/88	09/24/84	No
160217#	MADISON COUNTY *	MADISON COUNTY	01/31/78	06/03/91	06/03/91	06/03/91	No
160106#	MALAD CITY, CITY OF	ONEIDA COUNTY	05/24/74	09/27/85	09/27/85	09/27/85	No
160187#	MALTA, TOWN OF	CASSIA COUNTY	12/13/74	09/24/84	09/24/84(M)	05/15/97	No
160175#	MCCALL, CITY OF	VALLEY COUNTY	09/05/75	04/17/89	04/17/89	04/17/89	No
160176#	MCCAMMON, CITY OF	BANNOCK COUNTY	04/23/76	09/15/78	07/07/09	12/21/78	No
160180#	MERIDIAN, CITY OF	ADA COUNTY	05/28/76	09/27/81	10/02/03	03/20/82	No
160037#	MIDDLETON, CITY OF	CANYON COUNTY	11/02/73	09/03/80	05/24/11	09/03/80	No
160123#	MIDVALE,CITY OF	WASHINGTON COUNTY	09/13/74	02/19/87	05/16/09	02/19/87	No
160201	MINIDOKA COUNTY*	MINIDOKA COUNTY	09/06/77	10/01/86	10/01/86(L)	10/01/86	No
160090#	MOSCOW, CITY OF	LATAH COUNTY	02/15/74	05/15/80	04/15/02	05/15/80	No
160058#	MOUNTAIN HOME, CITY OF	ELMORE COUNTY	08/07/74	09/30/88	03/15/94	09/30/88	No
160115#	MULLAN, CITY OF	SHOSHONE COUNTY	12/28/73	08/01/79	09/26/08	08/01/79	No
160038#	NAMPA, CITY OF	CANYON COUNTY	05/31/74	09/28/84	05/24/11	09/28/84	No
160181#	NEW MEADOWS, CITY OF	ADAMS COUNTY	02/21/75	06/05/85	11/20/00	06/05/85	No
160101#	NEZ PERCE COUNTY *	NEZ PERCE COUNTY	10/25/77	04/04/83	04/04/83	04/04/83	No
160255#	NEZPERCE, CITY OF	LEWIS COUNTY		08/03/89	08/03/89	08/03/89	No
160147#	NOTUS, CITY OF	CANYON COUNTY	09/26/75	03/18/80	05/24/11	03/18/80	No
160045#	OAKLEY, CITY OF	CASSIA COUNTY	10/18/74	08/01/97	08/01/97(L)	08/01/97	No
160073#	OLDTOWN, CITY OF	BONNER COUNTY		11/18/09	11/18/09	12/21/10	No
160229	ONEIDA COUNTY *	ONEIDA COUNTY			01/01/50	10/10/03(E)	No
160047#	OROFINO, CITY OF	CLEARWATER COUNTY	11/23/73	12/02/80	12/02/80	12/02/80	No
160116#	OSBURN, CITY OF	SHOSHONE COUNTY	01/23/74	09/05/79	09/26/08	09/05/79	No
160183#	PARIS, CITY OF	BEAR LAKE COUNTY	09/19/75	09/24/84	09/24/84(M)	09/24/84	No
160039#	PARMA, CITY OF	CANYON COUNTY	05/17/74	09/30/80	05/24/11	09/30/80	No
160100	PAUL, CITY OF	MINIDOKA COUNTY	06/14/74		(NSFHA)	06/20/76	No
160198#	PAYETTE COUNTY *	PAYETTE COUNTY	05/17/77	02/15/83	02/15/84	02/15/84	No
160184#	PAYETTE, CITY OF	PAYETTE COUNTY	05/02/75	02/15/84	02/15/84	02/15/84	No
160105#	PECK, CITY OF	NEZ PERCE COUNTY	08/16/74	01/20/82	01/20/82	01/20/82	No
160048	PIERCE, CITY OF	CLEARWATER COUNTY	06/21/74	08/29/78	08/29/78(M)	08/29/78	No
160200#	PINEHURST, CITY OF	SHOSHONE COUNTY	01/31/75	07/02/79	09/26/08	07/02/79	No
160012#	POCATELLO, CITY OF	BANNOCK COUNTY	03/01/74	05/01/80	07/07/09	05/01/80	No
160150#	PONDERAY, CITY OF	BONNER COUNTY	08/13/76	11/18/09	11/18/09	01/13/10	No
160083#	POST FALLS, CITY OF	KOOTENAI COUNTY	01/09/74	05/03/10	05/03/10	02/17/82	No
160219	POWER COUNTY*	POWER COUNTY			(NSFHA)	03/19/86	No
160186#	PRESTON, CITY OF	FRANKLIN COUNTY	08/29/75	09/24/84	09/24/84(M)	09/24/84	No
160026#	PRIEST RIVER,CITY OF	BONNER COUNTY	06/28/74	02/17/82	11/18/09	02/17/82	No
160187#	RATHDRUM, CITY OF	KOOTENAI COUNTY	07/11/75	05/03/10	05/03/10	09/28/84	No
160098#	REXBURG, CITY OF	MADISON COUNTY	12/17/73	06/03/91	06/03/91	06/03/91	No
160189#	RIGGINS, CITY OF	IDAHO COUNTY		12/19/97	12/19/97	12/19/97	No
160152#	ROBERTS, CITY OF	JEFFERSON COUNTY	01/24/75	02/17/88	09/26/08(M)	12/29/08	No
160110	ROCKLAND, CITY OF	POWER COUNTY	12/27/74	04/01/77	04/01/77(M)	04/01/77	No
160016#	SAINT MARIES, CITY OF	BENEWAH COUNTY	02/15/74	11/15/79	09/25/09	11/15/79	No
160093#	SALMON, CITY OF	LEMHI COUNTY	06/25/76	12/04/84	12/04/84	12/04/84	No
160025#	SANDPOINT,CITY OF	BONNER COUNTY	06/21/74	02/17/82	11/18/09	02/17/82	No
160114#	SHOSHONE COUNTY *	SHOSHONE COUNTY	07/05/77	09/05/79	09/26/08	09/05/79	No

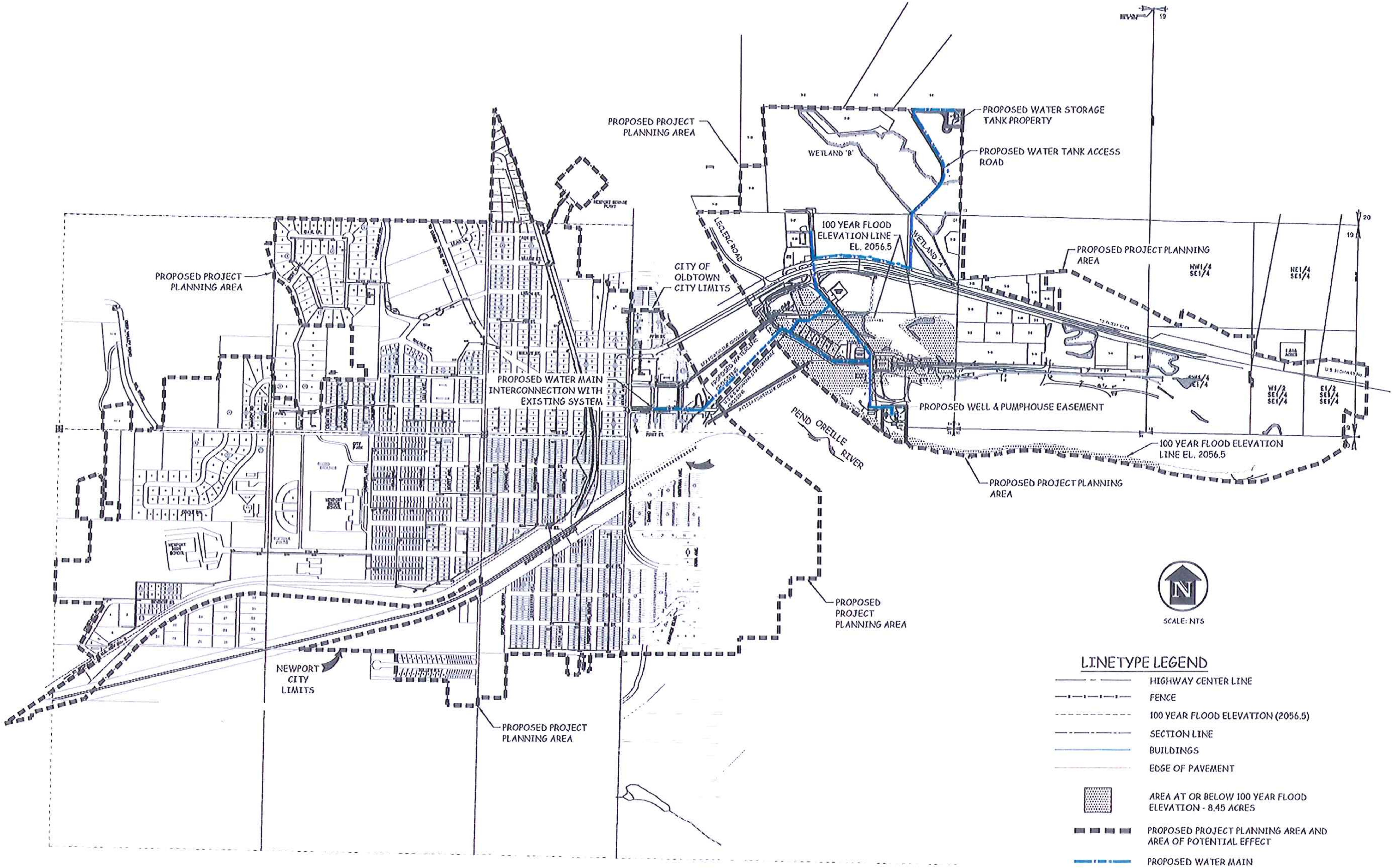
Federal Emergency Management Agency
Community Status Book Report
IDAHO
Communities Not in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Sanction Date	Tribal
160247#	CROUCH, CITY OF	BOISE COUNTY		04/05/88	04/05/88	04/05/89	No
160134#	DUBOIS, CITY OF	CLARK COUNTY	12/27/74	09/24/84	09/24/84	07/04/88(S)	No
160137#	FRANKLIN, CITY OF	FRANKLIN COUNTY	09/05/75	08/19/85	08/19/85	09/05/76	No
160241#	GRAND VIEW, CITY OF	OWYHEE COUNTY	04/03/79		04/03/79	04/03/80	No
160235#	GREENLEAF, CITY OF	CANYON COUNTY			05/24/11		No
160259#	HAMER, CITY OF	JEFFERSON COUNTY		02/17/88	09/26/08	02/17/89	No
160141#	HAUSER, CITY OF	KOOTENAI COUNTY	10/08/76	05/03/10	05/03/10	10/08/77	No
160179#	MENAN, CITY OF	JEFFERSON COUNTY	04/30/76	02/17/88	09/26/08	04/30/77	No
160249#	PLACERVILLE, CITY OF	BOISE COUNTY		04/05/88	04/05/88	04/05/89	No
160149#	PLUMMER, CITY OF	BENEWAH COUNTY	10/29/76	09/25/09	09/25/09	10/29/77	No
160153	ST. CHARLES, CITY OF	BEAR LAKE COUNTY	03/19/76		03/19/76	03/19/77	No
160049#	WEIPPE, CITY OF	CLEARWATER COUNTY	05/17/74	12/04/79	12/04/79	12/04/79(S)	No
160072	WHITE BIRD, CITY OF	IDAHO COUNTY	09/13/74	09/18/86	09/18/86	07/04/88(S)	No

Summary:

Total Not In Flood Program	13
Total Suspended from Emergency Program	0
Total Suspended from Regular Program	3
Total Withdrawn Communities Not In Program	0
Total Not In Program With Hazard Area Identified	13
Total Not In Program With Hazard Area Identified < 1 Year	0

Legend:



NOTE:
NEWPORT CITY LIMIT BOUNDARY LINE, PROPOSED PROJECT PLANNING AREA BOUNDARY LINE AND AREA OF POTENTIAL EFFECT BOUNDARY LINE COINCIDE. THE PROPOSED PROJECT PLANNING AREA AND THE AREA OF POTENTIAL EFFECT COINCIDE AT ALL LOCATIONS.

PROFESSIONAL ENGINEER 5998 STATE OF IDAHO ERIC J. ELDENBURG

ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
100 YEAR FLOOD MAP

PROJECT:
WATER SYSTEM EXTENSION, 2012
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

DATE:	5-5-10
SCALE:	AS SHOWN
DRAWN BY:	JMB
CHECKED BY:	EJE
FILE NAME:	[illegible]
DATA No.:	23072-09-002

SHEET 1 OF 1

APPENDIX C

CULTURAL RESOURCES ASSESSMENT OF THE ALBENI ANNEX WATER AND SEWER PROJECT

Cold Springs Pegram Truss Railroad Bridge
97000762
Over the Big Wood R., 0.5 mi. S of jct. of US 93 and ID 267, Ketchum
970725
Pegram Truss Railroad Bridges of Idaho MPS

Gimlet Pegram Truss Railroad Bridge
97000757
Over the Big Wood R., 0.5 mi. S of jct. of US 93 and E. Fork Wood River Rd., Ketchum
970725
Pegram Truss Railroad Bridges of Idaho MPS

Greenhow and Rumsey Store Building
83000280
Main Ave., Ketchum
830818

SUN VALLEY

Proctor Mountain Ski Lift
80001294
Trail Creek, Sun Valley
800120

Sawtooth City
75000625
Address Restricted, Sun Valley
750404

[redacted]

IDAHO CITY

Arrowrock Dam
72000437
About 10 mi. E of Boise on U.S. Forest Service Roads, Boise
721109

Idaho City
75000626
Bounded by city limits, Idaho City
750627

PLACERVILLE

Placerville Historic District
84001029
Roughly bounded by townsite limits, Placerville
840907

[redacted]

BAYVIEW

Lake Pend Oreille Lime and Cement Industry Historic District
94001450
Roughly, discontiguous sites around Bayview and Lakeview, Bayview
970327

COOLIN

Vinther and Nelson Cabin
82002507
Eight Mile Island, Coolin
820721

DOVER

Dover Church
86002153
Washington between 3rd and 4th, Dover
890808

PRIEST RIVER

Hotel Charbonneau
91001718
207 Wisconsin St., Priest River
911119

Priest River Commercial Core Historic District
95001057
Roughly bounded by Wisconsin, Montgomery, and Cedar Sts. and Albeni Rd., Priest River
950831

Priest River High School
95001402
1020 W. Albeni Hwy., Priest River
951207
Public School Buildings in Idaho

This stone structure (c. 1905) is one of three bread ovens associated with the ***Spokane and International Railroad Construction Camp*** *near Eastport (Boundary County). All that remains of the temporary railroad camp are building depressions, log wall remnants, dumping areas, and these ovens, believed to be erected by Italian construction laborers. (c. 1990; ISHS 1997.21.7.)*

MPS

SANDPOINT

Bernd, W. A., Building
83000282
307-311 N. 1st. Ave., Sandpoint
830818

Nesbitt, Amanda, House
82002508
602 N. 4th Ave., Sandpoint
820715

Priest River Experimental Forest
94000661
Idaho Panhandle National Forest, Sandpoint
940701

Sandpoint Burlington Northern Railway Station
73000682
Cedar St. at Sand Creek, Sandpoint
730705

Sandpoint Community Hall
86002148
204 S. 1st Ave., Sandpoint
860911

Sandpoint Historic District
84001100
Roughly 1st and 2nd Aves., Main and Cedar Sts., Sandpoint
840907

BONNEVILLE COUNTY

IDAHO FALLS

Beckman, Andrew and Johanna M., Farm
92001414
US 20 0.5 mi. W of jct. with New Sweden Rd., Idaho Falls
921106
New Sweden and Riverview Farmsteads and Institutional Buildings MPS

Beckman, Oscar and Christina, Farmstead
91001713
SW corner of jct. of New Sweden—Shelley Rd. and US 20, Idaho Falls
911119
New Sweden and Riverview Farmsteads and Institutional Buildings MPS

Bonneville County Courthouse
79000781
Capital Ave. and C St., Idaho Falls
790710

Bonneville Hotel
84001032
400 Blk W. C St., Idaho Falls
840830
Idaho Falls Downtown MRA

Douglas-Farr Building
84001035
493 N. B Ave., Idaho Falls
840830
Idaho Falls Downtown MRA

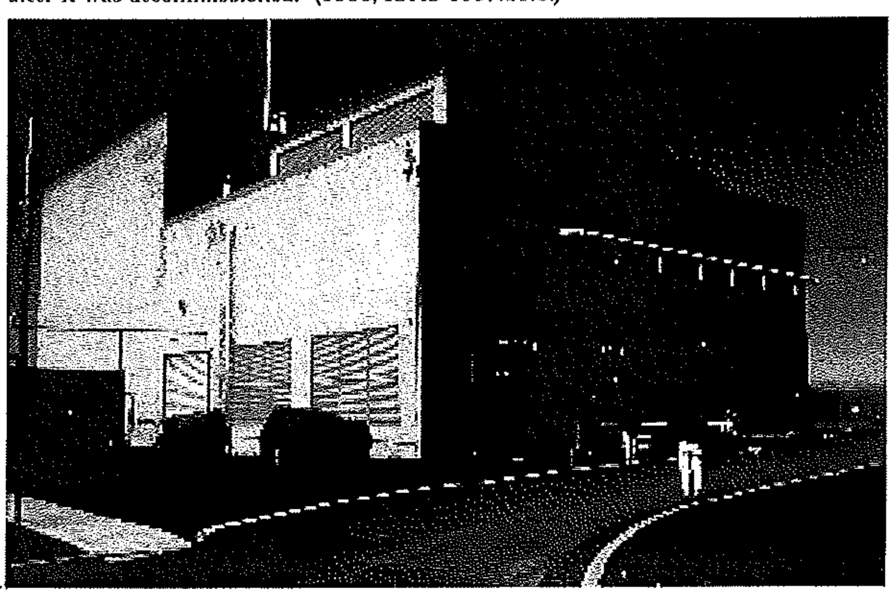
Eagle Rock Ferry
74000734
N of Idaho Falls on Snake River, Idaho Falls
740607

Eleventh Street Historic District
97000863
Roughly bounded by S. Boulevard, 13th, 10th, and 9th Sts., S. Emerson and S. Lee Aves., Idaho Falls
970808

Farmers and Merchants Bank Building
84001037
383 W. A St., Idaho Falls
840830
Idaho Falls Downtown MRA

First Presbyterian Church
78001052
325 Elm St., Idaho Falls
780329

When it was commissioned in 1951, the Experimental Breeder Reactor No. 1 (Butte County) demonstrated that a nuclear reactor is capable of breeding (creating more fuel than its operation consumes) and of achieving economically competitive nuclear power. Because of its major impact on the nation's desire for cheap, efficient power, EBR #1 was deemed a National Historic Landmark in 1966— only two years after it was decommissioned. (1996; ISHS 1997.21.8.)



NATIONAL REGISTER OF HISTORIC PLACES IN IDAHO

ADDENDUM TO LISTINGS
SEPTEMBER 1, 1997 THROUGH JULY 31, 2009

(✓ Indicates Latest Listings)

ADA COUNTY

BOISE

Anduiza Hotel
619 Grove St., Boise
02-25-03
03000064 (A, C)

Boulevard Mo-tel
1121 S. Capitol Blvd., Boise
01-07-98
97001609 (A, C)

Chitwood, Joseph, House
1321 Denver St., Boise
08-23-06
06000709 (A)

Idaho National Guard Armory
801 Reserve St., Boise
02-26-99
Tourtellotte & Hummel Architecture In Idaho TR
99000253 (A, C)

Ninth Street Bridge
E of new 9th St. bridge, over Boise River, Boise
09-14-01
Metal Truss Highway Bridges of Idaho MPS
01000980 (C)

O'Farrell, John A., Cabin
N side of W. Fort St. between N. 4th and N. 5th sts., Boise
12-03-99
99001415 (A, f)

Schick/Ostolasa Farmstead
5213 Dry Creek Rd., Boise
08-23-06
06000710 (A)

KUNA

Boise City - Silver City Road: Fick Property Segment
3232 W. Kuna-Mora Rd., Kuna vicinity
07-15-99
99000852 (A)

Lilyquist-Christianson Building
459 W. 3rd, Kuna
04-01-99
99000415 (A)

MERIDIAN

Bell, R. H. and Jessie, House
137 E. Pine St., Meridian
02-01-06
05001599 (C)

Hill, Clara, House
1123 N. Main St.., Meridian
02-01-06
05001600 (C)

Mittleider Farmstead Historic District
575 Rumpel Ln., Meridian vicinity
03-20-03
Historic Rural Properties of Ada County, Idaho MPS
03000122 (A, C)

Mountain States Telephone and Telegraph Company Building
815 N. Main St., Meridian
09-17-08
08000905 (A)

STAR

Star Camp
N. Star Rd. and W. 3rd St., Star
04-27-05
05000344 (A, a)

BANNOCK COUNTY

LAVA HOT SPRINGS

L.D.S. Ward Building
187 S. 2nd Ave. W., Lava Hot Springs
12-09-99
99001474 (C, a)

POCATELLO

Lincoln-Johnson Avenues Residential Historic District
Roughly bounded by W. Hayden St., the Portneuf River, W. Benton St., and the West Bench, Pocatello
03-15-06
06000126 (A, C)

Old Town Residential Historic District
Roughly bounded by W. Benton St., S. Garfield St., W. Lewis St., and the Portneuf River, Pocatello
04-02-08
08000249 (A, C)

Pocatello Westside Residential Historic District
Roughly bounded by N. Arthur Ave., W. Fremont St., N. Grant Ave., and W. Young St., Pocatello
03-17-03
03000102 (A, C)

BEAR LAKE COUNTY

FISH HAVEN

Scofield, Anna Nielsen, House
2788 US 89, Fish Haven
04-01-99
99000417 (C)

GEORGETOWN

Georgetown Relief Society Hall
161 3rd NW St., Georgetown
09-18-98
98001171 (A)

BINGHAM COUNTY

BLACKFOOT

Eastern Idaho District Fair Historic District
97 Park Dr., Blackfoot
08-10-01
01000864 (A, g)

BLAINE COUNTY

HAILEY

✓ **Chase, Eben S. and Elizabeth S., House**
203 E. Bullion St., Hailey
05-05-09
09000292 (A)

Hailey Masonic Lodge
100 S. 2nd Ave., Hailey
09-12-08
08000869 (A)

KETCHUM

Ketchum Ranger District Administrative Site
131/171 River St., Ketchum
02-09-07
07000005 (A, C)

BOISE COUNTY

SWEET

Upper Brownlee School
On Dry Buck Rd., 0.1 mi. NE of jct. with Timber Butte Rd., Sweet vicinity
03-31-98
Public School Buildings in Idaho MPS
98000264 (A, C)

BONNER COUNTY

PRIEST RIVER

Lamb Creek School
28769 N. Hwy. 57, Priest River vicinity
11-30-99
Public School Buildings in Idaho MPS
99001418 (A)

Settlement School
Settlement Rd., 0.5 mi. E of jct. with East Side Rd., Priest River
04-01-99
Public School Buildings in Idaho MPS
99000418 (A, C)

SANDPOINT

Olson, Charles A. and Mary, House
401 Church St., Sandpoint
05-30-01
01000566 (C)

Sandpoint Federal Building
419 N. 2nd Ave., Sandpoint
08-08-01
01000836 (C)

Sandpoint High School
102 S. Euclid Ave., Sandpoint
10-28-99
Public School Buildings in Idaho MPS
99001277 (A, C)

BONNEVILLE COUNTY

IDAHO FALLS

Art Troutner Houses Historic District
3950, 4032, 4012 S. 5th W., Idaho Falls
09-10-08
08000868 (C)

Holy Rosary Church
228 E. 9th St., Idaho Falls
07-17-02
02000802 (C, a)

Idaho Falls Airport Historic District
2381 Foote Dr., Idaho Falls
09-10-97
97001126 (A)

BOUNDARY COUNTY

BONNERS FERRY

Soderling, Russell and Pearl, House
217 W. Madison St., Bonners Ferry
01-15-98
97001650 (C)

BUTTE COUNTY

ARCO

Arco Baptist Community Church
402 W. Grand Ave., Arco
11-29-01
01001303 (C)

CANYON COUNTY

CALDWELL

Boise River and Canal Bridge
Plymouth St. (Old Hwy. 30), Caldwell
02-07-07
Metal Truss Highway Bridges of Idaho MPS
07000003 (C)

Caldwell Residential Historic District
Roughly bounded by Cleveland Blvd., Everett St., S. 12th Ave., and S. 20th Ave., Caldwell
09-23-02
02001064 (A, C, a)

Dorman, Henry W. and Ida Frost, House
114 Logan St., Caldwell
07-05-00
00000756 (A, C)

NAMPA

Lockman, Jacob P., House
23 9th Ave. N., Nampa
07-27-05
05000735 (C)

Old Nampa Neighborhood Historic District
Roughly bounded by 4th Ave. S., 4th St. S., 11th Ave. S., and 9th St. S.
03-21-07
07000164 (A, C)

WILDER

Obendorf, George, Gothic Arch Truss Barn
24047 Batt Corner Rd., Wilder vicinity
10-28-99
99001278 (C)

CUSTER COUNTY

CLAYTON

Idaho Mining and Smelter Company Store
One Ford St., Clayton
02-01-06
05001601 (A)

ELMORE COUNTY

ATLANTA

Atlanta Ranger Station Historic District
At end of Middle Fork Rd., Boise NF, Atlanta
01-23-03
02001726 (A, C)

FRANKLIN COUNTY

FRANKLIN

Relic Hall
111 E. Main St., Franklin
10-11-01
00001627 (C)

FREMONT COUNTY

ISLAND PARK

Crabtree, Glen and Addie, Cabin
3939 Cowan Rd., Island Park
06-29-00
00000742 (C)

Spencer Ferguson

From: Kevin Lyons [kjlyons@knrd.org]
Sent: Monday, February 22, 2010 9:31 AM
To: Spencer Ferguson
Subject: RE: Cultural and Historical Information

Mr. Ferguson:

Thank you for your email pertaining to this project. Two traditional cultural properties are co-located within the described bounds of your project area and there is a specific data gap relative to the related archaeological deposits. At your earliest opportunity, please have your cultural resources professional contact me for more specific input on data collection methods, scheduling, and types of necessary disclosure. Please also be mindful, there are CRM vendors within the marketplace I shall not work with when it comes to ethnographic matters due to their lack of skills and expertise in both the geographic and subject area. Based upon our past experiences with each other, I am sure you appreciate the seriousness of this response given how rarely I mention TCP issues for these types of projects.

Sincerely yours,
/s/
Kevin J. Lyons
Cultural Resources Program Manager
Kalispel Natural Resources Department
Kalispel Tribe of Indians

From: Spencer Ferguson [mailto:sferguson@jasewell.com]
Sent: Friday, February 19, 2010 7:57 AM
To: Kevin Lyons
Subject: Cultural and Historical Information

Mr. Lyons,

I am attempting to acquire information on areas of tribal cultural significance within the Albeni Falls area near Oldtown, Idaho as part of a project to install public water and sewer utilities within that area. I have attached a map showing the project area (bounded in red). I appreciate any information you can provide in this respect. Feel free to call me (509-447-3626) or email me if you require further information or have any questions. Thank you very much for your time.

SPENCER FERGUSON, EIT
James A. Sewell & Associates, LLC
600-4th Street West
Newport, WA 99156
(509) 447-3626
(509) 447-2112 Fax

Kalispel Tribe of Indians
P.O. Box 39
Usk, WA 99180

(509) 445-1147
(509) 445-1705 *fax*
www.kalispeltribe.com

KALISPEL
TRIBE OF INDIANS

RECEIVED
JUN 09 2010
JAMES A. SEWELL & ASSOCIATES

8 June 2010

Mr. Spencer Ferguson, EIT
James A. Sewell & Associates, LLC.
600-4th Street West
Newport, WA 99156

Re: Commentary/Review Albeni Annex Water and Sewer Extension Project Archaeological Study Report

Dear Mr. Ferguson:

I received in yesterday's post and reviewed this morning the above mentioned report and I am providing you written comments in duplicate, please retain one copy for the project file and forward a copy to Idaho SHPO's office to meet their regulatory needs. The technical merits and analytical summary provided are sufficient, in my opinion, to form a fact based decision that meets the good faith standard and I as a cultural resources manager concur with the recommendations Ms. Sharley has provided you and your client. Namely, in the absence of definable and defensible NRHP listed or potentially eligible historic properties in proximity to the proposed action it is without an adverse affect and thus should proceed as designed with the usual inadvertent discovery clauses for the excavation contractor.

As to substantive comments, these are somewhat petty and fall under the rubric of factual clarification rather than a demand for redrafting the report.

1. Figure 7 dates from August 1936 and was taken by Allan H. Smith at the old powwow grounds (Frog Island) on the Kalispel Indian Reservation.
2. Page 9, the Kalispel place name "Red Tree" is presented in the old and unverified orthography that contains demonstrable phonological errors, a clarification notation is typically footnoted by authors as to this fact when they themselves lack the skill set to correct and/or present the linguistic data to contemporary standards. In the absence of that type of notation citing the source materials, wherein the original errors arise, is the appropriate and most narrative efficient action to include.
3. As to the Tribe's request to have the mill's frontage included in this terrestrial inventory: Ms. Sharely's report provides independent confirmation of a long feared opinion I have held that any tangible archaeological evidence of the proto-historic use of that land form as an alternate winter village loci has likely been erased by subsequent industrial uses. It's not that I take oral history as holy writ as often there are factual errors and misinterpretations associated with such data but seldom are place name associations gathered by multiple sources without merit. This is particularly true when cultural-ecological data analysis and parsing of parallel (field verified) data sets have been analyzed and indicate a high probability for a residential base camp

occurrence in that vicinity. This is a case where facts on the ground trump well thought out and arguably reasonable theoretical expectations.

In conclusion, albeit the identification and confirmation of prehistoric deposits within and/or adjacent to the project footprint are negative I must acknowledge and affirm that negative data is data nonetheless. You, your contractor, and client are to be commended for following through the cultural resources management processes in a timely and professional manner and for providing a durable relief for the Kalispel Tribe and residents of the Pend Oreille valley in terms of clarify the question about the absence/presence of recognizable archaeological deposits on north bank of the Pend Oreille River at the river mile 89. Follow up actions forthcoming; I shall be adding the above named report into our professional reading room catalog and remind you to retain a copy of this letter in your project file. I shall be appending these survey data into our spatial database for future project review procedures to improve our own efficiencies. As oft-as-not, a follow through federal participant will attempt to reinitiate the section 106 processing of the NHPA assuming that it and their particular needs have not been anticipated. To minimize such a redundant eventuality share with them, if need be, this and any corresponding SHPO input on this project. Again, thank you for doing a fine job and if there are any additional questions that I am able to answer for you please do not hesitate to call me at (509) 445-1147.

Sincerely yours,

Kevin J. Lyons
Cultural Resources Program Manager
Kalispel Natural Resources Department
Kalispel Tribe of Indians

IDAHO STATE HISTORICAL SOCIETY

PRESERVING OUR HERITAGE · FOUNDED IN 1881

Preserving the past, Enriching the future

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C.L. "Butch" Otter
Governor of Idaho

Janet L. 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

Archaeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office (208) 334-3847
Fax: (208) 334-2775

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office (208) 334-2120
Fax: (208) 334-4059

Historic Preservation Office
210 Main Street
Boise, Idaho 83702-7264
Office (208) 334-3861
Fax: (208) 334-2775

Old Penitentiary & Historic Sites
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office (208) 334-2844
Fax: (208) 334-3225
- Franklin Historic Site
- Pierce Courthouse
- Rock Creek Station & Stricker Homesite

Public Archives & Research Library
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office (208) 334-3356
Fax: (208) 334-3198
- Public Archives
- Research Library
- Oral History

North Idaho Office
112 W. Fourth Street, Suite 7
Moscow, Idaho 83843
Office (208) 882-1540
Fax: (208) 882-1763

RECEIVED
JUL 0 2 2010
JAMES A. SEWELL & ASSOCIATES

June 29, 2010

Spencer Ferguson, EIT
James A. Sewell & Associates, LLC
600 4th Street West
Newport, Washington 99156

RE: Albeni Annex Water and Sewer Extension Project

Dear Spencer,

Thank you submitting the report documenting a cultural survey for the Albeni Annex Water and Sewer Extension project located near Oldtown, Idaho. The project will consist of five miles of new water and sewer lines installed in trenches excavated approximately four feet wide and six feet deep. In addition, two new wells will be drilled and a water tank will be installed. New water and sewer lines will connect with existing systems in Oldtown via a pipeline drilled beneath the Pend Oreille River.

Three historic properties have been identified within or partially within the Area of Potential Effect (APE): The Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1), the Albeni Falls-Pine Street Transmission Line (17-17917), and the Pend Oreille River Sawmill shoreline features (17-17816). The Red Tree Winter Village Site Traditional Cultural Property (TCP) is reportedly within or partially within the APE. The TCP was not formally documented at the request of the Kalispel Tribe of Indians, and no archaeological evidence of the TCP was noted as a result of the survey.

Albeni Falls-Pine Street Transmission Line (17-17917) has been determined Not Eligible. While the Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1) and the shoreline features of the Pend Oreille River Sawmill (17-17816) are not eligible individually, due to loss of integrity, both likely would contribute to the overall eligibility of the Pend Oreille River Sawmill. The full extent of the Pend Oreille River Sawmill remains unevaluated for eligibility to the National Register. However, we agree no individually significant cultural resources were identified within the APE, and cultural resources that may contribute to the eligibility of the historical sawmill site will not be affected by the proposed project, either directly or indirectly.

We appreciate your cooperation. If you should have any questions regarding these comments please feel free to contact me at 208-334-3847 or travis.pitkin@ishs.idaho.gov.

Sincerely,

Travis Pitkin
SHPO Archaeologist

ARCHAEOLOGICAL AND HISTORICAL SURVEY REPORT
IDAHO ARCHAEOLOGICAL SURVEY

CULTURAL RESOURCES ASSESSMENT OF THE ALBENI ANNEX WATER AND SEWER PROJECT

City of Oldtown
Bonner County, Idaho

by
Ann Sharley, M.A., RPA

Prepared for

James A. Sewell & Associates, LLC
600 Fourth Street West
Newport, WA 99156

May 19, 2010
NWAA Project No. ID10-004

Northwest Archaeological Associates, Inc.
5418 20th Avenue NW, Suite 200
Seattle, Washington 98107

CONTAINS CONFIDENTIAL INFORMATION - NOT FOR GENERAL DISTRIBUTION

ARCHAEOLOGICAL AND HISTORICAL SURVEY REPORT
ARCHAEOLOGICAL SURVEY OF IDAHO

A. KEY INFORMATION

1. **Project name**: Albeni Annex Water and Sewer Project.

2. **Report number or associated federal project number**: Northwest Archaeological Associates, Inc. (NWAA) Project No. ID10-004; U.S. Army Corps of Engineers project number has not yet been assigned.

3. **Agency name**: James A. Sewell & Associates, LLC, Newport, Washington; the project will be permitted and partially funded by the U.S. Army Corps of Engineers. The project contact is: Mr. Spencer Ferguson, EIT, James A. Sewell & Associates, LLC, 600 Fourth Street West, Newport, WA 99156.

4. **Report author**: Ann Sharley, MA, RPA, Northwest Archaeological Associates, Inc. (NWAA), 5418 20th Avenue NW, Suite 200, Seattle, WA 98107.

5. **Date**: May 19, 2010.

6. **County**: Bonner.

7. **Township, range, section:** T. 56 N., R. 5 W., Section 19 and T. 56 N., R. 6 W., Section 24, Boise Meridian (Figure 1).

   USGS topographic map(s): Newport, Wash.-Idaho, 7.5', 1968, photorevised 1986.

8. **Acres Surveyed**

	23	intensive (30-meter or less transect interval)
	0	reconnaissance (greater than 30-meter transect interval, intuitive, or statistical sample).

B. PROJECT DESCRIPTION

1. **Description of project and potential direct and indirect impacts to known or suspected historic properties**: Prior to additional development in the Albeni Annex area of Oldtown, Idaho, utilities must be upgraded. The proposed Albeni Annex Water and Sewer Project consists of approximately five miles of new water and sewer lines, to be installed in trenches excavated approximately four feet wide and six feet deep. Two new wells will also be drilled, a water storage tank will be installed, and a pipeline will be drilled beneath the Pend Oreille River, connecting the new water and sewer lines with existing systems in Oldtown (Figures 2 and 3). Since the U.S. Army Corps of Engineers will provide project funding and approve project permits, the Albeni Annex Water and Sewer Project is subject to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

2. **Description of Area of Potential Effects (APE)**: The project APE is the area that will be disturbed during installation of water and sewer lines, drilling of wells, and installation of the water tank (Figures 2 and 3). At the request of the Kalispel Tribe of Indians, the Pend Oreille River shoreline bordering the Albeni Annex area was added to the APE. A number of buildings, 50 or more years of age, sit immediately adjacent to the APE: sawmill buildings, river gauging stations, and abandoned residences and shops. None of these buildings will be removed or modified during project activities, and indirect project effects such as vibration and noise will not be of an intensity to affect the structures. Since improvements in the building vicinities will consist of buried utility lines, the structures' visual settings will not be permanently altered. Therefore these resources were not included in the APE.

3. **Project acres**: 23 acres.

4. Owner(s) of land in project area: The greater part of the project is on privately owned lands or lands within the U.S. Route 2 (US 2) right-of-way. Small portions of the project are owned by the City of Oldtown.

C. STATEMENT OF OBJECTIVES FOR SURVEY

The purpose of the survey was to identify, document, and evaluate pre-contact and historical cultural material within the APE, in compliance with Section 106 of the NHPA, through review of archival sources, intensive surface examination, and subsurface testing.

D. LOCATION AND ENVIRONMENTAL SETTING

1. Setting: The Albeni Annex Water and Sewer project APE extends across low terraces bordering the Pend Oreille River in the Newport, Washington-Oldtown, Idaho area, one-half mile downstream from Albeni Falls. Modern development in the project vicinity began in the late nineteenth century as Euroamericans moved to the area, attracted by dense stands of timber and the promise of free land. By 1909 a large sawmill occupied the terrace across the Pend Oreille River from Newport and Oldtown–part of the present project area (Figure 4). Today Newport and Oldtown are small thriving communities, surrounded by scattered farms, pastures, and commercial developments. Second- and third-growth forests cover the adjacent hills, and the Pend Oreille River, impounded by hydroelectric dams, has become a series of reservoirs.

Known geologic history of the project vicinity dates back more than 2 billion years to the Precambrian era when the first sediments of the Belt Series were deposited in shallow regional seas. Over time geological processes turned these sediments to stone, metamorphosed the stone into metasedimentary rock such as argillite, quartzite, and siltite, added intrusive igneous bodies, and uplifted the bedrock into hills and mountains. During the Eocene epoch, roughly 50 million years ago, movement along the Newport fault formed a linear depression through the mountains, creating a drainage channel that would become the Pend Oreille River valley (McKee 1972:71-77; Stoffel et al. 1991).

As climates cooled during the Pleistocene, continental glaciers flowed into the area from present-day Canada, grinding the mountains into rounded hills and widening and deepening the Pend Oreille valley. Final retreat of the glaciers, around 11,000 years ago, opened the region to human occupation. As the glacial ice melted, ephemeral lakes formed in low-lying areas of the valley. Sands, gravels, and boulders were thickly deposited over the landscape, some transported into the area with glacial outburst floods as glacial ice dams to the east weakened and collapsed (Breckenridge 1989:5-8; Gough 1997:4, 5; Stoffel et al. 1991). In time soils formed in the glacial sediments, including the Bonner, Mission, and Kootenai silt loams and gravelly silt loams found in the project area along the river and valley margins. Poorly drained Hoodoo and Pywell series soils, formed in alluvium and decomposed plant materials, are present along US 2 in the central portion of the APE, evidence of post-glacial flooding and pooling of water (Weisel 1982). Recent years have seen portions of these low marshy areas filled, reclaiming the land for modern development. Today much of the APE is devoid of vegetation and exotic weeds predominate in vegetated areas (Figure 5). Open stands of ponderosa pine and Douglas fir with understories of native forbs and bushes occur on higher landforms and around the margins of the millsite, and riparian plant communities border the river and fill low-lying marshy areas (Figure 6).

E. PRE-FIELD RESEARCH

1. Sources of information checked:

[x] Overviews
[x] National Register
[x] Archaeological site records/maps
[x] Survey records
[x] Ethnographic studies
[x] Architectural site records/maps
[ ] Other (list):

[x] Historical records/maps (T56N, R5W; T56N, R6W): General Land Office (GLO) official plats 1893, 1894, surveyor's notes 1892, 1893; Bureau of Land Management (BLM) master title plats and historic indices 1971, 1973; BLM land patent records 2010; U.S. Geological Survey (USGS) Newport 30' map 1936, USGS Priest Lake 30' map 1913, USGS Sandpoint 30' map 1910; Kaniksu National Forest map 1914; Sanborn fire insurance maps Newport, Washington 1908, 1912, 1940

The literature review for this project included a site file search at the Idaho State Historic Preservation Office (SHPO) in Boise; review of General Land Office (GLO) plats, surveyor's notes, master title plats, historic indices, and land patent records available on Bureau of Land Management (BLM) websites; examination of historical U.S. Geological Survey (USGS) and U.S. Forest Service maps; review of Sanborn fire insurance maps; and examination of cultural resources and natural history reports on file at NWAA in Seattle. Local historian Anne Geaudreau was contacted on April 22, 2010, to inquire about previous artifact finds in the project vicinity; she had not heard of any.

NWAA contacted the Kalispel Tribe of Indians through a letter dated April 15, 2010, briefly describing the project and inquiring about cultural resource concerns, including traditional cultural properties (TCPs) that could be affected by the proposed project (Appendix A). It should be noted that these letters do not constitute formal consultation, which is the responsibility of the lead federal agency or its designee.

NWAA archaeologist/architectural historian Ann Sharley met with Kevin Lyons, Kalispel Tribe of Indians Cultural Resources Program Manager, on April 21, 2010, at the Kalispel Tribe's Spokane, Washington, office. During this meeting Mr. Lyons apprised Ms. Sharley that the present project vicinity is a Kalispel Tribe of Indians (KTI) traditional cultural property, that is, a "precious place" important to the tribal community in maintaining its unique identity and culture. The TCP in the project vicinity is an alternate winter village site called *Čkʷi'ƛ̓ɔəqʷ* ("Red Tree") in reference to a large ponderosa pine that once grew there. The Kalispel people selected winter village locations based on proximity to needed resources, particularly winter deer yards, an important consideration in a region where winter lasts nearly five months. An alternate winter village would be occupied, perhaps every fifth year, as predation pressure or other factors caused deer populations in the area of the primary village to decline. In addition to its significance as a winter village site, Red Tree is important to the Kalispel people as the birthplace of prominent tribal historian Blind Paul (Figure 7), an important figure in Kalispel history. Although Kalispel tribal members no longer visit the site, it remains an important and valued connection with their past (Fandrich et al. 2000:4.18; Lyons 2005, 2009a; Kevin Lyons, personal communication 2010; Smith 1985:40, 41). Boundaries of the Red Tree TCP have not yet been established; therefore the KTI, at this time, does not wish to formally document the property or evaluate its eligibility for listing in the National Register of Historic Places (NRHP) (Kevin Lyons, personal communication 2010).

2. Summary of previous studies in the general area: Five previous cultural resource investigations have been conducted within 0.5 mile of the present APE. These studies are summarized in Table 1. Four of these studies intersect the present project. Brannan and Clark Schmidt's 2007 visual survey of the Albeni Falls-Pine Street powerline corridor included a small portion of the present project, 0.1 mile west of the Pend Oreille River near the Newport Substation; the archaeologists recorded one cultural resource during the survey–the Albeni Falls-Pine Street Transmission Line (17-17917). Carbonneau Kincaid and Hudson's survey of the proposed Great Pend Oreille River Trail overlapped the present project along US 2. Ms. Carbonneau Kincaid excavated four shovel probes to a depth of 40-50 centimeters (16-20 inches) below surface near the eastern end of the Pend Oreille River Bridge, but recovered no cultural material. Fandrich, Peterson, and Deaver's ethnographic, historical, and archaeological investigations of traditional Kalispel lands were published in 2000. Fieldwork for the project included 1999 survey of the Pend Oreille River shoreline bordering the entire Albeni Annex project; the archaeologists identified only one cultural resource in that area–shoreline features of the historical millsite (17-17816). In 2000 Kevin Lyons, Kalispel Tribe of Indians Cultural Resources Program Manager, surveyed the proposed Oldtown Recreational Park, a seven-acre parcel adjoining the present project on the west. In addition to the visual survey of the parcel and river shoreline, Mr. Lyons excavated four shovel tests to a depth of 30 centimeters (12 inches) below surface; no cultural resources were identified in the extensively disturbed parcel.

Table 1. Recent Studies within 0.5 Mile of the APE.

AUTHOR	DATE	PROJECT	SURVEY AREA	RESULTS*
Gaston, J.	1982	Annual Report of Archeological Investigations, Idaho Transportation Department	Includes portions of Section 24, T56N, R6W	Oldtown Bridge (17-4925)
Lyons, K.	2000	Oldtown Recreational Park Acquisition	Portions of Section 24, T56N, R6W	No new resources
Fandrich, B., L. Peterson, and S. Deaver	2000	A Kalispel Indian Cultural History	Includes portions of Sections 24, 25, T56N, R6W, Sections, 20, 30, T56N, R5W	Reported three ethnographic villages and one ethnographic fishery in Newport/ Oldtown/Albeni Falls area; recorded three historical sites (10BR957, 17-17816, 17-17817)
Carbonneau Kincaid, S., and L. Hudson	2005	Great Pend Oreille River Trail, Segment 5	Portions of Section 19, T56N, R5W, Section 24, T56N, R6W	No new resources
Brannan, N., and S. Clark Schmidt	2007	Albeni Falls–Pine Street Structure Replacements	Portions of Section 19, T56N, R5W, Section 24, T56N, R6W	Albeni Falls-Pine Street BPA Transmission Line (17-17917)

* Resources within 0.5 mi of the APE.

F. EXPECTED HISTORIC AND PREHISTORIC LAND USE AND SITE SENSITIVITY

1. Are cultural properties known in this area? [X] Yes [ ] No

Nine cultural resources have previously been recorded within 0.5 mile of the present project. These properties are listed in Table 2. Two of these resources–the Pend Oreille River Sawmill (17-17816) shoreline features and the Albeni Falls-Pine Street Transmission Line (17-17917)–are partially within the Albeni Annex Water and Sewer APE. Despite their proximity to the proposed Albeni Annex Water and Sewer project, none of the nine previously recorded cultural resources will be affected, either directly or indirectly, by proposed project activities

Table 2. Previously Recorded Cultural Properties within 0.5 Mile of the APE.

SITE NO./ FIELD NO.	SITE NAME	SITE DATE	NRHP STATUS	RELATIONSHIP TO APE
10BR995	Great Northern Railway (main line)	Ca. 1892	Recommended eligible (main line)	0.5 mi E, 0.3 mi S
10BR871	Steamboat Landing Site	Pre-contact, ca. 1895-1915	Unevaluated	0.3 mi NW
10BR19	Prehistoric habitation (open camp)	Pre-contact	Unevaluated	0.25 mi SE
10BR957	Cultural material scatter	Ca. 1950s?	Recommended not eligible	0.1 mi SE
17-17816	Pend Oreille River sawmill [Fidelity / Humbird / Diamond Match shoreline features]	1910-1948	Recommended not eligible	Within APE
17-17817	Burlington Northern Railroad culvert	Ca. 1920	Recommended not individually eligible, but contributing to eligibility of Great Northern Railway (10BR995)	0.5 mi S
17-17766	Idaho Hill Elementary School	1923	Recommended eligible	0.2 mi S
17-17917	Albeni Falls-Pine Street Transmission Line	1954	Determined not eligible by SHPO (Pengilly 2007)	Partially within APE
17-4925	Oldtown Bridge	1926-1927	Not eligible (no longer extant)	N/A

2. Are cultural properties expected? [X] Yes [ ] No

Ethnographic period Kalispel village sites are reported on both sides of the Pend Oreille River in the project vicinity and pre-contact cultural material has been found in the Newport-Oldtown area. Early Euroamerican settlement and industry also occurred in the project vicinity–the first store was built in 1889, 0.1 mile north of the western APE, and a sawmill was established in 1908/1909 in the area of the eastern APE. Historical and modern maps show a railroad spur, built to access the sawmill, partially within the APE. Although the limited size of the APE decreases the chance of encountering cultural materials, and extensive historical period disturbance reduces the probability of locating intact cultural deposits, the chance of finding evidence of pre-contact, ethnohistorical, and historical period activity in the project vicinity is moderately high.

3. What cultural themes/contexts could be encountered within the survey area?

Theme		Time Period
[x] Prehistoric Archaeology	[ ] Military	[x] Pre-Contact
[ ]Agriculture	[x] Mining Industry	[x] Historic Native American
[ ] Architecture	[x] Native Americans	[x] Exploration: 1805-1860
[ ] Civilian Conserv. Corp.	[ ] Politics/Government	[x] Settlement: 1855-1890
[x] Commerce	[ ] Public Land Mngt/Conserv.	[x] Phase I Statehood:1890-1904
[ ] Communication	[ ] Recreation/Tourism	[x] Phase II Statehood:1904-20
[x] Culture and Society	[x] Settlement	[x] Interwar: 1920-1940
[x] Ethnic Heritage	[x] Timber Industry	[x] Pre-Modern: 1940-1958
[x] Exploration/Fur Trapping	[x] Transportation	[x] Modern: 1958-present
[x] Industry	[ ] Other (list)	

4. Brief description of where cultural properties associated with expected themes might be found with respect to landforms, water, vegetation, slope, fauna, and historical documentation:

Probability for pre-contact, ethnohistorical, and historical cultural resources is highest in areas of well-drained sediments along the Pend Oreille River. Valley margins adjacent to wet bottomlands, particularly areas with sandy soils, are high probability for pre-contact and early historical period camas processing sites. Upland areas bordering the Pend Oreille valley could contain evidence of the earliest Native American residents of the region.

Ethnographic/Historical Context:

Following final glacial retreat in the Pend Oreille region, low-lying areas were inundated by vast meltwater lakes while the uplands remained a cold steppe environment. Projectile point styles and radiocarbon dates provide evidence that humans, probably highly mobile big game hunters, were living in the Pend Oreille basin prior to 8,000 years before present (BP) (Miss 2002, 2005, 2006:21). As the climate warmed between 8,000 and 6,000 BP, residents of the region adopted a foraging strategy focused on upland resources–large and small game animals and a variety of plant foods (Miss 2006:21). From 6,000 to 2,500 BP, as the climate again cooled and dense coniferous forests replaced grasslands and open woodlands, people expanded into more diverse habitats, focusing their subsistence activities on previously underutilized resources such as camas, bitterroot, and biscuitroot (Miss 2006:22). By 2,500 BP the Pend Oreille river valley had become a major resource area and travel corridor, and most people lived in semi-permanent villages along the river's banks. Camas had, by this time, become a dietary staple and local residents processed large quantities of the root vegetable for local use and probably for trade (Miss 2006:22). This was the subsistence pattern observed by the first Europeans to enter the Pend Oreille region.

The Albeni Annex Water and Sewer project is located within the traditional territory of Salishan-speaking Kalispel people. The Kalispel were divided geographically into upper and lower bands: the Upper Kalispel resided along the Pend Oreille River, Pend Oreille Lake, and the Clark Fork River, upstream from Albeni Falls, while the Lower Kalispel were centered in the Calispell Valley, downstream from the falls (Kalispel Tribe of Indians 2010; Lahren 1998:284; Miss 2002:22; Ray 1936:103). Like other Columbia Plateau groups, the Kalispel generally spent the winters in permanent streamside villages. As warmer weather arrived, village residents broke into smaller groups for travel to favored hunting, fishing, and plant gathering locales (Lahren 1998:285; Lyons

2003a:3, 2003b:5, 2009b:3). Numerous ethnographic Kalispel villages, campsites, and resource extraction locations have been documented in the Pend Oreille basin, including a winter village site in the present Newport area, another winter village–"Red Tree"–across the river in the vicinity of the historical/modern sawmill, and a third winter village–"Portage around the Falls"–near a popular fishery at Albeni Falls (Deaver 2000:17, 20; Fandrich et al. 2000:4.18, 4.21; Ray 1936:129; Smith 1985:38-42).

The first documented Euroamerican incursion into the Pend Oreille valley came in September 1809 as a North West Company exploratory party led by David Thompson descended the Kootenai River to present-day Bonners Ferry, then continued south over an established Indian trail to Lake Pend Oreille. After exploring the northern portion of the lake by canoe, Thompson selected a site for a trading post on the eastern shore and directed his men to begin construction. Leaving members of the party to complete the facility, Thompson proceeded on horseback around the northern end of the lake and down the right bank of the Pend Oreille River, following an Indian trail. During the trip Thompson and his Native American guide stopped to fish at Albeni Falls, apparently a well-known local fishery. Later a group of Native Americans presented Thompson with two cakes of "root bread" and 12 pounds of roots, presumably *Camassia quamash* (camas) harvested in the valley (Elliott 1932:19-21; McCart and McCart 2000; Nisbet 1994; Smith 2000:7.20).

By the early 1840s Christian missionaries were regularly visiting the Pend Oreille valley and, in 1844, Jesuit priests Adrian Hoecken and Pierre Jean DeSmet established St. Michael's Mission near Albeni Falls. The following year the facility was moved farther downstream to the present Cusick area and renamed St. Ignatius Mission. Although many Kalispel people settled near the mission and took up farming, seasonal flooding and infertile soils resulted in poor harvests, and the discouraged converts began to drift away. In 1854, in an effort to retain their new congregants, the priests again relocated the mission, this time to more favorable agricultural land in western Montana. The Upper Kalispel and most of the Lower Kalispel moved to Montana with the priests, but within two years nearly all the Lower Kalispel people had returned to their traditional homes in the Pend Oreille valley (Chalfant 1974:193; Fahey 1986:7-13; Lahren 1998).

In 1855, Washington Territorial Governor Isaac Stevens concluded the Hell Gate Treaty with Flathead, Kootenai, and Pend Oreille peoples, creating the Flathead Indian Reservation in western Montana. Governor Stevens had planned to negotiate a separate treaty with the Kalispel, but the outbreak of the Indian Wars forced him to postpone further negotiations and return to Olympia (Chalfant 1974:196-198; Fahey 1986:17, 18, 53, 54; Lahren 1998:294). During subsequent years the government continued to pressure the Lower Kalispel to cede their lands and, in 1887, the Northwest Indian Commission met with the Lower Kalispel leadership to negotiate a formal treaty. Under pressure, Michael, leader of one of two major Lower Kalispel bands, signed the treaty and moved his followers to the Flathead Reservation. Victor and Marcella, however, leaders of the other Lower Kalispel band, refused to sign, insisting on a reservation on traditional Lower Kalispel lands (Chalfant 1974:199-203; Cotes 1980:24; Lahren 1998:294).

Gold strikes in British Columbia and Montana during the 1860s brought miners and freighters through the Pend Oreille region, and subsequent decades saw a handful of Euroamerican farmers, merchants, and lumbermen move into the valley. The first settler in the Newport-Oldtown area, an Irishman named Mike Kelley, arrived in 1889. Mr. Kelley built a log store on the west bank of the Pend Oreille River, just south of today's Interstate Bridge. Other settlers soon arrived, apparently aware of the Great Northern's plans for a railroad through the area, and by 1890 the population had grown to the point that a post office was warranted. Residents of the new community selected the name Newport for their town, hopeful that steamboats operating out of Albeni Falls would add it as a port of call (Cork 1991:39, 40).

Arrival of the Great Northern transcontinental railroad in 1892, and completion of federal government cadastral surveys shortly thereafter, greatly accelerated immigration. The railroad ran along the north bank of the Pend Oreille River to Albeni Falls, where it crossed on a steel bridge and continued along the south bank of the river to Newport, Idaho, before turning south toward Spokane (General Land Office [GLO] 1893a, 1894a, 1899). When the Great Northern depot, a rail car, burned in 1894, the company selected a level spot across the state line in Washington and built a permanent frame structure. Businesses and residents wished to be near the depot and gradually the town of Newport shifted from Idaho to Washington. In time the original town came to be called Oldtown, a name that was made official in 1947 when the town incorporated (Bamonte and Bamonte 1996:202; Cork 1991:40).

During the early twentieth century, logging and lumbering were the Pend Oreille region's primary industries, and numerous sawmills sprang up along the river. One of these, located at the northern edge of Newport, Washington, was acquired in 1904 by the Fidelity Lumber Company of Spokane. Fidelity, however, had plans for expansion and the company began looking for a larger parcel of land. Around 1908 Fidelity acquired a low riverside terrace across the Pend Oreille River from Oldtown and Newport and built a large modern mill, accessed by a rail spur from the Great Northern main line at Albeni Falls (Figures 8 and 9) (Bamonte and Bamonte 1998:36; Chance 1991:57, 58; Steele and Rose 1904:162; U.S. Forest Service 1914).

As Euroamericans moved into the Pend Oreille region, most Kalispel residents drifted to the more remote right (east) bank of the Pend Oreille River. Settlers generally avoided the area of the old St. Ignatius Mission and there, in a small remnant of their once-vast territory, the Kalispel made their home. In 1914 the federal government gave legal protection to the Indian "squatters," setting aside this small area, through Executive Order, as the Kalispel Indian Reservation (Lindeman 2000:8.10; KTI 2010).

The 1910s were a difficult decade for the lumber industry. Most mills, including the Fidelity plant, operated only sporadically. In the summer of 1915 the Fidelity Lumber Company went into receivership and, the following year, the Humbird Lumber Company, a Weyerhaeuser subsidiary, purchased the Oldtown plant. The lumber industry subsequently revived and saw a number of good years, but in the early 1930s the Depression again disrupted logging and lumbering, and production in the region plummeted. In 1935, after sitting idle for an extended period, Humbird's Oldtown mill was sold to the Diamond Match Company for the unbelievably low price of $60,000. Acquisition of the mill, located just over the state line in Idaho, allowed Diamond Match to purchase timber from state lands at in-state rates, and the Oldtown plant was put back into production (Chance 1991:132-135, 252-257, 277; Renk 2006:28).

Waning of extractive industries–particularly logging and mining–during the late twentieth century saw the population of the Pend Oreille valley drop precipitously. Members of the Kalispel Tribe of Indians, however, as in the past, clung to their traditional homeland. Today, the Kalispel Tribe has again become an influential presence in the region. This federally recognized group works actively to preserve its heritage and culture, protect the regional environment, and improve the social and economic well-being of both Indian and non-Indian community members (KTI 2010). Tribal members continue to visit places of traditional value in the project vicinity, and tribal representatives actively participate in planning for state and federally funded projects. The Oldtown mill continues to operate, although ownership has changed several times since its Diamond Match days. Lands in the vicinity of the mill were recently annexed by the City of Oldtown, and additional development is planned for the area.

G. FIELD METHODS

1. Areas examined and type of coverage:

On April 22 and 23, 2010, two NWAA archaeologists conducted fieldwork in the Albeni Annex Water and Sewer Project APE. The archaeologists walked over the APE in transects spaced 5 to 15 meters (16 to 50 feet) apart (Figure 2). The APE generally followed existing roads, railroads, and fence lines, making it easy to locate using project engineering plans and aerial photographs. Portions of the project running cross-country had been staked by Sewell & Associates personnel, and boundaries of the shoreline portion of the APE were determined with Global Positioning System-(GPS-) generated UTM coordinates. The archaeologists thoroughly examined the ground surface, throughout the survey, for evidence of past cultural activity, with special attention to areas of exposed sediments. The archaeologists faced up cut banks along the shoreline with a trowel, as needed for improved visibility. The archaeologists documented the survey and cultural resources encountered with digital photographs and field notes, recorded on standard NWAA daily work record, photo log, site, and site update forms.

Anticipating compacted sediments, gravel, wood waste, and other debris within the APE, NWAA contracted with a backhoe operator for excavation of test pits, allowing visualization of subsurface sediments and identification of buried cultural deposits. On April 23, 2010, the backhoe operator, directed by an archaeologist, excavated five test pits, each a trench approximately 5 feet (1.5 meters) long, 2.5 feet (0.8 meter) wide, and 6.5 to 7.5 feet (2 to 2.3 meters) deep (Figure 2 and Appendix B). Test pit locations were chosen in areas with limited subsurface exposure, and an effort was made to sample all portions of project area landforms. Presence of underground utilities, however, prevented excavation in certain portions of the APE. The archaeologist observed the excavation from a safe distance, frequently checking the walls and floors of the test pit and the spoils piles for cultural materials. Samples of the excavated sediments were screened through 1/4-inch mesh hardware cloth to check for smaller objects or materials. The archaeologist documented the tests with digital photographs, GPS-generated UTM coordinates, and field notes on standard NWAA shovel probe forms (Figure 10). Other than imported earth and rock fill, the only cultural materials encountered in the five tests were a vertical 12-inch diameter log post with a sharpened lower end extending from 10 to 180 centimeters (4 to 70 inches) below surface in Backhoe Probe 4, and a relatively thin, colorless glass bottle sherd recovered between 1 and 9 centimeters (0.4 to 3.5 inches) below surface in Backhoe Probe 5. Cultural materials were noted and reburied in the holes from which they came.

2. **Description of ground surface conditions**: Ground visibility–exposed sediments–ranged from 10 to 95 percent of the ground surface throughout the APE: an estimated 10 percent north of US 2, 10-90 percent in the millsite, and 80-95 percent along the Pend Oreille River shoreline. Approximately 40 percent of the APE has been artificially leveled or disturbed during railroad, road, or sawmill construction. An additional 30 percent consists of deep imported fill, used to reclaim low marshy areas. Fluctuation of the Box Canyon Dam reservoir has eroded the shoreline, and large portions of the riverbank have been filled, rip-rapped, or used as industrial waste disposal sites.

3. **Areas not examined and reasons why:** The entire APE was examined for cultural resources.

4. **Names of personnel participating in the survey in the**: Ann Sharley, archaeologist/architectural historian, and Simone Carbonneau Kincaid, archaeologist, Northwest Archaeological Associates, Inc., Seattle.

5. **Date(s) of survey**: April 22 and 23, 2010.

6. **Problems encountered**: None.

H. RESULTS

1. **Listing of <u>all</u> cultural properties (including previously recorded) in this area:** Four cultural resources were identified within or partially within the APE: The Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1), the Albeni Falls-Pine Street Transmission Line (17-17917), the Pend Oreille River Sawmill (17-17816) shoreline features, and the Red Tree Winter Village Site Traditional Cultural Property. The railroad spur was recorded during the present project; a copy of the Idaho Historic Sites Inventory (IHSI) form completed for the property is included in Appendix C. The transmission line and sawmill shoreline features were initially documented during previous cultural resource surveys; original IHSI forms for both properties and a site update form, completed by NWAA, for the sawmill shoreline features are also in Appendix C. An update of the powerline form was unnecessary since the site was recorded recently and the site's condition appeared unchanged. The Red Tree TCP was not formally documented at the request of the Kalispel Tribe of Indians (Kevin Lyons, KTI Cultural Resources Program Manager, personal communication 2010). Brief descriptions of the four resources follow.

<u>Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1)</u>: This standard gauge railroad spur was built, ca. 1909, to access the Fidelity Lumber Company sawmill from the Great Northern main line at Albeni Falls (Figures 9 and 11). Historical maps show the spur entering the millsite from the east, passing along the northern boundary of the complex, then curving south to the mill's boiler house/sawmill building. At some point the curving western segment of the line, approximately 700 feet in length, was removed, leaving no evidence of its location. The spur now ends abruptly at a modern building, much of its final 200 feet paved over and unusable. After 1940,

additional rail spurs or sidings were constructed in the mill area, paralleling the original track; segments of these lines have since been removed (Chance 1991:57, 58, 103; Sanborn Map Company 1940:Sheet 1; U.S. Forest Service 1914).

Today, shortly after entering the millsite, the spur divides into two and then three parallel lines. (1940 Sanborn maps show only one line in this location.) The northernmost of the three lines has been removed west of Diamond Mill Road, leaving only the ballast-covered grade to mark its route. A hand-operated mechanical switch stand at each of the turnouts moves the switch rails and rotates a color-coded switch target to signal the track position to oncoming trains. Maintenance through the years has resulted in replacement of ties, rails, and other trackage elements; embossed dates, however, suggest that some rails may be original.

Albeni Falls-Pine Street Transmission Line (17-17917): This 2.1-mile-long, 115-kilovolt Bonneville Power Administration (BPA) transmission line was constructed in 1954 and 1963, connecting the power plant at Albeni Falls Dam with the Newport Substation in Oldtown, Idaho. The feature consists of 16 wood H-frame structures and three wood three-pole structures. The line crosses over the Albeni Annex project near the Newport Substation, west of the Pend Oreille River (Figure 12).

Pend Oreille River Sawmill (17-17816): This property, consisting of three piling alignments and the remains of a large circular brick structure, was recorded in 1999 during cultural resources survey of the Pend Oreille River shoreline. Since the survey was restricted to the 2028- to 2041-foot elevation zone, associated sawmill buildings on the terrace above the beach were not recorded or evaluated (Figure 13) (Fandrich et al. 2000:5.23; Walker-Kuntz 1999). The site was revisited in 2002 (by the original recorder?) and a site form update was completed, providing additional descriptions of the property and historical information. NWAA archaeologists visited the site as part of the present Albeni Annex Water and Sewer Project, a survey limited to the shoreline and proposed utility corridors. NWAA completed another site update form for the property, documenting a fifth site feature–an extensive scatter of industrial waste and structural debris dumped over the riverbank–and adding a sketch map (Appendix C).

Red Tree Winter Village Site Traditional Cultural Property: This property, located in the present project vicinity, is the site of the *Čkʷi'ƛ̓ɔəqʷ* ("Red Tree") alternate winter village site, as well as the birthplace of tribal historian Blind Paul. The location, a Kalispel "precious place," remains important to tribal members in maintaining their unique identity and culture. The boundaries of this property have not yet been defined.

2. Recommendations for National Register eligibility of each cultural property:
Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1): Over the years, the configuration of the Fidelity Lumber Company rail spur has been significantly altered: the western 700 feet of the line has been removed, sidings and spurs have been added, and segments of these features have been removed. The rail spur's integrity–of location, design, materials, workmanship, and association–has been severely compromised. Loss of integrity prevents the feature from conveying its historical significance, precluding individual eligibility for listing in the National Register of Historic Places (NRHP). The spur, however, may contribute to eligibility of the historical sawmill site, and should be reevaluated if the millsite as a whole is evaluated. The proposed Albeni Annex Water and Sewer Project will not affect extant portions of the rail spur, either directly or indirectly.

Albeni Falls-Pine Street Transmission Line (17-17917): BPA archaeologists recorded the Albeni Falls-Pine Street Transmission Line in 2007 and recommended that it be determined ineligible for NRHP listing due to replacement of fabric and relocation of portions of the route (Brannan and Clark Schmidt 2007). The Idaho State Historic Preservation Office (SHPO) concurred with the recommendation (Pengilly 2007).

Pend Oreille River Sawmill (17-17816): In the 2002 site form update, this property is recommended not eligible for NRHP listing due to loss of integrity. Today the property remains unevaluated. Although compromised integrity precludes individual NRHP eligibility for the shoreline features, they may contribute to eligibility of the sawmill property as a whole. Evaluation of the shoreline features should, therefore, accompany evaluation of the historical sawmill. The present project will have no effect on site 17-17816 or the adjacent sawmill buildings, and evaluation of the millsite is currently unnecessary.

Red Tree Winter Village Site Traditional Cultural Property: Since the boundaries of the Red Tree Winter Village Site TCP have not yet been established, the KTI does not wish to formally document the property, at this time, or evaluate its eligibility for listing in the National Register of Historic Places (NRHP) (Kevin Lyons, personal communication 2010). Consultation with the Kalispel Tribe of Indians will be necessary to determine what impact, if any, the Albeni Annex Water and Sewer Project will have on this resource.

3. Recommendations for further investigations needed to evaluate cultural properties: The U.S. Army Corps of Engineers (USACE), as the federal project proponent, will initiate formal government-to-government consultation with the Kalispel Tribe of Indians regarding the proposed project, as directed by the NHPA. During this consultation process, the USACE will ask the Tribe to identify historic properties of traditional religious and cultural significance, including TCPs, that could be affected by the project. The USACE, in consultation with the Tribe and the SHPO, will then assess the affect of the project on identified historic properties. If an adverse effect to historic properties is anticipated, the USACE will, in consultation with the Tribe and SHPO, develop and evaluate alternatives or modifications to the project in order to avoid, minimize, or mitigate the adverse effect.

4. Cultural properties noted but not formally recorded: None.

I. CONCLUSIONS AND RECOMMENDATIONS

1. Discussion of potential threats to the integrity of the cultural properties and recommendations for future investigations or protective actions:
No individually significant cultural resources were identified within the APE, and cultural resources that may contribute to NRHP eligibility of the historical sawmill site will not be affected by the proposed project, either directly or indirectly. The project's effect on the Red Tree Winter Village Site Traditional Cultural Property must be addressed during formal government-to-government consultation between the U.S. Army Corps of Engineers and the Kalispel Tribe of Indians. If the Albeni Annex Water and Sewer Project will not adversely affect the Red Tree Winter Village Site TCP, the project is expected to have no effect on significant cultural resources.

In the event that additional cultural materials, dating either to the pre-contact or historical period, are unearthed during construction in the APE, work should be halted in the immediate vicinity of the find and a qualified archaeologist contacted to assess the significance of the resource. If project activities expose human remains, either in the form of burials, isolated bones, teeth, or other mortuary items, work in that area should immediately stop and local law enforcement and the Idaho State Historic Preservation Officer (208-334-3847) should be notified. No additional excavation should be undertaken until a treatment plan has been agreed upon by the appropriate agencies and affected Native American tribes. At no time should exposed human remains be left unattended.

Prior to initiation of land-altering project activities, James A. Sewell & Associates, LLC, on behalf of the City of Oldtown, should submit this document to appropriate agencies and interested parties, including the Idaho State Historic Preservation Office (SHPO), the U.S. Army Corps of Engineers, and the Kalispel Tribe of Indians.

2. For 106-related surveys, discussion of relationship of each cultural property to direct and indirect project impacts.
No individually significant cultural resources were identified within the APE, and cultural resources within the APE that may contribute to NRHP eligibility of the historical sawmill site will not be affected, either directly or indirectly, by the proposed project.

3. For 106-related surveys affecting cultural properties, discussion of avoidance or mitigation options for each property: N/A.

J. ATTACHMENTS

1. **Appropriate forms attached for each site?** [x] YES
2. **Maps attached?** [x] YES
3. **Other attachments?** [x] YES -- photographs and correspondence

K. REPOSITORY

Northwest Archaeological Associates, Inc., 5418 20th Avenue NW, Suite 200, Seattle, WA 98107.

L. CERTIFICATION OF RESULTS

I certify that this investigation was conducted and documented according to the Secretary of Interior's Standards and Guidelines and that the report is complete and accurate to the best of my knowledge.

Ann Sharley
Signature of Reporter

May 19, 2010
Date

Lorelea Hudson
Principal Investigator

May 19, 2010
Date

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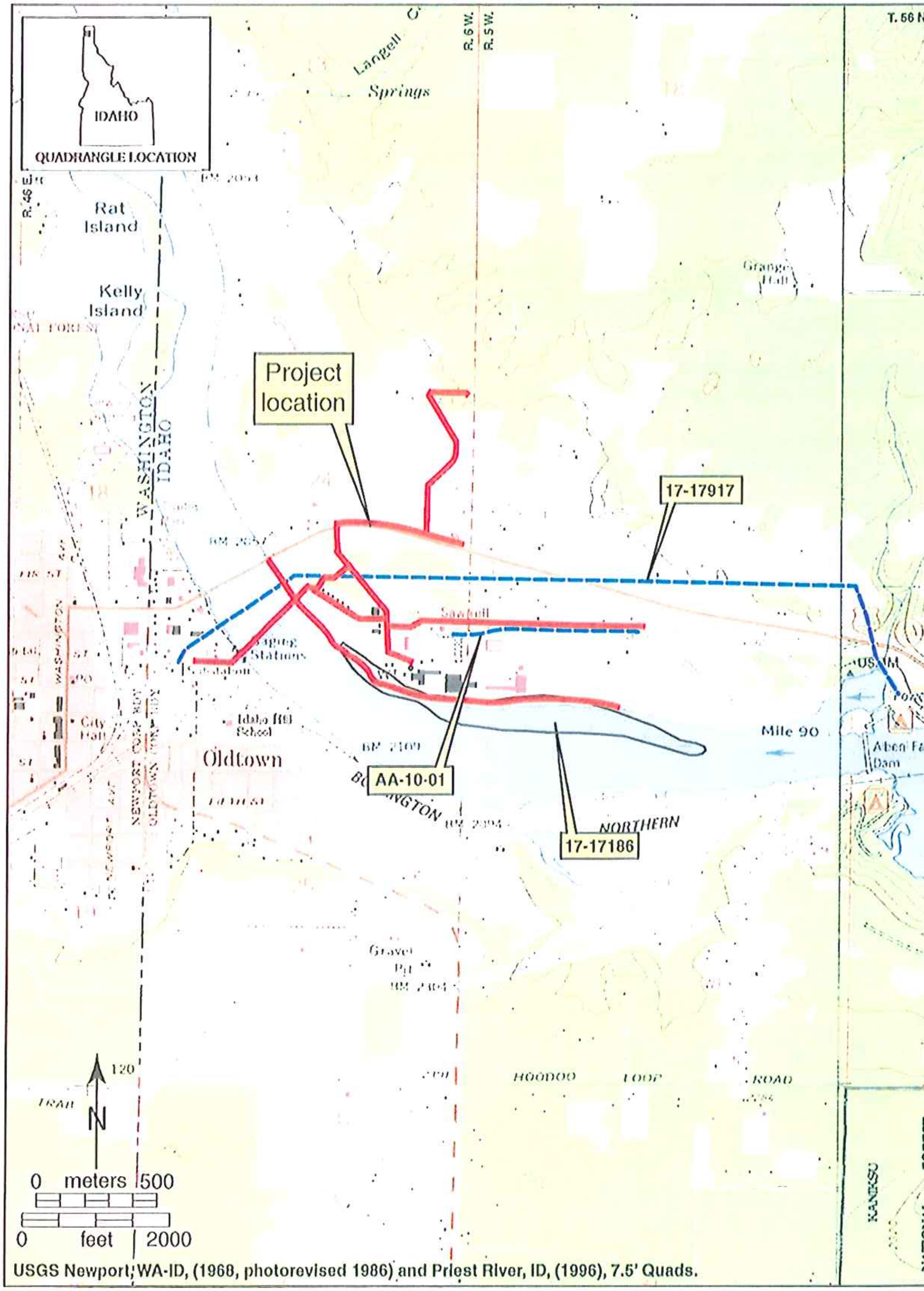


Figure 1. Project location, showing cultural resources.

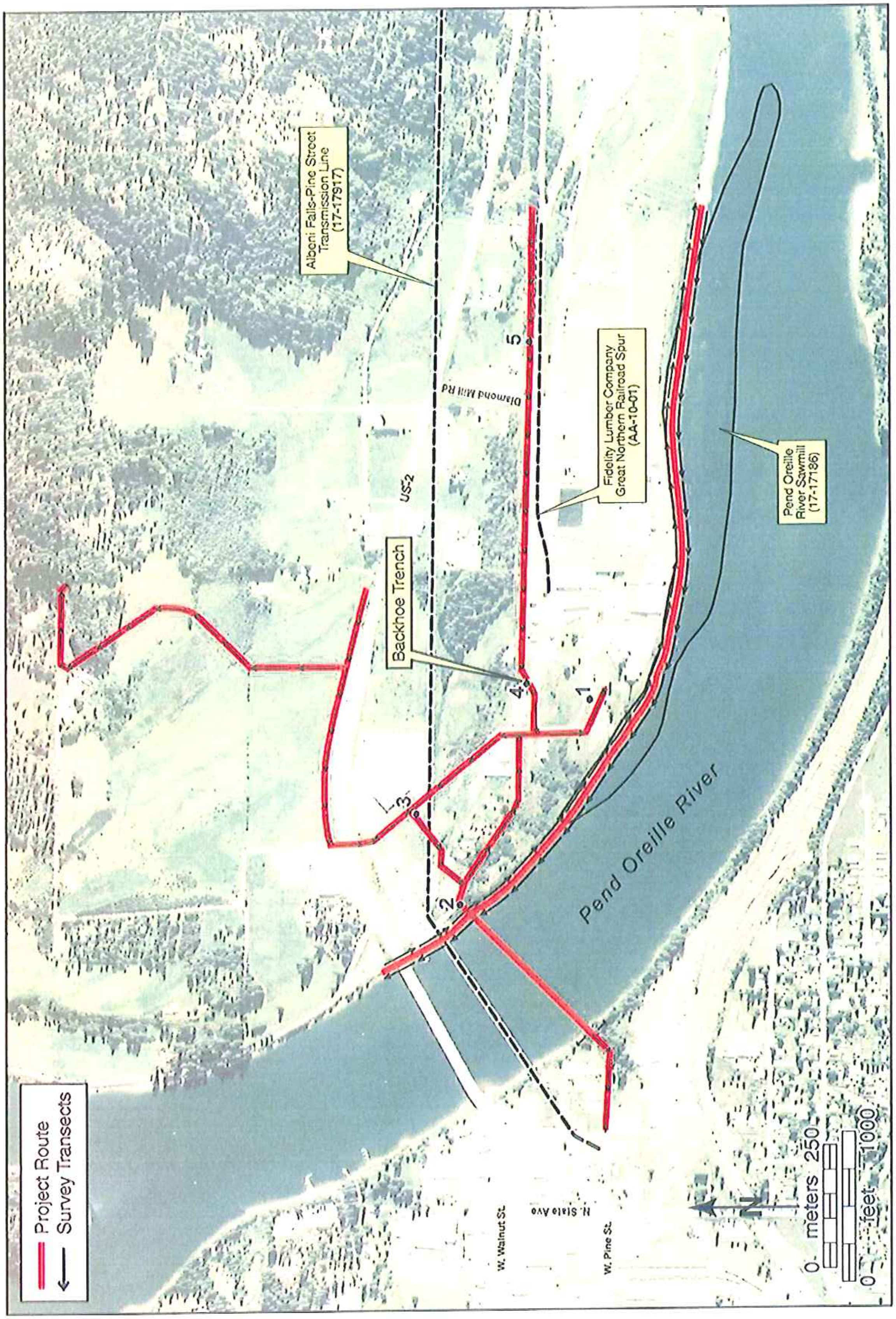


Figure 2. Project area, showing survey transects, backhoe probe locations, and cultural resources.

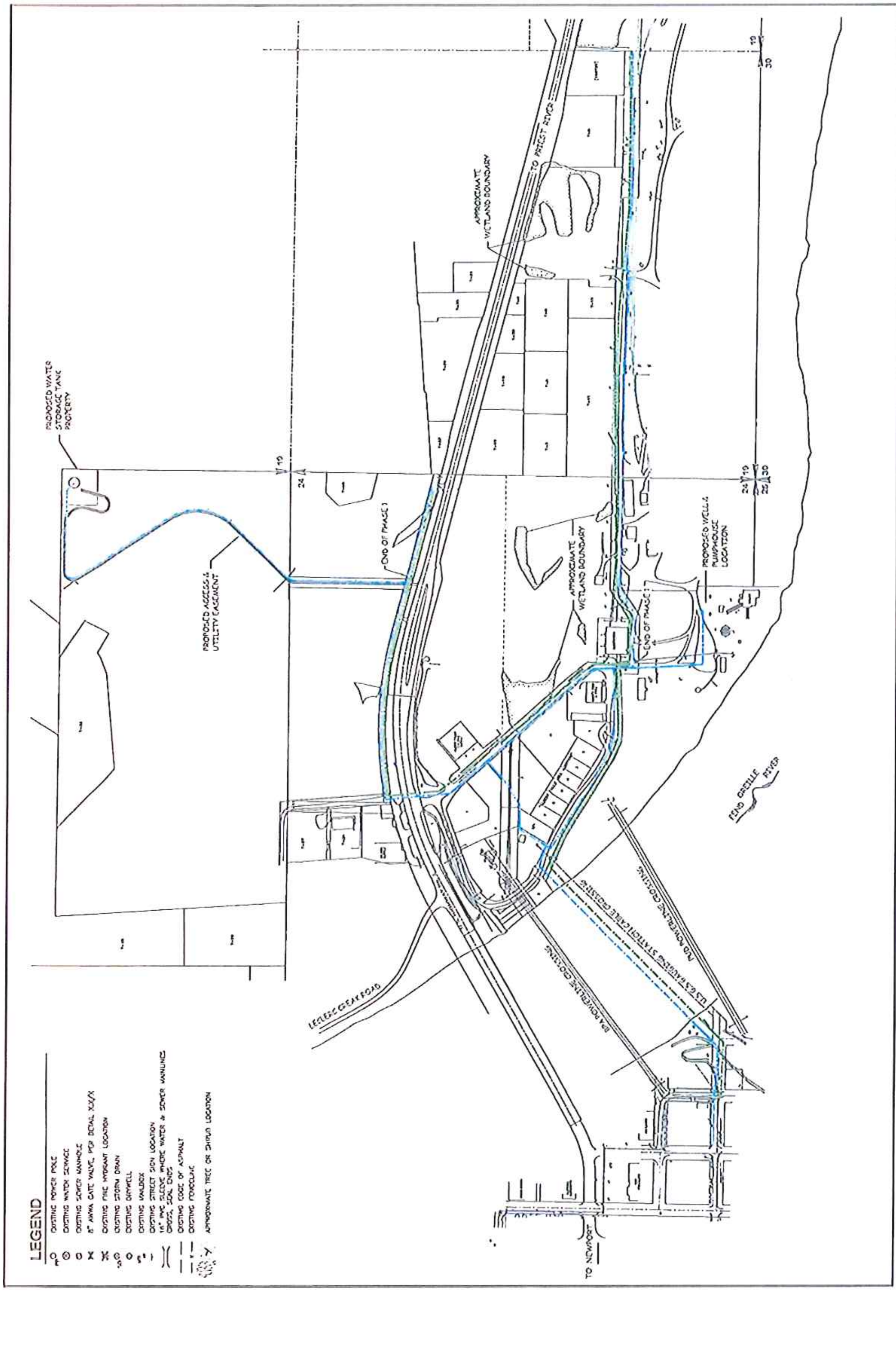


Figure 3. Project engineering plans.

Figure 4. Overview of project vicinity; view to the northeast.

Figure 5. Overview of project APE east of Pend Oreille River; view to the east.

Figure 6. Overview of project APE west of Pend Oreille River; view to the northwest.

Figure 7. Undated historical photograph of Kalispel tribal historian Blind Paul and unidentified child (photograph courtesy of Allan H. Smith Collection, Lewis and Clark State College, Lewiston, Idaho).

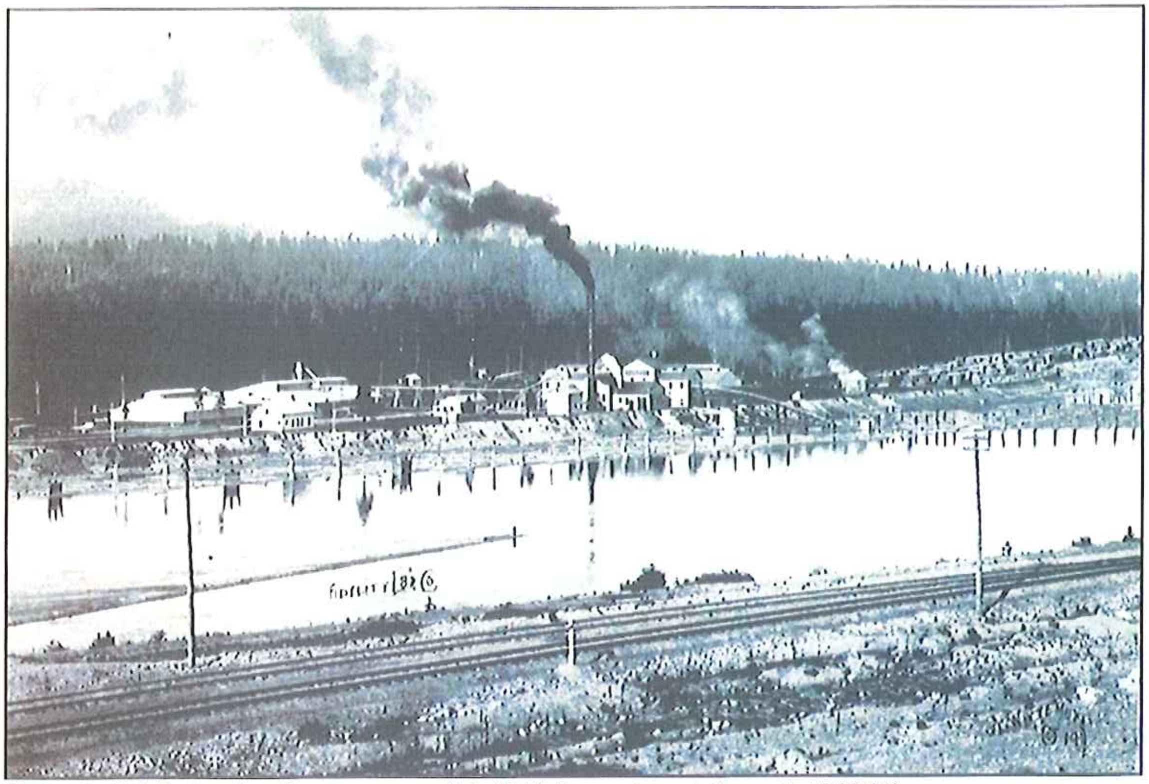


Figure 8. Fidelity Lumber Company sawmill in 1910 (Bamonte and Bamonte 1998:36).

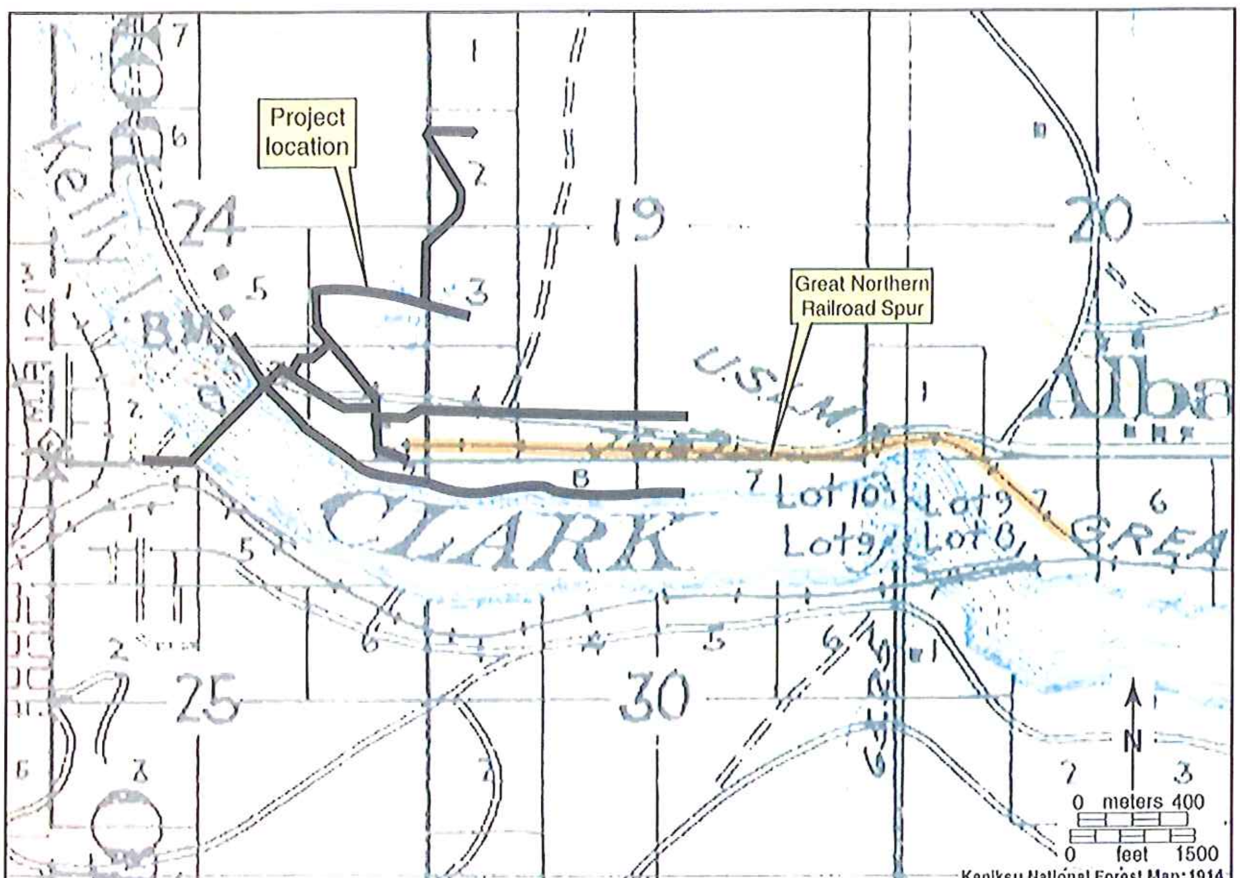


Figure 9. Kaniksu National Forest map showing project area in 1914.

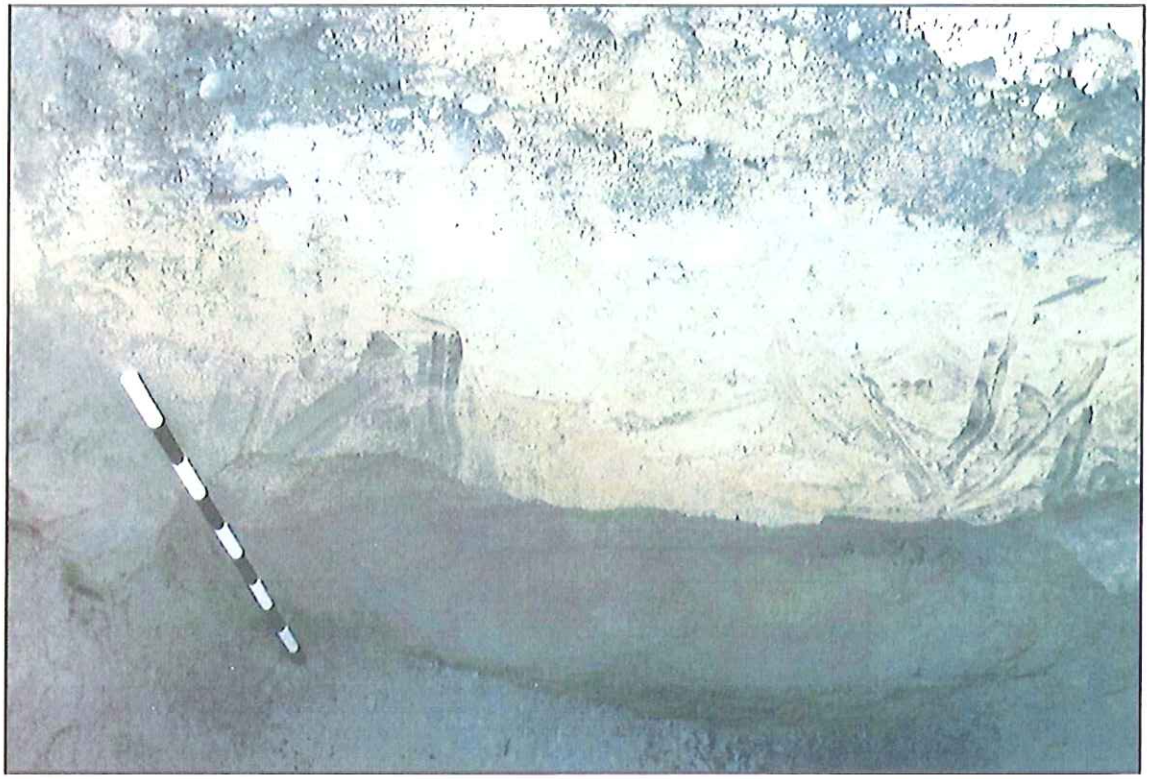


Figure 10. Soil stratigraphy: south wall of Backhoe Probe 1; one meter rod for scale.

Figure 11. Fidelity Lumber Company Great Northern Railroad Spur (Field No. AA-10-1) just south of Tri Pro Cedar Products office; view to the southeast.

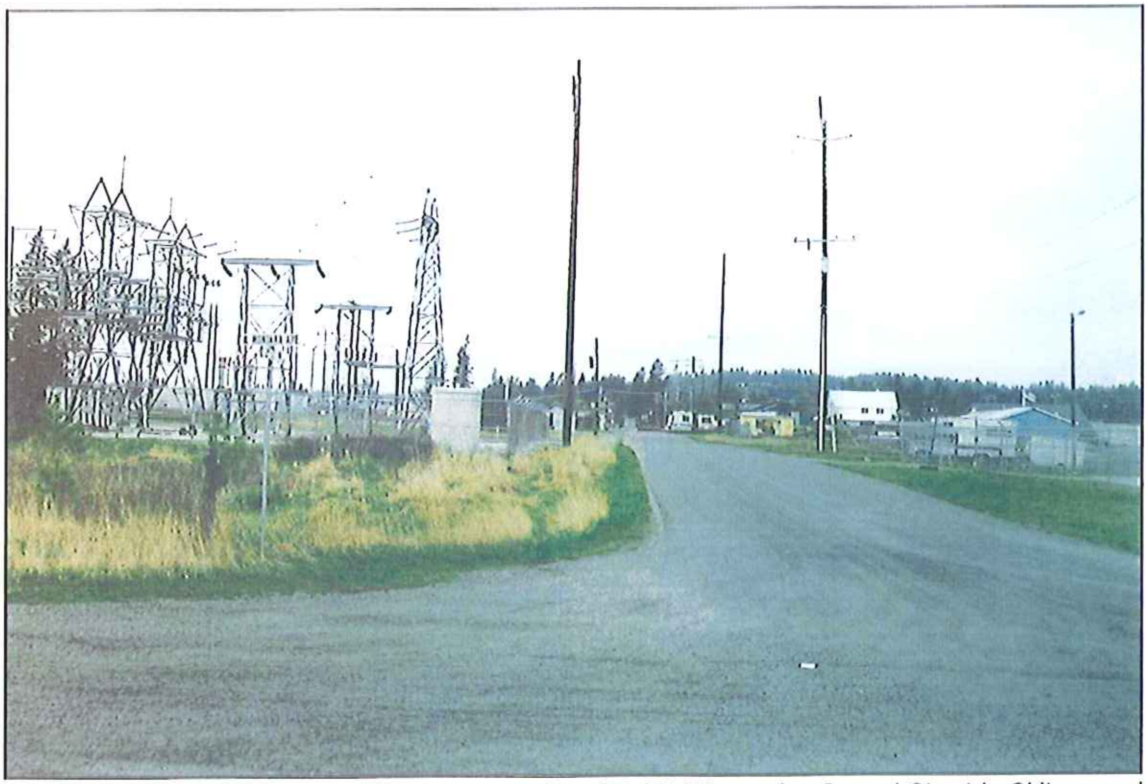


Figure 12. Albeni Falls-Pine Street Transmission Line (17-17917) crossing Second Street in Oldtown and entering the Newport Substation; view to the west.

Figure 13. Pend Oreille River Sawmill (17-17816); view to the southeast.

APPENDIX A
Correspondence

Northwest Archaeological Associates, Inc.
Cultural Resources Management Services
5418 20th Avenue NW, Suite 200, Seattle, WA 98107

April 15, 2010

Mr. Kevin Lyons, Cultural Resources Program Manager
Kalispel Tribe of Indians, Natural Resources Department
P. O. Box 39
Usk, WA 99180

RE: Cultural Resources Assessment of the Albeni Annex Water and Sewer Project, Bonner County

Dear Mr. Lyons,

James A. Sewell and Associates of Newport, Washington, has contracted with Northwest Archaeological Associates, Inc. (NWAA) for cultural resources assessment of the Albeni Annex Water and Sewer Project. The proposed project is located in Oldtown, Idaho, in portions of Sections 19 and 30, Township 56 North, Range 5 West, and Section 24, Township 56 North, Range 6 West, Boise Meridian (see attached maps). Since the U.S. Army Corps of Engineers will provide project funding and approve project permits, the Albeni Annex Water and Sewer Project is subject to the National Historic Preservation Act of 1966, as amended (NHPA).

A private landowner in the Albeni Annex area of Oldtown is planning to develop a parcel of land into residential lots. Due to the density of the proposed residential development, community water distribution and sewer collection systems are needed. The proposed Albeni Annex Water and Sewer Project consists of approximately five miles of new water and sewer lines, to be installed in trenches, excavated approximately four feet wide and six feet deep. Two new wells will also be drilled, a water storage tank will be installed, and a pipeline will be drilled beneath the Pend Oreille River, connecting the new water and sewer lines with existing systems in Oldtown (see attched maps).

As noted in our recent emails to you, NWAA will be conducting field survey of the project area of potential effects (APE) as soon as possible, probably April 22 and 23, 2010. Fieldwork will include a 100 percent visual survey of the APE, as well as subsurface testing with a backhoe to examine subsurface deposits and determine if archaeological materials are present.

We are contacting you to inquire about historic properties, cultural resources, or traditional use areas, including traditional cultural properties (TCPs), that could be affected by the project. If the Kalispel Tribe has any cultural resource concerns, please let me know as soon as possible so we can include this information in our report. Thank you for scheduling a meeting with me prior to the fieldwork (3 p.m., Wed., April 21, at the Kalispel Tribe's Spokane office, Saranac Building, 25 W. Main, Spokane). We respect any concerns the Tribe may have about sharing sensitive information, and we will be happy to work with you in a way that respects those concerns. Thank you again for your assistance.

Sincerely,

Ann Sharley

Ann Sharley, MA, RPA
Archaeologist/Architectural Historian

Enclosures: Project location map, project map

Tel: (206) 781-1909
Cell: (509) 998-5074
Email: asharley@northwestarch.com

APPENDIX B
Backhoe Probe Data

Table B-1. Backhoe Probe Summary (UTM Zone 11, NAD83).

BACKHOE PROBE NUMBER	UTM COORDINATES: EASTING, NORTHING	STRATIGRAPHIC DESCRIPTION (depth in centimeters below surface)	CULTURAL MATERIAL OBSERVED	COMMENTS
1	498102, 5336557	0-20: Mixed dark brown silt loam and yellowish brown sandy loam with estimated 50-75% of volume rounded pebbles. Impression: Imported fill.	None	Backhoe probe excavated at edge of graded road in central millsite area.
		Abrupt transition, horizontal boundary: 20-84: Very compact light greyish-brown silts with estimated 10% of volume rounded pebbles. Impression: Glacial lake sediments, top bladed off.	None	
		Abrupt transition, wavy boundary: 84-200: Yellowish-brown medium sands with estimated 5% of volume rounded pea-size pebbles. Impression: Glacial sediments.	None	
2	497685, 5336825	0-21: Dark brown sandy loam with estimated 40% of volume rounded pebbles. Impression: Organic horizon formed in overbank alluvial sediments.	None	Backhoe probe excavated near edge of low terrace above the Pend Oreille River; landform appears intact.
		Abrupt transition, wavy boundary: 21-130: Very compact light greyish-brown silts with estimated 10% of volume rounded pebbles. Impression: Glacial lake sediments.	None	
		Abrupt transition, wavy boundary: 130-200: Fine yellowish-grey sands with an occasional rounded pebble. Impression: Glacial sediments.	None	
3	497872, 5336915	0-230: Yellowish-brown sand medium sands with estimated 30% of volume rounded pebbles and cobbles; frequent strata of brown silt loam with estimated 20-30% of volume rounded pebbles and cobbles. Impression: Imported fill; never reached intact sediments.	None	Backhoe probe excavated in an area of fill adjacent to a wetland.
4	498135, 5336687	0-12: Dark brown silt loam with estimated 20% of volume rounded pebbles; much woody debris. Impression: Fill.	Vertical log post 12" diameter with sharpened lower end *in situ* from 10-180 cm below surface.	Backhoe probe excavated beside a graded road in the northern millsite area.
		Abrupt transition, wavy boundary: 12-80: Mixed light greyish-brown silts with an occasional rounded pebble, dark brown sandy loams with 20% of volume rounded pebbles, and burned materials. Impression: Fill.	Log posts continues.	
		Abrupt transition, wavy boundary: 80-170: Compact light greyish-brown silts with occasional rounded pebble. Impression: Glacial lake sediments, top bladed off.	Log post continues.	
		Abrupt transition, wavy boundary: 170-220: Medium yellowish-grey sands with an occasional rounded pebble. Impression: Glacial sediments.	Log post continues to 180 cm below surface.	

Table B-1. Backhoe Probe Summary (UTM Zone 11, NAD83).

BACKHOE PROBE NUMBER	UTM COORDINATES: EASTING, NORTHING	STRATIGRAPHIC DESCRIPTION (depth in centimeters below surface)	CULTURAL MATERIAL OBSERVED	COMMENTS
5	498834, 5336680	0-9: Dark brown silt loam with estimated 10% of volume rounded pebbles. Impression: Organic horizon, disturbed.	Colorless bottle glass sherd, relatively thin.	Backhoe probe excavated immediately north of a railroad spur and 50 feet south of a wetland.
		Abrupt transition, wavy boundary: 20-84: Yellowish-brown silt loam with occasional rounded pebble. Impression: Soil formed in glacial lake/alluvial sediments, top disturbed?	None	
		Abrupt transition, wavy boundary: 84-200: Yellowish-brown medium sands with occasional rounded pebble. Impression: Glacial sediments.	None	

APPENDIX C
Site Forms and Site Form Updates

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME	Fidelity Lumber Company Great Northern Railroad Spur	FIELD#	AA-10-1
STREET	Diamond Mill Road, just south of Tri Pro Cedar Products office	RESTRICT	☐
CITY	Oldtown	VICINITY	☒
COUNTY CD	17	COUNTY NAME	Bonner
SUBNAME	Albeni Annex	BLOCK	N/A
SUBLOT	N/A	ACRES	5
LESS THAN	☐	TAX PARCEL	Unknown
UTMZ	11	EASTING	498318
NORTHING	5336652	TOWNSHIP	56
N_S	N	RANGE	5
E_W	W	SECTION	19
1/4		1/4	
QUADRANGLE	Newport, Wash.-Idaho, 7.5', USGS	OTHERMAP	Kaniksu, Sheet 12, 1914, Forest Service, District Office, Missoula
SANBORN MAP	Newport, WA 1940	SANBORN MAP#	Sheet 1
PHOTO#			

PROPERTYTYPE	Structure	CONST/ACT1	Original construction
ACTDATE1	1909	CIRCAI	☒
CONST/ACT2		ACTDATE2	
CIRCA2	☐		
ASSOCIATED FEATURES	None	TOTAL # FEATURES	1
ORIGINAL USE	Transportation	WALL MATERIAL	None
ORIGSUBUSE	Rail-related	FOUND. MATERIAL	Stone (ballast)
CURRENTUSE	Transportation	ROOF MATERIAL	None
CURSUBUSE	Rail-related	OTHER MATERIAL	Steel, wood
ARCHSTYLE	No Style	PLAN	Linear
CONDITION	Fair		

NR REF #		NPS CERT	
ACTIONDATE		FUTURE ELIG DATE	
DIST/MPLNAME1		DIST/MPLNAME2	

Individually Eligible ☐ Contributing in a potential district Multiple Property Study ☒ ☐ Noncontributing ☐ Future eligibility ☐

Not Eligible ☐ Not evaluated ☒

CRITERIA A ☒ B ☐ C ☒ D ☐ CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

AREA OF SIGNIF	Industry, Transportation	AREA OF SIGNIF	Engineering

COMMENTS: This 1.5-mile-long railroad spur was built ca. 1909 to access the Fidelity Lumber Company from the main Great Northern line at Albeni Falls. Although the configuration of the spur has been significantly altered within the millsite, portions of the line are still maintained and serviceable.

PROJ/RPT TITLE	Albeni Annex Water and Sewer Project, NWAA Project No. ID10-004 (Sharley 2010)	SVY DATE	04/22/2010
SVY LEVEL	Intensive		
RECORDED BY	Ann Sharley	PH	(206) 781-1909
ADDRESS	Northwest Archaeological Associates, Inc. 5418 20th Ave. NW, Suite 200, Seattle, WA 98107		

SUBMITTED PHOTOS ☒ NEGS ☐ SLIDES ☐ SKETCH MAP ☒

******** FOR ISHPO USE ONLY ********

SVY RPT # | MS RPT # | IHPR # | HABS NO. ID- | HAER NO. ID- | IHSI# | SITS# | REV#

CS# | IHSI# REF | NR REF# 2 | REV# REF

SVY RPT# 1 | SVY RPT# 2 | SVY RPT# 3 | MS RPT# 1 | MS RPT# 2

REV# | SITS# | IHSI#

ADUL NOTES:
-Section 106 compliance report.
-Legal description for entire spur: Sections 19, 20, and 29, T56N, R5W and Section 24, T56N, R6W, BM.
-UTMs derived from differentially corrected GPS, NAD83: west end of spur 498318 mE, 5336652 mN, east end of surveyed spur segment 499080 mE, 5336653 mN.

ATTACH ☒

MOREDATA ☐

OF PHOTOS | NEGBOX# | # OF SLIDES | SHPO DETER | DETER DATE

INITIALLED | ENTRY DATE | REVISE1 | REVISE2 | REVISE3

IDAHO HISTORIC SITES INVENTORY FORM -ATTACHMENT

PROPERTY NAME: Fidelity Lumber Company Great Northern Railroad Spur   IHSI#:

FIELD#: AA-10-1   COMMENTS: COUNTY NAME: Bonner

ATTACH ☒

During the early twentieth century, logging and lumbering were the Pend Oreille Region's primary industries, and numerous sawmills sprang up along the Pend Oreille River. One of these, the Fidelity Lumber Company mill, was built in 1908 and 1909 across the river from Newport, Washington, and Oldtown, Idaho. A standard gauge railroad spur was built, ca. 1909, to access the Fidelity Lumber Company sawmill from the Great Northern main line at Albeni Falls. Although the sawmill changed hands through the years–purchased by the Humbird Lumber Company in 1916, the Diamond Match Company in 1935, and, later, other firms–the rail spur continued to serve as a shipping outlet for the plant (Chance 1991:57, 58, 132-135, 252-257, 277; Sanborn Map Company 1940:Sheet 1; U.S. Forest Service 1914).

Historical maps show the rail spur entering the millsite from the east, passing along the northern boundary of the complex, then curving south to the mill's boiler house/sawmill building. At some point the curving western segment of the line, approximately 700 feet in length, was removed, leaving no evidence of its location. The spur now ends abruptly at a modern building, much of its final 200 feet paved over and unusable. After 1940, additional rail spurs or sidings were constructed in the mill area, paralleling the original track; segments of these lines have since been removed (Chance 1991:57, 58, 103; Sanborn Map Company 1940:Sheet 1; U.S. Forest Service 1914).

Today, shortly after entering the millsite, the spur divides into two and then three parallel lines. (1940 Sanborn maps show only one line in this location.) The northernmost of the three lines has been removed west of Diamond Mill Road, leaving only the ballast-covered grade to mark its route. A hand-operated mechanical switch stand at each of the turnouts moves the switch rails and rotates a color-coded switch target to signal the track position to oncoming trains.

Maintenance through the years has resulted in replacement of ties, rails, and other trackage elements. Rails and tie plates are embossed with strings of characters that include foundry information and dates of manufacture. Embossed dates on the rails suggest that some may be original. Examples from the spur segments east of Diamond Mill Road include:

- Rails, north spur: "O.H. 90.LB P.S.Co. 1912 IIIIIIIIII" and "L.S. Co. BUFFALO. 9032, 9, 1909".
- Tie plates, north spur: "90 P.C. S. CO. 26", "36I ILL. G. U.S.A. 27", and "<I> 1925 RRS CO PAT".
- Rails, central spur : "160 MARYLAND IIIII 08" and "G. N. LINE. L. S. Co. BUFFALO 9030 6 1908".
- Tie plates, central spur : "90 RB B.S.C. 37", "36I ILL USA 36", and "7-55-68 B.S.Co - L - 1934".
- Rails, south spur: "G.N. LINE L.S.CO. BUFFALO. 9030. 4. 1908", "G. N. LINE. LACKAWANNA 9030 II 1913", and "-CAMBRIA-90 LBS NO 560 - 1912".
- Tie plates, south spur: "5-58 -L-1927 B.S.CO.-" and "55-58 -L. 1924 B.S.".

Over the years, the configuration of the Fidelity Lumber Company rail spur has been significantly altered. The rail spur's integrity–of location, design, materials, workmanship, and association–has been severely compromised. Loss of integrity prevents the feature from conveying its historical significance, precluding individual eligibility for listing in the National Register of Historic Places (NRHP). Extant spur segments, however, may contribute to NRHP eligibility of the historical sawmill site, and should be reevaluated if the millsite as a whole is evaluated.

References cited:

Chance, David H.
1991 The Lumber Industry of Washington's Pend Oreille Valley, 1888-1941. Prepared for the Colville National Forest, Colville. David & Jennifer Chance & Associates, Moscow, Idaho.

Sanborn Map Company
1940 Newport, Stevens Co., Wash. [maps]. 1912 edition, updated to 1940. Sanborn Map Company, New York, New York.

Sharley, Ann
2010 Cultural Resources Assessment of the Albeni Annex Water and Sewer Project, City of Oldtown, Bonner County, Idaho. NWAA Project No. ID10-004. Northwest Archaeological Associates, Inc., Seattle, Washington.

U.S. Forest Service (USFS)
1914 Kaniksu [map], Sheet 12. Kaniksu National Forest, District Office, Missoula, Montana.

IHSI#
SITS#
REV#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME Fidelity Lumber Company Great Northern Railroad Spur FIELD# AA-10-1

PHOTO PAGE 1 of 2

Overview of railroad spur just south of Tri Pro Cedar Products office; view to the southeast.

Spur track turnout with switch stand just south of Tri Pro Cedar Products office; view to the northwest.

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME | Fidelity Lumber Company Great Northern Railroad Spur | FIELD# | AA-10-1

Close-up view of the turnout switch stand and target; view to the northwest.

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Update form: Pend Oreille River Sawmill (Fidelity/Humbird/Diamond Match sawmill) FIELD#: 17-17816
STREET: Pend Oreille River shoreline, opposite town of Newport RESTRICT ☐
CITY: Oldtown VICINITY ☒ COUNTY CD: 17 COUNTY NAME: Bonner
SUBNAME: Albeni Annex BLOCK: SUBLOT: ACRES: 2 LESS THAN ☒
TAX PARCEL: UTMZ: 11 EASTING: 497866 NORTHING: 5336606
TOWNSHIP: 56 N_S: N RANGE: 6 E_W: W SECTION: 25 NE 1/4 NE 1/4
QUADRANGLE: Newport, Wash.-Idaho, 7.5' OTHERMAP:
SANBORN MAP: Newport, WA 1940 SANBORN MAP#: Sheet 1 PHOTO#:

PROPERTYTYPE: Structure CONST/ACT1: Original construction ACTDATE1: 1909 CIRCA1 ☒
CONST/ACT2: ACTDATE2: CIRCA2 ☐
ASSOCIATED FEATURES: extensive debris scatter, three piling alignment features TOTAL # FEATURES: 6
ORIGINAL USE: Industry/Processing WALL MATERIAL: Brick
ORIGSUBUSE: manufacturing facility FOUND. MATERIAL:
CURRENTUSE: Industry/Processing ROOF MATERIAL:
CURSUBUSE: manufacturing facility OTHER MATERIAL:
ARCHSTYLE: No Style PLAN: Round CONDITION: Poor

NR REF #: NPS CERT: ACTIONDATE: FUTURE ELIG DATE:
DIST/MPLNAME1: DIST/MPLNAME2:
Individually Eligible ☐ Contributing in a potential ☒ Noncontributing ☐ Future eligibility ☐
Not Eligible ☐ district Multiple Property Study ☐ Not evaluated ☒
CRITERIA A ☒ B ☐ C ☐ D ☐ CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐
AREA OF SIGNIF: Industry AREA OF SIGNIF:

COMMENTS: This update form adds information to the original 17-17816 site form, completed in 1999 and updated in 2002. The site and update forms document shoreline features of the Fidelity Lumber Co. mill (later owned by Humbird Lumber Co., Diamond Match Co., and other firms). During all three visits time limitations and access issues prevented recording of the millsite buildings/features on the terrace above the river.

PROJ/RPT TITLE: Albeni Annex Water and Sewer Project, NWAA Project No. ID10-004 (Sharley 2010) SVY DATE: 04/22/2010 SVY LEVEL: Intensive
RECORDED BY: Ann Sharley PH: (206) 781-1909 ADDRESS: Northwest Archaeological Associates, Inc. 5418 20th Ave. NW, Suite 200, Seattle, WA 98107
SUBMITTED PHOTOS ☒ NEGS ☐ SLIDES ☐ SKETCH MAP ☒

SVY RPT #: ******* FOR ISHPO USE ONLY ******* IHSI#: 17-17816 (update)
MS RPT #: SITS#:
IHPR #: HABS NO. ID-: HAER NO. ID-: REV#:
CS#: IHSI# REF: NR REF# 2: REV# REF:
SVY RPT# 1: SVY RPT# 2: SVY RPT# 3: MS RPT# 1: MS RPT# 2:
REV# SITS# IHSI#

ADUL NOTES:
-Section 106 compliance report.
-Legal description for entire property as presently recorded: N2 of N2, Sec. 30, T56N, R5W, and S2 of SE4, Sec. 24, and NE4 of NE4, Sec. 25, T56N, R6W, BM.
-UTMs, NAD83: West end of site (derived from differentially corrected GPS) 497866 mE, 5336606 mN, approximate east end of site 499349 mE, 5336192 mN.

ATTACH ☒
MOREDATA ☐
OF PHOTOS: NEGBOX#: # OF SLIDES: SHPO DETER: DETER DATE:
INITIALLED: ENTRY DATE: REVISE1: REVISE2: REVISE3:

IDAHO HISTORIC SITES INVENTORY FORM -ATTACHMENT

PROPERTY NAME: Update form: Pend Oreille River Sawmill (Fidelity/Humbird/Diamond Match sawmill)   IHSI# 17-17816 (update)

FIELD# 17-17816   COMMENTS: COUNTY NAME Bonner

Four features of site 17-17816 are recorded in the original 1999 and 2002 forms. This update documents one additional feature–the extensive debris scatter–and adds a sketch map. The five site features, and their eligibility for listing in the National Register of Historic Places (NRHP) are addressed below. Site 17-17816 appears essentially unchanged since the 1999 and 2002 visits.

ATTACH ☒

Feature 1, two piling alignments: As described in the original forms.

Feature 2, partially collapsed circular brick structure: As described in the original forms.

Feature 3, five piling alignments: As described in the original forms.

Feature 4, 0.75-mile-long piling alignment: This feature is apparently the linear alignment of pilings far out in the river, barely visible above the waterline, as well as the cluster of approximately 24 pilings 40 feet from the right (north/east) bank of the river. The piling cluster is lozenge-shaped in plan view, approximately 40 feet long (aligned with the river flow) and 25 feet wide. The pilings are spaced approximately 3 feet apart, and the tops are sawed off 0.5 to 5 feet above the waterline.

Feature 5: This feature is an extensive debris scatter, primarily industrial waste and structural debris, dumped over the riverbank. The scatter extends for 0.5 mile and includes steel spikes, red bricks, firebricks, clinker, concrete chunks, hardware, machinery parts, wire, flat glass, colorless and amber bottle glass, metal pipes, angle iron, bark, and other woody debris. All ferrous metal is thoroughly corroded and materials in certain parts of the scatter have been burned.

Although the sawmill's shoreline features are not individually eligible for NRHP listing due to loss of integrity, they may contribute to eligibility of the sawmill property as a whole. Evaluation of the shoreline features should, therefore, accompany evaluation of the historical sawmill.

References cited:

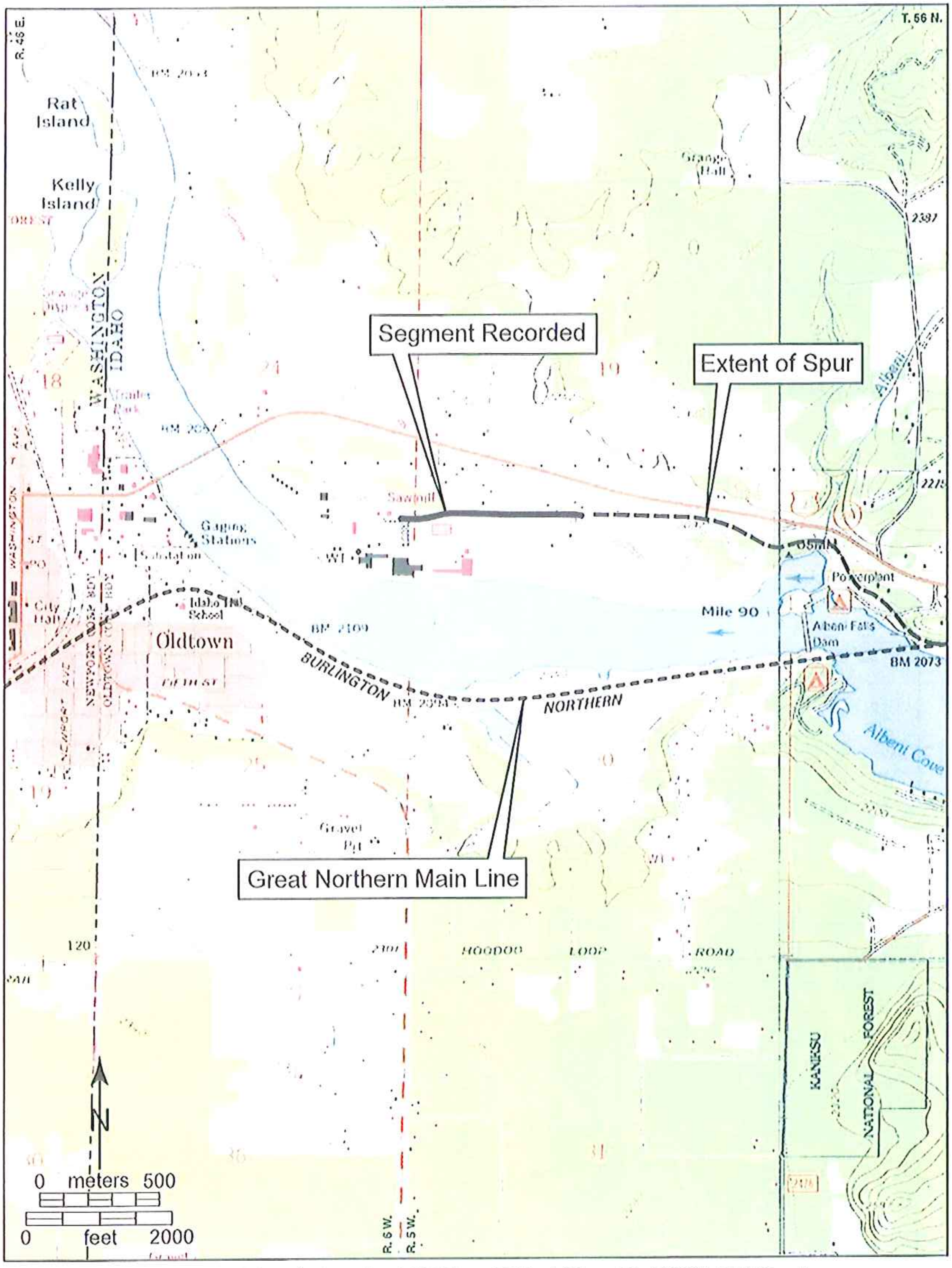
Sharley, Ann
2010 Cultural Resources Assessment of the Albeni Annex Water and Sewer Project, City of Oldtown, Bonner County, Idaho. NWAA Project No. ID10-004. Northwest Archaeological Associates, Inc., Seattle, Washington.

IHSI#
SITS#
REV#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME	Fidelity Lumber Company Great Northern Railroad Spur	FIELD#	AA-10-1

LOCATION MAP



USGS Newport, WA-ID, (1968, photorevised 1986) and Priest River, ID, (1996), 7.5' Quads.

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Fidelity Lumber Company Great Northern Railroad Spur

FIELD#: AA-10-1

SKETCH MAP

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME	Update form: Pend Oreille River Sawmill (Fidelity/Humbird/Diamond Match sawmill)	FIELD#	17-17816

PHOTO PAGE

Feature 5 foreground, Feature 2 background; view to the northeast.

Artifact in Feature 5; tape for scale.

IDAHO HISTORIC SITES INVENTORY FORM

17-17816

PROPERTY NAME: Pend Oreille River sawmill
FIELD#: PWK-20
STREET: lying within Pend Oreille River extending from N shore, E of Oldtown
RESTRICT: ☐
CITY: Oldtown
VICINITY: ☑
COUNTY CD: 17
COUNTY NAME: Bonner
SUBNAME:
BLOCK:
SUBLOT:
ACRES: 2
LESS THAN: ☑
TAX PARCEL:
UTMZ: 11
EASTING: 497960
NORTHING: 5336320
TOWNSHIP: 56
N_S: N
RANGE: 6
E_W: W
SECTION: 24
SW 1/4 SE 1/4
QUADRANGLE: Newport 7.5'
OTHERMAP:
SANBORN MAP:
SANBORN MAP#:
PHOTO#:

PROPERTY TYPE: Structure
CONST/ACT1: Original Construction
ACTDATE1: 1910
CIRCA1: ☐
CONST/ACT2:
ACTDATE2:
CIRCA2: ☐
ASSOCIATED FEATURES: 3 series of wood pilings, remains of kiln (or burner)
TOTAL # FEATURES: 4
ORIGINAL USE: Industry/Processing
WALL MATERIAL:
ORIGSUBUSE: manufacturing facility
FOUND. MATERIAL:
CURRENT USE: Vacant/Not in Use
ROOF MATERIAL:
CURSUBUSE:
OTHER MATERIAL: WOOD
ARCHSTYLE:
PLAN:
CONDITION: Poor

NR REF #:
NPS CERT:
ACTIONDATE:
FUTURE ELIG DATE:
DIST/MPLNAME1:
DIST/MPLNAME2:

Individually Eligible ☐ | Contributing in a potential district ☐ | Noncontributing ☐ | Future eligibility ☐
Not Eligible ☑ | Multiple Property Study ☐ | Not evaluated ☐

CRITERIA A ☐ B ☐ C ☐ D ☐
CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐
AREA OF SIGNIF:
AREA OF SIGNIF:

COMMENTS: Though the site represents elements of the historically important Fidelity/Humbird/Diamond Match lumber mill, the features within the site have lost their integrity. The features of the site have been partially dismantled and are non-functional.

PROJ/RPT TITLE:
SVY DATE: 1999
SVY LEVEL: Reconnaissance
RECORDED BY: Patrick Walker-Kuntz
PH: 406-252-9163
ADDRESS: Ethnoscience, PO Box 30577, Billings MT 59107-0577
SUBMITTED PHOTOS ☑ NEGS ☐ SLIDES ☐ SKETCH MAP ☐

SVY RPT #:
MS RPT #:
IHPR #:
******** FOR ISHPO USE ONLY ********
IHSI#: 17-17816
SITS#:
REV#: 98-415
HABS NO. ID-:
HAER NO. ID-:

CS #:
IHSI# REF:
NR REF# 2:
REV# REF:
SVY RPT# 1:
SVY RPT# 2:
SVY RPT# 3:
MS RPT# 1:
MS RPT# 2:

REV# SITS# IHSI#

ADD'L NOTES: Color photographs. Also located in T56N, R6W Section 25 (NE4, NE4); T56N, R5W Section 30 (NW4 and NW4, NE4). Original site form indicates currently used as a sawmill, but the photographs indicate it is not in use. Updated site form reflects intensive survey.

ATTACH ☐
MOREDATA ☐

OF PHOTOS: 4
NEGBOX#:
OF SLIDE:
SHPO DETER:
DETER DATE:
INITIALLED: be
ENTRY DATE: 5/19/00
REVISE1: 11/8/04
REVISE2:
REVISE3:

IDAHO HISTORIC SITES INVENTORY
IDAHO STATE PRESERVATION OFFICE

This form provides the basic documentation required to determine a property's eligibility for the National Register. To ensure an expedited review, complete all starred (*) items on front and back, as well as the National Register Recommendation.

PROPERTY DATA

*Property Name/Field Number: PWK-20 Site No.: 17-17816 Update
*Map Reference: Newport, 7.5' Topographic Map 1968 Photorevised 1986
*Township: 56N *Range: 6W Boise Meridian
Section 25 N1/2 NE1/4 1/4 NE1/4,
Section 24 SE1/4 1/4 1/4 SW1/4 1/4 SE1/4,
Section 30 N1/2 NW1/4,
Section 30 SW1/4 1/4 1/4 NW1/4 1/4 NE1/4
UTM: Zone 11; 497960, 499420 easting, 5336320, 5335970 northing
*County: Bonner *Acres
*Address: *City: Old Town
Lot(s) Block(s)
Historic Context(s): Industry (Sawmill)
*Property Type: Structure *Total # features: 4
*Associated bldgs./structures: pilings, firehouse
*Construction Date: 1910 *Estimated Construction Period: 1910-1948
Style: Plan:
*Condition: Poor *Moved: No
*Materials: wood, brick, metal
*Original Use: log sorting and storage boom
*Current Use: none

NATIONAL REGISTER RECOMMENDATION: (check all that apply)

____ Individually eligible
____ Contributing in a potential district
____ Multiple property study
____ Significant person
____ Architectural/artistic values
_X_ Not eligible
____ Noncontributing
____ Historical significance
____ Historic landscape
____ Not evaluated

Comment: Site has lost integrity

Site 17-17816 is recommended not eligible for inclusion in the NRHP under Criteria A, B, C or D. Though the site represents elements of the historically important Fidelity / Humbird / Diamond Match lumber mill, the features within the site have lost their integrity. The wood pilings of Features 1, 3 and 4 have been cut off; the building of Feature 2 is partially collapsed, and the equipment has been removed. The features are no longer able to convey their historic context. The site is therefore recommended not eligible for inclusion in the NRHP under Criterion A. Former mill owner Thomas J. Humbird, a regionally important businessman, was not directly associated with the site. The site is therefore recommended not eligible for inclusion in the NRHP under Criterion B. The features are not architecturally unique. The features have also lost their integrity. The site is therefore recommended not eligible for inclusion in the NRHP under Criterion C. The physical integrity and artifact deposition of the site has been compromised by decades of river water flow. The artifact assemblage observed at the site suggests that it is unlikely to yield further information about the history of the area. The site is therefore recommended not eligible for inclusion in the NRHP under Criterion D.

NATIONAL REGISTER RECOMMENDATION: (continued)

*Recorded by: Patrick Walker-Kuntz *Phone: (406) 252-9163
*Address: Ethnoscience, Inc., 4140 King Ave. East, Billings, MT 59101

*Project/Report Title:

Fandrich, B., L. M. Peterson and S. Deaver
2000 [The River] A Kalispel Indian Cultural History. Ethnoscience, Inc., Billings, MT. Prepared for the Kalispel Tribe Department of Natural Resources, Usk, WA.

Fandrich, B.
2002Pend Oreille River: An evaluation of 23 Historic Sites located between Albeni Falls Dam and Box Canyon Dam. Ethnoscience, Inc., Billings, MT. Prepared for EES Consulting, Belevue, WA.

Survey Report #: Reconnaissance: X Intensive: *Date: 1999 Site Form Updated: 2002

IHSI #__________
R&C #__________
SITS #__________

DESCRIPTION

Site 17-17816 consists of piling features and a building feature associated with the Fidelity Lumber Company mill (subsequently owned by the Humbird Lumber Company and the Diamond Match Company). The features of Site 17-17816 have been partially dismantled and are non-functional. The features are located on top of the river terrace, the beach area and in the Pend Oreille River. The site area is estimated at 150 ft (north-south) x 4,900 ft (east-west). The site is vegetated with grasses, sedges and forbs.

Feature 1 consists of two wood piling alignments that were once part of the log storage boom system. The pilings are approximately 13 ft apart and angle southwest-northeast approximately 164 ft from the cutbank, across the beach area and into the Pend Oreille River. One row has 24 pilings visible; the other row has 12 pilings visible. The visible portion of the various pilings project approximately 4 to 19.5 inches above the water surface (variable depending upon fluctuating water level).

Feature 2 is a partially collapsed circular brick building that was once the mill firehouse. The building is approximately 16 ft in height (5 ft of which is underground) and 16 ft in diameter. The walls are one foot thick. The interior of this structure is empty except for a metal landing with pipes that is located approximately 10 ft from the ground. There is a 12-inch diameter metal pipe resting on top of the structure that extends into a wooden, bridge-like structure on the north side of Feature 2. The pipe is part of the original 12-inch water intake, and the metal landing provided access to the pump and engine (both missing). The firehouse had an original discharge capacity of 1,000 gallons of water per minute through an 8-inch pipe (Newport Miner, 17 June 1909:1). Cultural materials near and possibly associated with Feature 2 include pipes sticking out of the ground, rusted nails, machinery parts, a railroad tie, concrete blocks and a wooden piling approximately 6.6 ft in height. The feature is approximately 68 ft north of the water edge and 295 ft west of Feature 1.

DESCRIPTION (continued)

Feature 3 consists of five piling alignments. The pilings were once part of a jam pier system that protected the jack chain ramp from damage. The piling alignments run north-south from the base of the cutbank across the beach and into the river. The alignments are approximately 164 ft in length and stand about 20 ft apart. Each alignment averages eight visible pilings. The pilings have been sawed off and now project approximately 4 to 20 inches above the water (this may vary depending upon water fluctuation). This feature is approximately 980 ft from Feature 2.

Feature 4 is a series of wood pilings that were once part of the log storage boom system. The pilings parallel the east bank of the river for approximately three-quarters of a mile, beginning about 492 ft east of Feature 1. The pilings run east toward Albeni Falls Dam. The pilings have been sawed off and are barely visible above the current (unknown) water level.

(Above the 2040 ft contour level is the former Fidelity mill, now operated by Tri Pro Cedar Products. The mill is located outside the project area and is not included within the current site boundary. As such, the mill is neither described nor evaluated in this form.)

PROPERTY HISTORY

Construction of the Fidelity mill began in 1908 and was completed in 1909 (Newport Miner, 27 August 1908, 17 June 1909). Pilings for the log sorting and storage boom (Features 1 & 4), the firehouse (Feature 2) and the jack chain ramp (Feature 3) were constructed as part of the Fidelity mill operation. The first log drive to the mill was completed in the spring of 1909, prior to completion of the mill. River current at Site 17-17816 hindered the development of ice in the log storage boom area. This allowed mill operation to continue into early winter, after other mills located downriver had closed for the season (Chance 1991:104). The adjoining mill site, located outside the current project area and site boundary, included a saw mill, a planing mill, a shingle mill, a lath mill, a boiler room (with five boilers and a 350-kW generator), a dry kiln, a sorting shed and a storage yard (Newport Miner 17 June 1909; Chance 1991:104). The mill initially employed approximately 150 people and had a production capacity of 75,000 board feet of lumber in a 10-hour shift. The mill, however, was unable to stem the financial difficulties that befell Fidelity Lumber Company in 1908.

The mill was purchased in 1916 by the Humbird Lumber Company of Sandpoint, Idaho. The Humbird Lumber Company was a subsidiary of the Weyerhaeuser Company, one of the largest lumber companies in the United States. Humbird continued operation of the mill until the company closed its operation in 1934. The mill was then purchased by the Diamond Match Company, which operated the mill until 1961. Through the years, the mill underwent several modifications. The mill is currently operated by Tri Pro Cedar Products.

DOCUMENTATION

Chance, D. H.
1991 *The Lumber Industry of Washington's Pend Oreille Valley.* David & Jenifer Chance & Associates, Moscow, ID. Submitted to the Colville National Forest, Contract No. 43-05G1-0-4600.

Newport Miner [Newport, WA.]
1908 Fidelity starts work. 27 August:1.
1909 Big mill will soon run. 17 June:1.

IDAHO HISTORIC SITES INVENTORY
IDAHO HISTORIC PRESERVATION OFFICE **Site No.: 17-17816 Update**

SECTION 106 REVIEW AND COMPLIANCE DATA

Map and Photographic Requirements:

It is critical that we know the precise location of the property described on this form. Please include a clear map showing the exact location of the property. For city properties, a city map or equivalent must clearly pinpoint the location and identify nearby streets. For rural properties, USGS topographic maps or equivalent are recommended.

*Map included: _√_ Yes

In order to evaluate the physical integrity of a property and its eligibility for the National Register, clear photographs must accompany this form. Photographs must provide a good overall view of the property as it presently appears. This may require several views of a building sufficient to illustrate minor facades, architectural details, interiors , and overall perspectives of the surrounding environment. For urban properties, photographs of adjacent buildings and streetscapes ate appropriate. **Do not affix photographs to paper, etc.**

*Photographs(s) included: _√_ Yes

If possible, include significant historical events, dates, persons, associated with the property. Note any documentary sources which support the property's significance such as archival materials, newspapers, books, articles, historic photographs, etc.

RETURN THIS FORM TO: Idaho State Historic Preservation Office
210 Main
Boise, ID 83702

****

SHPO COMMENTS

Listed in NR: _____ Less than fifty year of age: _____

Context(s) for evaluation:

_____ ELIGIBLE - Criterion A B C D
_____ NOT ELIGIBLE - Available documentation does not support eligibility under any Criterion or Exception.

Reason:

Federal Agency Involved:

Reviewer: ______________________________ Date: ____________________________

NOTES:

IDAHO HISTORIC SITES INVENTORY
IDAHO STATE PRESERVATION OFFICE

This form provides the basic documentation required to determine a property's eligibility for the National Register. To ensure an expedited review, complete all starred (*) items on front and back, as well as the National Register Recommendation.

PROPERTY DATA

*Property Name/Field Number: PWK-20
*Map Reference: Newport 7.5' Topographic Map 1968 Photorevised 1986
*Township: 56N *Range: 6W *Section: See Continuation Form
* ____ 1/4 of * ____ 1/4 of * ____ 1/4, Boise Meridian
UTM: Zone 11; 497960, 499420 easting 5336320, 5335970 northing
*County: Bonner *Acres [illegible]
*Address: [illegible] *City: [illegible]
Lot(s) [illegible] Block(s) ____
Historic Context(s): Industry (Sawmill)
*Property Type: Structure *Total # features 4
*Associated bldgs./structures [illegible] Kiln or burner
*Construction Date: ____ *Estimated Construction Period ca. 1920
Style: ____ Plan: ____
*Condition: Poor *Moved: No
*Materials: Wood Poles, Brick
*Original Use: Sawmill [illegible]
*Current Use: Sawmill [illegible]

NATIONAL REGISTER RECOMMENDATION: (check all that apply)

____ Individually eligible
____ Contributing in a potential district
____ Multiple property study
____ Significant person
____ Architectural/artistic values

____ Not eligible
____ Noncontributing
____ Historical significance
____ Historic landscape
_√_ Not evaluated

Comment ____

*Recorded by: Patrick Walker-Kuntz *Phone: (406) 252-9163
*Address: Ethnoscience, P.O. Box 30577, Billings, MT 59107-0577
*Project/Report Title:
[illegible]

Survey Report #: ____ Reconnaissance: √ Intensive: ____ *Date: 1999 √

FIELD NOTES/SKETCHES

IHSI #17-17816
R&C #____
SITS #____

IDAHO HISTORIC SITES INVENTORY
IDAHO HISTORIC PRESERVATION OFFICE

Field Number: PWK-20

DESCRIPTION

Describe the property's physical characteristics, such as form, plan, style, materials, foundation, roof type, integrity, condition, dimensions, interior design, alterations/additions, etc.

Feature 1 consists of two wood piling alignments that are approximately four meters apart and angle SW-NE approximately 50 m from the cutbank, across the riverbank, and into the Pend Oreille River. One row has 24 pilings visible; the other row has 12 pilings visible. The pilings vary in height from 10 cm to 50 cm above the water surface.

Feature 2 is a circular brick structure that is partially collapsed. The structure is approximately 5 m high (1/3 of that is underground) and the diameter is 5 m. The walls are 30 cm (3 bricks) thick. The interior of this structure is empty except for a metal landing with pipes that is approximately 3 m from the ground. There is a metal pipe (33 cm in diameter) resting on top of the structure that extends into a wooden bridge-like structure on the north side of Feature 2. This may have connected to the broiler room at the top of the ridge (outside the current project area). The broiler room dates between 1901-1907 and Feature 2 is possibly an extension of the broiler room. Cultural materials around Feature 2 include pipes sticking out of the ground, rusted nails, machinery parts, a railroad tie, concrete blocks and a wooden piling approximately 2 m in height. Feature 2 is 21 m north of the water's edge and 90 m west of Feature 1. It is possible this feature was a kiln or a burner.

Feature 3 consists of five wood piling alignments running perpendicular to the river bank. The rows run north-south from the base of the cutbank, down the riverbank, and into the river. The alignments are approximately 50 m in length and stand about six meters apart. Each alignment averages eight visible pilings. The pilings have been sawed off and now stand 10 cm to 50 cm above the water. This feature is approximately 300 m from Feature 2 and the area is scattered with logs. This feature may have been a log boom.

Feature 4 is a series of wood pilings that align the north side of the river for approximately 3/4 of a mile beginning about 150 m east of Feature 1. The pilings run east towards the dam. The pilings have been sawed off and are barely visible above the water.

PROPERTY HISTORY

Provide an overview of the property's history and development.

DOCUMENTATION

Property ownership history (deed/title search):

Current owner's name and address:

Private

Sources/bibliography consulted (note publications, historical documents, drawings/plans, newspapers, photographs, oral histories etc.)

SECTION 106 REVIEW AND COMPLIANCE DATA

Map and Photographic Requirements:

It is critical that we know the precise location of the property described on this form. Please include a clear map showing the exact location of the property. For city properties, a city map or equivalent must clearly pinpoint the location and identify nearby streets. For rural properties, USGS topographic maps or equivalent are recommended.

*Map included: __√__ Yes

In order to evaluate the physical integrity of a property and its eligibility for the National Register, **clear** photographs must accompany this form. Photographs must provide a good overall view of the property as it presently appears. This may require several views of a building sufficient to illustrate minor facades, architectural details, interiors , and overall perspectives of the surrounding environment. For urban properties, photographs of adjacent buildings and streetscapes ate appropriate. **Do not affix photographs to paper, etc.**

*Photographs(s) included: __√__ Yes

If possible, include significant historical events, dates, persons, associated with the property. Note any documentary sources which support the property's significance such as archival materials, newspapers, books, articles, historic photographs, etc.

RETURN THIS FORM TO: Idaho State Historic Preservation Office
210 Main
Boise, ID 83702

****

SHPO COMMENTS

Listed in NR: _____ Less than fifty year of age: _____
Context(s) for evaluation: ____
_____ ELIGIBLE -Criterion A B C D
_____ NOT ELIGIBLE - Available documentation does not support eligibility under any Criterion or Exception.

Reason: ____

Federal Agency Involved: ____

Reviewer: ____________________________ Date: ________________________

NOTES:

IDAHO HISTORIC SITES INVENTORY
IDAHO HISTORIC PRESERVATION OFFICE   Field Number: PWK-20

DESCRIPTION (continued)

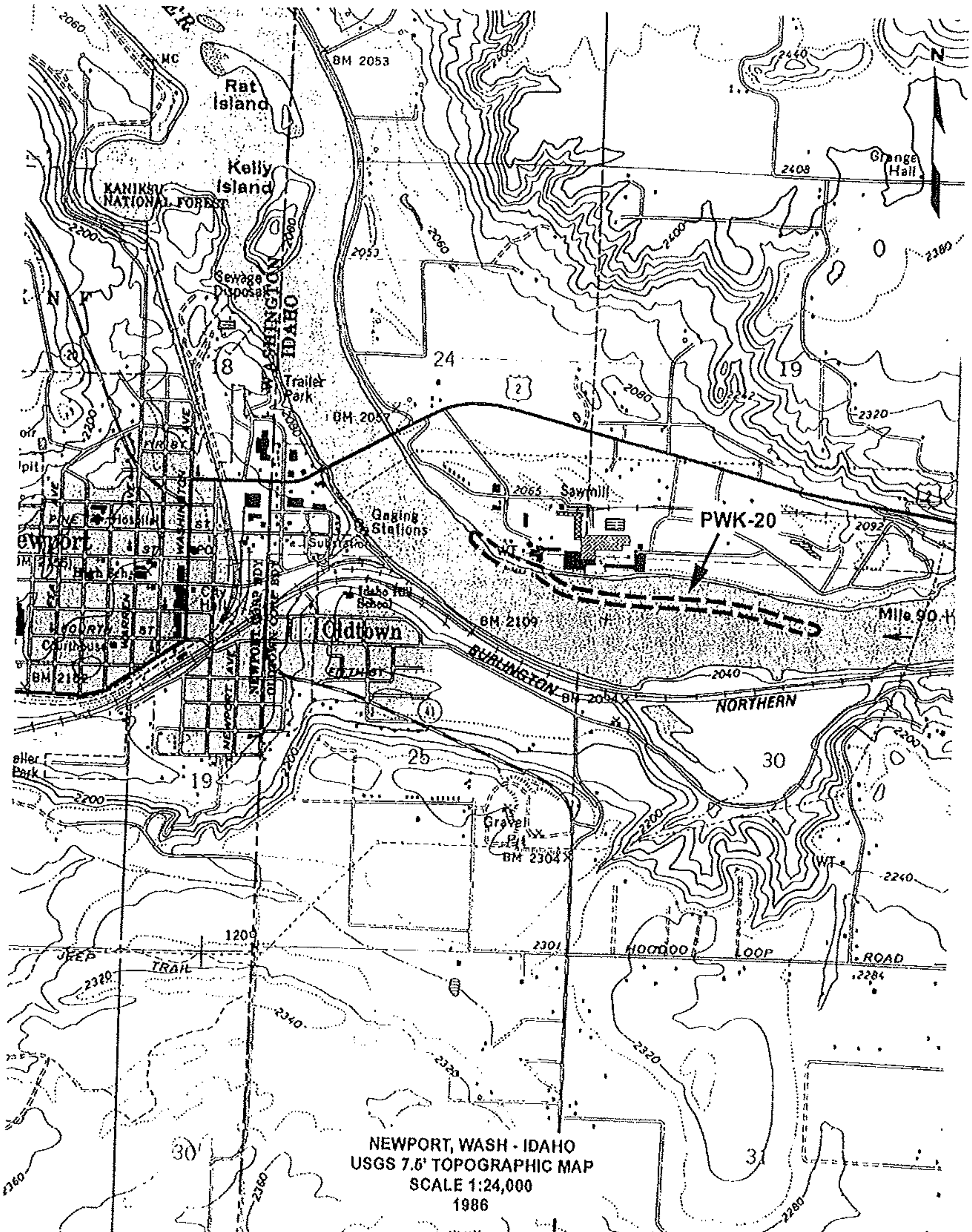
Legal location: Section 25 N1/2 NE1/4 1/4 NE1/4
Section 24 SE1/4 1/4 1/4 SW1/4 1/4 SE1/4
[illegible] Section 30 N1/2 NW1/4
Section 30 SW1/4 1/4 1/4 NW1/4 1/4 NE1/4

PROPERTY HISTORY (continued)

DOCUMENTATION (continued)

Sources/bibliography consulted (continued)

IDAHO HISTORIC SITES INVENTORY
IDAHO STATE PRESERVATION OFFICE
TOPOGRAPHIC MAP



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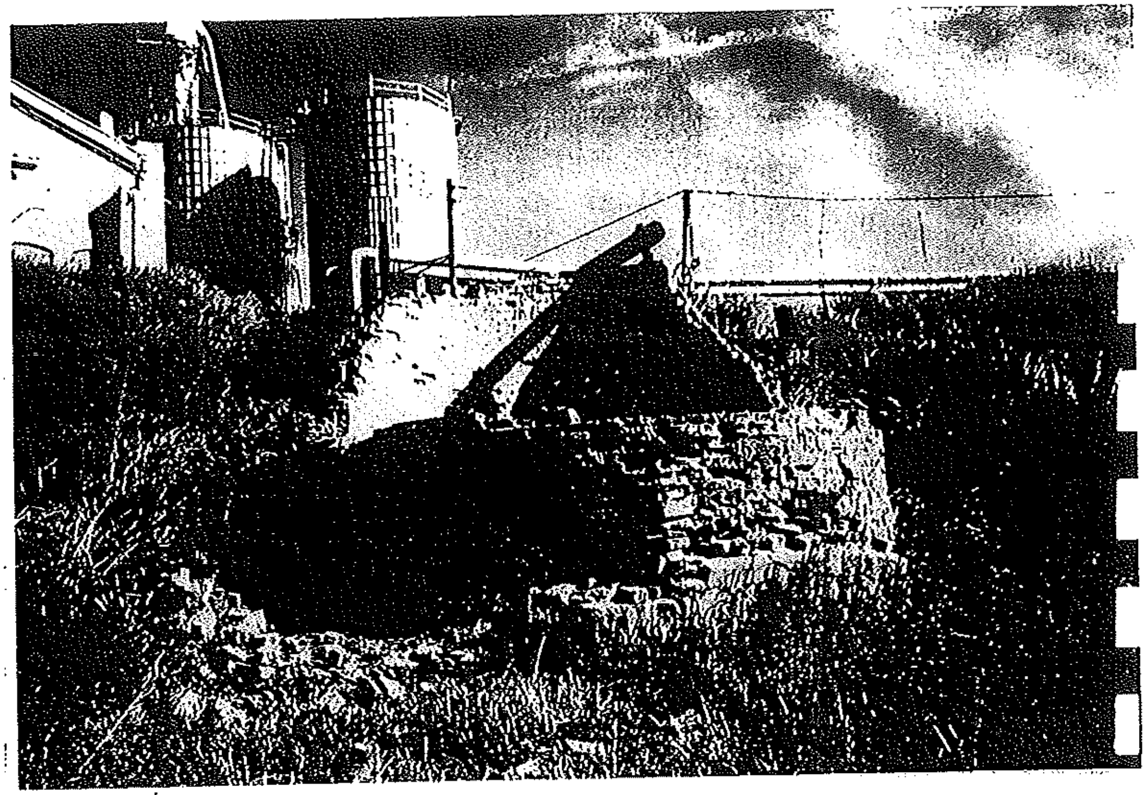

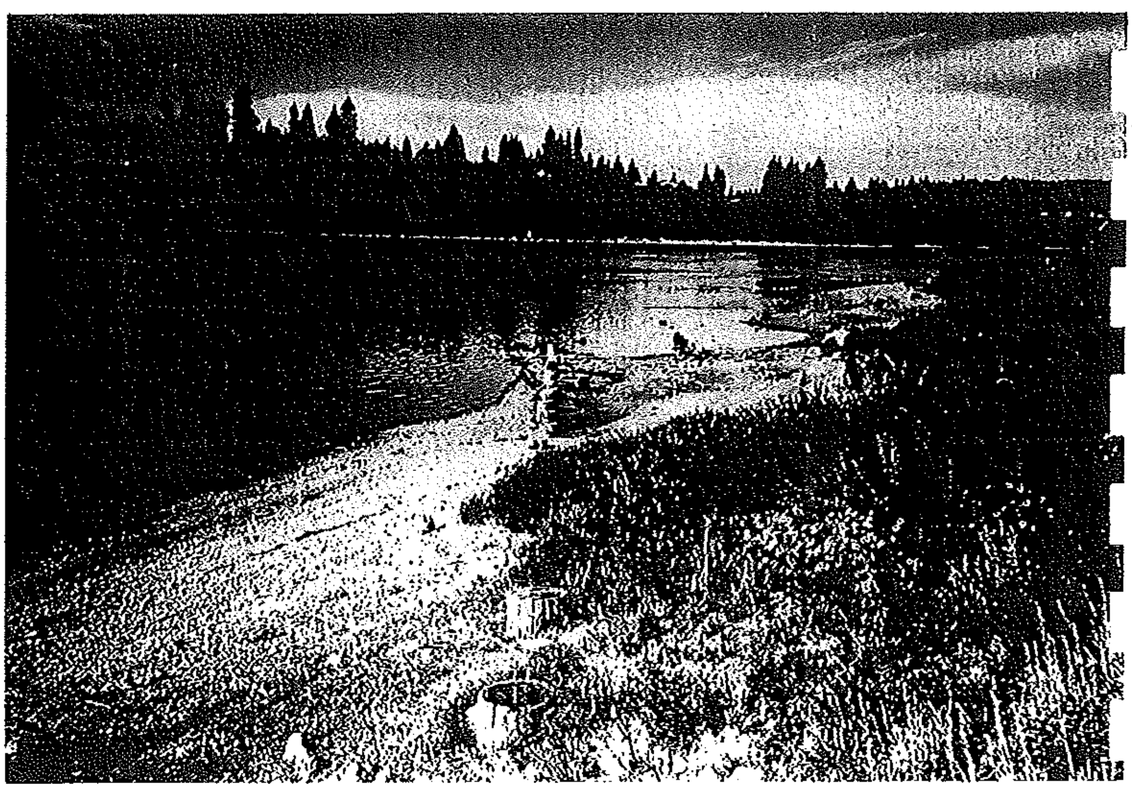

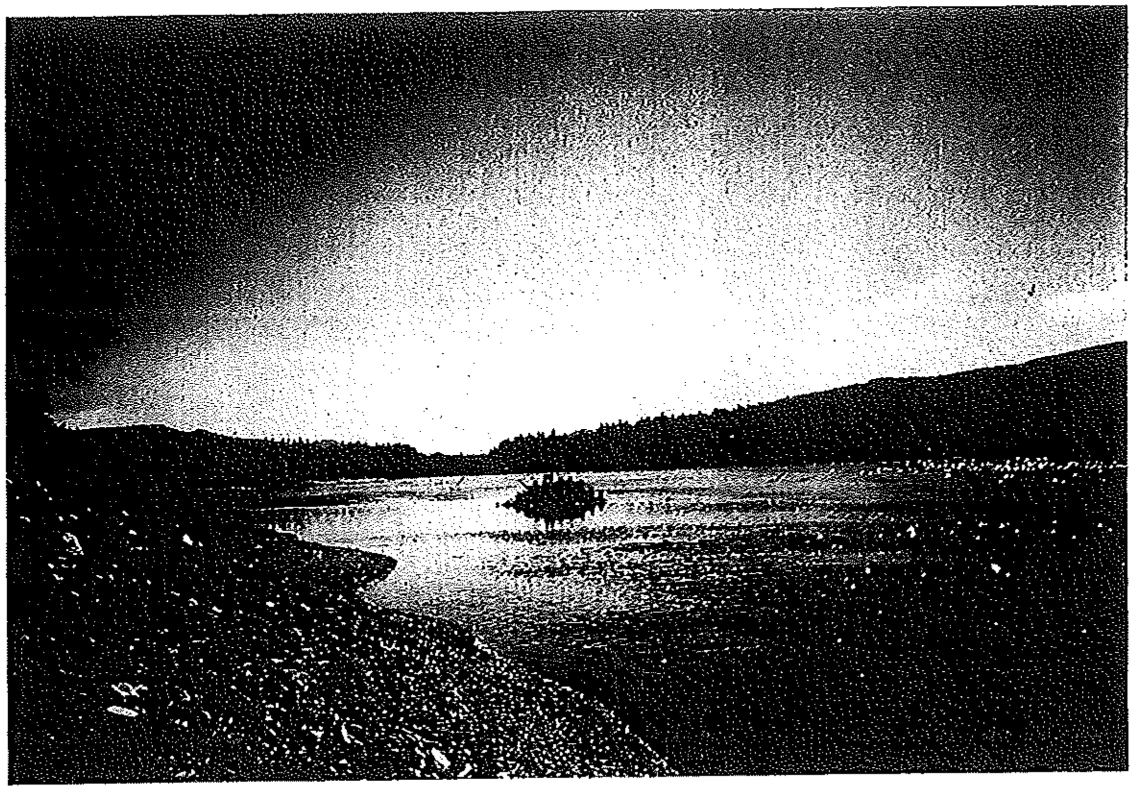

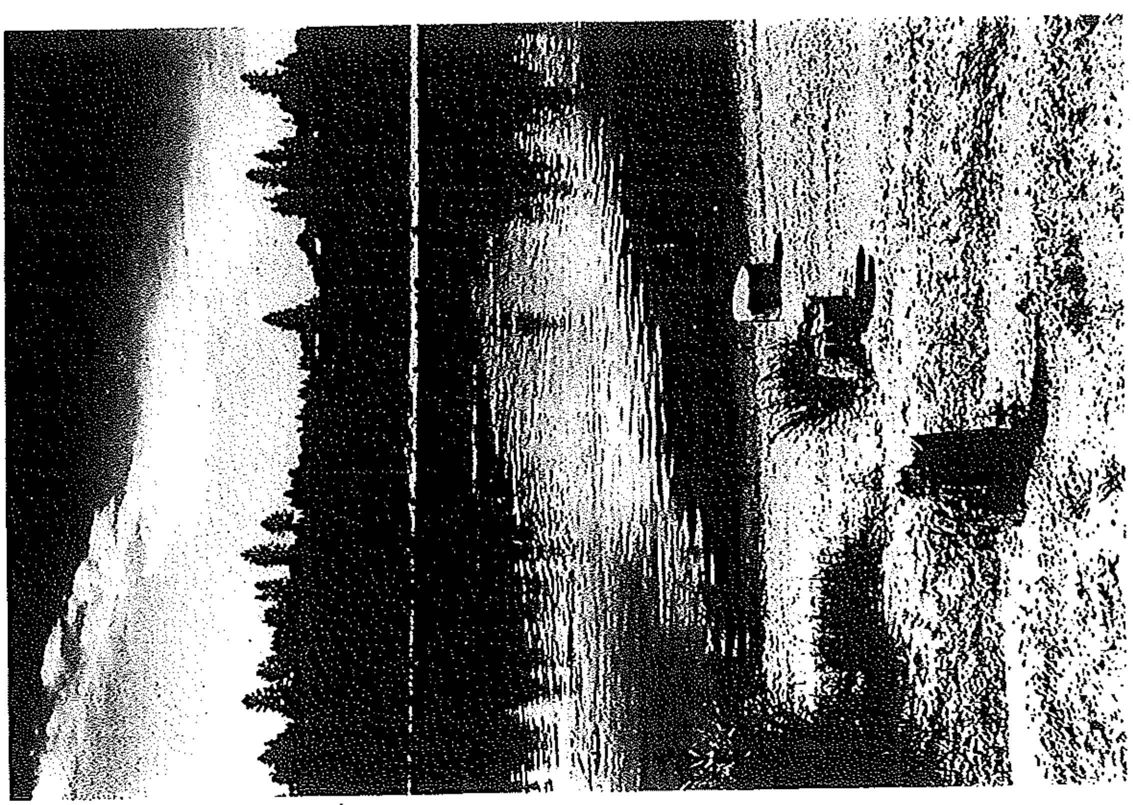

APPENDIX D

WETLANDS DELINEATION REPORT AND MAP

JAMES A. SEWELL & ASSOCIATES, LLC

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Sandpoint, Idaho 83864
(208) 263-4160
(208) 263-5229 Fax

*Civil Engineering *Electrical Engineering *Land Surveying *Building Inspection * Land Use Planning

REQUEST FOR JURISDICTIONAL DETERMINATION

August 6, 2010

INTRODUCTION

Delineation Authorization: West Bonner Water and Sewer District (applicant)
James and Bobbie Ward (land owners)

Delineation Purpose: The subject of this wetland boundary delineation is limited to the proposed fill associated with a service road designed to access the proposed water system storage tank (see accompanying mapping).

Background: The West Bonner Water and Sewer District is proposing to install a community wide water distribution system and sewer collection system. The proposed water system installation and sewer extension will centralize services to the existing residences and commercial buildings while allowing for future residential and commercial expansion . The project will provide fire suppression flows to residences and facilities within the city of Oldtown area, provide safe, potable water to residential and commercial areas, provide a sanitary means of collecting and disposing of wastewater, and facilitate in the future growth of the community.

Site Location: The delineated wetland areas are located in and are surrounded by the Ward's livestock pasture, all situated in Township 56 North, Range 6 West, Section 24, Boise Meridian, Bonner County, Idaho.

Site Visits: April 19, 2010; April 23, 2010; April 26, 2010; and May 12, 2010

Delineator: Martin E. Taylor, AICP
Member -- *American Institute of Certified Planners*
Wetland Delineator Certification Program (WTI)

METHODS

Methods used included: Routine Method (Level 3; Existing Data and Onsite Inspection). The project includes an area greater than 5 acres. A determination was made that "normal" conditions were present.

Vegetation

On site inspections included: identifying plant community types; selecting a representative observation point (data plot) within each plant community; visually selecting the dominant species from each stratum (tree, shrub, herb, woody vine); recording the indicator status of dominant species; and determining whether vegetation was hydrophytic based on the rapid test, the dominance test or prevalence index worksheets, or morphological adaptations.

Hydrology

Field observations included (as applicable): water measurement depths at the surface; within soil pits; and depth to saturated soils. Additional hydrologic data considered included the wetland hydrology primary and secondary indicators specified on the data form *(Wetland Determination Data Form - Western Mountains, Valleys and Coast Regions*; May 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region – Version 2.0*). If available, recorded data were also considered.

Soil

Soil pits were associated with all data plots in an attempt to verify the presence or absence of hydric soils. Profile descriptions and hydric soil indicators were considered as specified on the referenced data form). Soil survey general data were considered to the extent applicable.

Modifications of methods used included:

Transects were prepared consistent with the Routine Method for areas greater than five acres in order to approximate the "Wetland B" boundary due to extent of the wetland complex (20.97 acres; 913,239 square feet). No modifications were necessary for determining the "Wetland B" boundary. Though "Wetland A" contains less than five acres (0.97 acre; 42,447 square feet), one transect was prepared pursuant to the same Routine Method standard employed for "Wetland B."

Sources of existing information used included: Preliminary data gathering included: USGS quadrangles; USFWS wetland inventory mapping; USFWS Region 9 plant list (and 1993 Region 9 Supplement); SCS (NCRS) Bonner County Soil Survey; USGS National Hydrologic Dataset - Geodatabase; Tom Dubendorfer, PWS (plant identification); FEMA Flood Insurance Rate Maps; and James A. Sewell & Associates proposed utility (water) line access road alignment.

RESULTS AND DISCUSSION

Description of site

Topography

The site consists predominantly of level to undulating pasture. A hillside sloping from north to south borders "Wetland B" to the north. "Wetland A" consists of a swale-like, isolated depression bisecting the southeast corner of the pasture.

Plant Communities

Wetland plant communities consist of species that occur in a shared habitat and environment populated predominantly by dominants *Phalaris arundinacea* (reed canary grass), *Carex sp.* (sedge) and *Juncus sp.* (rushes). Subordinate species include *Lysichiton americanum* (skunk cabbage) and *Typha latifolia* (cattail).

Non-wetland plant communities consist of species that occur in a shared habitat and environment populated predominantly by dominants *Centaurea maculosa* (knapweed) and *Taraxacum officinale* (dandelion). Subordinate species include *Achillea millefolium* (yarrow) and *Bromus sp.* (miscellaneous pasture grasses).

Soils (mapped and found)
Mapped soils suggest that the subject area contains Hoodoo silt loam, 0-1 percent slopes, a Mollic Andaquept, and Pywell-Hoodoo complex, 0-1 percent slopes, a Typic Borosaprist. Both soils are classified as hydric. Data plots confirmed the presence of these soil types, though vegetation and hydrology did not in all Hoodoo and Pywell data plots confirm the presence of wetlands. Though soil test pits often revealed low chroma, redox features and a corresponding depleted matrix, thus qualifying as hydric soil, some data plots lacked dominant hydrophytic vegetation and wetland hydrology indicators.

Additional mapped soils include Kootenai gravelly silt loam, 0-4 percent slopes, a Typic Xerochrept. This soil is not categorized as hydric. "Upland" data plots confirmed the presence of this soil type.

Hydrology
Field indicators of wetland hydrology were observed in several data plots (attached). Specifically, the visual observation of saturation within the upper 12 inches of the soil profile proved evident. These saturated conditions occur within a major portion of the root zone (within 12 inches of the surface) in sufficient duration to support hydrophytic vegetation between at minimum 5 percent to 12.5 percent of the growing season (between 8 days to 19 days in Bonner County based on 157 days of >28°F temps for 5 years in 10). Accordingly, these data plots fall within "Hydrologic Zone V: Irregularly inundated or saturated." Additionally, several data plots also included evidence of a high water table and/or wetland drainage patterns (swales).

USFWS Wetland Inventory Map
"Wetland A" is classified by Cowardin as PUSC (palustrine unconsolidated shore seasonally flooded). "Wetland B" is classified by Cowardin as PEM1C (palustrine emergent persistent seasonally flooded; 20 acres). The easternmost one acre (more or less) of "Wetland B" is classified by Cowardin as PSS1A (palustrine scrub-shrub broad-leaved deciduous temporarily flooded).

SCS (NRCS) Soil Map
Soils Map Sheet 55 depicts the subject area. Map Units 15 and 42 comprise the two hydric soil types within the project boundary (Hoodoo silt loam and Pywell-Hoodoo complex, respectively). Map Unit 23 comprises the non-hydric soil type (Kootenai gravelly silt loam).

Findings

Wetland Types Identified (USFWS Inventory)

Description

The USFWS inventory references three mapped wetlands, all of which were confirmed in the field. Hydrology indicators include a seasonal high water table, soil saturation, wetland drainage patterns and in some areas, surface water. Of noteworthiness is the accuracy of the USFWS wetland boundaries when overlaid with the actual field-located boundaries.

Locations
The survey-located wetland boundaries and proposed service road alignment are depicted on the accompanying map. Delineated wetlands total 21.94 acres. "Wetland A" is isolated and will not be affected by the proposed water tank service road. (The proposed road alignment is located west of the actual wetland boundary.) "Wetland B" is proposed to be traversed by about 534 lineal feet of service road requiring an estimated 13,845 square feet (0.32 acre) of fill.

Area
The accompanying site plan includes the boundary of both delineated wetlands, field transects, and data plot locations. Acreage totals are also included.

Contrast with non-wetlands
The "Wetland A" wetland/upland boundary proved distinct, the boundary following the top of a defined swale. As noted on the applicable data plots, "Wetland B" boundaries were contrasted with upland boundaries most noticeably along the north boundary where ground elevations rose markedly from the wetland edge up the adjacent hillside. Contrasts between wetland and upland were more subliminal along the south boundary of "Wetland B", warranting additional data points collected on three additional site visits (April 23, 2010; April 26, 2010; and May 12, 2010).

Boundary
Where a distinct, abrupt upland boundary was apparent due to changes topography and the absence of dominant hydrohytic vegetation, boundary lath were placed. Similarly, where a distinct, abrupt wetland boundary was apparent due to obvious primary hydrology indicators (e.g, surface water) and the dominance of hydrophytic vegetation ("rapid test"), boundary lath were placed. Where boundaries were less apparent, nine transects involving 27 locations were sampled and data plots prepared (one transect and four data plots for "Wetland A"; and 8 transects and 23 data plots for "Wetland B"). Where boundaries proved less distinct due to subtle differences in topography, vegetation, hydrology and soils, the distance between confirmed wetland and confirmed upland data plots was averaged between the plots. This established the wetland boundary as mapped.

Other Types of Water

Description
The proposed utility road does not include other types of jurisdictional waters of the U.S., such as streams, rivers, lakes and similar non-wetland, but regulated, waters.

CONCLUSION

Total Area and Wetland Types (and other regulated waters)

"Wetland A" contains 0.97 acres. "Wetland B" contains 20.97 acres. Both wetland types are palustrine, with both wetland types being seasonally or temporarily flooded. The utility road wetland crossing does not involve other regulated waters.

Permit Needs

Prior to utility road fill placement, it is anticipated that, in addition to the jurisdictional determination, a NWP 12 will need to be verified and a PCN acknowledged by Corps staff via the "joint application" process.

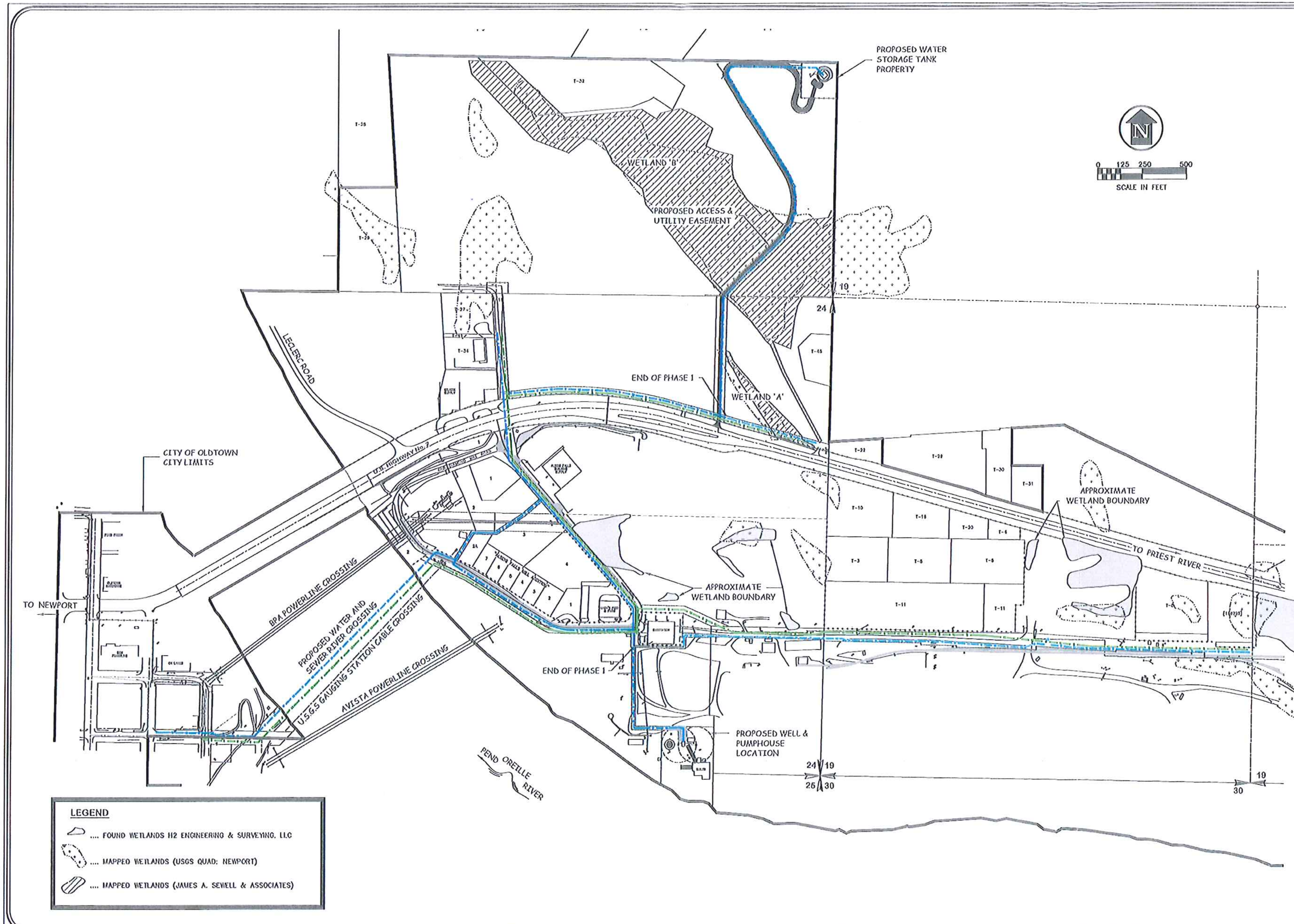
Final Authority
The final jurisdictional determination rests with the Army Corps of Engineers.

LITERATURE CITED

FEMA *Flood Insurance Rate Maps,* Panel 16017C0850E, 2009.
USDA, *Soil Survey of the Bonner County Area*, 1982.
USGS, *Newport* Quadrangles, 1986.
USGS, *National Hydrologic Dataset, Geodatabase*, 2010.
USFWS, *National Wetland Inventory, Newport* Quadrangle, 1987.

APPENDIX

Data Plots
JAS wetland boundary determination
USFWS wetland overlay
Aerial overlay
USGS quad overlay



PROFESSIONAL ENGINEER 3998 STATE OF IDAHO ERIC J. ELDENBURG 6/11/12

ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
WETLAND COMPARISON MAP

PROJECT:
WATER & SEWER SYSTEM EXTENSIONS, 2010
WEST BONNER W&S DISTRICT
OLDTOWN, BONNER COUNTY, IDAHO

DATE:	5-10-10
SCALE:	AS SHOWN
DRAWN BY:	JMB
CHECKED BY:	EJE
FILE NAME:	ALBD8-W&S-3510
DATA No.:	23072-02-002

SHEET OF

APPENDIX E

GEOTECHNICAL REPORT AND NRCS SOILS INFORMATION

Budinger
& Associates
Proudly serving the Inland Northwest for over 30 years

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Kevin Koesel, PE
James A. Sewell and Associates
600 4th Street West
Newport, WA 99156

July 20, 2010

Project Number S10030
Addendum #1

PROJECT: Albeni Water Reservoir Site
Oldtown, ID

SUBJECT: Addendum to Geotechnical Engineering Evaluation Report – Test Drilling at the Tank Site

Dear Mr. Koesel,

Budinger & Associates, Inc. is pleased to provide this report summarizing the results of additional geotechnical exploration and analysis for the proposed water reservoir in Oldtown, Idaho. This addendum is subject to the same terms and conditions as the original Geotechnical Engineering Evaluation Report dated April 9, 2010.

1. PROJECT CONSIDERATIONS & SCOPE

The services for the addendum were limited to the following scope:

1. Drill 1 test boring (Boring 6) with split-spoon sampling in the area of the proposed water tank;
2. Log subsurface conditions including encountered soil conditions, soil moisture, and groundwater levels;
3. Complete one cone penetration test (CPT) with pore pressure measurement;
4. Perform a slope stability analysis with the subsurface information;
5. Prepare this report.

2. ENCOUNTERED CONDITIONS

SUBSURFACE CONDITIONS

The encountered soil conditions are described in the attached Boring Logs and illustrated in the attached Results of Cone Penetration Test plots. The descriptions of the subsurface conditions are in accordance with the procedures described in Chapter 5 of the original report.

During exploration for Boring 6 we encountered 1) thin layer of topsoil 2) silty clay/ silty sand, 3) sand. When comparing encountered observations made from the Reservoir Site in test pits 3 and 4, it appears that the layer 3) sand becomes stratified with silt at depths greater than 10 feet below ground surface. The three soil layers encountered are described below:

1) Topsoil of silty sand with some gravel was encountered in the upper 2 feet of Boring 6.

2) Silty clay/silty sand as described in the report was encountered from 2 to 10 feet below ground surface (BGS), underlying the topsoil. As observed in Test Pit 4, this soil horizon was dominated by sand that was relative uniform, poorly graded, and contained small amounts of silt and clay. The cone tip resistance (q_t) values ranged from 2 to 60 tons per square foot (tsf) and friction ratio (ratio of sleeve to tip resistance) from 0.5 to 6.5%.

3) Sand was observed from 10 to 30 feet BGS in Boring 6. Sand became stratified with silt at 10 feet BGS, which was at greater depths than encountered in the Report. Spacing of stratification was on the order of 1 to 6 inches and contacts between the sand and silt were abrupt. Fresh faces from some of the sand layers contained laminations, or fine layering of Sand and fine material on the scale of 1/10th inches. Laminations were parallel and straight to wavy and undulatory. The silt was low plasticity. As noted in the *Boring Log*, the Sand was generally fine at 10 feet depth, but graded to very fine Sand with increased amount of silt and clay towards the bottom of the boring.

Stratification of the sand is most likely represented in the CPT results, where below 10 feet depth q_t alternates between low and high over depths on the scale of an inch to tens of inches. The majority of the q_t values ranged from 40 to 60 tons per square foot (tsf) and a couple layers were as low as 20 tsf and as high as 120 tsf. The friction ratio (ratio of sleeve to tip resistance) varied from 1.0 to 4.0% from 10 to 40 feet BGS and varied from 1.5 to 2.5% from 40 to 50 feet BGS.

GROUNDWATER

Groundwater was encountered at 11.5 feet BGS in the exploratory boring. The pore pressure results ranged from 2 to 4 feet of head in the upper 30 feet and then steadily increased to 15 feet of head from 30 to 50 feet BGS. This indicates saturated soil conditions and a potentiometric head that decreases with depth due to drainage downslope. We believe that the shallow water table is perched upon the less permeable silt.

3. CONCLUSIONS

The CPT and boring results indicated the upper 10 feet of subsurface to be loose to medium dense. At 10 to 50 feet the blow counts indicate the subsurface conditions are medium stiff and CPT test results indicate a bearing pressure to be good. Due to the subsurface conditions our original recommendations have slightly changed.

4. RECOMMENDATIONS

The following recommendations supplement and supersede those presented in the original Geotechnical Engineering Evaluation Report dated April 9, 2010.

FOUNDATIONS

We recommend founding the reservoir on a pad of open-graded, crushed, gravel (OGCG) meeting ITD 703.08 (Idaho Transportation Department Standard Specifications for Highway Construction, current edition) Rock Cap, extending a minimum of one foot below the bottom of the perimeter footing. The open-graded gravel should be underlain by Layer 2 (silty clay/silty sand)or Layer 3 (sand). The footings should bear at maximum pressures of 3500 pounds per square foot (psf) embedded a minimum of 24 inches below grade. Note: with a 12 inch layer of OGCG below the footings, the total frost embedment will be 36 inches. Interior columns should also be embedded a minimum of 24 inches below grade. The recommended minimum width for wall footings is 18 inches and the column footings a minimum of 36 inches.

DRAINAGE
Shallow groundwater was encountered during the field explorations. We anticipate groundwater will be encountered during construction. In our original report we recommended a trench drain be installed up slope from the tank site. The trench drain will divert the ground water away from the site for construction. The trench drain should remain in place after construction.

We also recommend bearing the tank floor on a minimum of 12-nches of OGCG as described above. The OGCG layer should be drained to an unobstructed, safe outlet. The outlet should be located laterally away from the down-gradient extent of the tank. The foundation drain should be placed at the base of the footings or below the footings. The drain should consist of a 4-inch perforated PVC pipe surrounded by a minimum of 2 feet of OGCG as described in the foundations section of this report. The drain rock should be wrapped in filter fabric.

Separate OGCG from surrounding soils including the floor and footing subgrades with geotextile.

LIQUEFACTION
Soil liquefaction occurs in loose sandy soils that are saturated. The CPT results and the N values indicate that the soil is medium dense. Thus, we conclude that liquefaction potential is low.

SETTLEMENT
Based on an average N-value of 10 for the upper 10 feet and a corresponding drained modulus of 240 kips per square foot (ksf), total predicted settlement was calculated using the anticipated loads from Section 1 of the original report. Total estimated settlement is between ¾ and 1-inch. Some additional settlement may occur from wall and column loads, but is estimated to be less than ½-inch.

Thank you for the opportunity to provide these services. If we may be of further assistance, please call. We also have an excellent team of technicians available to assist with quality control during construction.

Respectfully Submitted:
BUDINGER & ASSOCIATES, INC.

Megan Rounds, PE
Geotechnical Engineer

Steve Burchett, PE
Geotechnical Engineer, Principal

John E. Finnegan, PE
Geotechnical Engineer, Principal

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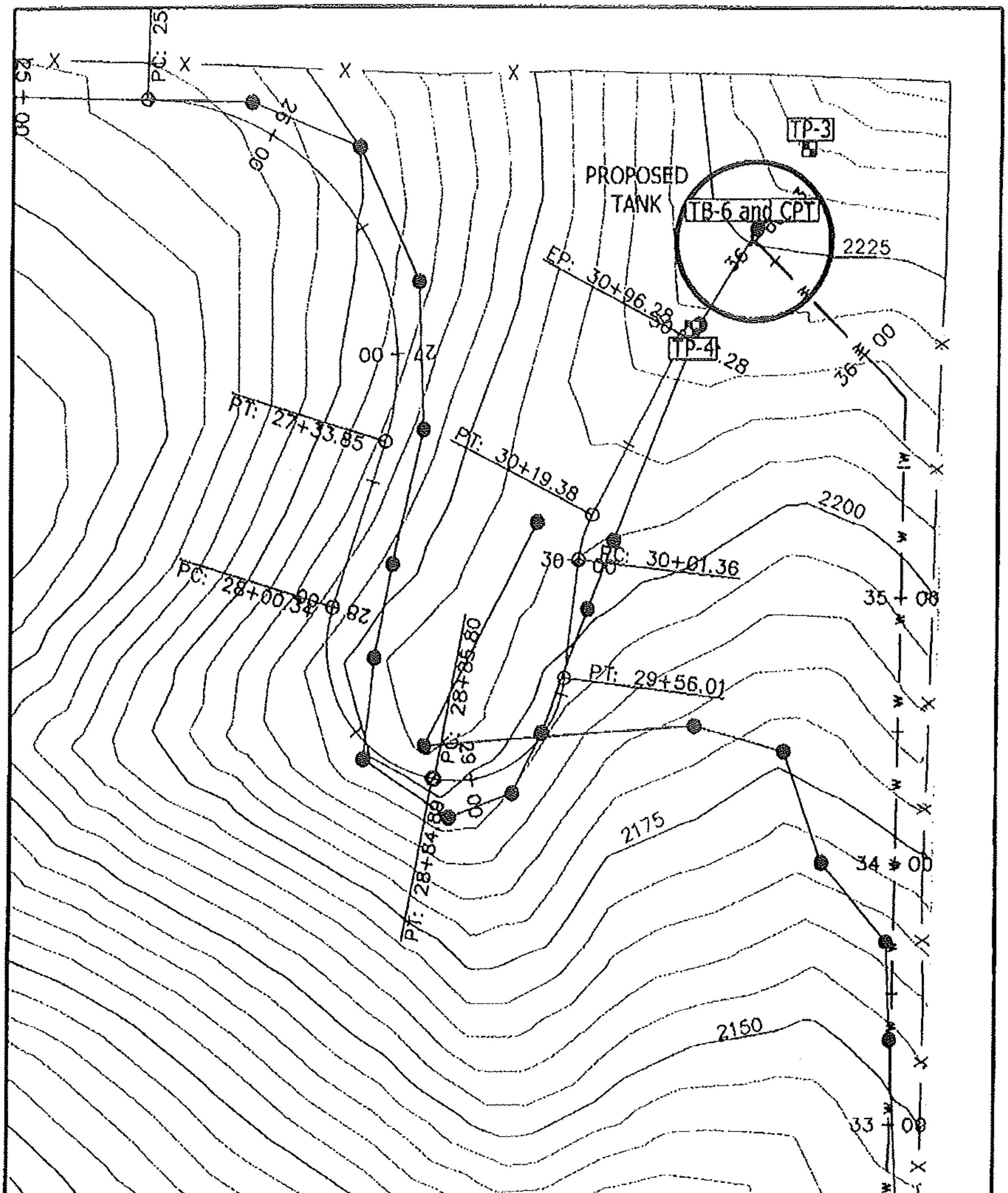
MEGAN M. ROUNDS

MMR/jg
Addressee - 1

Enclosures
Site Plan – Figure 2
Boring Log 6 – Figure 4-6
CPT Results – Figure 5



Note: TB-6 and CPT Location were added to this drawing

N SCALE: 1"=50' 0 25 50	BASE PLAN PROVIDED BY SEWELL & ASSOCIATES	Budinger & Associates	WATER RESERVOIR SITE PLAN ALBENI TANK & UTILITY CROSSING OLDTOWN, IDAHO
			FIGURE 2-2 PROJECT NUMBER S10030 DATE: 7/2010

TEST BORING 6

Date of Boring: 6-24-10
Driller: Budinger & Assoc., Inc.
Type of Drill: EAMR tracked drill
Location: Center of proposed water reservoir
Surface: thick brush

Elevation: 2225 ft
Logged by: T. Black
Size of hole: 6.5" O.D. (3-1/4" I.D.) hollow stem auger

DEPTH	SAMPLES	RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	TEST RESULTS
0			moist, brown, soft	TOPSOIL, SILTY SAND with Gravel		
			moist, brown to dark brown, loose to medium dense	SILTY SAND with small amount Clay, trace Gravel		
5			wet to saturated, brown to gray, mottled, medium dense	appears to be colluvium with possible relict soil horizon at 3'		
				CLAYEY SAND, slight to moderate cohesion		
10			wet to saturated, light brown, medium dense	SAND (fine) trace Silt, occasional Gravel (medium), low cohesion		
15		31 (25%)	saturated, gray, medium dense	SILT, some Sand and Clay, fine to medium, subrounded to subangular, micaceous - (from 12 to 30 feet the soil is layered - approximately 1 to 6 inch layers of sand, silt and clay in varying amounts from mostly sand to mostly clay)		N ≈ 31
		25 (67%)				N ≈ 25
20		16 (100%)				N ≈ 16
				(more silt and clay layers with depth and sandy layers become more fine with depth)		
25		17 (100%)				N ≈ 17
30		17 (100%)		(brownish gray to gray with reddish orange mottling in shoe of sample at 28½ to 30 feet - possible transition to different soil layer or highly weathered granite)		N ≈ 17
				End of Boring @ 30 ft		
35						
40						

TEST RESULTS legend: ATTERBERG LIMITS PL ├──┤ LL; WATER CONTENT ○; STANDARD PEN TEST, N-VALUE (OBSERVED); 3" SPLIT SPOON PENETRATION, BLOWS/FT. Scale: 10 20 30 40 50 60 70 80 90

Budinger & Associates
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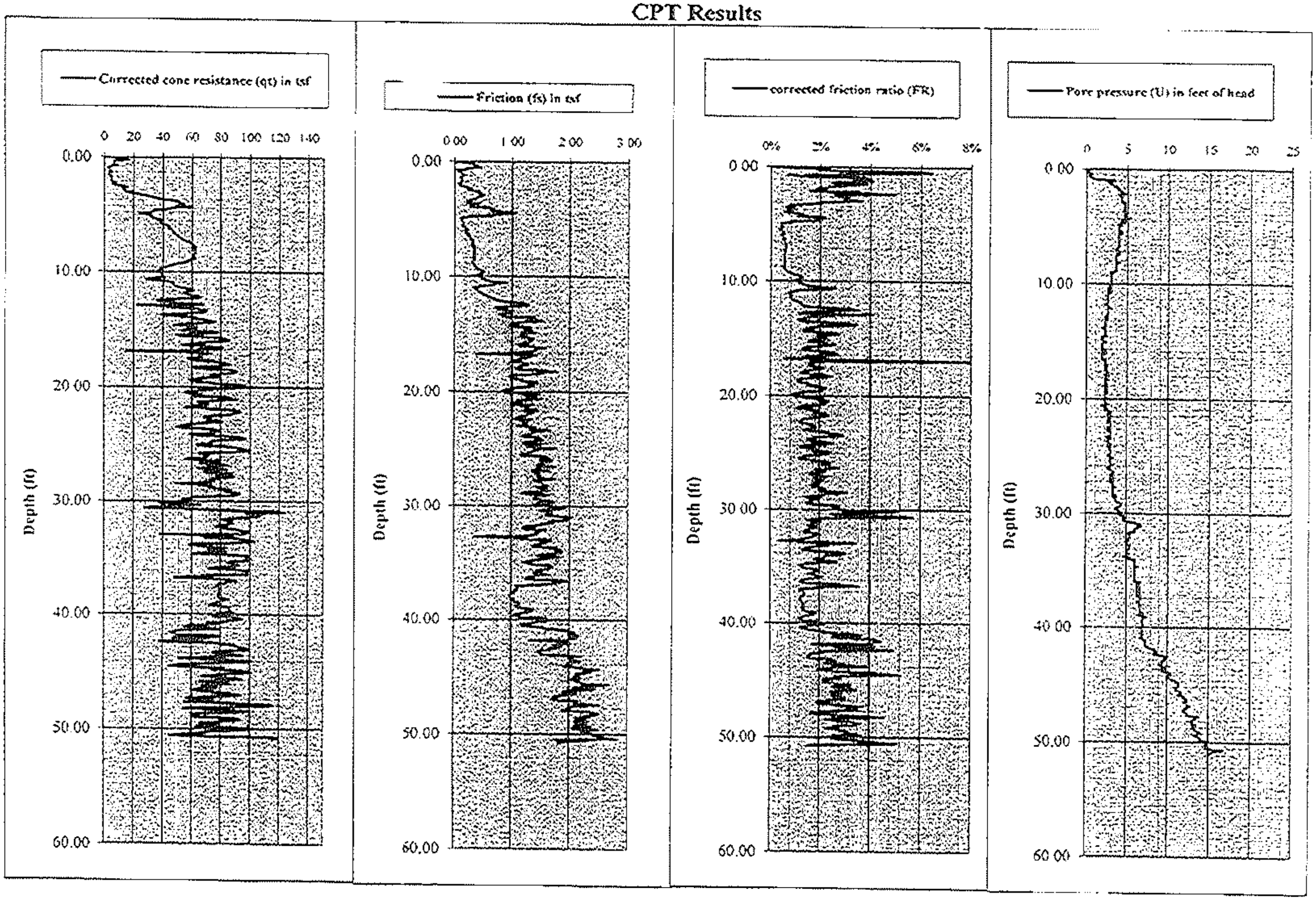
Spokane Valley, WA 99212

BORING LOGS

FIGURE 4-6

Project: Albeni Tank & Utility Crossing
Location: Old Town, Idaho
Number: S10030

CPT Results



Budinger & Associates

FIGURE 5

Budinger & Associates
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Kevin Koesel, PE
James A. Sewell and Associates
600 4th Street West
Newport, WA 99156

April 9, 2010

Project Number S10030

PROJECT: Albeni Water Reservoir Site &
Pend Oreille River Utility Crossing
Oldtown, ID

SUBJECT: Results of Geotechnical
Exploration and Analysis

Dear Mr. Koesel,

Budinger & Associates, Inc. is pleased to provide the results of a geotechnical exploration and analysis for the proposed water reservoir wet well and utility crossing in Oldtown, Idaho. This report comprises 7 Chapters. The conclusions and recommendations are provided in Chapters 3 and 4, respectively.

Thank you for the opportunity to provide these services. If we may be of further assistance, please call. We also have an excellent team of technicians available to assist with quality control during construction.

Respectfully Submitted:
BUDINGER & ASSOCIATES, INC.

Megan M. Rounds

Megan Rounds, PE
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Steve Burchett, PE
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JOHN E. FINNEGAN

4-9-10

TABLE OF CONTENTS

1. *CONTEXT*

This report presents the results of a geotechnical exploration and analysis for the proposed 500,000–gallon water reservoir; a river undercrossing for water and sewer lines; and a 30-foot deep wet well.

1.1 *PROJECT CONSIDERATIONS*

A proposed 500,000-gallon water reservoir will be constructed on a hillside. The diameter of the reservoir will be 60 feet and the height of the reservoir will be 30 feet. Structural loads for the reservoir were provided as follows:

Ring Wall Dead Load	1,020 plf
Ring Wall Live Load	675 plf
Center Column Dead Load	12,750 lbs
Center Column Live Load	42,500 lbs
Floor dead load	10 psf
Floor live load	1,900 psf

The wet well will be constructed between the Old Diamond Mill Road and the right (east) bank of the Pend Oreille River, south of the public boat launch. Sewell & Associates stated that the ordinary high water mark for Pend Orielle River is 2,035.33 feet. We understand the wet well will be approximately 30 feet deep and will be used to pump wastewater across the river.

The project will also include water and sewer lines to be constructed under Pend Oreille River. We understand the utility crossings will be constructed with a directional bore.

The water reservoir site was inaccessible to drilling equipment necessary to adequately characterize the support conditions. The client elected not to mobilize all-terrain drill equipment to save costs, but stated that a boring would be made when the site is made accessible to less-expensive truck mounted drill equipment.

LOCATION

The project site is located in Oldtown, Idaho. The water reservoir site is located approximately 2,000 feet north of State Highway 2 and 0.5 miles east of Pend Oreille River. The wet well site is located south of State Highway 2 and adjacent to the left (east) bank of Pend Oreille River. The utility crossing will start at the wet well site and extend across the river to the right (west) bank. The project site is illustrated on the attached *Vicinity Map* and *Site Plan*.

1.2 *SCOPE*

This geotechnical study involved interpretation of the surface and subsurface conditions to provide conclusions as to the suitability of the geotechnical conditions to support the improvements and provide geotechnical parameters needed for others to design and construct. We endeavored to conduct these services in accordance with generally accepted geotechnical engineering practices as outlined in the proposal dated February 9, 2010 (Proposal Number 050S10).

As proposed, the following scope was completed.

- Research available geotechnical, topographic, and geologic information, as well as preliminary plans by J.A. Sewell & Associates;
- Conduct geophysical surveys along the undercrossing alignment (Provided by Siemens and Associates);
- Drill and sample 1 boring using air rotary methods to a maximum depth of 33.5 feet below ground surface; sample soils at intervals of 5 feet;
- Excavate and sample 4 test pits in the vicinity of the river crossing and the water reservoir site. The test pits were excavated to a maximum depth of 14 feet below ground surface. Bulk soil samples were obtained;
- Log subsurface conditions including encountered soil, penetration resistance, soil moisture, and groundwater levels;
- Prepare geotechnical report documenting data and analysis completed, as well as providing geotechnical recommendations addressing:
    - a) Foundation design criteria for the lift station and water reservoir including allowable bearing pressures, anticipated settlement, lateral earth pressure, and minimum size of spread footings;
    - b) Earthwork criteria such as subgrade preparation, use of existing soils as fill, placement of fill, and temporary slope angles;
    - c) Evaluation of geotechnical conditions as they relate to wet well construction and utility undercrossing;

Note: A drilled boring will be needed at the water reservoir site prior to final design and construction.

Construction inherently entails risk and this project is not an exception. The purpose of this study is to reduce risks related to subjects in the scope to levels generally accepted for similar projects designed with the benefit of similar geotechnical studies.

2. ENCOUNTERED CONDITIONS

2.1 GEOLOGICAL SETTING

Source: Reed, Russel, Burmester F., Breckenridge, Roy M., McFadden, Roy M., and Phillips, William M. Lewis S., Preliminary Geologic Map of Sandpoint 30 x 60 Quadrangle, Idaho and Montana, Idaho Geologic Survey, Open File Report DWM-94-M, 2008.

The geologic unit mapped in the area of the proposed wet well is Qal – Quaternary Alluvium (Holocene). The unit is described as poorly to well-sorted boulders, cobbles, gravel, sand, silt and clay in floodplains, terraces and valley bottoms.

The geologic unit mapped in the area of the proposed water reservoir is Qfg – Quaternary flood deposits. The unit is described as poorly to moderately well-sorted stratified deposits of boulders, cobbles, pebbles and sand resulting form multiple episodes of catastrophic outbursts from glacial-dammed Lake Missoula. The particles are subrounded to angular clasps of diverse lithologies and can be as large as 3 yards in diameter.

Well logs were reviewed to gather more subsurface geologic information. No well logs were in close proximity to the water reservoir site, but some wells were located upgradient to the north west of the site. These logs were reviewed and the deepest well log is attached, in an Appendix as Well Tag No 0010529. The well was drilled to a depth of 523 below ground surface (BGS). Sand and gravel soils were encountered to a depth of 190 feet BGS and were underlain by a layer of clay that was 50 feet thick. The clay extended to 270 feet BGS and was underlain by bedrock. Bedrock is not likely to be encountered within the water reservoir site.

Near the proposed wet well water levels reportedly penetrated 18 to 32 feet of clay overlying 90 feet or more of sand. The Appendix includes the log with Tag No. 033281

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SEISMIC CONSIDERATIONS

We understand that the 2006 International Building Code (IBC) will be used as the basis for design of the proposed water reservoir and wet well structure. The seismic parameters were calculated using USGS's software, Earthquake Ground Motion Parameters Version 5.0.9a. The following latitude and longitude were used to specify the location of the subject property.

Latitude: 48.189 N
Longitude: 117.022 W

The maximum earthquake spectral response accelerations, based on a site class of B are:

Short Period Response (S_S) – 0.383g per Figure 1615(1)
One Second Response (S_1) – 0.109g per Figure 1615(2)

Boring 1 illustrates standard Penetration Blow Counts between 15 and 50, corresponding to a site classification of D per Table 1613.5.2. Thus, the maximum considered earthquake spectral response accelerations need to be adjusted for site class effects as follows:

Short Period Response (S_{MS}) – 0.571g per Figure 1615(1)
One Second Response (S_{M1}) – 0.259g per Figure 1615(2)

Seismic Refraction Microtremor results from 3 surveys located along the underground alignment reveal the following:

ReMI #o.	River Channel Area	Depth (ft)	Shearwave Velocity (rt/sec)	Correlated N Value
1	Right	0-7	200-400	<1-4
		7-30	700-750	21-31
2	Middle	0-3	200	<1
		3-20	500 -600ft/sec	8-14
		20-30	750-800	31-36
3	Left (west) side	0-9	200-400	<1 to 4
		9-30	750-800	34-36

2.2 *SURFACE CONDITIONS*

The site location, surrounding surface features, and topographic contours are illustrated on the *Vicinity Map* and *Site Plan*. The ground surface in the area of the wet well and water reservoir is covered with dense brush, grass, weeds and trees.

The proposed water reservoir site is located on a hillside. The hillside slopes downward in three directions at approximately 2.5(Horizontal):1(Vertical) in the steepest direction and will require approximately a 10 foot cut to create a level building area. The ground surface in the area of the wet well is relatively level, sloping downward toward the Pend Oreille River. The river bank slope is approximately 1.5(Horizontal):1(Vertical).

2.3 *SUBSURFACE CONDITIONS*

The attached *Boring Log* and *Test Pit Logs* include detailed descriptions of the subsurface conditions, in accordance with the procedures described in Chapter 5.

These distinct soil units were encountered: 1) fill and topsoil, 2) silty clay/silty sand, and 3) sand. The following paragraphs summarize the materials encountered, based on anticipated relevance to the project.

GROUND SURFACE- FILL & TOPSOIL

Reservoir Site

Topsoil of silty sand with some gravel was encountered at the surface in the reservoir site explorations. The topsoil was approximately 1 foot thick. No signs of disturbance was observed at the reservoir site.

Left (West) Side of River

Minor thicknesses of fill were placed on the west side of the river possibly during construction of the intake/gaging structures. Areas with some fill are present, but the majority of the site surface appeared to be in a natural condition. Shear wave velocities of approximately 250 feet per second were encountered in the upper 2 to 4 feet.

Wet Well Area

Fill was encountered at the surface in the exploration bore for the wet well. The fill was gravel with some sand and a small amount of silt. The fill was medium dense and well graded. We understand that fill was placed in the area of the wet well to create the access roadway. An employee for the City of Oldtown said the surrounding area was always wet. Six feet of fill was placed in the area so it could be used by traffic.

SILTY CLAY/SILTY SAND (SC/SS)

Reservoir Site

The topsoil was underlain by sand to silty sand. Sand was encountered in the down-gradient test pit but was underlain by a layer of silty sand. If the reservoir site is moved up-gradient we anticipate silty sand will be encountered beneath the topsoil.

Left (West) Side of River

Test pits on the west side of the river sloughed at 5 feet BGS. Test Pit 1 encountered sand, while Test Pit 2 encountered a 2-foot thick layer of silty sand that was moist and medium dense.

Wet Well Area

The boring encountered a 4-foot thick layer of silty clay. Observed N-value of 17 to 21 indicated that the silty clay was medium stiff to stiff. Some fine roots were present.

SAND

Reservoir Site

In Test Pit 2, the silty sand was underlain by fine sand with a trace of low-plasticity silt and clay. The sand was relatively uniform and poorly graded.

Test pits were used to save costs over drilled borings due to difficult access conditions. Deeper information is needed prior to final design and construction, which we understand will be obtained when access is in provided.

Left (West) Side of River
Test Pit 2 encountered sand beneath the silty sand. Sidewalls of Test Pit 1 were unstable, so the excavation was discontinued at 6 feet BGS. The sand was fine with a trace of low-plasticity silt and clay.

Wet Well Area
The boring encountered sand beginning at 7.5 feet BGS. Thin zones of fine gravel were observed that became courser with depth though the silt content appeared to remain consistent. Blow counts revealed a medium dense condition. Moisture content of the sand changed from dry to moist at about 15 feet BGS, then to saturated at 23 feet BGS.

2.4 SURFACE AND GROUNDWATER HYDROLOGY

Reservoir Site
Test Pits 3 and 4 at the reservoir site encountered groundwater at 8 and 10 feet BGS, respectively. Aspen trees were growing in the area of the reservoir site. Aspen trees tend to grow in wet areas so their presence may indicates seeps and springs in the area. Pit sidewalls were not stable below the groundwater table.

Left (West) Side of River
Test Pits 1 and 2 on the left side of the river encountered groundwater at 2 feet BGS. Pit sidewalls were not stable below the groundwater table.

Wet Well Area
The exploratory boring encountered groundwater at 23.3 feet BGS. We understand that surface ponding is common in the area indicating the potential for a shallow table approaching the ground surface. River water levels influence the groundwater elevation; groundwater levels likely remain at or above river levels. If the excavation is below the river elevation then water has the potential to migrate into the excavation.

Permeability

SILTY CLAY/SILTY SAND (SC/SS)
The estimated hydraulic conductivity of the SC/SS unit is 0.2 to 2 inches per second. Sieve analysis results indicate an effective grain size for the clean sand of 0.17 millimeters. Estimated hydraulic conductivity of the sand is approximately 40 inch per second, using the Hazen Method (Hazen 1911).

3. *CONCLUSIONS*

Based on the encountered conditions described in Chapter 2, we conclude that the site offers favorable geotechnical conditions for support of the project.

In the area of the reservoir site, more subsurface explorations are required. Specifically a boring at least 50 feet below the propose reservoir foundation elevation deep is needed. The native clean sand is typically favorable for support of conventional shallow spread footings. However, the clean sand is below the water table and the reservoir site is located on a hillside with slopes on three sides. An exploratory boring is necessary to complete the slope stability analysis.

Groundwater will influence the excavations. Dewatering will be required and will increase project costs. The river elevation will affect excavations adjacent to the river due to high permeability of the sand. Construction timing may be dependent on river elevation. It may still be difficult to dewater the entire excavation for the wet well, so a portion of the wet well may need to be installed as a caisson.

The reservoir site will require foundation drains to decrease the hydrostatic pressure from groundwater. Differential settlement will tend to occur due to the sloping terrain where restraint is lower on the downhill side. A pad of open graded gravel would improve drainage, improve stability and reduce differential settlement potential.

The overflow water should not be allowed to pond near the reservoir, due to steep slopes and the underlying sand. Water from the over-flow valve should be directed to a natural drainage path.

The high permeability of the sand will make it difficult to dewater an area for a large excavation. The directional boring for the river crossing will require a large excavation on one side of the river for the drill machine. The reservoir site will also require a large excavation. The sides of the excavation, in both locations, will not be stable due to the shallow ground water. Water could be diverted from the construction area by installing a trench drain up gradient from both excavations. The trench drain should be constructed before starting the large excavations and should extend to a depth that is approximately 5 feet deeper than planned excavation depth. The trench drain should direct groundwater around planned excavations. Soil freezing and coffer dam construction are also options for the reservoir and drill machines excavations.

4. RECOMMENDATIONS

Based upon the conclusions presented in Chapter 3, we recommend founding the wet well in the SAND unit. To control settlements and slope stability, as well as to control seepage pressures from the shallow ground water table, we recommend founding the reservoir on a 5-foot thick pad of open-graded gravel. Alternatives to the gravel pad include use of densely compacted aggregate piers combined with a groundwater interception trench drain. The recommendations presented throughout this chapter are intended to provide the geotechnical criteria needed for an economically feasible design at normally accepted risk levels. More conservative design parameters may be used if lower risks are preferred. Specifically, the design and construction should incorporate the following recommendations concerning earthwork, foundations, lateral earth pressures, and the well floor.

4.1 EARTHWORK

The earthwork for this project will be difficult because of the shallow depth to groundwater -- at the reservoir site, river crossing, and wet well site. The native SAND unit will allow rapid infiltration and will tend to heave in the bottom of excavations if the excavations are not dewatered first.

EXCAVATION

Clean sand is not stable when saturated. Therefore, sidewalls of excavations will cave below the water table and overlying capillary fringe. Excavations for the reservoir and directional bore pit will require dewatering. The drain should divert the water away from the excavation. Diverted water should be directed to a natural drainage way and should not be allowed to pond on the hillside or cause erosion. If excavations are shored, but not dewatered, heave of the SAND unit could occur.

Water levels at the wet well site, which is adjacent to Pend Oreille River, should be researched to facilitate timing of construction for a period of normally low water levels. OSHA soil Type C conditions should be anticipated to control temporary stability. OSHA temporary excavation criteria includes maximum slope inclination of 1½ H:1V (Horizontal:Vertical) in the temporary condition for Type C soil.

If the wet well is deeper than the river elevation, that portion of the wet well may need a caisson. The water can be forced out of the wet well while the caisson is being placed by using either air or a plug in the bottom of the caisson. The contractor's shoring design will need to be completed and sealed by a registered professional engineer.

The directional bore machine will require a bore pit on both sides of the river. Depending on time of construction, groundwater may be encountered in the bore pit excavation. A trench drain up gradient from the bore pit may be helpful to reduce water seepage potential. Advanced means of seepage control may be necessary, such as soil freezing or cofferdam construction. Conventional dewatering from a temporary sump may require high discharge rates to control inflows.

PREPARATION OF SURFACES TO RECEIVE FILL

For preparation of the site, we recommend removing and replacing encountered fill and topsoil below foundations and slabs. We anticipate topsoil to be approximately 1 foot thick and fill in the area of the wet well to be approximately 6 feet thick.

Surfaces to receive fill and backfill should be excavated nearly level (8% maximum slope), brought to optimum moisture (±2%) if necessary, and compacted in-place to at least 92% of maximum dry unit weight. For structural fill, much of the existing soil will be suitable for reuse. Debris such as wood and metal, as well as boulders too large for compaction equipment and organic soils should be removed.

Place fill in nearly level lifts and compact to at least 92% of maximum dry unit weight. The lift thickness should vary with the capability of the equipment. Obtain the maximum unit weight and optimum moisture contents for fill material in accordance with the Modified Proctor (ASTM D 1557).

A qualified soils technician representing the Geotechnical Engineer should be present during fill and backfill operations to monitor the subgrade preparation and unit weight of each lift of fill.

4.2 FOUNDATIONS

We recommend an exploratory boring be completed in the area of the reservoir when access is available. Therefore, these recommendations are preliminary for planning purposes and may be altered after the completion of additional explorations. Due to shallow groundwater and characteristics of the clean SAND unit, we recommend installing a gravel pad below the reservoir as described further below (see Settlement).

FOUNDATIONS

A pad of open graded gravel, at least 5 feet thick, is recommended below the reservoir. The gravel pad needs to extend 3 feet wider than the reservoir. With this pad wall and column footings may bear at 5000 pounds per square foot (psf). Foundations should be at a minimum depth of 3 feet BGS to protect against frost action. However, footings do not need to extend to frost depth if founded on open gravel that is drained. A minimum embedment of 12 inches is recommended. The top 6 inches should be materials with 10 to 20 percent, slopes away at 2 percent to shed water.

The wet well will need to be drilled due to shallow groundwater and unstable subsurface conditions, so conventional spread footings will not be an option. Recommended allowable bearing pressure is 2,000 psf.

TEMPORARY LIVE LOADS

To calculate seismic loading, the acceleration and site classification criteria described in Section 2.1 of Chapter 2 should be followed. Soil liquefaction occurs when the strength and stiffness of the soil is reduced by earthquake shaking. It appears the underlying soils are fine grained and saturated so there is potential for liquefaction to occur. The well logs in the area indicate the fine-grained soil to be approximately 100 feet thick. We recommend a boring be completed at the reservoir site to determine the underlying soil conditions. A liquefaction analysis requires blow count information for a depth of 50 feet below the expected foundation elevation. So the boring should extend a minimum of 60 feet BGS. If the analysis determines that the soil has a potential to liquefy, then underlying soil may need to be modified or a deep foundation

HYDROSTATIC/BUOYANT FORCES

Shallow groundwater was encountered during the field explorations. The wet well should be designed to resist the buoyant forces. If the wet well is constructed as a caisson then it will be difficult to use the foundation to resist buoyant forces. Therefore, it may be necessary to add rings on the shallow portions of the drywell. The rings can be designed to be used to resist the buoyant forces.

The water reservoir should be designed with foundations drains. The foundation drains will direct the water away from the reservoir and decrease the potential for hydrostatic forces on the walls of the reservoir.

SETTLEMENT

The relative density of the soil that will support the reservoir is not known at this time. An additional bore is required to evaluate the underlying sand. Based on an assumed average N-Value of 15 and a corresponding drained modulus of 230 kips per square foot (ksf), the total predicted settlement was calculated using the anticipated loads from Section 1.1. Settlement results from wall and column loads are estimated to be less than ½-inch. While the floor loads will influence the soil to a depth of more than 30-feet below the reservoir, we recommend providing a 5-foot thick pad of open graded (see next section- Slope Stability Analysis) below the reservoir to reduce potential for differential settlements, improve drainage and reduce risks from unexpected reservoir leakage. Settlement will take place rapidly with the majority occurring during construction.

In the area of the wet well, the weight of the soil removed will be larger then the weight of the water in the wet well, so no settlement is anticipated for the wet well. However, due to the shallow groundwater, there is a potential for the sand to heave during construction and after construction. Heaving is caused when the surrounding soil is saturated. Installing a potion of the wet well like a caisson will decrease the potential for heaving during construction. The wet well will have to be designed to prevent the underlying soil from heaving after construction.

SLOPE STABILITY ANALYSIS

The reservoir will be located on a hillside. The existing slopes appear stable in their current configuration. No evidence of large-scale slope movement or long-term slope creep was observed at the time of our field evaluation. We assumed that the hillside is underlain by soils of the clean SAND stratum. However, we recommend an exploratory bore be completed so that we have soil information for the underlying conditions. We completed an undrained triaxial test on the SAND. The sample was obtained at 8 feet BGS. The triaxial test results indicate an angle of internal friction of 34 degrees and no cohesion.

We analyzed the existing slope for stability using the triaxial test results. We performed a stability analysis using Bishop's method of slices to calculate the minimum factor of safety for the underlying sand with groundwater 8 feet BGS.

For the assumed conditions (since a boring is required to understand the underlying conditions), we calculated the minimum factor of safety to be 1.5 for slope stability. For stability, a minimum factor of safety of 1.5 is typically considered to be adequate. To meet the analysis assumptions, we recommend 1) installing a pad of open-graded gravel, per ITD 703.08 (Idaho Transportation Department Standard Specifications for Highway Construction, 2004) Rock Cap, at least 5-feet thick below the reservoir to control different settlement and 2) installing a groundwater interception drain surrounding the reservoir as described in section 4.5. The pad should be separated from the underlying soil with geotextile or a graded filter such as 4-inches of ½-inch minus base per ITD 703.04 and the pad should drain by daylighting on the slope or with a relief pipe.

4.3 DIRECTIONAL BORE

The utility crossing under the Pend Oreille River will be completed by using directional bore equipment. The cost of a directional bore varies depending on the type of subsurface material. Siemens and Associates conducted a Geophysical Reconnaissance of the river bed to obtain an understanding of underlying geology. It appears the riverbed may be underlain by sand and gravel. Grain size of the gravel is unknown. If the gravel is coarse then it will be difficult for the directional bore machine to proceed with soil drilling tools. Therefore, it may be necessary for the drilling machine to use rock tools, which has a potential to increase the cost of the project.

4.4 LATERAL EARTH PRESSURES

RETAINING STRUCTURES

Assuming drained conditions and level backfill, the lateral earth pressures against retaining structures may be calculated using the following Active or At-Rest pressures. Appropriate safety factors should be applied in retaining wall designs that are not included in values provided. Since some displacement is required to mobilize the full active strength (approximately 0.2% of the wall height), the At-Rest pressure factors must be used when retaining structures are rigidly restrained to limit yield under earth pressure. Slopes and surcharge loads above a wall will increase the earth pressure.

TABLE 4.3.1	*RETAINING WALLS*	
	EQUIVALENT FLUID PRESSURE	
STRATUM	ACTIVE	AT REST
Native Clean Sand or Similar Structural Fill	40 pcf	60 pcf

LATERAL RESISTANCE

Lateral forces can be transferred to soil through use of passive earth pressures together with earth/concrete friction factors presented in Table 4.3.2. These values are unfactored and anticipate properly compacted horizontal backfill. They will be substantially reduced when unit weights are less than those recommended under *Earthwork* and when the surface is sloped.

TABLE 4.3.2	*LATERAL RESISTANCE*	
		EQUIVALENT FLUID PRESSURE
STRATUM	EARTH/CONCRETE FRICTION FACTOR	PASSIVE EARTH CONDITION DRAINED
Native Clean Sand or Similar Structural Fill	0.35	350 pcf

4.5 *DRAINAGE*

Trench drains should consist of a 4-inch perforated PVC pipe. Perforations should be on top of the pipe. There should be no perforations on the bottom of the pipe. The pipe should be placed in the bottom of the trench and surrounded with approximately 2 feet of drainrock. The drainrock should then be covered with filter fabric and then the trench can be backfilled with the native sand soil, compacted per Section 4.1.

4.6 *ADDITIONAL SERVICES*

Soil and foundation engineering comprises a 5-part endeavor involving cooperation with the owner, designer, and constructor as follows:

1. Preliminary investigation to assist in planning and to economically adapt the project to its geologic environment.
2. Soil study to analyze subsurface conditions and recommend design criteria.
3. Consultation with the designer to verify adaptation of the specific design to the site in accordance with the recommendations.
4. Monitor fill placement to verify proper compaction.
5. Construction observation to verify the conditions encountered and to make recommendations for modifications as necessary.

This report satisfies Item 2 of the 5-phase endeavor. We are eager to provide assistance with design and construction as appropriate to assist in completing a safe and economical project.

5. FIELD EXPLORATION

The fieldwork was conducted by NICET soils engineering technician and licensed driller Ethan Hageman and supervised by geotechnical engineer Steve Burchett, PE and Megan Rounds, PE on March 4, 2010. The field activities generally consisted of the following:

- Reconnaissance of the site and surrounding area;
- Drilling and logging subsurface conditions for 1 exploratory boring using air rotary drilling;
- Excavating and logging subsurface conditions for 4 test pits using an excavator.
- Obtaining split-spoon and bulk samples of the soils.

Results are presented in Figures listed in the *Table of Contents*.

5.1 TEST BORINGS

One boring was drilled with a truck-mounted Mobile B-57 utilizing 4½-inch outside diameter casing at the proposed wet well location. The western undercrossing location and reservoir site were not accessible with our truck-mounted drill; these areas were accessed by a tracked excavator provided by Pumnea Excavation.

AIR ROTARY DRILLING

The air rotary method involves circulating air through a specially designed pilot bit that engages with a casing bit during drilling, but disengages upon reversal of rotation to allow retrieval of the drill stem at desired sampling depths.

EXPLORATORY EXCAVATION

Two test pits were advanced at the proposed reservoir location; one 40 feet uphill and one 40 feet downhill of the center of the proposed reservoir. They were advanced to a depth of 12 to 14 feet. At this depth, groundwater and collapsing sidewalls made deeper excavation impractical. Two test pits were excavated at the western undercrossing location; one on the shoreline, and one adjacent to the access road near the likely termination of the horizontal boring. The test pit on the shore of the river sloughed considerably once below the water table, and groundwater freely entered the excavation until it stabilized at the level of adjacent surface water.

Test pits were backfilled without significant compactive effort due to shallow groundwater and saturated soil conditions, The backfill will need to be stabilized during construction by excavation and compaction.

5.2 SOIL SAMPLES

Samples were obtained by driving samplers through the temporary drill casing and by excavating soil out of the excavator bucket.

STANDARD PENETRATION TESTS *ASTM D 1586*

To obtain samples of soil, Standard Penetration Tests (SPT) were conducted by driving a 2-inch O.D. split-spoon sampler with a 140-pound hammer actuated by a Mobile automatic hammer to provide a test of penetration resistance. The resulting blow count for each foot of sampler advancement, representing uncorrected N-values, is presented on the *Boring Log.* The energy ratio (ER) is much higher with the automatic hammer compared to the reference cathead/rope system. Consequently, to correct N-values an ER of 1.2 is assumed in order to reflect the greater energy imparted by the automatic hammer.

3-INCH SPLIT SPOON SAMPLES (3"SS) *ASTM D 3550*

Blow counts with the 3"SS do not represent N-values since the end area of the 3-inch sampler is approximately twice that of the standard sampler. Uncorrected N-values can be approximated by multiplying the observed blow counts (in blows per foot) by 0.5 for the 3-inch split-spoon. As with SPT sampling, N-values for the 3-inch split spoon are corrected with an ER of 1.2 to reflect the energy of the automatic hammer.

5.3 SOIL CLASSIFICATION

UNIFIED SOIL CLASSIFICATION SYSTEM *ASTM D 2487*

The encountered soils and rock were classified visually from split-spoon samples, rock core samples and drill rig response. The soil descriptions presented on the Boring Logs are intended to comply with the Unified Soil Classification System (USCS), described in the *Guide to Soil and Rock Descriptions*, attached, which is recognized internationally in the fields of engineering and construction.

5.4 LOCATION

HORIZONTAL & VERTICAL CONTROL

The *Site Plan* (Figure 2) was reproduced from a preliminary plan provided by the client. The elevations presented in the *Boring Log* and *Test Pit Logs* were interpolated from these plans. Horizontal and vertical locations can be considered accurate to ±10 and ±1 feet, respectively, relative to the information provided.

6. *LABORATORY ANALYSIS*

Laboratory testing was performed on representative samples of the soils encountered to provide data used in our assessment of soil characteristics. The tests were chosen to assess moisture, grain-size distribution, as well as engineering and chemical parameters.

Tests were conducted, where practical, in general accordance with nationally recognized standards (ASTM, AASHTO, etc.), which are intended to model in-situ soil conditions and behavior. The results are summarized on the *Laboratory Summary* (Table 1).

6.1 *INDEX PARAMETERS*

MOISTURE CONTENT — *ASTM D 2116*

Moisture contents were determined by direct weight proportion (weight of water/weight of dry soil) determined by drying soil samples in an oven until reaching constant weight.

GRADATION — *ASTM D 421*

Gradation analysis was performed by the mechanical sieve and hydrometer method. The mechanical sieve method is utilized to determine particle size distribution based upon the dry weight of sample passing through sieves of varying mesh sizes.

Since very small particles (silt & clay) cannot be reliably sieved, the grain size distribution was measured past the #200 sieve with the hydrometer method, which makes use of the principle that larger particles will settle in a suspension of fluid faster than smaller particles as defined by Stoke's Law. The concentration of suspended soil particles is measured versus time with a hydrometer to determine percentage and size of soil particles in a fluid of known temperature, viscosity, and specific gravity.

ATTERBERG LIMITS — *ASTM D 4318*

Atterberg limits were determined for a representative sample of the native soil. Atterberg Limits describe the properties of a soil's fine-grained constituents by relating the water content to the soil's limits of engineering behavior. As the water content increases, the state of soil changes from a brittle solid to a plastic solid and then to a viscous liquid.

The Liquid Limit (LL) is the water content above which the soil tends to behave as a viscous liquid. Similarly, the Plastic Limit (PL) is defined as the water content below which the soil tends to behave as a brittle solid. The Plasticity Index (PI) describes the range of water contents over which a soil is plastic and is derived by subtracting the PL from the LL.

HAZEN METHOD

The Hazen method was used to calculate the hydraulic conductivity of sandy sediments. The method is applicable to sands where the effective grain size (D_{10}) is between approximately 0.1 and 3.0 mm. The effective grain size was determined as a result of the gradation test results.

TRIAXIAL SHEAR TEST — *ASTM D-4767*

Representative samples of each recognized stratigraphic layer were tested in a Triaxial cell under consolidated undrained (CU) conditions to determine shear strength. The test involves applying a uniform confining stress in a controlled fluid chamber isolated from the sample by a thin rubber membrane then applying an additional vertical load mechanically until failure at approximately 1ksf, 2 ksf, and 4 ksf confining pressures.

6.2 *CHEMICAL PARAMETERS*

pH *AASHTO T 289*

Certain clayey soils can contain excess acidity that attacks concrete and iron. Corrosive potential of embedded iron and steel can be quantified by determining the pH (acidity = PH<7) and minimum resistivity of soil. Buried conduit, culverts, and reinforcing will deteriorate rapidly under acidic conditions. Cathodic protection is used to protect such components. Neutral pH (7 ± 1) generally represents the least corrosive potential.

7. *LIMITATIONS*

The conclusions and recommendations presented herein are based upon the results of the field explorations presented in Chapter 3. They are predicated upon our understanding of the project, its design, and its location as defined in Chapter 1.

We endeavored to conduct this study in accordance with generally accepted geotechnical engineering practices in this area. This report presents our professional interpretation of investigation data developed, which we believe meets the standards of the geotechnical profession in this area; we make no other warranties, express or implied.

Unless test locations are specified by others or limited by accessibility, the scope of analysis is intended to develop data from a representative portion of the site. However, the areas tested are discreet. Interpolation between these discreet locations is made for illustrative purposes only, but should be expected to vary. If a greater level of detail is desired, the client should request an increased scope of exploration.

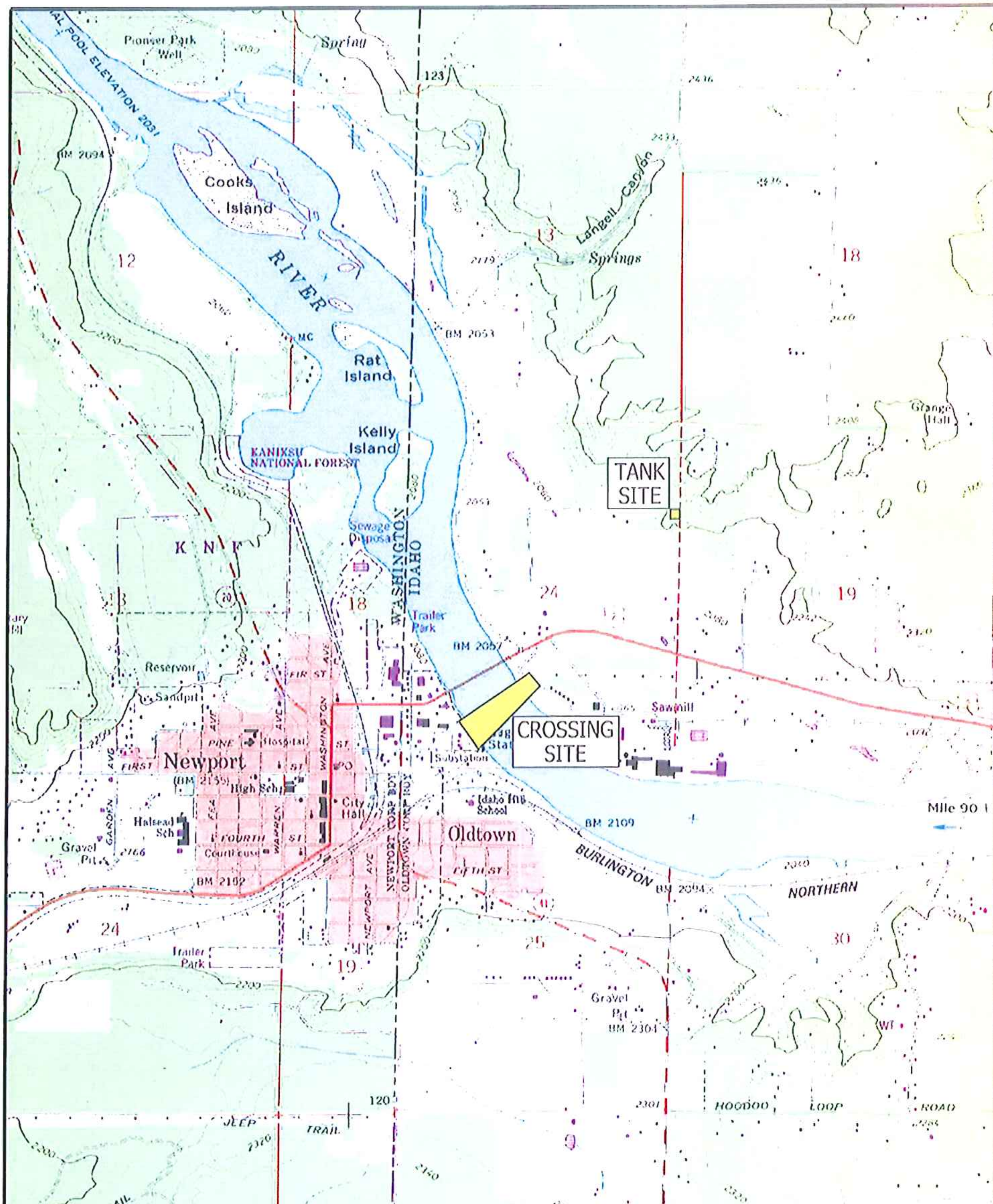
This study was not specifically intended to provide information for cost estimation. While we realize that this report may present information, which could be used for bidding, it was not intended for that purpose. If it were, different field procedures would likely have been used to more reliably assist the estimator. Consequently, use of this information for bidding purposes is strictly at the contractor's risk.

Likewise, this study deals with physical characteristics of the soil encountered on the site. Chemical characteristics, including identification of dangerous chemicals or hazardous materials, are beyond the scope of this exploration. The delineation of wetlands is also beyond the scope of this report. If conditions are encountered which vary from those described in this report, they should be brought to our attention immediately so that these recommendations may be re-evaluated.

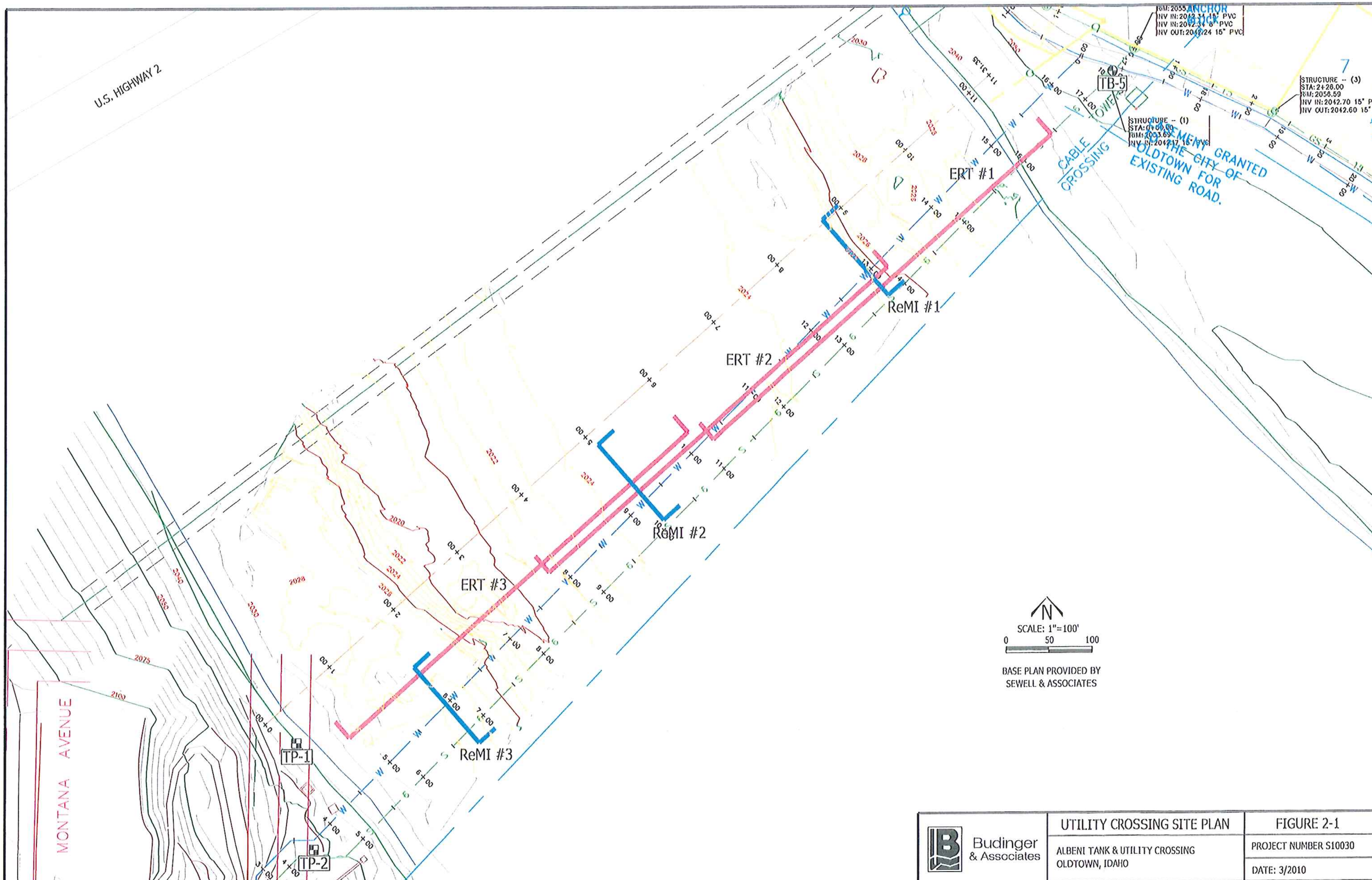
Changes in engineering standards, code requirements, or general improvements of the state-of-the-art, could render this exploration less than adequate at a future date. Consequently, if the proposed construction is not started within one year, this report should be re-evaluated prior to application.

The conclusions and recommendations presented herein are intended for design and construction of the currently proposed project as described in Paragraph 1.1. Changes in alignment, layout, loads, or construction material should be brought to our attention so that we may reassess the applicability of these recommendations.

Furthermore, as project success depends on the proper application of these recommendations in both design and construction, we cannot accept liability in cases where these recommendations are not applied or followed as intended. Consequently, any liability on our part must be accompanied by our retention to assist the owner and designer in properly implementing these recommendations.



N SCALE: 1"=2000' 0 1000 2000 SOURCE: U.S.G.S.	Budinger & Associates	VICINITY MAP	FIGURE 1
		ALBENI TANK & UTILITY CROSSING OLDTOWN, IDAHO	PROJECT NUMBER S10030 DATE: 3/2010



Budinger & Associates

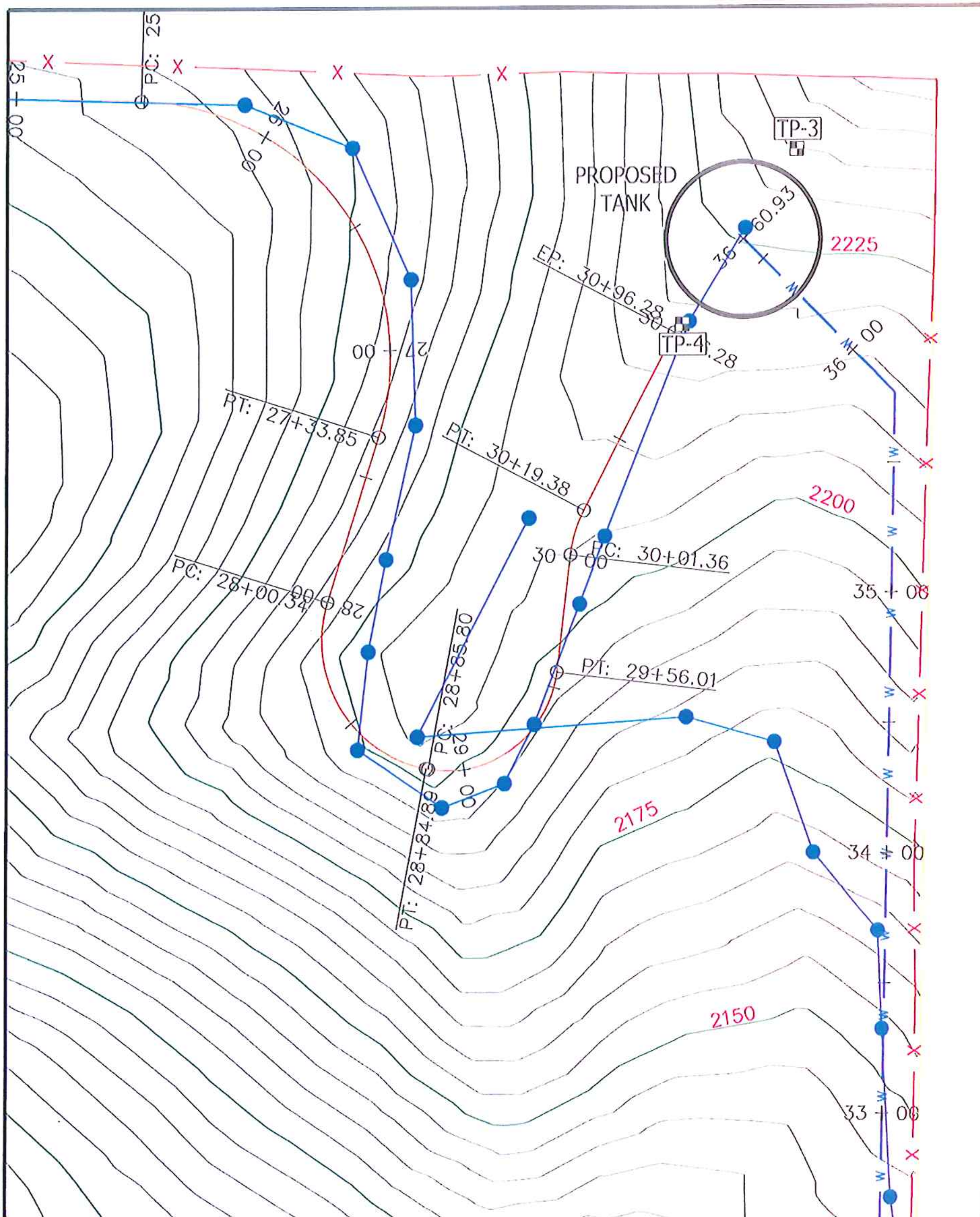
UTILITY CROSSING SITE PLAN

ALBENI TANK & UTILITY CROSSING
OLDTOWN, IDAHO

FIGURE 2-1

PROJECT NUMBER S10030

DATE: 3/2010



SCALE: 1"=50'
0 25 50

BASE PLAN PROVIDED BY SEWELL & ASSOCIATES

Budinger & Associates

WATER RESERVOIR SITE PLAN

ALBENI TANK & UTILITY CROSSING
OLDTOWN, IDAHO

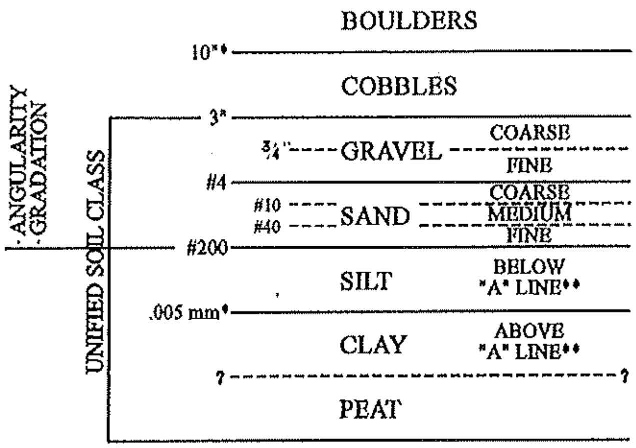
FIGURE 2-2

PROJECT NUMBER S10030

DATE: 3/2010

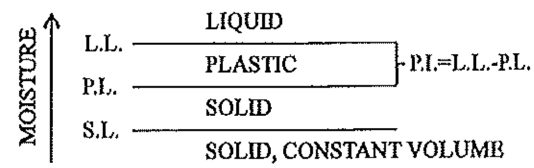
GUIDE TO SOIL & ROCK DESCRIPTIONS

UNIFIED
SOIL CLASSIFICATION SYSTEM
(USCS)

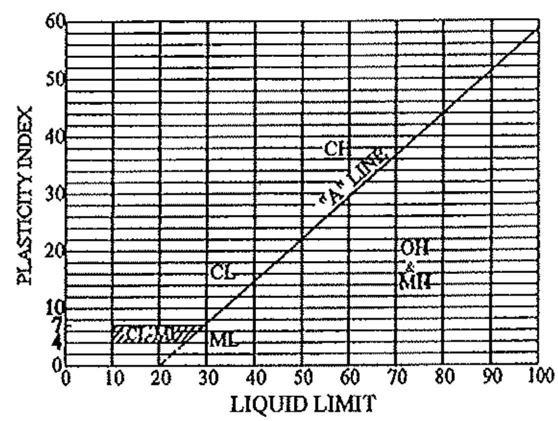


* NOT INCLUDED IN U.S.C.S.
** SEE PLASTICITY CHART

ATTERBERG LIMITS



PLASTICITY CHART



GUIDE TO SOIL DESCRIPTION MODIFIERS, MOISTURE, AND CONDITION PRESENTED ON LOGS.

MODIFIER	ESTIMATED PERCENTAGE OF SAMPLE	MOISTURE
SUFFIX "LY" OR "Y".........	GREATER THAN 40%	DRY
SOME	22% - 45%	SLIGHTLY MOIST
SMALL AMOUNT	8% - 25%	VERY MOIST
TRACE/OCCASIONAL	0% - 12%	SATURATED

CONDITION

COARSE GRAINED:
- VERY LOOSE
- LOOSE
- MEDIUM DENSE
- DENSE
- VERY DENSE

FINE GRAINED:
- VERY SOFT
- SOFT
- MEDIUM
- STIFF
- VERY STIFF
- HARD

ROCK:
- SOFT
- MODERATELY HARD
- HARD
- VERY HARD

▽ GROUNDWATER INDICATION DURING DRILLING

▼ GROUNDWATER INDICATION AFTER DRILLING

SAMPLES

- STANDARD 2" PENETRATION TEST SAMPLER WITH BLOWS PER FOOT
- 3" SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- DRILL CUTTING SAMPLE
- BULK SAMPLE
- SHELBY TUBE SAMPLE
- DIAMOND CORE RUN WITH % RECOVERY & ROCK QUALITY DESIGNATION
- 4" O.D. SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- R REFUSAL OF SAMPLE (50+ BLOWS PER 6")

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Geotechnical & Environmental Engineers
Construction Materials Testing & Special Inspection

FIGURE 3

TEST PIT 1

Date: 3-4-10
Excavator: Pumnea Excavation
Equipment: Caterpillar E1208 Tracked Excavator
Location: Adjacent to River Near West Undercrossing
Surface: Sandy Beach

Elevation: 2035 ft
Logged by: S. Burchett
Size of Hole: 3 x 6

DEPTH	SAMPLE	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		wet to saturated, light brown, medium dense	SAND, small amount Gravel, trace to small amount Silt	
5			occasional Cobbles and Boulders scattered along shoreline and riverbank	
			excavation sloughed considerably below 2' water level	
			End of Excavation @ 6 ft	
10				
15				
20				

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TEST PIT LOGS **FIGURE 4-1**

Project: Albeni Tank & Utility Crossing

Location: Old Town, Idaho

Number: S10030

TEST PIT 2

Date:	3-4-10
Excavator:	Pumnea Excavation
Equipment:	Caterpillar E1208 Tracked Excavator
Location:	Adjacent to Access Road At West Undercrossing
Surface:	bare
Elevation:	2060 ft
Logged by:	S. Burchett
Size of Hole:	3 x 10

DEPTH	SAMPLE	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown, loose to medium dense	SAND (medium), small amount Silt, occasional Gravel, small amount Organics in upper 12"	
5		moist, light brown, medium dense	SILTY SAND, occasional Gravel	
10		slightly moist, light brown, medium dense	SAND (medium), trace silt, occasional Gravel occasional Cobbles and Boulders present on adjacent slopes	
15			End of Excavation @ 14 ft	
20				

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TEST PIT LOGS

FIGURE 4-2

Project: Albeni Tank & Utility Crossing

Location: Old Town, Idaho

Number: S10030

TEST PIT 3

Date: 3-4-10
Excavator: Pumnea Excavation
Equipment: Caterpillar E1208 Tracked Excavator
Location: 40 Feet Uphill From Center Of Water Reservoir
Surface: Dense Brush

Elevation: 2235 ft
Logged by: S. Burchett
Size of hole: 3 x 10

DEPTH	SAMPLE	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown, soft	TOPSOIL, SILTY SAND with Gravel	
		moist, brown to dark brown, loose to medium dense	SILTY SAND with small amount Clay, trace Gravel appears to be colluvium with possible relict soil horizon at 3'	
5		wet to saturated, brown to gray, mottled, medium dense	CLAYEY SAND, slight to moderate cohesion	
10		wet to saturated, light brown, medium dense	SAND (fine) trace Silt, occasional Gravel (medium), low cohesion groundwater slowly entered excavation below 8'	
15			pit terminated at 14' due to excessive sloughing End of Excavation @ 14 ft	
20				

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TEST PIT LOGS — **FIGURE 4-3**

Project: Albeni Tank & Utility Crossing
Location: Old Town, Idaho
Number: S10030

TEST PIT 4

Date: 3-4-10
Excavator: Pumnea Excavation
Equipment: Caterpillar E1208 Tracked Excavator
Location: 40 Feet Downhill From Center Of Water Reservoir
Surface: Grass and Weeds

Elevation: 2218 ft
Logged by: S. Burchett
Size of hole: 3 x 10

DEPTH	SAMPLE	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		slightly moist, brown, loose to medium dense	TOPSOIL, SILTY SAND, trace Clay, small amount Gravel, some Organics	
		moist, light brown	SAND (fine), occasional Gravel (rounded), trace Silt and Clay mottled reddish brown to gray from 6'-8', with black Organic soil possible relicit topsoil horizon	
5				
		moist to saturated, gray, firm	SILTY SAND, small amount Clay, slightly plastic, uniform deposit water slowly seeped into pit below 10'	
10				
			test pit terminated at 13' due to excessive sloughing End of Excavation @ 13 ft	
15				
20				

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TEST PIT LOGS **FIGURE 4-4**

Project: Albeni Tank & Utility Crossing
Location: Old Town, Idaho
Number: S10030

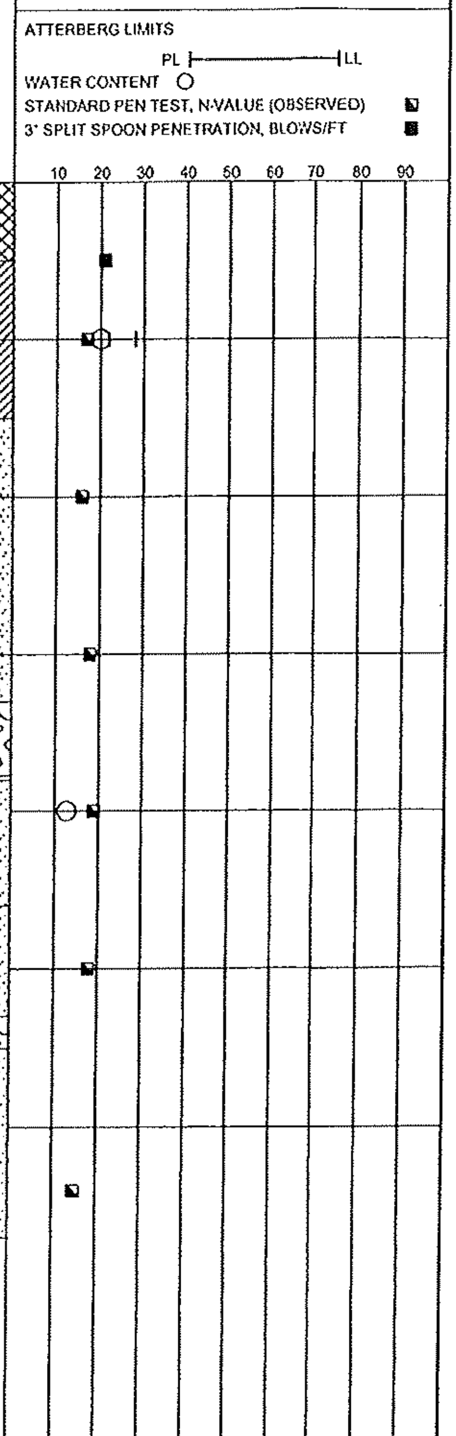
TEST PIT BY WENDY BORING LOGS.GPJ BUDINGER.GDT 4/7/10

TEST BORING 5

Date of Boring:	3-4-10	**Elevation:**	2060 ft
Driller:	Budinger & Assoc., Inc.	**Logged by:**	M. Rounds
Type of Drill:	Mobile B-57 with automatic SPT hammer	**Size of hole:**	air rotary overburden system, 4.5 in O.D. casing
Location:	Road Shoulder Adjacent to Wet Well		
Surface:	Thick Brush		

DEPTH	ROD. BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION
0		dry, brown, medium dense	FILL: GRAVEL, some Sand, small amount Silt, well graded, subangular.
	21 (88%)	dry, gray and black, medium dense	SILTY CLAY, some Sand, some fine roots, non-plastic.
5	17 (88%)	dry, gray and black, medium dense	SILTY CLAY, some Sand, some pockets of fine roots, non-plastic.
	(0%)	dry, tan, medium dense	SAND, fine-grained, clean, poorly-graded, subangular
10	16 (83%)	dry, tan, medium dense	SAND, medium-grained, clean, poorly-graded, subangular
15	18 (94%)	moist, tan and black, medium dense	SAND, coarse-grained, clean, thin layers of black Sand, poorly-graded, subangular.
		moist, tan, medium dense	GRAVEL, fine-grained, poorly-graded, subangular.
20	19 (94%)	moist to wet, tan, medium dense	SAND, coarse-grained, clean, thin layers of black Sand, poorly-graded, subangular.
		saturated	
25	18 (88%)		
		saturated, tan, medium dense	GRAVEL, fine-grained, poorly-graded, subangular.
		saturated, tan, medium dense	SAND, coarse-grained, clean, thin layers of black Sand, poorly-graded, subangular.
30	15 (100%)		
			End of Boring @ 33.5 ft
35			
40			

TEST RESULTS



LOGS WITHOUT WELL WITH TESTS BORING LOGS.GPJ BUDINGER.GDT 4/1/10

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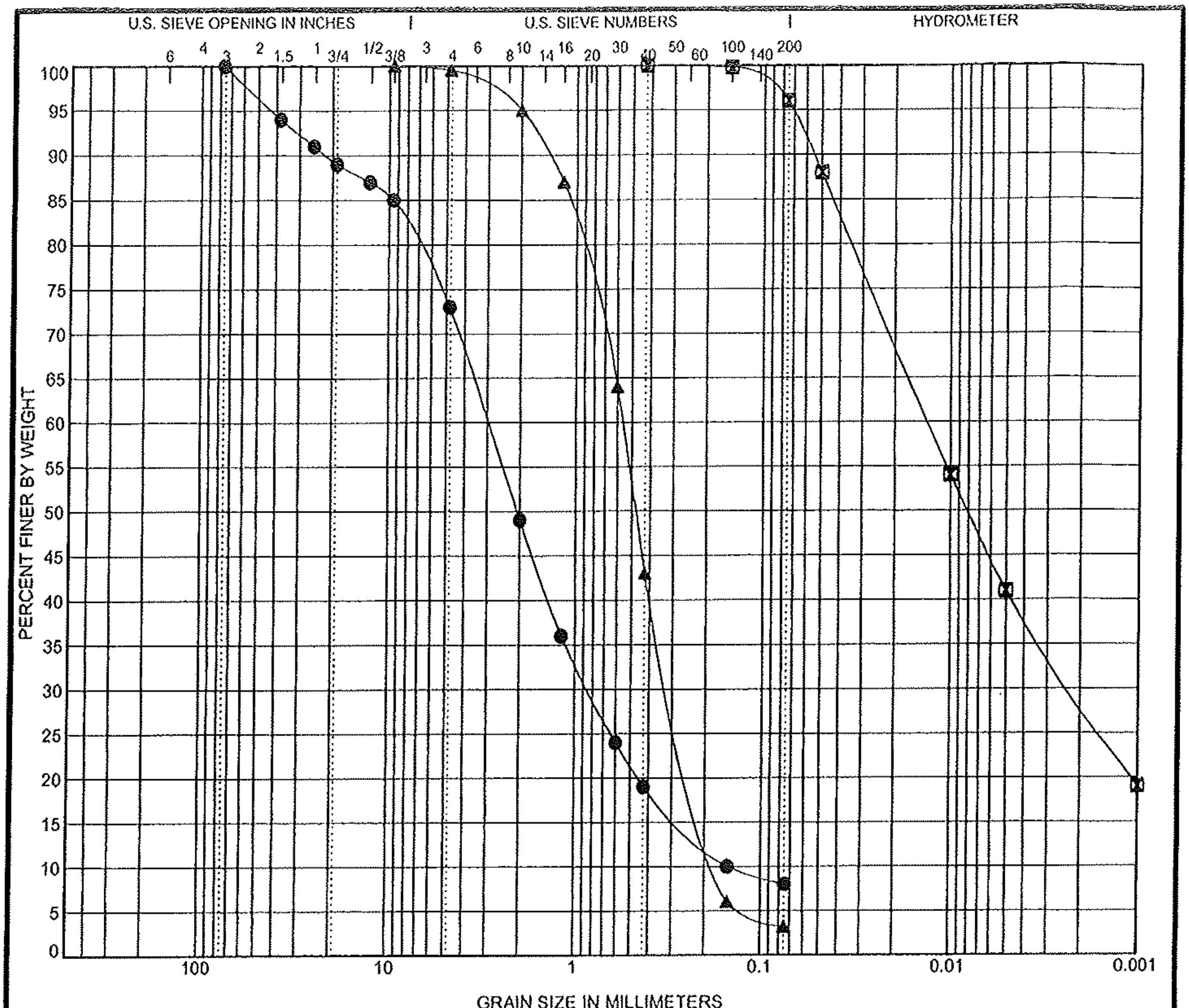
BORING LOGS **FIGURE 4-5**

Project: Albeni Tank & Utility Crossing

Location: Old Town, Idaho

Number: S10030



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	# / Depth		Lab #	Classification	LL	PL	PI	Cc	Cu
●	2	8.0		WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP	1.58	19.92
⊠	5	5.0		SILTY CLAY(CL-ML)	28	22	6		
▲	5	20.0		POORLY GRADED SAND(SP)				0.92	3.35

	# / Depth		Lab #	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	2	8.0		76.2	2.987	0.841	0.15	27.2	64.7	8.0	
⊠	5	5.0		0.425	0.013	0.002		0.0	4.0	96.0	
▲	5	20.0		9.5	0.562	0.295	0.168	0.6	96.2	3.2	

US_GRAIN_SIZE BORING LOGS.GPJ BUDINGER.GDT 4/1/10

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GRAIN SIZE DISTRIBUTION RESULTS

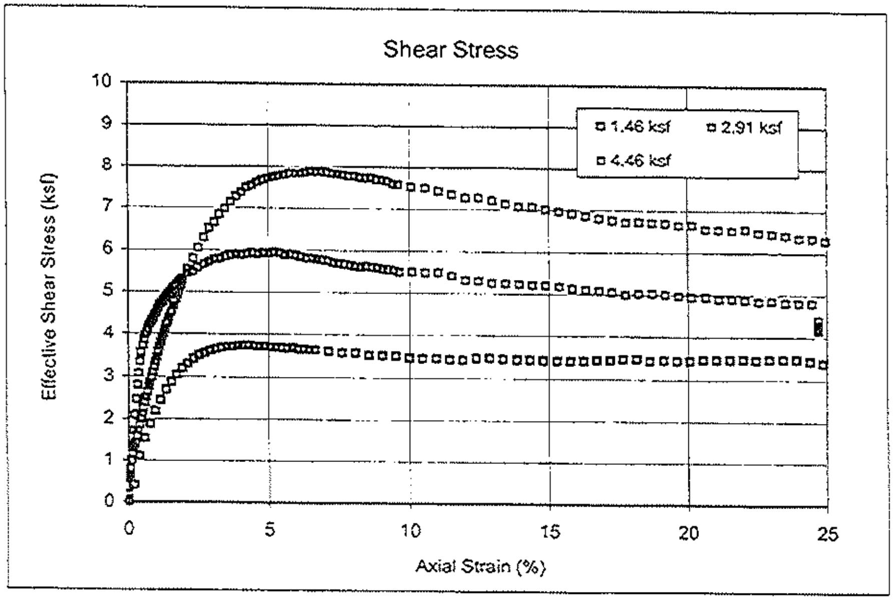
Project: Albeni Tank & Utility Crossing

Location: Old Town, Idaho

Number: S10030

FIGURE 5

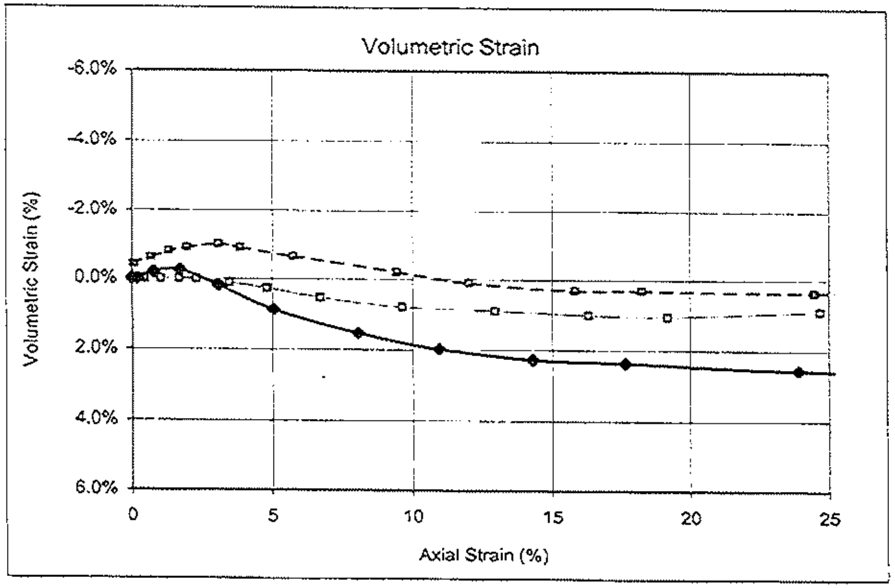
Report of CU Triaxial Shear Test

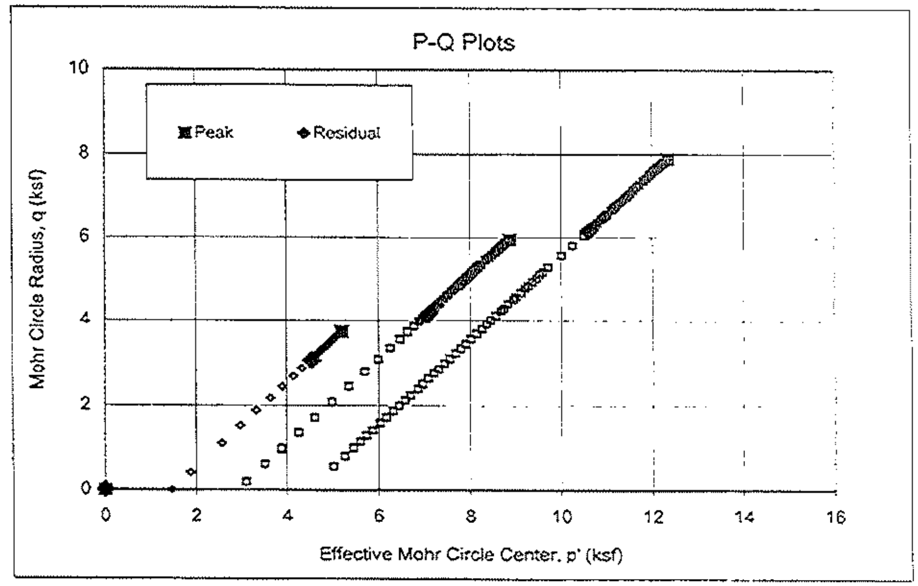


Remolded/shear rate 20%/hour	1.46 ksf	2.91 ksf	4.46 ksf
Initial dry unit weight (pcf)	115.4	115.6	114.8
Initial Wc (%)	13.2%	13.2%	13.2%
Final dry unit weight (pcf)	113.0	112.0	114.5
Final Wc (%)	15.0%	14.0%	12.7%

Consolidation Stress (ksf)	Peak Failure Stress p (ksf)	Peak Failure Stress q (ksf)	Residual Failure Stress p (ksf)	Residual Failure Stress q (ksf)
1.46	5.21	3.73	4.55	3.07
2.91	8.87	5.94	7.10	4.16
4.46	12.35	7.89	10.62	6.16

Above values are effective stresses





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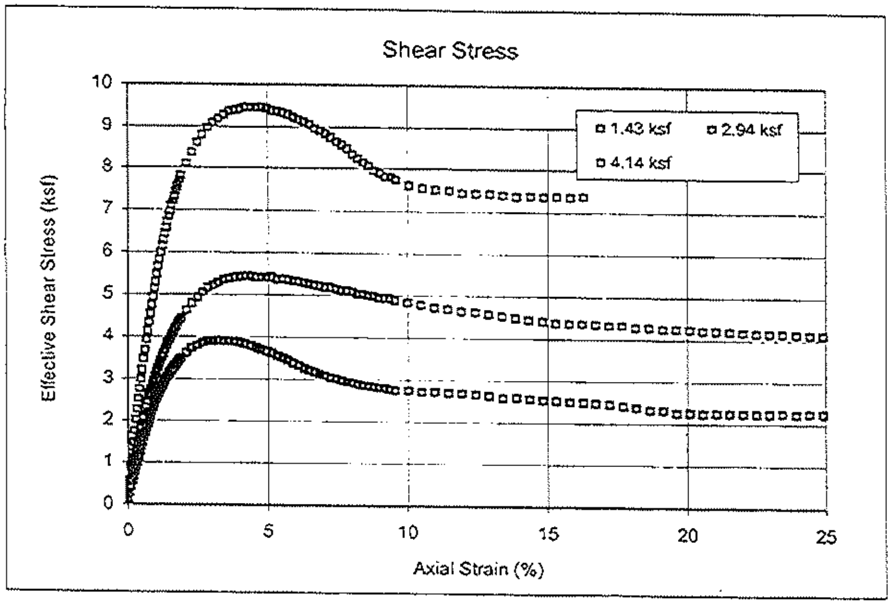
TRIAXIAL SHEAR TEST RESULTS
Project: Albeni Tank Utility Crossing
Location: Old Town, Idaho
Number: S10030

Figure 6-1

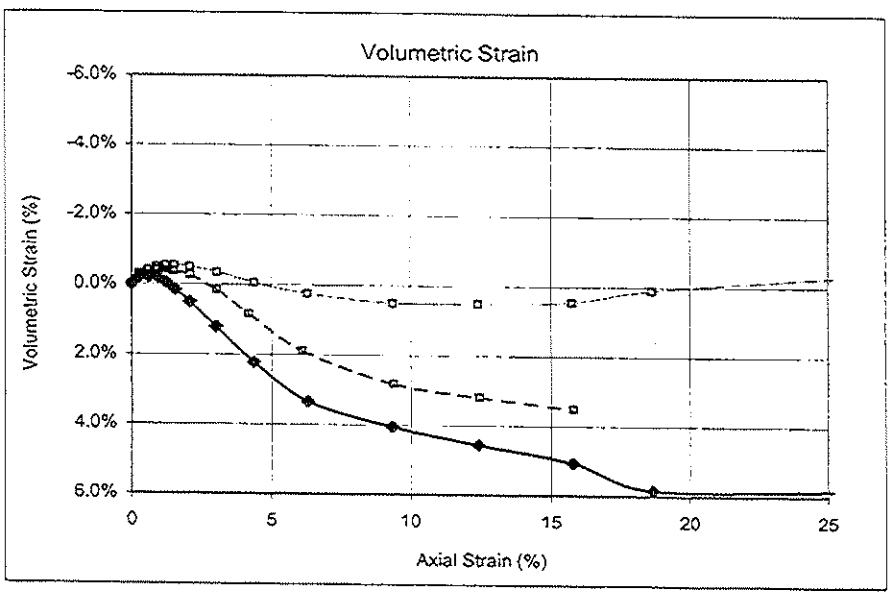
Report of CU Triaxial Shear Test

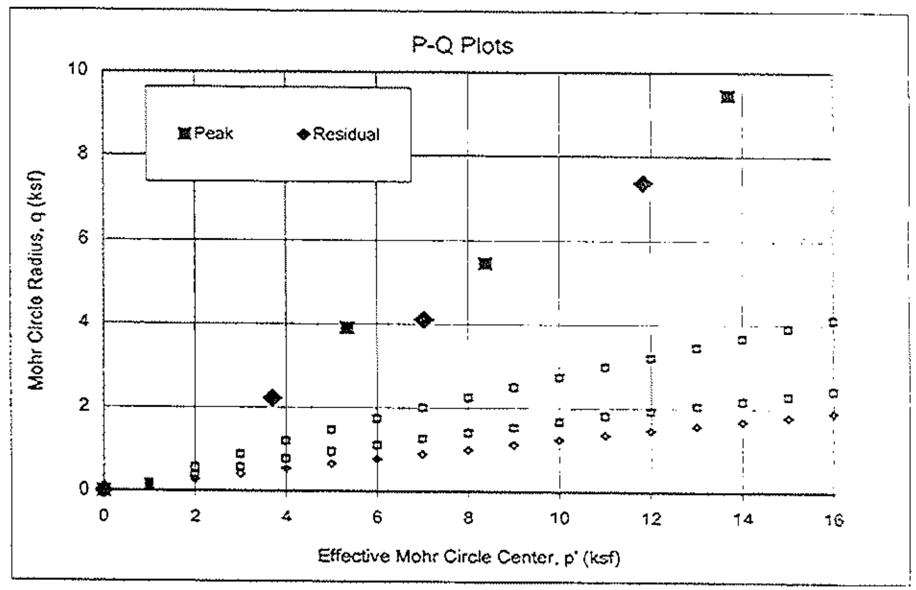


Remolded/shear rate 20%/hour	1.43 ksf	2.94 ksf	4.14 ksf
Initial dry unit weight (pcf)	109.1	105.9	110.9
Initial Wc (%)	15.2%	16.8%	11.9%
Final dry unit weight (pcf)	109.0	105.7	108.9
Final Wc (%)	17.9%	19.5%	17.7%

Consolidation Stress (ksf)	Peak Failure Stress p (ksf)	Peak Failure Stress q (ksf)	Residual Failure Stress p (ksf)	Residual Failure Stress q (ksf)
1.43	5.35	3.91	3.70	2.22
2.94	8.39	5.45	7.04	4.10
4.14	13.70	9.46	11.84	7.37

Above values are effective stresses





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TRIAXIAL SHEAR TEST RESULTS
Project: Albeni Tank Utility Crossing
Location: Old Town, Idaho
Number: S10030

Figure 6-2

APPENDIX A1

SIEMENS & ASSOCIATES REPORT MARCH 1, 2010

Budinger & Associates, Inc.
1101 North Fancher Road
Spokane Valley, Washington 99212
Attention: Steve Burchett P.E.

March 1, 2010
Project No. 110016

Project: Albeni Tank and Utility Crossing
Old Town, Idaho

Subject: Geophysical Reconnaissance

Dear Steve,

This letter describes our participation in the geophysical reconnaissance along the route of a proposed horizontal boring to facilitate a utility crossing below the Pend Oreille River just upstream from the Thompson Memorial Bridge on U.S. Highway 2 crossing. The work was conducted on February 21, 2010 in accordance with an oral agreement that was later followed up by a written description of services and fee proposal. This letter presents three electrical images and three shear-wave depth profiles developed to describe geologic conditions along an alignment described by our client, Mr. Steve Burchett, P.E. of Budinger & Associates, Inc. who also assisted with the data gather.

Purpose

We understand that the engineering firm Budinger & Associates, Inc. is in the process of conducting a geotechnical exploration and evaluation to support planning and design of the proposed water tank and utility crossing. Our objective was to provide a continuous cross section describing geologic conditions using DC electrical resistivity tomography (ERT) complimented by seismic refraction microtremor (ReMi) at select locations. The result illustrates continuity or heterogeneity of stratigraphy in terms of electrical contrast along the geophysical array in addition to indications of soil strength ascertained from shear-wave velocity (ReMi).

Approach

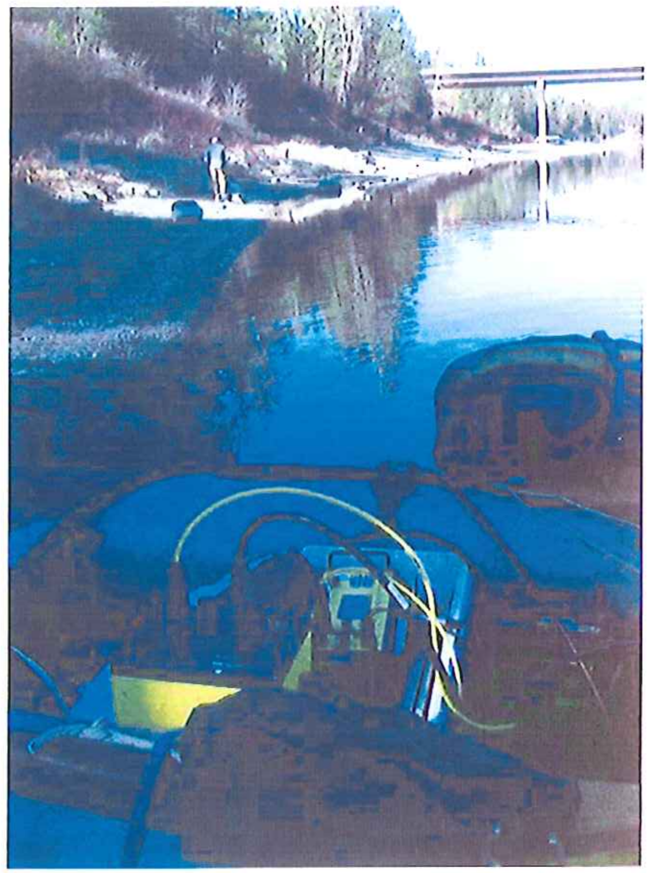
Two underwater geophysical methods were used to develop a broad understanding of the geology below the river bottom near the proposed crossing. Electrical and seismic methods were employed using marine cables deployed from a boat which carried the geophysical crew, instrumentation and

power supply. The techniques were used to develop information describing the full cross section below the river bottom through the area of interest.
A description of the two procedures follows:

Electrical Resistivity Tomography (ERT)

How it works

Two-dimensional (2D) electrical resistivity tomography is a geophysical method to evaluate the subsurface electric resistivity distribution by taking measurements along a survey line at the surface over dry land, along the bottom of a water body and from floating electrodes at the water surface. In this case, we used a marine cable built to be pulled along the bottom to a specific position then anchored to gather static measurements at a select location. These measurements are then interpreted to provide a description of the electrical properties of the subsurface which are in turn related to the likely distribution of geologic or cultural features known to offer similar electrical properties.



A measurement in an electrical survey involves injecting DC current into the ground through two current-carrying electrodes and measuring the resulting voltage difference at two potential electrodes. The apparent resistivity is calculated using the value of the injected current, the voltage measured, and a geometric factor related to the arrangement of the four electrodes. The investigation depth of electrical resistivity is related to the spacing between the electrodes that inject electrical current. Therefore, sampling at different depths can be done by changing the spacing between the electrodes. Measurements are repeated along a survey line with various combinations of electrodes and spacing to produce an apparent resistivity cross-section.

Since consecutively deeper readings are influenced by overlying strata, apparent resistivity data are inverted mathematically to generate a model of the subsurface structure and stratigraphy based on its electrical properties. Many geological/environmental or cultural factors affect or control the resistivity of the subsurface such as composition of the subsurface materials, amount of water in the subsurface and ionic concentration of the pore fluid.

The marine cable offered 28 electrodes set on 6 meter spacing with a total length of about 530 feet giving rise to a depth of interpretation greater than 100 feet with the highest density of data within the upper 40 feet or so of the images which is also the zone with the greatest confidence level. Three (3) overlapping ERT surveys were performed at intervals spaced along the river crossing (see Site Plan – developed by Budinger & Associates, Inc.). The data were collected using the Dipole-Dipole array for reasons of the array sensitivity to smaller anomaly as well as superior amount of data levels and quantity of data points compared to most other arrays. We used an 8 channel Super Sting Automated resistivity system manufactured by Advanced Geosciences, Inc.. Data were interpreted using the latest version of Res2DINV software by Geotomo Software, Malaysia.

Seismic Refraction Microtremor (ReMi)

At three locations we deployed a marine cable fitted with 24 hydrophone receivers with five foot spacing. The short spacing was ideal to provide high resolution interpretation through the shallow environments (depth of exploration about 30 feet). The hydrophone cable was deployed perpendicular to the ERT

lines with the first receiver allowed to drift downstream then the array was straightened by pulling the full array a short distance upstream. Ambient background energy (vibrations) are utilized as the seismic signal. At this site the background noise was very limited and was enhanced by driving a 1-ton truck up and down the cleats of a nearby boat ramp. Even so, the records were less than ideal making for difficult data interpretation.

How it Works:
The ReMi analysis develops the shear-wave velocity/depth profile using a reasonably conventional engineering seismograph, receivers (hydrophones) and array aperture. The microtremor records are transformed as a simple, two-dimensional slowness-frequency (p-f) plot where the ray parameter 'p' is the horizontal component of slowness (inverse velocity) along the array and 'f' is the corresponding frequency (inverse of period). The p-f analysis produces a record of the total spectral power in all records from the site, which plots within the p-f axes. If one identifies trends within these axes where a coherent phase has significant power, then the slowness-frequency picks can be plotted on a typical period-velocity diagram for dispersion analysis. Picking the points to be entered into the dispersion curve is done manually along the lowest velocity envelope bounding the energy appearing in the p-f image.

SeisOpt ReMi software provides a Rayleigh wave dispersion modeling tool for manual forward modeling to produce the shear-wave/depth profile. As the profile is developed the interpreter can recognize tradeoffs between layer thickness, depth and velocity in relationship to the dispersion picks as they influence the interpreted model. Incorporation of priori data such as that gathered from area refraction surveys or boring logs can improve the interpretation as such information can resolve otherwise equal dispersion modeling to the observed picks from the ReMi p-f transformation.

It is important to recognize that the one dimensional plot of shear-wave velocity versus depth from a ReMi survey is representative of the 'average' conditions in the area of the survey and may or may not correlate well with data gathered from more traditional methods such as cross-hole seismic techniques that measure conditions at a select location. The ReMi analysis would, however agree well with the average of many down-hole measurements if such extensive work were done in the area of the ReMi survey and agreement would be achieved with a single down-hole test if subsurface conditions were reasonably uniform across the survey site.

The ReMi results are presented as the traditional shear-wave velocity verses depth profile along with the p-f transformation used and corresponding dispersion curve picks illustrating the quality of the data fit to the model.

Discussion of Results

Geophysical interpretation offers both advantage and disadvantage over more traditional exploration results such as drilling and test pit exploration. First, the method produces no direct sample and the conditions must be determined through correlation with known or typical values associated with the properties that are measured – in this case electrical resistivity and shear-wave velocity. An advantage is that the methods sample much larger areas than do borings and therefore are less likely to be skewed by some anomaly that happens to correspond with a drill hole or exploration pit. In fact, these anomalies are often well defined as are the typical or "normal" conditions in the area of the survey. Therefore geophysics provides an effective way to evaluate a site for the purpose of selecting boring locations that are targeted to sample both common subsurface characteristics and anomalous zones if deemed important.

In this case, the geophysical approach is an economic one in terms of exploration cost and eliminates complications/delay associated with permitting necessary for direct exploration (drilling) within the river corridor. Of primary value is the delineation of variation and continuity of the geologic conditions that make up the shallow environment below the river bottom. The electrical results show reasonably homogeneous, unconsolidated soils (interpreted to be composed of sand, gravel and silt) layered through most of the proposed crossing. Several anomalies are present, mostly on the left side, where the data suggest the likelihood of greater accumulations of cobbles and perhaps boulders within the sandy soil. Seismic measurements confirm the interpretation of soil (rather than rock) and indicate that these soils are fairly loose at the river bottom with strength progressively increasing with depth.

The methods provide a robust description of geologic conditions yet the resolution is set to provide a broad, rather than detailed exploration especially when considering the ERT. This is due to the relatively long spacing between electrodes (6 meters) which is useful for providing deeper data yet leads to an averaging of small anomaly. Features offering target size less than about one half the electrode spacing (3 meters or about 10 feet) in size will probably not be well defined.

Although without confirmation provided by direct exploration at a few points it is not possible to know the true nature of the conditions illustrated by the electrical contrasts, some generalities are known. These include the following:

- Lower resistivity is indicative of finer textured soils – dominated by silty materials on the river bottom as well as finer-grained accumulations at depth – possibly clayey zones. These zones are illustrated by dark blue coloration on the ERT images with apparent resistivity generally below about 60 Ohm-m;

- Higher resistivity (greater than 1500 Ohm-m or so) is characteristic of rock, drier soils and unsaturated voided structure – only saturated soils are present below the river bottom and the highest resistivity was measured at ERT-3 which indicates only small, isolated high resistivity zones that we interpret to be revealing clusters of cobbles and boulders rather than solid rock. This conclusion is supported by the absence of rock-like shear-wave velocity recorded through the same area;

- Moderate resistivity as indicated in the ERT images by green and light blue which we interpret as more gravelly soils with lower silt content. A band of this material is consistently illustrated with a thickness on the order of 10 to 20 feet at about a 10 foot depth below river bottom. This zone could also include the occasional cobble and boulder not resolved due to the 6m electrode spacing. Shear-wave velocity indicates this layer to be moderately dense to moderately loose rather than heavily consolidated;

Note that the ReMi shear-wave velocity profiles are plotted directly on the ERT interpretations and there is a distinct upward swing in shear-wave velocity corresponding to the layer interpreted to represent a more gravelly, competent layer. The individual ReMi profiles also depict a calculation of the common SPT "N-value" that has been empirically related to a plethora of geotechnical constants including shear strength, excavation characteristics and more.

Conclusions

It is important to recognize that geophysical measurements are influenced by the characteristics of the 3D environment yet are presented here in only one (ReMi profiles) or two dimensions (ERT cross sections). As a result, when conditions are changing rapidly across a survey area the agreement with ReMi (and borings if available) is often difficult to interpret; however, here, it is our view that reasonably consistent conditions prevail at the proposed crossing with exception to a segment identified near the left bank.

Thin lenses of differing strata are not likely to be resolved, especially at depth. With the Dipole-Dipole array it is often reasonable to assume that layer thickness on the order of one half times the electrode spacing can be resolved, at least in shallow horizons. As such, layers of thickness less than a few feet (unless offering very significant electrical contrast) will probably go undetected.

Limitations

This report presents our professional opinion based upon geophysical measurement and interpretation presented as an endeavor to conform to the standard of practice currently employed by area geoprofessionals conducting similar work in Old Town, Idaho at this time – we make no other warranty express or implied.

We appreciate the opportunity to conduct this exploration and look forward to you completing a successful project. In addition, we would like to express our appreciation regarding the first-rate assistance in the field provided by team Burchett who provided guidance in defining the location for each line and served as our crew through the data gathering process.

We would be delighted to expand any of the topics as necessary. If you have any questions, just ask.

Respectfully submitted,
Siemens & Associates

J. Andrew Siemens, P.E., G.E.

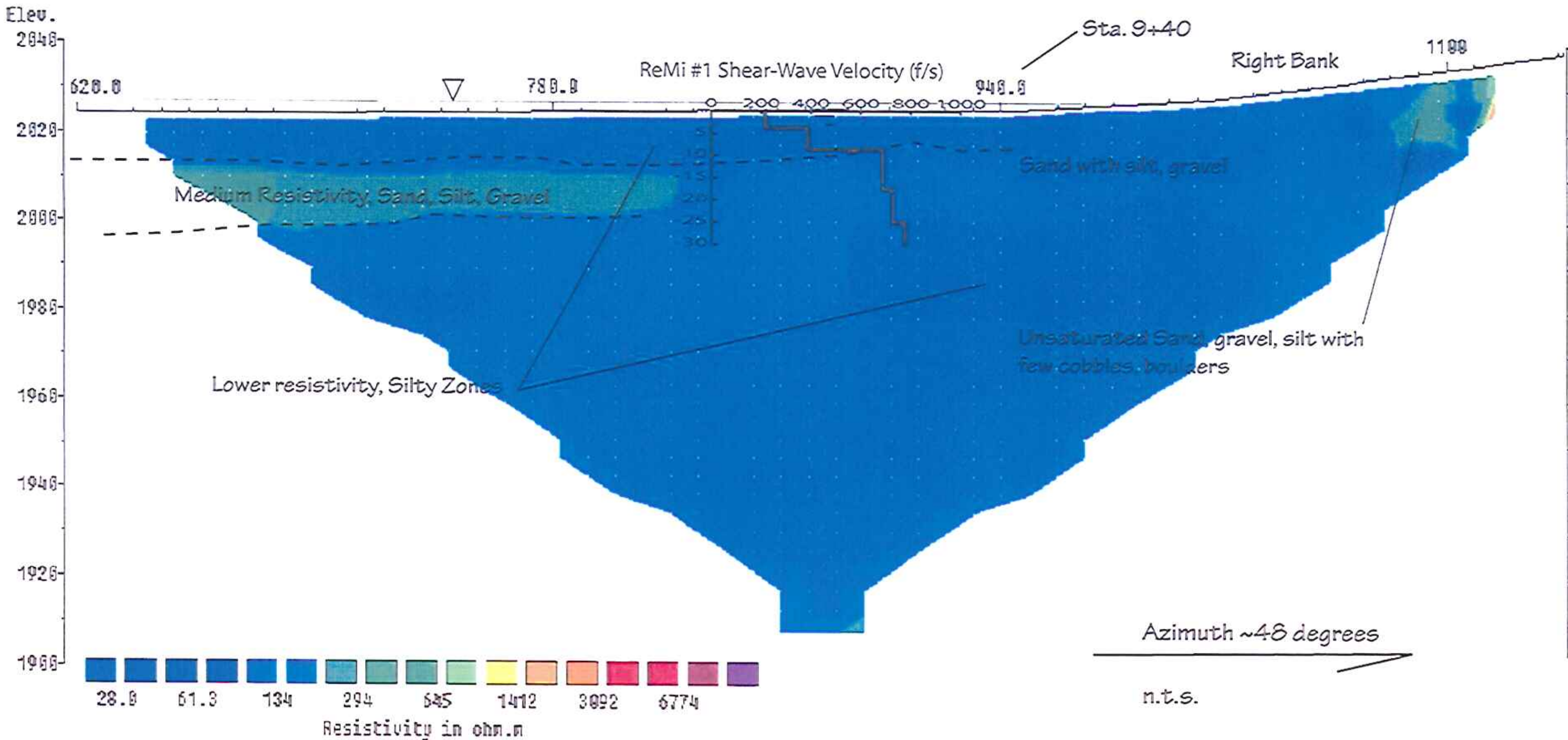
Addressee: 1 hard copy, 1 electronic (pdf)
Enclosures: ERT Profiles 1 through 3 and ReMi 1 through 3

Albeni Tank and Utility Crossing
Old Town, Idaho

Project 110016
February 2010

Underwater Electrical Resistivity Tomography: ERT-1

28 electrodes on 6m spacing (looking downstream)



Prepared for: Budinger & Associates, Inc.

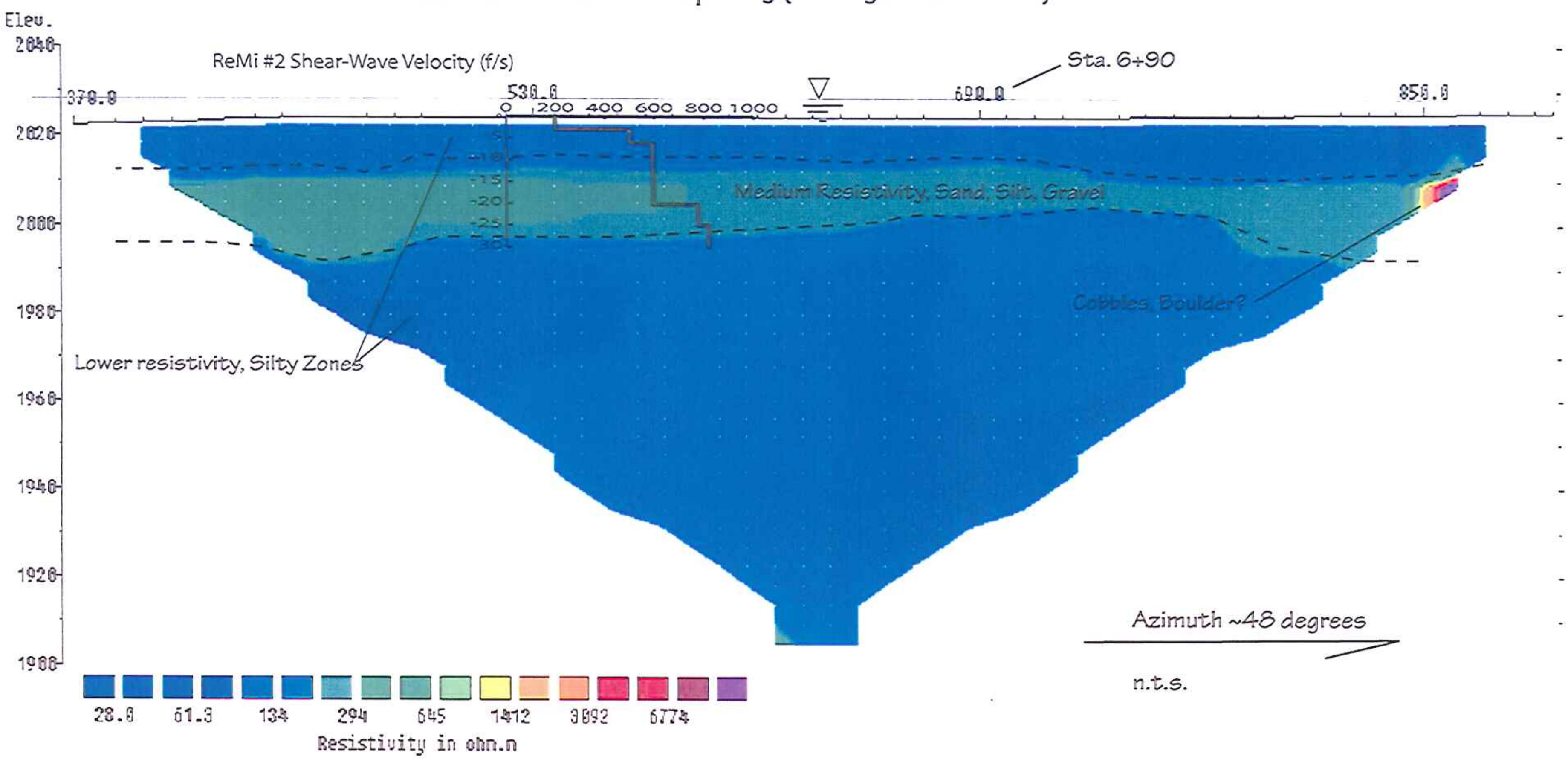
Prepared by: Siemens & Associates
Bend, Oregon

Albeni Tank and Utility Crossing
Old Town, Idaho

Project 110016
February 2010

Underwater Electrical Resistivity Tomography: ERT-2

28 electrodes on 6m spacing (looking downstream)



Prepared for: Budinger & Associates, Inc.

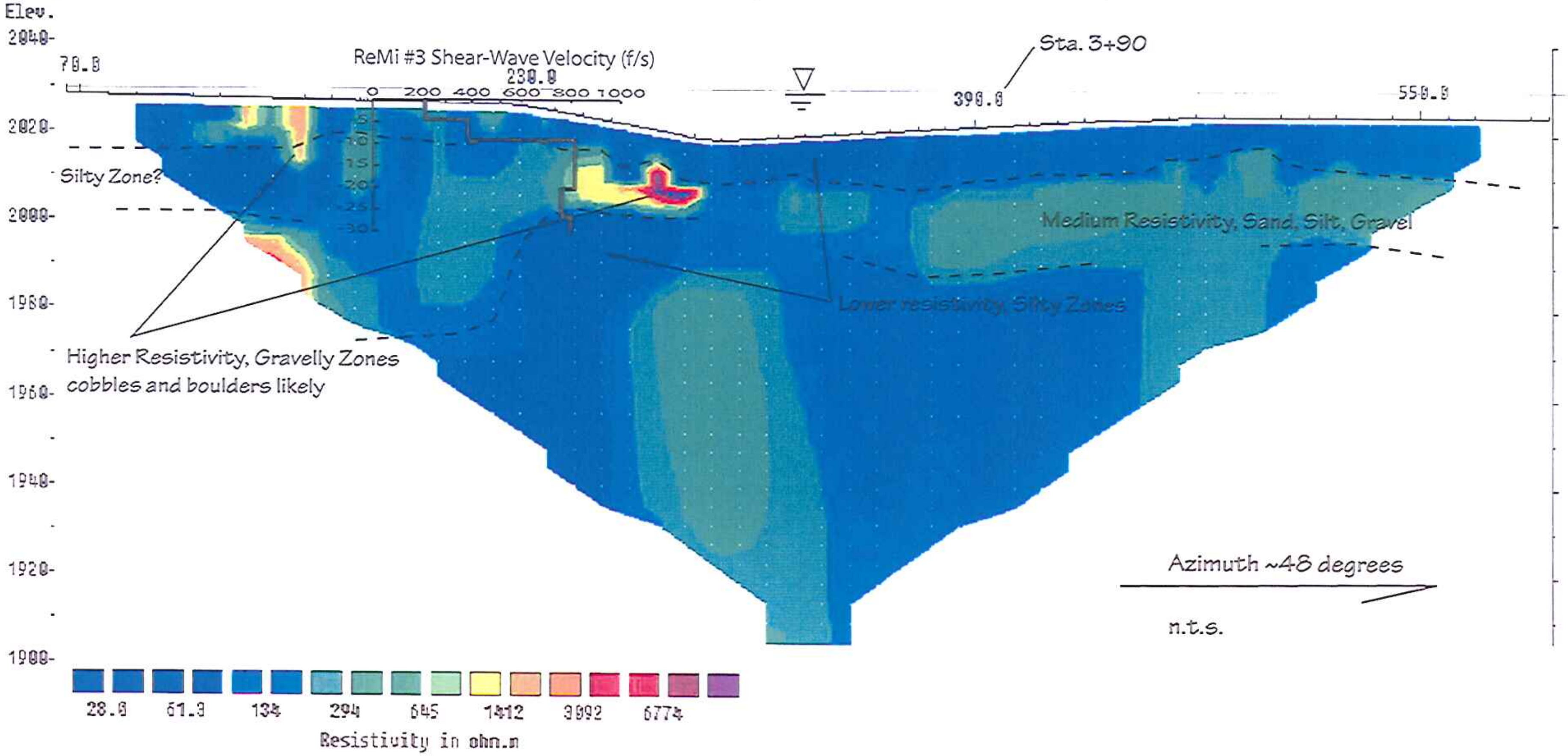
Prepared by: Siemens & Associates
Bend, Oregon

Albeni Tank and Utility Crossing
Old Town, Idaho

Project 110016
February 2010

Underwater Electrical Resistivity Tomography: ERT-3

28 electrodes on 6m spacing (looking downstream)



Prepared for: Budinger & Associates, Inc.

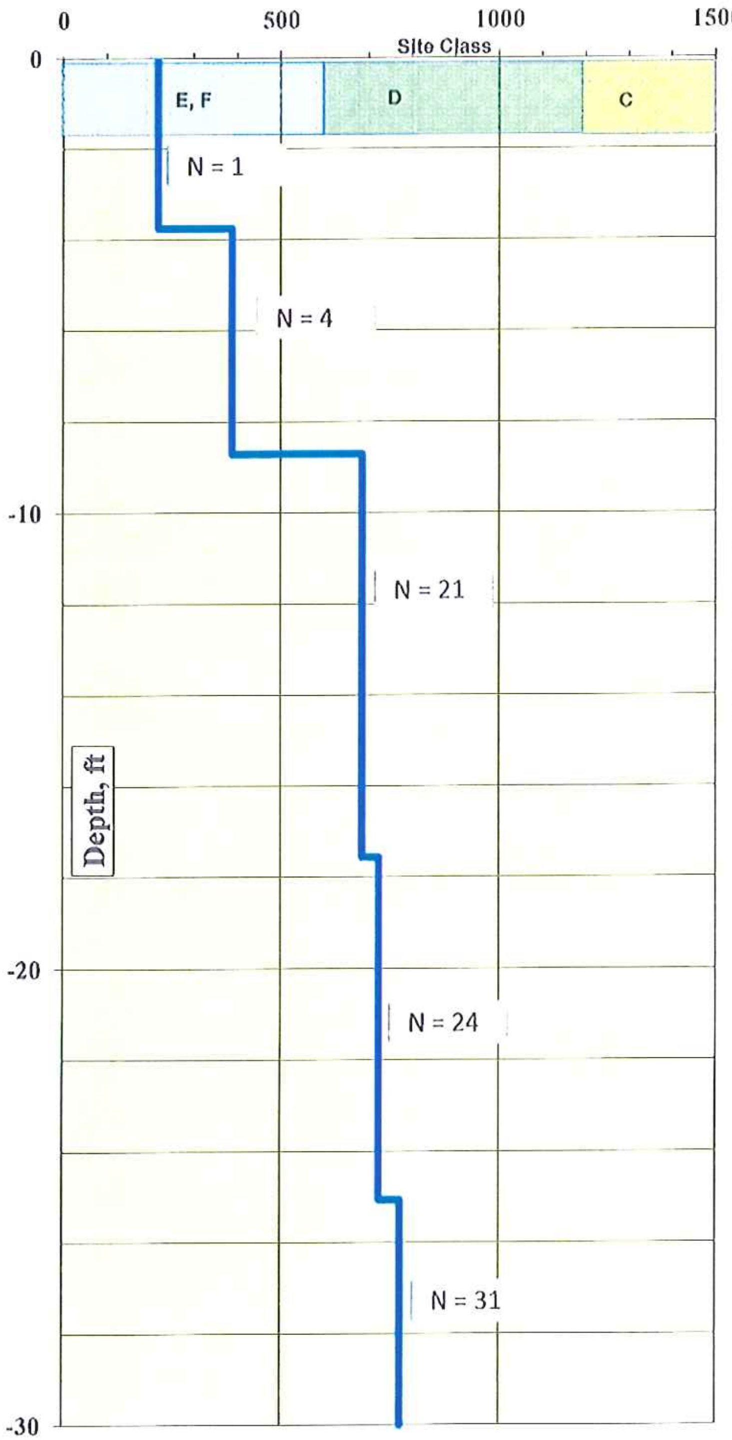
Prepared by: Siemens & Associates
Bend, Oregon

Albeni Tank and Utility Crossing
Old Town, Idaho

Project Number: 110016

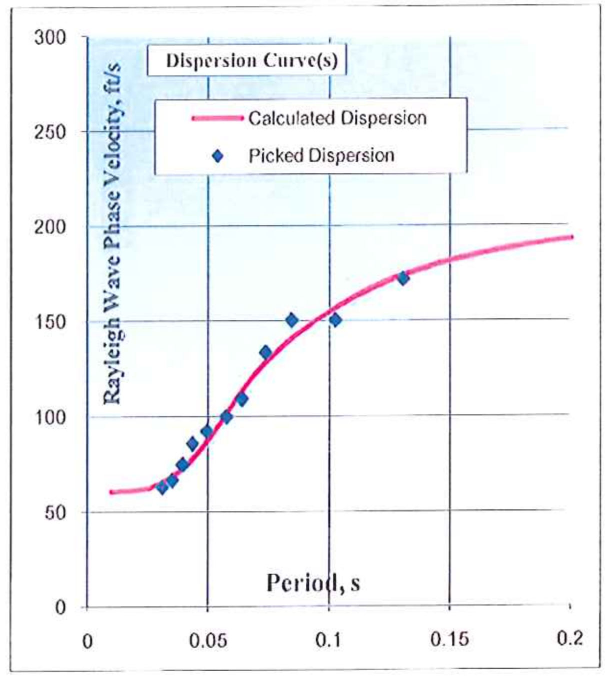
Refraction Microtremor: ReMi #1

24, Hydrophone Receivers on 5 foot spacing
Station ~8+70

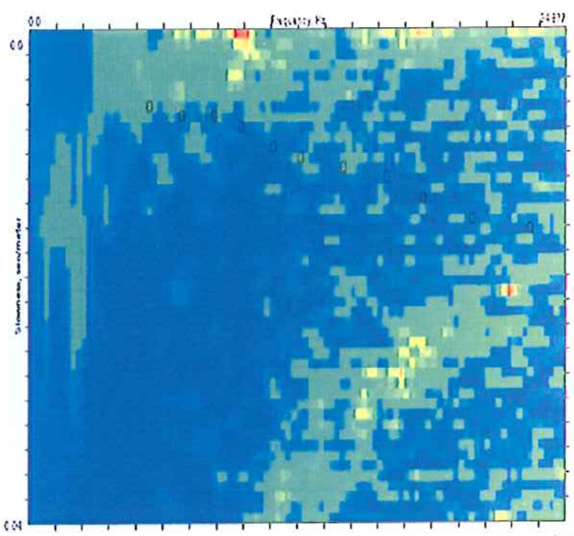


SPT "N" value after Lee 1990 (sand)

Supportive Illustrations:



ReMi Spectral Ratio (p-f image) w/ Modeling Picks



Prepared By: Siemens & Associates
SeisOpt ReMi Software: February 2010

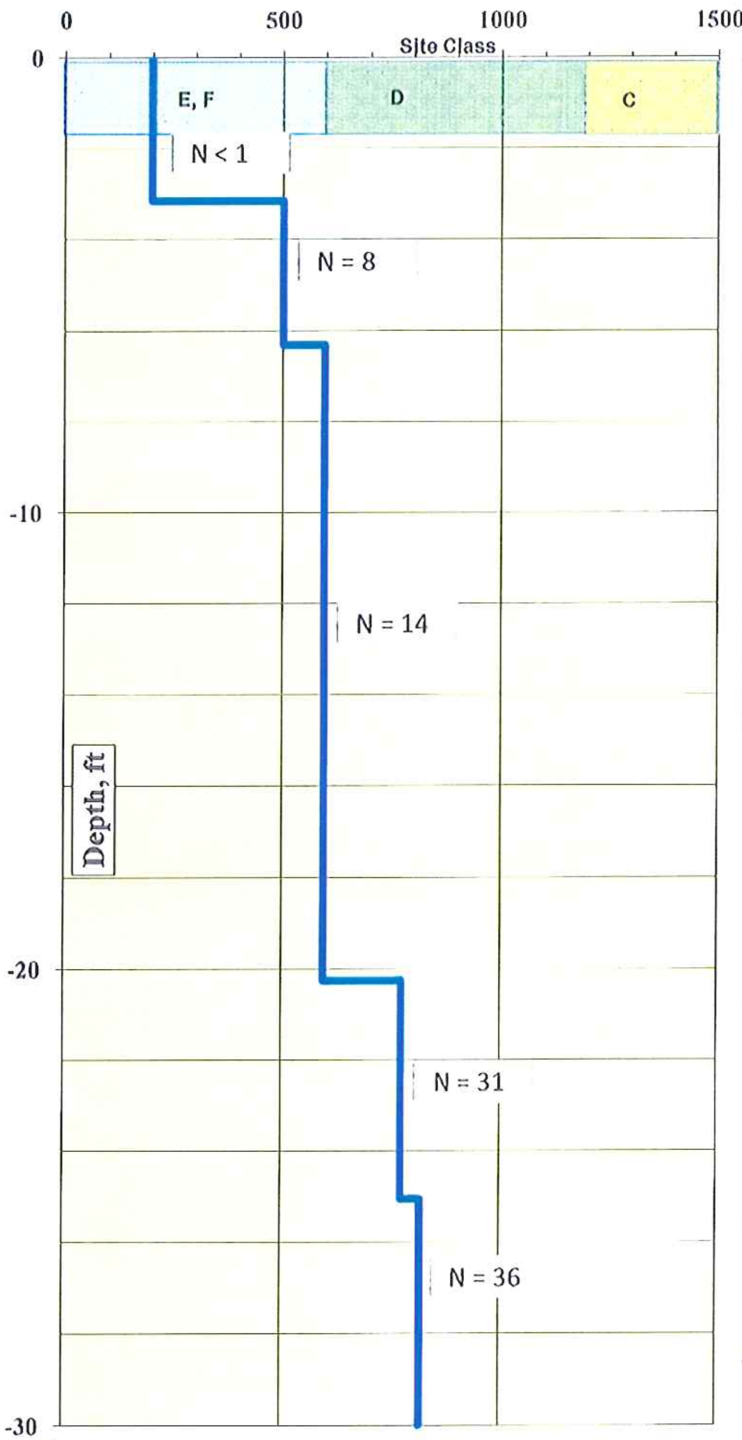
Albeni Tank and Utility Crossing
Old Town, Idaho

Project Number: 110016

Refraction Microtremor: ReMi #2

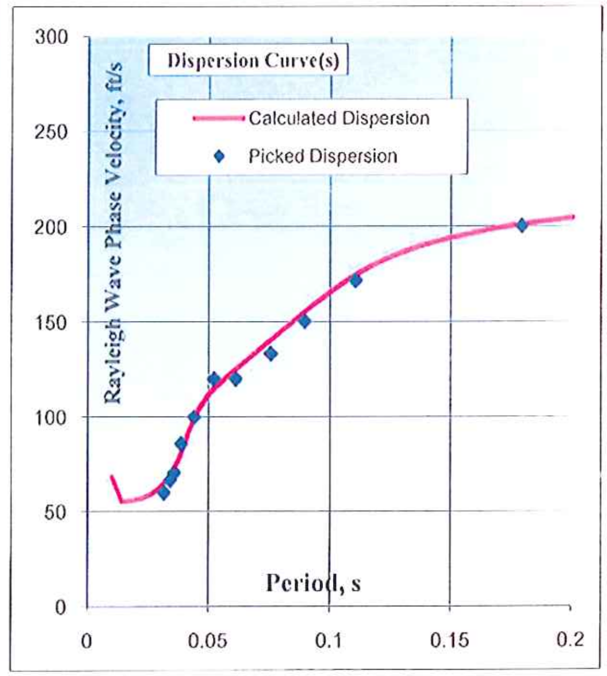
24, Hydrophone Receivers on 5 foot spacing
Station ~5+00

Shear Wave Velocity Profile: V100= na

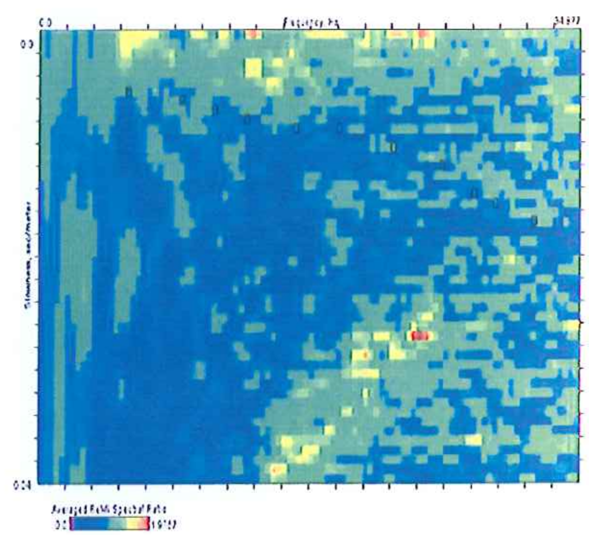


SPT "N" value after Lee 1990 (sand)

Supportive Illustrations:



ReMi Spectral Ratio (p-f image)
w/ Modeling Picks



Prepared By: Siemens & Associates
SeisOpt ReMi Software: February 2010

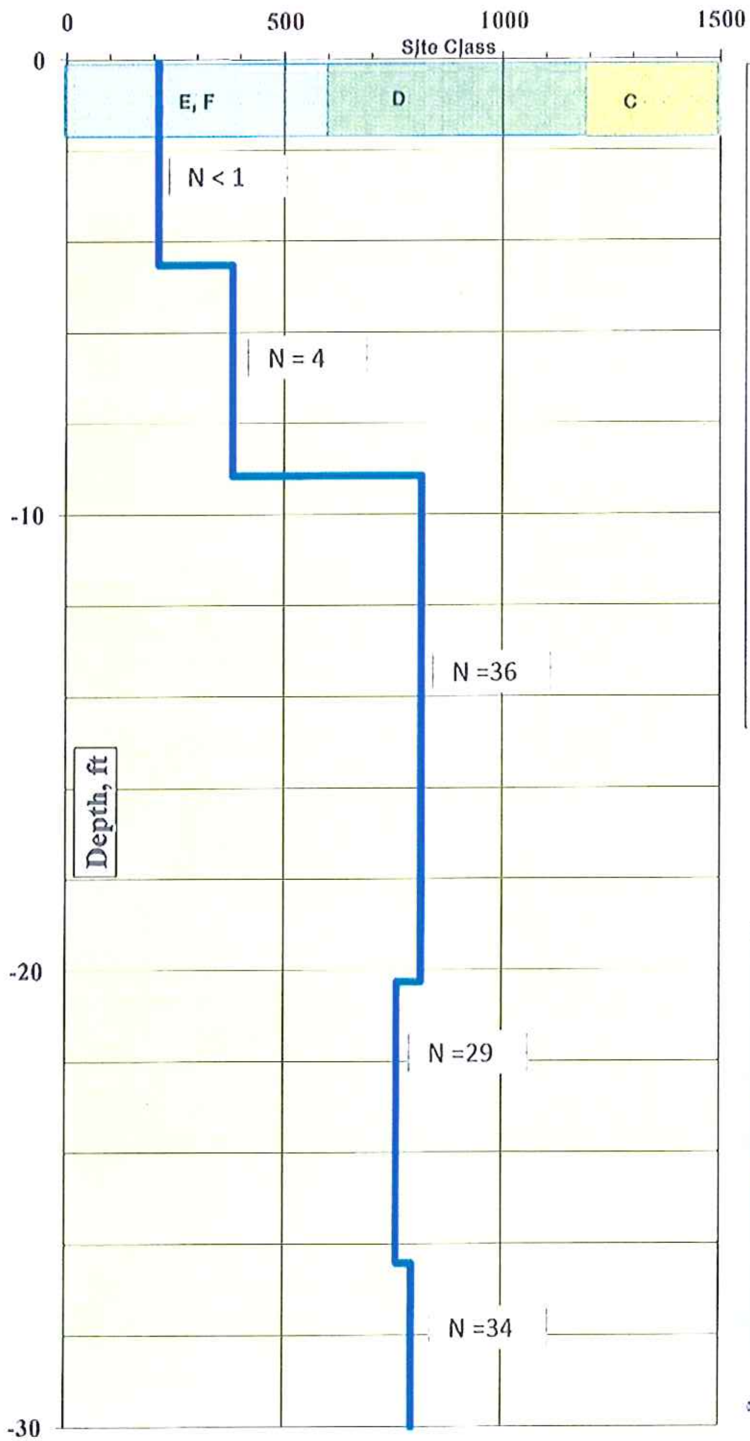
Albeni Tank and Utility Crossing
Old Town, Idaho

Project Number: 110016

Refraction Microtremor: ReMi #3

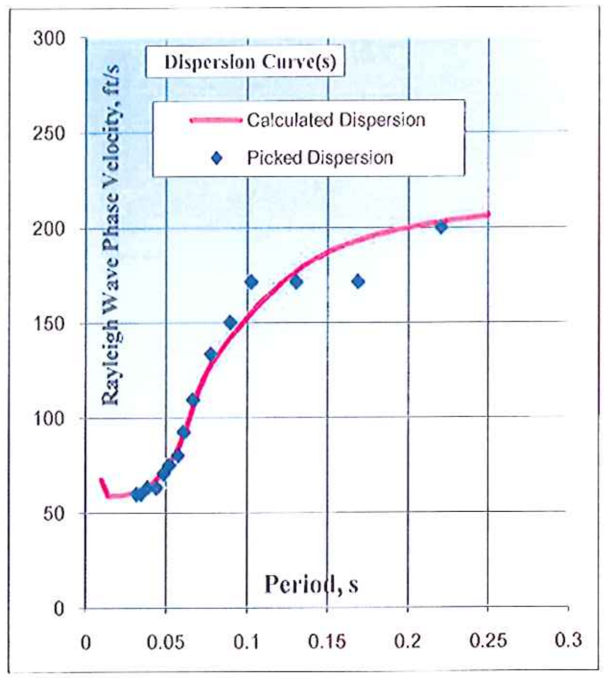
24, Hydrophone Receivers on 5 foot spacing
Station ~1+70

Shear Wave Velocity Profile: V100= na

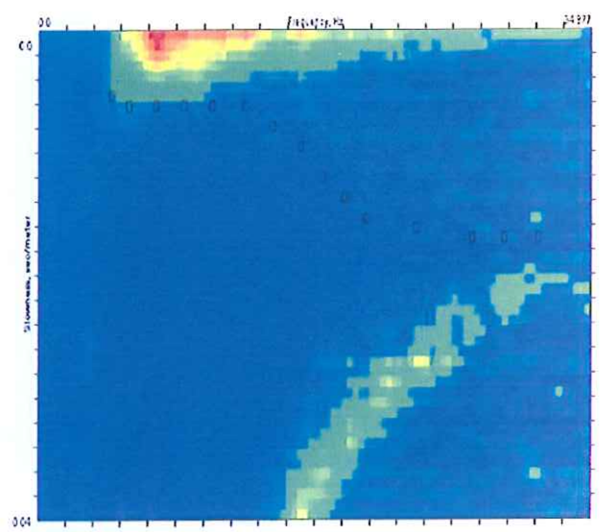


SPT "N" value after Lee 1990 (sand)

Supportive Illustrations:



ReMi Spectral Ratio (p-f image)
w/ Modeling Picks



Prepared By: Siemens & Associates
SeisOpt ReMi Software: February 2010

APPENDIX A2

WELL LOGS

RECEIVED

Form DEC 0 1 1999
11/97
IDWR/North

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT · 77223

Office Use Only
Inspected by ______
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0010529
DRILLING PERMIT NO. 97-99N-46
Other IDWR No. ______

2. OWNER
Name Rick + Cindy Pettit
Address Rt 4 Box 155A
City Oldtown State Id Zip 83822

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

POSTED

Twp. 56 North ☒ or South ☐
Rge. 5 East ☐ or West ☒
Sec. 18, ____ 1/4 SW 1/4 SW 1/4
Gov't Lot ____ County Bonner
Lat: : : Long: : :
Address of Well Site Freeman Lk Rd. + Jill Way
(Give at least name of road + Distance to Road or Landmark)
City Oldtown

Lt. ____ Blk. ____ Sub. Name ______

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ______

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ______

6. DRILL METHOD
☒ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other ______

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	7	Temp Casing

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 270'
Was drive shoe seal tested? ☐ Y ☒ N How? ______

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1	270	.250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ______ Length of Tailpipe ______

9. PERFORATIONS/SCREENS
Perforations Method ______
Screens Screen Type ______

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
300' ft. below ground Artesian pressure ____ lb.
Depth flow encountered ______ ft. Describe access port or control devices: ______

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
5	223	523	1 Hr

Water Temp. Cold Bottom hole temp. ______
Water Quality test or comments: Good
Depth first Water Encounter 410'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	18	Top Soil, Sand, cobbles		X
6	18	40	Sand, gravel		X
6	40	100	Sand, gravel		X
6	100	180'	Sand, gravel		X
6	180	190	Silt, sand, Clay	X	
6	190	220	Clay		X
6	220	240	Clay		X
6	240	250	Clay + gravel		X
6	250	270	Clay + gravel Hard Pan		X
6	270	420	Granite Frac. 410' 1/2 GPM	X	
6	420	480	Granite		X
6	480	500	Granite Frac 490' 3 GPM	X	
6	500	523	Granite Frac 515' 1 1/2	X	

Completed Depth 523' (Measurable)
Date: Started 10-7-99 Completed 10-21-99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Carl Pitts & Sons Firm No. 168
Firm Official Carl Pitts Date 10-22-99
and
Driller or Operator Steve Pitts Date 10-22-99
(Sign once if Firm Official & Operator)

56N 5W 18

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

RECEIVED
DEC 10 2003
IDWR/North

Office Use Only
Well ID No.
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 33281
DRILLING PERMIT NO. 808694
Water Right or Injection Well No.

2. OWNER:
Name CITY of OLDTOWN
Address 214 N. WASHINGTON AVE
City OLDTOWN State ID Zip 83822

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 56 North ☒ or South ☐
Rge. 6 East ☐ or West ☒
Sec. 24, SE 1/4 (10 acres) NW 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot ____ County BONNER
Lat: : : Long: : :
Address of Well Site ROTARY PARK, SE of U.S. HWY 2, BRIDGE (Give at least name of road + Distance to Road or Landmark) City OLDTOWN
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☒ Other TRANSIENT PUBLIC WATER SYSTEM

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD:
☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
BENTONITE	0	64	1900 lbs	TEMP CASING

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 124
Was drive shoe seal tested? ☐ Y ☒ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+4	124'	280	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____
Packer ☒ Y ☐ N Type K- PACKER

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method ____
Screen Type & Method of Installation STAINLESS TELESCOPING

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
124	129	25	304	5"	STAINLESS	☒	☐
						☐	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
28 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: WELL CAP

12. WELL TESTS:
☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
30+	20	126	1 HR

Water Temp. COLD Bottom hole temp. ____
Water Quality test or comments: CLEAR / 1½ m/L IRON
Depth first Water Encounter 28'

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	8	SAND		X
10	8	32	CLAY (WHITE)		X
10	32	58	PEA GRAVEL / SAND	X	
10	58	64	CLAY / SAND		X
6	64	129	PEA GRAVEL / SAND	X	

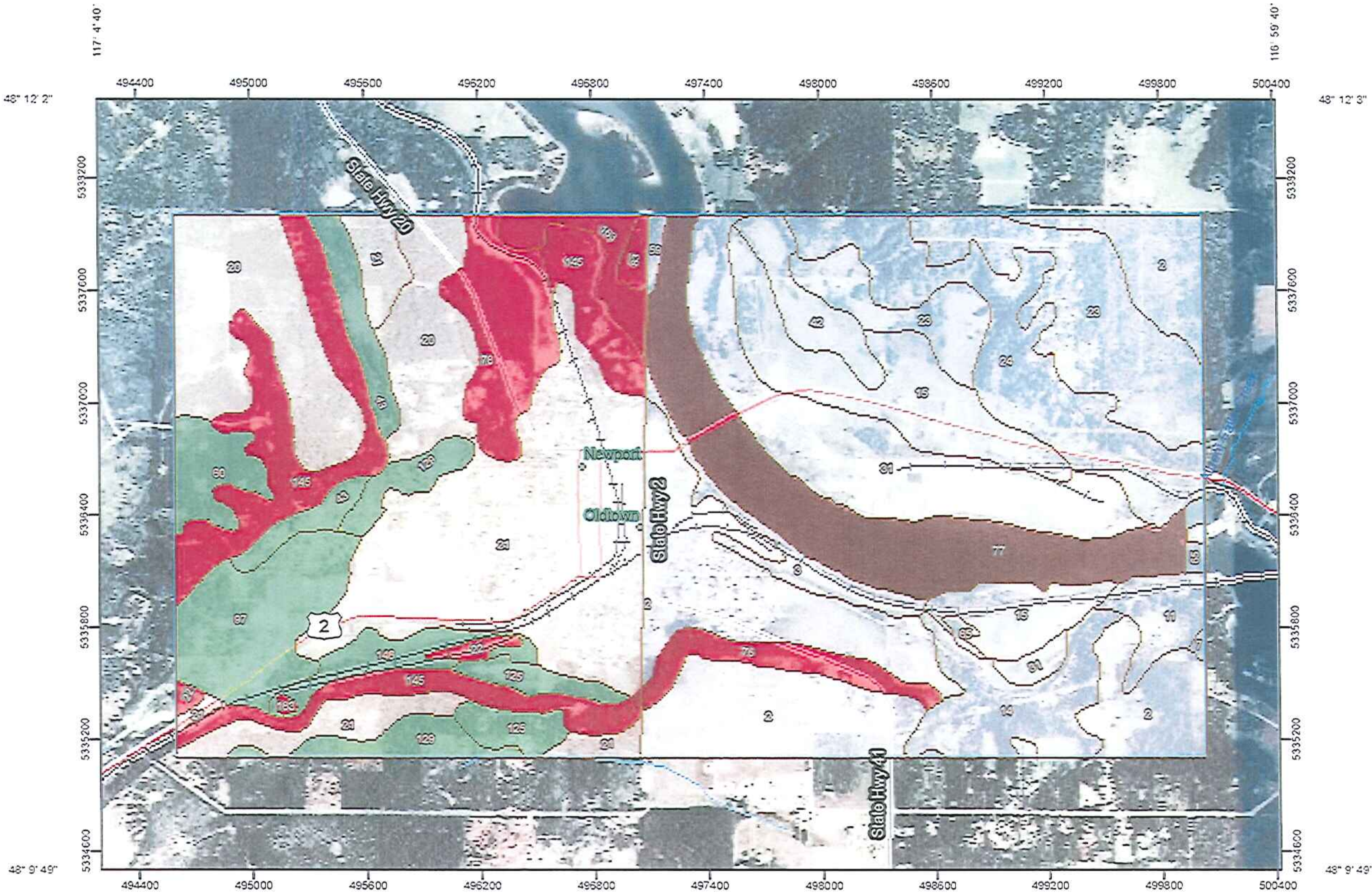
Completed Depth 129' (Measurable)
Date: Started 11-4-03 Completed 11-29-03

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name HUGHES WATER WELLS Firm No. 604
Principal Driller David J Hughes Date 11-29-03
and
Driller or Operator II [signature] Date 11-29-03
Operator I ____ Date ____
Principal Driller and Rig Operator Required.
Operator I must have signat...

56N 6W 24

FORWARD WHITE COPY TO WATER RESOURCES



Map Scale: 1:29,500 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
- 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
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:29,500 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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 6, Jan 31, 2008

Soil Survey Area: Pend Oreille County Area, Washington
Survey Area Data: Version 7, Jun 15, 2009

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: 7/2/2006

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 — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Bonner gravelly silt loam, 0 to 4 percent slopes		525.4	13.5%
3	Bonner gravelly silt loam, 30 to 65 percent slopes		49.1	1.3%
7	Cabinet silt loam, 12 to 30 percent slopes		2.4	0.1%
11	Dufort-Rock outcrop complex, 5 to 45 percent slopes		46.6	1.2%
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes		116.9	3.0%
15	Hoodoo silt loam, 0 to 1 percent slopes		220.5	5.7%
23	Kootenai gravelly silt loam, 0 to 4 percent slopes		257.8	6.6%
24	Kootenai gravelly silt loam, 20 to 55 percent slopes		224.3	5.8%
31	Mission silt loam, 0 to 2 percent slopes		261.0	6.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes		54.4	1.4%
59	Vassar-Moscow association, 35 to 65 percent slopes		7.8	0.2%
65	Water		12.6	0.3%
76	Typic Xerorthents, 30 to 65 percent slopes	Not prime farmland	53.4	1.4%
77	Kegel loam	Prime farmland if drained	283.8	7.3%
Subtotals for Soil Survey Area			**2,116.0**	**54.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

Farmland Classification— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
20	Bonner silt loam, 0 to 10 percent slopes	Prime farmland if irrigated	316.3	8.1%
21	Bonner gravelly silt loam, 0 to 10 percent slopes	Prime farmland if irrigated	562.2	14.5%
22	Borosaprists, ponded	Not prime farmland	12.9	0.3%
43	Dufort silt loam, 0 to 15 percent slopes	Farmland of statewide importance	65.3	1.7%
60	Kaniksu sandy loam, 0 to 15 percent slopes	Farmland of statewide importance	52.2	1.3%
78	Mobate-Rock outcrop complex, 40 to 65 percent slopes	Not prime farmland	115.9	3.0%

Farmland Classification— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
83	Moscow-Rock outcrop complex, 40 to 65 percent slopes	Not prime farmland	10.7	0.3%
97	Orwig sandy loam, 0 to 20 percent slopes	Farmland of statewide importance	142.8	3.7%
125	Sacheen loamy fine sand, 5 to 15 percent slopes	Farmland of statewide importance	54.5	1.4%
129	Scotia fine sandy loam, 7 to 15 percent slopes	Farmland of statewide importance	72.8	1.9%
145	Typic Xerorthents, 30 to 65 percent slopes	Not prime farmland	275.0	7.1%
146	Uncas muck	Farmland of statewide importance	46.6	1.2%
163	Water	Not prime farmland	42.7	1.1%
Subtotals for Soil Survey Area			**1,769.7**	**45.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

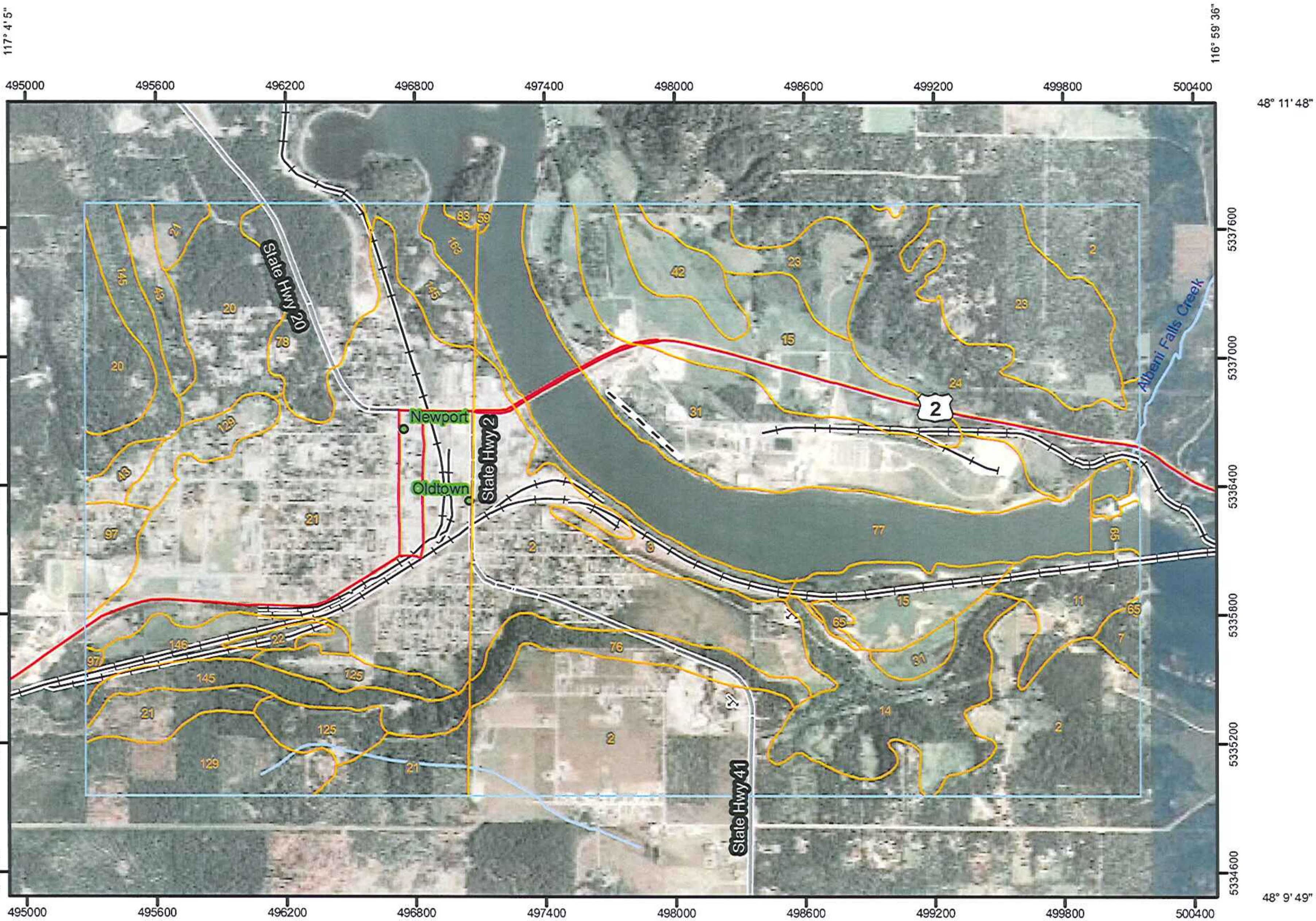
Description

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.

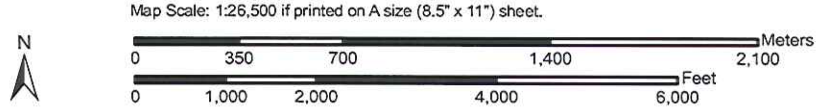
Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower



Map Scale: 1:26,500 if printed on A size (8.5" x 11") sheet.



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
- Local Roads

MAP INFORMATION

Map Scale: 1:26,500 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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 6, Jan 31, 2008

Soil Survey Area: Pend Oreille County Area, Washington
Survey Area Data: Version 7, Jun 15, 2009

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.

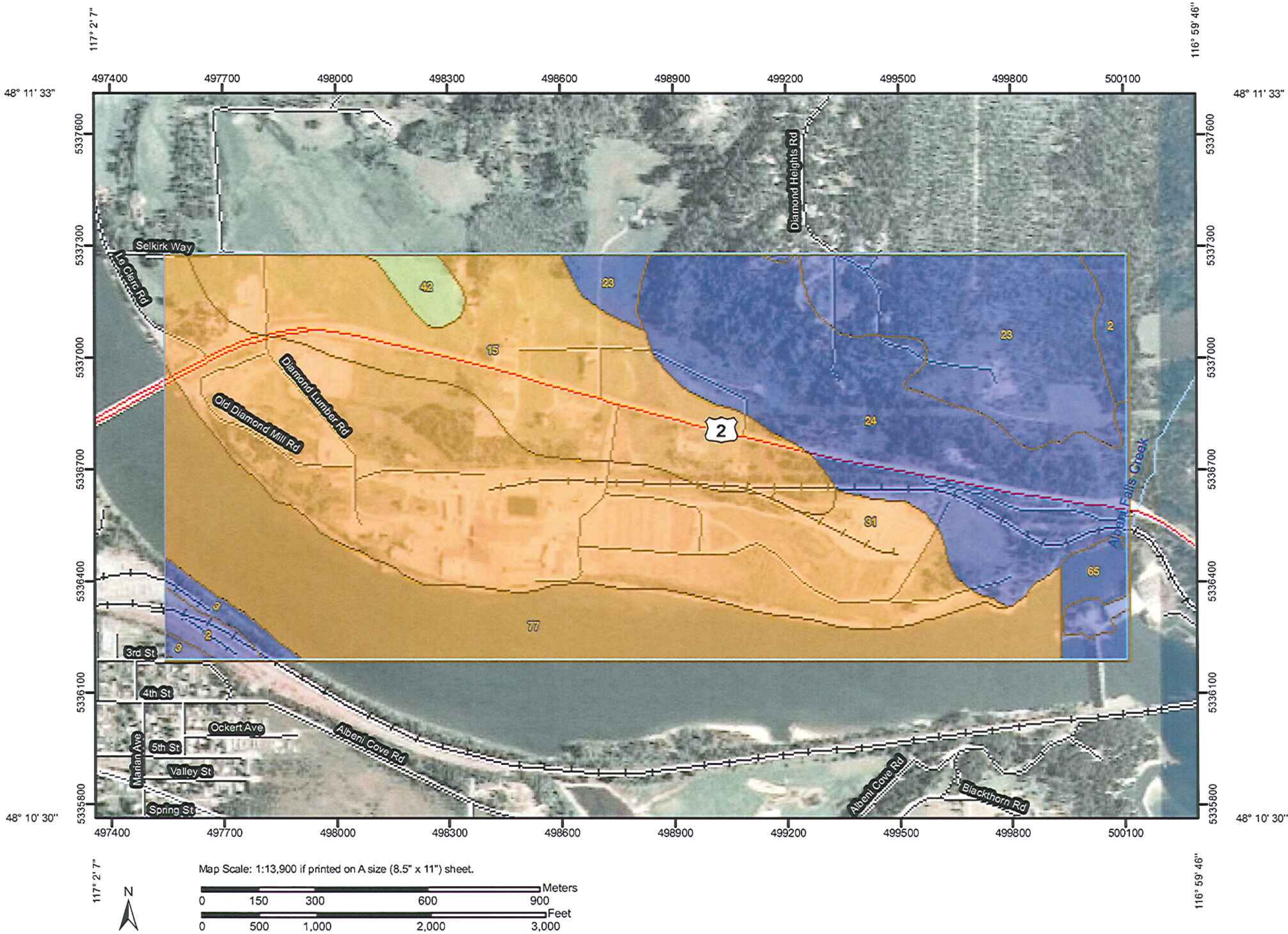
Date(s) aerial images were photographed: 7/2/2006

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

Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
2	Bonner gravelly silt loam, 0 to 4 percent slopes	631.8	19.0%
3	Bonner gravelly silt loam, 30 to 65 percent slopes	49.1	1.5%
7	Cabinet silt loam, 12 to 30 percent slopes	10.5	0.3%
11	Dufort-Rock outcrop complex, 5 to 45 percent slopes	54.5	1.6%
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes	127.6	3.8%
15	Hoodoo silt loam, 0 to 1 percent slopes	213.9	6.4%
23	Kootenai gravelly silt loam, 0 to 4 percent slopes	196.7	5.9%
24	Kootenai gravelly silt loam, 20 to 55 percent slopes	187.4	5.6%
31	Mission silt loam, 0 to 2 percent slopes	246.2	7.4%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	38.5	1.2%
59	Vassar-Moscow association, 35 to 65 percent slopes	1.7	0.0%
65	Water	23.2	0.7%
76	Typic Xerorthents, 30 to 65 percent slopes	53.4	1.6%
77	Kegel loam	272.8	8.2%
Subtotals for Soil Survey Area		**2,107.3**	**63.3%**
Totals for Area of Interest		**3,327.6**	**100.0%**

Pend Oreille County Area, Washington (WA651)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
20	Bonner silt loam, 0 to 10 percent slopes	135.7	4.1%
21	Bonner gravelly silt loam, 0 to 10 percent slopes	541.3	16.3%
22	Borosaprists, ponded	8.3	0.2%
43	Dufort silt loam, 0 to 15 percent slopes	42.3	1.3%
78	Mobate-Rock outcrop complex, 40 to 65 percent slopes	96.5	2.9%
83	Moscow-Rock outcrop complex, 40 to 65 percent slopes	3.3	0.1%
97	Orwig sandy loam, 0 to 20 percent slopes	28.1	0.8%
125	Sacheen loamy fine sand, 5 to 15 percent slopes	54.6	1.6%
129	Scotia fine sandy loam, 7 to 15 percent slopes	112.8	3.4%
145	Typic Xerorthents, 30 to 65 percent slopes	140.0	4.2%
146	Uncas muck	41.8	1.3%
163	Water	15.4	0.5%
Subtotals for Soil Survey Area		**1,220.3**	**36.7%**
Totals for Area of Interest		**3,327.6**	**100.0%**


117° 2' 7"
116° 59' 46"
48° 11' 33"
48° 10' 30"
497400
497700
498000
498300
498600
498900
499200
499500
499800
500100
5337600
5337300
5337000
5336700
5336400
5336100
5335800
Diamond Heights Rd
Selkirk Way
Le Clerc Rd
Diamond Lumber Rd
Old Diamond Mill Rd
Albeni Falls Creek
3rd St
4th St
Ockert Ave
5th St
Marian Ave
Valley St
Spring St
Albeni Cove Rd
Blackthorn Rd
42
23
15
2
24
31
65
77
3
N
Map Scale: 1:13,900 if printed on A size (8.5" x 11") sheet.
0 150 300 600 900 Meters
0 500 1,000 2,000 3,000 Feet

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

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

MAP INFORMATION

Map Scale: 1:13,900 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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 6, Jan 31, 2008

Date(s) aerial images were photographed: 7/2/2006

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.

Depth to Water Table

Depth to Water Table— Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
2	Bonner gravelly silt loam, 0 to 4 percent slopes	>200	13.4	1.9%
3	Bonner gravelly silt loam, 30 to 65 percent slopes	>200	7.1	1.0%
15	Hoodoo silt loam, 0 to 1 percent slopes	46	118.1	17.1%
23	Kootenai gravelly silt loam, 0 to 4 percent slopes	>200	78.8	11.4%
24	Kootenai gravelly silt loam, 20 to 55 percent slopes	>200	130.2	18.8%
31	Mission silt loam, 0 to 2 percent slopes	31	199.0	28.8%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	61	7.5	1.1%
65	Water	>200	10.6	1.5%
77	Kegel loam	38	126.4	18.3%
Totals for Area of Interest			**691.0**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

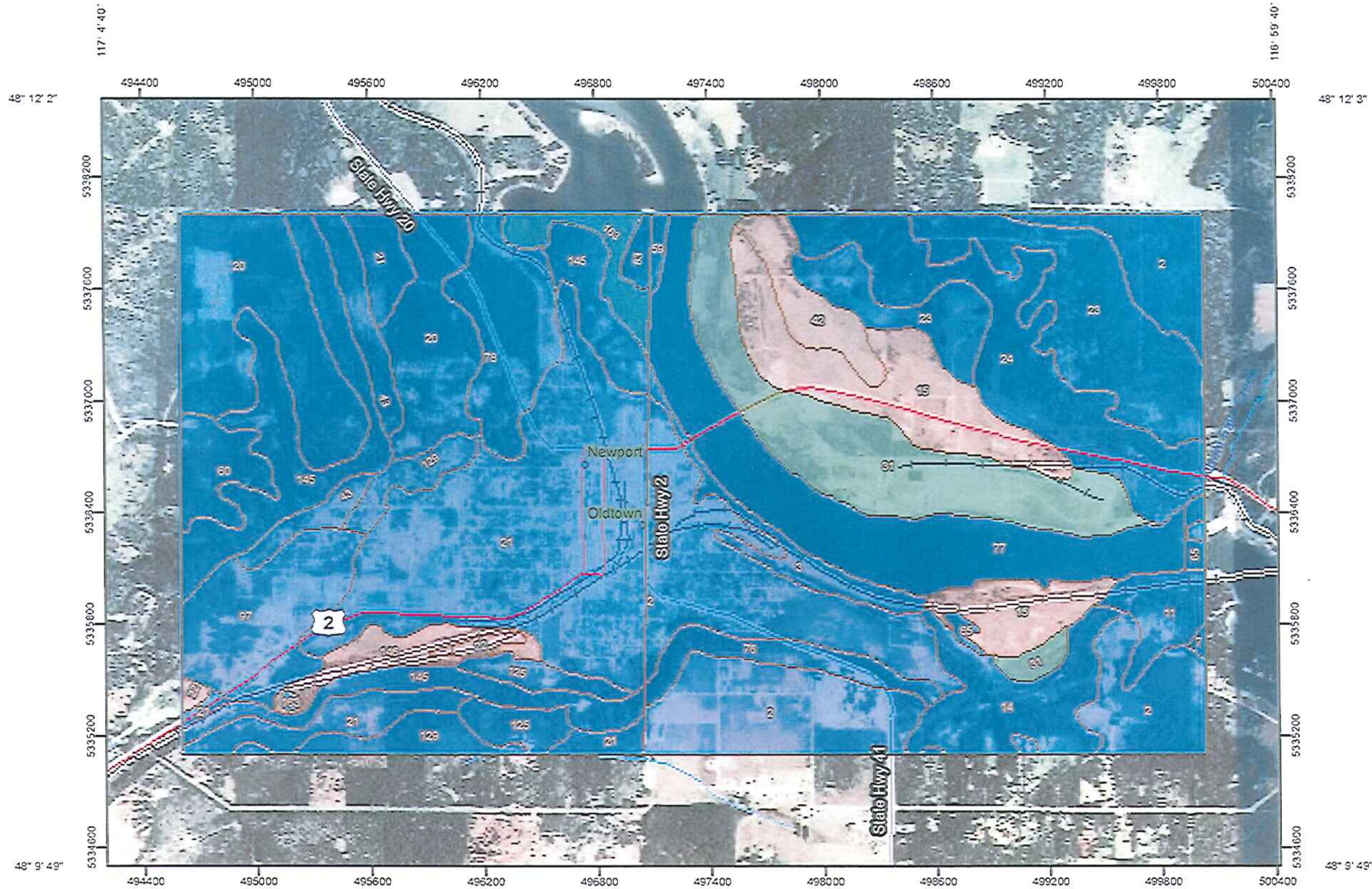
Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December



Map Scale: 1:29,500 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
- All Hydric
- Partially Hydric
- Not Hydric
- Unknown Hydric
- Not rated or not available

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:29,500 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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 6, Jan 31, 2008

Soil Survey Area: Pend Oreille County Area, Washington
Survey Area Data: Version 7, Jun 15, 2009

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: 7/2/2006

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.

Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Bonner gravelly silt loam, 0 to 4 percent slopes	Not Hydric	525.4	13.5%
3	Bonner gravelly silt loam, 30 to 65 percent slopes	Not Hydric	49.1	1.3%
7	Cabinet silt loam, 12 to 30 percent slopes	Not Hydric	2.4	0.1%
11	Dufort-Rock outcrop complex, 5 to 45 percent slopes	Not Hydric	46.6	1.2%
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes	Not Hydric	116.9	3.0%
15	Hoodoo silt loam, 0 to 1 percent slopes	All Hydric	220.5	5.7%
23	Kootenai gravelly silt loam, 0 to 4 percent slopes	Not Hydric	257.8	6.6%
24	Kootenai gravelly silt loam, 20 to 55 percent slopes	Not Hydric	224.3	5.8%
31	Mission silt loam, 0 to 2 percent slopes	Partially Hydric	261.0	6.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	All Hydric	54.4	1.4%
59	Vassar-Moscow association, 35 to 65 percent slopes	Not Hydric	7.8	0.2%
65	Water	Not Hydric	12.6	0.3%
76	Typic Xerorthents, 30 to 65 percent slopes	Not Hydric	53.4	1.4%
77	Kegel loam	Not Hydric	283.8	7.3%
Subtotals for Soil Survey Area			**2,116.0**	**54.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

Hydric Rating by Map Unit— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
20	Bonner silt loam, 0 to 10 percent slopes	Not Hydric	316.3	8.1%
21	Bonner gravelly silt loam, 0 to 10 percent slopes	Not Hydric	562.2	14.5%
22	Borosaprists, ponded	All Hydric	12.9	0.3%
43	Dufort silt loam, 0 to 15 percent slopes	Not Hydric	65.3	1.7%
60	Kaniksu sandy loam, 0 to 15 percent slopes	Not Hydric	52.2	1.3%
78	Mobate-Rock outcrop complex, 40 to 65 percent slopes	Not Hydric	115.9	3.0%
83	Moscow-Rock outcrop complex, 40 to 65 percent slopes	Not Hydric	10.7	0.3%

Hydric Rating by Map Unit— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
97	Orwig sandy loam, 0 to 20 percent slopes	Not Hydric	142.8	3.7%
125	Sacheen loamy fine sand, 5 to 15 percent slopes	Not Hydric	54.5	1.4%
129	Scotia fine sandy loam, 7 to 15 percent slopes	Not Hydric	72.8	1.9%
145	Typic Xerorthents, 30 to 65 percent slopes	Not Hydric	275.0	7.1%
146	Uncas muck	All Hydric	46.6	1.2%
163	Water	Unknown Hydric	42.7	1.1%
Subtotals for Soil Survey Area			**1,769.7**	**45.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

Description

This rating indicates the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric," "partially hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. "Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

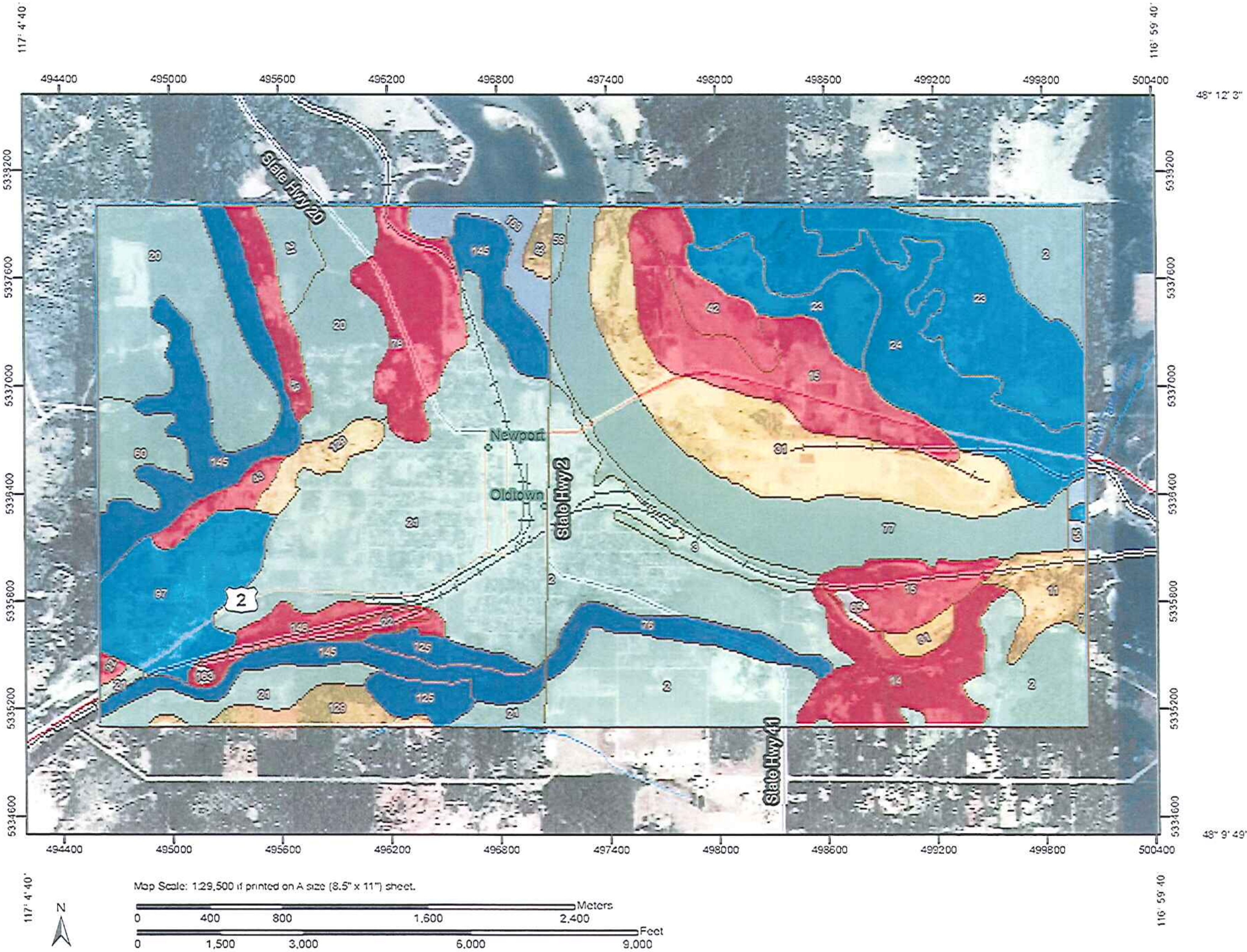
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Absence/Presence

Tie-break Rule: Lower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116° 59' 40"
48° 12' 2"
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48° 9' 49"
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496800
497400
498000
498600
499200
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500400
5338200
5337600
5337000
5336400
5335800
5335200
5334600
State Hwy 20
State Hwy 2
State Hwy 41
Newport
Oldtown
2
20
21
145
60
97
77
31
42
16
23
24
125
129
11
14
N
Map Scale: 1:29,500 if printed on A size (8.5" x 11") sheet.
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

- <= 12.1319
- > 12.1319 AND <= 19.8101
- > 19.8101 AND <= 38.5494
- > 38.5494 AND <= 62.5165
- > 62.5165 AND <= 108.1538
- Not rated or not available

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

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

MAP INFORMATION

Map Scale: 1:29,500 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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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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 6, Jan 31, 2008

Soil Survey Area: Pend Oreille County Area, Washington
Survey Area Data: Version 7, Jun 15, 2009

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: 7/2/2006

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.

Saturated Hydraulic Conductivity (Ksat)

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties				
Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
2	Bonner gravelly silt loam, 0 to 4 percent slopes	37.9121	525.4	13.5%
3	Bonner gravelly silt loam, 30 to 65 percent slopes	37.9121	49.1	1.3%
7	Cabinet silt loam, 12 to 30 percent slopes	15.9175	2.4	0.1%
11	Dufort-Rock outcrop complex, 5 to 45 percent slopes	15.2637	46.6	1.2%
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes	7.6034	116.9	3.0%
15	Hoodoo silt loam, 0 to 1 percent slopes	9.0000	220.5	5.7%
23	Kootenai gravelly silt loam, 0 to 4 percent slopes	62.5165	257.8	6.6%
24	Kootenai gravelly silt loam, 20 to 55 percent slopes	62.5165	224.3	5.8%
31	Mission silt loam, 0 to 2 percent slopes	15.9321	261.0	6.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	9.0000	54.4	1.4%
59	Vassar-Moscow association, 35 to 65 percent slopes	28.5165	7.8	0.2%
65	Water		12.6	0.3%
76	Typic Xerorthents, 30 to 65 percent slopes	103.7473	53.4	1.4%
77	Kegel loam	31.8022	283.8	7.3%
Subtotals for Soil Survey Area			**2,116.0**	**54.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
20	Bonner silt loam, 0 to 10 percent slopes	36.3626	316.3	8.1%
21	Bonner gravelly silt loam, 0 to 10 percent slopes	36.3626	562.2	14.5%
22	Borosaprists, ponded	9.0000	12.9	0.3%
43	Dufort silt loam, 0 to 15 percent slopes	12.1319	65.3	1.7%
60	Kaniksu sandy loam, 0 to 15 percent slopes	38.6494	52.2	1.3%

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Pend Oreille County Area, Washington				
Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
78	Mobate-Rock outcrop complex, 40 to 65 percent slopes	11.0690	115.9	3.0%
83	Moscow-Rock outcrop complex, 40 to 65 percent slopes	19.8101	10.7	0.3%
97	Orwig sandy loam, 0 to 20 percent slopes	57.5604	142.8	3.7%
125	Sacheen loamy fine sand, 5 to 15 percent slopes	108.1538	54.5	1.4%
129	Scotla fine sandy loam, 7 to 15 percent slopes	13.3846	72.8	1.9%
145	Typic Xerorthents, 30 to 65 percent slopes	103.7473	275.0	7.1%
146	Uncas muck	9.0000	46.6	1.2%
163	Water		42.7	1.1%
Subtotals for Soil Survey Area			**1,769.7**	**45.5%**
Totals for Area of Interest			**3,885.8**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options: Depth Range

Top Depth: 0

Bottom Depth: 36

Units of Measure: Inches

APPENDIX F

PROJECT COST ESTIMATES

JAMES A. SEWELL & ASSOCIATES, LLC 6/11/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost

Total Project Cost Estimate

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2010 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
General					
1	Moblization	1	LS	$ 205,000.00	$ 205,000.00
2	Stormwater and Erosion Control	1	LS	$ 10,000.00	$ 10,000.00
3	Wetland Mitigation	1	LS	$ 25,000.00	$ 25,000.00
	Subtotal				**$ 240,000.00**
Water System Construction					
1	12" C900 Class 165 PVC Water Pipe, Installed	10,400	LF	$ 38.00	$ 395,200.00
2	8" C900 Class 165 PVC Water Pipe, Installed	350	LF	$ 28.00	$ 9,800.00
3	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
4	12" Gate Valve	20	EA	$ 3,000.00	$ 60,000.00
5	8" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
6	Fire Hydrant	11	EA	$ 4,200.00	$ 46,200.00
7	Air Release Valves	1	EA	$ 2,500.00	$ 2,500.00
8	Water Service	20	EA	$ 750.00	$ 15,000.00
9	Site Rehabilitation	1	LS	$ 5,000.00	$ 5,000.00
10	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	Construction Subtotal				**$ 583,700.00**
Welded Steel Water Storage Tank Construction					
1	500,000 Gallon Welded Steel Water Storage Tank	1	LS	$ 600,000.00	$ 600,000.00
2	Tank Excavation and Embankment	1,325	CY	$ 15.00	$ 19,875.00
3	Tank Pad Construction	550	CY	$ 30.00	$ 16,500.00
4	Valve Vault	1	LS	$ 10,000.00	$ 10,000.00
5	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
6	Access Road	3,100	LF	$ 25.00	$ 77,500.00
7	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
8	12' Gates	2	Each	$ 500.00	$ 1,000.00
9	Retaining Wall	800	SF	$ 15.00	$ 12,000.00
10	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
11	Parking Lot	1	LS	$ 2,500.00	$ 2,500.00
12	Tank Foundation	50	CY	$ 500.00	$ 25,000.00
	Construction Subtotal				**$ 792,875.00**
New 12" Diameter Water Well Construction					
1	12" Diameter Water Well with Pump and Panel	2	LS	$ 90,000.00	$ 180,000.00
2	8" C900 Cl. 165 PVC Transport Piping to Pump House	100	LF	$ 28.00	$ 2,800.00
3	Parking Area	1	LS	$ 5,000.00	$ 5,000.00
4	Pumphouse	456	SF	$ 250.00	$ 114,000.00
5	Pumphouse Piping	1	LS	$ 55,000.00	$ 55,000.00
6	Pumphouse Electrical	1	LS	$ 55,000.00	$ 55,000.00
	Construction Subtotal				**$ 411,800.00**
New Gravity Sewer Collection System Construction					
1	15" Gravity Sewerline Extension	1,250	LF	$ 38.00	$ 47,500.00
2	12" Gravity Sewerline Extension	1,575	LF	$ 35.00	$ 55,125.00
3	10" Gravity Sewerline Extension	1,250	LF	$ 30.00	$ 37,500.00
4	8" Gravity Sewerline Extension	355	LF	$ 28.00	$ 9,940.00
5	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
6	Connection to Existing System	1	EA	$ 5,000.00	$ 5,000.00
7	Manholes	18	EA	$ 4,000.00	$ 72,000.00
8	Sewer Services	171	EA	$ 500.00	$ 85,500.00
9	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	Construction Subtotal				**$ 359,565.00**
Sewage Lift Station Construction					
1	8' Diameter Wet Well	1	LS	$ 35,000.00	$ 35,000.00
2	Excavation, Earthwork, Shoring	1	LS	$ 25,000.00	$ 25,000.00
3	Duplex 15hp Non-Clog Pumps with Control Panel	1	LS	$ 25,000.00	$ 25,000.00
4	Valve Vault with Fittings and Piping	1	LS	$ 8,000.00	$ 8,000.00
5	Control Building	112	LS	$ 150.00	$ 16,800.00
6	Stand-by Generator	1	LS	$ 50,000.00	$ 50,000.00
7	Plumbing	1	LS	$ 30,000.00	$ 30,000.00
8	Site Fencing	200	FT	$ 30.00	$ 6,000.00
9	Electrical	1	LS	$ 30,000.00	$ 30,000.00
	Construction Subtotal				**$ 225,800.00**
Bore Water and Sewer Lines Under River					
1	12" 200 psi HDPE Pipe	2,900	LF	$ 40.00	$ 116,000.00
2	Bore Under River	2,900	LF	$ 300.00	$ 870,000.00
3	Prepare Drilling Area	1	LS	$ 10,000.00	$ 10,000.00
4	Water Transition Vaults	2	EA	$ 10,000.00	$ 20,000.00
5	Water Transition Valves and Fittings	1	LS	$ 15,000.00	$ 15,000.00
6	6" HDPE Pressure Sewer Pipe	1,450	LF	$ 25.00	$ 36,250.00
7	Sewer Transition Fittings	1	LS	$ 2,000.00	$ 2,000.00
	Construction Subtotal				**$ 1,069,250.00**
Reconstruct Diamond Mill Road & Loop Road, 2,960' @ 24' wide					
1	Subgrade Preparation	7,900	SY	$ 0.75	$ 5,925.00
2	Fabric	7,900	SY	$ 1.50	$ 11,850.00
3	Base Rock Installation	6,200	Ton	$ 15.00	$ 93,000.00
4	3/4"- Crushed Rock	3,000	Ton	$ 18.00	$ 54,000.00
5	Asphalt Surfacing	1,600	Ton	$ 80.00	$ 128,000.00
	Construction Subtotal				**$ 292,775.00**
	Subtotal				$ 3,975,765.00
	Contingency, 10%				$ 397,576.50
	Construction Subtotal				**$ 4,373,341.50**
	Construction Engineering, 10%				$ 437,334.15
	Property/Easement Acquisition				$ 300,000.00
	TOTAL				**$ 5,110,675.65**

JAMES A. SEWELL & ASSOCIATES, LLC 5/25/2012
Newport, Washington SJF

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
General					
1	Moblization	1	LS	$ 125,000.00	$ 125,000.00
2	Stormwater and Erosion Control	1	LS	$ 10,000.00	$ 10,000.00
3	Wetland Mitigation	1	LS	$ 25,000.00	$ 25,000.00
	Subtotal				**$ 160,000.00**
Water System Construction					
4	12" C900 Class 165 PVC Water Pipe, Installed	10,400	LF	$ 38.00	$ 395,200.00
5	8" C900 Class 165 PVC Water Pipe, Installed	350	LF	$ 28.00	$ 9,800.00
6	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
7	12" Gate Valve	20	EA	$ 3,000.00	$ 60,000.00
8	8" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
9	Fire Hydrant	11	EA	$ 4,200.00	$ 46,200.00
10	Air Release Valves	1	EA	$ 2,500.00	$ 2,500.00
11	Water Service	20	EA	$ 750.00	$ 15,000.00
12	Site Rehabilitation	1	LS	$ 5,000.00	$ 5,000.00
13	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	Construction Subtotal				**$ 583,700.00**
Welded Steel Water Storage Tank Construction					
14	500,000 Gallon Welded Steel Water Storage Tank	1	LS	$ 600,000.00	$ 600,000.00
15	Tank Excavation and Embankment	1,325	CY	$ 15.00	$ 19,875.00
16	Tank Pad Construction	550	CY	$ 30.00	$ 16,500.00
17	Valve Vault	1	LS	$ 10,000.00	$ 10,000.00
18	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
19	Access Road	3,100	LF	$ 25.00	$ 77,500.00
20	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
21	12' Gates	2	Each	$ 500.00	$ 1,000.00
22	Retaining Wall	800	SF	$ 15.00	$ 12,000.00
23	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
24	Parking Lot	1	LS	$ 2,500.00	$ 2,500.00
25	Tank Foundation	50	CY	$ 500.00	$ 25,000.00
	Construction Subtotal				**$ 792,875.00**
New 12" Diameter Water Well Construction					
26	12" Diameter Water Well with Pump and Panel	2	LS	$ 90,000.00	$ 180,000.00
27	8" C900 Cl. 165 PVC Transport Piping to Pumphouse	100	LF	$ 28.00	$ 2,800.00
28	Parking Area	1	LS	$ 5,000.00	$ 5,000.00
29	Pumphouse	456	SF	$ 250.00	$ 114,000.00
30	Pumphouse Piping	1	LS	$ 55,000.00	$ 55,000.00
31	Pumphouse Electrical	1	LS	$ 55,000.00	$ 55,000.00
	Construction Subtotal				**$ 411,800.00**
Bore Water Line Under River					
32	12" 200 psi HDPE Pipe	1,450	LF	$ 40.00	$ 58,000.00
33	Bore Under River	1,450	LF	$ 300.00	$ 435,000.00
34	Prepare Drilling Area	1	LS	$ 5,000.00	$ 5,000.00
35	Water Transition Vaults	2	EA	$ 10,000.00	$ 20,000.00
36	Water Transition Valves and Fittings	1	LS	$ 15,000.00	$ 15,000.00
	Construction Subtotal				**$ 533,000.00**
	Subtotal				$ 2,481,375.00
	Contingency, 10%				$ 248,137.50
	Construction Subtotal				**$ 2,729,512.50**
	Construction Engineering, 10%				$ 272,951.25
	Property/Easement Acquisition				$ 300,000.00
	TOTAL				**$ 3,302,463.75**

JAMES A. SEWELL & ASSOCIATES, LLC
Newport, Washington

5/25/2012
TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost

Total Project Cost Estimate

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
General					
1	Moblization	1	LS	$ 80,000.00	$ 80,000.00
2	Stormwater and Erosion Control	1	LS	$ 10,000.00	$ 10,000.00
	Subtotal				**$ 90,000.00**
New Gravity Sewer Collection System Construction					
1	15" Gravity Sewerline Extension	1,250	LF	$ 38.00	$ 47,500.00
2	12" Gravity Sewerline Extension	1,575	LF	$ 35.00	$ 55,125.00
3	10" Gravity Sewerline Extension	1,250	LF	$ 30.00	$ 37,500.00
4	8" Gravity Sewerline Extension	355	LF	$ 28.00	$ 9,940.00
5	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
6	Connection to Existing System	1	EA	$ 5,000.00	$ 5,000.00
7	Manholes	18	EA	$ 4,000.00	$ 72,000.00
8	Sewer Services	171	EA	$ 500.00	$ 85,500.00
9	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	Construction Subtotal				**$ 359,565.00**
Sewage Lift Station Construction					
1	8' Diameter Wet Well	1	LS	$ 35,000.00	$ 35,000.00
2	Excavation, Earthwork, Shoring	1	LS	$ 25,000.00	$ 25,000.00
3	Duplex 15hp Non-Clog Pumps with Control Panel	1	LS	$ 25,000.00	$ 25,000.00
4	Valve Vault with Fittings and Piping	1	LS	$ 8,000.00	$ 8,000.00
5	Control Building	112	SF	$ 150.00	$ 16,800.00
6	Stand-by Generator	1	LS	$ 50,000.00	$ 50,000.00
7	Plumbing	1	LS	$ 30,000.00	$ 30,000.00
8	Site Fencing	200	FT	$ 30.00	$ 6,000.00
9	Electrical	1	LS	$ 30,000.00	$ 30,000.00
	Construction Subtotal				**$ 225,800.00**
Bore Sewer Lines Under River					
1	12" 200 psi HDPE Pipe	1,450	LF	$ 40.00	$ 58,000.00
2	Bore Under River	1,450	LF	$ 300.00	$ 435,000.00
3	Prepare Drilling Area	1	LS	$ 5,000.00	$ 5,000.00
4	6" HDPE Pressure Sewer Pipe	1,450	LF	$ 25.00	$ 36,250.00
5	Sewer Transition Fittings	1	LS	$ 2,000.00	$ 2,000.00
	Construction Subtotal				**$ 536,250.00**
Reconstruct Diamond Mill Road & Loop Road, 2,960' @ 24' wide					
1	Subgrade Preparation	7,900	SY	$ 0.75	$ 5,925.00
2	Fabric	7,900	SY	$ 1.50	$ 11,850.00
3	Base Rock Installation	6,200	Ton	$ 15.00	$ 93,000.00
4	3/4"- Crushed Rock	3,000	Ton	$ 18.00	$ 54,000.00
5	Asphalt Surfacing	1,600	Ton	$ 80.00	$ 128,000.00
	Construction Subtotal				**$ 292,775.00**
	Subtotal				$ 1,504,390.00
	Contingency, 10%				$ 150,439.00
	Construction Subtotal				**$ 1,654,829.00**
	Construction Engineering, 10%				$ 165,482.90
	Property/Easement Acquisition				$ 300,000.00
	TOTAL				**$ 2,120,311.90**

JAMES A. SEWELL & ASSOCIATES, LLC 6/11/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Bore Sewer Line Under River					
1	12" 200 psi HDPE Pipe	1,450	LF	$ 40.00	$ 58,000.00
2	Bore Under River	1,450	LF	$ 300.00	$ 435,000.00
3	Prepare Drilling Area	1	LS	$ 5,000.00	$ 5,000.00
4	6" HDPE Pressure Sewer Pipe	1,450	LF	$ 25.00	$ 36,250.00
5	Sewer Transition Fittings	1	LS	$ 2,000.00	$ 2,000.00
	CONSTRUCTION TOTAL				**$ 536,250.00**

JAMES A. SEWELL & ASSOCIATES, LLC 6/5/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost For 20 Year Development Condition

Construction of New Gravity Sewer Collection System

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Gravity Sewer Collection System Construction					
1	15" Gravity Sewerline Extension	1,250	LF	$ 40.00	$ 50,000.00
2	12" Gravity Sewerline Extension	1,575	LF	$ 37.50	$ 59,062.50
3	10" Gravity Sewerline Extension	1,250	LF	$ 33.25	$ 41,562.50
4	8" Gravity Sewerline Extension	355	LF	$ 31.00	$ 11,005.00
5	Highway Crossing	120	LF	$ 400.00	$ 48,000.00
6	Connection to Existing System	1	EA	$ 7,250.00	$ 7,250.00
7	Manholes	18	EA	$ 5,000.00	$ 90,000.00
8	Sewer Services	171	EA	$ 600.00	$ 102,600.00
9	Fiber Optic Locate and Protect	1	LS	$ 7,250.00	$ 7,250.00
	CONSTRUCTION TOTAL				**$ 416,730.00**

JAMES A. SEWELL & ASSOCIATES, LLC 5/25/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost For 20 Year Development Condition

Construct New Pressure Sewer Collection System

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2010 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Pressure Sewer System Construction					
1	6" Pressure Sewerline Extension	1,240	LF	$ 25.00	$ 31,000.00
2	4" Pressure Sewerline Extension	3,200	LF	$ 17.50	$ 56,000.00
3	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
4	Connection to Existing System	1	EA	$ 5,000.00	$ 5,000.00
5	Pressure Sewer Service	171	LF	$ 500.00	$ 85,500.00
6	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
7	Sewage Air Release Valve	1	EA	$ 2,750.00	$ 2,750.00
	Subtotal				**$ 227,250.00**
Individual Pump Station Installation					
1	E-One Explosion Proof Pump Basins	171	EA	$ 10,000.00	$ 1,710,000.00
	Subtotal				**$ 1,710,000.00**
	CONSTRUCTION TOTAL				**$ 1,937,250.00**

JAMES A. SEWELL & ASSOCIATES, LLC 5/25/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: Extend Water & Sewer Utilities to Albeni Falls Area
SUBJECT: Engineer's Opinion of Probable Cost

Construct New Wastewater Treatment Plant to Serve Subdivision

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Wastewater Treatment Plant Construction					
1	Wastewater Treatment Plant	228,000	Gal	$ 15.00	$ 3,420,000.00
	CONSTRUCTION TOTAL				**$ 3,420,000.00**

JAMES A. SEWELL & ASSOCIATES, LLC 6/5/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: **West Bonner Water & Sewer District**
PROJECT: **Extend Water & Sewer Utilities to Albeni Falls Area**
SUBJECT: **Engineer's Opinion of Probable Cost**

Construct Lift Station to Pump Wastewater Across Pend Oreille River

NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Lift Station Construction					
1	8' Diameter Wet Well	1	LS	$ 45,000.00	$ 45,000.00
2	Excavation, Earthwork, Shoring	1	LS	$ 45,000.00	$ 45,000.00
2	Duplex 15hp Non-Clog Pumps with Control Panel	1	LS	$ 45,000.00	$ 45,000.00
3	Valve Vault with Fittings and Piping	1	LS	$ 12,000.00	$ 12,000.00
4	Control Building	112	SF	$ 200.00	$ 22,400.00
5	Stand-by Generator	1	LS	$ 95,000.00	$ 95,000.00
6	Plumbing	1	LS	$ 65,000.00	$ 65,000.00
8	Site Fencing	200	FT	$ 42.00	$ 8,400.00
7	Electrical	1	LS	$ 65,000.00	$ 65,000.00
	CONSTRUCTION TOTAL				**$ 402,800.00**

JAMES A. SEWELL & ASSOCIATES, LLC 6/5/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: **West Bonner Water & Sewer District**
PROJECT: **West Bonner Water System Ext. Water Main River Crossing Alternative Comparison**
SUBJECT: **Engineer's Opinion of Probable Cost**

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Lay Pipe In Trench On River Bottom					
1	12" 200 psi HDPE Casing Pipe in Trench	1,450	LF	$ 40.00	$ 58,000.00
2	6" 200 psi HDPE Carrier Pipe in Casing Pipe	1,450	LF	$ 25.00	$ 36,250.00
3	Trench Across River Bottom	1,450	LF	$ 1,000.00	$ 1,450,000.00
4	Silt Fencing Across River Bottom	1	LS	$ 10,000.00	$ 10,000.00
5	Stage Trenching Equipment	1	LS	$ 10,000.00	$ 10,000.00
6	Sewer Transition Fittings	1	LS	$ 2,000.00	$ 2,000.00
	Construction Subtotal				**$ 1,566,250.00**

JAMES A. SEWELL & ASSOCIATES, LLC 6/5/2012
Newport, Washington TMP

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: West Bonner Water System Ext. Water Main River Crossing Alternative Comparison
SUBJECT: Engineer's Opinion of Probable Cost

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Lay Pipe On River Bottom					
1	12" 200 psi HDPE Casing Pipe	1,450	LF	$ 40.00	$ 58,000.00
2	6" 200 psi HDPE Carrier Pipe	1,450	LF	$ 25.00	$ 36,250.00
3	Lay Sewer Casing and Carrier Across River Bottom	1,450	LF	$ 500.00	$ 725,000.00
4	Pipe Anchoring System	1,450	LF	$ 16.00	$ 23,200.00
5	Stage Equipment	1	LS	$ 10,000.00	$ 10,000.00
6	Sewer Transition Fittings	1	EA	$ 2,000.00	$ 2,000.00
	Construction Subtotal				**$ 854,450.00**

JAMES A. SEWELL & ASSOCIATES, LLC 8/16/2011
Newport, Washington SJF

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: **West Bonner Water & Sewer District**
PROJECT: **West Bonner Water System Extension Water Source Alternative Comparison**
SUBJECT: **Engineer's Opinion of Probable Cost**

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Draw Water from the River					
1	Mechanical Filtration Plant to meet the Surface Water	720,000	GPD	$ 15.00	$10,800,000.00
	Treatment Rule Regualtions				
	Construction Subtotal				**$10,800,000.00**
New 12" Diameter Water Well Construction in Albeni					
1	12" Diameter Water Well with Pump and Panel				
	Well Drilling and Steel Casing	2	LS	$ 19,000.00	$ 38,000.00
	Surface Seal	2	LS	$ 15,000.00	$ 30,000.00
	Submersible Well Pump	2	LS	$ 19,000.00	$ 38,000.00
	12" Pitless Adapter and Well Cap and Comp Installation	2	LS	$ 20,000.00	$ 40,000.00
	Well Screen and Mobilization and Development	2	LS	$ 17,000.00	$ 34,000.00
2	8" C900 Cl. 165 PVC Transport Piping to Pumphouse	100	LF	$ 28.00	$ 2,800.00
3	Parking Area	1	LS	$ 5,000.00	$ 5,000.00
4	Pumphouse	456	SF	$ 250.00	$ 114,000.00
5	Pumphouse Piping	1	LS	$ 55,000.00	$ 55,000.00
6	Pumphouse Electrical	1	LS	$ 55,000.00	$ 55,000.00
	Construction Subtotal				**$ 411,800.00**

JAMES A. SEWELL & ASSOCIATES, LLC — 9/7/2011
Newport, Washington — SJF

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: West Bonner Water System Extension Water Storage Alternative Comparison
SUBJECT: Engineer's Opinion of Probable Cost

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Upgrade Existing Tri-Pro Steel Tank					
1	Tank Rehabilitation	1	LS	$ 250,000.00	$ 250,000.00
2	New 400,000 Gallon Steel Stand Pipe Water Tank	1	LS	$ 500,000.00	$ 500,000.00
3	Tank Pad Construction	300	CY	$ 30.00	$ 9,000.00
4	Valve Vault	1	LS	$ 20,000.00	$ 20,000.00
5	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
6	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
7	12' Gates	2	Each	$ 500.00	$ 1,000.00
8	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
	Construction Subtotal				**$ 808,500.00**
Above Ground Concrete Tank at Proposed Tank Site					
1	Tank Foundation	50	CY	$ 500.00	$ 25,000.00
2	500,000 Gallon Concrete Water Storage Tank Floor	92	CY	$ 750.00	$ 69,000.00
3	500,000 Gallon Concrete Water Storage Tank Wall	200	CY	$ 1,000.00	$ 200,000.00
4	500,000 Gallon Concrete Water Storage Tank Roof	92	CY	$ 2,000.00	$ 184,000.00
5	Architectural Surface Finish	1,800	SF	$ 5.00	$ 9,000.00
6	Tank Excavation and Embankment	1,325	CY	$ 15.00	$ 19,875.00
7	Tank Pad Construction	550	CY	$ 30.00	$ 16,500.00
8	Valve Vault	1	LS	$ 10,000.00	$ 10,000.00
9	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
10	Access Road	3,100	LF	$ 25.00	$ 77,500.00
11	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
12	12' Gates	2	Each	$ 500.00	$ 1,000.00
13	Retaining Wall	800	SF	$ 15.00	$ 12,000.00
14	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
15	Parking Lot	1	LS	$ 2,500.00	$ 2,500.00
	Construction Subtotal				**$ 654,875.00**
Welded Steel Water Storage Tank Construction at Proposed Tank Site					
1	500,000 Gallon Welded Steel Water Storage Tank	1	LS	$ 600,000.00	$ 600,000.00
2	Valve Vault	1	LS	$ 10,000.00	$ 10,000.00
3	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
4	Tank Excavation and Embankment	1,325	CY	$ 15.00	$ 19,875.00
5	Tank Pad Construction	550	CY	$ 30.00	$ 16,500.00
6	Access Road	3,100	LF	$ 25.00	$ 77,500.00
7	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
8	12' Gates	2	Each	$ 500.00	$ 1,000.00
9	Retaining Wall	800	SF	$ 15.00	$ 12,000.00
10	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
11	Parking Lot	1	LS	$ 2,500.00	$ 2,500.00
12	Tank Foundation	50	CY	$ 500.00	$ 25,000.00
	Construction Subtotal				**$ 792,875.00**
Bolted Steel Water Storage Tank Construction at Proposed Tank Site					
1	500,000 Gallon Bolted Steel Water Storage Tank	1	LS	$ 500,000.00	$ 500,000.00
2	Valve Vault	1	LS	$ 10,000.00	$ 10,000.00
3	Drainage Grading	1	LS	$ 2,000.00	$ 2,000.00
4	Tank Excavation and Embankment	1,325	CY	$ 15.00	$ 19,875.00
5	Tank Pad Construction	550	CY	$ 30.00	$ 16,500.00
6	Access Road	3,100	LF	$ 25.00	$ 77,500.00
7	Chain Link Fence	800	LF	$ 30.00	$ 24,000.00
8	12' Gates	2	Each	$ 500.00	$ 1,000.00
9	Retaining Wall	800	SF	$ 15.00	$ 12,000.00
10	Site Rehabilitation	1	LS	$ 2,500.00	$ 2,500.00
11	Parking Lot	1	LS	$ 2,500.00	$ 2,500.00
12	Tank Foundation	50	CY	$ 500.00	$ 25,000.00
	Construction Subtotal				**$ 692,875.00**

JAMES A. SEWELL & ASSOCIATES, LLC 8/16/2011
Newport, Washington SJF

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: **West Bonner Water & Sewer District**
PROJECT: **West Bonner Water System Ext. Water Main River Crossing Alternative Comparison**
SUBJECT: **Engineer's Opinion of Probable Cost**

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Lay Pipe On River Bottom					
1	12" 200 psi HDPE Pipe	1,450	LF	$ 70.00	$ 101,500.00
2	Lay Water Main Across River Bottom	1,450	LF	$ 500.00	$ 725,000.00
3	Pipe Anchoring System	1,450	LF	$ 16.00	$ 23,200.00
4	Stage Equipment	1	LS	$ 10,000.00	$ 10,000.00
5	Water Transition Vaults	2	EA	$ 10,000.00	$ 20,000.00
6	Water Transition Valves and Fittings	1	LS	$ 15,000.00	$ 15,000.00
	Construction Subtotal				**$ 894,700.00**
Lay Pipe In Trench On River Bottom					
1	12" 200 psi HDPE Pipe in Trench	1,450	LF	$ 70.00	$ 101,500.00
2	Trench Across River Bottom	1,450	LF	$ 1,000.00	$ 1,450,000.00
3	Silt Fencing Across River Bottom	1	LS	$ 10,000.00	$ 10,000.00
3	Stage Trenching Equipment	1	LS	$ 10,000.00	$ 10,000.00
4	Water Transition Vaults	2	EA	$ 10,000.00	$ 20,000.00
5	Water Transition Valves and Fittings	1	LS	$ 15,000.00	$ 15,000.00
	Construction Subtotal				**$ 1,606,500.00**
Bore Under River Bottom					
1	12" 200 psi HDPE Pipe	1,450	LF	$ 40.00	$ 58,000.00
2	Bore Under River	1,450	LF	$ 300.00	$ 435,000.00
3	Prepare Drilling Area	1	LS	$ 5,000.00	$ 5,000.00
4	Water Transition Vaults	2	EA	$ 10,000.00	$ 20,000.00
5	Water Transition Valves and Fittings	1	LS	$ 15,000.00	$ 15,000.00
	Construction Subtotal				**$ 533,000.00**

JAMES A. SEWELL & ASSOCIATES, LLC 5/25/2012
Newport, Washington SJF

ENGINEER'S OPINION OF PROBABLE COST

CLIENT: West Bonner Water & Sewer District
PROJECT: West Bonner Water System Ext. Water Dist. Sys. Alternative Comparison
SUBJECT: Engineer's Opinion of Probable Cost For 20 Year Development Condition

Total Project Cost Estimate
NOTE: Prices are based on Davis-Bacon Wage Rates for the 2011 Construction Year

ITEM	DESCRIPTION	SIZE/CAPACITY	UNITS	UNIT PRICE	PRICE
Water System Construction Alternative 2					
Install Water Line Through Rotary Parking Lot					
3	12" C900 Class 165 PVC Water Pipe, Installed	10,844	LF	$ 38.00	$ 412,072.00
4	Reconstruct Rotary Parking Area	1	LS	$ 8,100.00	$ 8,100.00
5	8" C900 Class 165 PVC Water Pipe, Installed	350	LF	$ 28.00	$ 9,800.00
6	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
7	12" Gate Valve	20	EA	$ 3,000.00	$ 60,000.00
8	8" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
9	Fire Hydrant	11	EA	$ 4,200.00	$ 46,200.00
10	Air Release Valves	1	EA	$ 2,500.00	$ 2,500.00
11	Water Service	20	EA	$ 750.00	$ 15,000.00
12	Site Rehabilitation	1	LS	$ 5,000.00	$ 5,000.00
13	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	CONSTRUCTION TOTAL				**$ 608,672.00**
Water System Construction Alternative 3					
Install Water Pipe at Easement East of Rotary Building					
3	12" C900 Class 165 PVC Water Pipe, Installed	10,400	LF	$ 38.00	$ 395,200.00
4	8" C900 Class 165 PVC Water Pipe, Installed	350	LF	$ 28.00	$ 9,800.00
5	Highway Crossing	120	LF	$ 350.00	$ 42,000.00
6	12" Gate Valve	20	EA	$ 3,000.00	$ 60,000.00
7	8" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
8	Fire Hydrant	11	EA	$ 4,200.00	$ 46,200.00
9	Air Release Valves	1	EA	$ 2,500.00	$ 2,500.00
10	Water Service	20	EA	$ 750.00	$ 15,000.00
11	Site Rehabilitation	1	LS	$ 5,000.00	$ 5,000.00
12	Fiber Optic Locate and Protect	1	LS	$ 5,000.00	$ 5,000.00
	CONSTRUCTION TOTAL				**$ 583,700.00**

APPENDIX G

CITY OF OLDTOWN/WEST BONNER WATER AND SEWER DISTRICT FINANCIAL STATEMENTS

Date: 9/1/2010
Project: West Bonner W-S Extension - West Bonner W-S District
Subject: Expected Operation, Maintenance & Replacement Budget - West Bonner Water and Sewer District

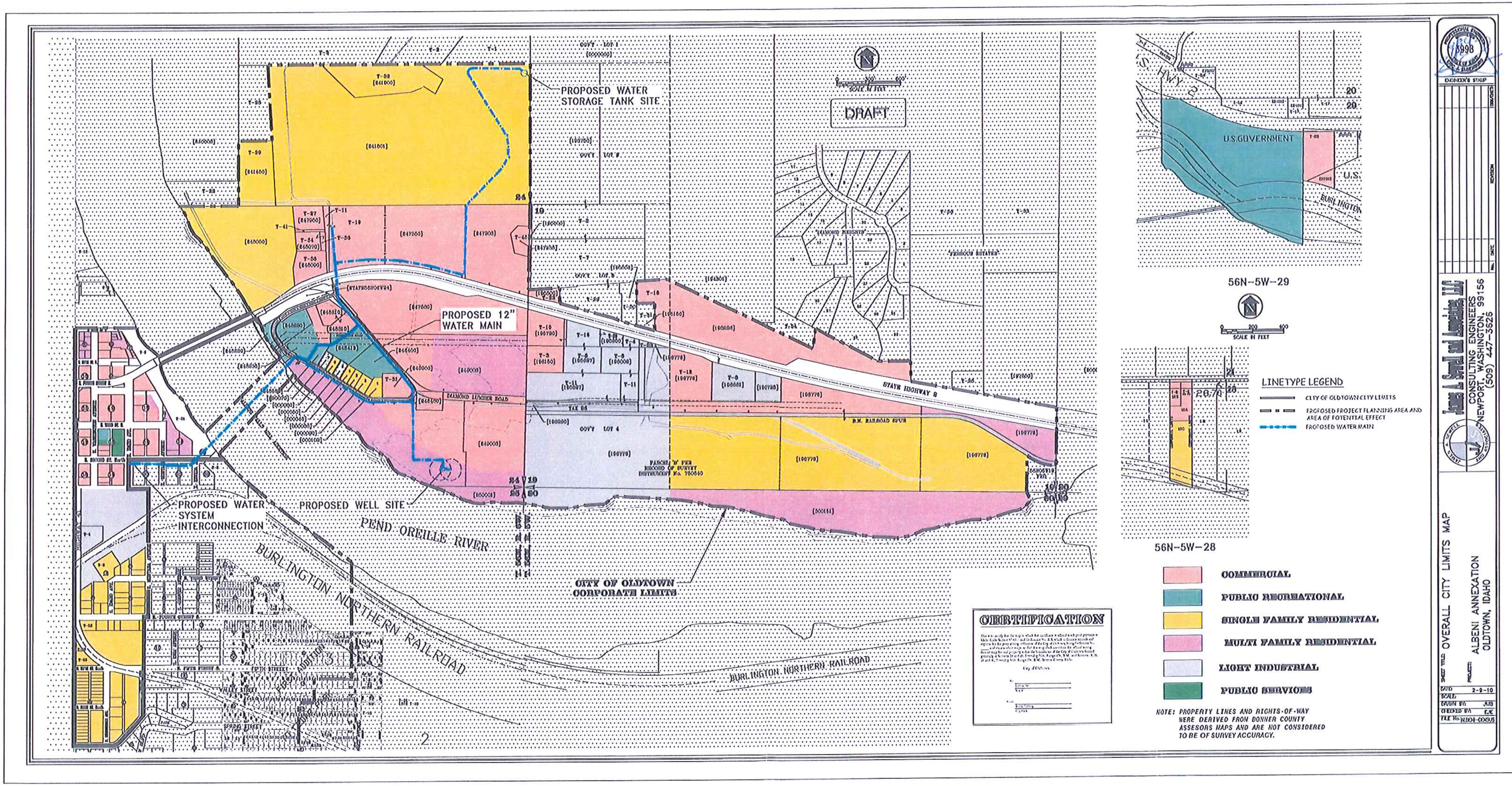
Item	Description	BUDGET YEAR 2009	2008	2007	2006	First Year O&M
	REVENUE					
	Operating Revenues					
	Charges for Services: Water	$ 72,983.00	$ 72,989.00	$ 82,776.00	$ 79,737.92	$ 78,000.00
	Charges for Services: Sewer	$ 92,184.00	$ 94,770.00	$ 83,191.00	$ 75,862.28	$ 98,000.00
	Taxes - property and sales	$ 9,870.00	$ 11,348.00	$ 11,190.00	$ 11,980.87	$ 12,000.00
	Hook-up fees	$ -	$ 4,400.00	$ 2,200.00	$ 2,200.00	$ 3,000.00
	Other income	$ -	$ 6,160.00	$ -	$ -	
	Sludge Hauling	$ 8,834.00	$ 12,237.00	$ 3,593.00	$ 15,230.20	$ 9,000.00
	Total Operating Revenues	$ 183,871.00	$ 201,904.00	$ 182,950.00	$ 185,011.27	$ 200,000.00
	EXPENSES					
	Operating Expenses					
	Bank Fees	$ -	$ 25.00	$ 13.00	$ 8.50	$ -
	Depreciation	$ 31,491.00	$ 32,361.00	$ 35,029.00	$ 34,821.00	$ 38,000.00
	Dues and subscriptions	$ 474.00	$ 462.00	$ 736.00	$ 170.00	$ 500.00
	Insurance - liability	$ 3,138.00	$ 3,046.00	$ 2,986.00		$ 3,000.00
	Insurance - medical/disability	$ 8,210.00	$ 5,989.00	$ 5,059.00	$ 2,319.55	$ 10,000.00
	Licenses and permits	$ 90.00	$ 1,077.00	$ 1,077.00	$ 85.00	$ 1,000.00
	Miscellaneous	$ 1,113.00	$ 255.00	$ 612.00	$ 150.00	$ 1,000.00
	Office supplies	$ 1,029.00	$ 476.00	$ 550.00	$ 796.09	$ 1,000.00
	Operating lease	$ 27,800.00	$ 27,800.00	$ 27,800.00	$ 27,800.00	$ 27,800.00
	Payroll taxes and workers' compensation	$ 4,762.00	$ 3,986.00	$ 3,281.00	$ 3,627.94	$ 6,000.00
	Postage and delivery	$ 906.00	$ 709.00	$ 709.00	$ 687.69	$ 1,000.00
	Printing, publishing and recording	$ 966.00	$ 331.00	$ 1,137.00	$ 574.63	$ 1,000.00
	Repairs and maintenance	$ 11,687.00	$ 10,033.00	$ 5,515.00	$ 20,439.79	$ 15,000.00
	Retirement contributions	$ 5,488.00	$ 4,466.00	$ 3,730.00		$ 7,000.00
	Sewer plant operations and management fee	$ 61,740.00	$ 58,550.00	$ 56,958.00	$ 40,965.51	$ 63,000.00
	Small tools and supplies	$ 3,439.00	$ 3,880.00	$ 3,668.00	$ 2,488.05	$ 3,500.00
	Utilities and telephone	$ 5,405.00	$ 5,764.00	$ 4,843.00	$ 3,666.89	$ 6,000.00
	Vehicle and mileage	$ 2,144.00	$ 3,287.00	$ 1,882.00	$ 1,772.45	$ 3,000.00
	Wages	$ 56,560.00	$ 44,535.00	$ 39,100.00	$ 44,222.15	$ 58,000.00
	Water Testing	$ 505.00	$ 352.00	$ 914.00	$ 376.00	$ 550.00
	Capital Expenditures	$ -	$ -	$ -	$ -	$ -
	Cost share	$ -	$ -	$ -	$ 107.71	$ -
	Education and training	$ -	$ -	$ -	$ 30.00	$ -
	Equipment rental	$ -	$ -	$ -	$ 25.00	$ -
	District Supplies	$ -	$ -	$ -	$ 557.74	$ -
	Professional fees	$ 10,663.00	$ -	$ -	$ 3,147.28	$ -
	State fees	$ -	$ -	$ -	$ 2,064.00	$ -
	Shipping and handling	$ -	$ -	$ -	$ 199.47	$ -
	Chlorine gas	$ -	$ -	$ -	$ 475.30	$ -
	Compressed gas	$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
	Total Operating Costs	$ 237,610.00	$ 207,384.00	$ 195,599.00	$ 191,577.74	$ 246,350.00
	Non-Operating Income (Expenses)					
	Interest income	$ 4,693.00	$ 8,834.00	$ 12,543.00	$ 8,608.60	$ -
	Interest expense	$ -	$ (724.00)	$ (1,087.00)	$ 1,412.50	$ -
	Logging	$ -	$ -	$ 3,515.00	$ 13,987.22	$ -
	(Loss) on sale of equipment	$ -	$ (720.00)	$ -	$ -	$ -
	Total Non-Operating Income (Expenses)	$ 4,693.00	$ 7,390.00	$ 14,971.00	$ 24,008.32	$ -
	OTHER COSTS					
	Total Operating Costs	$ 237,610.00	$ 207,384.00	$ 195,599.00	$ 191,577.74	$ 246,350.00
	Net Operating Income	$ (53,739.00)	$ (5,480.00)	$ (12,649.00)	$ (6,566.47)	$ (46,350.00)

Date: 9/1/2010
Project: West Bonner W-S Extension - West Bonner W-S District
Subject: Expected Operation, Maintenance & Replacement Budget - City of Oldtown

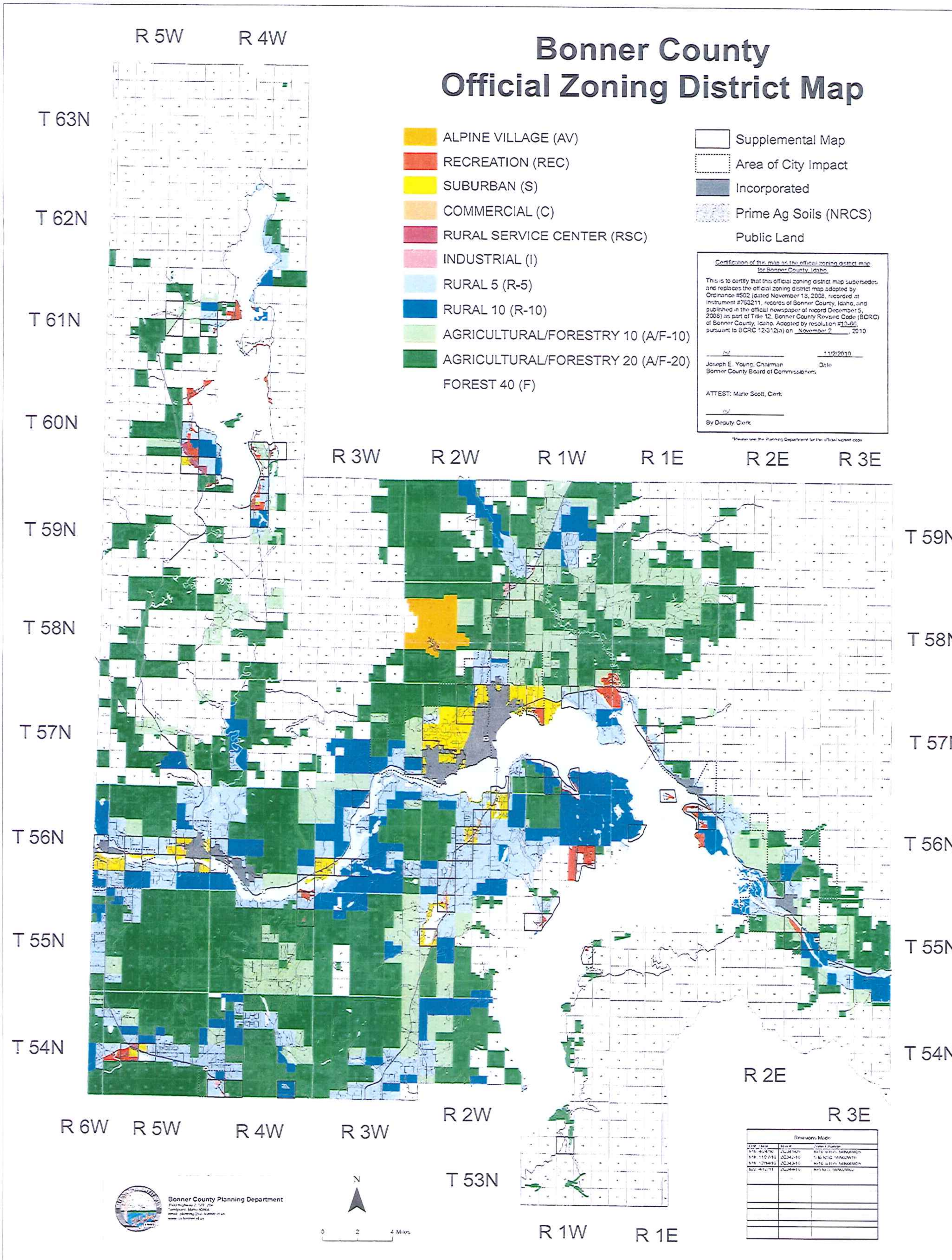
Item	Description	BUDGET YEAR 2008	2007	2006
	REVENUE			
	Contribution and other	$ 165.00	$ 5,221.00	$ -
	County road and bridge	$ 3,883.00	$ 3,594.00	$ 4,144.08
	Fines	$ 570.00	$ 279.00	$ -
	Franchise fees and permits	$ 1,901.00	$ 2,097.00	$ 1,871.62
	Grants	$ 18,632.00	$ 70,800.00	$ 39,948.67
	Interest	$ 3,972.00	$ 4,955.00	$ 1,285.38
	Licenses	$ 4,748.00	$ 4,518.00	$ 4,759.00
	Snow plowing	$ 10,890.00	$ 5,790.00	$ 3,300.00
	State highway and user fees	$ 7,605.00	$ 8,069.00	$ 7,816.35
	State liquor revenue	$ 110,096.00	$102,534.00	$ 71,703.00
	State revenue sharing	$ 7,368.00	$ 8,121.00	$ 7,695.84
	Taxes - Bonner county	$ 12,282.00	$ 12,534.00	$ 13,752.19
	Taxes - State sales	$ 3,136.00	$ 3,288.00	$ -
	Zoning Maps	$ -	$ -	$ 4.50
	Zoning permit fees	$ -	$ -	$ 60.00
	Surplus equipment sales	$ -	$ -	$ -
	Avista pay station	$ -	$ -	$ 160.50
	Bonner County fines and other fees	$ -	$ -	$ 2,051.90
	Gain on sale of equipment	$ -	$ -	$ 8,433.01
	other	$ -	$ -	$ 15.00
		$ -	$ -	$ -
	Total Operating Revenues	$ 185,248.00	$231,800.00	$ 167,001.04
	EXPENSES			
	General government	$ 45,314.00	$ 40,660.00	$ -
	Public safety	$ 6,825.00	$ 6,743.00	$ -
	Streets and street maintenance	$ 54,716.00	$ 37,171.00	$ 3,135.37
	Parks	$ 17,866.00	$ 30,115.00	$ -
	Capital outlay: equipment and construction	$ 82,349.00	$ 71,067.00	$ -
	Boat Launch PUD MT	$ -	$ -	$ 725.37
	Boat launch - grant expense	$ -	$ -	$ -
	Bank fees	$ -	$ -	$ 2.50
	Capital expenditures	$ -	$ -	$ -
	Contributions	$ -	$ -	$ 138.00
	Depreciation expense	$ -	$ -	$ 30,839.00
	Dues and Subscriptions	$ -	$ -	$ 838.00
	District supplies	$ -	$ -	$ 557.78
	Education and training	$ -	$ -	$ -
	Election	$ -	$ -	$ 136.78
	Equipment rental	$ -	$ -	$ 25.00
	Fire protection	$ -	$ -	$ 2,975.00
	Freight charges	$ -	$ -	$ -
	Insurance	$ -	$ -	$ 3,535.45
	Miscellaneous	$ -	$ -	$ 205.60
	Office supplies	$ -	$ -	$ 662.99
	Payroll	$ -	$ -	$ 42,728.60
	Payroll taxes	$ -	$ -	$ 2,352.10
	Postage and delivery	$ -	$ -	$ 218.20
	Police protection	$ -	$ -	$ 3,600.00
	Printing and reproduction	$ -	$ -	$ 93.00
	Professional fees	$ -	$ -	$ 9,716.55
	Publication and recording	$ -	$ -	$ 1,100.27
	Repairs and maintenance	$ -	$ -	$ 2,067.99
	City park maintenance	$ -	$ -	$ -
	Solid waste disposal	$ -	$ -	$ 35.50
	small tools and supplies	$ -	$ -	$ 2,466.76
	street grant expense	$ -	$ -	$ 2,963.15
	Travel	$ -	$ -	$ 2,332.58
	Utilities	$ -	$ -	$ 7,793.86
	question	$ -	$ -	$ 774.00
	Total Operating Costs	$ 207,070.00	$185,756.00	$ 122,019.40
	Non-Operating Income (Expenses)			
	Interest income	$ -	$ -	$ -
	Interest expense	$ -	$ -	$ -
	Logging	$ -	$ -	$ -
	(Loss) on sale of equipment	$ -	$ -	$ -
	Total Non-Operating Income (Expenses)	$ -	$ -	$ -
	Total Operating Costs	$ 207,070.00	$185,756.00	$ 122,019.40
	Net Operating Income	$ (21,822.00)	$ 46,044.00	$ 44,981.64

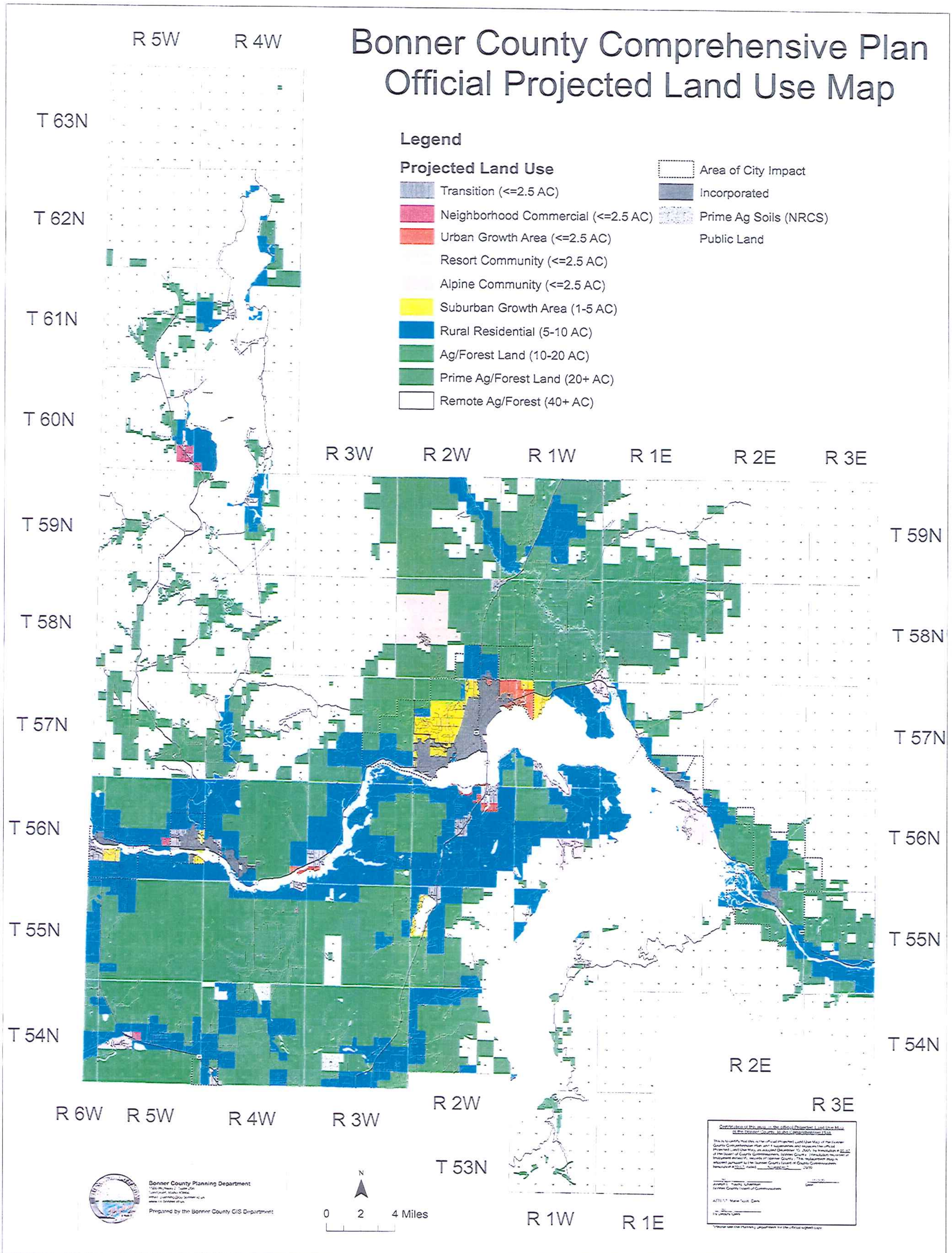
APPENDIX H

ZONING MAPS



DRAFT
PROPOSED WATER STORAGE TANK SITE
PROPOSED 12" WATER MAIN
PROPOSED WELL SITE
PROPOSED WATER SYSTEM INTERCONNECTION
STATE HIGHWAY 2
DIAMOND LUSCHER ROAD
B.N. RAILROAD SPUR
PEND OREILLE RIVER
BURLINGTON NORTHERN RAILROAD
CITY OF OLDTOWN CORPORATE LIMITS
GOVT LOT 4
U.S.GOVERNMENT
56N-5W-29
56N-5W-28
LINETYPE LEGEND
CITY OF OLDTOWN CITY LIMITS
PROPOSED PROJECT PLANNING AREA AND AREA OF POTENTIAL EFFECT
PROPOSED WATER MAIN
COMMERCIAL
PUBLIC RECREATIONAL
SINGLE FAMILY RESIDENTIAL
MULTI FAMILY RESIDENTIAL
LIGHT INDUSTRIAL
PUBLIC SERVICES
NOTE: PROPERTY LINES AND RIGHTS-OF-WAY WERE DERIVED FROM BONNER COUNTY ASSESORS MAPS AND ARE NOT CONSIDERED TO BE OF SURVEY ACCURACY.
CERTIFICATION
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3526
OVERALL CITY LIMITS MAP
ALBENI ANNEXATION
OLDTOWN, IDAHO
2-9-10


Bonner County
Official Zoning District Map
ALPINE VILLAGE (AV)
RECREATION (REC)
SUBURBAN (S)
COMMERCIAL (C)
RURAL SERVICE CENTER (RSC)
INDUSTRIAL (I)
RURAL 5 (R-5)
RURAL 10 (R-10)
AGRICULTURAL/FORESTRY 10 (A/F-10)
AGRICULTURAL/FORESTRY 20 (A/F-20)
FOREST 40 (F)
Supplemental Map
Area of City Impact
Incorporated
Prime Ag Soils (NRCS)
Public Land
Certification of this map as the official zoning district map for Bonner County, Idaho.
This is to certify that this official zoning district map supersedes and replaces the official zoning district map adopted by Ordinance #502 (dated November 18, 2008, recorded at Instrument #763211, records of Bonner County, Idaho, and published in the official newspaper of record December 5, 2008) as part of Title 12, Bonner County Revised Code (BCRC) of Bonner County, Idaho. Adopted by resolution #10-66, pursuant to BCRC 12-312(a) on November 2, 2010
/s/
11/2/2010
Joseph E. Young, Chairman
Bonner County Board of Commissioners
Date
ATTEST: Marie Scott, Clerk
/s/
By Deputy Clerk
*Please see the Planning Department for the official signed copy
R 5W
R 4W
T 63N
T 62N
T 61N
T 60N
T 59N
T 58N
T 57N
T 56N
T 55N
T 54N
T 53N
R 3W
R 2W
R 1W
R 1E
R 2E
R 3E
R 6W
Revisions Made
Bonner County Planning Department
N
0
2
4 Miles


Bonner County Comprehensive Plan
Official Projected Land Use Map
Legend
Projected Land Use
Transition (<=2.5 AC)
Neighborhood Commercial (<=2.5 AC)
Urban Growth Area (<=2.5 AC)
Resort Community (<=2.5 AC)
Alpine Community (<=2.5 AC)
Suburban Growth Area (1-5 AC)
Rural Residential (5-10 AC)
Ag/Forest Land (10-20 AC)
Prime Ag/Forest Land (20+ AC)
Remote Ag/Forest (40+ AC)
Area of City Impact
Incorporated
Prime Ag Soils (NRCS)
Public Land
R 5W
R 4W
R 3W
R 2W
R 1W
R 1E
R 2E
R 3E
R 6W
T 63N
T 62N
T 61N
T 60N
T 59N
T 58N
T 57N
T 56N
T 55N
T 54N
T 53N
N
0
2
4 Miles
Bonner County Planning Department
Prepared by the Bonner County GIS Department

APPENDIX I

TRI-PRO WATER QUALITY TEST, ROTARY BUILDING WELL MICRO PARTICULATE ANALYSIS RESULTS, AND WBWSD WATER QUALITY TEST RESULTS

ATL Accurate Testing Labs, LLC

7950 Meadowlark Way Coeur d'Alene, ID 83815 Phone (208) 762 8378 Fax (208) 762 9082
Web site: www.accuratetesting.com E-mail: info@accuratetesting.com

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Order No.: **2004050031**
Description: West Bonner Water Dist 1
Date Received: 05/04/2004 10:35:00 AM

Certificate of Analysis

Sample No.: 2
Location: 215 N. Washington Ave PWS# 1090151
Sample Type: Distribution

Matrix: Drinking Water
D/T Collected: 05/04/2004 09:30:00 AM
Collected By: Karel Mrazek

Analyte	Result	Unit	PQL	Method	Analysis Date	Analyst
Asbestos Fibers	ND	MFL	0.15	EPA 100.2	05/07/2004	EMS

Sub-Lab: EMSL Analytical, Inc.

Laboratory Supervisor 05/14/2004
Walter Mueller

ND: Not Detected PQL: Practical Quantitation Limit

Lab EPA ID No:. ID00912	Lab Sample #: 76563
Date Received: 05/02/2007	Date Reported by Lab: 05/11/2007
Compliance or Replacement Sample: Compliance	
Date Collected: 05/02/2007	Time Collected: 07:30:
Sample Type: Plant Tap	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer Dist
Sampling Location: Springs E0005119	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel						
1015	Cadmium							1074	Antimony						
1020	Chromium							1075	Beryllium						
1035	Mercury							1085	Thallium						
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate	1.2	10.0	0.5	EPA 300.0	05/02/2007	WM	1005	Arsenic	ND	0.010	.005	EPA 200.9	05/11/2007	WM
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium						
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

05/11/2007

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2007050046 3

Lab EPA ID No:. ID00912	Lab Sample #: 43978
Date Received: 05/04/2004	Date Reported by Lab: 05/05/2004
Compliance or Replacement Sample: Compliance	
Date Collected: 05/04/2004	Time Collected: 09:30:
Sample Type: Raw Water	
PWS # 1090151 RE	PWS Name: West Bonner Water
Sampling Location: Springs	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel						
1015	Cadmium							1074	Antimony						
1020	Chromium							1075	Beryllium						
1035	Mercury							1085	Thallium						
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate							1005	Arsenic	ND	0.050	.004	EPA 200.9	05/05/2004	WM
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium						
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Lab Supervisor's Signature 05/05/2004
Walter Mueller

ATL Order No.: 2004050031 1

Water System Name: West Bonner Water & Sewer Dist		PWS ID No.: 1090151 RE
Collector: Scott Emch	Date Collected: 05/03/2012	County: Bonner
Report Results to: West Bonner Water & Sewer Dist Karel Mrazek 215 N. Washington Ave Oldtown, ID 83822		
Phone: (208) 437-3833	Fax: (208) 437-3833	
E-Mail:		

COLIFORM BACTERIA
ANALYSIS REPORT
CONTAMINANT ID# 3100

Type of System: **Public**

Type of Sample: **Compliance Sample**

Lab Order No.: 2012050078

Water system info must be fully filled out or samples will not be run. Private samples do not need PWS# or Chlorine residual. Your sample will be analyzed for TOTAL COLIFORMS unless you specify analysis under Remarks.

Laboratory Name:
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378 Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab EPA ID No: ID00912

For PWS only, if this is a repeat sample, mark the date of the ORIGINAL POSITIVE SAMPLE.

Sample Number	Sample Type	Sample Location	Time Collected	Chlorine Residual ppm	Original Sample Date	Total Coliform Method: 9223B-PA	E. Coli Method: 9223B-PA
130128	RS-Routine Sample	215 N. Washington Ave	08:50	0.28		Absent	Absent
130129	RS-Routine Sample	Springs	09:20			Absent	Absent

Sample Transportation by (Name):	Scott Emch	Date/Time:	05/03/2012 11:00	Analyst: AC Date Analyzed: 05/04/2012
Sample Received by (Name):		Date/Time:	05/03/2012 11:00	Supervisor: Rhena Cooper
Remarks:				Date Reviewed and Printed: 05/04/12

COLIFORM BACTERIA
ANALYSIS REPORT
CONTAMINANT ID# 3100

Water System Name: West Bonner Water & Sewer Dist		PWS ID No.: 1090151 RE
Collector: Scott Emch	Date Collected: 04/05/2012	County: Bonner
Report Results to: West Bonner Water & Sewer Dist Karel Mrazek 215 N. Washington Ave Oldtown, ID 83822		
Phone: (208) 437-3833	Fax: (208) 437-3833	
E-Mail:		

Type of System: **Public**

Type of Sample: **Compliance Sample**

Lab Order No.: 2012040082

Water system info must be fully filled out or samples will not be run. Private samples do not need PWS# or Chlorine residual. Your sample will be analyzed for TOTAL COLIFORMS unless you specify analysis under Remarks.

Laboratory Name:
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378 Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab EPA ID No: ID00912

For PWS only, if this is a repeat sample, mark the date of the ORIGINAL POSITIVE SAMPLE.

Sample Number	Sample Type	Sample Location	Time Collected	Chlorine Residual ppm	Original Sample Date	Total Coliform Method: 9223B-PA	E. Coli Method: 9223B-PA
129379	RS-Routine Sample	215 N. Washington Ave	08:45	0.29		Absent	Absent
129380	W-Untreated (source)	Springs	08:00			Absent	Absent

Sample Transportation by (Name):	Scott Emch	Date/Time:	04/05/2012 10:23	Analyst: AC Date Analyzed: 04/06/2012
Sample Received by (Name):		Date/Time:	04/05/2012 10:23	Supervisor: Rhena Cooper
Remarks:				Date Reviewed and Printed: 04/06/12

COLIFORM BACTERIA
ANALYSIS REPORT
CONTAMINANT ID# 3100

Water System Name: West Bonner Water & Sewer Dist		PWS ID No.: 1090151 RE
Collector: Scott Emch	Date Collected: 03/06/2012	County: Bonner
Report Results to: West Bonner Water & Sewer Dist Karel Mrazek 215 N. Washington Ave Oldtown, ID 83822		
Phone: (208) 437-3833	Fax: (208) 437-3833	
E-Mail:		

Type of System: **Public**

Type of Sample: **Compliance Sample**

Lab Order No.: 2012030059

Water system info must be fully filled out or samples will not be run. Private samples do not need PWS# or Chlorine residual. Your sample will be analyzed for TOTAL COLIFORMS unless you specify analysis under Remarks.

Laboratory Name:
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378 Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab EPA ID No: ID00912

For PWS only, if this is a repeat sample, mark the date of the ORIGINAL POSITIVE SAMPLE.

Sample Number	Sample Type	Sample Location	Time Collected	Chlorine Residual ppm	Original Sample Date	Total Coliform Method: 9223B-PA	E. Coli Method: 9223B-PA
128614	RS-Routine Sample	215 N. Washington	09:30	0.26		Absent	Absent
128615	W-Untreated (source)	Springs	10:00			Absent	Absent

Sample Transportation by (Name):	Scott Emch	Date/Time:	03/06/2012 11:30	Analyst: AC Date Analyzed: 03/07/2012
Sample Received by (Name):		Date/Time:	03/06/2012 11:30	Supervisor: Rhena Cooper
Remarks:				Date Reviewed and Printed: 03/07/12

State of Idaho, Department of Health and Welfare
Bureau of Laboratories - Coeur d'Alene Branch Lab
2195 Ironwood Court, Coeur d'Alene, Idaho 83814
DRINKING WATER REPORT - CHEMICAL ANALYSIS

LAB: COEUR D'ALENE, Phone: (208) 769-1432
Branch Laboratory Supervisor: Mike Brodwater
Inorganic Chemistry Section: Peggy Albertson

WEST BONNER WATER DIST. #1
SHEILA GORMLEY
214 N WASHINGTON AVE
OLDTOWN, ID 83822

Tracking Number: 11197-2503/
(Please Refer to this Tracking Number on any communications)

Water System: WEST BONNER WATER DISTRICT #1 (1090151)
County:
Sample Location: PLANT TAP
Collected by: KLAUS
Type of sample: Plant Tap
Preservation: None, HNO3, Cooled 4° C

Date Collected: 11/19/97 Date Received in Lab: 11/19/97
Time Collected: 08:30

ID	TEST PERFORMED	RESULTS	COMPLETED	ANST
1074	Antimony	<0.005 (mg/l)	11/20/97	PA
1005	Arsenic	<0.010 (mg/l)	11/20/97	PA
1010	Barium	<0.1 (mg/l)	11/21/97	KH
1075	Beryllium	<0.001 (mg/l)	11/20/97	PA
1015	Cadmium	<0.0005 (mg/l)	11/25/97	PA
1020	Chromium	<0.010 (mg/l)	12/09/97	PA
1025	Fluoride, specific ion	<0.12 (mg/l)	12/01/97	SP
1035	Mercury	<0.0005 (mg/l)	12/09/97	PA
1036	Nickel	<0.005 (mg/l)	11/20/97	PA
1045	Selenium	<0.005 (mg/l)	11/19/97	PA
1052	Sodium	3.0 (mg/l)	12/18/97	PA
1085	Thallium	<0.002 (mg/l)	11/21/97	PA

No limit at this time; proposed 20.0 mg/L but not set. Maybe next year.

Lab EPA ID No:. ID00912	Lab Sample #: 45137		
Date Received: 06/03/2004	Date Reported by Lab: 06/14/2004		
Compliance or Replacement Sample: Compliance			
Date Collected: 06/03/2004	Time Collected: 08:30:		
Sample Type: Plant Tap			
PWS # 1090151 RE	PWS Name: West Bonner Water Dist 1		
Sampling Location: Springs		Tag # E0005119	
Collector's Name: Karel Mrazek		Phone: (208) 437-3833	

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium	0.06	2.000	0.02	EPA 200.7	06/07/2004	WM	1036	Nickel	ND	0.10	0.02	EPA 200.7	06/07/2004	WM
1015	Cadmium	ND	0.005	.002	EPA 200.7	06/07/2004	WM	1074	Antimony	ND	0.006	.005	EPA 200.9	06/08/2004	WM
1020	Chromium	ND	0.100	0.01	EPA 200.7	06/07/2004	WM	1075	Beryllium	ND	0.004	.002	EPA 200.7	06/07/2004	WM
1035	Mercury	ND	0.002	.0005	EPA 245.1	06/14/2004	WM	1085	Thallium	ND	0.002	.001	EPA 200.9	06/08/2004	WM
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate	1.0	10.0	0.5	EPA 300.0	06/04/2004	WM	1005	Arsenic	ND	0.050	.004	EPA 200.9	06/07/2004	WM
1041	Nitrite							1025	Fluoride	ND	4.000	0.2	EPA 300.0	06/04/2004	WM
1045	Selenium	ND	0.050	.005	EPA 200.9	06/08/2004	WM	1052	Sodium	3.47		0.30	EPA 200.7	06/07/2004	WM
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate	6.4	250.0	1.50	EPA 300.0	06/04/2004	WM
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

06/14/2004

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2004060092 1

Lab EPA ID No:. ID00912	Lab Sample #: 115462	
Date Received: 11/09/2010	Date Reported by Lab: 11/22/2010	
Compliance or Replacement Sample: Compliance		
Date Collected: 11/09/2010	Time Collected: 08:45:	
Sample Type: Plant Tap		
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer	
Sampling Location: Springs		Tag #
Collector's Name: Scott Emch		Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
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Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel	ND	0.10	0.02	EPA 200.7	11/19/2010	WM
1015	Cadmium							1074	Antimony	ND	0.006	.005	EPA 200.9	11/17/2010	WM
1020	Chromium							1075	Beryllium	ND	0.004	.002	EPA 200.7	11/19/2010	WM
1035	Mercury							1085	Thallium	ND	0.002	.001	EPA 200.9	11/18/2010	WM
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate	1.3	10.0	0.5	EPA 300.0	11/09/2010	WM	1005	Arsenic	ND	0.010	0.003	EPA 200.9	11/11/2010	WM
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium	4.79		0.30	EPA 200.7	11/19/2010	WM
1024	Cyanide	ND	0.200	0.04	SM 4500CN	11/22/2010	AC								
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

11/22/2010
Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2010110183 1

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LEAD/COPPER DISTRIBUTION TAP SAMPLES

Public Drinking Water Chemical Analysis Report

Lab Tracking#:	Sampling Location:	Date Collected:	Time Collected:	Lead mg/L (frds# 1030)	Copper mg/L (frds# 1022)
113183	Robert Sedlacek 311 S. Grover Ave	09/13/2010	06:30:	0.003	0.12
113184	Carl Kloepfer 407 E. 4th Street S.	09/13/2010	07:30:	ND	0.03
113185	Bobby Jones 625 S. State Ave	09/13/2010	07:30:	ND	0.05
113186	Lonnie Orr 614 S. Meadowdale Ave	09/13/2010	04:00:	ND	0.08
113187	Randy Edgar 601 E. Ockert St S.	09/13/2010	06:35:	0.003	0.04

Analyst: WM	Analysis Date: 09/17/2010	Lead MDL: 0.002	Copper MDL: 0.01	Nitic Acid Preservative Used: Yes

Lab Tracking Number:

ACTION-LEVEL FAILURE SAMPLES (Water Quality Parameters)

Check if Desired	FRDS Number	ANALYTE	Analyst	Analysis Date	Result	Sample Location (or Tag# if source sample)
	1030	Source Lead (mg/L)				Note: Public water systems serving less than 100,000 people need to collect water quality parameter samples only if the results of the distribution samples in the block above indicate that the 90%ile level of lead is above 0.015 mg/L or the 90%ile of copper is above 1.3 mg/L.
	1022	Source Copper (mg/L)				
	1925	pH (Standard pH units)				
	1996	Temperature (Degrees Celsius)				
	1016	Calcium Hardness (as CaCO3 mg/L)				
	1927	Alkalinity (as CaCO3 mg/L)				
	1930	Total Sissolved Solids (mg/L)				
	1926	Conductivity (uS)				
	1044	Orthophosphate (as PO4 mg/L)				
	1049	Silica (as SiO2 mg/L)				

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

PWS #	1090151 RE
Date Collected:	09/13/2010
Date Received:	09/13/2010
Time Collected:	
Date Reported by Lab	09/20/2010
# of pages in this report	1
DEQ USE ONLY	
90%ile Lead	
90%ile Copper	
# Pb/Cu Samples Reported	
Paperwork Attached?	☐ Yes ☐ No

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Lab Supervisor's Signature
Walter Mueller

09/20/2010

ATL Order No.: 2010090297
Lab EPA ID No:. ID00912

ATL Accurate Testing Labs, LLC
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LEAD/COPPER DISTRIBUTION TAP SAMPLES

Public Drinking Water Chemical Analysis Report

Lab Tracking#:	Sampling Location:	Date Collected:	Time Collected:	Lead mg/L (frds# 1030)	Copper mg/L (frds# 1022)
46195	Oldtown City Hall 215 N. Washington Ave	07/12/2004	05:00:	0.008	0.03
46196	Randy Edgar 601 E. Ockert St. S.	07/12/2004	06:30:	0.005	0.04
46197	Lyle Orr 613 S. Meadowdale Ave	07/11/2004	07:50:	0.002	0.05
46198	Robert Sedlacek 311 S. Grover Ave	07/12/2004	06:30:	0.002	0.12
46199	Lonnie Orr 614 S. Meadowdale Ave	07/11/2004	08:00:	0.002	0.15

Analyst: WM	Analysis Date: 07/16/2004	Lead MDL: 0.002	Copper MDL: 0.01	Nitic Acid Preservative Used: Yes

ACTION-LEVEL FAILURE SAMPLES (Water Quality Parameters)

Lab Tracking Number:

Check if Desired	FRDS Number	ANALYTE	Analyst	Analysis Date	Result
	1030	Source Lead (mg/L)			
	1022	Source Copper (mg/L)			
	1925	pH (Standard pH units)			
	1996	Temperature (Degrees Celsius)			
	1016	Calcium Hardness (as CaCO3 mg/L)			
	1927	Alkalinity (as CaCO3 mg/L)			
	1930	Total Sissolved Solids (mg/L)			
	1926	Conductivity (uS)			
	1044	Orthophosphate (as PO4 mg/L)			
	1049	Silica (as SiO2 mg/L)			

Sample Location (or Tag# if source sample)

Note: Public water systems serving less than 100,000 people need to collect water quality parameter samples only if the results of the distribution samples in the block above indicate that the 90%ile level of lead is above 0.015 mg/L or the 90%ile of copper is above 1.3 mg/L.

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

PWS #	1090151 RE
Date Collected:	07/11/2004
Date Received:	07/12/2004
Time Collected:	
Date Reported by Lab	07/16/2004
# of pages in this report	1
DEQ USE ONLY	
90%ile Lead	
90%ile Copper	
# Pb/Cu Samples Reported	
Paperwork Attached?	☐ Yes ☐ No

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Lab Supervisor's Signature
Walter Mueller

07/16/2004

ATL Order No.: 2004070176
Lab EPA ID No:. ID00912

ATL Accurate Testing Labs, LLC
7950 Meadowlark Way Coeur d'Alene, ID 83815

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LEAD/COPPER DISTRIBUTION TAP SAMPLES

Public Drinking Water Chemical Analysis Report

Lab Tracking#:	Sampling Location:	Date Collected:	Time Collected:	Lead mg/L (frds# 1030)	Copper mg/L (frds# 1022)
80476	Robert Sedlacek 311 S. Grover Ave	08/27/2007	07:00:	0.002	0.10
80477	Oldtown City Hall 215 N. Washington Ave	08/27/2007	08:30:	0.007	0.09
80478	Lonnie Orr 614 S. Meadowdale Ave	08/27/2007	03:30:	ND	0.11
80479	Bessie Orr 613 S. Meadowdale Ave	08/27/2007	06:00:	0.002	0.09

Analyst: WM	Analysis Date: 08/31/2007	Lead MDL: 0.002	Copper MDL: 0.01	Nitic Acid Preservative Used: Yes

Lab Tracking Number:

ACTION-LEVEL FAILURE SAMPLES (Water Quality Parameters)

Check if Desired	FRDS Number	ANALYTE	Analyst	Analysis Date	Result
	1030	Source Lead (mg/L)			
	1022	Source Copper (mg/L)			
	1925	pH (Standard pH units)			
	1996	Temperature (Degrees Celsius)			
	1016	Calcium Hardness (as CaCO3 mg/L)			
	1927	Alkalinity (as CaCO3 mg/L)			
	1930	Total Sissolved Solids (mg/L)			
	1926	Conductivity (uS)			
	1044	Orthophosphate (as PO4 mg/L)			
	1049	Silica (as SiO2 mg/L)			

Sample Location (or Tag# if source sample)

Note: Public water systems serving less than 100,000 people need to collect water quality parameter samples only if the results of the distribution samples in the block above indicate that the 90%ile level of lead is above 0.015 mg/L or the 90%ile of copper is above 1.3 mg/L.

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

PWS #	1090151 RE
Date Collected:	08/27/2007
Date Received:	08/27/2007
Time Collected:	
Date Reported by Lab	09/05/2007
# of pages in this report	1
DEQ USE ONLY	
90%ile Lead	
90%ile Copper	
# Pb/Cu Samples Reported	
Paperwork Attached?	☐ Yes ☐ No

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Lab Supervisor's Signature
Walter Mueller

09/05/2007 JM

ATL Order No.: 2007080499
Lab EPA ID No:. ID00912

ATL Accurate Testing Labs, LLC
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LEAD/COPPER DISTRIBUTION TAP SAMPLES

Public Drinking Water Chemical Analysis Report

Lab Tracking#:	Sampling Location:	Date Collected:	Time Collected:	Lead mg/L (frds# 1030)	Copper mg/L (frds# 1022)
80867	Randy Edgar 601 E. Ockert St.	09/05/2007	06:10:	0.003	0.03

Analyst: WM	Analysis Date: 09/12/2007	Lead MDL: 0.002	Copper MDL: 0.01	Nitic Acid Preservative Used: Yes

Lab Tracking Number:

ACTION-LEVEL FAILURE SAMPLES (Water Quality Parameters)

Check if Desired	FRDS Number	ANALYTE	Analyst	Analysis Date	Result
	1030	Source Lead (mg/L)			
	1022	Source Copper (mg/L)			
	1925	pH (Standard pH units)			
	1996	Temperature (Degrees Celsius)			
	1016	Calcium Hardness (as CaCO3 mg/L)			
	1927	Alkalinity (as CaCO3 mg/L)			
	1930	Total Sissolved Solids (mg/L)			
	1926	Conductivity (uS)			
	1044	Orthophosphate (as PO4 mg/L)			
	1049	Silica (as SiO2 mg/L)			

Sample Location (or Tag# if source sample)

Note: Public water systems serving less than 100,000 people need to collect water quality parameter samples only if the results of the distribution samples in the block above indicate that the 90%ile level of lead is above 0.015 mg/L or the 90%ile of copper is above 1.3 mg/L.

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

PWS #	1090151 RE
Date Collected:	09/05/2007
Date Received:	09/05/2007
Time Collected:	
Date Reported by Lab	09/13/2007
# of pages in this report	1
DEQ USE ONLY	
90%ile Lead	
90%ile Copper	
# Pb/Cu Samples Reported	
Paperwork Attached?	☐ Yes ☐ No

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Lab Supervisor's Signature
Walter Mueller

09/13/2007

ATL Order No.: 2007090065
Lab EPA ID No:. ID00912

Lab EPA ID No.: ID00912	Lab Sample#: 130130
Date Received: 05/03/2012	Date Reported by Lab: 05/04/12
Compliance or Replacement Sample: Compliance	
Date Collected: 05/03/2012	Time Collected: 09:30
Sample Type: Plant Tap	
PWS No.: 1090151 RE	PWS Name: West Bonner Water & Sewer
Sampling Location: Springs	Tag#
Collector: Scott Emch	Phone: (208) 437-3833

Laboratory Name:
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab Order No.: 2012050078 3

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Analytes	Results	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Analytes	Results	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel						
1015	Cadmium							1074	Antimony						
1020	Chromium							1075	Beryllium						
1035	Mercury							1085	Thallium						
1038	NO2/NO3							*Other IOCs*							
1040	Nitrate	1.21	10.0	0.5	EPA 300.0	05/03/12	WM	1005	Arsenic						
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium						
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Postassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL - Maximum Contaminant Level

Comments:

05/04/12

Laboratory Supervisor
Walter Mueller

West Bonner Water & Sewer Dist

215 N. Washington Ave
Oldtown , ID 83822

Lab EPA ID No.: ID00912	Lab Sample#: 121793	
Date Received: 07/06/2011	Date Reported by Lab: 07/07/11	
Compliance or Replacement Sample: Compliance		
Date Collected: 07/06/2011	Time Collected: 08:00	
Sample Type: Plant Tap		
PWS No.: 1090151 RE	PWS Name: West Bonner Water & Sewer	
Sampling Location: Springs		Tag#
Collector: Karel Mrazek	Phone: (208) 437-3833	

Laboratory Name:
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab Order No.: 2011070090 3

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Analytes	Results	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Analytes	Results	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel						
1015	Cadmium							1074	Antimony						
1020	Chromium							1075	Beryllium						
1035	Mercury							1085	Thallium						
1038	NO2/NO3							*Other IOCs*							
1040	Nitrate	1.21	10.0	0.5	EPA 300.0	07/06/11	WM	1005	Arsenic						
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium						
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Postassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL - Maximum Contaminant Level

Comments:

07/07/11

Laboratory Supervisor
Walter Mueller

West Bonner Water & Sewer Dist
Karel Mrazek
215 N. Washington Ave
Oldtown , ID 83822

Lab EPA ID No:. ID00912	Lab Sample #: 115462
Date Received: 11/09/2010	Date Reported by Lab: 11/22/2010
Compliance or Replacement Sample: Compliance	
Date Collected: 11/09/2010	Time Collected: 08:45:
Sample Type: Plant Tap	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer
Sampling Location: Springs	Tag #
Collector's Name: Scott Emch	Phone: (208) 437-3833

ATL

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Coeur d'Alene, ID 83815
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E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel	ND	0.10	0.02	EPA 200.7	11/19/2010	WM
1015	Cadmium							1074	Antimony	ND	0.006	.005	EPA 200.9	11/17/2010	WM
1020	Chromium							1075	Beryllium	ND	0.004	.002	EPA 200.7	11/19/2010	WM
1035	Mercury							1085	Thallium	ND	0.002	.001	EPA 200.9	11/18/2010	WM
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate	1.3	10.0	0.5	EPA 300.0	11/09/2010	WM	1005	Arsenic	ND	0.010	0.003	EPA 200.9	11/11/2010	WM
1041	Nitrite							1025	Fluoride						
1045	Selenium							1052	Sodium	4.79		0.30	EPA 200.7	11/19/2010	WM
1024	Cyanide	ND	0.200	0.04	SM 4500CN	11/22/2010	AC								
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

11/22/2010

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2010110183 1

Lab EPA ID No:. ID00912	Lab Sample #: 38596
Date Received: 10/01/2003	Date Reported by Lab: 10/22/2003
Compliance or Replacement Sample: Compliance	
Date Collected: 10/01/2003	Time Collected: 06:45:
Sample Type: Raw Water	
PWS # 1090151 RE	PWS Name: West Bonner Water Dist 1
Sampling Location: Idaho Springs	Tag # E0005119
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System RADIOLOGICAL ANALYSIS REPORT:

FRDS	Contaminant	RESULT	Units	MCL	MDL	Analysis Date	Analyst	Method
4002	Gross Alpha Activity (includes radium and uranium)							
4006	Uranium, Combined convert to activity; multiply concentration in ug/Lx 0.67 (required if gross alpha exceeds 15pC/L)							
4000	Net Alpha subtract uranium activity from gross alpha activity (includes radium but excludes uranium)			15pCi/L				
4020	Radium-226 (required if alpha activity is greater than 5 pCi/L)							
4030	Radium-228	ND	pCi/L		1.0	10/17/2003	ENG	EPA 904.0
4010	Radium, Combined (226&228) (add results of Ra-226 and Ra-228)			5pCi/L				
4100	Gross Beta/Photo Activity (required to measure major isotopes if activity exceeds 50 pCi/L)			4mREM				
	Radium 222 (GAS)							

ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
COMPOSITE SAMPLE DATES: 1st, 2nd, 3rd or 4th quarter or latest sample date beside Collection Date at top of form
MDL = Method detection limit
MCL = Maximum Contaminant Level

Comments: Sub-Lab: ENERGY LABORATORIES, Casper WY

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

10/22/2003

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2003100011 1

State of Idaho, Department of Health and Welfare
Bureau of Laboratories - Boise Laboratory
2220 Old Penitentiary Road, Boise, Idaho 83712
RADIOLOGICAL REPORT - RADIOLOGICAL CONTAMINANTS

LAB: BOISE, Phone: (208) 334-2235
Section Manager, Inorganic Chemistry: Barry Pharaoh

WEST BONNER WATER DISTRICT
SHEILA GORMLEY
215 N. WASHINGTON AVE.
OLD TOWN, ID 83822

Tracking Number: 40899-0034/
(Please Refer to this Tracking Number on any communications)

Water System: ( )
County:
Sample Location: WEST BONNER WATER DIST. SPRINGS
Collected by: SHEILA GORMLEY
Type of sample:
Preservation: HNO3

Date Collected: 08/03/99 Date Received in Lab: 08/05/99
Time Collected: 08:30

ID	TEST PERFORMED	RESULTS	COMPLETED	ANST
4002	Gross Alpha Particle Activity (pCi/l)	1.4+/-2.2 ()	09/09/99	BP
4100	Gross Beta Particle Activity (pCi/l)	2.9 ()	09/09/99	BP

Lab EPA ID No:. ID00912	Lab Sample #: 76564
Date Received: 05/02/2007	Date Reported by Lab: 05/09/2007
Compliance or Replacement Sample: Compliance	
Date Collected: 05/02/2007	Time Collected: 07:30:
Sample Type: Plant Tap	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer Dist
Sampling Location: Springs E0005119	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System VOLATILE ORGANIC (VOC) ANALYSIS REPORT:

Method: EPA 524.2 Analysis Date: 05/08/2007 Analyst: ANA

FRDS	Contaminant	RESULT*	MCL*	MDL*	FRDS	Contaminant	RESULT*	MCL*	MDL*
2378	1,2,4-Trichlorobenzene	ND	70.0	0.5	2979	trans-1,2-Dichloroethylene	ND	100.0	0.5
2380	cis-1,2-Dichloroethylene	ND	70.0	0.5	2980	1,2-Dichloroethane	ND	5.0	0.5
2950	Trihalomethanes-Total	ND	80.0	0.5	2981	1,1,1-Trichloroethane	ND	200.0	0.5
2943	Bromodichloromethane	ND		0.5	2982	Carbon Tetrachloride	ND	5.0	0.5
2942	Bromoform	ND		0.5	2983	1,2-Dichloropropane	ND	5.0	0.5
2941	Chloroform	ND		0.5	2984	Trichloroethylene	ND	5.0	0.5
2944	Dibromochloromethane	ND		0.5	2985	1,1,2-Trichloroethane	ND	200	0.5
2955	Xylenes-Total	ND	1000	0.5	2987	Tetrachloroethylene	ND	5.0	0.5
2964	Dichloromethane	ND	5.0	0.5	2989	Monochlorobenzene	ND	100.0	0.5
2968	o-Dichlorobenzene	ND	600.0	0.5	2990	Benzene	ND	5.0	0.5
2969	p-Dichlorobenzene	ND	75.0	0.5	2991	Toluene	ND	1000	0.5
2976	Vinyl Chloride	ND	2.0	0.5	2992	Ethylbenzene	ND	700.0	0.5
2977	1,1-Dichloroethylene	ND	7.0	0.5	2996	Styrene	ND	100.0	0.5

*Reported in ug/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
VOC: Sub_Lab: Anatek Labs, Inc.
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

05/09/2007

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2007050047 1

Lab EPA ID No:. ID00912	Lab Sample #: 76564
Date Received: 05/02/2007	Date Reported by Lab: 05/09/2007
Compliance or Replacement Sample: Compliance	
Date Collected: 05/02/2007	Time Collected: 07:30:
Sample Type: Plant Tap	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer Dist
Sampling Location: Springs E0005119	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System VOLATILE ORGANIC (VOC) ANALYSIS REPORT:

Method: EPA 524.2 Analysis Date: 05/08/2007 Analyst: ANA

FRDS	Contaminant	RESULT*	MCL*	MDL*	FRDS	Contaminant	RESULT*	MCL*	MDL*
2378	1,2,4-Trichlorobenzene	ND	70.0	0.5	2979	trans-1,2-Dichloroethylene	ND	100.0	0.5
2380	cis-1,2-Dichloroethylene	ND	70.0	0.5	2980	1,2-Dichloroethane	ND	5.0	0.5
2950	Trihalomethanes-Total	ND	80.0	0.5	2981	1,1,1-Trichloroethane	ND	200.0	0.5
2943	Bromodichloromethane	ND		0.5	2982	Carbon Tetrachloride	ND	5.0	0.5
2942	Bromoform	ND		0.5	2983	1,2-Dichloropropane	ND	5.0	0.5
2941	Chloroform	ND		0.5	2984	Trichloroethylene	ND	5.0	0.5
2944	Dibromochloromethane	ND		0.5	2985	1,1,2-Trichloroethane	ND	200	0.5
2955	Xylenes-Total	ND	1000	0.5	2987	Tetrachloroethylene	ND	5.0	0.5
2964	Dichloromethane	ND	5.0	0.5	2989	Monochlorobenzene	ND	100.0	0.5
2968	o-Dichlorobenzene	ND	600.0	0.5	2990	Benzene	ND	5.0	0.5
2969	p-Dichlorobenzene	ND	75.0	0.5	2991	Toluene	ND	1000	0.5
2976	Vinyl Chloride	ND	2.0	0.5	2992	Ethylbenzene	ND	700.0	0.5
2977	1,1-Dichloroethylene	ND	7.0	0.5	2996	Styrene	ND	100.0	0.5

*Reported in ug/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
VOC: Sub_Lab: Anatek Labs, Inc.

Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

05/09/2007

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2007050047 1

Lab EPA ID No:. ID00912	Lab Sample #: 23986
Date Received: 11/15/2001	Date Reported by Lab: 12/11/2001
Compliance or Replacement Sample: Compliance	
Date Collected: 11/15/2001	Time Collected: 08:35:
Sample Type: Plant Tap	
PWS # 1090151	PWS Name: West Bonner Water & Sewer
Sampling Location: Idaho Springs	Tag # E0005119
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: mueller@accuratetesting.com

Public Drinking Water System VOLATILE ORGANIC (VOC) ANALYSIS REPORT:

Method: EPA 524.2 Analysis Date: 11/20/2001 Analyst: ANA

FRDS	Contaminant	RESULT*	MCL*	MDL*	FRDS	Contaminant	RESULT*	MCL*	MDL*
2378	1,2,4-Trichlorobenzene	ND	70.0	0.5	2979	trans-1,2-Dichloroethylene	ND	100.0	0.5
2380	cis-1,2-Dichloroethylene	ND	70.0	0.5	2980	1,2-Dichloroethane	ND	5.0	0.5
2950	Trihalomethanes-Total	2.1	100.0	0.5	2981	1,1,1-Trichloroethane	ND	200.0	0.5
2943	Bromodichloromethane	0.8		0.5	2982	Carbon Tetrachloride	ND	5.0	0.5
2942	Bromoform	ND		0.5	2983	1,2-Dichloropropane	ND	5.0	0.5
2941	Chloroform	0.6		0.5	2984	Trichloroethylene	ND	5.0	0.5
2944	Dibromochloromethane	0.7		0.5	2985	1,1,2-Trichloroethane	ND	5.0	0.5
2955	Xylenes-Total	ND	1000	0.5	2987	Tetrachloroethylene	ND	5.0	0.5
2964	Dichloromethane	ND	5.0	0.5	2989	Monochlorobenzene	ND	100.0	0.5
2968	o-Dichlorobenzene	ND	600.0	0.5	2990	Benzene	ND	5.0	0.5
2969	p-Dichlorobenzene	ND	75.0	0.5	2991	Toluene	ND	1000	0.5
2976	Vinyl Chloride	ND	2.0	0.5	2992	Ethylbenzene	ND	700.0	0.5
2977	1,1-Dichloroethylene	ND	7.0	0.5	2996	Styrene	ND	100.0	0.5

*Reported in ug/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

Walter Mueller 12/11/2001

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2001110147 1

Lab EPA ID No:. ID00912	Lab Sample #: 23986		
Date Received: 11/15/2001	Date Reported by Lab: 12/11/2001		
Compliance or Replacement Sample: Compliance			
Date Collected: 11/15/2001	Time Collected: 08:35:		
Sample Type: Plant Tap			
PWS # 1090151	PWS Name: West Bonner Water & Sewer		
Sampling Location: Idaho Springs		Tag # E0005119	
Collector's Name: Karel Mrazek		Phone: (208) 437-3833	

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83815
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Web site: www.accuratetesting.com
E-mail: mueller@accuratetesting.com

Public Drinking Water System SYNTHETIC ORGANIC (SOC) ANALYSIS REPORT:

FRDS	Contaminant	RESULT*	Method	MCL*	MDL*	Analysis Date	Analyst
2005	Endrin						
2010	Lindane						
2015	Methoxychlor						
2020	Toxaphene						
2031	Dalapon	ND	EPA 515.3	200	1.0	11/17/2001	ANA
2032	Diquat						
2033	Endothall						
2034	Glyphosate						
2035	Di(2-ethylhexyl)adipate						
2036	Oxamyl						
2037	Simazine						
2040	Picloram	ND	EPA 515.3	500	0.1	11/17/2001	ANA
2041	Dinoseb	ND	EPA 515.3	7	0.1	11/17/2001	ANA
2042	Hexachlorocyclopentadiene						
2046	Carbofuran						
2050	Atrazine						
2051	Alachlor						
2065	Heptachlor						
2067	Heptachlor Epoxide						
2105	2,4-D	ND	EPA 515.3	70	0.1	11/17/2001	ANA
2110	2,4,5-TP	ND	EPA 515.3	50	0.1	11/17/2001	ANA
2274	Hexachlorobenzene						
2298	Di(2-ethylhexyl)phthalate						
2306	Benzo[a]pyrene						
2326	Pentachlorophenol	ND	EPA 515.3	1	0.04	11/17/2001	ANA
2383	PCB's						
2931	DBCP						
2946	EDB						
2959	Chlordane						

*Reported in ug/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

12/11/2001

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2001110147 1

Lab EPA ID No:. ID00912	Lab Sample #: 23986
Date Received: 11/15/2001	Date Reported by Lab: 11/29/2001
Compliance or Replacement Sample: Compliance	
Date Collected: 11/15/2001	Time Collected: 08:35:
Sample Type: Plant Tap	
PWS # 1090151	PWS Name: West Bonner Water & Sewer
Sampling Location: Idaho Springs	Tag # E0005119
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL

Accurate Testing Labs, LLC

7950 Meadowlark Way
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E-mail: mueller@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								*Phase V*							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium	0.06	2.000	0.02	EPA 200.7	11/26/2001	WM	1036	Nickel	ND	0.10	0.02	EPA 200.7	11/26/2001	WM
1015	Cadmium	ND	0.005	.002	EPA 200.7	11/26/2001	WM	1074	Antimony	ND	0.006	.005	EPA 200.9	11/27/2001	WM
1020	Chromium	ND	0.100	0.01	EPA 200.7	11/26/2001	WM	1075	Beryllium	ND	0.004	.002	EPA 200.7	11/26/2001	WM
1035	Mercury	ND	0.002	.0005	EPA 245.1	11/29/2001	WM	1085	Thallium	ND	0.002	.002	EPA 200.9	11/27/2001	WM
1038	Ttl (NO2/NO3)							*Other IOCs*							
1040	Nitrate							1005	Arsenic	ND	0.050	.002	EPA 200.9	11/27/2001	WM
1041	Nitrite							1025	Fluoride	0.4	4.000	0.2	EPA 300.1	11/15/2001	WM
1045	Selenium	ND	0.050	.005	EPA 200.9	11/27/2001	WM	1052	Sodium	3.20		0.05	EPA 200.7	11/26/2001	WM
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate	5.1	250.0	1.50	EPA 300.1	11/15/2001	WM
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit

Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

11/29/2001

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2001110147 1

ANATEK LABS 1917 S. Main Street, Moscow, ID 83843 (208)883-2839

VOLATILE ORGANIC CHEMICAL REPORT

Results of analysis by EPA Method 524.2

County:
System Name: West Bonner Water District #1
Address: 214 N. Washington Ave.
City/State/ZIP: Oldtown, ID 83822
System ID #: 1090151
Sampling Location: Well #A Source
Date Collected: 7/27/94
Time Collected: 12:00 noon

Laboratory Number: 12502921
Analyst: Mike Pearson
Preservative: Ascorbic Acid / HCL
Date Analyzed: 8/2/94

Collected By: Karel Mrazek
Phone:
Source Type:

x-Check Desired Analysis

	FRDS #	NAME OF COMPOUND	MCL* ug/L	AMOUNT ug/L		FRDS #	NAME OF COMPOUND	AMOUNT ug/L
		Regulated Compounds					Unregulated Compounds	
	2976	Vinyl chloride	2		x	2210	Chloromethane	ND
x	2977	1,1-Dichloroethylene	7	ND	x	2214	Bromomethane	ND
x	2981	1,1,1-Trichloroethane	200	ND	x	2216	Chloroethane	ND
x	2982	Carbon Tetrachloride	5	ND	x	2978	1,1-Dichloroethane	ND
x	2990	Benzene retest	5	ND	x	2416	2,2-Dichloropropane	ND
x	2980	1,2-Dichloroethane	5	ND	x	2410	1,1-Dichloropropene	ND
x	2984	Trichloroethylene	5	7.1	x	2408	Dibromomethane	ND
x	2969	p-Dichlorobenzene	75	ND	x	2412	1,3-Dichloropropane	ND
x	2979	t-1,2-Dichloroethylene	100	ND	x	2986	1,1,1,2-Tetrachloroethane	ND
x	2380	c-1,2-Dichloroethylene	70	ND	x	2993	Bromobenzene	ND
x	2983	1,2-Dichloropropane	5	ND	x	2414	1,2,3-Trichloropropane	ND
x	2991	Toluene	1000	ND	x	2988	1,1,2,2-Tetrachloroethane	ND
x	2987	Tetrachloroethylene	5	ND	x	2965	o-Chlorotoluene	ND
x	2989	Chlorobenzene	100	ND	x	2966	p-Chlorotoluene	ND
x	2992	Ethylbenzene	700	ND	x	2967	m-Dichlorobenzene	ND
x	2955	Xylene (total)	10000	ND	x	2212	Dichlorodifluoromethane	ND
x	2996	Styrene	100	ND	x	2218	Trichlorofluoromethane	ND
x	2968	o-Dichlorobenzene	600	ND	x	2430	Bromochloromethane	ND
x	2964	Methylene chloride	5	ND	x	2994	Isopropylbenzene	ND
x	2985	1,1,2-Trichloroethane	5	ND	x	2998	n-Propylbenzene	ND
x	2378	1,2,4-Trichlorobenzene	70	ND	x	2424	1,3,5-Trimethylbenzene	ND
		Trihalomethanes			x	2426	t-Butylbenzene	ND
x	2941	Chloroform		0.6	x	2428	s-Butylbenzene	ND
x	2943	Bromodichloromethane		ND	x	2030	p-Isopropyltoluene	ND
x	2944	Chlorodibromomethane		ND	x	2422	n-Butylbenzene	ND
x	2942	Bromoform		ND	x	2418	1,2,4-Trimethylbenzene	ND
					x	2248	Naphthalene	ND
					x	2246	Hexachlorobutadiene	ND
					x	2420	1,2,3-Trichlorobenzene	ND
					x	2228	c-1,3-Dichloropropene	ND
					x	2224	t-1,3-Dichloropropene	ND

*MCL = Maximum Contaminant Level
NOTE: ND indicates that the true Concentration is less than the method detection limit of 0.5 ug/L.

Report Reviewed By:
Report Date: 8/16/94

Lab EPA ID No:. ID00912	Lab Sample #: 113182
Date Received: 09/13/2010	Date Reported by Lab: 09/29/2010
Compliance or Replacement Sample: Compliance	
Date Collected: 09/13/2010	Time Collected: 08:40:
Sample Type: Distribution	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer
Sampling Location: 513 S. Meadowdale Ave	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System DISINFECTION BYPRODUCT (DBP) ANALYSIS REPORT:

FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (Cl2)						
1006	Chloramine (Cl2)						
1008	Chlorine Dioxide						
	Disinfection Byproducts						
2950	Total Trihalomethanes	**0.0012**	0.08	0.0005	EPA 524.2	09/20/2010	ANA
	Disinfection Byproducts						
2456	Total Haloacetic acides	**ND**	0.060	0.001	SM 6251B	09/24/2010	ANA
	Other DBP Analytes						
1009	Chlorite						
1011	Bromate						
1927	Alkalinity (CaCO3)						
2920	TOC (source water)						

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
THM/HAA: Sub_Lab: Anatek Labs, Inc.
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

09/29/2010

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2010090296 1

Lab EPA ID No:. ID00912	Lab Sample #: 77677
Date Received: 06/06/2007	Date Reported by Lab: 06/20/2007
Compliance or Replacement Sample: Compliance	
Date Collected: 06/06/2007	Time Collected: 08:00:
Sample Type: Distribution	
PWS # 1090151 RE	PWS Name: West Bonner Water & Sewer Dist
Sampling Location: 614 S. Meadowdale Ave	Tag #
Collector's Name: Karel Mrazek	Phone: (208) 437-3833

ATL
Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System DISINFECTION BYPRODUCT (DBP) ANALYSIS REPORT:

FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (Cl2)						
1006	Chloramine (Cl2)						
1008	Chlorine Dioxide						
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.0005	EPA 524 2	06/18/2007	ANA
	Disinfection Byproducts						
2456	Total Haloacetic acides	ND	0.060	0.001	SM6251B	06/14/2007	ANA
	Other DBP Analytes						
1009	Chlorite						
1011	Bromate						
1927	Alkalinity (CaCO3)						
2920	TOC (source water)						

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
THM/HAA: Sub_Lab: Anatek Labs, Inc.
Comments:

West Bonner Water Dist 1
Karel Mrazek
215 N. Washington Ave
Oldtown, ID 83822

06/20/2007

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2007060105 1

Well Log Form 1
4M --5/62

028451

RECEIVED
1965
Department of Reclamation

WELL LOG AND REPORT OF THE STATE RECLAMATION ENGINEER OF IDAHO

97-65-N-1

Permit No. S-32486 Well No. 2 County Bonner
97-2070

Owner Diamond National Corp.

Address Albeni Falls Idaho

Driller EA Holman

Address 601-S-Pines Rd Spokane Wash 99206

Well location NE ¼ NE ¼ Sec. 25 T. 56 N/S. R. 6 E/W.

Size of drilled hole 12" I.D.

Total depth of well 125

Locate well in section

NW ¼	NE ¼
SW ¼	SE ¼

Give depth to standing water from the ground 20' Water temp. 40 °Fahr.

On "Pumping Test" delivery was 500 g.p.m. or ____ c.f.s. Drawdown was 0 feet.

Size of pump and motor used to make test 6" Colum 120 HP Gas motor

Length of time of test 4 hours ____ minutes.

If flowing well, give flow ____ c.f.s. or ____ g.p.m. and of shut off pressure ____

If flowing well, described control works ____
(TYPE AND SIZE OF VALVE, ETC.)

Water will be used for ____ Weight of casing per lineal foot ____

Thickness of casing 3/8 Casing material Steel
(STEEL, CONCRETE, WOOD, ETC.)

Diameter, length and location of casing 12" From 0 to 125
(CASING 12" IN DIAMETER OR LESS, GIVE INSIDE DIAMETER; CASING OVER 12" IN DIAMETER, GIVE OUTSIDE DIAMETER)

CASING RECORD

Diam. Casing	From Feet	To Feet	Length	Remarks—seals, grouting, etc.
12"	0	125	125	

Number and size of perforations 5/16 X 3" 105 located 109 - feet to 123 feet from ground

Date of commencement of well April 12-1965 Date of completion of well April 23 1965

NENE S.25 56N 5W

96

WELL LOG

From Feet	To Feet	Type of Material	Water-bearing Formation Ans. Yes or No	Casing Perforated Ans. Yes or No
0'	10'	Clay	no	
10	40	Sand Clay & Gravel	no	
40	73	Sandy Clay	no	~~no~~
73	83	Blue Sand	yes	
83	90	Washed Gravel	yes	
90	103	Brown Gray Sand	yes	
103	125	Good washed Gravel	yes	yes
		Static water Level 22'		
		If more space is required use Sheet No. 2		

WELL DRILLER'S STATEMENT

This well was drilled under my supervision and the above information is complete, true and correct to the best of my knowledge and belief.

E H Holman Drilling Co.

Signed E A Holman

By

License No. ~~242~~ 105

Dated May 3, 19 65

RECEIVED

Form DEC 0 1 1999
11/97
IDWR/North

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 77223

Office Use Only
Inspected by ______
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 00 10529
DRILLING PERMIT NO. 97-99N-46
Other IDWR No. ______

2. OWNER:
Name Rick + Cindy Pettit
Address Rt 4 Box 155A
City Oldtown State Id. Zip 83822

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

POSTED

Twp. 56 North ☒ or South ☐
Rge. 5 East ☐ or West ☒
Sec. 18 , ____ 1/4 SW 1/4 SW 1/4
Gov't Lot ____ County Bonner
Lat: : : Long: : :
Address of Well Site Freeman LK Rd. + Jill Way City Oldtown
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ______

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ______

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ______

6. DRILL METHOD
☒ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other ______

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	7	Temp Casing

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 270'
Was drive shoe seal tested? ☐ Y ☒ N How? ______

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1	270	.250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ______ Length of Tailpipe ______

9. PERFORATIONS/SCREENS
Perforations Method ______
Screens Screen Type ______

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
300' ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ______

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
5	223	523	1 Hr

Water Temp. Cold Bottom hole temp. ______
Water Quality test or comments: Good
Depth first Water Encounter 410'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	18	Top Soil, Sand, cobbles		X
6	18	40	Sand, gravel		X
6	40	100	Sand, gravel		X
6	100	180'	Sand, gravel		X
6	180	190	Silt, sand, Clay	X	
6	190	220	Clay		X
6	220	240	Clay		X
6	240	250	Clay + gravel		X
6	250	270	Clay + gravel Hard Pan		X
6	270	420	Granite Frac. 410' 1/2 GPM	X	
6	420	480	Granite		X
6	480	500	Granite Frac 490' 3 GPM	X	
6	500	523	Granite Frac 515' 1 1/2	X	

Completed Depth 523' (Measurable)
Date: Started 10-7-99 Completed 10-21-99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Carl Pitts + Sons Firm No. 168

Firm Official Carl Pitts Date 10-22-99
and
Driller or Operator Steve Pitts Date 10-22-99
(Sign once if Firm Official & Operator)

56N 5W 18

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No.
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 33281 RECEIVED
DRILLING PERMIT NO. 808694
Water Right or Injection Well No. DEC 10 2003

2. OWNER: IDWR/North
Name CITY of OLDTOWN
Address 214 N. WASHINGTON AVE
City OLDTOWN State ID Zip 83822

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 56 North ☒ or South ☐
Rge. 6 East ☐ or West ☒
Sec. 24 SE 1/4 NW 1/4 SE 1/4
Gov't Lot ____ County BONNER
Lat: : : Long: : :
Address of Well Site ROTARY PARK, SE of U.S. HWY 2, BRIDGE City OLDTOWN
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☒ Other TRANSIENT PUBLIC WATER SYSTEM

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD:
☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
BENTONITE	0	64	1900 lbs	TEMP CASING

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 124
Was drive shoe seal tested? ☐ Y ☒ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+4	124'	250	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____
Packer ☒ Y ☐ N Type K-PACKER

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method ____
Screen Type & Method of Installation STAINLESS TELESCOPING

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
124	129	25	304	5"	STAINLESS	☒	☐
						☐	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
28 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: WELL CAP

56N 6W 24

12. WELL TESTS:
☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
307	20	126	1 HR

Water Temp. COLD Bottom hole temp. ____
Water Quality test or comments: CLEAR / 1½ m/L IRON
Depth first Water Encounter 28'

13. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
10	0	8	SAND		X
10	8	32	CLAY (WHITE)		X
10	32	58	PEA GRAVEL / SAND	X	
10	58	64	CLAY / SAND		X
6	64	129	PEA GRAVEL / SAND	X	

Completed Depth 129' (Measurable)
Date: Started 11-4-03 Completed 11-29-03

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name HUGHES WATER WELLS Firm No. 604
Principal Driller David J Hughes Date 11-29-03
and
Driller or Operator II [signature] Date 11-29-03
Operator I ____ Date ____
Principal Driller and Rig Operator Required.
Operator I must have signature...

FORWARD WHITE COPY TO WATER RESOURCES

TRI PRO CEDAR SAWMIL (PWSNO 1090034)
TRI PRO CEDAR MAIN (PWSNO 1090192)
SOURCE WATER ASSESSMENT REPORT

August 5, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This risk assessment is based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

This report, *Source Water Assessment for Tri Pro Cedar,* describes the public drinking water wells; the well recharge zones and potential contaminant sites located inside the recharge zone boundaries. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this public water system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Drinking water for the Tri Pro Cedar sawmill is supplied by two wells regulated as separate public drinking water systems. The wells draw from a small aquifer north of the Pend Oreille River in the vicinity of Oldtown, Idaho. The company planned to interconnect the distribution systems in October 2001 so that the Sawmill Well would supply all the potable water for the plant. Correspondence in the public water system files does not indicate whether the Main Well remains physically connected to the distribution system for use as a back up source. Tri Pro continues to submit sampling results for both public water systems.

DEQ performed a ground water susceptibility analysis for Tri Pro Cedar on May 29, 2002. Both wells ranked moderately susceptible to all classes of contaminants. Many factors used to assess vulnerability to contamination are unknown because the well logs are missing. Nevertheless, the final ranking for the Tri Pro Cedar wells is in line with the ranking of other public water system wells in the Oldtown vicinity.

This assessment should be used as a basis for determining appropriate new source water protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Tri Pro Cedar already has some important drinking water protection measures in place. Operation and maintenance of the water systems is in substantial compliance with *Idaho Rules for Public Drinking Water Systems.* Needed repairs are attended to promptly. Both wellheads are inside pump houses that are locked to prevent unauthorized access, and both the pump houses are located in a fenced yard where the company can regulate activities that could contaminate the well.

Tri Pro Cedar should develop a drinking water emergency response plan. It might also be helpful to have a written testing and maintenance schedule so important routine tasks don't get overlooked in the press of other responsibilities.

Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. For assistance in developing protection strategies, please contact the Coeur d'Alene Regional office of the Department of Environmental Quality.

SOURCE WATER ASSESSMENT FOR TRI PRO CEDAR

Section 1. Introduction - Basis for Assessment

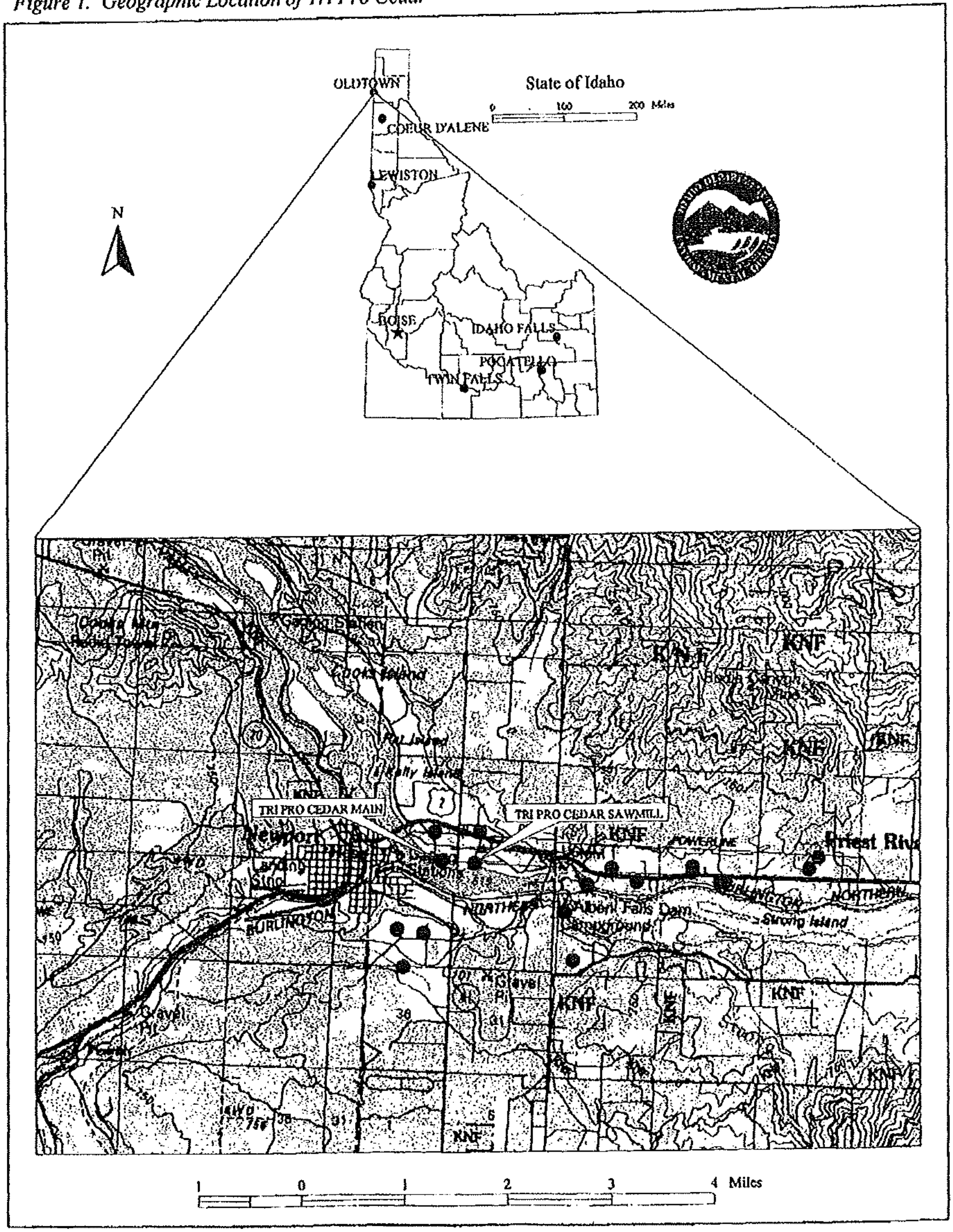
The following sections contain information necessary for understanding how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and an inventory of significant potential sources of contamination identified within that area are included. The ground water susceptibility analysis worksheets used to develop this assessment are attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess every public drinking water source in Idaho for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. These assessments are based on a land use inventory inside the delineated recharge zones, sensitivity factors associated with how the well is constructed, and aquifer characteristics. The state must complete more than 2900 assessments by May of 2003. Because resources and the time available to accomplish assessments are limited, an in-depth, site-specific investigation for every public water system is not possible.

The results of the source water assessment should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system. The ultimate goal of this assessment is to provide data to local communities for developing a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Tri Pro Cedar



Section 2. Preparing for the Assessment

Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the well recharge area into time of travel (TOT) zones indicating the number of years necessary for a particle of water to reach a well. DEQ used a refined computer model approved by the EPA to delineate the recharge zones for public water system wells. The computer model used data DEQ assimilated from a variety of sources including local well logs.

Drinking water Tri Pro Cedar comes from a small aquifer north of the Pend Oreille River near Old Town, Idaho (Figure 1). The sawmill site is served by two wells regulated as separate public drinking water systems. The Sawmill Well system has 3 connections providing potable water for about 25 employees. The Main Well system with 7 connections serves 45 employees. The recharge area delineated for the Sawmill Well is approximately half a mile long and encloses 51 acres divided into 0-3, 3-6 and 6-10-year time of travel zones. The outer boundary of the 6-10 year TOT is irregular because another well intercepts some of the ground water flowing toward the Sawmill Well (Figure 2). The delineation for the Main Well encloses about 40 acres. The primary direction of ground water flow toward the wells is from northeast to southwest.

Identifying Potential Sources of Contamination

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. Inventories for public water systems in Idaho were conducted in two-phases. The first phase involved identifying and documenting potential contaminant sources inside individual source water assessment areas through the use of computer databases and Geographic Information System maps developed by DEQ. The maps and inventory lists were then sent to system operators for verification and correction in the second or enhanced part of the inventory process.

Figure 2, *Tri Pro Cedar Delineation and Potential Contaminant Inventory* on page 7 of this report shows the locations of the Tri Pro Cedar wells, the recharge zones and potential contaminant sites located in the vicinity. Land use inside the delineation boundaries is industrial near the wells. In the 3-6 and 6-10 year TOT zones for the wells land use is a mix of suburban residential and agriculture.

Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. When a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation.

Section 3. Susceptibility Analysis

The susceptibility to contamination of all groundwater sources in Idaho is being assessed on the following factors:

- physical integrity of the well,
- hydrologic characteristics,
- land use characteristics, and potentially significant contaminant sources
- historic water quality

The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility rankings assigned to the Tri Pro Cedar wells. Susceptibility Analysis Worksheets in Attachment A show in detail how the wells scored.

Well Construction

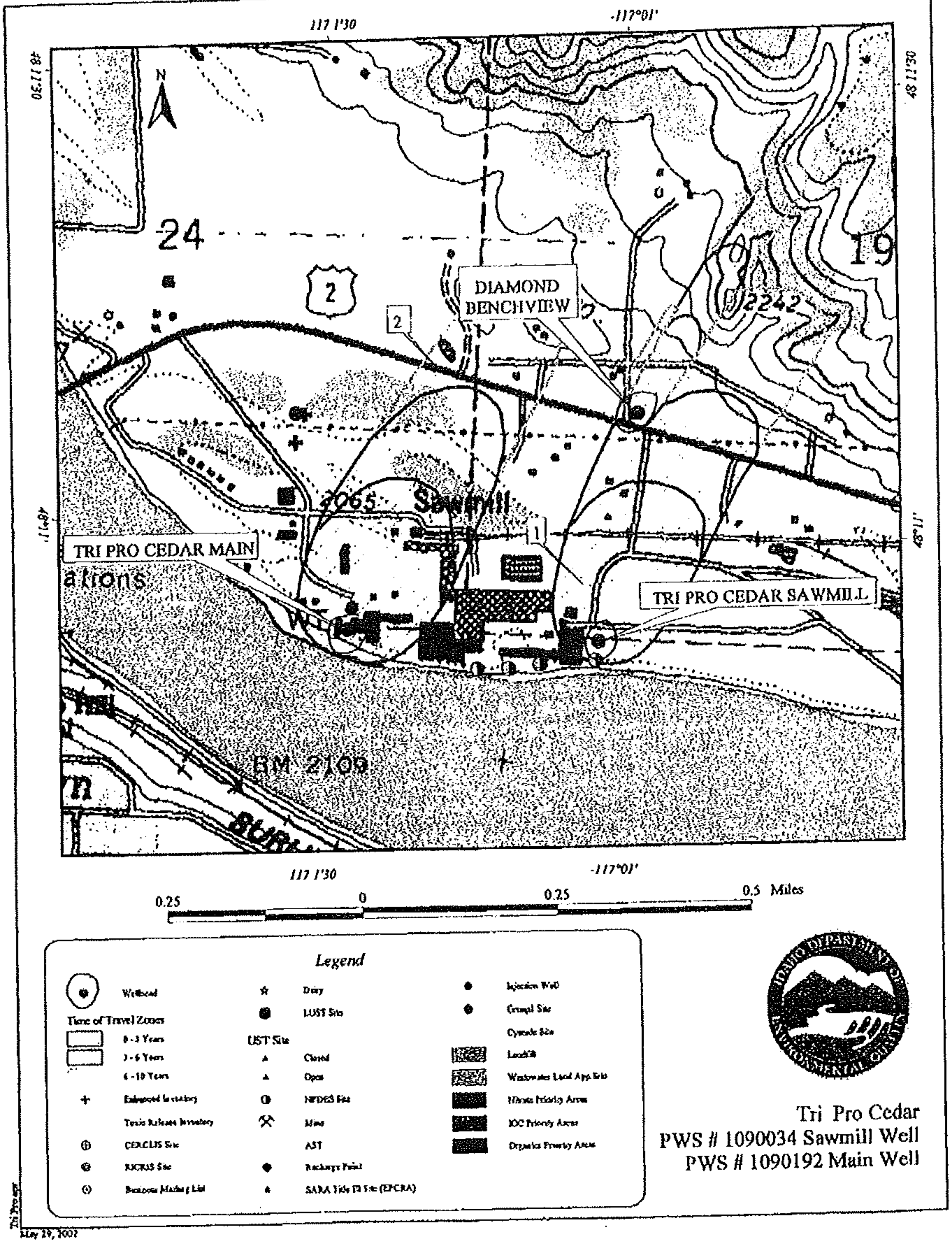
Construction factors bear directly on the ability of a well to protect the ground water from contaminants. Lower scores imply a well that can better protect the water. This portion of the susceptibility analysis relies on information from individual well logs and from the most recent sanitary survey of the public water system. Well logs for the Tri Pro Cedar wells are not on file with DEQ, and were not found in a search of Idaho Department of Water Resources records. Sanitary surveys of the Tri Pro Cedar systems were conducted in June 2001.

Sawmill Well. The Tri Pro Cedar Sawmill Well was drilled in 1984 to a reported depth of 120 feet. The 6-inch steel casing extends 11 inches above the concrete floor of the pump house, and is fitted with a vented sanitary well seal. No deficiencies in wellhead or surface seal maintenance were noted during the sanitary survey. Because the well logs are unavailable, several factors used to assess construction integrity are unknown. Conservative scores were assigned to those items.

The sanitary survey of the Sawmill Well system recommended:

- Installing a flow meter on the well discharge line.
- Installing a smooth sample tap and a pump to waste device on the well discharge line.
- Repairing the pump house floor and installing a drain with screened ends.

Figure 2. Tri Pro Cedar Delineations and Potential Contaminant Inventory.



Main Well. The Main Well, drilled in 1965, is located in a steel lined pit with a concrete floor. An 8-inch steel casing fitted with a vented watertight well cap was welded to the 16-inch casing in the bottom of the pit. The extension rises 20 inches above grade. Well pits are not allowed under current standards for drinking water well construction.

The sanitary survey of the Main Well system recommended:

- Installing a flow meter on the Main Well discharge line.
- Evaluating the well for surface water influence.
- Filling the well pit or installing a drained concrete floor instead of the wood framed floor in the pumphouse

The compliance schedule Tri Pro Cedar developed in response to the sanitary surveys included:

- Consolidating the water system so all drinking water supply in the mill is serviced off the Sawmill Well, October 1, 2001.
- Installing a flow meter on the Sawmill, October 6, 2001.
- Repairing the Sawmill Well pump house floor and fixing the drain, October 8, 2001.
- Installing a smooth nosed tap and pump to waste fitting on the discharge line, October 8, 2001.

A microscopic particulate analysis of water from the Main Well was conducted in December 2001 to determine whether the well is surface water influenced. The final results characterized the well as low risk.

Hydrologic Sensitivity

The hydrologic sensitivity scores for the Tri Pro Cedar wells are 6 points out of 6 points possible. This score reflects natural geologic conditions in the recharge zone as a whole and at the well site. Information for this part of the analysis is derived from the soil classification inside the delineation boundaries and from the soil profile reported on the well log.

Soils in the capture zones delineated for the Tri Pro Cedar wells are generally moderately well drained to well drained. Poorly drained to moderately well drained soils are deemed more protective of ground water than soils that drain faster. No information is available about the soil composition above the water table at the well sites.

Potential Contaminant Sources and Land Use

The sawmill complex covers most of the 0-3 year time of travel zones for the Tri Pro Cedar wells. In the 3-6 and 6-10 year time of travel zones, land use is a mix of agriculture and rural residential. State Highway 2 crosses the 3-6 year TOT for the Sawmill Well and the 6-10 year TOT for the Main Well. The green and black map symbols on Figure 2 depict locations of regulated industrial discharge points into the Pend Oreille River.

Table 1. Tri Pro Cedar Potential Contaminant Inventory

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Sawmill / Log yard	IOC, SOC, VOC,	0-3 Sawmill Well 0-3 Main Well	Geological Survey Map
2	State Highway 2	IOC, SOC, VOC, Microbial	3-6 Sawmill Well 6-10 Main Well	Geological Survey Map

[1] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Historic Water Quality

Historically, Tri Pro Cedar has had few water quality problems. In the period from October 1992 through April 2002, only one sample from the Sawmill Well system was positive for total coliform bacteria, probably as a result of work on the well discharge line. The Main Well system had one positive total coliform bacteria result from an untreated well sample drawn in June 1996. The tables below summarize chemical monitoring results. Chloroform, a disinfection by product detected in a sample from the Main Well in December 2001, is not indicative of volatile organic chemical contamination of the ground water.

Table 2-1. Tri Pro Cedar Sawmill Well Test Results

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Antimony	0.006	ND*	3/8/95, 3/11/98	Nitrate	10	ND to 0.4	3/8/95 to 8/10/00
Arsenic	0.01	ND	3/8/95, 3/11/98	Nickel	N/A	ND	3/8/95 to 8/10/00
Barium	2.0	ND	3/8/95, 3/11/98	Selenium	0.05	ND	3/8/95, 3/11/98
Beryllium	0.004	ND	3/8/95, 3/11/98	Sodium	N/A	4.41	3/8/95
Cadmium	0.005	ND	3/8/95, 3/11/98	Thallium	0.002	ND	3/8/95 to 8/10/00
Chromium	0.1	ND	3/8/95, 3/11/98	Cyanide	0.02	ND	3/8/95 to 8/10/00
Mercury	0.002	ND	3/8/95, 3/11/98	Fluoride	4.0	0.09 0.12	3/8/95 3/11/98
[illegible]	[illegible]	[illegible]				[illegible]	
Sulfate		8.5				3/8/95	
[illegible]			[illegible]			[illegible]	
29 Regulated and 13 Unregulated Synthetic Organic Compounds			None Detected			9/30/93, 1/6/00, 12/12/01	
[illegible]			[illegible]			[illegible]	
21 Regulated And 16 Unregulated Volatile Organic Compounds			None Detected			9/30/93, 1/6/00, 12/12/01	

*ND = None Detected

Table 2-2. Tri Pro Cedar Main Well Test Results

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Antimony	0.006	ND*	9/23/91 to 3/11/98	Nitrate	10	ND to 1.1	6/27/94 to 8/10/00
Arsenic	0.01	ND	9/23/91 to 3/11/98	Nickel	N/A	ND	9/23/91 to 3/11/98
Barium	2.0	ND	9/23/91 to 3/11/98v	Selenium	0.05	ND	9/23/91 to 3/11/98
Beryllium	0.004	ND	9/23/91 to 3/11/98	Sodium	N/A	5.37	3/8/95
Cadmium	0.005	ND	9/23/91 to 3/11/98	Thallium	0.002	0.001	3/8/95
Chromium	0.1	ND	9/23/91 to 3/11/98	Cyanide	0.02	ND	9/23/91 to 3/11/98
Mercury	0.002	ND	9/23/91 to 3/11/98	Fluoride	4.0	0.08	3/8/95

[illegible]	[illegible]	[illegible]	[illegible]
Sulfate		14.5	3/8/95
Iron		0.01 0.03	9/24/91 9/23/91
Manganese		0.01	9/23/91
Chloride		0.6 1.2	9/23/91 9/24/91

[illegible]	[illegible]	[illegible]
29 Regulated and 13 Unregulated Synthetic Organic Compounds	None Detected	9/30/93, 1/6/00

[illegible]	[illegible]	[illegible]
21 Regulated And 16 Unregulated Volatile Organic Compounds	None Detected except as noted below	9/30/93, 1/6/00
Chloroform	1.1 µg/l	12/10/0

*ND = None Detected

Final Susceptibility Ranking

The Tri Pro Cedar well ranked moderately susceptible to all classes of regulated contaminants. Though several risk factors were scored conservatively because the well logs are not available, the final ranking of the wells is in line with other public water systems in the vicinity of Oldtown. Final scores and ranking relative to each class of contaminant are summarized on Table 3. Complete susceptibility analysis worksheets for the wells are in Attachment A.

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

The final ranking categories are as follows:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

Table 3. Summary of Tri Pro Cedar Susceptibility Evaluation

Final Susceptibility Scores/ Ranking				
	IOC	VOC	SOC	Microbial
Sawmill Well	12/Moderate	12/Moderate	12/Moderate	11/Moderate
Main Well	12/Moderate	12/Moderate	12/Moderate	12/Moderate

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
HIGH* - Indicates source automatically scored as high susceptibility due to presence of bacteria or a VOC, SOC or an IOC above the maximum contaminant level in the tested drinking water

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Tri Pro Cedar already has some important drinking water protection measures in place. Operation and maintenance of the water systems is in substantial compliance with *Idaho Rules for Public Drinking Water Systems.* Needed repairs are attended to promptly. Both wellheads are inside pump houses that are locked to prevent unauthorized access, and both the pump houses are located in a fenced yard where the company can regulate activities that could contaminate the well. Additional guidelines for protecting public drinking water systems with voluntary security measures are available on the DEQ website, www2.state.id.us/deq/water/water1.htm.

Every water system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process. It might also be helpful to have a written maintenance and testing schedule so important routine tasks don't get overlooked.

Because Tri Pro Cedar does not have jurisdiction over the entire well recharge area delineated for its wells it will be important to establish ground water protection partnerships with neighboring landowners. Some of them may not be aware that their property is in a sensitive area where household, agricultural or business practices could have a negative impact on water quality for the whole community. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

DEQ Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001for assistance with drinking water protection strategies.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

Idaho Division of Environmental Quality, 1996. Lower Payette River Agriculture Irrigation Water Return Study and Ground Water Evaluation, Payette County, Idaho. Water Quality Status Report No. 115.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Natural Resource Conservation Service, 1991. Idaho Snake-Payette Rivers Hydrologic Unit Plan of Work. March 1991.

United States Geological Survey, 1986. Quality of Ground Water in the Payette River Basin, Idaho. United States Geological Survey. Water Resources Investigation Report 86-4013.

University of Idaho. 1986. Ground Water Resources in a Portion of Payette County, Idaho. Idaho Water Resources Research Institute. University of Idaho. Moscow, Idaho. April 1986.

Attachment A

Tri Pro Cedar Susceptibility Analysis Worksheets

Ground Water Susceptibility

Public Water System Name : TRI PRO CEDAR SAWMILL

Source: SAWMILL

Public Water System Number : 1090034

5/29/02 10:10 52 AM

		SCORE			
1. System Construction					
Drill Date	6/6/05				
Driller Log Available	NO				
Sanitary Survey (If yes, indicate date of last survey)	YES 2001	1			
Well meets IDWR construction standards	UNKNOWN	0			
Wellhead and surface seal maintained	YES	2			
Casing and annular seal extend to low permeability unit	UNKNOWN	1			
Highest production 100 feet below static water level	UNKNOWN	0			
Well protected from flooding	YES	4			
Total System Construction Score					
2. Hydrologic Sensitivity		2			
Soils are poorly to moderately drained	NO	1			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	2			
Aquitard present with > 50 feet cumulative thickness	NO	6			
Total Hydrologic Score					

		IOC Score	VOC Score	SOC Score	Microbial Score
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)					
Land Use Zone 1A	INDUSTRIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES SAWMILL/LOG YARD	1	1	1	0
(Score = # Sources X 2) 8 Points Maximum		2	2	2	0
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	0
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	HIGHWAY 2	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	Greater Than 50% Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Irrigated agricultural lands occupy > 50% of Zone III	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		9	9	9	2
4. Final Susceptibility Source Score		12	12	12	11
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : TRI PRO CEDAR MAIN — Source: MAIN WELL

Public Water System Number : 1090191 — 5/29/02 10:31:27 AM

		SCORE			
1. System Construction					
Drill Date	5/3/65				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES 2001				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	UNKNOWN	2			
Highest production 100 feet below static water level	UNKNOWN	1			
Well protected from flooding	NO	1			
Total System Construction Score		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	UNKNOWN	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	UNKNOWN	2			
Total Hydrologic Score		6			
		IOC Score	VOC Score	SOC Score	Microbial Score
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)					
Land Use Zone 1A	INDUSTRIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	SAWMILL/LOG YARD	1	1	1	0
(Score = # Sources X 2) 8 Points Maximum		2	2	2	0
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	0
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	25 to 50% Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		1	1	1	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Irrigated agricultural lands occupy > 50% of Zone III	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		1	1	1	0
Cumulative Potential Contaminant / Land Use Score		7	7	7	2
4. Final Susceptibility Source Score		12	12	12	12
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

08/05/02

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

BML (Business Mailing List)– This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under Resource Conservation Recovery Act (RCRA). RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

Closed Or Open UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

Lab EPA ID No:. ID00912	Lab Sample #: 106786
Date Received: 02/24/2010	Date Reported by Lab: 03/05/2010
Compliance or Replacement Sample: Compliance	
te Collected: 02/24/2010	Time Collected: 12:45:
Sample Type: Plant Tap	
PWS # 1090034 PH	PWS Name: Tri-Pro Cedar Sawmill
Sampling Location: Sawmill Well	Tag # E0005158
Collector's Name: R. Strange	Phone: (208) 437-2412

ATL

Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378
Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst	FRDS	Contaminant	RESULT*	MCL*	MDL*	Method	Analysis Date	Analyst
1010	Barium							1036	Nickel						
1015	Cadmium							1074	Antimony						
1020	Chromium							1075	Beryllium						
1035	Mercury							1085	Thallium						
1038	Ttl (NO2/NO3)	ND	10.0	0.5	EPA 300.0	02/26/2010	WM	Other IOCs							
1040	Nitrate	ND	10.0	0.5	EPA 300.0	02/26/2010	WM	1005	Arsenic	0.003	0.010	0.003	EPA 200.9	03/05/2010	WM
1041	Nitrite	ND	1.0	0.5	EPA 300.0	02/26/2010	WM	1025	Fluoride						
1045	Selenium							1052	Sodium						
1024	Cyanide														
Secondary IOCs (optional)															
1002	Aluminum							1055	Sulfate						
1003	Ammonia							1095	Zinc						
1016	Calcium							1905	Color						
1017	Chloride							1915	Hardness						
1022	Copper							1920	Odor						
1027	Hyd. Sulfide							1925	pH						
1028	Iron							1926	Conductivity						
1031	Magnesium							1927	Alkalinity						
1032	Manganese							1930	Diss. Solids						
1042	Potassium							1997	Langlier Indx						
1049	Silica SiO2							2905	Surfactants						
1050	Silver							1030	Lead						

*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant
ND = Not detected within sensitivity of instrument
Empty = No analysis performed for this contaminant
MDL = Method detection limit
MCL = Maximum Contaminant Level
Comments:

Tri-Pro Cedar Products
on Strange
7122 Hwy 2
Oldtown, ID 83822

03/05/2010

Lab Supervisor's Signature
Walter Mueller

ATL Order No.: 2010020327 2

Water System Name: Tri-Pro Cedar Sawmill		PWS ID No.: 1090034 PH
Collector: R. Strange	Date Collected: 06/14/2011	County: Bonner
Report Results to: Tri-Pro Cedar Sawmill, Ron Strange, 1122 Hwy 2, Oldtown, ID 83822		
Phone: (208) 437-2412	Fax:	
E-Mail:		

COLIFORM BACTERIA

ANALYSIS REPORT

CONTAMINANT ID# 3100

Type of System: **Public**

Type of Sample: **Compliance Sample**

Lab Order No.: 2011060295

Water system info must be fully filled out or samples will not be run. Private samples do not need PWS# or Chlorine residual. Your sample will be analyzed for TOTAL COLIFORMS unless you specify analysis under Remarks.

Laboratory Name:

Accurate Testing Labs, LLC
7950 Meadowlark Way
Coeur d'Alene, ID 83815
Phone (208) 762 8378 Fax (208) 762 9082
Web site: www.accuratetesting.com
E-mail: info@accuratetesting.com

Lab EPA ID No: ID00912

For PWS only, if this is a repeat sample, mark the date of the ORIGINAL POSITIVE SAMPLE.

Sample Number	Sample Type	Sample Location	Time Collected	Chlorine Residual ppm	Original Sample Date	Total Coliform Method: 9223B-PA	E. Coli Method: 9223B-PA
121078	RS-Routine Sample	Sawmill Bathroom	10:10			Absent	Absent

Sample Transportation by (Name):	R. Strange	Date/Time:	06/14/2011 14:55	Analyst: AW Date Analyzed: 06/15/2011
Sample Received by (Name):		Date/Time:	06/14/2011 14:55	Supervisor: Rhena Cooper
Remarks:				Date Reviewed and Printed: 06/15/11

STATE OF IDAHO
DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814-2648 • (208) 769-1422

Dirk Kempthorne, Governor
C. Stephen Allred, Administrator

February 19, 2002

To: Mike Nelson , Panhandle Health Department

From: Brian Painter Hydrogeologist/ P.G. and Scott Honodel, geologist, DEQ Coeur d'Alene Regional office Public Drinking Water Program

Through: Steve Tanner, CRO Drinking Water Program Supervisor

RE: Tri Pro Cedar Main (PWS 1090192) - Hydro geological Well Source Evaluation

The DEQ-GWUDI guidance allows a groundwater source to be evaluated by a professional geologist or hydrogeologist to determine if there is a likelihood of a hydraulic connection that will result in direct influence of surface water. The determination of surface water influence should include at a minimum the evaluation of the following: well characteristics, aquifer characteristics, hydraulic gradient, groundwater flow, and estimated time of travel for water between the surface water source and the well. If in the opinion of a DEQ hydrogeologist or professional geologist, the well is not directly influenced by surface water than the system should not be required to perform any further analysis and can be designated as groundwater.

The Tri Pro Cedar Main well was evaluated by us using these criteria, and it was determined to not be directly influence by surface water. Therefore we recommend that no further monitoring be performed and the well source be designated as groundwater.

Attached is a copy of the hydrogeological assessment report to support this recommendation. We suggest you notify the water system owner of this determination as soon as possible. Please retain a copy of this report in the Tri Pro Cedar Main public water system gwudi file for future reference. If you have any questions about the evaluation please contact us.

<u>Subject :</u>Hydrogeologic Assessment of Tri Pro Cedar Main
(PWS 1090192)

By Brian Painter – Env. Hydrogeologist, P.G., and
J. Scott Honodel – geologist
January 17, 2002

Background and Purpose:

The United States Environmental Protection Agency requires all states to inspect all ground water public drinking water systems for determining 'Ground Water Under the Direct Influence of Surface Water' (GWUDI). The *Surface Water Treatment Rule,* in the code of federal regulations, is a primacy drinking water regulation that requires these water systems to be assessed for surface water influence.

With the completion of the initial field survey of water wells for both DEQ and the Panhandle Health District, further work is needed for those that could be influenced by surface water situated close by; generally within 500 feet. This report presents geological, and hydrogeological data to help in making decisions concerning whether these water systems would ***not*** require more testing to determine their susceptibility to surface water influence. The goal being to maintain drinking water quality standards to protect public health, and yet not give the added monitoring expenses to area water system operators. Those water systems close to surface water sources will be assessed via this hydrogeological assessment method due to their close proximity to: lakes, rivers, streams, wetlands, and/or sewage lagoons.

Methods:

The methods used here utilize published information, maps, drinking water files, and computer data, for both the surface, and subsurface environment in the area of the well in question to perform a geologic, and hydrologic evaluation. The results of the review will be used to eliminate water systems that are clearly not influenced by surface water from further GWUDI evaluation, or water well monitoring. Systems where the data evaluation is inconclusive would be recommended for further water quality testing with a 'microscopic particulate analysis', or MPA.

A United States Geological Survey map was used to locate the area surrounding the Tri Pro Cedar Main public water well supply. The township, and range of the immediate area were used to narrow the area down to three sections located along the Pend Oreille River below the Albeni Falls Dam. The Newport 7 1/2-minute quadrangle topographic map was used. On a working copy, private and public wells closest to the Tri Pro Cedar Main well were penciled in on Sections 24,19,25,and 30of township 56N, 6W in Bonner County, Idaho. The exact location for the Tri Pro Cedar Main well was found by using ArcView and previously obtained GPS data.

Findings:

Well Logs

Well data was accessed from the Idaho Department of Water Resources; copies of drill logs for private, and public, water wells were obtained for the four sections in question. Static water levels for the wells were added to the sections, and placed as best as possible as per locations provided by the drill operators. The geology of material penetrated is normally noted by the drill operators, as well as basic well construction. The main well at Tri Pro Cedar was drilled in 1965 to a depth of 125 feet. No geologic data was noted on the drill log form.

Geology

On a surficial geologic map of North Idaho, the area around the Tri Pro Cedar Main well consists of very recent 'glacial, fluvial, alluvial, and terrace deposits'. Tri Pro Cedar Products has two water wells for their employees. The *main* well is closest to the Pend Oreille River, and is measured via ArcView at 197 horizontal feet away, and it is on top of a river terrace on the north side of the river. With my initial on site GWUDI survey on 3/29/01, the steep hillside prevented accurate measurement to surface water, and 150 feet was estimated. The *sawmill* well is farther away, at approximately 300 feet, and will not be assessed as needing a hydrogeologic report, and can be considered ground water.

A neighboring well close to the *main* well is the one for Albeni Falls Building Supply, and it has geology that consists of 18 feet of clay that starts at the surface. The rest of this well is in variants of fine sand (clean, or dirty), with very occasional clay layers. The static water level is noted at 25 feet, while the *main* well at Tri Pro Cedar Products is at 20 feet. The distance between these wells as measured by ArcView is 1500 feet.

This area north of the river where the *main* well is located is on a bluff that is approximately 50 feet above the river according to the site visit for the GWUDI, and confirmed from the topographic map that has lines of relief of 40 feet.

Hydrogeology

The attached map made in ArcView shows the modeled groundwater flow, and source water delineation of the *main* well for Tri Pro Cedar Products. This water system was modeled because it is classified as a non-transient non-community water well.

The area shown on the map is a part of a model simulation of the entire Oldtown area. This simulation was made using the WHAEM 2000 model made available by the US-EPA, and was done using publicly available hydrogeologic information from the area. The accuracy of the model is subject to the accuracy of the data that was collected; inferences had to be made in areas where data was not available.

The whole area underneath the Newport, and Oldtown region consists of an area wide aquifer that is situated within layers of river, and glacial deposits. The depth to bedrock is not known. On the groundwater model on the attached map, Brian Painter was able to determine that the groundwater flow for recharging this water well is from the highlands above the lumber mill and not from the direction of the river. (See map.)

The concentric ovals on the map show the flow of water over time, from 0 to 3 years closest to the well, to 6 to 10 at the farthest. This data was determined by using other well log information throughout the area, and adding the Tri Pro Cedar Main well. The depth to the static water level of the *main* well also is proof that the recharge is from the highlands, and not from the direction of the river since the bluff is 50 feet high, and the water level is at 20 feet.

Conclusions:

With the evidence from the groundwater flow model, and with the added proof that the static water level is higher than the level of the river by about 30 feet, this well can be considered groundwater, and no further testing would be required for the system. This data shows that the threat from the waters of the Pend Oreille River is negligible.

* An MPA was done on this well on 12/17/01. The resulting score of '0' confirms the conclusion that this well can be classified as groundwater

02/19/02

Well Log Form 1
4M 5/62

Tri Co
Cedar Main

RE[illegible]VED
JUN 29 1965
Department of Reclamation

WELL LOG AND REPORT OF THE STATE RECLAMATION ENGINEER OF IDAHO

97-65-N-1

Permit No. D-32488 Well No. 2 County Bonner
97-2070

Owner Diamond National Corp. Name of sawmill at the time

Address Albeni Falls Idaho

Driller EA Holman

Address 601-S-Pines Rd Spokane Wash 99206

Well location NE ¼ NE ¼ Sec. 25 T. 56 N/S R. 5 E/W

Size of drilled hole 12" I.D.

Total depth of well 125

Locate well in section

NW ¼	NE ¼ *
SW ¼	SE ¼

Give depth to standing water from the ground 20' Water temp. 40 °Fahr.

On "Pumping Test" delivery was 500 g.p.m. or ______ c.f.s. Drawdown was 0 feet.

Size of pump and motor used to make test 6" Colum 120 HP Gas motor

Length of time of test 4 hours ______ minutes.

If flowing well, give flow ______ c.f.s. or ______ g.p.m. and of shut off pressure ______

[Flo]wing well, described control works ______
(TYPE AND SIZE OF VALVE, ETC.)

Water will be used for ______ Weight of casing per lineal foot ______

Thickness of casing 3/8 Casing material Steel
(STEEL, CONCRETE, WOOD, ETC.)

Diameter, length and location of casing 12" From 0 to 125
(CASING 12" IN DIAMETER OR LESS, GIVE INSIDE DIAMETER; CASING OVER 12" IN DIAMETER, GIVE OUTSIDE DIAMETER)

CASING RECORD

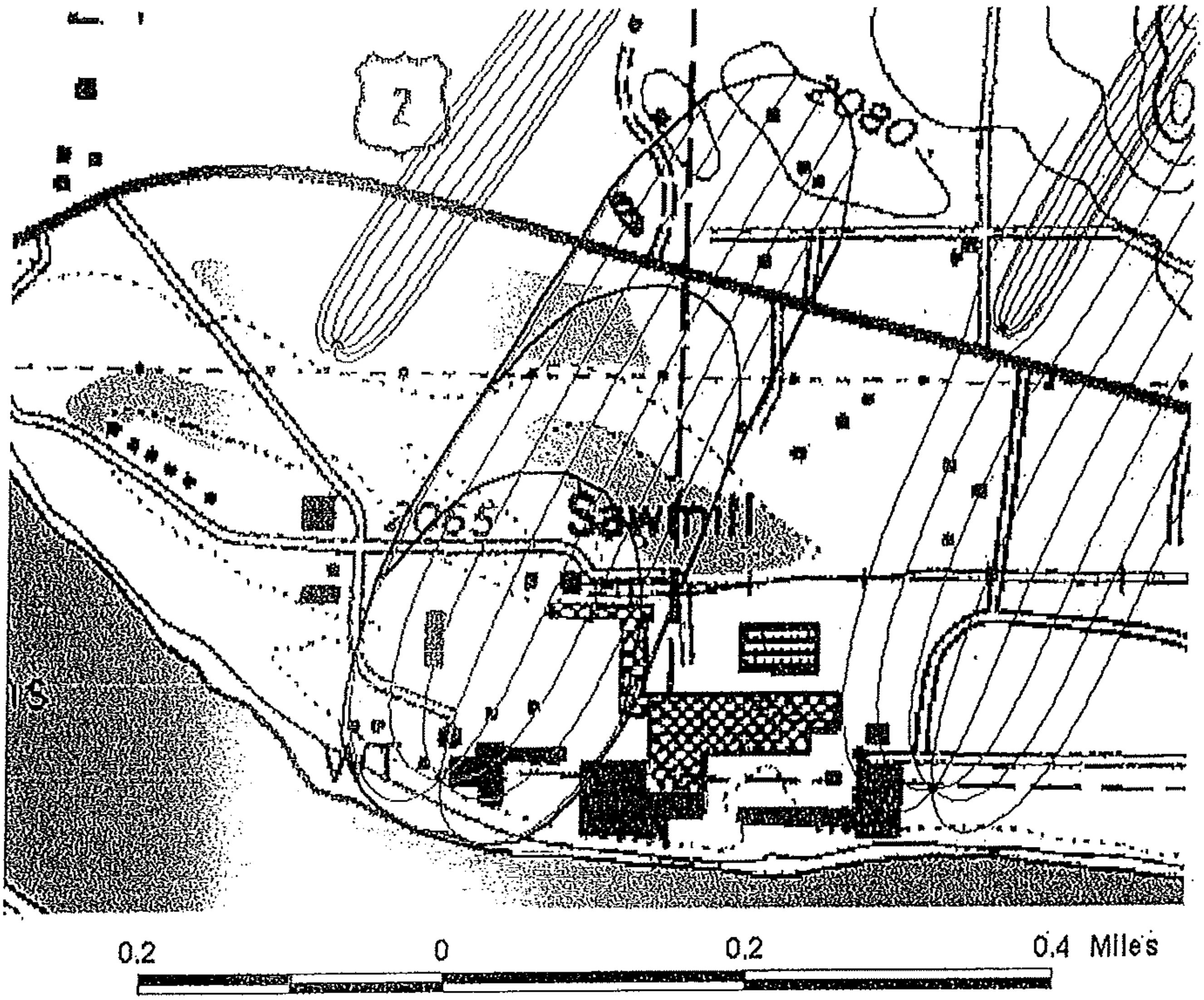
Diam. Casing	From Feet	To Feet	Length	Remarks—seals, grouting, etc.
12"	0	125	125	
				USGS

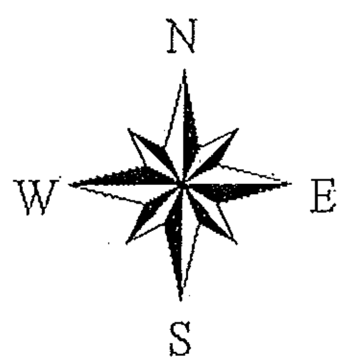
Number and size of perforations 5/16 X 3" 105 located 108 ~~120~~ feet to 123 feet from ground

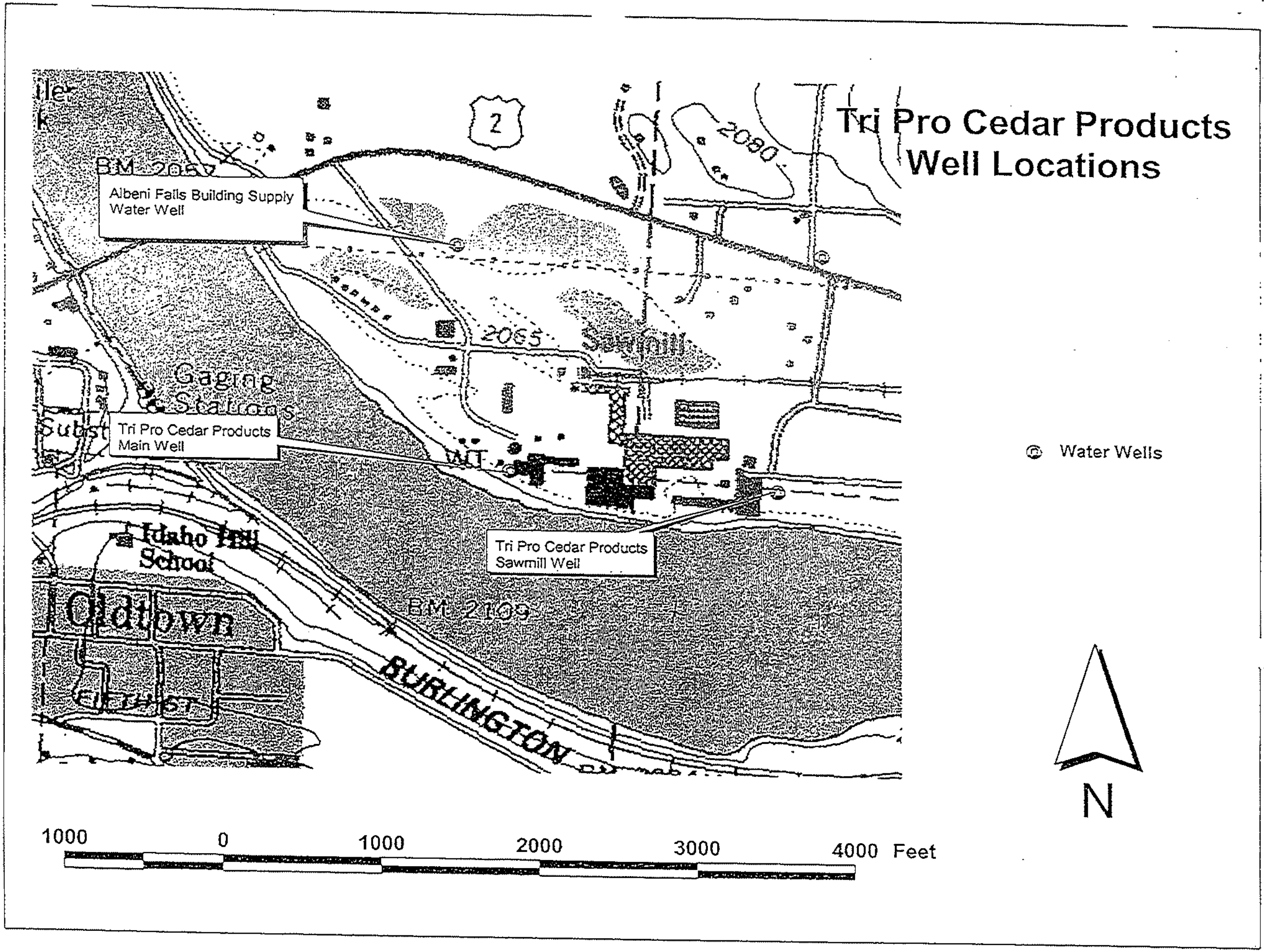
Date of commencement of well April 12-1965 Date of completion of well April 23 1965

NENE S.25 56N 5W

Tripro Cedar Main Well






Tri Pro Cedar Products
Well Locations
Albeni Falls Building Supply
Water Well
Tri Pro Cedar Products
Main Well
Tri Pro Cedar Products
Sawmill Well
Water Wells
2
2080
2065
Sawmill
Gaging
Stations
BM 2109
BURLINGTON
Idaho Hill
School
Oldtown
N
1000
0
1000
2000
3000
4000 Feet

Form 238-7
7/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

DRILLING PERMIT NO. 97-95-N-0059-000
Other IDWR No. 97-07363

2. OWNER:
Name Albeni Falls BLDG Supply Inc
Address Rt 4 Box 35
City Oldtown State Id Zip 83822

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 56 North ☒ or South ☐
Rge. 6 East ☐ or West ☒
Sec. 24, ___ 1/4 SE 1/4 NW 1/4
Gov't Lot ____ County Bonner

Address of Well Site SE Corner Hwy 2 and Old Mill Rd City ________
(Give at least name of road + Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____________

4. PROPOSED USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ________

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☒ Cable ☐ Other ________

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	6	Temp Casing

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? Y ☐ N ☒ How? ________

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1	120	250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ________ Length of Tailpipe ________

9. PERFORATIONS/SCREENS
☐ Perforations Method Telescoping
☒ Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
120	125	35		6"	S.S.	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
35 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ________

11. WELL TESTS:
☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
10	1'	36'	1hr

Water Temp. ________ Bottom hole temp. ________
Water Quality test or comments: ________

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8"	0	18'	Clay		X
6"	18'	25'	Fine Sand dirty		X
	25'	35'	Fine Sand	X	
	35'	50'	Fine Sand Brown Dirty	X	
	50'	78'	Clean Sand	X	
	78'	108'	Sand & Clay layers	X	
	108'	125'	Sand Clean	X	

Completed Depth 125' (Measurable)
Date: Started 9-29-95 Completed 9-28-95

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Carl Pitts & Sons Firm No. 68
Firm Official Carl Pitts Date 9-28-95
and
Supervisor or Operator [illegible] Pitts Date 9-28-95

EDGE ANALYTICAL
The lab you can trust.

11525 Knudson Rd
Burlington, WA 98223
1-800-755-9295
www.edgeanalytical.com

Microscopic Particulate Analysis (MPA) Report

Client: Accurate Testing Labs LLC

7950 Meadowlark Way
Coeur d'Alene, ID 83814
Fax: ( ) 762-9082

Laboratory Information:
Bottle# ID: 05-02622
Lab Number: 6401
Client Number: ACC01
Results Submitted by: [signature]

Sample Information:

Water System:	City of Oldtown	Source:	Drilled Well	Depth:	129
Location:	Visitor Center at Rotary Gateway Park	Sampler:	Krel O. Mrazek	Distance:	363
Sample Point:	Basement by pressure tank				

Collection Information:

Date/Start: 3/8/2005 10:50 Date/Stop: 3/9/2005 8:50

	Turb (NTU)	pH	Conductivity	T. chlor	F. chlor	Temp (°C)
Visit One:	0	0	0	0	0	0
Visit Two:	0	0	0	0	0	0

Meter Before: 60822
Meter After: 61875
Total Gallons Filtered: 1053
PSI: 10

Processing Information:

Centrifugate: 113.96 ul sediment/100 gal Percoll/Sucrose Gradient: 1.2 Number of Slides to Examined: 10
Dilution: 50 Number of Slides Examined: 10

Results

Primary Bioindicators with Relative Risk Factor (Bold Number is the Risk Factor)

Giardia	0	0 /100 Gals	Not Detected.
Coccidia	0	0 /100 Gals	Not Detected.
Diatoms	0	0 /100 Gals	Not Detected.
Other Algae	0	0 /100 Gals	Not Detected.
Insect/Larvae	0	0 /100 Gals	Not Detected.
Rotifers	0	0 /100 Gals	Not Detected.
Plant Debris	0	0 /100 Gals	Not Detected.

Secondary Bioindicators

Large Amorphous Debris	5,755 /100 Gals	Debris that are greater than 5um and were a mix of organic detritus and large grains of sand.
Fine Amorphous Debris	90,329 /100 Gals	It is granular material. The granular material could be a combination of silica and organic detritus.
Minerals	11,493 /100 Gals	Minerals are solid cystaline chemical compounds. They have a fractured or "broken glass" appearance.
Plant Pollen	0 /100 Gals	Not Detected.
Nematodes	0 /100 Gals	Not Detected.
Crustacia	0 /100 Gals	Not Detected.
Amoeba	0 /100 Gals	Not Detected.
Ciliate	0 /100 Gals	Not Detected.
Flagellates	0 /100 Gals	Not Detected.
Other	0 /100 Gals	Not Detected.

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA). All limitations stated in the method apply.

Final Results: Score: 0 - Low Risk per EPA Consensus Method referenced above.

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11525 Knudson Rd
Burlington, WA 98223
1-800-755-9295
www.edgeanalytical.com

Microscopic Particulate Analysis (MPA) Report

Client: Accurate Testing Labs LLC

7950 Meadowlark Way
Coeur d'Alene , ID 83814
Fax: ( ) 762-9082

Laboratory Information:
Bottle# ID: 04-9560
Lab Number: 19664
Client Number : ACC01
Results Submitted by:

Sample Information:

Water System: City of OldTown
Source: Drilled Well
Depth: 129
Location: Visitor Center @ Rotary Gateway Park
Sampler: Karel O Mrazek
Distance: 363
Sample Point: Basement between well & Pressure Tank

Collection Information:

Date/Start: 10/4/2004 10:45 Date/Stop: 10/5/2004 8:45

	Turb (NTU)	pH	Conductivity	T. chlor	F. chlor	Temp (°C)
Visit One:	0	0	0	0	0	0
Visit Two:	0	0	0	0	0	0

Meter Before: 31245
Meter After: 32223
Total Gallons Filtered: 978
PSI: 10

Processing Information:

Centrifugate: 178.94 ul sediment/100 gal
Percoll/Sucrose Gradient: 1.2
Number of Slides to Examined: 23
Dilution: 25
Number of Slides Examined: 10

Results

Primary Bioindicators with Relative Risk Factor (Bold Number is the Risk Factor)

Giardia	0	0 /100 Gals	Not Detected.
Coccidia	0	0 /100 Gals	Not Detected.
Diatoms	0	0 /100 Gals	Not Detected.
Other Algae	0	0 /100 Gals	Not Detected.
Insect/Larvae	0	0 /100 Gals	Not Detected.
Rotifers	0	0 /100 Gals	Not Detected.
Plant Debris	0	0 /100 Gals	Not Detected.

Secondary Bioindicators

Large Amorphous Debris	304 /100 Gals	Debris that are greater than 5um and were a mix of organic detritus and large grains of sand.
Fine Amorphous Debris	24,517 /100 Gals	It is granular material. The granular material could be a combination of silica and organic detritus.
Minerals	672 /100 Gals	Minerals are solid cystalline chemical compounds. They have a fractured or "broken glass" appearance.
Plant Pollen	0 /100 Gals	Not Detected.
Nematodes	0 /100 Gals	Not Detected.
Crustacia	0 /100 Gals	Not Detected.
Amoeba	0 /100 Gals	Not Detected.
Ciliate	43 /100 Gals	Ciliates are free-living protozoa and are extremely common in healthy surface sources.
Flagellates	11 /100 Gals	Flagellates are plant-like possessing chlorophyll and chromatophores. Since these protozoa have broad feeding a
Other	0 /100 Gals	Not Detected.

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA). All limitations stated in the method apply.

Final Results: Score: 0 - Low Risk per EPA Consensus Method referenced above.

APPENDIX J

WBWSD SANITARY SURVEYS

Bryan:

I've been reviewing the Sanitary Surveys that IDEQ has done on the water system and they have been recommending replacement of the reservoir since 1998 (see photos in prior email). They have also recommended replacement of transite lines since 1998. Neither of those projects has been economically feasible for the District because of the 65% LMI status of our users. Ergo, the redundancy that the extension project would bring to the water system is essential. If the reservoir were to fail, not only would our District users be without water, but also half of the City of Newport, WA.

On the sewer side of the issue, the septic system for Selkirk Supply on the other side of the river was in such bad shape IDEQ made the owners replace it. The owners asked IDEQ if they could wait for the extension project and IDEQ said no. The first drainfield that Albeni Falls Building Supply put in when they built their new building along the highway failed within two years and had to be replaced. Anecdotal reports of raw sewage on top of the ground over the drainfields of some of the houses on Old Diamond Mill Road have come in to this office for years. When Bob Camp was at Panhandle Health, he was aware of some of these reports.

Efforts to extend water and sewer services east of the river were undertaken in 1996 and 1998 and discussed in 2001. None of the projects got off the ground because current users could not bear the cost. The environmental benefit of doing away with private septic systems in an area on the banks of the Pend Oreille River seems obvious.

Sheila

IDAHO DEPARTMENT
OF HEALTH AND WELFARE
DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

July 22, 1998

Ms. Sheila Gormley
West Bonner Water District
214 North Washington Ave.
Oldtown, ID 83822

RE: Sanitary Survey of West Bonner Water District System (PWS#1090151)

Dear Ms. Gormley:

First, I would like to thank you and Karel for providing me with information and guiding through your water system on June 30, 1998. I would like to commend both of you for your efforts in your providing the City of Oldtown a good source of drinking water. During the sanitary survey I noted the following items that need to be addressed:

1. The reservoir has many cracks with one leaking steadily on the southwest side. With this many cracks in the tank, the board should consider lining the existing tank or replacing it.

2. The system needs to maintain a free chlorine residual of at least .2 mg/L in distribution at the maximum hourly flow rate before delivery to the first connection. At the time of the survey the measured total chlorine residual was only .05 and .04 mg/L, as taken at your office. You will probably want to coordinate with the City of Newport as they have the chlorination equipment installed. You may also want to purchase a portable colorimeter for chlorine residual testing. The two chlorine gas tanks in the chlorine room should be equipped with an automatic switch over valve so that if one tank is depleted the other tank could be put into use without an operator being present. Also, an automatic valve should be installed that would shutdown the flow leaving the springs when the power is out. With the current configuration water would leave the springs unchlorinated if the power was to go out. An alternative would be to install a DC operated back-up system for the chlorinators for when the power is out. Since the City of Newport owns and operates the chlorination system you will want to coordinate with them to address these items.

3. All three spring collection boxes need to have rubber gaskets installed around the hatches to ensure that insects and debris cannot enter the boxes.

4. We recommend replacing the older transite lines when it is possible.

5. Before the backup well can be used in the future a VOC sample must be done prior to use.

A time frame for Items 1 through 3 is given in the Conclusions and Recommendations section of the sanitary survey form that is enclosed. I have also enclosed some information that Karel had requested. If you have any questions concerning this survey please give me a call at (208) 769-1422.

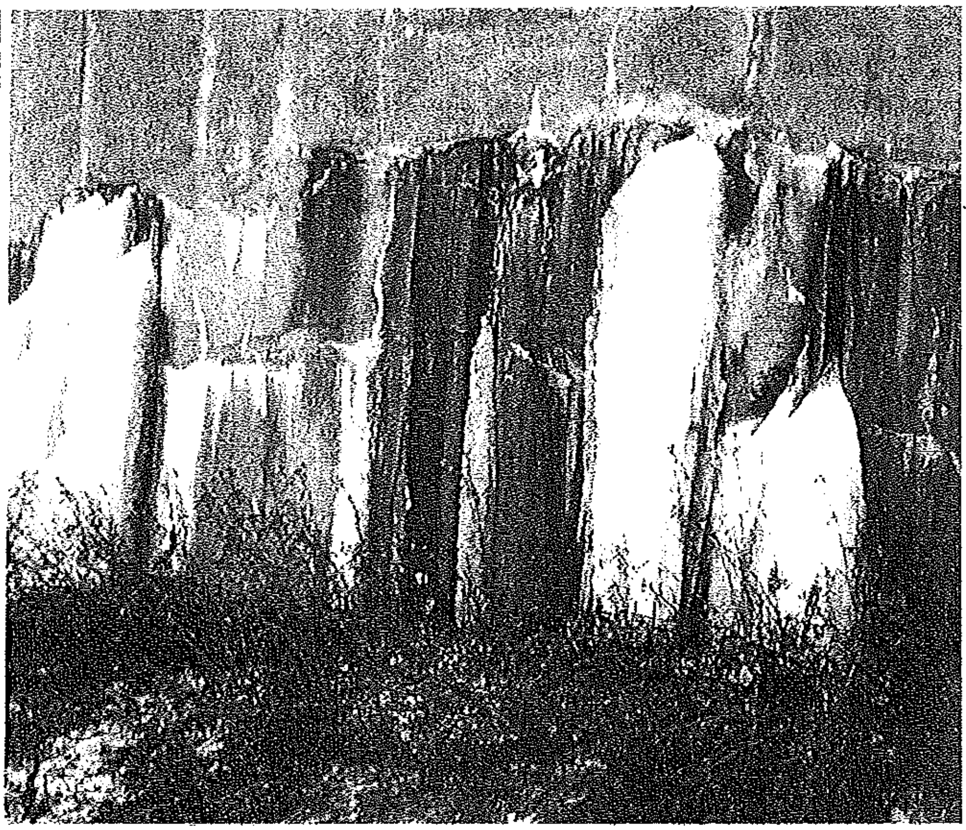
Sincerely,

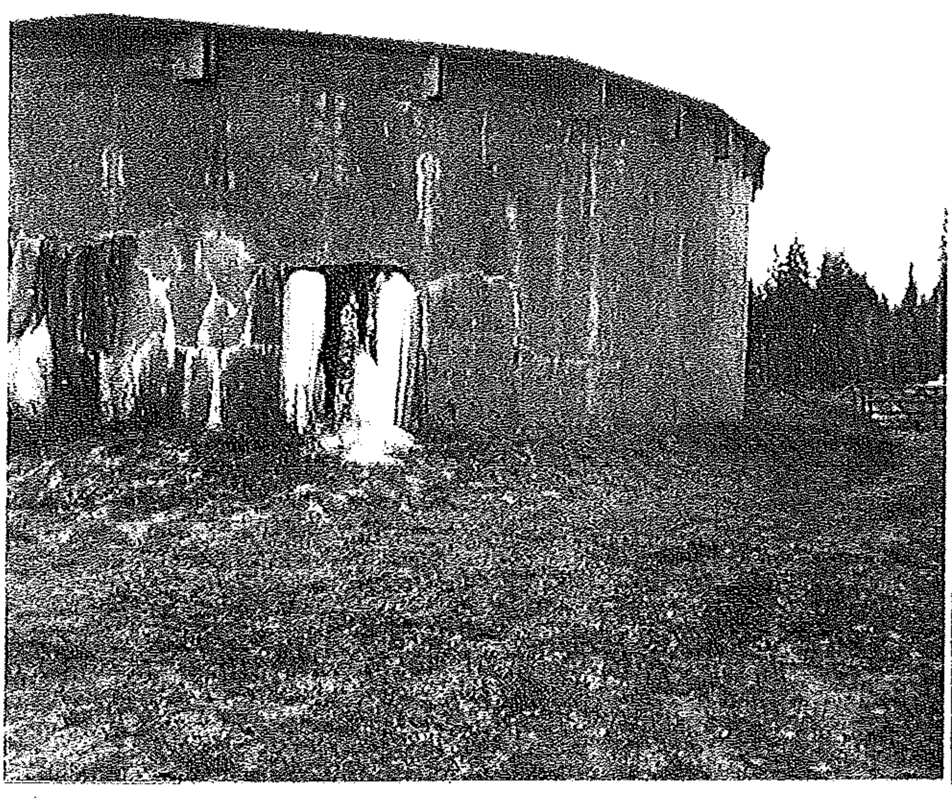
Michael B. Klaus

Michael B. Klaus, EIT
Engineering Specialist

Enclosures

c: Steve Tanner, DEQ-CdA
Mr. Ray King, City of Newport, P.O. Box 945, Newport, WA 99156
Mr. Tom Justus, Washington Department of Health, 1500 W. 4th, Suite 305, Spokane, WA 99204





STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814-2648 • (208) 769-1422

Dirk Kempthorne, Governor
C. Stephen Allred, Director

August 12, 2003

Ms. Sheila Gormley
West Bonner Water District
215 W. Washington Avenue
Oldtown, ID 83822

Re: Reports of Inspection, PWS # 1090151, West Bonner Water District Water System

Dear Ms. Gormley:

Thank you for the assistance or Carl Mrazek in conducting the inspection of the West Bonner Water District Water System. We conducted this inspection on our 5-year cycle of routine inspection activities. The inspection was quite thorough and Mr. Mrazek demonstrated complete understanding of the water system.

We did not find any deficiencies in the water system with regard to the Idaho Rules for Public Drinking Water System. To remain in compliance we have the following suggestions:

1. The water system should concentrate on the continued enforcement of it's cross connection control ordinance and begin to extend it into enforcement of the annual inspection and certification of the existing devices.
2. The maintenance of the concrete reservoir should be ongoing to ensure that the minor leakage from the cold joint in the side wall is remedied.

If you have any questions or comments on this matter please feel free to contact me at the Department of Environmental Quality (DEQ) in Coeur d'Alene. We are located at 2110 Ironwood Parkway, phone 208 769-1422.

Sincerely,

Anthony P. Davis

Anthony P. Davis
Water Quality Science Officer

c: Steve Tanner, DEQ, Coeur d'Alene

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814 • (208) 769-1422

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

December 29, 2008

West Bonner Water District 1
Karel Mrazek
215 N Washington Ave
Oldtown, ID 83822

RE: Sanitary Survey of PWS #ID1090151, West Bonner Water District 1

Dear Mr. Mrazek:

I would like to thank you for taking the time to assist with the sanitary survey that DEQ performed on the West Bonner Water District 1 on December 2, 2008. You were very helpful during the survey.

During the inspection we found that the water system is operating **in compliance** with the Idaho Rules for Public Drinking Water Systems.

Deficiencies

The deficiencies and additional requirements listed below need to be addressed in a written Plan of Correction (POC), submitted within 45 days of the receipt of this letter. The POC is a simple narrative document that lists the deficiencies and additional requirements, how they will be corrected, and the date by which corrections will be completed. Please afford yourself adequate time to address the problems so that time extensions will not be necessary.

1. At the time of the survey the operator stated that one of the air vacuum release valve is buried in dirt. This valve must be uncovered and have all of the proper vents and drains.

Additional Requirements

The requirements listed below, while not considered significant deficiencies, must be completed by the District. Please provide a timeline in the POC to DEQ within 45 days that specifies when the requirements will be addressed.

1. Since the source has been determined to be ground water, DEQ will require that the 1720C turbidimeter be calibrated quarterly if turbidity should ever exceed 1.0 NTU.
2. All of the safety equipment required for gas chlorination systems were not observed at the time of the survey according to 158.01.08.531.05 in the Idaho Rules for Public Drinking Water Systems (IRPDWS). West Bonner must provide all required safety equipment.
3. According to 158.01.08.552.06 in the IRPDWS, West Bonner must continue to actively enforce their cross connection ordinance by implementing their cross connection control program. In order to do that they need to inspect assemblies annually to ensure adequate backflow prevention

assemblies and devices are provided. West Bonner must have all assemblies inspected on an annual basis by a certified backflow tester.

4. A written total coliform rule (TCR) sample site plan is required. Please submit a copy of the plan to the DEQ Coeur d'Alene office.
5. Ammonia is currently being stored in the same room as the chlorine gas. It is required that the ammonia be stored in a different location.
6. All threaded hose bibs in the chlorination room must have an appropriate atmospheric or pressure vacuum breaker installed when connected to garden hoses.
7. West Bonner must continue to maintain the concrete reservoir to ensure that seepage is remedied in order to provide the longest useful life of the reservoir as possible. DEQ also recommends the system begin preliminary planning for replacement of the reservoir in the future. Please contact our office to discuss public funding opportunities available to the District.

Recommendations

The following items are being recommended to assist the District in continuing to maintain the system successfully.

1. DEQ recommends all valves are exercised on an annual basis.
2. DEQ recommends that the water system pursue a Drinking Water Protection Plan to establish further protective measures against contamination in the watershed. Yvonne Pettit, DEQ Drinking Water Protection Coordinator may be contacted at 208-769-1422 for further information regarding the plan.
3. DEQ recommends the reservoir is cleaned and inspected every five years.

If you have any questions or comments regarding the survey, please do not hesitate to contact me at 769-1422.

Regards,

Troy Wassink
Drinking Water Analyst

Enc: Narrative, ESS Form, contact time calculations, copy of Idaho DW Rules, & table for cross connection devices

c: Suzanne Scheidt, DEQ

APPENDIX K

WATERCAD MAP AND RESULTS

JAMES A. SEWELL & ASSOCIATES, LLC
600 4TH STREET WEST
NEWPORT, WA 99156
509-447-3626

May 25, 2012
BY: TMP

CITY OF OLDTOWN - WATERCAD RESULTS
Phase I - Fire Flow

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/Minimum Pressure (System)
H-57	TRUE	2,500	3,471	2,500	3,471	20.00	44	20	RIVER XING J-179 END
H-58	TRUE	2,500	3,403	2,500	3,403	20.00	46.3	20	RIVER XING J-179 END
H-59	TRUE	2,500	3,392	2,500	3,392	20.00	45.4	20	RIVER XING J-179 END
H-60	TRUE	2,500	3,333	2,500	3,333	20.00	45.5	20	RIVER XING J-179 END
H-61	TRUE	2,500	3,253	2,500	3,253	20.00	46.8	20	RIVER XING J-179 END
H-62	TRUE	2,500	3,396	2,500	3,396	20.00	44.4	20	RIVER XING J-179 END
H-63	TRUE	2,500	3,400	2,500	3,400	20.00	40.1	20	RIVER XING J-179 END
H-64	TRUE	2,500	3,158	2,500	3,158	20.00	20	26.2	RIVER XING J-179 END
H-65	TRUE	2,500	3,500	2,500	3,500	20.00	51.3	27	RIVER XING J-179 END
H-66	TRUE	2,500	3,500	2,500	3,500	20.00	43.8	20.8	RIVER XING J-179 END
H-67	TRUE	2,500	3,394	2,500	3,394	20.00	46.8	20	RIVER XING J-179 END
H-73	TRUE	2,500	3,500	2,500	3,500	20.00	34.9	20.4	RIVER XING J-179 END
J-151	TRUE	2,500	3,500	2,510	3,510	20.00	51.7	27.4	RIVER XING J-179 END
J-152	TRUE	2,500	3,500	2,510	3,510	20.00	43.7	20.7	RIVER XING J-179 END
J-153	TRUE	2,500	3,436	2,510	3,446	20.00	44.9	20	RIVER XING J-179 END
J-154	TRUE	2,500	3,397	2,510	3,407	20.00	46.3	20	RIVER XING J-179 END
J-155	TRUE	2,500	3,394	2,510	3,404	20.00	46.3	20	RIVER XING J-179 END
J-156	TRUE	2,500	3,395	2,510	3,405	20.00	46.2	20	RIVER XING J-179 END
J-157	TRUE	2,500	3,393	2,510	3,403	20.00	45.8	20	RIVER XING J-179 END
J-158	TRUE	2,500	3,392	2,510	3,402	20.00	45.8	20	RIVER XING J-179 END
J-159	TRUE	2,500	3,390	2,510	3,400	20.00	44.7	20	RIVER XING J-179 END
J-160	TRUE	2,500	3,368	2,510	3,378	20.00	44	20	RIVER XING J-179 END
J-161	TRUE	2,500	3,362	2,510	3,372	20.00	44.5	20	RIVER XING J-179 END
J-162	TRUE	2,500	3,338	2,510	3,348	20.00	45.4	20	RIVER XING J-179 END
J-163	TRUE	2,500	3,337	2,510	3,347	20.00	45.4	20	RIVER XING J-179 END
J-164	TRUE	2,500	3,325	2,510	3,335	20.00	45.6	20	RIVER XING J-179 END
J-165	TRUE	2,500	3,324	2,510	3,334	20.00	45.6	20	RIVER XING J-179 END
J-166	TRUE	2,500	3,313	2,510	3,323	20.00	46	20	RIVER XING J-179 END
J-167	TRUE	2,500	3,310	2,510	3,320	20.00	46.1	20	RIVER XING J-179 END
J-168	TRUE	2,500	3,292	2,510	3,302	20.00	46.8	20	RIVER XING J-179 END
J-180	TRUE	2,500	3,400	2,510	3,410	20.00	44.3	20	RIVER XING J-179 END
J-181	TRUE	2,500	3,500	2,520	3,520	20.00	37.5	20.7	RIVER XING J-179 END
J-182	TRUE	2,500	3,500	2,510	3,510	20.00	35	20.7	RIVER XING J-179 END
J-183	TRUE	2,500	3,500	2,510	3,510	20.00	23.6	20.7	RIVER XING J-179 END
J-184	TRUE	2,500	3,315	2,510	3,325	20.00	44.9	20	RIVER XING J-179 END
J-187	TRUE	2,500	3,500	2,510	3,510	20.00	24.1	20.8	RIVER XING J-179 END
PHASE II H-68	TRUE	2,500	3,440	2,500	3,440	20.00	44.3	20	RIVER XING J-179 END
PHASE II H-69	TRUE	2,500	3,492	2,500	3,492	20.00	40.6	20	RIVER XING J-179 END
PHASE II H-70	TRUE	2,500	3,500	2,500	3,500	20.00	37.4	20.1	RIVER XING J-179 END
PHASE II H-71	TRUE	2,500	3,500	2,500	3,500	20.00	34.7	20.3	RIVER XING J-179 END
PHASE II H-72	TRUE	2,500	3,500	2,500	3,500	20.00	34.7	20.4	RIVER XING J-179 END
PHASE II H-74	TRUE	2,500	3,500	2,500	3,500	20.00	34.6	20	RIVER XING J-179 END
PHASE II H-75	TRUE	2,500	3,500	2,500	3,500	20.00	33	20.2	RIVER XING J-179 END
PHASE II H-76	TRUE	2,500	3,500	2,500	3,500	20.00	31.9	20.3	RIVER XING J-179 END
PHASE II H-77	TRUE	2,500	3,500	2,500	3,500	20.00	31.4	20.4	RIVER XING J-179 END
PHASE II H-78	TRUE	2,500	3,500	2,500	3,500	20.00	31.5	20.5	RIVER XING J-179 END
PHASE II H-79	TRUE	2,500	3,500	2,500	3,500	20.00	32.2	20.6	RIVER XING J-179 END
PHASE II H-80	TRUE	2,500	3,500	2,500	3,500	20.00	33.6	20.8	RIVER XING J-179 END
PHASE II H-81	TRUE	2,500	3,500	2,500	3,500	20.00	34.9	21	RIVER XING J-179 END
PHASE II H-82	TRUE	2,500	3,500	2,500	3,500	20.00	28.6	20.8	RIVER XING J-179 END

JAMES A. SEWELL & ASSOCIATES, LLC
600 4TH STREET WEST
NEWPORT, WA 99156
509-447-3626

May 25, 2012
BY: TMP

CITY OF OLDTOWN - WATERCAD RESULTS
Phase I - Fire Flow

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/Minimum Pressure (System)
PHASE II H-83	TRUE	2,500	3,500	2,500	3,500	20.00	27	21	RIVER XING J-179 END
PHASE II H-84	TRUE	2,500	3,500	2,500	3,500	20.00	30.1	20.7	RIVER XING J-179 END
PHASE II H-86	TRUE	2,500	3,500	2,500	3,500	20.00	50.2	26.5	RIVER XING J-179 END
PHASE II H-87	TRUE	2,500	3,500	2,500	3,500	20.00	43.3	25.3	RIVER XING J-179 END
PHASE II H-88	TRUE	2,500	3,500	2,500	3,500	20.00	41.7	24.4	RIVER XING J-179 END
PHASE II H-89	TRUE	2,500	3,500	2,500	3,500	20.00	41.7	23.7	RIVER XING J-179 END
PHASE II H-90	TRUE	2,500	3,500	2,500	3,500	20.00	39.5	23	RIVER XING J-179 END
PHASE II H-91	TRUE	2,500	3,500	2,500	3,500	20.00	30.8	22.3	RIVER XING J-179 END
PHASE II H-92	TRUE	2,500	3,500	2,500	3,500	20.00	22.4	21.6	RIVER XING J-179 END
PHASE II J-185	TRUE	2,500	3,500	2,510	3,510	20	27.9	21.1	RIVER XING J-179 END
PHASE II J-186	TRUE	2,500	3,486	2,510	3,496	20	41.3	20	RIVER XING J-179 END
PHASE II J-188	TRUE	2,500	3,500	2,510	3,510	20	33.7	20.8	RIVER XING J-179 END
PHASE II J-189	TRUE	2,500	3,497	2,510	3,507	20	35.3	20	RIVER XING J-179 END
PHASE II J-190	TRUE	2,500	3,500	2,510	3,510	20	46.7	25.8	RIVER XING J-179 END
PHASE II J-191	TRUE	2,500	3,500	2,510	3,510	20	42.1	24.9	RIVER XING J-179 END
PHASE II J-192	TRUE	2,500	3,500	2,510	3,510	20	42.6	24.1	RIVER XING J-179 END
PHASE II J-193	TRUE	2,500	3,500	2,510	3,510	20	40.2	23.4	RIVER XING J-179 END
PHASE II J-194	TRUE	2,500	3,500	2,510	3,510	20	39	22.7	RIVER XING J-179 END
PHASE II J-195	TRUE	2,500	3,500	2,510	3,510	20	26.6	22	RIVER XING J-179 END
PHASE II J-196	TRUE	2,500	3,500	2,510	3,510	20	25.8	21.3	RIVER XING J-179 END
PHASE II J-197	TRUE	2,500	3,500	2,510	3,510	20	28.6	20.8	RIVER XING J-179 END
PHASE II J-198	TRUE	2,500	3,500	2,510	3,510	20	35.3	20.6	RIVER XING J-179 END
PHASE II J-199	TRUE	2,500	3,500	2,510	3,510	20	34.9	20.4	RIVER XING J-179 END
PHASE II J-200	TRUE	2,500	3,500	2,510	3,510	20	34.5	20.3	RIVER XING J-179 END
PHASE II J-201	TRUE	2,500	3,500	2,510	3,510	20	37.5	20.1	RIVER XING J-179 END
PHASE II J-202	TRUE	2,500	3,477	2,510	3,487	20	43.3	20	RIVER XING J-179 END
PHASE II J-203	TRUE	2,500	3,500	2,510	3,510	20	32.4	20.3	RIVER XING J-179 END
PHASE II J-204	TRUE	2,500	3,500	2,510	3,510	20	31.6	20.4	RIVER XING J-179 END
PHASE II J-205	TRUE	2,500	3,500	2,510	3,510	20	31.4	20.4	RIVER XING J-179 END
PHASE II J-206	TRUE	2,500	3,500	2,510	3,510	20	31.8	20.5	RIVER XING J-179 END
PHASE II J-207	TRUE	2,500	3,500	2,510	3,510	20	32.7	20.7	RIVER XING J-179 END
PHASE II J-208	TRUE	2,500	3,500	2,510	3,510	20	31.6	20.8	RIVER XING J-179 END
PHASE II J-209	TRUE	2,500	3,500	2,510	3,510	20	25.9	20.8	RIVER XING J-179 END
RIVER XING J-169	TRUE	2,500	3,174	2,500	3,174	20	67.7	20	RIVER XING J-179 END
RIVER XING J-170	TRUE	2,500	3,124	2,500	3,124	20	73.1	20	RIVER XING J-179 END
RIVER XING J-171	TRUE	2,500	3,085	2,500	3,085	20	73.1	20	RIVER XING J-179 END
RIVER XING J-172	TRUE	2,500	3,030	2,500	3,030	20	73.1	20	RIVER XING J-179 END
RIVER XING J-173	TRUE	2,500	2,970	2,500	2,970	20	73.1	20	RIVER XING J-179 END
RIVER XING J-174	TRUE	2,500	2,928	2,500	2,928	20	73.1	20	RIVER XING J-179 END
RIVER XING J-175	TRUE	2,500	2,890	2,500	2,890	20	73.1	20	RIVER XING J-179 END
RIVER XING J-176	TRUE	2,500	2,856	2,500	2,856	20	70.8	20	RIVER XING J-179 END
RIVER XING J-177	TRUE	2,500	2,844	2,500	2,844	20	67.9	20	RIVER XING J-179 END
RIVER XING J-178	TRUE	2,500	2,789	2,500	2,789	20	46	20	RIVER XING J-179 END
RIVER XING J-179	TRUE	2,500	2,647	2,500	2,647	20	20	41.9	PHASE II H-92

JAMES A. SEWELL & ASSOCIATES, LLC
600 4TH STREET WEST
NEWPORT, WA 99156
509-447-3626

May 25, 2012
BY: TMP

CITY OF OLDTOWN - WATERCAD RESULTS
Phase I - Peak Hourly Demand

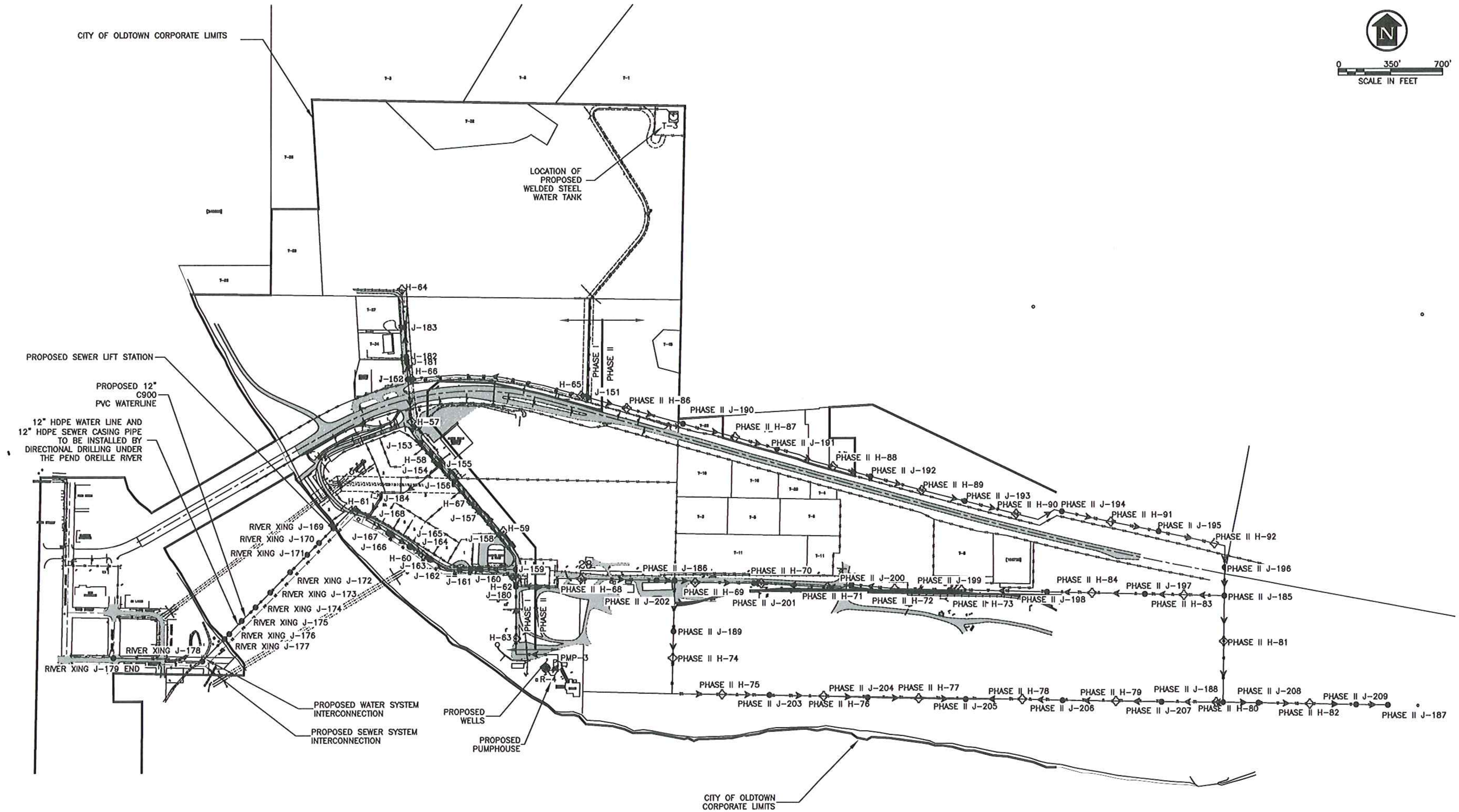
Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/Minimum Pressure (System)
H-57	TRUE	0	40	79.1	54.8	RIVER XING J-179 END
H-58	TRUE	0	40	81.2	54.8	RIVER XING J-179 END
H-59	TRUE	0	40	81.6	54.8	RIVER XING J-179 END
H-60	TRUE	0	40	81.1	54.8	RIVER XING J-179 END
H-61	TRUE	0	40	81.6	54.8	RIVER XING J-179 END
H-62	TRUE	0	40	80.3	54.8	RIVER XING J-179 END
H-63	TRUE	0	40	79	54.8	RIVER XING J-179 END
H-64	TRUE	0	40	80	54.8	RIVER XING J-179 END
H-65	TRUE	0	40	79.4	54.8	RIVER XING J-179 END
H-66	TRUE	0	40	78.3	54.8	RIVER XING J-179 END
H-67	TRUE	0	40	82.5	54.8	RIVER XING J-179 END
H-73	TRUE	0	40	78.1	54.8	RIVER XING J-179 END
J-151	TRUE	19	40	79.5	54.8	RIVER XING J-179 END
J-152	TRUE	19	40	78.3	54.8	RIVER XING J-179 END
J-153	TRUE	19	40	79.9	54.8	RIVER XING J-179 END
J-154	TRUE	19	40	81.2	54.8	RIVER XING J-179 END
J-155	TRUE	19	40	81.2	54.8	RIVER XING J-179 END
J-156	TRUE	19	40	81.6	54.8	RIVER XING J-179 END
J-157	TRUE	19	40	81.6	54.8	RIVER XING J-179 END
J-158	TRUE	19	40	81.6	54.8	RIVER XING J-179 END
J-159	TRUE	19	40	80.3	54.8	RIVER XING J-179 END
J-160	TRUE	19	40	79.8	54.8	RIVER XING J-179 END
J-161	TRUE	19	40	80.3	54.8	RIVER XING J-179 END
J-162	TRUE	19	40	81.1	54.8	RIVER XING J-179 END
J-163	TRUE	19	40	81.1	54.8	RIVER XING J-179 END
J-164	TRUE	19	40	81.1	54.8	RIVER XING J-179 END
J-165	TRUE	19	40	81.1	54.8	RIVER XING J-179 END
J-166	TRUE	19	40	81.4	54.8	RIVER XING J-179 END
J-167	TRUE	19	40	81.4	54.8	RIVER XING J-179 END
J-168	TRUE	19	40	81.6	54.8	RIVER XING J-179 END
J-180	TRUE	19	40	80.3	54.8	RIVER XING J-179 END
J-181	TRUE	20	40	79.1	54.8	RIVER XING J-179 END
J-182	TRUE	19	40	79.1	54.8	RIVER XING J-179 END
J-183	TRUE	19	40	80	54.8	RIVER XING J-179 END
J-184	TRUE	19	40	79.9	54.8	RIVER XING J-179 END
J-187	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-68	TRUE	0	40	82	54.8	RIVER XING J-179 END
PHASE II H-69	TRUE	0	40	80.7	54.8	RIVER XING J-179 END
PHASE II H-70	TRUE	0	40	79	54.8	RIVER XING J-179 END
PHASE II H-71	TRUE	0	40	77.2	54.8	RIVER XING J-179 END
PHASE II H-72	TRUE	0	40	77.7	54.8	RIVER XING J-179 END
PHASE II H-74	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-75	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-76	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-77	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-78	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-79	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-80	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-81	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-82	TRUE	0	40	76.4	54.8	RIVER XING J-179 END
PHASE II H-83	TRUE	0	40	68.2	54.8	RIVER XING J-179 END

JAMES A. SEWELL & ASSOCIATES, LLC
600 4TH STREET WEST
NEWPORT, WA 99156
509-447-3626

May 25, 2012
BY: TMP

CITY OF OLDTOWN - WATERCAD RESULTS
Phase I - Peak Hourly Demand

Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/Minimum Pressure (System)
PHASE II H-84	TRUE	0	40	72.5	54.8	RIVER XING J-179 END
PHASE II H-86	TRUE	0	40	79.8	54.8	RIVER XING J-179 END
PHASE II H-87	TRUE	0	40	76.7	54.8	RIVER XING J-179 END
PHASE II H-88	TRUE	0	40	77.5	54.8	RIVER XING J-179 END
PHASE II H-89	TRUE	0	40	79.2	54.8	RIVER XING J-179 END
PHASE II H-90	TRUE	0	40	78.2	54.8	RIVER XING J-179 END
PHASE II H-91	TRUE	0	40	70.4	54.8	RIVER XING J-179 END
PHASE II H-92	TRUE	0	40	62.6	54.8	RIVER XING J-179 END
PHASE II J-185	TRUE	19	40	68.2	54.8	RIVER XING J-179 END
PHASE II J-186	TRUE	19	40	80.7	54.8	RIVER XING J-179 END
PHASE II J-188	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-189	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-190	TRUE	19	40	78.5	54.8	RIVER XING J-179 END
PHASE II J-191	TRUE	19	40	76.7	54.8	RIVER XING J-179 END
PHASE II J-192	TRUE	19	40	79.2	54.8	RIVER XING J-179 END
PHASE II J-193	TRUE	19	40	78.3	54.8	RIVER XING J-179 END
PHASE II J-194	TRUE	19	40	78.2	54.8	RIVER XING J-179 END
PHASE II J-195	TRUE	19	40	66.5	54.8	RIVER XING J-179 END
PHASE II J-196	TRUE	19	40	66	54.8	RIVER XING J-179 END
PHASE II J-197	TRUE	19	40	70.3	54.8	RIVER XING J-179 END
PHASE II J-198	TRUE	19	40	78.1	54.8	RIVER XING J-179 END
PHASE II J-199	TRUE	19	40	78.1	54.8	RIVER XING J-179 END
PHASE II J-200	TRUE	19	40	77.2	54.8	RIVER XING J-179 END
PHASE II J-201	TRUE	19	40	79	54.8	RIVER XING J-179 END
PHASE II J-202	TRUE	19	40	82.4	54.8	RIVER XING J-179 END
PHASE II J-203	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-204	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-205	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-206	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-207	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-208	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
PHASE II J-209	TRUE	19	40	76.4	54.8	RIVER XING J-179 END
RIVER XING J-169	TRUE	0	40	102.5	54.8	RIVER XING J-179 END
RIVER XING J-170	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-171	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-172	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-173	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-174	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-175	TRUE	0	40	107.8	54.8	RIVER XING J-179 END
RIVER XING J-176	TRUE	0	40	105.6	54.8	RIVER XING J-179 END
RIVER XING J-177	TRUE	0	40	102.7	54.8	RIVER XING J-179 END
RIVER XING J-178	TRUE	0	40	80.7	54.8	RIVER XING J-179 END
RIVER XING J-179	TRUE	0	40	54.8	62.6	PHASE II H-92



4.1 WATER SYSTEM PLAN

PROFESSIONAL ENGINEER
REGISTERED
3998
STATE OF IDAHO
ERIC J. ELDENBURG

ENGINEER'S STAMP

No.	DATE	REVISION	DRN/CHK'D

James A. Sewell and Associates, LLC
CONSULTING ENGINEERS
NEWPORT, WASHINGTON, 99156
(509) 447-3626

SHEET TITLE:
WATER SYSTEM
HYDRAULIC ANALYSIS
PROJECT:
ALBENI ANNEXATION
OLDTOWN, IDAHO

DATE:	3-23-09
SCALE:	AS SHOWN
DRAWN BY:	TMP
CHECKED BY:	KAK
FILE NAME:	ALBENI PARK-4408
DATA No.:	

PAGE 1 OF 1

APPENDIX L

AFFIDAVIT OF PUBLICATIONS AND PUBLIC MEETING MINUTES

The regular monthly meeting of the **West Bonner Water & Sewer Board** was called to order by Chairman, Lonnie Orr, on Wednesday, September 14, 2011, at 6:30 p.m. at Oldtown City Hall.

Roll Call:
Present: Lonnie Orr, Carl Kloepfer, Bob Sedlacek, Randy Edgar
Absent: Jan Edgar

Minutes: Randy made the MOTION, seconded by Carl to approve the minutes of the last meeting. Motion carried.

Randy made the MOTION, seconded by Carl to approve the minutes of the annual budget hearing.

Randy made the MOTION, seconded by Carl to approve the minutes of the public hearing on the preferred alternatives for the water/sewer extension project. Motion carried.

Guests:
Eric Eldenburg of J. A. Sewell & Associates

Eric reported that the environmental documents have been submitted to IDEQ and should be reviewed by the end of next week. Once it is approved, loan funds can be obligated to the district. Bids could be solicited on October 1st and closed on October 31st. Carl made the MOTION, seconded by Bob to go out to bid on October 1, 2011 contingent on approval of the documents that have been submitted to IDEQ. Motion carried.

Eric presented an engineering agreement for construction on the water/sewer extension project. Carl made the MOTION, seconded by Randy to approve the agreement as presented. Motion carried.

Unfinished Business:
Water/Sewer Extension Project Preferred Alternative: Of the alternatives presented by J. A. Sewell & Associates at the public hearing on August 31, 2011 Bob made the MOTION, seconded by Carl to approve the recommended alternative that includes boring under the river for water and sewer extension lines, sinking two wells on the property currently owned by Tri-Pro Cedar, and constructing a 500,000 gallon reservoir east of the river. Motion carried.

New Business:
Mountain West CD: The 6 month CD matures on September 28th of this year. Randy made the MOTION, seconded by Bob to pull the CD on the 28th. Motion carried.

Chlorine Testing Kit and Confined Space Equipment: The testing kits we have are no longer working correctly and need to be replaced. Quotes will be obtained from different suppliers.

Water Operator Certification: Idaho Bureau of Occupational Licensing regulations allow reinstatement of certification within two years of its lapse as long as the operator keeps taking and passing required classes. Gene Kolar's certification lapsed in May 2010 so he has until May 2012 to seek reinstatement.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Randy made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: October 12, 2011 at 6:30 p.m. at Oldtown City Hall.

Adjournment: Randy made the MOTION, seconded by Carl to adjourn the meeting. Motion carried. Meeting was adjourned at 7:30 p.m.

Lonnie L. Orr, Chairman

Sheila M. Gormley, Clerk

Nations member nations. Mrs. Horn found Mr. Rivkees very sympathetic to the Prisoner of War/Missing in Action issue and he, along with Annin's advertising agency, designed a flag to represent our missing men and women.

Since its inception this stark black and white flag, which was designed on behalf of American POW/MIAs form the Vietnam War, has come to represent our missing country men and women from all wars. The POW/MIA flag has been ruled legally to be "public domain"-as is the American flag; therefore, it cannot be claimed as the sole property by any organization or individual.

The POW/MIA flag flew over the White House for the first time on National POW/MIA Recognition Day, 1988. On 9 March 1989, it was installed in the United States Capitol Rotunda. This occurred as a result of legislation passed overwhelmingly during the 100th Congress and, additionally, in an extremely rare demonstration of bipartisan congressional support, the leadership of both Houses hosted the formal installation ceremony.

Further, by join Congressional Resolution, the POW/MIA flag-the only flag ever to be displayed in the United States Capitol Rotunda-stands as powerful symbol of our national commitment to American Prisoners of War and Missing in Action.

On 10 August 1990, the 101st Congress passed US Public Law 101-355, which recognized the POW/MIA flag and designated it "as the symbol of our Nation's concern and commitment to resolving as fully as possible the fates of Americans still held prisoner, missing and unaccounted for in Southeast Asia, thus ending the uncertainty for their families and the Nation.

The POW/MIA flag's importance lies in he continued visibility of this symbol as a constant reminder of the plight of America's prisoners and missing. Other than "Old Glory," the POW/MIA flag is the only flag to fly over the White House, and has flown in this place of honor on every POW/MIA Recognition Day since 1982. In addition, the POW/MIA flag flies over our nation's capitol on Veterans Day and Memorial Day.

This very distinctive and special flag also flies over the National Vietnam Veterans Memorial, as well as other military memorials across the country, on Federal and State buildings, at each National Cemetery, and at military installations worldwide. It also flies at countless additional locations throughout the nation every day of the year.

Those Americans who fly the POW/MIA flag do so to demonstrate their loyalty and sincere dedication to all Prisoners of War and Missing in Action, and to their safe return-both alive and dead.

Flag etiquette specifies that the POW/MIA flag may be flown below the American flag and/or a state flag. However, its size must be equal to or smaller than the flag that is flying above it. The correct order for three flags being flow on the same flagpole is the national flag, the state flag, and then the POW/MIA flag.

Submitted by:
Joseph L. English
VFW Post Commander

Ponderay will be available for urgent care needs.

Legals

Your Right To Know:
Be an informed citizen: Read the Legals for information important to you

WEST BONNER WATER AND SEWER DISTRICT NOTICE OF PUBLIC HEARING AND REQUEST FOR PUBLIC COMMENT

The West Bonner Water and Sewer District will hold a public hearing at the Visitor Center at Rotary Park, 68 Old Diamond Mill Road in Oldtown, Idaho on August 31, 2011 starting at 6:30pm to discuss and obtain public comment on their upcoming Albeni area water system extension project. The project is proposed to provide a centralized water system for the recently annexed Albeni area residents. The proposed project consists of: 1) The installation of two public water wells located near the Pend Oreille River; 2) Installation of a welded steel water tank located on a hill north of the Albeni area and U.S Highway 2; 3) Construction of a water distribution system that will serve the westerly Albeni area; 4) Construction of an access road to the proposed water tank; and, 5) Construction of a water main crossing the Pend Oreille River and interconnecting with the existing water distribution system for the West Bonner Water and Sewer District. The purpose of this notice is to inform the public of the project and to request comments concerning the proposed project alternatives, their identified environmental impacts, and possible actions or methods that would avoid or minimize these impacts. The District will formally adopt a specific project alternative for implementation after taking and reviewing all public comment for the project.

A list of the proposed project alternatives and a copy of the preliminary Environmental Information Document is available for review at the Oldtown City Hall located at 215 N. Washington Avenue, Oldtown, ID 83822, 208-437-3833. Any person interested in commenting on this proposal should submit verbal or written comments at the public hearing; or send written comments to Chairman Lonnie Orr, West Bonner Water & Sewer District, 215 N. Washington Ave., Oldtown, ID 83822.

Dated this 11th day of August, 2011
Sheila M. Gormley, District Clerk

PRT legal 2339
August 17, 2011

STATE TIMBER SALE CR100403, MOLLIE TRAP

A public oral auction will be conducted at the Idaho Department of Lands office, 4053 Cavanaugh Bay Road, Coolin, ID 83821, at 1:00 p.m. local time, on Tuesday, August 30, 2011, for an estimated 2,600 MBF of timber marked or otherwise designated for cutting. In addition, there is an unestimated volume of pulplogs that may be removed at the option of the purchaser. Prior to bidding, eligible bidders shall present a certified check or bank draft payable to Treasurer, State of Idaho, or a bid bond acceptable to the State, in the amount of $34,495.60 which is 10% of the appraised net sale value of $344,956.00. The successful bidder's deposit will be forfeited to the State should the bidder fail to complete the contract. The State will not accept bids from parties who are delinquent on payments on existing state contracts. The average starting minimum bid price is $152.54 per MBF.

The sale is located within Sections 3, 4 9 and 10, Township 63N, Range 4W, Sections 32, 33 and 34, Township 64N, Range 4W, B.M., Bonner and Boundary Counties, State of Idaho. Sale duration is 3 years. The sale may include blowdown and/or insect and disease infected timber which may result in additional volume and recovery reductions. Interested purchasers should carefully examine the sale and make their own estimates as to volume recovery, surface conditions, and proposed construction prior to bidding on the sale. Additional information concerning the timber and conditions of sale is available to the public and interested bidders on the department's timber sale website at https://apps.idl.idaho.gov/timbersale or from the Idaho Department of Lands office, Coolin, Idaho.

The State Board of Land Commissioners reserves the right to reject any and all bids provided that good and sufficient grounds for rejecting the bid shall be stated in the rejection notice and shall not be in violation of applicable law.

If you are disabled and need some form of accommodation, please call (208) 443-2516 five days prior to the date of sale. For text telephone services, please call 1-800-377-3529.

PRT legal 2327
August 3, 10, 17, 24, 2011

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PRT legal 23
August 3, 10,

A public hearing for the purpose of taking comments on alternative plans for extension of West Bonner Water & Sewer District services to the east side of the Pend Oreille River was called to order by Board Chairman, Lonnie Orr, on Wednesday, August 31, 2011, at 6:30 p.m. at Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Carl Kloepfer
Absent: Bob Sedlacek, Jan Edgar

Staff Present:
Kevin Koesel & Spencer Ferguson of J. A. Sewell & Associates
Bryan Quayle of Quayle Land Use Consulting

Alternative Plan for Water/Sewer Extension:
Kevin Koesel and Spencer Ferguson presented the alternatives that were considered for extending water and sewer services to the east side of the Pend Oreille River in Oldtown, as follows:

Supply Plan: Two wells to be developed on property currently owned by Tri-Pro Cedar.
Supply Alternatives:
1. The District could take no action.
2. The District could install a system for each property.
3. The existing well at Tri-Pro Cedar could be used.
4. Water could be drawn from the Pend Oreille River.

High costs, sanitary setbacks, and quality of water supply precludes the use of any of the above alternatives.

Storage Plan: A 500,000 gallon welded steel tank east of the river at the same elevation as that of the current system tank.
Storage Alternatives:
1. The District could take no action.
2. The existing tank at Tri-Pro Cedar could be upgraded.
3. An above-ground concrete tank could be built.
4. A bolted steel tank could be constructed.

High costs, feasibility, size, and elevation differences preclude the use of any of the above alternatives.

River Crossing Plan: Boring under the river.
River Crossing Alternative:
Laying pipe on the river bottom.
Shallow water depth and bull trout habitat issues preclude the use of this alternative.

Public Comment:
No public was in attendance and no written comments were received.

Adjournment: Carl made the MOTION, seconded by Randy to adjourn the hearing. Motion carried. The hearing was adjourned at 7:00 p.m.

______________________ ______________________
Lonnie L. Orr, Chairman Sheila M. Gormley, Clerk

WEST BONNER WATER AND SEWER DISTRICT
ALBENI AREA WATER SYSTEM EXTENSION PROJECT ALTERNATIVE ANALYSIS

Water Supply Alternatives and Analysis

No Action Water Supply Alternative
The No Action water supply alternative is not viable for the following reasons:

1) The West Bonner Water and Sewer District and the City of Newport currently have no reserve water supply capacity. New water supplies are required to provide both reserve capacity for future system growth and a standby water supply.

2) As growth takes place within the Albeni area, additional individual systems would create sanitary set back conflicts between adjacent lots and potential conflicts with cones of influence created by the wells.

For these reasons, this alternative is not recommended as the preferred alternative.

Install Individual Drinking Water Wells
Alternative Description/Alternative Practicality
This alternative proposes that no municipal system be installed in the Albeni area. Residences and businesses would be required to provide their own individual water source in accordance with local and State regulations for the desired development. Due to the density of proposed and existing lots, maintaining the required sanitary setbacks from the proposed and existing septic systems within and adjacent to existing and proposed lots would not be possible without increasing the size of the proposed lots and/or reducing the development density. The existing lot density in the developed areas makes this alternative highly impractical and would ultimately have negative impacts on the local aquifer.

Environmental Consequences
This alternative could create conflicts between well cones of influence, where water wells placed too close together reduce the ground water level within their interacting cone of influence. Where this happens, the water wells in question would have to be drilled deeper after initial installation to allow the existing well pump to be placed at a lower depth. These potential conflicts make the use of individual water wells a less viable alternative. As indicated above, the existing lot and development density would ultimately have negative impacts on the local aquifer in the form of increasingly high concentration of contaminates, including nitrates and harmful coliform bacteria.

Cost Projection

The estimated cost to install (1) water well in each lot could exceed $10,000.00 per lot. The projected full build out of the Albeni area is 912 ERU's. The resulting estimated expense to have individual wells on each lot is then $9,120,000.00. Additionally, this alternative could require a rezoning of the Albeni area as individual wells require larger lot sizes and reduced population densities. The cost of installing a well on each lot makes this alternative nonviable.

Conclusion
Due to the potential negative environmental impacts, this is not a desirable alternative and is not recommended as the preferred alternative.

Upgrade the Existing Tri-Pro Well
The Tri-Pro Cedar Mill currently owns a large well (approximately 1,000 GPM) located in the southern portion of the Albeni area adjacent to the existing water tank. Tri-Pro uses this well to supply the mill with drinking and process water. This well is privately owned and would need to be upgraded to meet Idaho Department of Environmental Quality (DEQ) standards for drinking water wells, which would include replacement of the well casing. Replacement of the well casing would require drilling a new well and abandoning the existing well, which makes this alternative financially non-viable.

Draw Water from the Pend Oreille River
Alternative Description/Alternative Practicality
The Albeni area is located on the east bank of the Pend Oreille River. In order to use the River as a drinking water source, a supply line and pump would have to be installed on the River bottom. The water drawn from the River would require extensive treatment to meet current water quality standards. As shown in the water source alternative cost comparison in Exhibit 2, the high cost of the treatment equipment and the treatment building when compared with the proposed alternative would make using the River as a drinking water source financially impractical.

Environmental Consequences
This alternative would require placing a water intake line along the bottom of the Pend Oreille River. As the Pend Oreille River has been designated as critical habitat for the bulltrout in the project area, disturbing the river bottom with a water supply line could be detrimental to the local bulltrout populations and would directly affect the their habitat. Additionally, the section of the River bordering the Albeni area is approximately 5 feet to 11 feet deep at the summer water level conditions, and may leave the supply line vulnerable to damage by boats and debris.

Cost Projection
A cost estimate is available in Exhibit 2 of this document.

Conclusion
Due to the potential negative environmental impacts and large cost of the building and operating of a water treatment facility, this alternative is not recommended as the preferred alternative.

Pipe Water across the Pend Oreille River from Oldtown
Alternative Description/Alternative Practicality
The existing West Bonner Water and Sewer District water system is located across the Pend Oreille River from the Albeni area. Currently, the City of Oldtown and the City of Newport obtain their drinking water from springs located southeasterly of the City of Oldtown as well as several wells located within the City of Newport. The springs produce approximately 300 GPM. This volume of water is not sufficient to serve both the West Bonner Water and Sewer District and the City of Newport needs during the high demand summer months. During times of continued high demand, the City of Newport augments the supply of water by activating their series of groundwater wells. Due to the fact that there is no current reserve capacity to supply new connections within the West Bonner Water and Sewer District and the City of Newport, supplying the Albeni area with water with the current system would require expansion of the existing water supply. Past hydrogeologic investigation indicates that the most promising location for high producing groundwater wells in the area is the Albeni area or an area located south of Newport.

Environmental Consequences
This alternative would require the construction of the recommended preferred alternative or construction of a transmission line from an outlying well site south of the City of Oldtown, where the new water wells would have to be constructed. The availability of water in this area is not certain. Areas within the City of Newport and the West Bonner Water and Sewer District on the west side of the Pend Oreille River do not contain high producing groundwater well potentials. The well site in this case would be required to be placed some distance from the nearest water system interconnection; thus installation of the water transmission line would require the disturb of a potentially large area. As a result, this alternative would increase the environmental impacts associated with construction of the water transmission line when compared to the preferred alternative, which places the proposed well site much closer to the proposed system.

Cost Projection
Since this alternative would not negate the installation of additional wells and would clearly require additional expenses associated with easement acquisition and water system component installation when compared to the recommended preferred alternative, this alternative is not economically viable.

Conclusion
Due to the negative environmental impacts of this alternative, the uncertainty with respect to the availability of water, and the expense of adding additional transmission

lines from possible outlying wells to the existing system, this alternative is not recommended as the preferred alternative.

Install New Wells in Albeni Area

Alternative Description/Alternative Practicality

Past hydrogeologic investigation indicates that the most promising location for high producing groundwater wells in the area is the Albeni area or an area located south of Newport. This alternative includes the installation of two 12 inch diameter groundwater wells, at the locations indicated on the attached design drawings, to provide water for the proposed project water distribution system. It is expected that each well will be capable of pumping approximately 500 GPM, based on available well drillers reports for Albeni area wells.

Environmental Consequences

The existing Tri-Pro 12" diameter well located near the proposed water well locations is approximately 125' deep and was tested at the time of installation for 4 hours and produced 500 GPM with no drawdown. The Tri-Pro well has been in use many years and has consistently produced water necessary for mill operations and has consistently passed water quality tests for a public water system. Based on this information coupled with the decommissioning of the majority of the existing water wells in the Albeni area, we anticipate that the proposed 12" diameter wells will be capable of equal production without adversely affecting the quantity or quality of the existing aquifer.

Cost Projection

A cost estimate is available in Exhibit 2 of this document.

Conclusion

As indicated in the cost comparison in Exhibit 2, this alternative is expected to be the most economical with the least potential for environmental impacts. Therefore this is the recommended alternative.

Water Storage Alternatives and Analysis

No Action Water Storage Alternative

Established fire codes mandate that proposed centralized water systems have the capacity to provide fire suppression flows and standby storage while meeting the future daily use demands within the design period as required by estimated population growth figures established by area Census data. In order to address fire flow prevention without the use of a water storage capability would require that proposed wells and submersible well pumps produce large volumes of water on demand, and that standby power be provided. The large fire flows for the proposed water system would prohibit the feasible installation of large wells and water system pressurization equipment. The no action water storage alternative is impractical and far too costly for the reasons indicated above, and is therefore not the recommended preferred alternative.

Upgrade Existing Tri-Pro Water Tank

Alternative Description/Alternative Practicality

The Tri-Pro Cedar Mill previously used an elevated steel tank to store drinking and process water for the mill. This tank is privately owned, has not been in service for over 10 years, and is not located at the correct elevation to allow convenient connection to the existing water system on the west side of the river. The tank also would need to be upgraded to meet Idaho DEQ standards. This existing water storage tank has a capacity of 100,000 gallons, which is not adequate to provide the required fire flow and standby storage; thus additional 400,000 gallon storage tank would have to be constructed.

Environmental Consequences

This alternative would require that an additional water storage tank, such as a water tank stand pipe, and parking area be constructed adjacent to the existing tank. Construction activities and placement of permanent facilities would result in minor impacts on nearby vegetation. However, as the water tank site has been developed and in use by the Mill for an extended period of time, and these construction related impacts would be minor.

Cost Projection

An estimated cost for this alternative is provided in Exhibit 2.

Conclusion

The complications associated with renovating and rehabilitating the existing water tank and construction of an additional water storage tank make using the existing tank economically impractical. Additionally, in the event the standby water storage is required for use by Albeni residents, the stand pipe water storage will not provide adequate pressure to the system. For these reasons this alternative is not recommend as the preferred alternative.

Above Ground Concrete Tank

Alternative Description/Alternative Practicality

An above ground concrete water storage tank would be constructed of steel reinforced, cast in place concrete and either a cast in place or precast roof, and would be located at the water tank site indicated in the preferred alternative design drawings (See Exhibit 1). The West Bonner Water and Sewer District currently operates an above ground concrete storage tank and is not satisfied with its performance. The concrete walls are cracked and leaking badly. The District will not consider using a concrete storage because of past poor performance of their existing tank.

Environmental Consequences

The environmental consequences associated with this alternative would be identical to those realized with the preferred alternative, which are discussed in detail below.

Cost Projection

An estimated cost for this alternative is provided in Exhibit 2. The concrete water tank will also require maintenance at minimum 10 year interval which will contribute to the anticipated lifetime costs of the tank.

Conclusion
Due to their experience with the existing water system concrete tank, the West Bonner Water and Sewer District will not accept this alternative. For this reason this is not the recommended preferred alternative.

Above Ground Bolted Steel Tank
Alternative Description/Alternative Practicality
An above ground bolted steel water storage tank would be constructed of steel plates bolted together supported on a cast in place concrete foundation, and would be located at the water tank site indicated in the preferred alternative design drawings (See Exhibit 1). Some local municipalities have had problems with their bolted steel tanks, such as ice forming inside the water tanks which can shear or pull-out steel bolts. Additionally, bolted steel water tanks cannot be welded, which can create problems when leaks and other maintenance issues arise, though their initial costs can be less expensive.

Environmental Consequences
The environmental consequences associated with this alternative would be identical to those realized with the preferred alternative, which are discussed in detail below.

Cost Projection
An estimated cost for this alternative is provided in Exhibit 2. The bolted steel water tank will also require maintenance and repainting at minimum 20 year interval which contribute to the lifetime alternative cost.

Conclusion
Due to the maintenance problems realized by other municipalities, and the unpredictable future costs; thus this alternative is not the recommended preferred alternative.

Above Ground Welded Steel Tank
Alternative Description/Alternative Practicality
An above ground welded steel water storage tank would be constructed of steel plates welded together supported on a cast in place concrete foundation, and would be located at the water tank site indicated in the preferred alternative design drawings (See Exhibit 1). The above ground welded steel water tank is expected to have a minimum 100-year useful life and will require re-painting with 15-25 years.

Environmental Consequences
This alternative is not expected to have significant environmental impacts. In each water tank alternative discussed above, the proposed tank sight will be grubbed and cleared for facilities installation. The environmental impacts of the clearing of area for the proposed tank are discussed in detail below.

Cost Projection
An estimated cost for this alternative is provided in Exhibit 2. The welded steel water tank will also require recoating maintenance at minimum 15-30 year interval which will contribute to the anticipated lifetime costs of the tank; however, the required maintenance costs are expected to be lower than the other alternatives. This is attributed to the thicker steel tank wall which better resists weathering, such as ice action, and allows for welding, for purposes of maintenance.

Conclusion
Due to the greater cost/benefit ratio of welded and bolted steel water tanks and has selected a welded steel water tank for its durability and reparability when compared to a bolted steel water tank. It is the preferred alternative to construct a 500,000 gallon steel water tank to store drinking water for domestic use and fire protection.

Water Main River Crossing Alternatives

No Action River Main Crossing

The water main crossing the Pend Oreille River is necessary to complete an interconnection of the proposed Albeni water system with the existing City of Oldtown/City of Newport joint water system. A no action alternative for the proposed water system river crossing would result in the removal of the proposed interconnection and thus a supplemental and standby water source for the existing water system. The benefits of a supplemental/standby potable water source have been determined by the West Bonner Water and Sewer District to be preferable this alternative. For these reasons the No Action alternative is not the recommended preferred alternative.

Lay Pipe on River Bottom

Alternative Description/Alternative Practicality
This alternative would require that the water main be anchored on the Pend Oreille River bed. The advantage to laying a water line on the River bottom is that less specialized equipment is required, making the installation simpler and less expensive. However the Pend Oreille River has been designated as critical habitat for bulltrout in the area the water main will be placed on the river bed. The anticipated high cost associated with excavating debris at the water main location, and the associated permits as well as costs associated with a Biological Assessment that could be required, this alternative is not practical.

Environmental Consequences
This alternative could potentially affect the Pend Oreille River bed in the following ways:

1) The river bed at the water main location will have to be excavated in order to remove any deposited debris and minimize any localized high spots and will require pipe anchors to prevent movement due to the River current. The

placement of the water main and anchors could potentially impact bulltrout habitat.

2) Changes in river bed topography due to sedimentation or erosion or debris carried by the river current may cause damage to the pipe which in turn will require repairs and additional disturbance to fish habitat.

A stream bed alteration permit and a biological assessment will be required for this alternative as the project would be directly impacting critical habitat. Both the permit process and biological assessment are costly and time consuming. The potential impacts to critical habitat make this alternative impractical.

Cost Projection
The shallow depth makes the pipeline susceptible to damage from boats and moving debris which could potentially result in water main repair expenses. The potential for the water main to be damaged and the associated repair costs make this alternative impractical.

Conclusion
Due to the costs associated with excavation and water main installation, and potential for environmental impacts to critical habitat, this alternative is not the recommended preferred alternative.

Lay Pipe in Trench on River Bottom
Alternative Description/Alternative Practicality
This alternative would require silt fencing be placed upstream and downstream of the proposed water main route and a trench be excavated within the river bed to an appropriate depth, at which point the proposed water main would be placed and backfilled.
The advantages to laying the pipe in a trench on the River bottom include:

1) Burying the pipe in the river bed will eliminate the need for pipe anchors.
2) The water main will not be susceptible from potential damage from boats or debris.

A disadvantage is a stream bed alteration permit and a biological assessment will be required which can be a time consuming and costly process. Also, constructing a trench and eliminating sediment migration will be extremely difficult and expensive.

Environmental Consequences
This alternative would require the water main location to be excavated in order to properly install the water main. During the construction process, sediments and excavated material will be carried down stream impacting areas declared to be critical bulltrout habitat by the USFWS. Additionally, the River flow will cause erosion at the excavated trench edges, effectively backfilling the water main trench. This would likely cause a reshaping of the river bed in the immediate area surround the water main route.

The compounded effects of erosion cause by excavation coupled with the introduction of sediments to the River flow make this alternative is impractical.

Cost Projection
An estimated cost for this alternative is provided in Exhibit 2.

Conclusion
Due to the costs associated with excavation and water main installation, and potential for river bed alterations, and the environmental impacts associated with the introduction of a large quantity of sediments to the local environment, this alternative is not the recommended preferred alternative.

Bore Under the Pend Oreille River
Alternative Description/Alternative Practicality
This alternative proposes the installation (1) 12" HDPE 200 psi water main under the Pend Oreille River using directional boring. The HDPE water main will provide a means to transport drinking water from the proposed water distribution system to the existing City of Oldtown water distribution system and vice versa.

Environmental Consequences
The proposed 12" boring for the water line crossing at the Pend Oreille River will have sufficient depth to ensure no disturbance or vibration at the river channel while allowing the proposed water line to be embedded within native soil. This alternative will cause the least environmental impact to bulltrout habitat while allowing for the interconnection of the proposed distribution system with the existing system on the east side of the Pend Oreille River.

Cost Projection
An estimated cost for this alternative is provided in Exhibit 2.

Conclusion
Since this alternative does not impact critical bulltrout habitat and has the lowest anticipated costs associated with water main installation across the Pend Oreille River, this alternative is recommended as the preferred alternative.

AFFIDAVIT OF PUBLICATION

State of Idaho

ss.

County of Bonner, Terri Irie

being first duly sworn on oath deposes and says that he/she is Managing Editor of the Priest River Times, a newspaper printed and published at Priest River, Bonner County, Idaho; that the said newspaper has been continuously and uninterruptedly published in said Bonner County during a period of 12 months prior to the first publication of the hereto attached notice of publication in the case of:

Public Hearing - urban renewal plan

as it was published in the regular and entire issue of the said newspaper for a period of 1 consecutive weeks, commencing on 11th day of November, 20 09 and ending on the 11th day of November, 20 09 and that said notice was published in said newspaper.

On this 11th day of November in the year of 2009, before me, a Notary Public, personally appeared Terri Irie, 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.

SHANNON M. FOOTE NOTARY PUBLIC STATE OF IDAHO

Shannon M. Foote

Notary Public for Idaho

Residing at Priest River

My Commission expires: 10.9.13

NOTICE OF PUBLIC HEARING
CITY OF OLDTOWN

Notice is hereby given that the Oldtown City Council will hold at their regular meeting on December 14, 2009 at 6:30 p.m. at Oldtown City Hall, 215 N. Washington Ave., Oldtown, Idaho, a public hearing to consider comments on an urban renewal plan, feasibility study and map of the Oldtown Urban Renewal District, an area found by the City Council to be deteriorated. The boundaries of the Plan area are hereinafter described. The Plan proposes that the Agency undertake urban renewal projects pursuant to the Idaho Urban Renewal Law of 1965, as amended. The Plan being considered for adoption contains a revenue allocation financing provision pursuant to the Local Economic Development Act, Chapter 29, Title 50, Idaho Code, that will cause property taxes resulting from any increases in equalized assessed valuation in excess of the equalized assessed valuation as shown on the base assessment roll as of January 1, 1994, to be allocated to the agency for urban renewal purposes.

Copies of the Plan are in file for public inspection at the office of the City Clerk, at Oldtown City Hall, 215 N. Washington Ave., Oldtown, Idaho, between the hours of 8:30 a.m. and 5:00 p.m. Monday through Friday.

The general scope and objectives of the Plan are:

To identify community-wide resources, conduct assessments, maximize their values, and the applications to create opportunities for community enhancement.

To promote employment with competitive wages, benefits, workforce training opportunities, and job advancements to assure sustainability of the economy and wellbeing of the community residents.

To target inadequate basic structure and infrastructures for value added improvements for the "Quality of Life" in the community.

To promote community improvement projects that will encourage opportunities for a healthy lifestyle including recreational opportunities for youth and adults as well as safety conditions, traffic management and street enhancement.

To promote community members' input through communication using the news media, public meetings, volunteerism, and partnerships to improve community spirit and achievements.

The proposed redevelopment as proposed in this plan conforms to the Comprehensive Plan for the City of Oldtown. This plan was reviewed by the Oldtown City Council acting as the City's Planning and Zoning Commission, stating that this plan is in conformity with the Oldtown Comprehensive Plan.

The projected area herein referred to is located as follows: an area consisting of approximately 300 acres which is generally that portion of the City of Oldtown lying north and east of the Pend Oreille River. Some sections within the project area have been eliminated were opportunity for additional urban development is limited.

All persons interested in the above matter may appear and be heard at the time and place noted above. Written comments will also be accepted. The hearing facility is an ADA accessible building. Assistance for persons with disabilities will be provided upon 24-hour notice prior to the public hearing.

DATED this 9th day of November, 2009.
/s/Sheila M. Gormley
City of Oldtown Clerk Treasurer

PRT legal 2089
November 11, 2009

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, May 12, 2009, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Carl Kloepfer, Bob Sedlacek

Absent: Jan Edgar

Minutes: Carl made the MOTION, seconded by Randy to approve the minutes of the last meeting. Motion carried.

Correspondence:
North Idaho Insurance: Renewal amount will be down 15%.

Unfinished Business:
Albeni Annexation: Several landowners whose parcels are adjacent to County Road #47 which runs through the area to be annexed, have asked Bonner County to vacate that road. The County will hold that hearing on May 13th and all expectations are that the road will be vacated. The City Council decided that the annexation should be made effective after that process is finished. The Board agreed that its annexation should take place concurrent with the City's. Randy made the MOTION, seconded by Bob approving the proposed annexation pending vacation of County Road #47 by Bonner County and directing staff to prepare the paperwork for order adoption. Motion carried.

West Pend Oreille Fire Station Update: Inland Northwest Consultants has drawn up the plans for the station and submitted them with the necessary application to the Bonner County Planning Department. We received a copy of that application from the Planning Department.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Randy made the MOTION, seconded by Bob, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: June 9, 2009, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Randy made the MOTION, seconded by Bob to adjourn the meeting. Motion carried. Meeting was adjourned at 7:30 p.m.

Lonnie L. Orr

Lonnie L. Orr, Chairman

Sheila M. Gormley

Sheila M. Gormley, Clerk

A special meeting of the Oldtown City Council was called to order by Mayor, Lonnie Orr, on Thursday, October 8, 2009 at 4:30 p.m. at Oldtown City Hall.

Roll Call: City Council Present: Lonnie Orr, Anna Burns, Gene Scott, Susan Jones, Bobby Jones
Staff Present: Bryan Quayle of Quayle Land Use Consulting,

Guests: John Austin of Panhandle Area Council
Eric Eldenburg of James A. Sewell & Associates

New Business:

Urban Renewal: Findings of Deterioration

After reviewing the resolution outlining the areas of deterioration for urban renewal that John Austin had drafted, the Council discussed removing the city streets in the older part of town but adding turn lanes on Highway 2 in the newly annexed area. They also discussed adding the reservoir and transmission line that supplies the city with water. Eric agreed to research costs for the water issue and to redraw the map of the deteriorated area. John agreed to edit the resolution to reflect these changes and have it ready for the regular monthly Council meeting on October 12th.

The next regular meeting will be October 12, 2009.

Anna made the MOTION, seconded by Susan to adjourn the meeting. Motion carried. Meeting was adjourned at 5:30 p.m.

Lonnie L. Orr, Mayor

Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, October 13, 2009, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Jan Edgar, Bob Sedlacek
Absent: Carl Kloepfer

Minutes: Randy made the MOTION, seconded by Bob to approve the minutes of the last meeting. Motion carried.

Guests: Karen Squires of West Bonner County Food Bank

Staff: Karel Mrazek reported on the repair of the leaks at the reservoir which were accomplished this fall. He also reported on replacement of the relays at the booster pump station at the corner of Marian and Valley Streets.

Unfinished Business:
Urban Renewal: Bob Sedlacek and Carl Kloepfer were appointed to the newly established Oldtown Urban Renewal Agency Board of Directors.

Section 595 Funding: In conjunction with West Bonner Investments, LLC the Water/Sewer District has sent a letter to the Army Corps of Engineers requesting funding for extension of services across the Pend Oreille River into the newly annexed area. The Corps funds at 75% requiring a 25% local match. A meeting with representatives from Idaho's congressional delegation will be held on October 23rd to familiarize them with the project which they will be involved in approving.

New Business:
Hookup Applications: Karen Squires of the West Bonner County Food Bank presented applications for hookups at the property currently owned by James Cowan. Work would not be started until spring. An easement from John Jamison, who owns the property adjacent on the south side would be necessary for the water hookup. The District will address that issue. The Food Bank representative requested a waiver of fees, but on the advice of our attorney, the Board suggested setting up a payment schedule instead.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Jan made the MOTION, seconded by Bob, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: November 10, 2009, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Bob made the MOTION, seconded by Jan to adjourn the meeting. Motion carried. Meeting was adjourned at 7:30 p.m.

Lonnie L. Orr

Lonnie L. Orr, Chairman

Sheila M. Gormley

Sheila M. Gormley, Clerk

A public hearing for taking of comments on the Oldtown Urban Renewal Agency Urban Renewal Plan was called to order by Mayor, Lonnie Orr, on Monday, December 14, 2009, at 6:30 p.m. at Oldtown City Hall.

Council Present:
Lonnie Orr, Anna Burns, Gene Scott, Susan Jones, Bobby Jones

Staff Present:
Sheila M. Gormley, City Clerk/Treasurer
John Austin, Panhandle Area Council
Eric Eldenburg, James A. Sewell & Associates
Mike Boeck, West Bonner Investment Company, LLC

Public Present:
Bob Sedlacek

Adjournment:
There being no comments from the public, Anna made the MOTION, seconded by Susan to adjourn the public hearing. Motion carried. The hearing was adjourned at 7:00 p.m.

Lonnie L. Orr, Mayor

Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, February 9, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Bob Sedlacek, Carl Kloepfer
Absent: Jan Edgar

Minutes: Randy made the MOTION, seconded by Bob to approve the minutes of the last meeting. Motion carried.

Guests: Eric Eldenburg of James A. Sewell & Associates
Mike Boeck of West Bonner Investment Company

Unfinished Business:
Section 595 Funding Update: The Agreement for Design Assistance between the Corps and the District is finished and has been signed by Chairman, Lonnie Orr. Once the US Army Corps of Engineers signs it, we can start invoicing the Corps for engineering costs.

Eric Eldenburg updated the Board on the plans for the water/sewer extension across the river. The contours of the river bottom are such that laying the lines on the river bottom is not feasible. Boring under the river is now the preferred method of extension. A survey crew has been out working on the project.

New Business:
Agreement for Engineering Services: J. A. Sewell & Associates presented the Board with an agreement for engineering services on the water/sewer extension project. A partial payment request was also presented. Carl made the MOTION, seconded by Bob to approve the engineering agreement and the partial payment request. Motion carried.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Bob made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: March 9, 2010, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Carl made the MOTION, seconded by Bob to adjourn the meeting. Motion carried. Meeting was adjourned at 8:00 p.m.

Lonnie L. Orr

Lonnie L. Orr, Chairman

Sheila M. Gormley

Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, March 9, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Bob Sedlacek, Carl Kloepfer

Absent: Jan Edgar

Minutes: Randy made the MOTION, seconded by Carl to approve the minutes of the last meeting. Motion carried.

Correspondence:
US Army Corps of Engineers Re: Design Project Partnership Agreement

Guests: Eric Eldenburg of James A. Sewell & Associates
Mike Boeck of West Bonner Investment Company

Unfinished Business:
Water/Sewer Extension Project Update: Eric Eldenburg presented the preliminary engineering report for the water/sewer extension across the river. Members discussed layout of the water and sewer mains east of the river and the size and number of lines that will cross the river from east to west. Decisions on those issues will be decided before the final engineering report is presented.

New Business:
Annual Budget Hearing: The district will hold its annual budget hearing at 6:00 p.m. on Wednesday, August 25, 2010.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Bob made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: April 13, 2010, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Carl made the MOTION, seconded by Bob to adjourn the meeting. Motion carried. Meeting was adjourned at 8:30 p.m.

Lonnie L. Orr

Lonnie L. Orr, Chairman

Sheila M. Gormley

Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, April 13, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Randy Edgar, Bob Sedlacek, Carl Kloepfer
Absent: Jan Edgar

Minutes: Carl made the MOTION, seconded by Bob to approve the minutes of the last meeting. Motion carried.

Correspondence:
Magnuson, McHugh & Co.: Financial Statements

Guests: **Eric Eldenburg of James A. Sewell & Associates**
Mike Boeck of West Bonner Investment Company

Unfinished Business:
Water/Sewer Extension Project Update: DEQ grant funds are available for the planning of projects such as replacement of the reservoir on Blackthorn Road and moving and replacing the main water line into town. Eric Eldenburg will check into the issue of transferring water rights from Tri-Pro Cedar or applying for new rights under the Water District's name for the new wells that will be drilled in the newly annexed area east of the Pend Oreille River.

New Business:
IRWA Rate Study: Diane Sauer of the Idaho Rural Water Association conducted a rate study for the District showing that our residential rate should be around $51.00 per month rather than the $45.00 it is now. Members agreed that the rate should be higher, but in this economic climate raising it $6.00 all at once would be too difficult for customers to absorb. A decision on the amount of increase will be made at next month's meeting.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Randy made the MOTION, seconded by Bob, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: May 11, 2010, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Bob made the MOTION, seconded by Carl to adjourn the meeting. Motion carried. Meeting was adjourned at 8:30 p.m.

Lonnie L. Orr

Lonnie L. Orr, Chairman

Sheila M. Gormley

Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, May 11, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Carl Kloepfer, Bob Sedlacek, Randy Edgar
Absent: Jan Edgar

Minutes: Carl made the MOTION, seconded by Randy to approve the minutes of the budget amendment hearing. Motion carried.

Bob made the MOTION, seconded by Carl to approve the minutes of the last regular meeting. Motion carried.

Agenda Amendment:
Bob made the MOTION, seconded by Carl to amend the agenda to include under new business the item "Interagency Agreement with Urban Renewal Agency". Motion carried.

Guests: New water/sewer customer, **Robert Magers** requested a waiver of the $50.00 deposit he had to pay when he moved into his newly purchased house. He stated that he grew up in the area, pays his bills on time, and could better use the money for improvements to his house. The Board explained that they must treat all customers equally, but would in future discuss a change to the time frame for refund of customer deposits.

Correspondence Was Read As Follows:
North Idaho Insurance Re: Renewal Rate

Unfinished Business:
Water/Sewer Extension Update: Eric Eldenburg reported that he has filled out the application for District water rights to the wells that will be placed in the newly annexed area. The access road for the new reservoir crosses a wetland area so wetland credits will have to be purchased for that area. Some changes were made to the layout for water/sewer mains in the Old Diamond Mill Road.

Rate and Hookup Fee Increase: Board members agreed that an increase in monthly water/sewer rates is needed due to increased operational costs. They also agreed that the hookup fees are lower than necessary. Randy made the MOTION, seconded by Bob to increase water fees by $1.00, sewer fees by $1.00 to take effect June 16, 2010 and to increase water hookup fees to $4,000.00 plus materials, and sewer hookup fees to $4,000.00. Motion carried.

New Business:
Inter-agency Agreement with Urban Renewal Agency: Carl made the MOTION, seconded by Bob to approve the interagency agreement with the Oldtown Urban Renewal Agency pending review by District's attorney and attachment of the Master Owner Participation Agreement. Motion carried.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Bob made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: June 8, 2010, at 6:30 p.m. at Oldtown City Hall.

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, June 8, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Jan Edgar, Bob Sedlacek, Carl Kloepfer
Absent: Randy Edgar

Minutes: Bob made the MOTION, seconded by Carl to approve the minutes of the last meeting. Motion carried.

Guests: Eric Eldenburg of James A. Sewell & Associates

Public Present:
Jeff & Pam Sherman of Sherman Rock & Concrete
Bobbie Ward, Oldtown Resident & Land Owner
Mary O'Neill & Donna of Mary's Feeds

Members of the public had questions concerning the water/sewer extension project which were answered by Eric Eldenburg and members of the Board.

Unfinished Business:
Water/Sewer Extension Project Update: Eric Eldenburg reported that the wetlands have been delineated. Also, drawings for the new reservoir are 65% complete. The new reservoir will be constructed at the same elevation as the old reservoir. Board members requested having the contractor put in meter boxes for potential hookups at the time of construction.

DEQ Funding: Eric is also working on the applications for DEQ money that is available now that we know our projects are high enough on the DEQ list to be funded.

New Business:
Meeting Schedule: Because some of the members now have scheduling conflicts that keep them from regularly scheduled meetings, a change to the second Wednesday of the month was suggested. The Clerk will check to find out if a resolution is necessary to make the change.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Jan made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: July 13, 2010, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Carl made the MOTION, seconded by Bob to adjourn the meeting. Motion carried. Meeting was adjourned at 8:00 p.m.

Lonnie L. Orr
Lonnie L. Orr, Chairman

Sheila M. Gormley
Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Tuesday, July 13, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Jan Edgar, Bob Sedlacek, Carl Kloepfer, Randy Edgar

Minutes: Randy made the MOTION, seconded by Bob to approve the minutes of the last meeting. Motion carried.

Guests: Eric Eldenburg of James A. Sewell & Associates

Unfinished Business:
Water/Sewer Extension Project Update: Eric Eldenburg reported on the final plans for the water distribution and sewer collection systems. The wetlands and archaeological work is ongoing as is the application process for the highway crossings. Submission of the 90% review to the Army Corps of Engineers will happen in August.

New Business:
Meeting Schedule Change: Randy made the MOTION, seconded by Bob to change the regular monthly meeting of the Board to the second Wednesday of the month at 6:30 p.m. Motion carried.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Carl made the MOTION, seconded by Randy, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: August 11, 2010, at 6:30 p.m. at Oldtown City Hall.

Adjournment: Jan made the MOTION, seconded by Randy to adjourn the meeting. Motion carried. Meeting was adjourned at 8:00 p.m.

Lonnie L. Orr
Lonnie L. Orr, Chairman

Sheila M. Gormley
Sheila M. Gormley, Clerk

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Wednesday, August 11, 2010, at 6:30 p.m. at the Oldtown City Hall.

Roll Call: Present: Lonnie Orr, Bob Sedlacek, Carl Kloepfer, Randy Edgar

Absent: Jan Edgar

Minutes: Bob made the MOTION, seconded by Randy to approve the minutes of the last meeting. Motion carried.

Guests:

Dave Magers Re: Water/Sewer New Account Deposit: Mr. Magers spoke to the Board about the water/sewer deposit required of new owners in the District. He felt that his good credit rating should exempt him from this requirement. Lonnie explained that it is required of all new owners regardless of their credit rating and that the District must treat all customers equally. Mr. Magers questioned the legality of such a policy and informed the Board that he is considering filing a request for information under the FOIA.

Eric Eldenburg of J. A. Sewell & Associates

Mike Ormsby, Bond Attorney

Unfinished Business:

Water/Sewer Extension Project Update: Eric Eldenburg reported that the plans are 95% complete and will be finished by the end of August or first week of September.

New Business:

Bond Election:

In the event that the District chooses to hold a bond election to fund the water/sewer extension project, Bond Attorney, Mike Ormsby explained his duties and how the bond election process works. He said there is still enough time to hold an election this year and that there would have to be two ballots, one for water and one for sewer. If the current users are not to be held responsible for paying for the extension and the District uses loan money to cover the project, the developer needs to provide a letter of credit or a cash bond to cover the entire cost of the project. If grant funds are received, that amount would be subtracted from the total cost. If the developer prefers to construct parts of the project separate from portions built with loan money, that's acceptable as long as the part of the infrastructure is then gifted to the District.

Preliminary Budget: The proposed budget for fiscal year 2010/11 was presented with total revenues of $4,231,670.00. Randy made the MOTION, seconded by Carl to accept the preliminary budget. Motion carried.

Request for Old Fire Hydrant: A request was made by an ex-firefighter for an old, broken fire hydrants to use as a lawn ornament. Carl made the MOTION, seconded by Bob to grant the request. Motion carried.

Financial:

The arrears list was presented and discussed.

Bills were presented for payment. Randy made the MOTION, seconded by Carl, to approve the bills as presented for payment. Motion carried.

The regular monthly meeting of the West Bonner Water & Sewer Board was called to order by Chairman, Lonnie Orr, on Wednesday, September 8, 2010, at 6:30 p.m. at Oldtown City Hall.

Roll Call:
Present: Lonnie Orr, Bob Sedlacek, Carl Kloepfer, Randy Edgar, Jan Edgar

Guests:
Kevin Koesel of J. A. Sewell & Associates

Minutes: Randy made the MOTION, seconded by Carl to approve the minutes of the last meeting. Motion carried.

Unfinished Business:
Water/Sewer Extension Project Update: Kevin Koesel presented the final plans for Board review and reported that they had been sent to the Army Corps of Engineers. Upon our Board approval, they will be sent to DEQ where it will take approximately six weeks for their review and approval.

Bond Election:
Carl made the MOTION, seconded by Bob to pursue holding a bond election to fund water and sewer improvements in the newly annexed area across the Pend Oreille River. Motion carried.

Services Agreements for Bond Attorney: Bob made the MOTION, seconded by Jan to approve the services agreements for K & L Gates LLP pending final staff review. Motion carried.

Financial:
The arrears list was presented and discussed.

Bills were presented for payment. Randy made the MOTION, seconded by Bob, to approve the bills as presented for payment. Motion carried.

Next Meeting Date: October 13, 2010 at 6:30 p.m. at Oldtown City Hall.

Adjournment: Carl made the MOTION, seconded by Jan to adjourn the meeting. Motion carried. Meeting was adjourned at 7:40 p.m.

Lonnie L. Orr
Lonnie L. Orr, Chairman

Sheila M. Gormley
Sheila M. Gormley, Clerk

APPENDIX M

WBWSD REIMBURSEMENT AGREEMENT WITH OURA

Exhibit A
Conceptual Agency Funded Public Improvements and Agency Startup Costs

STARTUP COSTS: Not to exceed $20,000 for the creation of the District and $5,000 annually for the operation of the Agency, until increment is received in 2012		$ 30,000
INFRASTRUCTURE COSTS:		
Streets:		
Albeni Loop Upgrade	$140,300	
Selkirk Extension	49,500	
Turn Lanes on Highway 2	305,000	
Total Streets		$ 494,800
Wastewater:		
Lines Extension	$500,000	
River Crossing	800,000	
Total Wastewater		$1,300,000
Water:		
Replace West Bonner Reservoir	$549,000	
Replace W. Bonner Trans Line	1,000,000	
Wells, Pumps and Pumphouse	500,000	
New Reservoir Water Lines	888,770	
New Water Reservoir	400,000	
Water Lines River Crossing	537,175	
Total Water		$3,874,945
Public Facilities:		
Oldtown Public Facilities	$100,000	
Parks Improvements	97,600	
Total Public Facilities		$ 197,600
Total Conceptual Agency Funded Public Improvements and Agency Startup Costs		$5,897,545

PARTICIPANT shall be also reimbursed for expenses for engineering and other professional services provided to government entities for the above projects.

reasonable costs and attorney fees and that venue for such dispute shall be the District Court of the State of Idaho, in and for the County of Bonner.

11. RELATIONSHIP OF PARTIES. Nothing in this agreement or any documents executed in connection with this agreement shall be construed as making DISTRICT, AGENCY and/or WEST BONNER INVESTMENT LLC a joint venture or partners.

DATED this ______ day of ______________, 2011.

ENTITY:	ENTITY:
_______________	_______________
Oldtown Urban Renewal Agency	*West Bonner Water and Sewer District No. 1*
By_______________	By_______________
Its_______________	Its_______________
ATTEST:	ATTEST:
_______________	_______________
Clerk of Agency	Clerk of District

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and used to reimburse the DISTRICT, grant and loan monies the DISTRICT may be able to obtain and developer contributions.

4. ADMINISTRATOR. The DISTRICT shall be the Administrator of the construction of the system improvement for all phases of the project contemplated by this Agreement. It shall be the duty of the Administrator to coordinate the design, construction and inspection of the authorized improvements. The Administrator shall have the final say in all design and construction decisions.

5. PAYMENT. The DISTRICT shall receive AGENCY approval before incurring expenses that are going to be ultimately paid by the AGENCY. AGENCY agrees to turn over all tax increment received by DISTRICT within thirty (30) days of receiving the increment, less twenty percent (20%) to be retained by AGENCY for AGENCY'S administrative costs, until such time as the AGENCY has paid the DISTRICT for all costs incurred by DISTRICT relating to the DISTRICT'S financing obligation for the construction of the system improvements.

6. CONSTRUCTION OF IMPROVEMENTS. It is contemplated that both engineering costs and DISTRICT costs associated with project administration will be paid by WEST BONNER INVESTMENT COMPANY LLC, a property owner within the DISTRICT'S boundaries and the boundaries of the urban renewal district. The payment of those costs will be either made directly to the DISTRICT as reimbursement, or to the engineering firm engaged by the DISTRICT The property owner will be reimbursed for those costs by the AGENCY through a separate agreement with AGENCY, which reimbursement to the property owner will not reduce the payment to be made to the DISTRICT pursuant to the term of Paragraph 5. The DISTRICT shall cause the administration, inspection and construction of improvements contemplated by this agreement.

7. DESIGN OF IMPROVEMENTS. The DISTRICT shall cause the improvements to be designed, or review any proposed designs of improvements contemplated by this agreement that are prepared by, or on behalf of, WEST BONNER INVESTMENT LLC. Any designs that are proposed by WEST BONNER INVESTMENT COMPANY LLC must receive DISTRICT approval prior to commencement with bidding the work or commencement of construction.

8. ACCEPTANCE OF IMPROVEMENTS. When the improvements contemplated by this agreement have been constructed in a workmanlike fashion, in accordance with the approved design and plans, and to the DISTRICT'S satisfaction, the DISTRICT will accept the improvements as part of its system.

9. LIABILITY – HOLD HARMLESS. Each party shall assume complete liability for, and indemnify and hold the other party harmless for all of the acts of the indemnifying party and its personnel provided under this Agreement.

10. RESOLUTION OF DISPUTES. Should a dispute arise between the parties, it is agreed that they will attempt to mediate the dispute in accordance with Idaho Law. Should it be necessary to resolve a dispute in court, it is agreed that the prevailing party shall be entitled to its

REIMBURSEMENT AGREEMENT

THIS AGREEMENT made between the Oldtown Urban Renewal Agency, an urban renewal agency created pursuant to the laws of the State of Idaho (herein the AGENCY), and the West Bonner Water and Sewer District No. 1, a water and sewer district created pursuant to the laws of the State of Idaho (herein the DISTRICT), each being a governmental entity of the State of Idaho.

W I T N E S S E T H :

WHEREAS, each of the parties hereto is a "public agency" as defined by <u>Idaho Code</u>, and

WHEREAS, each of the parties may, by Resolution duly enacted by each party agree to contract for the promises contained herein, and

WHEREAS, the DISTRICT has a need for improvements to its water and sewer systems in order to update the deteriorating system (collectively the "Systems") and to foster economic development within the jurisdictional boundaries of the DISTRICT; and

WHEREAS, the AGENCY anticipates that it will have funding to pay for public improvements to the DISTRICT'S Systems through revenue allocation financing, and

WHEREAS, the improvements referenced herein are a part of the urban renewal plan recommended by the AGENCY and approved by the Oldtown City Council.

NOW, THEREFORE, subject to the limitations of this Agreement and in order to provide capital improvements within the DISTRICT, it is hereby agreed as follows:

1. <u>DURATION OF AGREEMENT</u>: This Agreement shall be effective until all capital improvements described in Exhibit A, attached hereto and included by this reference, have been constructed, accepted by the DISTRICT, and costs identified below have been reimbursed by the AGENCY or a third party.

2. <u>PURPOSE</u>: The purpose of this Agreement is to provide a general financing mechanism for the improvements, which includes reimbursement by the AGENCY for a portion of the capital improvements to be constructed as part of the DISTRICT'S systems, and the associated administrative and engineering costs, as listed in Exhibit A. If the DISTRICT elects to construct the improvements to the systems in phases, a separate addendum to this agreement will be prepared for each phase detailing the work, as well as specific funding details for that phase.

3. <u>MANNER OF FINANCING</u>: The Board of Directors of the District intends to present revenue bond propositions to the voters for their approval for financing the necessary improvements to the system. However, all parties to this Agreement agree that the current rate payers should not be paying for the cost of the system improvements. Therefore, improvements to the DISTRICT system, including engineering, administrative and inspection expenses, will be funded through multiple revenue sources: revenue allocation funds received by the AGENCY

APPENDIX N

REVENUE BOND PAYMENT GUARANTY AGREEMENT

REVENUE BOND PAYMENT GUARANTY AGREEMENT

THIS AGREEMENT made between West Bonner Water and Sewer District No. 1, a water and sewer district created pursuant to the laws of the State of Idaho, (herein "District"), and West Bonner Investment Company, LLC, an Idaho limited liability company, (herein "Company").

WHEREAS, Company is the owner of property that is located within the boundaries of the District and also within the boundaries of the Oldtown Urban Renewal District (herein "OURD"); and

WHEREAS, Company's land is not currently served by District and the existing water and sewer system will need to be extended across the Pend Oreille River (herein "River") in order to serve Company's property that is located on the opposite side of the River from where the existing water and sewer lines are located; and

WHEREAS, in order for Company to be able to develop Company's property in a manner that is economically viable, it is essential that certain improvements are made to the water and sewer system which include the extension of water and sewer system lines across the River to provide service to Company's property (herein "Improvements"); and

WHEREAS, the current OURD plan provides for improvements to the water and sewer systems in order to update the deteriorating systems and extend the existing water and sewer system across the River in order to foster economic development; and

WHEREAS, it is anticipated that the tax increment that will be derived from the Company's property once water and sewer service are available to the property will be sufficient to pay for the Improvements over time and to that end the District and OURD have entered into a reimbursement agreement with each other in which the District will construct the Improvements and be reimbursed by OURD using tax revenues realized through the tax increment (herein "Reimbursement Agreement"); and

WHEREAS, District is willing to pursue funding the Improvements to serve the Company through the issuance of water revenue bonds and sewer revenue bonds (herein "Bond" or "Bonds"), provided: 1) the District is reimbursed by OURD with the tax increment received as a result of development of the Company's property; and 2) Company provides a guaranty to fund all debt service obligations of the Bonds not satisfied through OURD's tax increment reimbursement, thereby guaranteeing that District will never need to increase its water and sewer utility rates for the purpose of funding debt service obligations for the Bonds so existing District customers are not burdened with the cost of Bonds issued for the benefit of Company; and

WHEREAS, it is in the best interest of Company to guaranty funding for the debt service obligations for the Bonds so that the Improvements can be installed in a more expeditious manner, which is a benefit to the Company and will allow the Company to develop its property sooner.

NOW THEREFORE in order to insure that sufficient funds are available to make the debt service obligations for the Bonds, it is hereby agreed as follows.

1. RECITALS. The above recitals are incorporated as a material part of this Agreement.

2. DEFINITIONS.

a. "Company" means West Bonner Investment Company, LLC, an Idaho Limited Liability Company, its successors or assigns.

b. "Base Year" means the year in which the Bonds are issued by the District.

c. "Bonds" means two series of Bonds to be issued by the District, a water revenue Bond in the aggregate principal amount of up to $2,420,000.00 and a sewer revenue Bond in the aggregate principal amount of up to $1,315,000.00.

d. "District" means West Bonner Water & Sewer District, a water and sewer district created and operating under the laws of the State of Idaho.

e. "Letter of Credit" means the Letter of Credit initially delivered by the Company's bank including any renewal or extension thereof in accordance with its terms. The Letter of Credit shall be in an amount sufficient to cover the total debt service for the life of the Bonds, less any Restricted Cash Deposit initially provided by Company to District; shall be irrevocable for the life of the Bonds; and shall enable the Bond Registrar as defined in the ordinances authorizing the Bonds to draw an amount sufficient to pay when and as due thereon the principal of and interest on the Bonds or the full amount of the Letter of Credit as provided in Paragraph 6. The Letter of Credit shall contain procedural and administrative terms acceptable to the Bond Registrar and the attorney for the District, including a requirement that the Bond Registrar shall be provided at least thirty (30) days' prior written notice of the expiration of the Letter of Credit. The Letter of Credit may not be revoked during the life of the Bonds, provided, the amount of the Letter of Credit may be reduced annually by the Company's bank in accordance with the reduction of the District's debt service obligations for the remaining life of the Bonds.

f. "OURD" means the Oldtown Urban Renewal District, or its successors.

g. "Outstanding Principal Balance" means on any particular day the aggregate of all funds that the District has drawn under the Bonds to that day, less the aggregate of all payments of principal on the Bond made by the District on or before that day.

h. "Restricted Cash Deposit" means a principal sum of cash initially deposited by Company in a restricted account of the District and to be used solely for the payment of debt service obligations of the Bonds or to fund any reserve account requirement for the Bonds.

h. "Revenue Allocation Proceeds" means that incremental portion of Taxes exceeding the amount of Taxes collected by OURD for property located within the area served by the Improvements in the Base Year after deductions for the School Credit and other deductions that may be required by the Law and transmitted to the District for debt service on the Bonds.

i. "Surety" means a Letter of Credit, a Restricted Cash Deposit, or any combination thereof provided by Company in an amount equal to the total outstanding debt service obligation of the District for the Bonds, plus the principal amount of any reserve account obligation that may be required of the District by the purchaser(s) of the Bonds.

j. "Taxes" means all levies on an ad valorem basis upon land, real property, personal property or any other property, tangible or intangible, included within the Oldtown Urban Renewal District.

3. <u>DURATION OF AGREEMENT</u>. This Agreement shall be effective upon execution by both parties and shall remain in effect until the Bonds are paid in full.

4. <u>PAYMENT SURETY</u>. The Company shall provide Surety to the District in an amount equal to the outstanding debt service obligations of the District for the Bonds, plus the amount of any reserve account obligation required of the District by the

purchaser(s) of the Bonds. The amount of the required Surety may be reduced annually in accordance with Paragraph 5 herein.

a. It is expressly agreed by the Parties that no Bonds, or any portion thereof, will be issued by the District without the prior written approval of the Company as to the total amount of the Bonds to be issued by the District for which Company will provide Surety.

b. Upon the Company's written approval of the amount of the Bonds for which it will provide Surety, Company agrees to provide to District a Restricted Cash Deposit, an irrevocable Letter of Credit in a form approved by the District's attorney(s), or any combination thereof, in an amount sufficient to guaranty the total outstanding debt service obligations of the Bonds. Any Letter of Credit must be irrevocable for the life of the Bonds and provide for automatic renewal until such time as the Surety is released by the District.

c. If any or all of the Surety is in the form of a Restricted Cash Deposit, the District shall deposit the funds in an interest bearing account. District shall be entitled to retain any interest that may accrue on the account for District's administrative costs related to managing the account.

d. The Surety must be provided either prior to the commencement of construction of the Improvements, or the District entering in any written agreement to issue the Bonds , whichever comes first.

e. Company understands and agrees that District has no obligation to construct the Improvements or issue the Bonds if the Company does not provide the Surety as required herein. Company further understands and agrees that District will only proceed with construction of the Improvements and/or issuance of the Bonds upon the binding commitment of Company to provide adequate and continuing Surety for the payment of all debt service obligations for the Bonds. Any breach of the promises herein by Company will cause District to incur substantial monetary damages for which Company shall be fully liable.

f. If interim financing of the Improvements is required prior to the issuance of the Bonds, Company shall be responsible for the costs associated with the interim financing. Nothing in this agreement is intended to prohibit the Company from providing the interim financing if allowed to do so by the entity that will be purchasing the Bonds and under terms satisfactory to District.

g. If the District is required to fund a reserve account pursuant to the terms of the Bonds, Company shall fully fund said reserve account in a form acceptable to the District's bond counsel.

5. <u>SURETY REDUCTION</u>. District agrees that the dollar amount of the Surety may be reduced on an annual basis. The amount of reductions shall be determined by the outstanding debt service obligation owing on the Bonds, provided the parties may agree to additional reduction of the Surety based on the amount of Revenue Allocation Proceeds the OURD has available to pay to District pursuant to the Reimbursement Agreement entered into between the District and OURD. Once the principal and interest on the Bonds is paid in full and the Bonds are fully defeased, District will fully release the Surety and any principal amount remaining in any reserve account established for the Bonds.

6. <u>BOND PAYMENTS</u>.

a. District agrees to apply all Revenue Allocation Proceeds transmitted to District pursuant to the Reimbursement Agreement entered into between District and OURD on the _____ day of __________, 2011 to the annual debt service payments for the Bonds. In the event that on the sixtieth (60th) day prior to the date on which the Bond payments are due, the District has not received Revenue Allocation Proceeds from OURD in an amount sufficient to make the annual debt service payments for the Bonds, the District will provide written notice to Company of the dollar amount of the funds that are needed to make the total annual debt service payments for the Bonds. No later than thirty (30) days prior to the due date of the Bond payment, Company shall deliver to District either cash, or a cashiers or certified check in the amount specified by District in the notice.

b. Company's failure to timely deliver the funds to District as provided herein automatically authorizes the District to draw on the Surety in the amount necessary to make the total annual debt service payments on the Bonds.

c. Company agrees to not interfere with District's right to draw on the Surety funds. If Company interferes, or attempts to interfere with District's right to draw on the Surety, District shall be entitled to draw the entire amount remaining in the Surety and apply those funds to the current Bond payments and to pre-pay as much of the outstanding debt service obligations for the Bonds as the proceeds of the Surety allow.

7. RELATIONSHIP OF PARTIES. Nothing in this agreement or any documents executed in connection with the construction of the Improvements or the Bond shall be construed as making District and Company as joint venture or partners.

8. LIABILITY — HOLD HARMLESS: Each party shall assume complete liability for, and indemnify and hold the other party harmless for all of the acts, or failure to act, of the indemnifying party and its principals, officers, agents, employees and personnel provided under this Agreement.

9. NONWAIVER: Failure of District to exercise any of the rights under this Agreement, or breach thereof, shall not be deemed to be a waiver of such right or a waiver of any subsequent breach.

10. CHOICE OF LAW: Any dispute under this Agreement, or related to this Agreement, shall be decided in accordance with the laws of the state of Idaho.

11. ATTORNEY FEES: Reasonable attorney fees shall be awarded to the prevailing party in any action to enforce this Agreement or to declare forfeiture or termination of this Agreement.

WEST BONNER WATER AND SEWER DISTRICT	WEST BONNER INVESTMENT COMPANY, LLC
By: ______________________	By: Michael O. [signature]
Its: ______________________	Its: MANAGER / AUTHORIZED AGENT
Date: ______________________	Date: 8/11/11

ATTEST:

____

Clerk of West Bonner Water and Sewer District

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APPENDIX O

CROSS-CONNECTION CONTROL ORDINANCE 2001-1

ORDINANCE 2001-1

AN ORDINANCE FOR THE WEST BONNER WATER AND SEWER DISTRICT, OLDTOWN, BONNER COUNTY, IDAHO, ADOPTED BY THE BOARD OF DIRECTORS ON MARCH 13, 2001, CREATING A PROGRAM FOR THE CONTROL OF BACKFLOW AND CROSS-CONNECTIONS WITHIN THE WEST BONNER WATER AND SEWER DISTRICT, PROVIDING FOR THE ESTABLISHMENT OF SAID PROGRAM, PROVIDING FOR THE TECHNICAL PROVISIONS TO ACHIEVE ELIMINATION OF BACKFLOW AND CROSS-CONNECTIONS, AND PROVIDING FOR PENALTY UPON VIOLATION OF THIS ORDINANCE AS REQUIRED BY IDAPA 16.01.08, THE IDAHO RULES FOR PUBLIC DRINKING WATER SYSTEMS, DECEMBER 10, 1992, AS WRITTEN AND AMENDED.

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE WEST BONNER WATER AND SEWER DISTRICT, OLDTOWN, BONNER COUNTY, IDAHO:

SECTION 1: Adoption of regulations.

A. The West Bonner Water & Sewer District (hereinafter referred to as "the District") hereby adopts all applicable State of Idaho Department of Environmental Quality regulations governing cross-connections for the purpose of protecting the District's potable water system from actual and potential contamination by objectionable and hazardous liquids, solids and gases.

B. The regulations adopted herein shall require that all premises being served by the District's water system shall be required to take appropriate steps to insure and protect the District's potable water system from actual and potential contamination from the premises' water system.

SECTION 2: Property owner responsibility.

A. The property owner of premises being served by the District's water system shall be responsible for preventing actual and potential contamination of the District's water system from the property owner's water system.

B. The property owner's responsibility begins at the meter shutoff valve, and shall include all of the premises' water system.

SECTION 3: Costs.

A. All costs and expenses incurred to install, operate, test and maintain an approved backflow prevention device shall be borne by the property owner.

SECTION 4: Compliance evaluation.

A. All pre-existing District water service connections shall be evaluated to determine the degree of hazard and the type of protection needed to comply with the requirements of State of Idaho Department of Environmental Quality regulations.

B. After the compliance evaluation is completed, a list of all premises where potential or actual cross-connections exist shall be prepared.

C. Notification by letter to all property owners of premises identified on the compliance evaluation list shall be mailed with the following minimum information:

1. A copy of this ordinance;
2. An explanation of the problem;
3. The approved type of backflow prevention device that must be installed;
4. The recommended location of the backflow prevention device;

5. The time allotted to install the backflow device;
6. The name, address and telephone number of the District representative to be contacted for questions or further information.

SECTION 5: Defective backflow prevention devices.

A. Whenever a backflow prevention device is determined to be defective, the property owner of the served premises shall be responsible for the repair of the backflow prevention device and shall be notified of the defective device as provided for in SECTION 4(C).

SECTION 6: Backflow prevention device testing.

A. An American Water Works Association-certified tester, or equal, shall be used to test all backflow prevention devices.
B. All backflow prevention devices shall be tested annually and the property owner shall provide a copy of the test to the District.
C. A record of all tested backflow prevention devices shall be maintained by the District.

SECTION 7: Shutoff of water service.

A. Shutoff of water services is authorized by this section when a property owner fails to install, repair, maintain or test a backflow prevention device subject to appropriate notification as required by this ordinance; or:
   1. A backflow prevention device has been removed or bypassed; or
   2. If unprotected cross-connections exist on the premises and there is inadequate backflow prevention protection at the point of delivery; or
   3. If a property owner/occupant refuses admittance of District personnel to the served premises for the expressed purpose of cross-connection control.
B. Water services will not be restored until such conditions or defects are corrected.
C. Turning on of water services shall be subject to a shutoff fee as provided for in District By-laws.

Passed by the Board of Directors of the West Bonner Water and Sewer District at a regular meeting thereof, held on the 13th day of March 2001.

Lonnie L. Orr
Chairman

Attest:

Sheila M. Gormley
District Clerk

Crystal Mountain WWTP Tank Design, LC = 0.9D+1.2F+1.0E+0.0H (conservative), top free, bottom fixed, sides fixed, Filled with Seismic

rectangular tank calculation, Wall 1		load factor	1
-Mx calculation		sanitary factor	1
at end of wall, negative bending,		d, (in.)	13
q, tri	1053	F'c, ksi	4
q, rect	80	Fy, ksi	60
a, ft	14	b, (in.)	12
b,ft	12	A	39.70588235
		B	-702
b/a	0.857143	As, min.	0.52

location	triangular coeff	rectangular coeff		moment #.ft	Mu, K.in.	As, reqd, in2/ft	#6 rebar spacing, in.	#5 rebar spacing, in.	#4 rebar spacing, in.
top	-2	-13		-616.616	-7.39939	0.010546736	500.628823	352.715762	227.558556
.9a	-3	-14		-838.684	-10.0642	0.014348123	367.9923903	259.267366	167.269268
.8a	-3	-13		-823.004	-9.87605	0.014079657	375.0091374	264.210983	170.458699
.7a	-4	-13		-1029.39	-12.3527	0.017613993	299.7616779	211.195728	136.255308
.6a	-5	-12		-1220.1	-14.6412	0.020881072	252.8605814	178.151773	114.936628
.5a	-5	-11		-1204.42	-14.453	0.020612407	256.1563982	180.473826	116.434726
.4a	-5	-10		-1188.74	-14.2649	0.020343751	259.5391614	182.857136	117.972346
.3a	-5	-8		-1157.38	-13.8886	0.019806462	266.5796622	187.817489	121.172574
.2a	-3	-5		-697.564	-8.37077	0.011932224	442.499236	311.760825	201.136016
.1a	-1	-2		-237.748	-2.85298	0.004065003	1298.892029	915.128475	590.405468
bottom	0	0		0	0	0	#DIV/0!	#DIV/0!	
						0.027771826			
				As, min.		0.027771826	190.1207379	133.948702	86.4185172

Crystal Mountain WWTP Tank Design, LC = 0.9D+1.2F+1.0E+0.0H (conservative), top free, bottom fixed, sides fixed, Filled with Seismic

rectangular tank calculation, Wall 1		load factor	1
-My calculation		sanitary factor	1
at end of wall, negative bending		d, (in.)	13.5
q, tri	1053	F'c, ksi	4
q, rect	80	Fy, ksi	60
a, ft	14	b, (in.)	12
b, ft	12	A	39.7058824
		B	-729
b/a	0.857143	As, min.	0.54

location	triangular coeff	rectangular coeff		moment #.ft	Mu, K.in.	As, reqd, in2/ft	#6 rebar spacing, in.	#5 rebar spacing, in.	#4 rebar spacing, in.
top	-7	-61		-2401.196	-28.81435	0.039611321	133.295227	93.9125466	60.5887397
.9a	-13	-68		-3749.284	-44.99141	0.061925474	85.2637798	60.0722085	38.7562636
.8a	-16	-65		-4321.408	-51.8569	0.071412048	73.9371033	52.09205	33.6077742
.7a	-20	-62		-5099.92	-61.19904	0.084336701	62.6061954	44.1089104	28.4573616
.6a	-23	-59		-5672.044	-68.06453	0.093846674	56.2619831	39.6391244	25.5736287
.5a	-26	-55		-6228.488	-74.74186	0.103105569	51.2096491	36.0795255	23.2771132
.4a	-26	-48		-6118.728	-73.42474	0.101278481	52.1334835	36.7304088	23.697038
.3a	-23	-38		-5342.764	-64.11317	0.088372093	59.7473681	42.0947366	27.1578946
.2a	-16	-24		-3678.528	-44.14234	0.060752932	86.9093862	61.231613	39.5042664
.1a	-6	-8		-1363.768	-16.36522	0.022476372	234.913361	165.507141	106.7788
bottom	0	0		0	0	0	#DIV/0!	#DIV/0!	

	0.137130406			
As, min.	0.137130406	38.5034956	27.1274628	17.5015889