

# CAVE BAY COMMUNITY SERVICES WASTEWATER FACILITY PLAN ENVIRONMENTAL INFORMATION DOCUMENT (EID)

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**Prepared for**

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**June 2, 2013**



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## **ACRONYMS AND ABBREVIATIONS**

<b>Abbreviation</b>	<b>Definition</b>
CAS	Compliance Agreement Schedule
CBCS	Cave Bay Community Services
CDC	Conservation Data Center
CUP	Conditional Use Permit
CY	Cubic Yards
IDEQ	Idaho Department of Environmental Quality
EID	Environmental Information Document
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
FEMA	Federal Emergency Management Agency
gpm	Gallons per minute
HHS	Human and Health Services
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
I/I	Infiltration and Inflow
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
SHPO	State Historic Preservation Officer
sfr	Single Family Residence
STEP	Septic Tank Effluent Pump
THPO	Tribal Historic Preservation Officer
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
VFD	Variable Frequency Drive

## 1 COVER SHEET

Applicant/Borrower: Dave Kinkela  
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IDEQ Grant or Loan Number:

Environmental Reviewer: Ester Ceja

Date: June 2, 2013

Project Cost: \$1,397,000 (construction, engineering fees, & legal fees) or  
\$1,627,386 (with Idaho Department of Environmental Quality  
(IDEQ) financing @ 1.5%)

Project Funding: Clean Water State Revolving Fund

### Abstract

The Cave Bay Community Services (CBCS) Wastewater Facility Plan, approved in October 2012, evaluates several alternatives to improve the existing wastewater system to meet Idaho Department of Environmental Quality (IDEQ) wastewater rules. The No Action Alternative is also evaluated. After receiving public input and following a public meeting held in September 2012, the CBCS Board selected the Class C Treatment and Forest Irrigation Alternative. This Environmental Information Document (EID) provides a summary of the project purpose and need, summarizes the alternatives that were developed and provides a comparison of the environmental effects and costs. It also provides a detailed description and environmental analysis of the environmental effects of the selected alternative, Class C Treatment and Forest Irrigation. This alternative was selected because it would have the least environmental effect, would be the most cost effective and would address the identified deficiencies.

Mitigation measures include the following:

- Best Management Practices (BMPs) to minimize temporary construction impacts will be developed as part of the project design and implemented during construction. This includes control of fugitive dust and erosion control measures.
- Required permits and approvals will be obtained prior to construction including; a Conditional Use Permit (CUP), Kootenai County Subdivision approval, a Wastewater Reuse Permit Modification for the 5.8 acres of new forest land, and tank only permits from US Environmental Protection Agency (EPA).
- While no cultural resources were identified in the Area of Potential Effect (APE)/Project Planning Area, if artifacts are discovered during the course of construction, the Coeur d'Alene Indian Tribe and Idaho State Historic Preservation Officer (SHPO) will be contacted, and mitigation may be further evaluated.

### Estimated Construction Costs

Treatment	\$ 517,000
Collection	\$79,000
Land Application	\$388,600
Mobilization, Engineering, Contingency and other	\$362,040
Total Estimated Cost	\$1,346,640 <sup>1</sup>

### Funding

IDEQ Share	\$1,346,640
Total Funding	pending
Other Share	N/A

### Estimated User Cost

There are currently 218 lot owners all of who are assessed for water and sewer regardless of whether they are connected per CBCS Policy (151 ERUs/existing connections and 67 ERUs/un-connected). All 218 lot owners will repay the loan, and there will be 218 ERUs/connections at full build.

Current Average Monthly User Charge per ERU	\$30.67
Change in Operation and Maintenance Monthly Charge per ERU	\$27.14
Change in Capital Cost Debt Service Monthly Charge per ERU	\$31.10
Future Monthly User Charge per ERU	\$58.24

<sup>1</sup> With additional legal fees the total cost would be \$1,397,000. With IDEQ loan costs at 1.5% it would be \$1,627,386.

## **2 PURPOSE AND NEED**

### **2.1 Purpose**

The purpose of this project is to resolve the deficiencies in the CBCS sewer collection and treatment facility and to meet the long-term needs of the community while ensuring compliance with IDEQ rules.

The problems with the current system include:

- The lagoons are unlined and do not meet IDEQ wastewater rules.
- The lagoon capacity is inadequate.
- There is no approved method for long-term reuse or disposal of lagoon effluent.

### **2.2 Need**

#### **2.2.1 Existing Conditions**

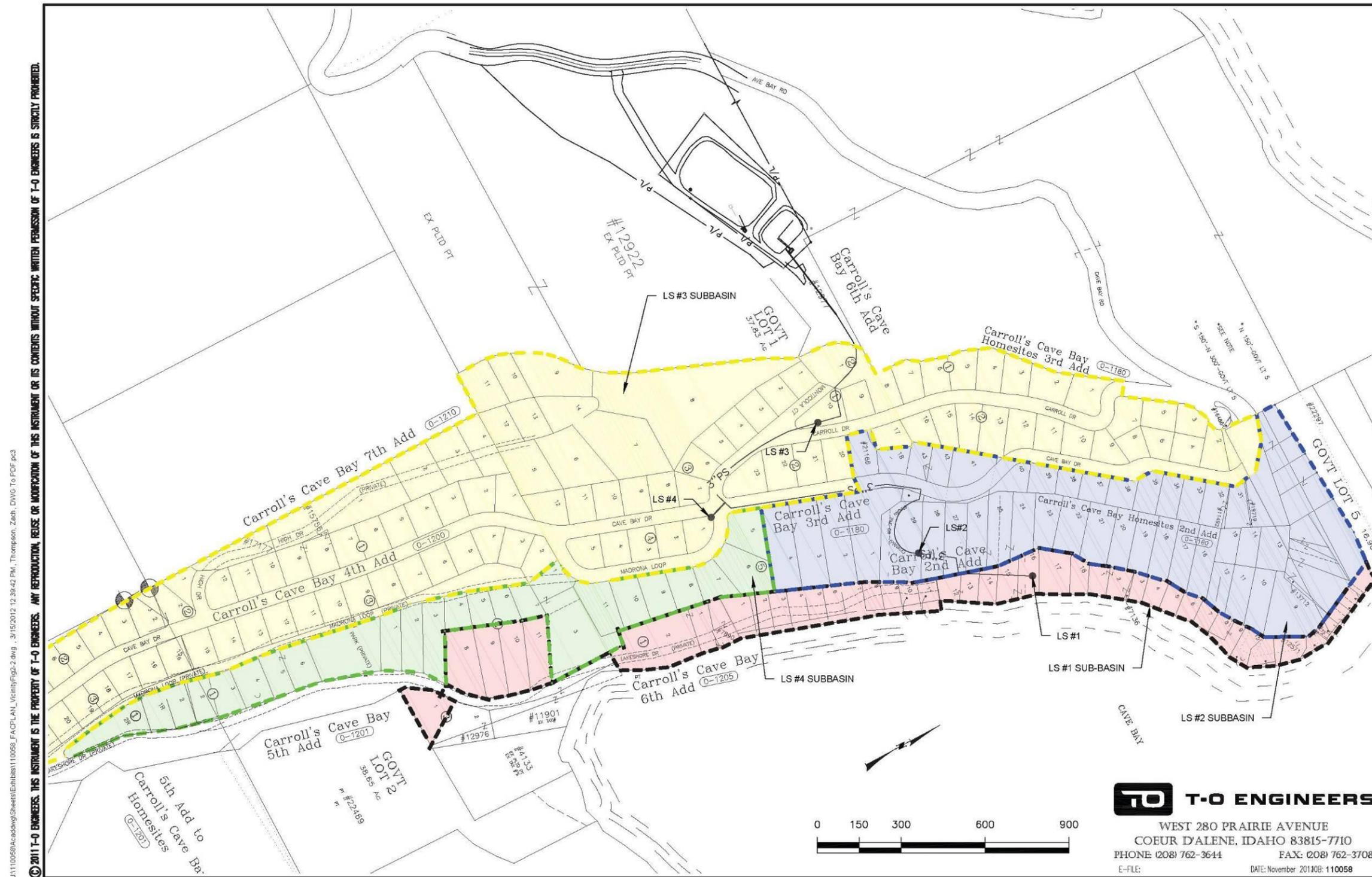
The CBCS wastewater collection and treatment system was constructed in 1977 and has been serving the Cave Bay Community since that time. Each of the residences have individual septic tanks which pump effluent through a septic tank effluent pump (STEP) collection system, which then discharges to two aerated un-lined lagoons (Lagoons #1 and #2) with a combined capacity of 3.1 million gallons. These lagoons were designed to be non-discharging and have historically operated to dispose of wastewater through evaporation and seepage. This does not comply with current IDEQ wastewater rules.

The two lagoons do not have approved reuse or disposal methods and have inadequate storage which can be demonstrated in a recent event. In February 2011, CBCS notified IDEQ that wastewater in their lower lagoon was close to breaching a low area in the embankment. CBCS immediately implemented an emergency action plan, including building up the embankment with sand bags and plastic, notifying community members to curtail their water usage, and hauling effluent to the City of Worley's wastewater treatment facility. CBCS was also granted a Temporary Reuse Permit Waiver to begin land application of their lagoon effluent on adjacent forest land owned by CBCS. The waiver was contingent on CBCS entering into a Compliance Agreement Schedule (CAS) with IDEQ to include an enforceable schedule for upgrading the CBCS wastewater system to meet the applicable Idaho wastewater rules. The CAS states that construction of a facility meeting IDEQ wastewater rules must be constructed by November 30, 2015. In addition, some lakefront residences may be incurring inflow and infiltration (I/I) to their septic tank systems when lake levels and groundwater are high from spring runoff. See Exhibit 1, Existing Site Layout for the existing site features.

The Cave Bay Community consists of approximately 225 lots located within Carroll's Cave Bay Subdivision and additions. Several of the lots are combined with contiguous residences, leaving 218 lots that are built on or buildable. Per CBCS policy all 218 lot owners are shareholders and pay assessments for water and sewer and improvements regardless of whether the lots are connected or are undeveloped.

The Cave Bay Community is primarily a seasonal community with about 149 single family residences with sewer connections, about 60 of which are full-time residences. A maintenance building and the fire substation are also connected to the sewer system comprising a total of 151 ERUs connected to the sewer system.

Exhibit 1, Existing Site Layout



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### 2.2.2 Forecasted Conditions

The proposed upgrades and expansion of the wastewater facilities would be designed to serve the projected build out conditions in 20 years, which would be 218 ERUs. There are currently 225 individual lots in the Carroll's Cave Bay Subdivision and additions but several are unbuildable or are small lots that have been combined with other contiguous lots for use by a single residence. The Cave Bay community is expected to grow by about three single family residences per year, or about two percent annually based on historical community growth data (US Census 2010). Based on this projected growth, all of the 218 lots would be developed and would be connected to the sewer system in 24 years, but for the purpose of this study it is estimated full build out would occur in 20 years. The 218 ERUs or connections also include the existing maintenance facility and the existing fire substation. See Table 1, Existing and Forecasted Connections and Wastewater Flows.

**Table 1, Existing and Forecasted Connections and Wastewater Flows**

Description	Existing (2011)	Forecasted (20 years)
Total Lots in Carroll's Cave Bay Subdivision and Additions <sup>2</sup>	225	225
Assessed lots <sup>3</sup>	218	218
Sewer connections	151	218
Estimated flows (gpd/ERU)	44	74

Current wastewater flows were calculated based on lift station pump run time records for the years 2006 through 2011. Flow data for April through December 2011 was obtained from the flow meter that was installed at Lift Station #3 which pumps directly to the lagoons. Pump run times multiplied by the measured operating capacity of the pumps (28 gpm) were utilized to estimate flows to the lagoon. Pump run times for 2011 were compared to metered flow data to verify accuracy. The current estimated flows were compared with connected ERUs for calculation of a design unit flow rate. Average unit flow rate over these six (6) years is 44.0 gpd/ERU. The average day flow for the observed years (2006-2011) was determined to be 6,203 gallons per day. The flow data shows that Cave Bay is primarily a seasonal community with the highest average monthly flow in the summer months.

A conservative flow rate of 74 gpd/ERU as well as precipitation and evaporation data were use to forecast lagoon and land application system capacity needs for the build out conditions with 218 ERUs. Flow projections were based on seasonal usage trends plus three standard

<sup>2</sup> Several lots are either unbuildable or combined with other residences.

<sup>3</sup> Both improved and unimproved lots pay for sewer and water improvements.

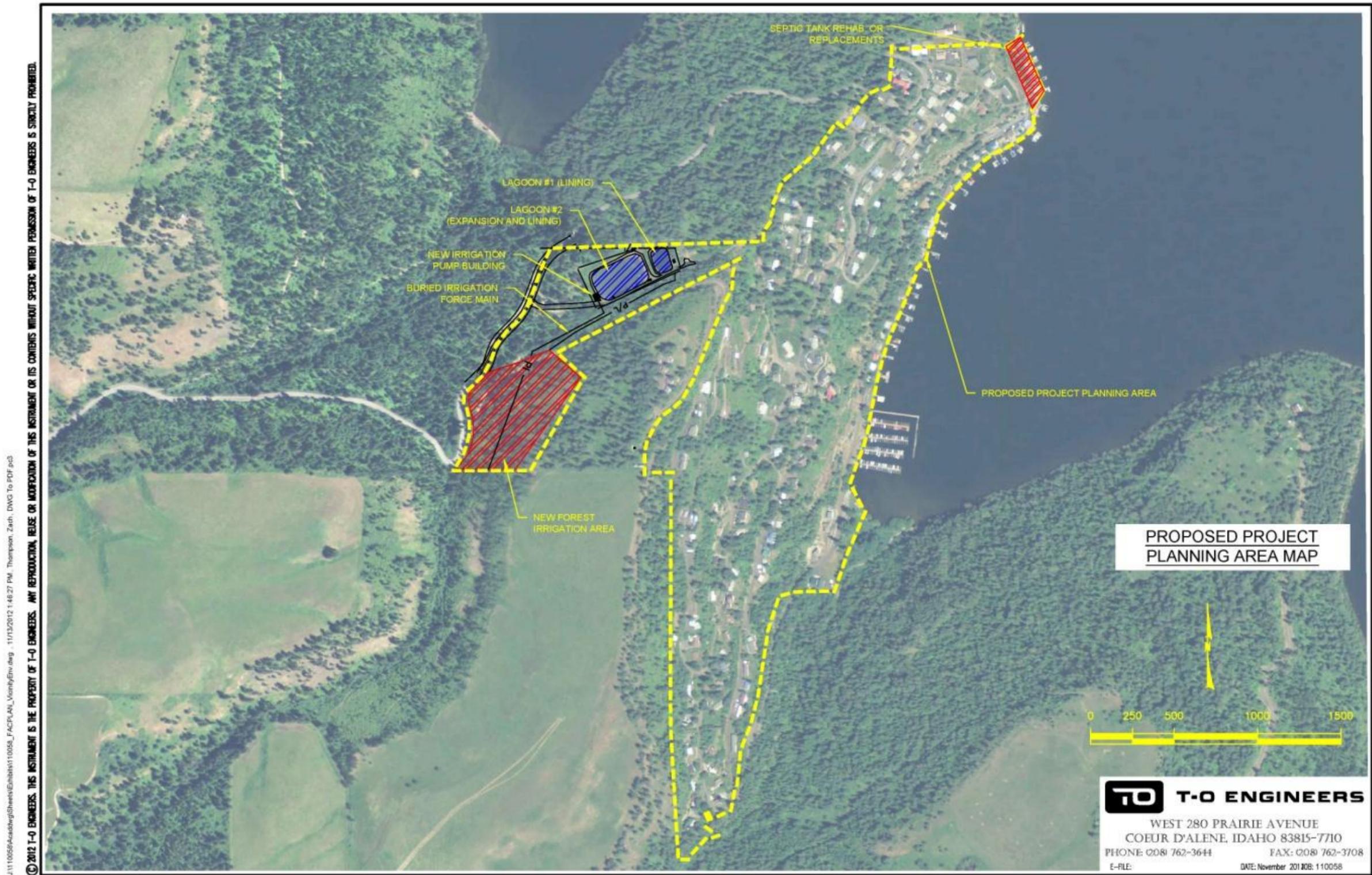
deviations to account for any potential increase in occupancy and/or full time residency. Seepage was not an assumption for the capacity calculations. By the 20-year design period, the storage volume of the lagoons will need to be at least 3.5 million gallons, which is 400,000 gallons more than the existing lagoon capacity. See the CBCS Wastewater Facility Plan for details.

Under the Reuse Permit issued in October 2012, CBCS is permitted to discharge effluent from the lagoons by irrigating approximately 3.29 acres of adjacent forest land owned by CBCS, referred to as the interim forest irrigation area. This interim condition represents the existing conditions. To meet the IDEQ wastewater requirements, an additional 5.8 acres of forest land would be needed for irrigation.

### **2.3 Project Planning Area**

The project planning area includes the service area for the Cave Bay Community and the location of the proposed alternatives including the selected alternative. For this study, the project planning area is the same as the Area of Potential Effect (APE) and represents the area that could be directly or indirectly affected by the project and by potential future activities. The project planning area/APE is located approximately six miles north of Worley in Kootenai County on the west side of Lake Coeur d'Alene, near Cave Bay. It is a peninsula bordered by Lake Coeur d'Alene to the east and 16 to 1 Bay to the west. The project planning area is primarily hillside covered with dense stands of ponderosa pine. The residential developments of the Cave Bay Community are located east of the existing lagoon system. It is in Township 48 North, Range 4 West, and Section 32. See Exhibit 2, Project Planning Area/Area of Potential Effect Map.

Exhibit 2, Project Planning Area/Area of Potential Effect Map



### 3 ALTERNATIVES AND PROPOSED ACTION

Several alternatives were developed and evaluated to address the identified deficiencies. The alternatives included:

Treatment and Disposal Alternatives:

- Class A Treatment and Groundwater Recharge Alternative
- Enhanced Treatment and Rapid Infiltration Alternative
- Class C Treatment and Pasture Grass Irrigation Alternative
- Class C Treatment and Forest Irrigation Alternative
- Regionalization Alternative
- No Action Alternative

Maintenance Alternatives:

- Optimize Existing Facilities
- No Action Alternative

See the CBCS Wastewater Facility Plan for details about the alternatives. Exhibit 3, Land Application Alternatives shows the sites for land application of effluent.

#### 3.1 Treatment and Disposal Alternatives

##### 3.1.1 *Class A Treatment and Groundwater Recharge Alternative*

This alternative would construct a new treatment facility on the existing CBCS site to achieve Class A effluent quality. Class A treatment is the highest water reuse treatment option. Class A effluent would be oxidized, coagulated, clarified, filtered and disinfected. The effluent from Class A can be used as a non-potable source of water, including but not limited to lawn irrigation, edible crop irrigation, park irrigation and groundwater recharge. However, for this alternative, groundwater recharge would be the most viable reuse option since lawn irrigation within the service area is too limited to accommodate the volume of effluent. Groundwater recharge would likely be achieved through a subsurface distribution system on the existing CBCS property. This would require a wastewater reuse permit from IDEQ.

The geologic and soil properties of the existing and proposed project sites feature soils that have low permeability and relatively shallow impermeable surfaces, which could result in groundwater mounding and subsurface discharge to surface waters. Since the subsurface discharge could still enter surface waters, this alternative could degrade surface water quality

and adversely affect aquatic species. There are no buffer requirements for this treatment option.

### **3.1.2 Enhanced Treatment and Rapid Infiltration Alternative**

Enhanced treatment would require nutrient and solids removal to levels that will not degrade groundwater quality. This would be accomplished through a mechanical treatment system optimized for nutrient removal. The effluent would be oxidized, coagulated, clarified, and disinfected. The process would be similar to Class A treatment technology, but without the filtration requirement.

For this alternative effluent would be disposed of through rapid infiltration. The treatment and subsurface distribution system would be on the existing CBCS property. This would require a wastewater reuse permit from IDEQ. The low permeability and shallow soils of the discharge site could result in subsurface discharge to surface waters similar to the Class A Treatment and Groundwater Recharge. There are no buffer requirements for discharge.

### **3.1.3 Class C Treatment and Pasture Grass Irrigation Alternative**

This alternative would utilize the existing lagoon treatment system with some upgrades including additional lagoon storage, adding lagoon liners, upgrading the irrigation pumping system and acquiring land for pasture grass irrigation. Class C treatment would provide adequate oxidation and disinfection for effluent. The effluent would be land applied to irrigate pasture grasses in a nearby field.

Class C treated effluent may be land applied but specific conditions regarding the application site must be met. By utilizing Class C treatment the cost of construction for new facilities is minimized since a majority of the required facilities is already in place. It would require approximately 11.5 acres of total irrigation area plus appropriate buffer area. This includes approximately 8.2 additional acres of pasture irrigation in addition to the 3.29 acres of interim forest irrigation area.

The nearest pasture land for irrigation is owned by Lampert Land Company and is approximately 1000 feet south of the existing treatment site. It does not border the existing site; therefore, easements would be required through other properties to reach the site. It would require modification of active farmland and more intensive crop rotation. See Exhibit 3.

### **3.1.4 Class C Treatment and Forest Irrigation Alternative**

The Class C Treatment and Forest Irrigation Alternative is similar to the existing interim forest application system permitted under the existing Reuse Permit but it would involve increasing lagoon capacity, installing lagoon liners and upgrading the irrigation and pumping system. It would be similar to the Class C Treatment and Pasture Grass Irrigation Alternative except that forest would be irrigated instead. This alternative would require approximately 9.1 acres of total irrigation area (5.8 acres additional to the interim phase) plus appropriate buffers. Less forest land is required compared to pasture because the forest vegetation has higher hydraulic and nutrient uptake compared to grasses. The nearest properties for forest irrigation are two parcels, which are adjacent to the existing CBCS site. See Exhibit 3.

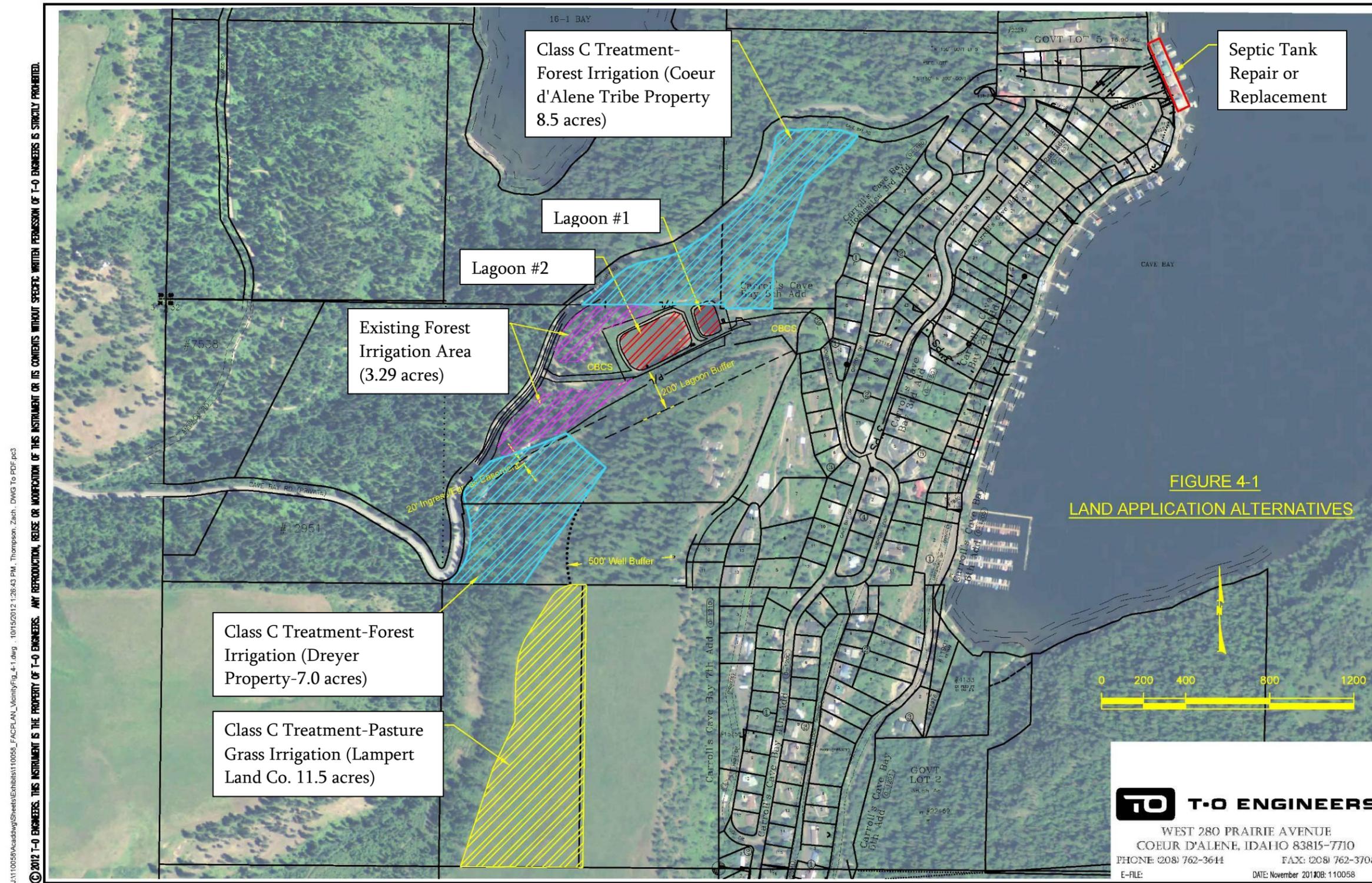
### **3.1.5 Regionalization Alternative**

This alternative would consolidate the Cave Bay Community into an existing municipal wastewater system. The nearest municipal wastewater system to the Cave Bay Service Area is in the City of Worley, approximately six miles to the south. Consolidation of the two systems is not practical due to the distance between the locations, and because the Cave Bay Service Area is located outside the City's limits. There are no inter-municipal service agreements proposed or required for this project.

### **3.1.6 No Action Alternative**

Under the treatment and disposal No Action Alternative, no improvements would be made to the existing wastewater treatment or disposal facilities. Flow projections estimate that by the year 2017 the interim conditions for treatment and irrigation on the 3.29 acres of forest land will not be adequate. The lagoons may reach capacity and would continue to pose a public health risk. Furthermore, the interim system relies on lagoon seepage, which is not allowed under the IDEQ wastewater rules. CBCS has entered into a CAS with IDEQ to formulate and implement a treatment program. If the No Action Alternative is utilized it would not correct the deficiencies and would violate the terms of the CAS agreement.

Exhibit 3. Land Application Alternatives



## **3.2 Maintenance Alternatives**

### **3.2.1 Optimize Existing Facilities**

Three of the four existing lift stations do not include flow meters and the only method of estimating flow is from pump run-time meters. The Optimize Existing Facilities Alternative would install flow meters at the three lift stations to accurately measure flow from each respective zone. Run-time meters would be installed on individual septic tanks at residences known or suspected to have infiltration and inflow (I/I) problems. This would help to identify sources of unwanted flow to the system so that efficiency may be improved.

Five residences in the Cave Bay community located near the Lake Coeur d'Alene shoreline have septic tanks that are believed to be experiencing I/I. Groundwater may flow into the tanks during spring runoff, when the lake level and groundwater levels are high. The excess groundwater is pumped into the collection and treatment system requiring increased volumes of wastewater to be treated. These tanks are likely seeping wastewater out of the tanks and into surface water and groundwater when the levels are down.

This alternative would evaluate and repair or replace septic tanks subject to flooding and/or excessive I/I if needed. The tanks would be replaced with concrete tanks. In some instances, fiberglass tanks may be considered; however, anchoring to protect from shallow groundwater conditions would be required. Permits would be required from Idaho Panhandle Health District for new tank installations.

### **3.2.2 No Action Alternative**

The No Action Alternative for maintenance would not evaluate, repair or replace the failing septic tanks. I/I would continue to occur resulting in the treatment of groundwater that flows into the system. The tanks would continue to seep during period of low flow, discharging pollutants. The tanks would continue to deteriorate, fail and operate inefficiently. This could be exasperated by increased projected usage and the aging of the facilities. This alternative would not provide suitable collection and treatment of wastewater prior to discharge and would not comply with IDEQ wastewater regulations.

## **4 COMPARISON OF ALTERNATIVES**

Each alternative was compared based on impacts to the human and natural environment, the ability to meet the project purpose and need, and cost. Based on preliminary information, all alternatives except the No Action Alternatives would meet the project purpose and need and would benefit surface and groundwater quality. Wastewater reuse permits would be required from IDEQ for land application, rapid infiltration, and subsurface discharge of

wastewater. The Class C Treatment and Forest Irrigation would be the most cost effective method that meets the project purpose and need; therefore, it was selected to correct the identified deficiencies. The Optimize Existing Facilities Alternative, a maintenance alternative, was also incorporated as part of the Selected Alternative. Table 2, Summary of Treatment and Disposal Alternatives and Table 3, Summary of Maintenance Alternatives provide screening level summaries of the impacts of each alternative.

#### **4.1 Treatment and Disposal Alternatives**

**Class A Treatment and Groundwater Recharge** would have the highest level of effluent treatment but would require expensive new treatment facilities, high operation and maintenance costs and would require groundwater recharge which would be problematic due to the shallow impermeable soils and limited areas for land application. Groundwater recharge could degrade groundwater and create mounding that would force the reclaimed water into surface waters. This alternative would require a wastewater reuse permit from IDEQ. Extensive hydrogeologic analysis would be required. This alternative would have the greatest level of treatment and would have the least adverse effect to water quality of ground and surface water, aquatic species, vegetation and odor. It would not require land acquisition and would not require buffers. It would meet the project purpose and need.

**Enhanced Treatment and Rapid Infiltration** would be similar to the Class A Treatment and Groundwater Recharge with similar benefits and effects. The difference would be that it would be a lower level of treatment and therefore, could have slightly greater effects to groundwater and surface waters, aquatic resources, and odor compared to the Class A Treatment and Groundwater Recharge. It would still be a great improvement over existing conditions. This alternative would require a wastewater reuse permit from IDEQ. It would not require buffers. It would meet the project purpose and need.

**Class C Treatment and Pasture Grass Irrigation** would have a lower level of treatment than the first two alternatives but would still be an improvement over existing conditions. It would require installation of lagoon liners, upgrades to pumps, irrigation pipes and sprinklers. This alternative would require approximately 11.5 acres total for land application or about 8.2 acres additional acres; however, the landowner of the available pasture is not interested in selling the property. Easements through additional properties would be required as the available pasture is not adjacent to the current facility. More intensive crop rotation would also be required. This alternative would require a wastewater reuse permit from IDEQ. It would require buffers for land application. It would meet the project purpose and need.

**Class C Treatment and Forest Irrigation** would be similar to the Class C Treatment and Pasture Grass Irrigation except that the treated effluent would be land applied to forests. It would require less land for application would not require easements through adjacent lands and would not require crop rotation but would require a Silvicultural Plan. In addition, there is a willing landowner. This alternative would not discharge to surface waters. It would require a wastewater reuse permit modification from IDEQ. Buffers are required for the land application. This would be the most cost effective alternative, which would meet the project purpose and need.

The **No Action Alternative** would be the least expensive alternative, would require the least amount of right of way and would have the least soil disturbance. However, seepage would continue, it would not adequately treat the effluent and it would not be compliant with IDEQ wastewater rules. The No Action Alternative would not meet the project purpose and need.

## **4.2 Maintenance Alternatives**

The **Optimize Existing Facilities Alternative** would meet the project purpose and need. By installing flow meters for sewer lift station, and run-time meters for septic tank pumps, the losses in the system would be identified. Repair or replacement of septic tanks suspected to have I/I would reduce inflow to the collection system and minimize pollutants entering surface and groundwater. It would improve the facility efficiency and would comply with IDEQ regulations.

The **No Action Alternative** would not repair or replace failing septic tanks and they would continue to experience I/I. Groundwater would continue to flow into the system during high lake levels and pollutants would continue to discharge to surface and groundwater. Flow meters and run-time meters would not be installed and the system would continue to operate inefficiently. This alternative would not comply with IDEQ regulations.

**Table 2, Summary of Treatment and Disposal Alternatives**

Environmental Resource	Class A-Groundwater Recharge	Enhanced Treatment-Rapid Infiltration	Class C-Pasture Irrigation	Class C-Forest Irrigation	Regionalization	No Action
Climate/Physical Aspects (topography/geology/and soils)	No impact to climate. Potential groundwater mounding due to shallow impermeable soils. Excavation required on CBCS site.	No impact to climate. Potential groundwater mounding due to shallow impermeable soils. Excavation required on CBCS site.	No impact to climate. No groundwater impact due to suitable soils. Excavation required on pasture and easements.	No impact to climate. No groundwater impact due to suitable soils. Excavation required on forestland.	No impact to climate. Excavation required for pipeline.	No impact to climate. No excavation required.
Population, Economic, and Social Profile	Lagoon is closest feature to residences. Highest level of treatment and highest cost.	Lagoon is closest feature to residences. High level of treatment and high cost.	Application area is furthest from residences. (Greater than 300 feet). Acceptable treatment. Moderate cost-\$1,517,140.	Application area greater than 300 feet from residences. Acceptable treatment. Most cost effective-\$1,346,640.	Treatment is off site. High level of treatment but high cost and not feasible.	Lagoon is closest feature to residences. Does not meet requirements. No cost increase.
Land Use	No change to land use. Would not create new development. CBCS owned property.	No change in land use. Would not create new development. Uses existing CBCS owned property.	No change in land use. Would not create new development. Would use agricultural land for application. Requires easement	No change in land use. Would not create new development. Would use adjacent forest land for application.	No change in land use. Would not create new development. Requires easements for pipeline to Worley facility.	No change in land use. Would not create new development. Would use existing CBCS owned property
Floodplain Development	No impact	No impact	No impact	No impact	No impact	No impact

Environmental Resource	Class A-Groundwater Recharge	Enhanced Treatment-Rapid Infiltration	Class C-Pasture Irrigation	Class C-Forest Irrigation	Regionalization	No Action
Wetlands and Water Quality	Improves surface & groundwater. Potential groundwater mounding	Improves surface & groundwater. Potential groundwater mounding	Improves surface & groundwater. Land application furthest from lake & stream. No groundwater mounding.	Improves surface & groundwater. Land application far from lake & streams. No groundwater mounding.	Improves surface & groundwater	Adverse impacts to surface & ground water.
Wild & Scenic Rivers	No impact	No impact	No impact	No impact	No impact	No impact
Cultural Resources	No impact	No impact	No impact	No impact	No impact	No impact
Flora and Fauna	No long-term adverse impacts. Potential impacts to aquatic species due to groundwater mounding. Disturbance for construction of facility and piping.	No long-term adverse impacts. Potential impacts to aquatic species due to groundwater mounding. Disturbance for construction of facility, pumps, and piping.	No long-term adverse impacts. No discharge to surface waters. Temporary disturbance for construction of irrigation lines and pumps.	No long-term adverse impacts. Minimal impact to trim understory near sprinklers. No discharge to surface waters. Temporary disturbance for construction of irrigation lines and pumps.	No long-term adverse impacts. Temporary disturbance for pipeline installation.	Long-term adverse impacts to aquatic species, including bull trout due to water quality degradation.
Recreation/Open Space	No impact	No impact	No impact	No impact	No impact	Continued degradation of lake water quality

Environmental Resource	Class A-Groundwater Recharge	Enhanced Treatment-Rapid Infiltration	Class C-Pasture Irrigation	Class C-Forest Irrigation	Regionalization	No Action
Agricultural Lands	No impact	No impact	Uses 11.5 acres of agricultural land (8.2 additional acres) for application. More intense crop rotation.	Uses 9.1 acres (5.8 additional acres) of forest land for application. Silvicultural Plan.	No impact	No impact. Continued use of forest land (3.29 acres) for application.
Air Quality	No adverse impact. Area is in attainment. Reduces odors.	No adverse impact. Area is in attainment. Reduces odors	No adverse impact. Area is in attainment. Reduces odors.	No adverse impact. Area is in attainment. Reduces odors.	No adverse impact. Area is in attainment. Reduces odors.	No adverse impact. Area is in attainment. No odor reduction.
Energy	Increases energy consumption due to operation of treatment facility.	Increases energy consumption due to operation of treatment facility and pumps.	Increases energy consumption from irrigation system, pumps & aerators. Utilizes energy efficient pumps. Lagoon treatment and land application have low energy consumption.	Increases energy consumption due to irrigation system, pumps & aerators. Utilizes energy efficient pumps. Lagoon treatment and land application have low energy consumption.	Increases energy consumption due to pump operation.	No increase. Could require hauling effluent to Worley if capacity is exceeded.
Public Health	Greatest public health benefit. Highest (Class A) treatment <sup>4</sup> . No buffer	High public health benefit. High treatment (Similar to Class A but no filtration). No buffer	Benefit to public health. Lower treatment (Class C <sup>5</sup> ). Buffer from wells, residences and surface water	Benefit to public health. Lower treatment (Class C). Buffer from wells, residences and surface water	Benefit to public health. Highest treatment; however, not feasible. No buffer.	Continued degradation of water quality and public health risk.

<sup>4</sup> Class A treatment requires 5-log inactivation of viruses; maximum daily average turbidity measurement of less than 2 NTU. Membrane filtration may also be used, and requires a maximum daily average turbidity of 0.2 NTU. Total Nitrogen less than 10 mg/L and Biochemical Oxygen Demand (BOD) cannot exceed 5 mg/L for groundwater recharge applications.

<sup>5</sup> Class C treatment provides adequate oxidation and disinfection. Median coliform levels must be 23 per100 milliliters (ml) with no maximum single sample exceeding 230 /100 ml. Weekly total coliform testing required.

**Table 3, Summary of Maintenance Alternatives**

Environmental Resource	Optimize Existing Facilities	No Action
Climate/Physical Aspects (topography/geology/and soils)	No impact to climate. Excavation for septic tank repair/replacement.	No impact to climate. No excavation required.
Population, Economic, and Social Profile	Greatest benefit to residents with tank repair/replacement. Benefit to all residents due to increase system efficiency, improved water quality, and regulatory compliance. Preserves investment.	Does not meet IDEQ requirements and doesn't improve efficiency. No cost increase.
Land Use	No impact.	No impact.
Floodplain Development	No impact. No floodplain development permit required from Kootenai County.	No impact
Wetlands and Water Quality	Improves surface & groundwater quality by eliminating tank leakage.	Adverse impacts to surface & ground water quality through tank leakage.
Wild & Scenic Rivers	No impact	No impact
Cultural Resources	No impact	No impact
Flora and Fauna	No long-term adverse impacts. Benefit to aquatic species, including bull trout, by reducing water quality degradation by tank repair/replacement. No vegetation removal.	Long-term adverse impacts to aquatic species, including bull trout. No vegetation removal.
Recreation/Open Space	No impact	Long term adverse impacts to Lake Coeur d'Alene water quality
Agricultural Lands	No impact	No impact
Air Quality	No impact.	No impact.
Energy	Reduced I/I will decrease pumping energy usage. Flow meters and run time meters will not consume a notable amount of energy.	Continued system inefficiency.
Public Health	Benefits public health by eliminating pollution of surface and groundwater. Reduce I/I impacts to treatment system and water quality.	Continued degradation of water quality and public health risk.

### 4.3 Screening of Alternatives

The alternatives were screened based on their ability to meet the project purpose and need and impacts to the human and natural environment. The principal alternatives that were recommended for consideration were:

- Class C Treatment and Pasture Grass Irrigation
- Class C Treatment and Forest Irrigation

Cost estimates for the principal alternatives were developed based on the most current available cost data for each related design alternative. Costs included capital costs, which would include acquisition, construction, and engineering. It would also include optimizing the existing system (installation of flow meters, run time meters and septic tank repair/replacement) but would exclude other operation and maintenance costs. Annual operation and maintenance costs were developed based on the existing operation and maintenance costs plus the added costs per alternative. See Table 4, Capital and Operation and Maintenance Cost Estimates of Principal Alternatives.

**Table 4, Capital and Operation and Maintenance Cost Estimates of Principal Alternatives.**

Cost Description	Class C Pasture Irrigation <sup>6</sup>	Class C Forest Irrigation
Capital Costs	\$1,517,140	\$1,346,640
Capital Project Cost per ERU <sup>7</sup>	\$6,959	\$6,177
O&M Costs	\$90,000	\$71,000
O&M monthly costs per ERU <sup>8</sup>	\$34.40	\$27.14

### 4.4 Selected Alternative

After evaluation of the alternatives and following the public meeting on September 15, 2012, the Class C Treatment and Forest Irrigation Alternative with the Optimize Existing System Alternative were selected for the following reasons:

- It would meet the project purpose and need
- It would comply with IDEQ wastewater rules
- The property owner is receptive to land acquisition.
- It would be the most cost effective alternative. It would utilize and upgrade the existing lagoons and would continue with land application to the 3.29 acres of forest on CBCS property; therefore, it would have less capital costs than other alternatives.

<sup>7</sup> Based on 218 ERUs

<sup>8</sup> Based on 218 ERUs

- There would be lower operation and maintenance costs compared to other alternatives due to a more passive lagoon system and because highly trained staff are not required.
- It would require less property than pasture irrigation.
- There would be less pipeline and sprinkler head installation required compared to pasture irrigation due to the smaller irrigation area and the closer proximity of the application area to the lagoons.
- It would not result in discharge to surface waters.
- It would be relatively easy to implement. CBCS has already developed an interim forest irrigation system and has a reuse permit for the existing site, which utilizes forest irrigation.

#### **4.4.1 Project Description**

The Class C Treatment with Forest Irrigation Alternative would utilize the existing treatment system with upgrades to provide adequate storage, treatment and disposal capacity through build-out conditions. The major project features are shown in Exhibit 2. The improvements include the following:

- Purchasing 7 acres of property that provides an additional 5.8 acres of forest suitable for irrigation. This new application area plus the 3.29 acres of interim CBCS owned forest would provide approximately 9.1 acres of total forest for land application.
- Building up the embankment of Lagoon #2 by approximately 2 feet to create at least 750,000 gallons of additional storage capacity
- Installing lagoon liners to prevent seepage
- Upgrading the aeration system for Lagoon #1.
- Constructing a new pump house/irrigation control building and upgrading the irrigation pumping system to handle 90 gpm. The new irrigation pump station would have 2 irrigation pumps with wet wells.
- Installing additional irrigation piping and sprinklers in the additional forest.
- Installing impact type sprinklers with flow control nozzles to provide for uniform land application. A 4-inch pressure irrigation main will be extended from the interim phase piping to the Dreher Property.
- Installing an oversized piping network to provide a minimum of 30 minutes of contact time prior to the first sprinkler head. Additional chlorine contact piping to provide adequate contact time for the new irrigation pumping system will be installed to meet the Class C chlorination requirements.
- Installing perimeter fencing around both lagoons and the irrigation areas.
- Installation of warning signs and gates where appropriate.

- Repairing or replacing up to five existing septic tanks to eliminate suspected I/I. The decision to repair or replace tanks will be based on visual inspection during high water/runoff periods and installation and monitoring of pump run time meters on suspected effluent pump systems.
- Installing flow meters at three main lift stations that do not currently have meters.
- Installing groundwater monitoring piezometers.
- Obtaining an easement for a 200-foot buffer from the lagoons to residential properties.

Two properties immediately adjacent to the existing site have been considered for forest irrigation: the Dreher and the Coeur d'Alene Tribe properties. The Dreher property is located southeast of the existing facility. The Coeur d'Alene Tribe property is located northwest of the existing facility. Upon review of the properties, it has been determined that the Dreher property is the most feasible alternative. The owner of the Dreher property has been responsive and appears agreeable to pursuit of land acquisition. While the Tribe owned property is closer than the Dreher property, acquisition is unlikely and would be time consuming, which may affect the timely implementation of the selected alternative.

#### **4.4.2 Construction Schedule**

Per the CAS issued on September 2012, construction must be completed by November 30, 2015. Construction will be phased so that sewer service will not be interrupted. The first construction phase will expand the land application system to facilitate drawdown of the large lagoon (Lagoon #2) early in the irrigation season. The large lagoon should be emptied by June.

The second phase will construct the wet wells, the irrigation pump system, the irrigation control building as well as build up of the large lagoon embankment. During the second construction season, the geo-membrane liner will also be installed. Then the small lagoon (Lagoon #1) will be bypassed, drawn down, and lined. The aeration system for the small lagoon will then be upgraded.

#### **4.4.3 Permits and Approvals**

The project will meet all applicable federal, state and local requirements. The following permits and approvals are anticipated:

- A Conditional use permit (CUP) through Kootenai County will be required for the acquired land.
- A Site Development Permit will be required from Kootenai County for movement of more than 50 cubic yards (cy) of material.

- The Kootenai County Subdivision process will be required prior to sale of the required portion of land.
- A Wastewater Reuse Permit Modification will be required from IDEQ to add additional forest to the irrigation area in the existing permit.
- IDEQ will issue an environmental determination on the project proposed in the EID.
- Tank Only Septic permits will be required from Idaho Panhandle Health District for tank installations.
- EPA and Kootenai County will be contacted to determine the appropriate stormwater controls and BMPs that should be implemented during and after construction.

## **5 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS OF SELECTED ALTERNATIVE**

This section identifies and characterizes the major human and natural environmental resources that are in or near the project area. It also evaluates the benefits and effects of the selected alternative, Class C Treatment and Forest Irrigation. Impacts include direct, indirect, short term, long term and cumulative impacts. Measures that could avoid, minimize or compensate for environmental effects are also discussed. The proposed project planning area and location of the selected alternative are shown in Exhibit 2. Project Planning Area/Area of Potential Effect (APE) Map.

### **5.1 Climate**

The project service area is near Worley, Idaho. Worley receives approximately 29 inches of rain and 16 inches of snow per year. The average temperature in July is 82 degrees Fahrenheit and in January, it averages 25 degrees Fahrenheit. There are no unusual climatic conditions that would affect the project and the project would not affect climate.

### **5.2 Topography, Geology and Soils**

In January 2012, a hydrogeologic characterization was completed for the project. It was updated in March 2013. Additional detail regarding geology and soils may be found in Appendix D, Hydrogeologic Characterization.

The CBCS planning area sits on a peninsula that extends into Lake Coeur d'Alene between Cave Bay and 16 to 1 Bay. The topography of the area consists of mostly steep terrain with some flat and mild slopes near the top of the peninsula where the existing CBCS treatment facilities are located.

The Natural Resource Conservation Service (NRCS) Web Soil Survey maps and soil descriptions indicate that the soils in the project area for the selected alternative consist mainly of Lacy-Rock outcrop complex and Lacy-Bobbit association. The Lacey soil is a shallow, well-drained soil consisting of a stony loam surface soil and stony clay loam subsoil. The Bobbit soil is moderately deep, well-drained soil consisting of stony loam surface soil and stony to very stony clay loam subsoil.

The soil survey descriptions indicate a depth to bedrock of 10-30 inches and depth to water table of more than 80 inches. These soils have moderate to low susceptibility to erosion. The subsurface conditions from the soil explorations show in general that topsoil ranges from 4-9 inches in depth. Soils in the existing treatment facility area consist of silty gravels, sandy silt, silt with gravel and some silty clay. Subsurface conditions for the proposed land application area included sandy silt, gravel with silt, poorly graded gravel and gravel with silt and sand. All test pits were excavated to at least six feet without encountering bedrock or other impervious layers. Water table elevations show that head decreases with depth. This suggests that there is a downward component to ground water flow in the Cave Bay area, and that the Cave Bay area is in a regional ground water recharge zone.

### **5.3 Population**

There are currently 149 residences in the Cave Bay Community with sewer connections, approximately 60 of which are full time residences. The CBCS maintenance facility and fire substation are also connected to the sewer system. Multiplying the 149 residences by a 2.46 average number of persons per household (US Census 2010), provides an estimated population of 367 persons in the Cave Bay Community. There are no industrial or commercial developments in the service area and none are anticipated.

There are total of 225 lots within the Carroll's Cave Bay Subdivision and Additions, however with many of the lots being combined with the residences, build-out is not expected to exceed 218 with residences, the maintenance facility and fire station. Development will continue to include a mixture of both seasonal and year-round use. It is anticipated that build-out will continue to be similar to the historic growth rates of Kootenai County, at an approximately two percent growth rate or three ERUs per year. Based on this growth rate, the subdivision is expected to reach full build out in 24 years. Based on 218 ERUs multiplied by the average number of people per household (2.46 people), the forecasted population would be approximately 536 persons.

The construction of the selected alternative would not result in additional growth, accelerated growth or induced growth in the subdivision.

## 5.4 Economics and Social Profile

Executive Order 12898 regarding Environmental Justice directs federal agencies to develop policies and ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. It ensures that projects do not have a disproportionately high and adverse effect on low income and minority populations. All residents within the Cave Bay Community will benefit from the proposed project by receiving a wastewater system that meets requirements for quality and quantity treatment of effluent and improves system efficiency. Surrounding communities would also benefit from the improved water quality.

### 5.4.1 User Charges and Budget

A general assessment of \$565 per lot per year is charged to all lot owners, of which approximately 20 percent (\$113) is dedicated to routine sewer operation and maintenance. CBCS also charges a water and sewer improvements assessment of \$300 per year, of which 85 percent (\$255) is dedicated to nonstandard sewer maintenance or sewer improvements. These assessments are paid by all lot owners, including undeveloped lots. However, the current capital fund would not adequately support major upgrades or expansion projects including the costs associated with the recent upgrades and emergencies.

The current average monthly charge per user/ERU is \$30.67. With the proposed project, based on 218 ERUs, the future average monthly charge per user would be \$58.24 if the project is funded through the IDEQ using the Clean Water State Revolving Fund. The total project cost per user would be \$6,177 per user. The monthly O&M charge per user is \$27.14. See Table 5, Current CBCS Sewer Fees and Projected Income and Table 6 for Annual Monthly Costs Per User with the loan. A CBCS Special Meeting was held on April 6, 2013 during which the community voted to incur debt for the proposed project. See Appendix F, Public Involvement for meeting minutes.

**Table 5, Current CBCS Sewer Fees and Projected Income**

Description	Annual Fee	Monthly Fee	Assessed Currently Assessed Properties	Annual Income
General Assessment (Sewer Portion)	\$113.00	\$9.42	218	\$24,634
Improvements Assessment (Sewer Portion)	\$255.00	\$21.25	218	\$55,590
<b>Total Annual Sewer Assessment</b>	<b>\$368.00</b>	<b>\$30.67</b>		<b>\$80,224</b>

**Table 6, Project Annual and Monthly Cost Per User with IDEQ Loan<sup>9</sup>**

Description	Capital Cost (Debt Service)	O&M Cost	Total
20-Year Loan @ 1.5%			
Annual Total Expenses	\$ 81,369.29	\$ 71,000.00	\$ 152,369.29
Annual Debt Service for Lot Owners (218 ERUs)	\$ 373.25	\$ 325.69	\$ 698.94
Monthly Service Fee for Lot Owners (218 ERUs)	\$ 31.10	\$ 27.14	\$ 58.24
Construction Project Total Cost (P&I)	\$ 1,627,386.00		

### 5.4.2 Income

Low-income populations are those populations that fall below the Human and Health Services (HHS) guidelines level. These were \$22,050 in 2010, \$22,350 in 2011, and \$23,050 in 2012 for a family of four (HHS 2013). The median household income (MHI) in Kootenai County was \$48,075 based on the 2007 to 2011 five-year estimate. This is well above the HHS poverty levels. The MHI in Kootenai County is slightly greater than the MHI statewide average of \$46,890 (US Census 2010). According to the Cave Bay Homeowner’s Association members, seniors who rely on social security, reside in the Cave Bay Community. There are also families and individuals that would be considered low-income individuals near the project vicinity.

The project would provide an overall benefit to all members of the community and would improve wastewater treatment and water quality of the area. It would be the most cost effective method of complying with IDEQ wastewater regulations. Therefore, there would be no disproportionately high and adverse impacts to low income populations.

### 5.4.3 Minorities

The project planning area is located in Census Tract 9400, Block Group 2 and Tribal Census Tract T002, which includes Coeur d’Alene Tribal Reservation lands. Block Group 2 has a population of Native Americans, which is greater than the average for Kootenai County. Table 7 shows the percentages of races in the project area compared to Kootenai County.

<sup>9</sup> Clean Water State Revolving Fund

**Table 7, Percentage of Races in the Project Area**

Race	Block Group 2 (%)	Kootenai County (%)
White	90.5	94.5
Black	0.2	0.3
American Indian/Alaska Native	6.7	1.3
Asian	0.3	0.7
Native Hawaiian and Other Pacific Islander	0.3	0.1
Other	2	3.1
Source: (US Census Bureau 2012)		

The project would provide an overall benefit to the community and would improve wastewater treatment and water quality of the area. The existing lagoon system would be utilized and would not affect populations differently. In addition, the land application would occur far from existing residences and would not disproportionately affect populations. Therefore, there would be no disproportionately high and adverse impacts to minority populations.

## 5.5 Land use and Development

The current zoning for the CBCS planning area includes Restricted Residential and Rural. The Kootenai County Comprehensive Plan designates the planning area as Shoreline, Suburban and Country. See Land Use Map in Appendix A, Maps.

The Shoreline designation encompasses lands generally within 500 feet of bodies of water. The primary purpose of this designation is to guard against water quality degradation through management of development, typically limited to single-family housing. Suburban development may allow the development of residential, commercial or mixed uses. The primary purpose of the Suburban designation is to promote development of vacant and under used parcels within areas that are largely developed. The Suburban designation encompasses the existing wastewater facilities and the surrounding area more than 500 feet from Lake Coeur d'Alene.

Land use for a portion of the proposed sewer facilities planning area is classified as Country, and is mostly undeveloped. The primary purpose of this designation is to protect open space and promote agricultural activities compatible with rural residential development. The project would provide improved treatment for the existing service area. It would not create new development or affect land use differently. It is expected that the existing service area will continue to be developed with single-family residential dwellings all within the

Carroll's Cave Bay Subdivision. Development will continue to include a mixture of both seasonal and year-round use. Several property owners have combined multiple contiguous lots to use for a single residence, and this practice is expected to continue as more of the vacant lots are developed. The total number of lots within the Carroll's Cave Bay Subdivision and Additions is 225, however with combined lots, it is anticipated that build-out will not exceed 218 single-family dwellings.

## **5.6 Floodplains**

There are designated floodplains within the project planning area along the shoreline of Lake Coeur d'Alene based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps panel number 16055C070E. See Appendix A, Maps. Consultation with Idaho Department of Water Resources in November 2012 confirms the floodplain locations. There is also an established floodplain elevation of 2139.3 ft (NAVD88) for Lake Coeur d'Alene (Tarbutton per. Communication 2013); however, because the project planning area is in the boundaries of the Coeur d'Alene Tribe Reservation, the Kootenai County requirements for flood insurance under the National Flood Insurance Plan do not apply (Tarbutton, per. Conversation 2013).

Activities below the floodplain elevation are subject to the requirements of the Kootenai County Flood Damage Prevention Ordinance 441. The ordinance requires that alternatives be identified to locate replacement sanitary sewage disposal systems within an area of special flood hazard. If there is no alternative, the system must be designed and located to minimize or eliminate both the infiltration of flood waters into the system, and discharge from the system into flood waters. The determination that there is no alternative will be made by Kootenai County with input from PHD and/or IDEQ. [Kootenai County Flood Damage Prevention Ordinance 441]. Idaho Panhandle Health District does not have specific regulations pertaining to locating septic systems in floodplains. (Peppin, per. Conversation 2013).

The majority of the construction activities would be located near the existing lagoons and in the forested land application areas, which are above the established floodplain elevation. The five septic tanks near Lake Coeur d'Alene that may be incurring I/I will be further evaluated and replaced or repaired if needed. The tanks are located in developed land between the residences and the existing road and in some cases lie underneath the roadway and parking areas. The tanks are located outside of the mapped 100-year floodplain at an approximate elevation of 2,143 feet, which is above the established flood elevation of 2,139.3 ft for Lake Coeur d'Alene. Therefore, tank replacements or repairs would not be in the floodplain and would not require floodplain development permits from Kootenai County. See Appendix A, Maps for a map of the designated 100-year floodplains in the area.

## **5.7 Wetlands**

The US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Maps were reviewed in February 2012. Site visits were also completed in 2011 and 2012. No wetlands were identified in the proposed project planning area or the project area for the Selected Alternative. Lake Coeur d'Alene is considered a traditional navigable water and a water of the US. There is wetland located along the shoreline of Lake Coeur d'Alene; however, none would be impacted by the replacement or repair of the septic tanks or other activities. The septic tank replacement or repair would be in developed areas between the roads and residences, and in some cases are under the existing roadway. After consultation with the USACE in November 2012, it was determined the project would not impact wetlands and no Section 404 permits would be required. If it appears that wetland conditions are present, a wetland delineation will be completed and Section 404, 401 and other applicable permits will be obtained as needed. See Appendix A, Maps for the NWI Map.

## **5.8 Water Quality, Quantity and Sole Source Aquifers**

### **5.8.1 Surface Water**

Lake Coeur d'Alene is adjacent to the Cave Bay community. The existing treatment facility site is located approximately 800 feet from the shore of 16 to 1 Bay and approximately 800 feet from an un-named ephemeral stream, which flows into 16 to 1 bay. Lake Coeur d'Alene has a TMDL for the trace heavy metals lead, cadmium and zinc, which are present on the lake bottom. In an effort to protect and improve lake water quality, the Coeur d'Alene Tribe and IDEQ collaboratively developed a Lake Management Plan in 2009. The goal of the plan is to limit basin wide nutrient inputs that can impair lake water quality, which in turn can influence the solubility of metals contamination found in lake sediments (IDEQ 2009).

According to the 2011 Addendum and update to the Coeur d'Alene Lake and River Subbasin Assessment, the Coeur d'Alene River is an impaired water body. Mining and ore processing activity in the past 100 years, primarily in the South Fork Coeur d'Alene River Subbasin, has resulted in extensive deposits of metal (lead, cadmium, zinc)-contaminated sediments along the bed, banks, and floodplain of the North and South Forks of the Coeur d'Alene River, the Coeur d'Alene River, the eleven lateral lakes, numerous wetlands located along the lower Coeur d'Alene River, the lakebed of Lake Coeur d'Alene, and the headwaters of the Spokane River. Annual precipitation and spring snowmelt runoff events continue to redistribute these contaminated sediments throughout the entire system (IDEQ 2011).

The project will treat wastewater and will be compliant with IDEQ wastewater rules. Water quality will be improved through the Class C treatment, land application, increased lagoon capacity and repair or replacement of septic tanks near Lake Coeur d'Alene. The project would not affect contaminated sediments.

Sediment and erosion control BMPs will be implemented to minimize the impacts of construction stormwater on surface and groundwater. See Appendix A, Maps for a map of the water resources in the area.

### **5.8.2 Groundwater**

Well driller's reports around the area indicate a depth to groundwater from 12 to 350 feet below the surface, depending on well location and depth. Data from well driller's reports suggests that there is a downward component to groundwater flow in the Cave Bay area, and the area is in a regional groundwater recharge zone. Data also indicates that there is an upper basalt, upper interflow zone, middle basalt, middle interflow zone, and lower basalt, deep interflow zone. The upper interflow zone may include a perched aquifer with some horizontal groundwater flow. However, based on the downward hydraulic gradient that exists in this area, most of the flow through the upper interflow zone is likely downward through the middle and deep interflow zones. If there is horizontal groundwater flow in the upper or middle interflow zones, that flow would be expected to discharge to surface water. See the Hydrogeologic Characterization in Appendix D for more specific discussion of the groundwater.

The EPA Region 10 Sole Source Aquifer Program website shows that the project planning area is approximately 14 miles south of the Spokane Valley Rathdrum Prairie. While the project planning area is not located over the aquifer, it is within the aquifer source area Aquifer (EPA 2012) and therefore, an Aquifer Checklist was prepared and submitted to EPA. The project would improve the treatment and disposal of the effluent and would result in a long-term benefit to groundwater quality. EPA did not express concern regarding the project. See Appendix A, Maps and Appendix B, Agency Correspondence.

The proposed upgrades are outside the wells zone of influence as determined by IDEQ. In addition, the lagoons have historically relied on seepage, which is more likely to have detrimental impacts to groundwater than the treatment and reuse alternatives presented. The project features including lagoons and land application would have a 500-foot buffer from wells and 100-foot buffer from surface waters. In addition, the project would improve the capacity of the lagoons and improve the treatment of the effluent, which would provide an overall improvement in the water quality of the wastewater. The replacement or repair of the septic tanks near the lake would result in a water quality improvement.

## 5.9 Wild and Scenic Rivers

Based on the list of National Wild and Scenic Rivers updated on August 2011, there are no Wild/Scenic Rivers in the project vicinity. See Appendix A, Maps for a map of the Wild and Scenic Rivers.

## 5.10 Cultural Resources

Under Section 106 of the National Historic Preservation Act, the Coeur d'Alene Indian Tribe's Historic Preservation Officer (THPO) is the lead preservation office because the project is within the Coeur d'Alene Indian Reservation boundaries. IDEQ has the responsibility under Section 106 of the National Historic Preservation Act to conduct government-to-government consultation with the Tribe. The THPO for the Coeur d'Alene Tribe was consulted to review the Area of Potential Effect (APE) and was contacted to assist in identifying cultural resource concerns. Tribal Consultation letters were sent by IDEQ to the Coeur d'Alene Tribe on November 17, 2012. Two follow up emails were sent in November 2012 and January 3, 2013. No responses were received.

Based on a review of records at the Idaho State Historic Preservation Office (SHPO), a site survey and findings from the cultural resource survey report, there are no previously recorded or known archaeological, historical, or cultural resources within project study area. Two resources, an historic railroad and a pre-contact (Native American) site are known to occur within one mile of the project study area but are outside of the APE. No cultural resources were found in the APE. There would be no effects to historic properties or archaeological resources.

## 5.11 Flora, Fauna and Natural Communities

### 5.11.1 Flora

The project area is primarily mature mixed coniferous forest dominated by firs (*Abies sp.*), ponderosa pine (*Pinus ponderosa*) and western larch (*Larix occidentalis*) approximately 30-50 ft in height. The undergrowth is moderate to low in density and is dominated by ocean spray (*Holodiscus discolor*), alder (*Alnus sp.*), snowberry (*Symphoricarpos albus*), and service berry (*Amelanchier alnifolia*). Groundcovers include grasses, weeds and other herbaceous plants. The project area supports general wildlife species including deer, small mammals, and songbirds.

The project would not adversely affect vegetation. Trees would not be removed from the project site; however, there may be a need to trim trees and shrubs to place pipes and pumps

and to allow the effective spraying of effluent within the forest area. The increased nutrients will improve the vegetative growth of plants. Groundcover will be temporarily disturbed during installation of the irrigation system.

### **5.11.2 Fish**

According to the 2011 Coeur d'Alene Subbasin Assessment, native fish that occur in the Lake Coeur d'Alene watershed include: Bull trout (*Salvelinus confluentus*), Largescale sucker (*Catostomus macrocheilus*), Longnose dace (*Rhinichthys cataractae*), Mottled sculpin (*Cottus bairdi*), Mountain whitefish (*Prosopium williamsoni*), Northern pikeminnow (*Ptychocheilus oregonensis*), Redside shiner (*Richardsonius balteatus*), sculpin (*Cottus* sp.) and Westslope cutthroat trout (*Oncorhynchus clarki*) (IDEQ 2011).

Non-native fish species that occur in the Lake Coeur d'Alene watershed include Brook trout (*Salvelinus fontinalis*), Chinook salmon (*Oncorhynchus tshawytscha*), Kokanee salmon (*Oncorhynchus nerka*), Rainbow trout (*Oncorhynchus mykiss*), Largemouth bass (*Micropterus salmoides*), Smallmouth bass (*Micropterus dolomieu*), Brown bullhead (*Ictalurus nebulosus*) Tench (*Tinca tinca*), Yellow perch (*Perca flavescens*) and Northern pike (*Esox lucius*) (IDEQ 2011).

The project would benefit fish and aquatic species because it would provide treatment that is compliant with IDEQ wastewater rules and water quality will be improved. Minimal vegetation would be disturbed (trimming and temporary disturbance) and there would be no adverse impacts to fish and aquatic habitat. This was confirmed through species occurrence information requests through the Idaho Department of Fish and Game (IDFG) Conservation Data Center (CDC). In addition, IDFG staff confirmed that the project would provide a benefit and did identify concerns regarding potential effects to species as a result of the project. See Appendix B for Agency Correspondence.

### **5.11.3 Threatened and Endangered Species**

In February 2012, the USFWS Idaho State Species list was reviewed to identify threatened and endangered species, candidate species and designated critical habitat that could occur in the project planning area. It was reviewed again in December 2012 and March 2013. Site visits including a plant inventory were completed in December 2011 and September 2012. In addition, requests for species occurrence data were made to USFWS and the IDFG CDC on February 7, 2012. Review of the database and follow up conversation with agency staff and correspondence indicated that there are no known occurrences of species of greatest conservation need, federally listed or proposed threatened and endangered species, candidate

species or designated critical habitat in the project area that could be adversely affected by the selected alternative.

USFWS and IDFG staff was again contacted in November 2012 to identify specific concerns regarding potential project impacts. No specific concerns were identified. See Appendix B for Agency Correspondence. The project would have no effect to federally listed species or critical habitat. Federally threatened, endangered and candidate species and designated critical habitat with a determination of the project effects to each listed species is summarized in Table 8. Federally Threatened and Endangered Species. See Appendix C, Endangered Species Act for the USFWS Species list.

**Table 8, Federally Threatened and Endangered Species**

Common Name	Scientific Name	Federal Status	Project Effect
Canada lynx	<i>Lynx Canadensis</i>	Threatened	No Effect
Bull trout	<i>Salvelinus confluentus</i>	Threatened	No Effect
Spalding's catchfly	<i>Silene spaldingii</i>	Threatened	No Effect
Water howellia	<i>Howellia aquatilis</i>	Threatened	No Effect
Bull trout	<i>Salvelinus confluentus</i>	Critical Habitat	No Effect
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Candidate	No Effect
Wolverine	<i>Gulo gulo</i>	Candidate	No Effect
Source: (USFWS 2013a)			

**Canada Lynx (*Lynx Canadensis*)**

Canada lynx is a medium sized cat with long legs, large, well-furred paws, long tufts on the ears, and a short, black-tipped tail. Canada Lynx habitat occurs in older dense, primarily coniferous/boreal forests with downed trees located above 4000 ft. The Lynx utilize primarily Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and lodgepole pine (*Pinus contorta*) habitats. The Lynx’s population and distribution is highly dependent on the distribution of its primary food source, the snowshoe hare, and to a lesser degree, other small mammals and birds (USFWS 2013c).

The project area is at an elevation of 2350 ft, well below lynx habitat and does not support Engelmann spruce or subalpine fir. Ridge tops near the project are under 3000 ft which is also well below lynx habitat. Once the project is complete, it will not introduce more human disturbance than is currently present. Due to the lack of suitable habitat and lack of

disturbance that will occur to lynx potentially passing through the area, the project will have **no effect** to Canada Lynx or its critical habitat.

**Bull Trout (*Salvelinus confluentus*)**

Bull trout are primarily found in clean, cold spring-fed streams but are also found in large rivers or lakes. Their diet consists of small aquatic and terrestrial insects; however, larger specimens will also consume small fish. No streams or rivers would be impacted by the selected alternative. There is a small seasonal unnamed stream located just west of the project area; however, there are no known occurrences of Bull trout in the stream (ICDC, 2012). Lake Coeur d'Alene is listed as Bull trout Critical Habitat. The proposed action will reduce the long-term degradation of water quality into surface and ground water. The proposed action will have **no effect** to Bull trout and its designated critical habitat.

**Spalding's Catchfly (*Silene spaldingii*)**

Spalding's Catchfly is a long-lived perennial in the Carnation family. It has distinctive yellow-green stems with four to seven pairs of lanceolate leaves that are coated with sticky hairs, hence the name catchfly. White blooms occur mid July to September and can remain dormant for up to six years. Native to Idaho, Montana, Oregon, Washington and British Columbia, it is primarily found in bunchgrass grassland dominated by Idaho fescue or sage brush-steppe habitats at elevations of 1900 to 3050 ft. It is also less commonly found in open canopy pine stands. (Nature Serve, 2012).



*Photo 1. Fir stand with dense understory*



*Photo 2. Second growth forest with understory*

The project area has a does not contain suitable habitat for Spalding's catchfly. The site is primarily dense pine and fir second growth forest with dense understory or disturbed areas with weedy species. While Spalding's catchfly habitat has been known to include ponderosa pine stands, they are typically open pine stands with an understory of native bunchgrasses.

The pine forests in the project area are a much denser forest with an understory of shrub and grass. There are no known occurrences of Spalding's catchfly near the project area and no plants were found during the August or October 2011 site visits. The project is anticipated to have **no effect** to the Spalding's catchfly or its habitat.

#### **Water Howellia (*Howellia aquatilis*)**

Water howellia is an aquatic plant found in small vernal freshwater potholes or abandoned river oxbow sloughs in valley zones. Ponds are one to two meters in depth, typically created by snowmelt and spring rain with clay and organic sediment bottoms. Water howellia germinates in the fall in dried ponds. It flowers between June and August and flowers may be white to light purple. The structure of the plant has extensive branching with submerged or floating stems with narrow alternate leaves. The project area does not contain any vernal potholes, wetlands or river oxbows. The stream to the west of the project area will not be altered and is a stream gradient with swift flowing water and a basalt gravel bottom. The project does not contain suitable habitat for this species. The project will have **no effect** on water howellia.

#### **Yellow-billed Cuckoo (*Coccyzus americanus*)**

The yellow-billed cuckoo is a small bird (approximately 12 inches), brownish above and white below; with rusty colored flight feathers. The upper mandible of the bill is black and the lower mandible is yellow. (USFWS, 2013b). Dense understory is important for nest site selection and cottonwood trees are important for foraging habitat. Nesting pairs require a minimum of five acres of prime riparian habitat which, in Idaho and much of the west, consists of old growth cottonwoods, with a dense understory of willow or dogwood (Reynolds et. al., 2005). In Idaho, the species is considered a rare and local summer resident. Most sighting information within Idaho has occurred in southern Idaho, mostly in the Snake River Valley. There is no prime riparian habitat located in the project area and no riparian habitat would be impacted by the project. The project will have **no effect** to the yellow-billed cuckoo.

#### **Wolverine (*Gulo gulo*)**

Wolverines generally inhabit tundra, remote mountains and boreal forests. They are most commonly found at elevations from 4,250 ft to 7,500 ft (MNHP, 2011). They naturally occur at low densities and live in remote and inhospitable places away from human populations (USFWS 2010).

The project area has low potential for wolverines due to proximity to human disturbance, low elevation, and lack of food sources. The proposed project would likely not affect wolverines if they were to occur in the area, as once the project is complete it will not result

in more human interaction in the area and would not remove any habitat. Because of the unsuitable habitat in the project area and the projects potential to disrupt any wolverines traveling through the area, the project is not likely to significantly impact populations, individuals, or suitable habitat of the wolverine. Therefore, the proposed action will have **no effect** on the wolverine.

### **Conclusion**

The project would improve water quality of the effluent that would be land applied to forest land. Trees and shrubs would not be removed but may be trimmed to allow effective irrigation. The project will benefit the endangered species, candidate species and their habitat.

The Cave Bay Waste Water Treatment Facility will have no effect to Canada lynx, bull trout, Spalding's catchfly, water howellia, yellow-billed cuckoo, wolverine, or designated critical habitat.

This determination satisfies our responsibilities under Section 7(c) of the Endangered Species Act, and is included in the EID. The status of the species will be verified and the effect re-evaluated up to the construction of the project.

### **Essential Fish Habitat**

The project is not located within the Essential Fish Habitat (EFH) boundary. See Appendix A, Maps.

## **5.12 Recreation and Open Space**

Lake Coeur d'Alene provides recreational opportunities for boating, swimming, fishing and vacation homes. The selected alternative would not impact any designated recreational sites but would improve water quality benefiting surface water quality and aquatic species. In addition, the majority of the land that will be acquired for land application is privately owned second growth forest, which provides privately owned open space habitat. Trees will not be removed and shrubs will only be trimmed as necessary to allow proper application. There will be soil disturbance during the construction of the project; however, fugitive dust will be controlled through implementation of erosion control BMPs.

## **5.13 Agricultural Lands**

The nearest land available for agricultural use is the property owned by Lampert Land Company, which is cultivated pasture grass, located approximately 1000 feet south of the existing treatment site. There are no prime or unique agricultural lands in the project area.

With the selected alternative, no effluent would be applied to the agricultural land and there would be no conversion of agricultural land to non-agricultural uses.

#### **5.14 Air Quality and Noise**

The project area meets national ambient air quality standards (NAAQS) and is in attainment (EPA 2012) for particulate matter, ozone, and carbon monoxide. There are no local air quality concerns identified in the project area (IDEQ 2012). Since the project planning area is within the Coeur d'Alene Reservation, the Tribe was consulted regarding air quality concerns from the project. There were no air quality concerns received. IDEQ was also consulted regarding air quality and noise concerns. Their recommendations are addressed in this EID. See Appendix B, Agency Correspondence.

There will be temporary fugitive dust during construction, which will be minimized by implementing best management practices (BMPs) that may include reseeded bare soils and minimizing soil disturbance.

There may be a minimal amount of noise due to the application of effluent; however, this would not be near any sensitive receptors. The sites that would be sensitive to air quality and noise impacts include the Cave Bay residences east of the lagoon and application areas. The project will provide an overall benefit to the residents by providing sufficient wastewater treatment and improvement of water quality. Odor would also be minimized through installation and upgrading the aerators in the lagoons.

#### **5.15 Public Health**

In February 2011, CBCS notified IDEQ that their lower lagoon was close to overflowing the embankment. IDEQ granted CBCS a Temporary Reuse Permit waiver allowing them to irrigate up to 10,000 gallons per day on forest land owned by CBCS.

On February 11, 2011, IDEQ sent a letter to CBCS concurring that overtopping of the lagoons would be detrimental to the integrity of the lagoon dikes and public health. This letter can be found in Appendix F of the CBCS Wastewater Facility Plan. CBCS entered into a CAS with IDEQ in order to develop a schedule to bring the existing system into compliance with applicable Idaho Wastewater Rules. Long-term upgrades to the existing treatment facilities are required to maintain compliance with IDEQ Rules and protect public health. The implementation of the selected alternative would meet the requirements of the CAS.

The lagoons are already located well away from the residences and other public facilities. The selected alternative would involve land application of treated effluent to forest land and aeration. Mosquito control and other public health concerns will be improved through implementation of the project as aerators will be improved in the lagoons and the effluent would be pumped to upland areas.

### **5.16 Energy**

The selected alternative involves passive treatment of effluent using two lagoons and forest land application of effluent. This will use natural processes and will improve the existing facility. It will therefore be an energy efficient method of construction and treatment. High efficiency pumps and aerators will be specified. Pumps will include variable frequency drives (VFDs) for increased efficiency. In addition, system efficiency would be improved through the installation of pump run-time meters, flow meters and the repair or replacement of failing septic tanks.

### **5.17 Re-use or Disposal**

The selected alternative is a widely used proven technique for reuse and disposal of effluent. Land application is the current method that was approved under the existing Reuse Permit through IDEQ. Rapid infiltration basins or subsurface sewage disposal would not be used due to high cost and unsuitable soils. While there is no public controversy surrounding the project, there is great interest by the homeowners, regulatory agencies, and the Tribe, to construct a project that will meet the existing wastewater rules. The project will not require additional water rights and is not a multi-purpose project. Its sole purpose is to collect, treat and dispose of wastewater from the Cave Bay Community in compliance with applicable wastewater rules.

## **6 MITIGATION**

The project will adequately treat wastewater, which will provide an overall benefit for surface water, groundwater, vegetation, fish and wildlife. There will be requirements for permits and approvals that may result in additional mitigation stipulations in addition to those listed below:

- Temporary construction impacts from erosion and sedimentation will be minimized and fugitive dust will be controlled through implementation of appropriate BMPs.
- Kootenai County and EPA will be contacted for details regarding the appropriate requirements and suggested BMPs for erosion and sediment control.

- If archaeological artifacts and human remains are inadvertently discovered during construction, ground-disturbing activities shall cease and the Coeur d'Alene THPO shall be notified.

## **7 BOARD AND PUBLIC PARTICIPATION**

CBCS Board input was considered throughout the project development and during the alternative selection. A preliminary discussion and presentation of alternatives was presented at a regular CBCS board meeting on November 12, 2011. Project development updates were provided at regularly scheduled CBCS board meetings.

After IDEQ review and approval of the Draft CBCS Wastewater Facility Plan, a notice of public meeting was mailed or emailed to all community members. The plan with recommended alternatives was made available to the public during the 14-day comment period.

A public meeting was held at the end of the public comment period on September 15, 2012 at the CBCS maintenance building. The format of the meeting was open house with poster boards describing the facilities plan alternatives and estimated costs. Copies of the draft CBCS Wastewater Facility Plan were displayed for the public to review and discuss with T-O Engineers. Thirty-one people signed the attendance sheet. A mailing list of everyone that received project information is included in Appendix E, Mailing List. The public notice was emailed to those that had an email address. Hard copies of the notice were sent to those without an email address. The Facility Plan and public notice were also posted on the CBCS web site. A copy of the public notice, sign in sheet and Cave Bay Community Board meeting minutes may be found in Appendix F, Public Involvement.

Comment forms were available at the entrance and each attendee was informed of the comment form. As the attendees entered, representatives from T-O Engineers, Inc. greeted them and asked them to look at the facilities plan and poster boards and discuss the project. Several verbal comments and questions were fielded throughout the event. The most common comments and questions are summarized below:

**Project Cost:** A common question was how much the project was going to cost and how much individual sewer rates were going to be increased due to the necessary upgrades identified in the Draft Facilities Plan. This was answered based on the draft facilities plan recommended alternative, which estimates an increase of approximately \$30 per month for each Cave Bay property owner.

**Need for the Project:** Also common among questions and discussion was why the upgrades needed to take place. Many attendees were under the impression that the existing sewer system was grandfathered in and that the system did not have to meet the current rules. This was answered by informing attendees that no sewer systems in the state of Idaho are grandfathered and all systems must meet current wastewater rules.

**Impacts to Drinking Water:** Some of the residents questioned whether the proposed alternatives in the Draft Facilities Plan would affect the drinking water wells. The answer to this question was that the proposed upgrades were outside the wells zone of influence as determined by IDEQ. In addition, the lagoons have historically relied on seepage, which is more likely to have detrimental impacts to groundwater than the treatment and reuse alternatives presented.

**Land Acquisition:** Some attendees expressed concern about what would happen if the land for the proposed upgrades cannot be acquired. This was addressed by informing attendees that all of the adjacent parcels had been considered and preliminary discussions with the property owners have taken place. One of the property owners has expressed a willingness to work with CBCS and negotiations will continue to move ahead along with completion of the facilities plan and environmental information document. If no adjacent land can be acquired then CBCS would need to consider other property further from the site.

## **8 AGENCIES CONSULTED**

Agencies that could have an interest in the project were consulted. A letter with the project description and a map of the proposed project planning area was sent to each of the agencies listed in Table 9, Agency Consultations. Agency input was addressed in the EID. Agency consultation correspondence is included in Appendix B, Agency Correspondence.

**Table 9, Agency Consultation**

Agency/Contact	Date of Contact	Date of Response
Coeur d'Alene Tribe-Jill Wagner	Sent letter November 16, 2012; follow-up emails November 30, 2012 and January 3, 2013	None received
Coeur d'Alene Tribe-Lester Higgins, Lance Mueller and Scott Fields	Spoke with Lester Higgins to inquire about any concerns regarding air quality and water quality on March 28, 2013. Emailed project information to Higgins and Fields March 28, 2013. Mueller distributed information to different departments for comment. Follow-up calls on April 4 and April 15, 2013.	None received
EPA-Region 10-Mike Lidgard	Sent letter November 20, 2012	None received
EPA-Region 10 - Sue Eastman	Sent letter February 14, 2013 Sent Aquifer Checklist February 20, 2013 Follow up messages and emails February 18, 19, March 10, 16, 19, 22, and 27, 2013	Email received April 1, 2013
EPA Coeur d'Alene Field Office-Don Martin	Sent letter November 20, 2012	None received
IDEQ-Katy Casile-Baker and John Tindall	Sent letter February 14, 2013 Follow up February 25, 2013	Letter received March 13, 2013
IDFG-Mary Terra-Berns	Sent letter November 19, 2012; Follow-up call December 17, 2012	Email received December 17, 2012
Idaho Panhandle Health District-Dale Peck and Jason Peppin	Sent letter February 14, 2013 February 25, 2013 follow-up conversation with Dale Peck March 19, 2013 follow-up conversation with Jason Peppin. Follow-up call with Jason Peppin May 15, 2013.	Email received March 19, 2013
Idaho Department of Water Resources-Mary McGown	Sent letter November 19, 2012	Email received November 21, 2012
Kootenai County Planning-Ben Tarbutton	Called May 12, 2013; sent email May 13, 2013; and follow-up conversations May 14, May 15, May 24 and May 28.	Phone message received May 14 and May 28, 2013
USACE-Shane Slate	Sent letter November 19, 2012	Email received November 27, 2012
USFWS-Ben Conard	Sent letter November 19, 2012	Letter received November 21, 2012

## **9 REFERENCES**

- EPA Greenbook and Amendments. December 14, 2012 accessed at <http://www.epa.gov/airquality/greenbk> on December 2012.
- EPA Sole Source Aquifers. Accessed at <http://yosemite.epa.gov/r10/water.nsf/SoleSourceAquifers/SSA> on February 2012.
- IDEQ Air Quality Monitoring Data. Accessed at [www.deq.idaho.gov/air-quality/monitoring](http://www.deq.idaho.gov/air-quality/monitoring) Accessed February and December 2012.
- IDEQ Coeur d'Alene Lake Management Plan 2009. Accessed at [www.deq.idaho.gov](http://www.deq.idaho.gov) in February 2012.
- IDEQ Coeur d'Alene Lake and River Subbasin Assessment, 2011 Addendum. Accessed at [www.deq.idaho.gov](http://www.deq.idaho.gov).
- Montana Natural Heritage Program. Wolverine-*Gulo gulo*. Montana Field Guide. Montana Natural Heritage Program and Montana Fish, Wildlife, and Parks. Helena, Mt. [http://FieldGuide.mt.gov/detail\\_AMAJF03010.aspx](http://FieldGuide.mt.gov/detail_AMAJF03010.aspx). Accessed August 2011.
- Nature Serve. Explorer; *Silene Spaldingii*. October 2012. Accessed at <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Silene+spaldingii> on March 2013.
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- Reynolds and Hinckely. A Survey for Yellow-billed Cuckoo in recorded historic and other likely locations in Idaho. TREC, Inc. August 2005. 4276 E 300 North Rigby, Idaho 83442. [trec@onewest.net](mailto:trec@onewest.net)
- Tarbutton, Ben. Phone conversations with Ben Tarbutton, Kootenai County Planning staff regarding Kootenai County Flood Hazard Prevention Ordinance 441, the location of regulatory floodplain, flood elevations, and requirements for floodplain permits. May 14, 24, and 28, 2013.
- TO Engineers. Cave Bay Community Services Wastewater Facility Plan. Prepared for IDEQ. October 23, 2012.

USFWS National Wetland Inventory Maps for Kootenai County. July 3, 2002. Accessed at [www.nwi.fws.gov](http://www.nwi.fws.gov) February 2012.

USFWS Endangered Species: Mountain-Prairie Region: Wolverine. December 2010. Accessed at <http://www.fws.gov/mountain-prairie/species/mammals/wolverine/wolverine-122010.pdf> on August 2011.

USFWS 2013a. Endangered, Threatened, Proposed Species and Critical Habitat with Associated Proposed and Critical Habitats in Idaho. Accessed at <http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf> on March 2013.

USFWS 2013b. Species Profile Yellow billed Cuckoo. Updated March 26, 2013. Accessed at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06R> March 2013.

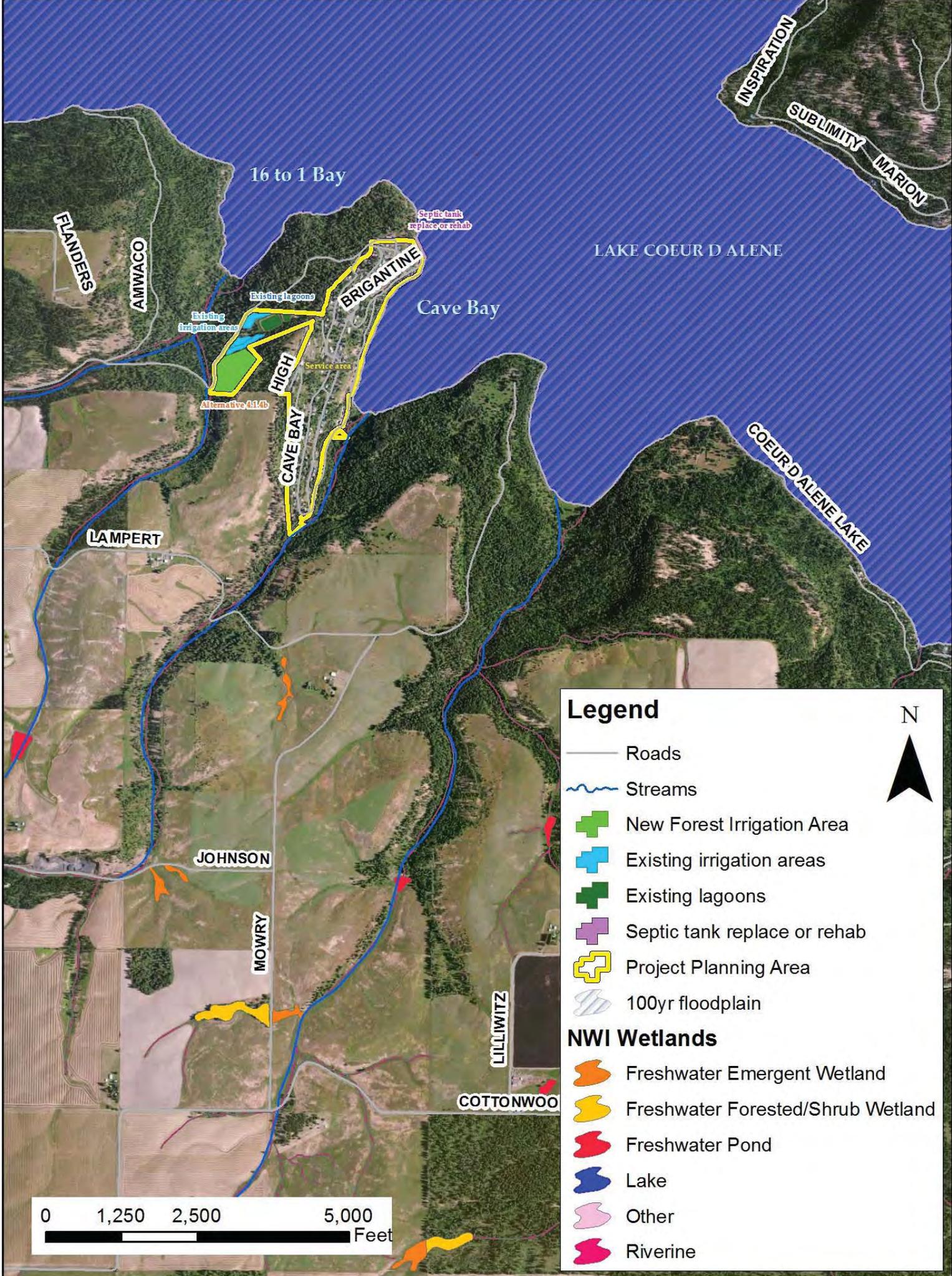
USFWS 2013c. Species Profile Canada Lynx. Accessed at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A073> on December 2012.

US Census Bureau. American Community Survey. Economic Characteristics 5 year (2007-2011). Based on 2010 Census data. Accessed at <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk> on February 2013.

US Department of Human and Health Services (HHS). HHS Poverty Guidelines and *Federal Register* References. Accessed at <http://aspe.hhs.gov/poverty/figures-fed-reg.shtml> on February 2013.

APPENDIX A  
MAPS

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INSPIRATION  
SUBLIMITY  
MARION

16 to 1 Bay

LAKE COEUR D ALENE

Cave Bay

COEUR DALENE LAKE

FLANDERS

AMWACO

BRIGANTINE

Existing lagoons

Existing irrigation areas

Service area

Alternative 4.1.4b

HIGH  
CAVE BAY

LAMPERT

JOHNSON

MOWRY

LILLIWITZ

COTTONWOOL

**Legend**

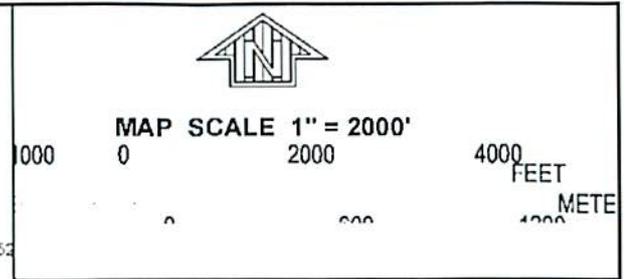
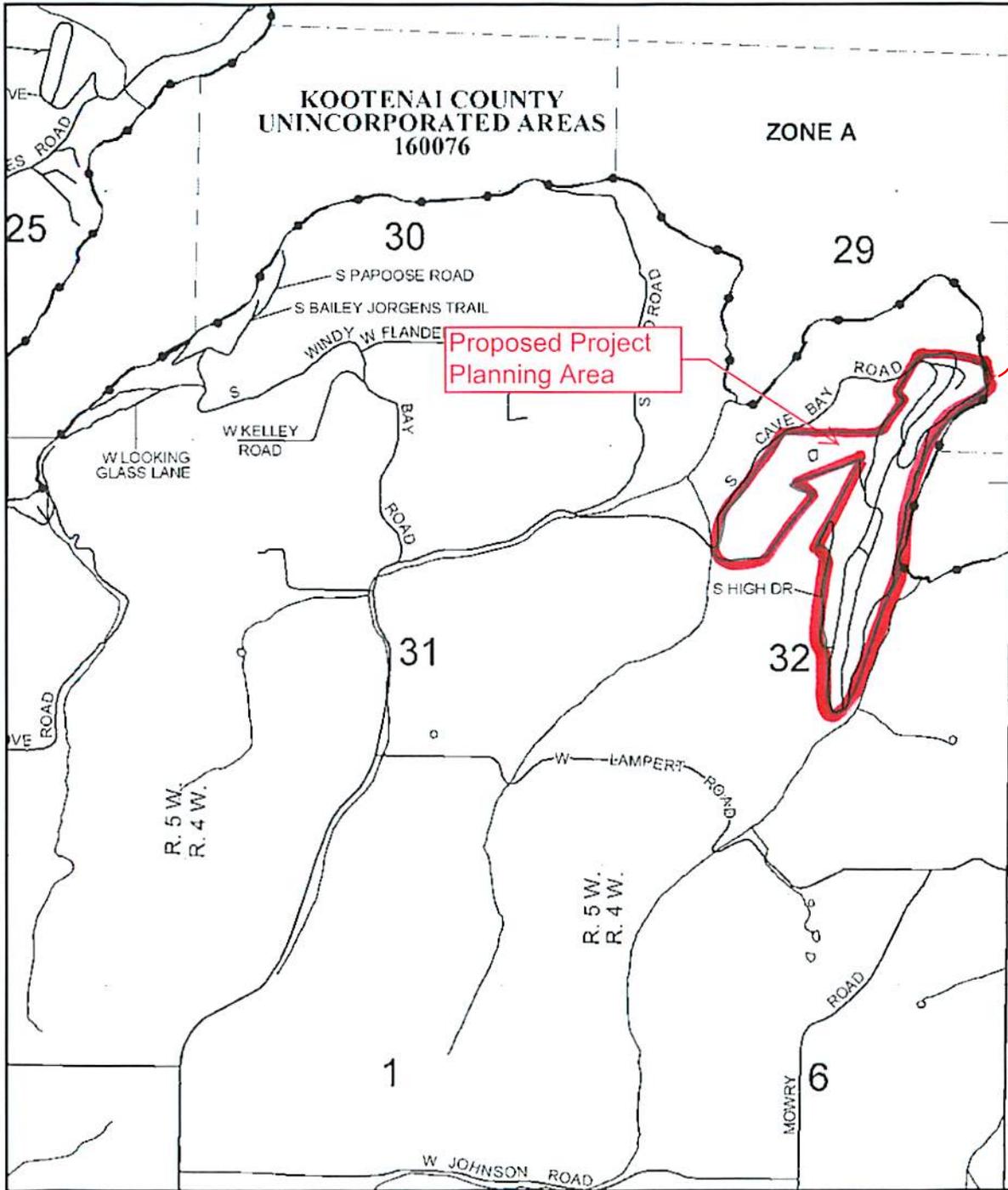
- Roads
- ~ Streams
- New Forest Irrigation Area
- Existing irrigation areas
- Existing lagoons
- Septic tank replace or rehab
- Project Planning Area
- ▨ 100yr floodplain

**NWI Wetlands**

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

N

0 1,250 2,500 5,000 Feet



NIPUP

PANEL 0750E

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**KOOTENAI COUNTY,**  
**IDAHO**  
**AND INCORPORATED AREAS**

**PANEL 750 OF 975**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
KOOTENAI COUNTY	160076	0750	E
COEUR D'ALENE INDIAN RESERVATION	160065	0750	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
**16055C0750E**  
**EFFECTIVE DATE**  
**MAY 3, 2010**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

NS PANEL 0775



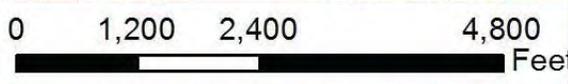
# LAKE COEUR D ALENE

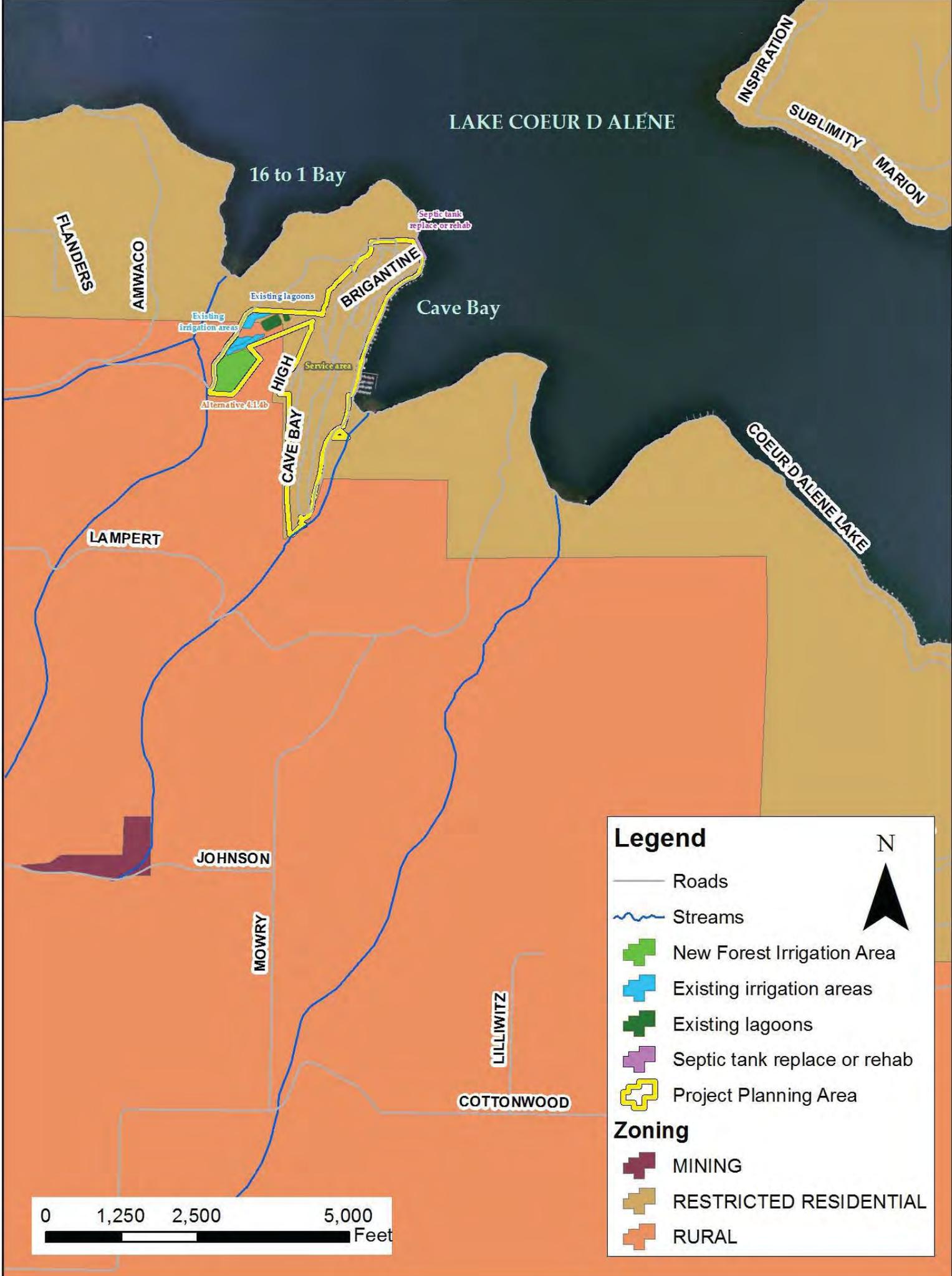


## Legend

- Roads
- ~ Streams
- Wells
- 500ft Well Buffer
- New Forest Irrigation Area
- Existing irrigation areas
- Existing lagoons
- Septic tank replace or rehab
- Project Planning Area

N





LAKE COEUR D ALENE

16 to 1 Bay

Cave Bay

INSPIRATION  
SUBLIMITY  
MARION

FLANDERS

AMWACO

BRIGANTINE

Existing lagoons  
Existing irrigation areas

Service area

Alternative 4.14b

HIGH CAVE BAY

COEUR DALENE LAKE

LAMPERT

JOHNSON

MOWRY

LILLIWITZ

COTTONWOOD

**Legend**

— Roads

~ Streams

■ New Forest Irrigation Area

■ Existing irrigation areas

■ Existing lagoons

■ Septic tank replace or rehab

■ Project Planning Area

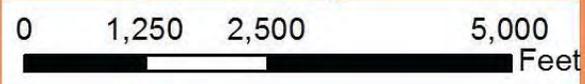
**Zoning**

■ MINING

■ RESTRICTED RESIDENTIAL

■ RURAL

N



LAKE COEUR D ALENE

160550021002997

16 to 1 Bay

160550021002100

160550021002052

CLARKE

CLIFF

BRIGANTINE

160550021002096

Cave Bay

CARROLL

LAKESHORE

160550021002101

OZZIE

HIGH

160550021002099

COEUR D ALENE

160550021002102

CAVE BAY

MADRONA

**Legend**

N

-  Roads
-  Streams
-  New Forest Irrigation Area
-  Existing irrigation areas
-  Existing lagoons
-  Septic tank replace or rehab
-  Project Planning Area

**Census Blocks**

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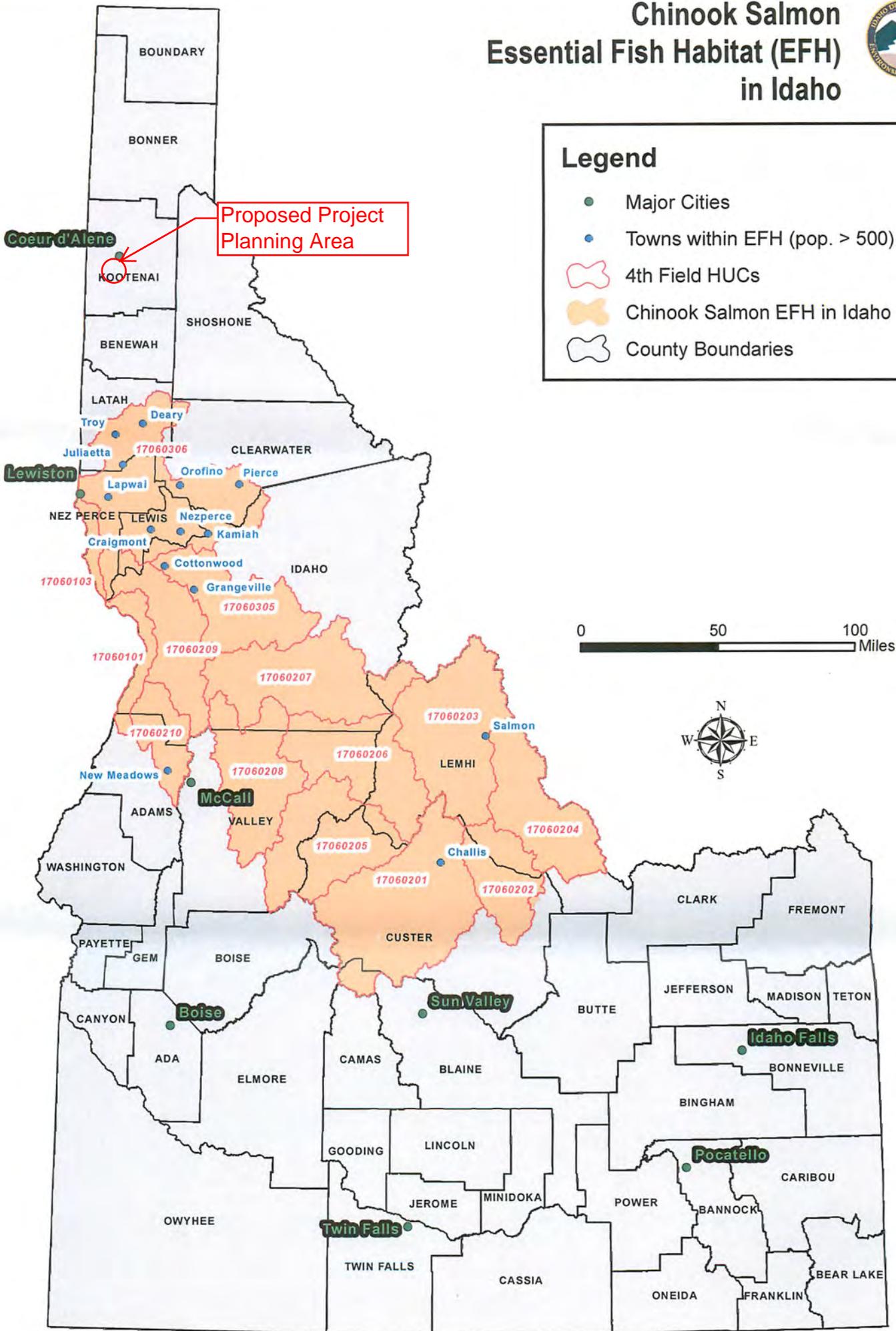
LAMPEL

# Chinook Salmon Essential Fish Habitat (EFH) in Idaho

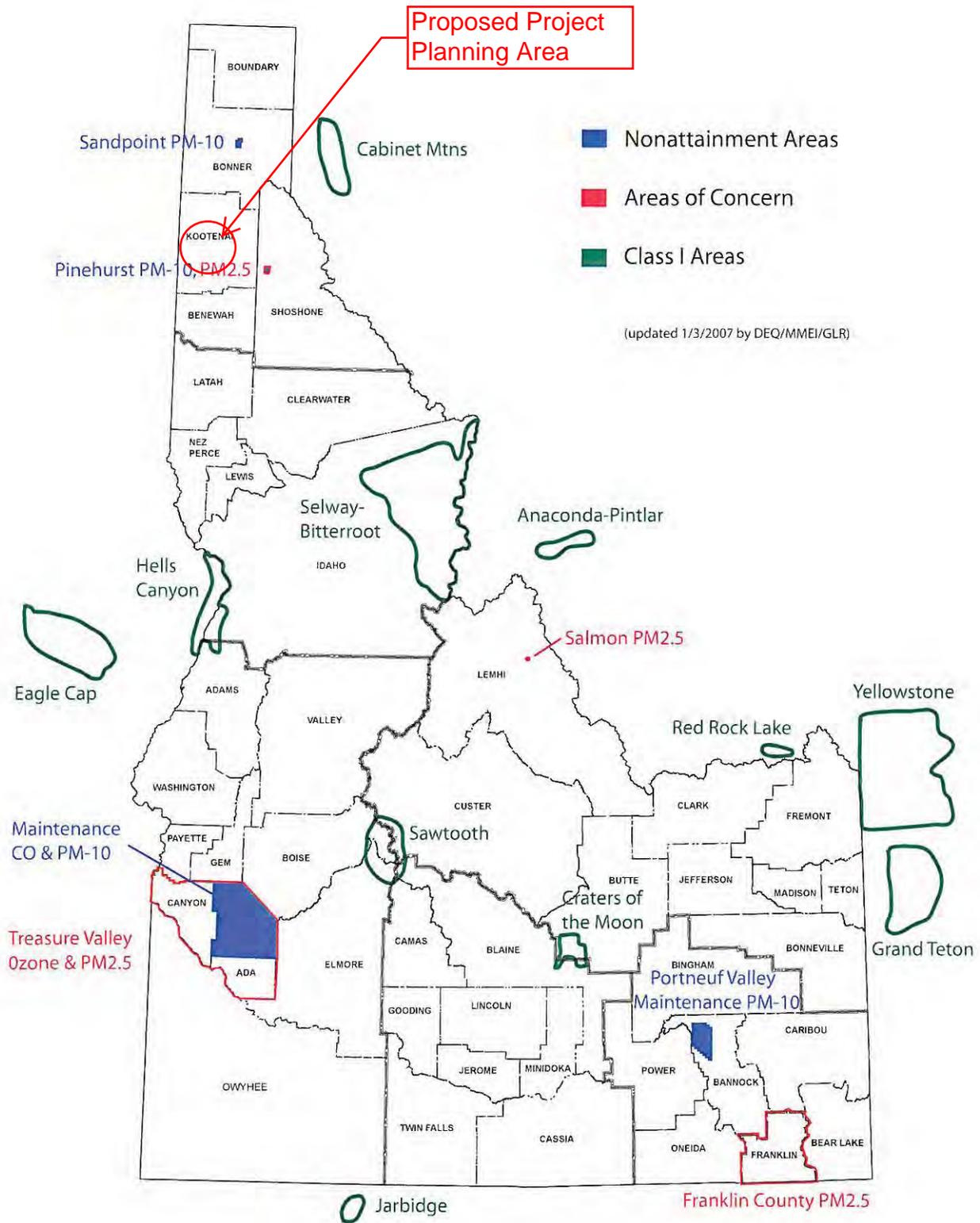


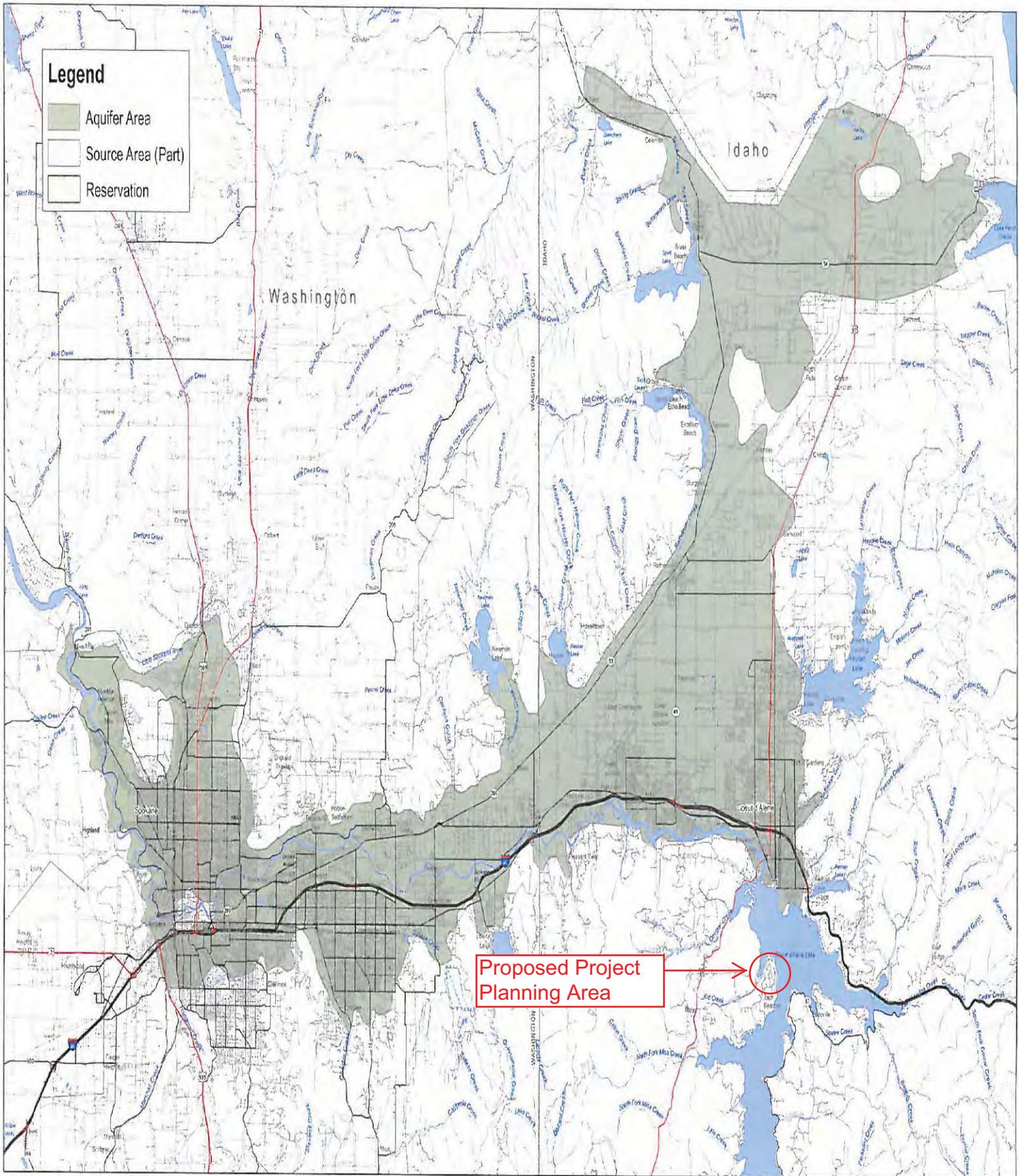
## Legend

- Major Cities
- Towns within EFH (pop. > 500)
- 🍷 4th Field HUCs
- 🍷 Chinook Salmon EFH in Idaho
- 🍷 County Boundaries



# Idaho Air Quality Planning Areas





**Legend**

- Aquifer Area
- Source Area (Part)
- Reservation

Proposed Project  
Planning Area

The U.S. Environmental Protection Agency (EPA) has compiled the accurate representation from data or information sources that may not have been updated by the EPA. This data is offered here as a general representation only and is not to be used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown and shall be held in any case or injury resulting from reliance upon the information shown.

**Spokane-Rathdrum Sole Source Aquifer  
Aquifer Area and Part of Source Area**



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**APPENDIX B**  
**AGENCY CORRESPONDENCE**

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STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

1410 North Hillton • Boise, Idaho 83706 • (208) 373-0502  
November 16, 2012

C.L. "Butch" Otter, Governor  
Curt Fransen, Director

Certified Mail No.: 7000 1670 0013 9128 2876

Jill Wagner, PhD  
THPO  
Coeur d'Alene Tribe  
P.O. Box 408  
Plummer, Idaho 83851

RE: Request for Tribal Consultation on Cultural Issues for the Cave Bay Community Services, Inc. Wastewater Improvement Project

Dear Ms. Wagner:

The Cave Bay Community Services, Inc (Cave Bay) has prepared a facility planning study to identify and make necessary improvements to their municipal wastewater system. The project could be fully or partially funded by the Idaho Water Pollution Control State Revolving Loan Fund. The purpose of this letter is to request your review and response regarding any environmental impacts that the Tribe may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, which mirrors the National Environmental Policy Act.

The proposed project would upgrade and expand the existing wastewater facility by installing lagoon liners and raising the embankment height of Lagoon #2 by up to two feet to provide approximately 750,000 gallons of additional lagoon storage. A new irrigation pumping system with a 90 gpm pump and pump house will be installed. Pipes, a sprinkler system and perimeter fencing would also be installed. The treated effluent would be land applied to an additional 6.0 acres of privately owned forest land owned by Steven Dreher which would be acquired by Cave Bay. The proposed irrigation system will consist of impact type sprinklers with flow control nozzles to provide for uniform application. A 4-inch pressure irrigation main will be extended from the interim phase piping to the Dreher Property. An oversized piping network will provide chlorine contact. Up to five (5) existing septic tanks would also be repaired or replaced to eliminate suspected infiltration and inflow.

Enclosed is a map of the proposed project area that depicts the proposed improvements.

Please respond within 30 days with any concerns or mitigation measures you have on the potential environmental impacts from this project. Please contact me at 208-373-0585 or by email at [Ester.Ceja@deq.idaho.gov](mailto:Ester.Ceja@deq.idaho.gov) if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Ester Ceja".

Ester Ceja  
SERP Coordinator

EC:dls

Enclosure

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## RE: Cave Bay project description and maps

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**From :** Ester Ceja <Ester.Ceja@deq.idaho.gov>

Fri, Nov 30, 2012 07:57 AM

**Subject :** RE: Cave Bay project description and maps

**To :** anderenv@q.com

Michelle,

I sent the CDA Tribe an email this week following up on the Cave Bay Consultation. Haven't heard back from them but they have 30 days which runs until December 17 (as the 16<sup>th</sup> is on the weekend) to provide a response.

Thanks,  
Ester

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## FW: Cave Bay Wastewater Project -- Tribal Consultation

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**From :** Ester Ceja <Ester.Ceja@deq.idaho.gov>  
**Subject :** FW: Cave Bay Wastewater Project -- Tribal Consultation  
**To :** anderenv@q.com

Mon, Jan 07, 2013 06:26 AM

 2 attachments

Michelle,

Good morning. I have not received any comments from the Coeur d'Alene Tribe regarding the Cave Bay wastewater project. Please consider this the response for tribal consultation and include in the EID.

Thanks,  
Ester  
-----Original Message-----

From: Ester Ceja  
Sent: Thursday, January 03, 2013 4:52 PM  
To: jwagner@cdatribe-nsn.gov  
Subject: Cave Bay Wastewater Project -- Tribal Consultation

Jill,

Good afternoon and Happy New Year! I'm working with the Cave Bay Community on a wastewater project that DEQ is looking to fund. The attached documents were sent out in November 2012. I have not received any comments from the Tribe and wanted to double check to make sure you do not have an cultural resource concerns with the proposed project.

Any information you could provide would be greatly appreciated.

Thank you,

Ester Ceja  
Sr. Water Quality Analyst  
1410 North Hilton  
Boise, Idaho 83706  
Phone (208) 373.0585  
Fax (208) 373.0576  
Ester.Ceja@deq.idaho.gov

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 **Cave Bay Proposed Project Planning Map\_11.15.12.PDF**  
743 KB

 **Cave Bay CDA Tribe.pdf**  
99 KB

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# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Idaho Fish and Wildlife Office

Northern Idaho Field Office

11103 East Montgomery Drive  
Spokane Valley, Washington 99206



November 21, 2012

Michelle Anderson  
Anderson Environmental Consulting, LLC  
14234 N. Tormey Rd  
Nine Mile Falls, WA 99206

Subject: Species List for Proposed Cave Bay Community Services Wastewater Facility Plan  
Project, Kootenai County, ID

Dear Ms. Anderson:

This responds to your recent request for a list of threatened and endangered species. For your convenience, updated countywide species and habitat listings are now available on our website at <http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf>. To view the listings in your area of concern, select "county species lists" within the ESA programs page, and then select the county of interest. The lists available on our website are compliant with Section 7(c) of the Endangered Species Act of 1973, as amended (Act), and are the most current available listings of endangered, threatened and proposed species and critical habitats in a given area. For optional consideration, the lists also contain updated candidate species.

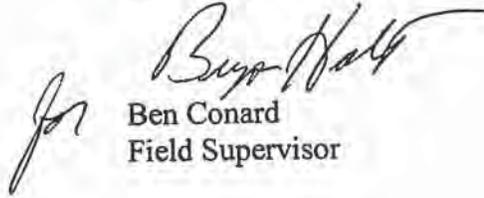
If you would like information concerning state listed species or species of concern in Idaho, you may contact the Idaho Conservation Data Center, at (208) 334-3402, for fish and wildlife species. Species of anadromous fishes that have been listed by the National Marine Fisheries Service (NMFS) may also occur in your project area. Please contact NMFS in Ellensburg, WA, at (509) 962-8911 or NMFS in Boise, ID at (208) 378-5692, to request information on listed species within NMFS's jurisdiction.

When you submit a request for Section 7 consultation, we request that you include your downloaded species list and the date it was downloaded, as an attachment. If applicable, please also include the United States Fish and Wildlife Service reference number on your consultation request. This will document your compliance with 50 CFR 402.12 (c).

Should your project plans change significantly, or if the project is delayed more than 90 days, you should update your species lists through our website and through the above listed agencies.

Thank you for your efforts to protect our nation's species and their habitats. If you have any questions concerning the above information, please contact Bryon Holt at (509) 893-8014 or via email at [Bryon\\_Holt@fws.gov](mailto:Bryon_Holt@fws.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Ben Conard". The signature is written in a cursive style with a large, sweeping flourish at the end.

Ben Conard  
Field Supervisor

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## Cave Bay Community Services

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**From :** Mary McGown <Mary.McGown@idwr.idaho.gov>  
**Subject :** Cave Bay Community Services  
**To :** anderenv@q.com  
**Cc :** Justin Seier <jseier@kcgov.us>

Wed, Nov 21, 2012 02:59 PM

 1 attachment

Ms. Anderson,

I have reviewed the information you supplied about the Cave Bay Community Services Wastewater Facility Plan. The only Special Flood Hazard Area (SFHA) in the project boundaries is along Lake Coeur d'Alene. I have attached a Firmette of the area. This is a vignette of the Flood Insurance Rate Map.

It is impossible to tell at this scale and stage of the project whether any of the proposed construction would impact the SFHA. Please consult with the Kootenai County floodplain administrator, Justin Seier, before construction begins, to determine if a floodplain development permit will be required. Kootenai County is enrolled in the National Flood Insurance Program (NFIP) and is required to permit development in SFHAs. The county has a flood damage prevention ordinance that complies with the minimum federal regulations, but it also contains some higher standards.

Kootenai County Floodplain Administrator, Justin Seier, (208) 446-1083

Mary G. McGown, Ph.D., CFM  
State Floodplain Coordinator  
Idaho Department of Water Resources  
322 E. Front Street  
P.O. Box 83720  
Boise, ID 83720-0098  
(208) 287-4928

(208) 830-4174 mobile  
(208) 287-6700 fax

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 **CBCSFM16055C0750E.pdf**  
754 KB

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## Cave Bay

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**From :** Terra Berns, Mary <mary.terra-berns@idfg.idaho.gov>

Mon, Dec 17, 2012 10:54 AM

**Subject :** Cave Bay

**To :** anderenv@q.com

Michelle,

IDFG has reviewed the information provided for the Cave Bay Community Services Wastewater Facility Plan to improve the existing sewer collection and treatment system for the Cave Bay community. The purpose of these comments is to assist the decision-making authority by providing technical information addressing potential effects on wildlife and wildlife habitat and how any adverse effects might be mitigated. It is not the purpose of Idaho Department of Fish and Game to support or oppose this proposal.

We have identified no adverse impacts of the proposed project on fish and wildlife as described. This project will improve an inadequate/outdated sewage disposal system and will have positive environmental outcomes, as well as address a human health concerns.

Based on the materials submitted, IDFG does not anticipate additional adverse impacts to fish, wildlife or habitat.

Please let me know if you have any additional questions.

Mary

Mary Terra-Berns  
Environmental Staff Biologist  
Idaho Department of Fish & Game  
2885 W. Kathleen Ave.  
Coeur d'Alene, ID 83814  
208-769-1414 208-769-1418 fax  
[mary.terra-berns@idfg.idaho.gov](mailto:mary.terra-berns@idfg.idaho.gov)

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## Cave Bay Community Services Wasterwater Facility Plan (NWW-2012-652) (UNCLASSIFIED)

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**From :** Shane P NWW Slate <Shane.P.Slate@usace.army.mil>

Tue, Nov 27, 2012 08:46 AM

**Subject :** Cave Bay Community Services Wasterwater Facility Plan (NWW-2012-652) (UNCLASSIFIED)

**To :** anderenv@q.com

Classification: UNCLASSIFIED  
Caveats: NONE

Ms. Anderson,

This is in response to your November 15, 2012 email regarding Community of Cave Bay's proposed wastewater system upgrades. After reviewing the information you provided, it appears that the proposed upgrades will not result in the discharge of fill material in Waters of the U.S., including wetlands, and an Army Corps permit will not be required.

Sincerely,

Shane Slate  
Regulatory Project Manager  
US Army Corps of Engineers  
Walla Walla District  
Coeur d'Alene Regulatory Office  
208-765-8961  
shane.p.slate@usace.army.mil

Classification: UNCLASSIFIED  
Caveats: NONE

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March 13, 2013

Michelle Anderson  
Anderson Environmental Consulting  
14234 N Tormey Rd  
Nine Mile Falls, WA 99026  
[anderenv@q.com](mailto:anderenv@q.com)

Subject: **Cave Bay Community Services, Wastewater System Improvement Projects, Idaho DEQ**  
Comments on Environmental Impacts

Dear Ms. Anderson:

In your letter dated February 14, 2013, you requested comments from the Idaho Department of Environmental Quality (DEQ) on the environmental impacts from the proposed wastewater system improvements listed in the letter. The proposed projects are needed to bring the wastewater system, owned and operated by Cave Bay Community Services (CBCS), into compliance with current DEQ requirements in the Idaho Wastewater Rules and Recycled Water Rules. In the past, there have been overflows from the CBCS lagoons onto the property owned CBCS and near Lake Coeur d'Alene.

The proposed projects are the following:

1. **Upgrade Existing Wastewater Treatment Plant** - The existing two (2) lagoons will be lined with a synthetic liner 60 ml. thick and the dike raised two (2) feet on Lagoon #2 to increase the storage capacity by 750,000 gallons. An additional 5.8 acres of forested property adjacent to the existing forested recycled water seasonal irrigation site will be purchased to provide the necessary 9.1 acres of forested property needed to serve the projected future population of 218 equivalent resident units (ERUs). Also to be constructed will be the facilities for disinfecting the wastewater prior to irrigation using liquid sodium hypochlorite and the expansion of the irrigation system onto the 5.8 acres.
2. **Wastewater Collection System Upgrades** – Up to five (5) existing septic tanks at individual homes will be either repaired or replaced to reduce the amount of infiltration and inflow entering the collection system.

DEQ is supportive of these projects. The following are the DEQ comments on the proposed wastewater improvements and the potential environmental impacts from the proposed projects related to surface water quality/storm water control and air quality issues:

#### Wastewater

DEQ has received the reports titled "Cave Bay Community Services, Inc., Wastewater Facilities Plan, Draft, June 27, 2012" prepared by Scott McNee, P.E. of T-O Engineers. This report provides the basis for the proposed improvement projects listed above. DEQ has provided comments on the "Facility Plan" report in an email dated August 22, 2012. The Facility Plan, Environmental Information Document, and plans and specifications will need to be approved by DEQ prior to starting construction on any of these improvements.

Michelle Anderson

March 13, 2013

Page 2

The CBCS reuse permit (M-229-01) will need to be modified to permit irrigation on the 5.8 acres of new forested irrigation property.

#### Surface Water Quality and Storm Water Control

Storm water controls will need to be developed that adequately protect surface waters and ground water from being impacted during and after construction. The local stormwater control authority should be contacted for details on the appropriate collection/treatment/disposal requirements. Control of sedimentation and erosion during construction activities must be achieved by the use of acceptable best management practices (BMPs) and is considered the responsibility of the owner/developer/contractor for the project. The project may require compliance with the Construction General Permit, a program administered by the U.S.

Environmental Protection Agency. This requirement is designed to prevent pollution of waters of the U.S. during construction projects. More information on this requirement can be found at:

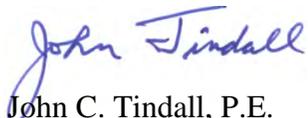
<http://yosemite.epa.gov/R10/WATER.NSF/NPDES+Permits/Region+10+CGP+resources/>

#### Air Quality

The Cave Bay Community is located within the exterior boundaries of the Coeur d'Alene Tribal Reservation. DEQ has no air quality regulatory authority for this area. Please consider contacting the Coeur d'Alene Tribe for comments applicable to air quality for the EID.

Thank you for the opportunity to provide input on these projects.

Sincerely,



John C. Tindall, P.E.

[John.tindall@deq.idaho.gov](mailto:John.tindall@deq.idaho.gov)

File: Cave Bay EID TRIM

c: Katy Baker-Casile, P.E., DEQ, Coeur d'Alene [katy.baker-casile@deq.idaho.gov](mailto:katy.baker-casile@deq.idaho.gov)

Ester Ceja, DEQ State Office, Boise [ester.ceja@deq.idaho.gov](mailto:ester.ceja@deq.idaho.gov)

Scott McNee, P.E., T-O Engineers, Coeur d'Alene [smcnee@to-engineers.com](mailto:smcnee@to-engineers.com)

Dave Kinkela, President, CBCS [davekink@aol.com](mailto:davekink@aol.com)

**Centurylink Webmail**

anderenv@q.com

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## Cave Bay Sewer Improvements

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**From :** Jason Peppin <JPeppin@phd1.idaho.gov>

Tue, Mar 19, 2013 10:39 AM

**Subject :** Cave Bay Sewer Improvements**To :** anderenv@q.com

Panhandle Health District supports the proposed improvements to the Cave Bay Community Sewer system. Tank only septic permits will be required for any new septic tanks installed.

Jason Peppin, REHS  
Senior Environmental Health Specialist  
Panhandle Health District  
8500 N. Atlas Road  
Hayden, ID 83835  
(208) 415-5217  
[jpeppin@phd1.idaho.gov](mailto:jpeppin@phd1.idaho.gov)

Privacy Disclaimer:

The information contained in this email may be privileged, confidential or otherwise protected from disclosure. All persons are advised that they may face penalties under state and federal law for sharing this information with unauthorized individuals. If you received this email in error, please reply to the sender that you have received this information in error. Also, please delete this email after replying to the sender.

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## Re: Cave Bay Community Sewer tank repair/replacements

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**From :** anderenv@q.com

Tue, May 28, 2013 02:20 PM

**Subject :** Re: Cave Bay Community Sewer tank repair/replacements

**To :** btarbutton@kcgov.us

Ben,

Thank you for clarification today regarding floodplain permit requirements under your flood ordinance. Just to summarize our conversation, since the tanks that will be evaluated or replaced are outside of the mapped 100 year floodplain and located above the established flood elevation for the Lake, no floodplain permit would be required from Kootenai County for the tank replacements or repairs.

In addition, any activity that involves moving more than 50 cubic yards of material per parcel will require a Site Disturbance Permit though Kootenai County. This is regardless of whether it is in a floodplain or not.

This information will be reflected in the Environmental Document for the Cave Bay Project.

Thanks again for your help!

Michelle Anderson  
AEC LLC  
509.467.2011 office  
509.220.0045 cell

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Hi Ben,

I just wanted to check and see if you were able to find out additional information about permitting/ requirements for tank repairs or replacements for the Cave Bay Project. While the tanks are outside the floodplain as mapped, you indicated a flood elevation of 2139.5. Based on rough elevation data the top of the tanks may be around 2141.5 ft based on Google Earth but the tank locations have not been formally surveyed that we know of. I spoke with Jason Peppin at the Health District who stated they normally don't have any restrictions on the tanks regarding floodplains so any restrictions would be based just on your ordinance.

Thanks for your help.

Michelle Anderson  
509-220-0045 cell

---

Hi Ben,

Thank you for checking into the floodplain permit requirements for the sewer tank repair/replacements for the Cave Bay Wastewater Facility Plan project. I am attaching a file from a cultural report that have some photos of the area in question which may be useful to you. Figures 7 and 9 in the attachment may provide a some useful context as to the locations and setting of these potential tank repair/replacements.

Thanks and please feel free to call me with any questions.

--

**Michelle Anderson**  
Anderson Environmental Consulting LLC  
Office: 509.467.2011  
Cell: 509.220.0045  
[anderenv@q.com](mailto:anderenv@q.com)

## **Summary of Phone Conversations and Messages regarding Flood Ordinance**

### **Phone Message from Ben Tarbutton, Kootenai County to Michelle Anderson 5/14/13**

Ben looked through the flood ordinance to answer questions about work on tanks at Cave Bay in relation to the flood zone. Based on conditions and topography of parcels, it's not going to be an option to relocate the septic outside of the floodzone. Therefore, we should work with the Panhandle Health District, Jason Peppin, to see if they have any problem with locating the tanks in the floodzone.

### **Phone Conversation between Michelle Anderson and Jason Peppin, Idaho Panhandle Health District 5/15/13**

I explained the text of the Kootenai County Ordinance, which discusses that Kootenai County, does not allow septic tank placement in a floodplain unless there is no alternative, which is determined in consultation with Idaho Panhandle Health District. We read through the ordinance during the phone conversation.

Jason stated that they (Idaho Panhandle Health District) do not normally have any restrictions for having septic systems in floodplains and that that is Kootenai County's regulation. But he is very familiar with the sites and believes there is no other alternatives to placement in the area. They would not have an objection to replacing or repairing the tanks in their current locations. They are in support of the project.

### **Phone Message received from Ben Tarbutton, Kootenai County, to Michelle Anderson 5/24/13**

Since the Idaho Health District does not have any regulations for septic systems in the floodplain and as long as we are not moving more than 50 cubic yards in the floodplain then we won't even require a permit from them.

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anderenv@q.com

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## Fwd: Sole Source Aquifer Checklist-Cave Bay Community Services Wastewater Facility Plan-EID

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**From :** Michelle Anderson <[anderenv@q.com](mailto:anderenv@q.com)>  
**Subject :** Fwd: Sole Source Aquifer Checklist-Cave Bay Community Services Wastewater Facility Plan-EID  
**To :** Michelle Anderson <[anderenv@q.com](mailto:anderenv@q.com)>

Wed, May 01, 2013 04:33 PM

Michelle C. Anderson LLC  
Ph: 509.467.2011  
Cell: 509.220.0045  
[anderenv@q.com](mailto:anderenv@q.com)

Begin forwarded message:

**From:** Michelle Anderson <[anderenv@q.com](mailto:anderenv@q.com)>  
**Date:** April 1, 2013, 2:46:49 PM PDT  
**To:** "Eastman, Susan" <[Eastman.Susan@epa.gov](mailto:Eastman.Susan@epa.gov)>  
**Subject:** Re: Sole Source Aquifer Checklist-Cave Bay Community Services Wastewater Facility Plan-EID

Thank you Susan.

Michelle C. Anderson LLC  
Ph: 509.467.2011  
Cell: 509.220.0045  
[anderenv@q.com](mailto:anderenv@q.com)

On Apr 1, 2013, at 2:57 PM, "Eastman, Susan" <[Eastman.Susan@epa.gov](mailto:Eastman.Susan@epa.gov)> wrote:

Thank you for submitting your project for review. We have reviewed the information provided and find that the project will not have a significant adverse impact on the Spokane Valley Rathdrum Prairie Sole Source Aquifer and therefore the funding may proceed.

EPA reviews federally financially assisted projects that are proposed in federally designated Sole Source Aquifer review areas to determine if the projects have a potential to contaminate the aquifer through a recharge zone so as to create a significant hazard to public health. Such projects are submitted to EPA by federal, state, and local governments, and by the public.

This correspondence only addresses the Sole Source Aquifer Program, any other federal environmental requirements are your responsibility to ensure

compliance. Please retain this email for your records.

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**From:** [anderenv@q.com](mailto:anderenv@q.com) [<mailto:anderenv@q.com>]  
**Sent:** Sunday, March 10, 2013 4:11 PM  
**To:** Eastman, Susan  
**Subject:** Fwd: Sole Source Aquifer Checklist-Cave Bay Community Services Wastewater Facility Plan-EID

Hi Sue,

Good afternoon. I wanted to check to see if you had any comments on the Sole Source Aquifer checklist for the Cave Bay Community Facility Plan-Environmental Information Document. Please let me know if you have any questions.

Thank you,

Michelle Anderson  
AEC LLC  
509.467.2011 office  
509.220.0045 cell

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**From:** [anderenv@q.com](mailto:anderenv@q.com)  
**To:** "eastman susan" <[eastman.susan@epa.gov](mailto:eastman.susan@epa.gov)>  
**Sent:** Wednesday, February 20, 2013 3:51:42 PM  
**Subject:** Sole Source Aquifer Checklist-Cave Bay Community Services Wastewater Facility Plan-EID

Sue,

Thanks for taking the time to discuss the project earlier today. I have attached the Aquifer Checklist with a couple of maps. Please note that the project is on the Coeur d'Alene Tribe Reservation. It is not over the SRVP Aquifer but is in the source area.

Thanks for your review.

--

**Michelle Anderson**  
Anderson Environmental Consulting LLC  
Office: 509.467.2011  
Cell: 509.220.0045  
[anderenv@q.com](mailto:anderenv@q.com)

--

**Michelle Anderson**  
Anderson Environmental Consulting LLC  
Office: 509.467.2011  
Cell: 509.220.0045  
[anderenv@q.com](mailto:anderenv@q.com)

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**Cave Bay Community Services Wastewater Facility**

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**From :** anderenv@q.com

Thu, Apr 04, 2013 09:14 AM

**Subject :** Cave Bay Community Services Wastewater Facility**To :** lmueller@cdatribe-nsn.gov

Lance,

Thank you for calling this morning. In response to your question, there will be perimeter fencing around the irrigation area and the lagoon area. There will also be warning signs and gates as necessary.

I appreciate any comments you may have. Please feel free to call me or email me if you have any other questions.

Thank you.

-- **Michelle Anderson**

Anderson Environmental Consulting LLC

Office: 509.467.2011

Cell: 509.220.0045

[anderenv@q.com](mailto:anderenv@q.com)

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# Anderson Environmental Consulting, LLC



November 15, 2012

Regional Non Game Biologist  
Idaho Department of Fish and Game  
2750 Kathleen Avenue  
Coeur d'Alene, ID 83815

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

To Whom it May Concern:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

The project is located in the Community of Cave Bay which is six miles north of Worley, Idaho and on the west side of Lake Coeur d'Alene. It is located in Township 48N, Range 4W, Sections 29 and 32. See attached Vicinity Map. The current wastewater facility does not meet current requirements and has inadequate capacity. In previous years the effluent has overflowed onto the adjacent properties.

The proposed project would upgrade and expand the existing wastewater facility by installing lagoon liners and raising the embankment height of Lagoon #2 by up to two feet to provide approximately 750,000 gallons of additional lagoon storage. A new irrigation pumping system with a 90 gpm pump and pump house will be installed. Pipes, a sprinkler system and perimeter fencing would also be installed. The treated effluent would be land applied to an additional 6.0 acres of privately owned forest land owned by Steven Dreher which would be acquired by Cave Bay. The proposed irrigation system would consist of impact type sprinklers with flow control nozzles to provide for uniform application. A four-inch pressure irrigation main would be extended from the interim phase piping to the Dreher Property. An oversized piping network would provide chlorine contact. Up to five existing septic tanks would also be repaired or replaced to eliminate

*14234 N. Tormey Rd., Nine Mile Falls, WA 99026*

*Phone/fax: (509) 467-2011; cell: (509) 220-0045; anderenv@q.com*

# Anderson Environmental Consulting, LLC



suspected infiltration and inflow. Enclosed is a map of the proposed project area that depicts the proposed improvements.

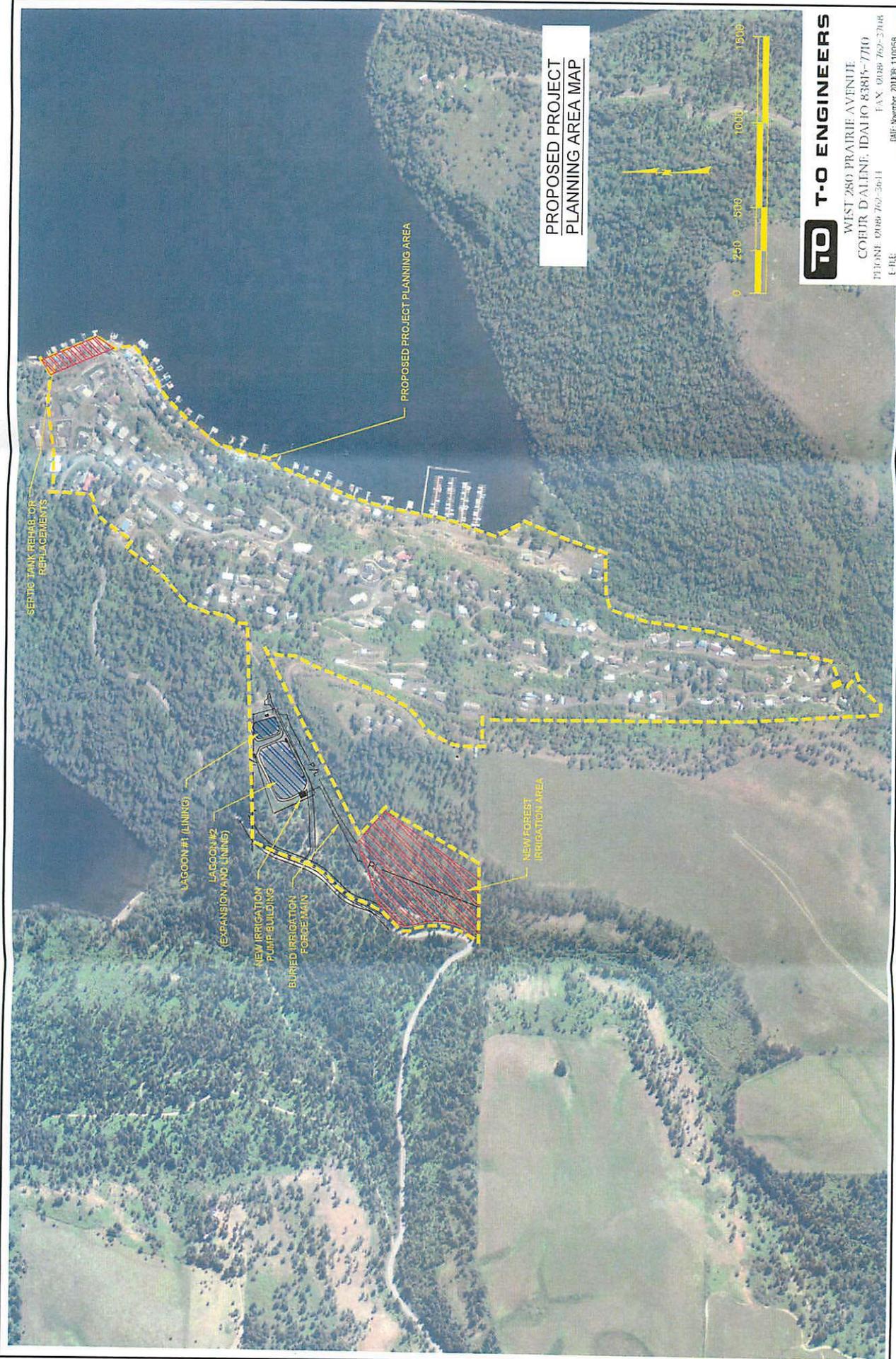
We request that you advise us of any comments that you may have regarding this project within 30 days, so the Cave Bay Community Services can proceed with the completion of the Wastewater Facility Plan. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at 509-467-2011 at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Michelle Anderson". The signature is fluid and cursive.

Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map



**PROPOSED PROJECT  
PLANNING AREA MAP**

**T-O ENGINEERS**  
WEST 280 PRAIRIE AVENUE  
COEUR D'ALENE, IDAHO 83815-7710  
PHONE: 208-762-2611 FAX: 208-769-2748  
E-HE: DATE: November 2010 110056

# Anderson Environmental Consulting, LLC



November 15, 2012

James Wertz  
US EPA, Idaho Operations Office  
1435 North Orchard  
Boise, ID 83706

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Mr. Wertz:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

The project is located in the Community of Cave Bay which is six miles north of Worley, Idaho and on the west side of Lake Coeur d'Alene. It is located in Township 48N, Range 4W, Sections 29 and 32. See attached Vicinity Map. The current wastewater facility does not meet current requirements and has inadequate capacity. In previous years the effluent has overflowed onto the adjacent properties.

The proposed project would upgrade and expand the existing wastewater facility by installing lagoon liners and raising the embankment height of Lagoon #2 by up to two feet to provide approximately 750,000 gallons of additional lagoon storage. A new irrigation pumping system with a 90 gpm pump and pump house will be installed. Pipes, a sprinkler system and perimeter fencing would also be installed. The treated effluent would be land applied to an additional 6.0 acres of privately owned forest land owned by Steven Dreher which would be acquired by Cave Bay. The proposed irrigation system would consist of impact type sprinklers with flow control nozzles to provide for uniform application. A four-inch pressure irrigation main would be extended from the interim phase piping to the Dreher Property. An oversized piping network would provide chlorine contact. Up to five existing septic tanks would also be repaired or replaced to eliminate suspected infiltration and inflow. Enclosed is a map of the proposed project area that depicts the proposed improvements.

*14234 N. Tormey Rd., Nine Mile Falls, WA 99026*

*Phone/fax: (509) 467-2011; cell: (509) 220-0045; anderenv@q.com*

# Anderson Environmental Consulting, LLC



We request that you advise us of any comments that you may have regarding this project within 30 days, so the Cave Bay Community Services can proceed with the completion of the Wastewater Facility Plan. If you have any questions concerning this proposed project or if you need any further information, please feel free to contact me at 509-467-2011 at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Michelle Anderson". The signature is written in a cursive, flowing style.

Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Anderson Environmental Consulting, LLC



November 15, 2012

Don Martin  
US EPA, Coeur d'Alene Field Office  
1910 NW Blvd., Suite 208  
Coeur d'Alene, ID 83814

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Mr. Martin:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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*14234 N. Tormey Rd., Nine Mile Falls, WA 99026*

*Phone/fax: (509) 467-2011; cell: (509) 220-0045; anderenv@q.com*

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

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# Anderson Environmental Consulting, LLC



November 15, 2012

Mary McGown  
Idaho Department of Water Resources  
322 East Front St.  
Boise, ID 83720-0098

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Ms. McGown:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Anderson Environmental Consulting, LLC



November 15, 2012

Beth Reinhart  
US Army Corps of Engineers, Coeur d'Alene Regulatory Office  
2065 W. Riverstone Dr., Suite 201  
Coeur d'Alene, ID 83814

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Ms Reinhart:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Anderson Environmental Consulting, LLC



November 15, 2012

State Supervisor  
US Fish and Wildlife Service  
11103 East Montgomery Dr.  
Spokane, WA 99206-4779

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

To Whom it May Concern:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Anderson Environmental Consulting, LLC



February 14, 2013

Sue Eastman  
EPA Region 10, Office of Environmental Assessment (OEA-095)  
1200 6<sup>th</sup> Ave. OWW136  
Seattle, WA 98101

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Ms. Eastman:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Sole Source Aquifer Checklist

## 1. Location and name of Sole Source Aquifer or Source Area.

The project is the Cave Bay Community Services Wastewater Facility Plan-Environmental Information Document. The project planning area is located in the Cave Bay Community approximately 6 miles north of Worley in Kootenai County, Idaho on the west side of Lake Coeur d'Alene, near Cave Bay.

It is located in Township 48 North, Range 4 West, and Section 32.

The project planning area is located on the Coeur d'Alene Reservation. It does not overlie the Spokane Valley-Rathdrum Prairie Aquifer but is within its source area. See attached Site Map.

## 2. Project description

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant. The construction is anticipated to come from the Clean Water Revolving Fund.

The current wastewater facility does not meet current requirements and has inadequate capacity. It does not have lagoon liners and wastewater currently seeps into the ground. In previous years the effluent has also overflowed onto the adjacent properties. The proposed project would upgrade and expand the existing wastewater facility by installing lagoon liners and raising the embankment height of Lagoon #2 by up to two feet to provide approximately 750,000 gallons of additional lagoon storage. A new irrigation pumping system with a 90 gpm pump and pump house will be installed. Pipes, a sprinkler system and perimeter fencing would also be installed. The treated effluent would be land applied to an additional 6.0 acres of adjacent privately owned forest land which would be acquired. The proposed irrigation system would consist of impact type sprinklers with flow control nozzles to provide for uniform application. A four-inch pressure irrigation main would be extended from the interim phase piping to the Dreher Property. An oversized piping network would provide chlorine contact. Up to five existing septic tanks would also be repaired or replaced to eliminate suspected infiltration and inflow. Flow meters would be installed on existing lift stations.

## 3. Is there any increase of impervious surface? If so, what is the area?

The two existing lagoons are unlined. They will be lined to prevent seepage of effluent. There will be approximately 400 square feet of concrete installed for a new irrigation pump building. There will be no other increase in impervious surface.

## 4. Describe how storm water is currently treated on the site?

The site is a wastewater lagoon and with residences and local access roads to homes. Stormwater systems are designed according to Kootenai County regulations. Stormwater is not

being increased as a result of the project. Sediment and erosion control measures will be implemented to collect and treat runoff during construction.

5. How will storm water be treated on this site during construction and after the project is complete?  
The project will incorporate measures such as erosion control, silt fence and reseeded to minimize impacts to the site. Runoff from the construction site will be contained on site and will not enter surface waters.
  
6. Are there any underground storage tanks present or to be installed? Include details of such tanks.  
Failing septic tanks located near Lake Coeur d'Alene will be replaced or repaired as needed. There are no other underground storage tanks.
  
7. Will there be any liquid or solid waste generated? If so how will it be disposed of?  
The project will not generate new liquid or solid waste but will improve the collection, treatment and disposal of the existing wastewater from the Cave Bay Community. Wastewater will continue to be pumped into the lagoon system; however the lagoons will be lined and capacity increased. The treated wastewater will be aerated and pumped to adjacent forest land where it will be land applied through a sprinkler system.
  
8. What is the depth of excavation?  
The project may result in shallow excavation for the lagoon expansion/installation of liners, installation of pipelines for sprinklers, pumps and lift stations. In addition, there will be excavation to replace or repair the failing septic systems at a sufficient depth to replace or repair the tanks.
  
9. Are there any wells in the area that may provide direct routes for contaminants to access the aquifer and how close are they to the project?  
The nearest well is located over 500 feet (upslope) from the lagoon system and forest land that would be receiving the effluent. There are no other possible direct routes for contaminants to access the aquifer near the project activities.

10. Are there any hazardous waste sites in the project area....especially if the waste site has an underground plume with monitoring wells that may be disturbed? Include details.

No

11. Are there any deep pilings that may provide access to the aquifer?

No

12. Are Best Management Practices planned to address any possible risks or concerns?

BMPs include; erosion control such as reseeded, buffers around waterways, and control of fugitive dust.

13. Is there any other information that could be helpful in determining if this project may have an affect on the aquifer?

The existing lagoons allow seepage of effluent into the ground and have the potential to overflow. This would pose a risk to surface and ground water quality and could result in degradation of the aquifer. The proposed project would fix the identified deficiencies by adding liners, improving treatment, adding areas for land application and replace failing septic tanks.

14. Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan?

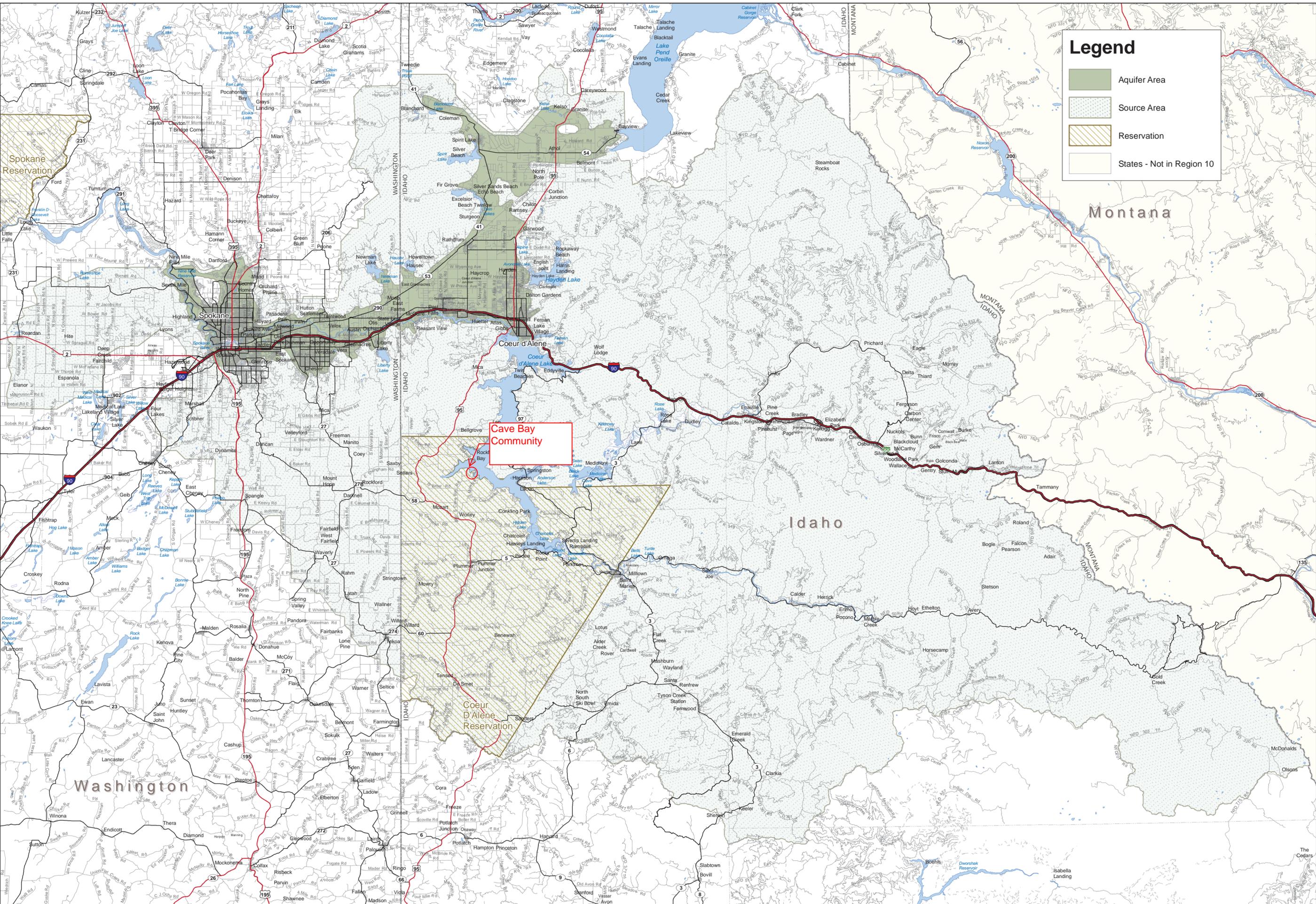
Yes. The project will improve the collection, treatment and disposal of the wastewater by improving the lagoon capacity, adding lagoon linings, improving pump capacity and providing forest land for application of the treated effluent. It will also install flow meters at the lift stations to monitor potable and wastewater and help ensure optimization of the system.

The EPA Sole Source Aquifer Program may request additional information if impacts to the aquifer are questionable after this information is submitted for review.

Submit hard copy to:  
Sue Ennes,  
Sole Source Aquifer Manager  
Region 10 EPA, 1200 Sixth Ave, Suite 900, OWW-136  
Seattle, WA 98101

The Sole Source Aquifer Checklist is also available at the following link:  
(See attached file: R10 Sole Source Aquifer Checklist.doc)

<http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/SSA>



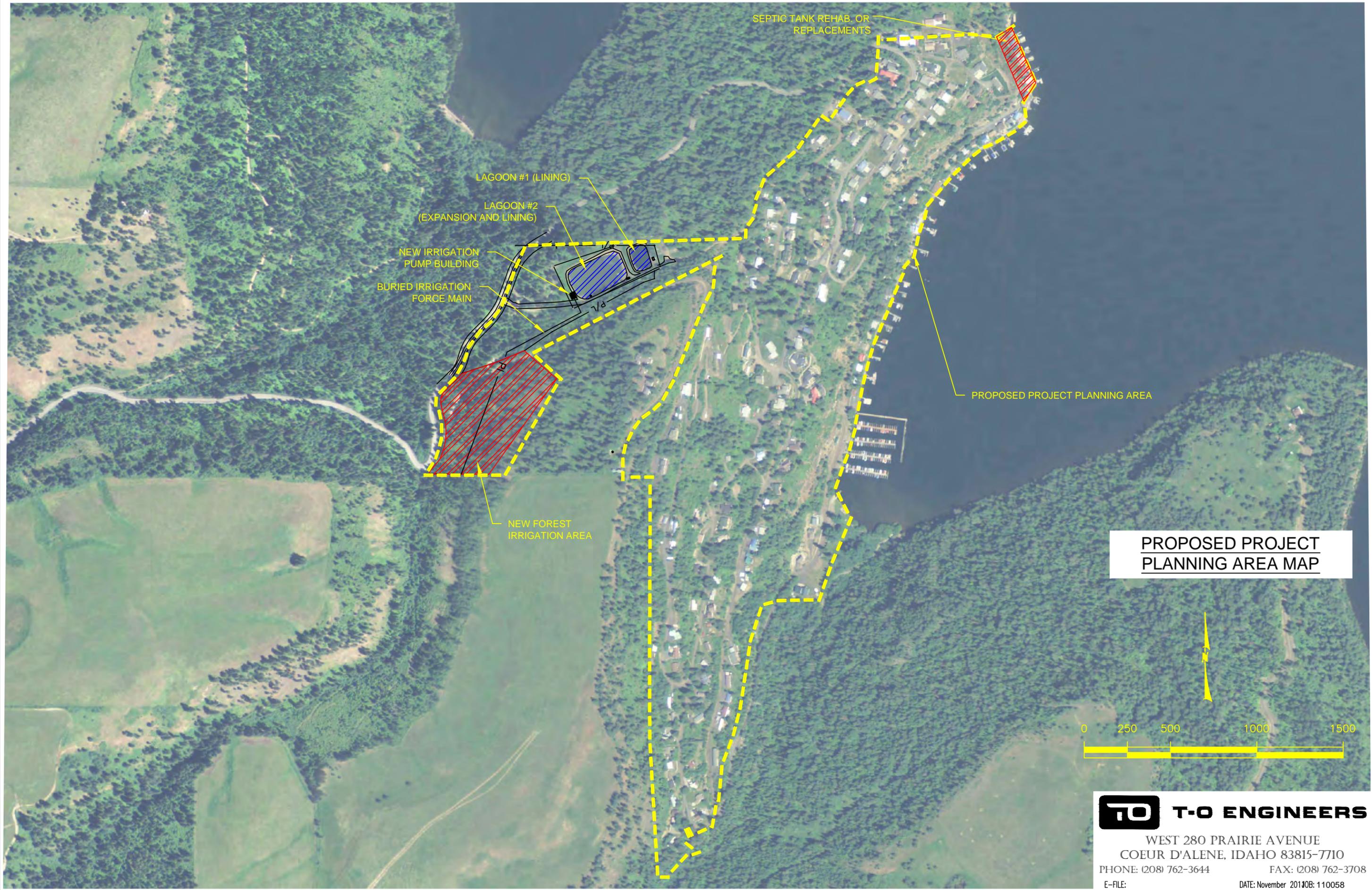
### Legend

- Aquifer Area
- Source Area
- Reservation
- States - Not in Region 10

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

# Spokane-Rathdrum Sole Source Aquifer





**PROPOSED PROJECT  
PLANNING AREA MAP**



**T-O ENGINEERS**  
 WEST 280 PRAIRIE AVENUE  
 COEUR D'ALENE, IDAHO 83815-7710  
 PHONE: (208) 762-3644 FAX: (208) 762-3708  
 E-FILE: DATE: November 2013JOB: 110058

# Anderson Environmental Consulting, LLC



February 14, 2013

Katy Casile-Baker  
Department of Environmental Quality  
Coeur d'Alene Regional Office  
2110 Ironwood Parkway  
Coeur d'Alene, ID 83814

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Ms Baker:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map

# Anderson Environmental Consulting, LLC



February 14, 2013

Dale Peck  
Environmental Health Director  
Panhandle District Health Department  
2195 Ironwood Court  
Coeur d'Alene, ID 83814

**RE: Cave Bay Community Services Wastewater Facility Plan** Request for  
Comments for Preparation of an Environmental Information Document (EID)

Dear Mr. Peck:

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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Michelle Anderson  
Anderson Environmental Consulting, LLC  
509.467-2011

Encl: Site Map



Search

**Centurylink Webmail**

anderenv@q.com

± Font Size ±

## Request for comments on Cave Bay Community Services- Wastewater Facility Improvement

**From :** anderenv@q.com

Thu, Mar 28, 2013 01:04 PM

**Subject :** Request for comments on Cave Bay Community Services-Wastewater Facility Improvement

📎 1 attachment

**To :** lhiggins@cdatribe-nsn.gov, sffields@cdatribe-nsn.gov

Dear Mr. Higgins and Mr. Fields,

The Cave Bay Community Services (CBCS) and the Idaho Department of Environmental Quality (DEQ) are preparing a facility planning document to identify and make necessary improvements to the sewer collection and treatment facilities for the Cave Bay Community. The facility plan for this project is being funded in part by a DEQ planning grant which requires compliance with the Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04. The grant requires compliance with the Idaho DEQ State Environmental Review Process which is the state's National Environmental Policy Act like process.

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--

**Michelle Anderson**

Anderson Environmental Consulting LLC

Office: 509.467.2011

Cell: 509.220.0045

[anderenv@q.com](mailto:anderenv@q.com)**Project&Service Area Map.jpg**

2 MB

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APPENDIX C  
ENDANGERED SPECIES ACT

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# United States Department of the Interior

## Fish and Wildlife Service

### Idaho Fish And Wildlife Office

1387 S. Vinnell Way, Room 368

Boise, Idaho 83709

Telephone (208) 378-5243

<http://www.fws.gov/idaho>



### **U.S. Fish and Wildlife Service - Idaho Fish and Wildlife Office Endangered, Threatened, Proposed, and Candidate Species With Associated Proposed and Critical Habitats in Idaho**

#### **This Letter and Species List**

The U.S. Fish and Wildlife Service (Service) is providing this letter in response to your inquiry regarding federally listed, proposed, and candidate species, and proposed and designated critical habitats that may occur in Idaho. Use the attached Species List to ensure compliance with Sections 7 and 9 of the Endangered Species Act (Act). As a federal agent or designated non-federal representative, use this list in conjunction with best available information to assess whether a proposed action may affect these species or their habitats. If you determine a proposed action may affect a species or their habitats, contact the Service to initiate informal or formal consultation. This list is only valid for a period of 90 days. An updated list can be obtained by downloading the PDF file: [www.fws.gov/idaho/species/IdahoSpeciesList.pdf](http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf).

#### **Candidate Species Conservation**

Though Candidate species have no protection under the Act, they are included in the Species List for early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises project proponents to evaluate potential effects to Candidate species that may occur in the project area. Should the species be listed, this may expedite Section 7 consultation under the Act.

#### **Effects Beyond Idaho**

If the anticipated effects of an action extend beyond the range of Idaho, please contact the appropriate Service Contact for lists of species and habitats occurring in those adjacent states.

#### **U.S. Fish and Wildlife Service Contacts**

Idaho - Idaho Fish and Wildlife Office, Bob Kibler, [bob\\_kibler@fws.gov](mailto:bob_kibler@fws.gov), (208) 378-5255

Montana - Montana Ecological Services Field Office, (406) 449-5225

Nevada - Nevada Fish and Wildlife Office, (775) 861-6300

Oregon - LaGrande Field Office, (541) 962-8584

Utah - Utah Ecological Service Field Office, (801) 975-3330

Washington - Eastern Washington Field Office, (509) 891-6839

Wyoming - Wyoming Ecological Services Field Office, (307) 772-2374

#### **NOAA Fisheries Species**

Listed or proposed species that are under National Marine Fisheries Service's (NOAA Fisheries) jurisdiction do NOT appear on the Service's Species Lists. In Idaho, please contact NOAA Fisheries at (208) 378-5696 or visit NOAA Fisheries' webpage at <http://www.nwr.noaa.gov/Species-Lists.cfm> for consultation information.

#### **Additional Information**

To obtain additional information about the Act, please visit one of the Service's internet sites at <http://www.fws.gov/endangered/laws-policies/index.html>; <http://www.fws.gov/idaho/agencies.htm>; or speak with a Service Contact.

# U.S. Fish and Wildlife Service • Idaho Fish and Wildlife Office

## CANDIDATE, PROPOSED AND LISTED SPECIES & PROPOSED AND DESIGNATED CRITICAL HABITAT IN IDAHO

Common Name	Herps	Birds	Mammals						Fish	Mollusks				Plants										
	Columbia Spotted Frog (Great Basin Population)	Greater Sage-Grouse	Yellow-Billed Cuckoo	Canada Lynx	Grizzly Bear	Northern Idaho Ground Squirrel	Selkirk Mountains Woodland Caribou	Southern Idaho Ground Squirrel	North American Wolverine	Bull Trout	Kootenai River White Sturgeon	Banbury Springs Lanx	Bliss Rapids Snail	Bruneau Hot Springsnail	Snake River Physa	Goose Creek Milkvetch	MacFarlane's Four-O'Clock	Packard's Milkvetch	Slickspot Peppergrass	Spalding's Catchfly	Ute Ladies'-Tresses	Water Howellia	Whitebark Pine	
Scientific Name	<i>Rana lateiventris</i>	<i>Centrocercus urophasianus</i>	<i>Coccyzus americanus</i>	<i>Lynx canadensis</i>	<i>Ursus arctos horribilis</i>	<i>Spermophilus brunneus brunneus</i>	<i>Rangifer tarandus caribou</i>	<i>Spermophilus brunneus endemicus</i>	<i>Gulo gulo luscus</i>	<i>Salvelinus confluentus</i>	<i>Acipenser transmontanus</i>	<i>Lanx</i> sp.	<i>Taylorconcha serpenticola</i>	<i>Pyrgulopsis bruneauensis</i>	<i>Haitia (Physa) natricina</i>	<i>Astragalus amerrinus</i>	<i>Mirabilis macfarlanei</i>	<i>Astragalus cusickii</i> var. <i>parkardiae</i>	<i>Lepidium papilliferum</i>	<i>Silene spaldingii</i>	<i>Spiranthes diluvialis</i>	<i>Howellia aquatilis</i>	<i>Pinus albicaulis</i>	
<b>Ada</b>		C	C							T														
<b>Adams</b>		C		T		T		C	P	T-DCH														C
<b>Bannock</b>		C	C						P															
<b>Bear Lake</b>		C		T					P															C
<b>Benewah</b>				T					P	T-DCH										T		T		
<b>Bingham</b>		C	C						P															
<b>Blaine</b>		C	C	T					P	T-DCH														C
<b>Boise</b>			C	T					P	T-DCH														C
<b>Bonner</b>				T	T		E		P	T-DCH														C
<b>Bonneville</b>		C	C	T	T				P													T		C
<b>Boundary</b>				T-DCH	T		E-DCH		P	T-DCH	E-DCH													C
<b>Butte</b>		C		T					P	T-DCH														C
<b>Camas</b>		C		T					P	T-DCH														C
<b>Canyon</b>			C												E								P-PCH	
<b>Caribou</b>		C		T					P															C
<b>Cassia</b>		C	C												E	C								
<b>Clark</b>		C	C	T	T				P															C
<b>Clearwater</b>				T					P	T-DCH														C
<b>Custer</b>		C	C	T					P	T-DCH														C
<b>Elmore</b>		C	C	T					P	T-DCH		T		E										C
<b>Franklin</b>		C		T					P															
<b>Fremont</b>		C	C	T	T				P													T		C
<b>Gem</b>		C						C	P	T-DCH														C

Table Key: C = Candidate Species P= Proposed Species T=Threatened Species E=Endangered Species PCH= Proposed Critical Habitat DCH=Designated Critical Habitat

# U.S. Fish and Wildlife Service • Idaho Fish and Wildlife Office

## CANDIDATE, PROPOSED AND LISTED SPECIES & PROPOSED AND DESIGNATED CRITICAL HABITAT IN IDAHO

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<b>Gooding</b>		C									E	T		E											
<b>Idaho</b>			C	T					P	T-DCH						T			T					C	
<b>Jefferson</b>		C	C	T					P											T					
<b>Jerome</b>		C										T		E											
<b>Kootenai</b>			C	T					P	T-DCH									T			T			
<b>Latah</b>			C	T					P										T			T			
<b>Lemhi</b>		C	C	T					P	T-DCH															
<b>Lewis</b>			C							T-DCH									T						
<b>Lincoln</b>		C																							
<b>Madison</b>		C	C	T					P												T				
<b>Minidoka</b>		C	C											E											
<b>Nez Perce</b>				T						T-DCH									T						
<b>Oneida</b>		C	C																						
<b>Owyhee</b>	C	C	C							T-DCH			E	E											
<b>Payette</b>		C						C		T				E			C								
<b>Power</b>		C																							
<b>Shoshone</b>				T					P	T-DCH												T		T	C
<b>Teton</b>				T	T				P																C
<b>Twin Falls</b>	C	C	C									T		E											
<b>Valley</b>				T		T			P	T-DCH															C
<b>Washington</b>		C				T		C	P	T-DCH				E											C

Table Key: C = Candidate Species P= Proposed Species T=Threatened Species E=Endangered Species PCH= Proposed Critical Habitat DCH=Designated Critical Habitat

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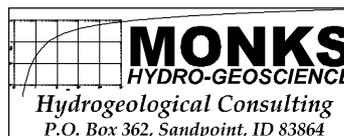
APPENDIX D  
HYDROGEOLOGIC CHARACTERIZATION

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March 6, 2013

March 6, 2013

T-O Engineers  
280 W. Prairie Ave.  
Hayden, Idaho 83815



Attention: Mr. Scott McNee, P.E.

**RE: HYDROGEOLOGIC CHARACTERIZATION OF CAVE BAY COMMUNITY SERVICES, INC. WASTEWATER SITE, KOOTENAI COUNTY, IDAHO**

Dear Mr. McNee:

Monks Hydro-Geoscience (MHGS) is pleased to present T-O Engineers this hydrogeologic characterization of the area around the Cave Bay Community Services, Inc. (CBCS) wastewater lagoon in Kootenai County, Idaho. This report is based on MHGS's "*Proposal For Hydrogeologic Characterization of Cave Bay Community Services, Inc. Wastewater Site, Kootenai County, Idaho dated June 28, 2011*". MHGS concludes that forest land application of wastewater at agronomic rates is more suitable for the CBCS site than rapid infiltration or shallow subsurface infiltration.

#### **Project Background**

The CBCS wastewater system is located on a peninsula that extends into Lake Coeur d'Alene between Cave Bay and 16 to 1 Bay. The CBCS wastewater system consists of two lagoons, a 0.5 MG aerated lagoon and a storage lagoon with a 2.6 MG capacity. These lagoons currently have no permitted method of discharge, and have relied on evaporation and seepage as their method of disposal. CBCS contracted with T-O Engineers (T-O) to prepare a Wastewater Facilities Plan for their wastewater system. T-O contracted with Monks Hydro-Geoscience to conduct a hydrogeologic characterization of the area around the CBCS facilities and to evaluate potential nutrient impacts to ground and surface water from rapid infiltration and subsurface shallow drip wastewater treatment systems.

#### **Regional Hydrogeology**

The CBCS facilities are located near the eastern edge of the Columbia River Basalt Plateau. The Columbia River Basalt Plateau forms an extensive plateau between the Cascade Mountains on the west and the western flank of the Rocky Mountains on the east. Lake Coeur d'Alene (summer pool elevation 2125' asl) and the CBCS facilities are within the St. Maries embayment, the northernmost of three embayments that are present in western Idaho (Camp et al., 1984). The Columbia River Basalts were extruded from vents in what is now northeastern Oregon. The basalt flowed across the landscape and dammed rivers flowing westward out of the mountains of what is now north-central Idaho. Fine-grained lacustrine sediments were deposited in the lakes that formed behind the basalt dams, and coarser grained alluvial sediments were deposited in and on the lacustrine sediments as the basalt dammed lakes drained. Later basalt flows covered the sedimentary layers, resulting in interlayered basalt flows and sedimentary deposits.

Basalt, by the nature of its formational processes, is extremely heterogeneous with respect to its hydraulic properties. Within a single flow, vertical and horizontal hydraulic conductivity can vary over a wide range. A typical basalt flow is pictured in Figure 1 on the following page. A typical basalt flow consists of a flow base, a colonnade section (columnar basalt), an entablature section of fractured basalt, and a flow top. The colonnade section with its signature columnar basalt is in the center of a flow and cooled slowly. The entablature section cools more rapidly and is more fractured. The flow top may be highly vesicular and fractured by movement of

the cooling basalt flow. Highly fractured flow tops, the sediments deposited on top of the flow, and the base of the overlying flow constitute an interflow zone.

In general, interflow zones (which typically make up about 5 to 10 percent of total flow thickness) have the highest hydraulic conductivities and form a series of superposed aquifers (Lindholm and Vaccaro, 1988). Ground water flow through the entablature and colonnade portions of a basalt flow is controlled by fractures. Fracture assemblages in entablature and colonnade tend to be better connected in the vertical direction, allowing ground water to move vertically between interflow zones. Water moves three dimensionally through all parts of a basalt flow. Lateral ground water movement occurs primarily in interflow zones, and vertical movement predominates in the central parts of flows (Lindholm and Vaccaro, 1988).

The volcanic rocks and interlayered sediments of the Columbia River Basalt Plateau constitute a complex, heterogeneous and anisotropic ground water system. Permeable parts of basalt flows, and coarser-grained sedimentary deposits, constitute numerous small aquifers. Some of these aquifers are confined, others unconfined.

The hydraulic conductivity of basalts ranges over thirteen (13) orders of magnitude (Wood and Fernandez, 1988). The highest hydraulic conductivities in sequences of basalt flows usually occur in interflow zones. The hydraulic conductivity of Columbia Basalt interflow zones ranges over approximately 11 orders of magnitude, from approximately  $5 \times 10^{-9}$  m/day to  $5 \times 10^3$  m/day, with a median value of approximately  $1 \times 10^{-4}$  m/day.

Aquifers in the Columbia River Basalt Plateau are recharged primarily by precipitation. The part of precipitation that does not run off, evaporate, or transpire is available to recharge the ground water system. Recharge is generally greatest at higher altitudes where precipitation is greatest (Lindholm and Vaccaro, 1988). Lateral water movement in Columbia River Basalt Plateau aquifers is from areas of higher altitude toward the center of the structural basin where altitude is lowest. In the uppermost basalt flows ground water movement is further influenced by surface water features such as small streams and lakes, which typically constitute local drains.

**Local Hydrogeology**

The geology of the Worley Quadrangle is described by Breckinridge and Othberg (2005) and is shown in Figure 2 on the following page:

*“The Worley Quadrangle is located on the west side of Coeur d’Alene Lake at the edge of the Columbia River Basalt Plateau and the Coeur d’Alene Mountains. Lake Coeur d’Alene is dammed by glacial flood gravels at the northern end near the City of Coeur d’Alene and provides substantial subsurface recharge to the Rathdrum Aquifer. Catastrophic outbursts of ice-age floods from Glacial Lake*

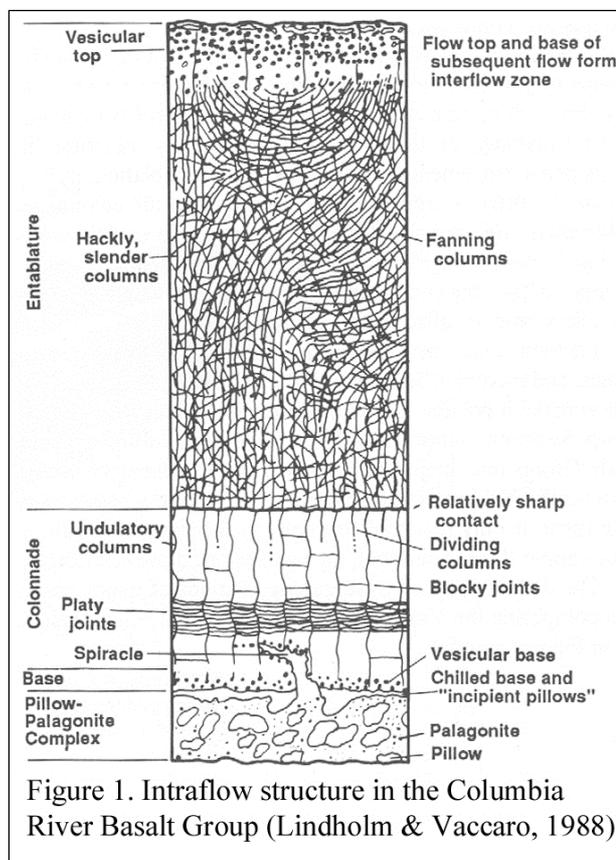


Figure 1. Intraflow structure in the Columbia River Basalt Group (Lindholm & Vaccaro, 1988)

*Missoula inundated the present Coeur d'Alene Lake Basin to at least 2,600 feet in elevation, creating floodways between some of the tributary bays. The Setters Floodway crosses the Worley Quadrangle and was scoured by water flowing from Windy Bay across the watershed divide and into Rock Creek. The lake is fed by the St. Joe and Coeur d'Alene River systems and the outlet is the source of the Spokane River. The plateaus west of the lake are underlain by Miocene lava beds of the Columbia River Basalt Group. Gneissic rocks of the Precambrian Belt Supergroup and associated intrusive rocks of Cretaceous age form buttes that rise above the plateau lavas and control the flow of basalts into embayments. The eastern margin of the Columbia Plateau is covered by Miocene sediments and soils that is in turn blanketed by Palouse Loess that are progressively thicker toward the west."*

The CBCS wastewater facility and proposed wastewater re-use areas are located on flood-scoured basalt that is covered by a relatively thin layer of colluvium and flood deposited sediments. Breckinridge and Othberg (2005) describe the soils overlying the flood scoured basalt as stony clay loam of the Lacey-Bobbitt Association, 2 to 15 feet thick, with locally scattered flood erratics. Soil excavations described by ALLWEST Testing and Engineering LLC (2011) describe a thin (<0.7 foot thick) layer of topsoil overlying 1.5 to 6.5 feet of colluvium consisting of sandy silt and gravel. The top soil and colluvium overlie angular basalt cobbles that may represent fractured basalt bedrock. Ground water was not encountered in any of the test pits, and there were no indications that seasonal high ground water occurs in the vicinity of the pits. The soil samples were described as silty sand, sandy silt, and lean clay with sand.

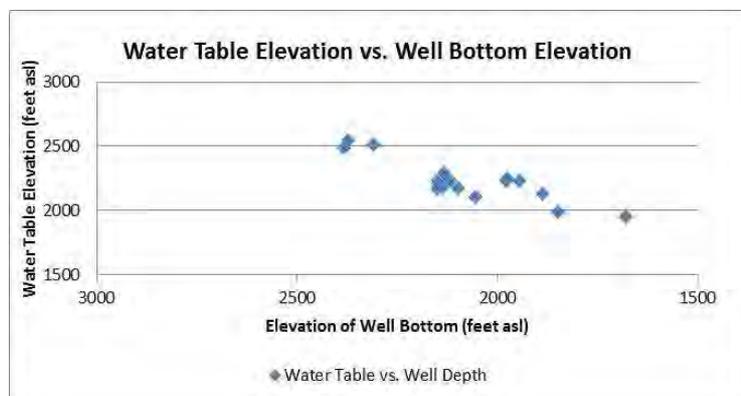
Well Driller's Reports for wells drilled in the Cave Bay area describe unconsolidated sediments of varying thickness overlying basalt. Based on a review of Well Driller's Reports for wells drilled in the Cave Bay area, the stratigraphy in the Cave Bay area consists of an upper basalt, upper interflow zone, middle basalt, middle interflow zone, lower basalt, and deep interflow zone.

At the Genagco, Inc. well, about 3,300 feet west of the Cave Bay facilities, the uppermost of these interflow zones occurs at 270 to 345 feet below ground surface and the middle interflow zone at 437 – 450 feet. The top of the upper interflow zone occurs at an elevation of approximately 2315 feet, and the top of the middle interflow zone is at an elevation of approximately 2150'. At the Glen Miles well, approximately 1.7 miles south-southwest of the Cave Bay facilities, the top of the upper interflow zone occurs at an elevation of approximately 2350 feet, an elevation similar to that of the Cave Bay facilities.

The Virgil Carrol and Mowry State Park wells are collared at lower elevations and are drilled through the middle interflow zone, the lower basalt, and into the deeper interflow zone. In the Virgil Carrol and Mowry State Park wells, the top of the lower interflow zone occurs at an elevation of about 1980'.

Depth to water and water table elevation vary depending on well location and well depth. Depth to water ranges from 12 to 350 feet below ground surface.

Plotting water table elevation versus well bottom elevation (see figure to right) shows that head decreases with depth. This suggests that there is a downward component to ground water flow in the Cave Bay area, and that the Cave Bay area is in a regional ground water recharge zone. This is consistent with the conceptual model for recharge and discharge described by Lindholm and Vaccaro (1988).



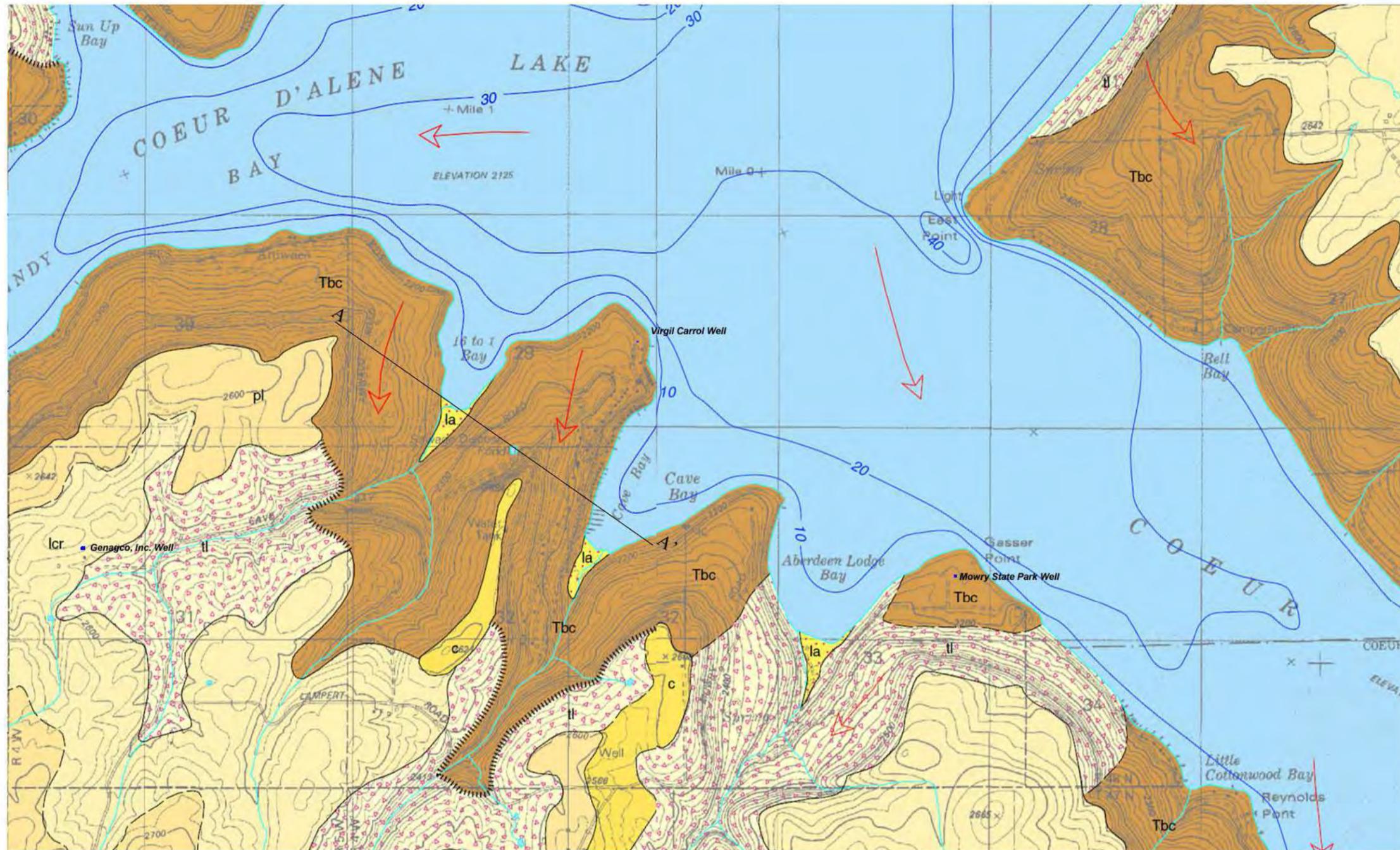


Figure 2. Geologic map of the Cave Bay area, Coeur d'Alene Lake, Kootenai County, Idaho.

- DESCRIPTION OF MAP UNITS  
ALLUVIAL AND LACUSTRINE DEPOSITS
- a** Alluvium (Holocene)—Primarily stream and slope wash deposits. Silt interbedded with silty sand, granules, and pebbles. Silt is mostly reworked from Palouse Formation (pl). Locally, pebble and cobble gravel of reworked Tertiary gravel (Ts) or basalt (Tbc) is exposed in channels.
  - la** Lacustrine sediments and alluvium (Holocene)—Silt and sand deposits in bays of Coeur d'Alene Lake. The deposits are mainly located within the lake's high-water zones and are interbedded with and grade upstream into alluvium of tributary streams. Includes levee deposits of the Coeur d'Alene River delta and levees of the St. Joe river system in Chatcolet Lake. Soils are deep, poorly drained, and include much of the Pywell series and silt loams of the Cald, Cougar Bay, Pywell, and Ramsdell series (Weisel, 1981).
  - Ts** Lag sediments and gravels on relict alluvial surfaces (Tertiary)—Sandy cobble and pebble gravels consist of mature rounded quartzites and mixed lithologies derived from the Precambrian Belt Supergroup rocks and Mesozoic-Tertiary intrusives. Matrix of weathered saprolite. Exposed on flat upland surfaces. The unit forms a flat to gently sloping upland surface 2,400-2,600 feet in elevation that is underlain by basalt of the Priest Rapids Member (Wanapum Basalt). The unit grades laterally into thick colluvium or residuum of pre-Tertiary rocks. The alluvial deposits are probably graded to high base levels formed when the Miocene plateau basalts blocked and diverted stream drainages (Othberg and Breckenridge, 1990).
- EOLIAN DEPOSITS
- pl** Palouse Formation loess (Pleistocene and Holocene)—Silty and clayey loess remnants that are distal outliers of the Palouse hills of the eastern Columbia River Plateau. The Palouse Formation overlies a Miocene-Pliocene surface primarily developed on the basalt of the Priest Rapids Member (Wanapum Basalt) and Tertiary alluvial deposits (Tg). Soils include the Santa and the Taney series (Weisel, 1981).
  - lcr** Loess, colluvium, and residuum (Holocene and late Pleistocene)—Silty loess and clay remnants formed on moderately dissected Miocene basalt surface. Soils developed in the thin loess include the Larkin, Setters, Southwick, and Taney series (Weisel, 1981). Subsurface is rich in clay and grades with depth into basalt. Along drainages, basalt may be within a few feet of the surface. Typically borders and grades laterally into areas of thick Palouse loess (pl), but may grade into areas of Tertiary sediment aprons adjacent to hills of pre-Tertiary bedrock (Ts). Grades downlope into steep areas of talus and landslide deposits of the Columbia River Basalt Group (tl).
- COLLUVIUM AND LANDSLIDE DEPOSITS
- tl** Talus and landslide deposits of Columbia River Basalt Group (Holocene and late Pleistocene)—Poorly sorted and poorly stratified angular basalt cobbles and boulders mixed with silts and clays. Mass-movement slope deposits mainly associated with steep basalt rimrock and the interbedded sediments. Locally may include basalt columns either from mass movement processes or deposited by Lake Missoula floods. Gradations from talus to landslide deposits are present, difficult to distinguish, and require local site-specific mapping. Mass movements have been reported in the Harrison area. Thickness as much as 40 feet.
  - c** Colluvium and common small rock outcrops (Quaternary)—Colluvium is composed of angular pebble and cobble gravel in a sandy silt matrix that overlies relatively unweathered Precambrian gneiss and arkosic quartzite on the west side of Coeur d'Alene Lake, and argillite, siltite, and quartzite on the east side of the lake. Where slopes are steep the unit may include landslide and debris flow deposits. Thickness of colluvium less than 6 feet. Includes debris flows and solifluction deposits occur on steep, north-facing slopes of higher ridges that are probably periglacial in origin and Pleistocene in age.
  - cb** Colluvium and bedrock that form linear, erosion-resistant ridges (Quaternary)—The thin and discontinuous colluvium is composed of angular pebble and cobble gravel in a sandy silt matrix. Bedrock outcrops are typically Precambrian quartzite. Ridges parallel the strike of the regional foliation. Thickness of colluvium is less than 6 feet.
- FLOOD-SCOURED BEDROCK
- Tbc** Basalt scoured by Missoula Floods (Miocene)—Columbia River Basalt Group. Forms sporadic rimrock along the margins of Rathdrum Prairie and around Coeur d'Alene Lake. Mostly eroded by Pleistocene glaciation and repeated Missoula Floods. The Priest Rapids Member (Wanapum Basalt) and Grande Ronde Basalt are recognized in the area. Shallow surface soils are stony clay loam of the Lacey-Bobbitt association (Weisel, 1981). Locally scattered flood erratics are present in the channel ways. Surface deposits are 2 to 15 feet thick.

**Cave Bay Wastewater Facility Site Hydrogeology**

The CBCS wastewater facilities and the adjoining areas investigated for this report are located on flood scoured basalts that are covered by a layer of colluvium. The bench the facilities lagoons are located on was likely formed by preferential erosion of an interflow zone during the Spokane Floods. The flood-scoured interflow zone and basalts have been covered by colluvium, talus, and possibly small landslide deposits. Based on Well Driller’s Report for wells in the Cave Bay area, the stratigraphy consists of: the basalt flow that forms the steep hillside and ridge above the facilities; an eroded interflow zone that is covered with colluvium; another basalt flow; a middle interflow zone; a lower basalt; and a lower interflow zone (See Geologic Cross Section A – A’ in Figure 3 to the right).

Precipitation and/or applied wastewater that is not evapotranspired is expected to move vertically through the unsaturated zone in the colluvium to the upper interflow zone, where a perched aquifer with some horizontal ground water flow may exist. However, based on the downward hydraulic gradient that exists in this area, most of the flow through the upper interflow zone is likely downward through the middle basalt, the middle interflow zone, and the lower basalt to the lower interflow zone. If there is horizontal ground water flow in the upper or middle interflow zones, that flow would be expected to discharge to surface water. Potential surface water receptors are the stream flowing into 16:1 Bay and/or Lake Coeur d’Alene at 16:1 or Cave Bay.

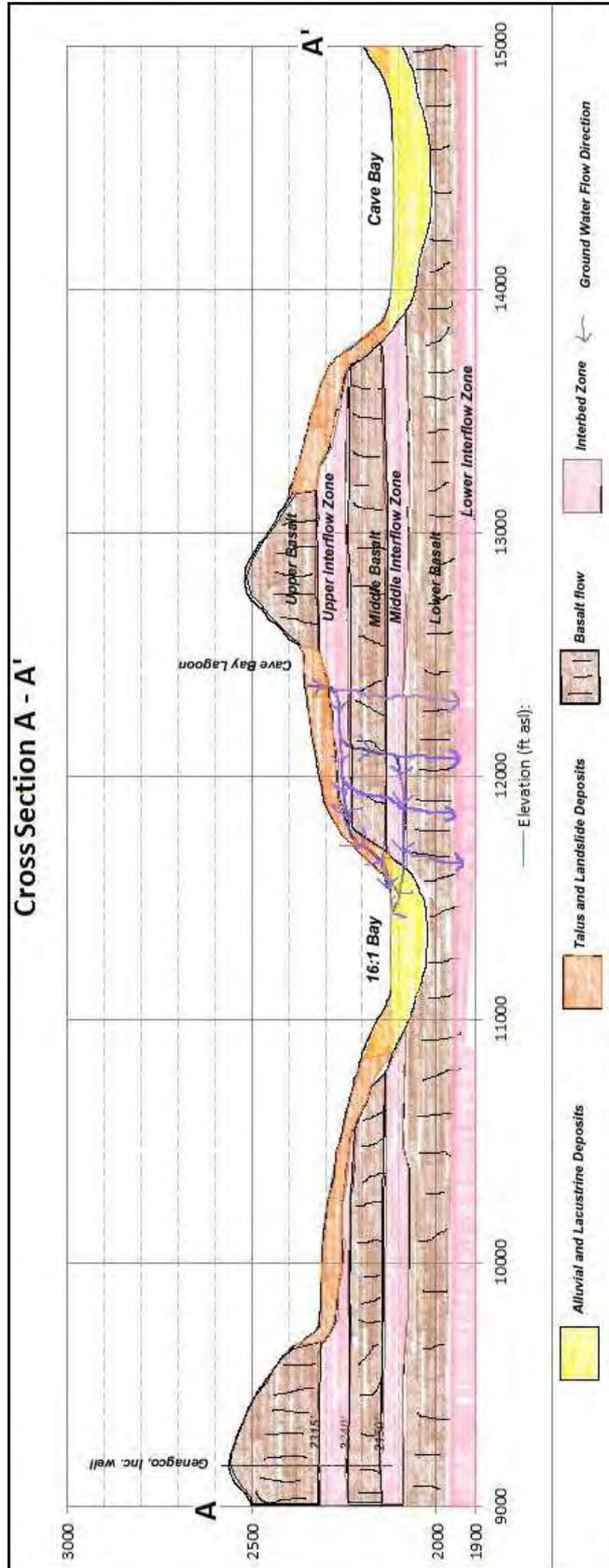


Figure 3. Geologic Cross Section A - A’

### Nutrient-Pathogen Analysis

The DEQ Level 1 Nutrient-Pathogen Evaluation Nitrogen Mass-Balance Spreadsheet (DEQ, 2002) was used to model potential ground water impacts from subsurface wastewater disposal methods such as Rapid Infiltration and subsurface drip irrigation. The spreadsheet uses a mass-balance approach to calculate the average down gradient nitrate concentration in ground water after the wastewater effluent, recharge from natural precipitation, and ground water have mixed completely.

For the purposes of this Nutrient-Pathogen Analysis, wastewater is assumed to follow a flow path that is primarily vertical from the land surface, through the unsaturated colluvium, upper interflow zone, down through the middle basalt unit, to the middle interflow zone. Ground water flow in the middle interflow zone is assumed to be to the northeast, towards Lake Coeur d'Alene. The middle interflow zone is assumed to discharge to 16 to 1 Bay on Lake Coeur d'Alene north of the CBCS facility.

The parameters used to model potential impacts in the mass-balance spreadsheet are shown in Table 1 below. Four different hydrogeologic scenarios were modeled using four values for hydraulic conductivity and two values for hydraulic gradient. These three scenarios are referred to as "Low K", "Medium K", "High K", and "Very High K", where K is the symbol for hydraulic conductivity. The "Low" through "Very High" labels are relative to each other and are not relative to the full scale of the range of hydraulic conductivities for interflow zones from Wood and Fernandez (1988). The hydraulic conductivity values used in the N-P Evaluation are at the upper end of the full scale of the range of hydraulic conductivities for interflow zones from Wood and Fernandez (1988), representing a range of from  $1 \times 10^{-1}$  m/day to  $1 \times 10^2$  m/day.

The Nutrient-Pathogen Evaluation represents Projected Build-out conditions as specified by T-O Engineers (Scott McNee, personal communication).

**Table 1. Parameters used in Nutrient-Pathogen Evaluation Spreadsheet**

<b>Parameter (units):</b>	<b>Value used:</b>	<b>Justification:</b>
Hydraulic Conductivity (ft/day):	0.328 to 328	Wood and Fernandez (1988)
Hydraulic Gradient (ft/ft):	0.01 & 0.005	estimated
Mixing Zone Thickness (ft):	15	Default value
Aquifer Width (ft):	1250	½ of estimated cross section width
Parcel Area (acres):	15	estimated
Percent impervious (%):	1	estimated
# of ERUs:	220	T-O Engineers
Design Flow (gpd/ERU):	64	T-O Engineers
Natural Recharge Rate (in/yr):	3.84	Calculated using Plummer Precip data
Upgradient Groundwater N (mg/L):	1	estimated
Wastewater Effluent N (mg/L):	20	estimated value for treated effluent
Denitrification Rate (%):	0.4	Estimated (table 9.2 DEQ Guidance)
Nitrate in natural recharge (mg/L):	0.3	Default value

The results of the Nutrient-Pathogen Evaluation are summarized in Tables 2 and 3 below. In both tables, the results are presented as a percent of the annual budget for the parameter being modeled, either water volume or mass of Nitrogen. The yearly water budget is shown in Table 2. In the Low K scenario, the percent of the yearly water budget for ground water is very low, only 2.5%. Increasing hydraulic conductivity, as in the Medium, High, and Very High K scenarios, increases the volume of ground water flowing beneath the site. The volumes of effluent and natural recharge are fixed for all three scenarios. As the volume (and %) of ground water flow increases, the percent of the annual water budget represented by effluent and natural recharge both decrease. In the Very High K scenario the average down-gradient nitrate level is 1.6 mg/l, an increase of 0.8 mg/L above background. All of the modeled scenarios suggest that rapid infiltration or subsurface shallow drip wastewater treatment systems could result in statistically significant lowering of ground water quality.

<b>Table 2. Yearly Water Budget for Modeled Scenarios.</b>				
<b>Scenario:</b>	<b>Yearly Water Budget</b>			
	<b>Ground Water %</b>	<b>Effluent %</b>	<b>Natural Recharge %</b>	<b>Average Down-gradient Nitrate Conc. (mg/L)</b>
Low K ( $10^{-1}$ m/day)	2.5	75.0	22.6	9.1
Medium K ( $10^0$ m/day)	20.1	61.4	18.5	7.6
High K ( $10^1$ m/day)	71.5	21.9	6.6	3.4
Very High K ( $10^2$ m/day)	92.6	5.7	1.7	1.6

The annual nitrogen budget is shown in Table 3. Ground water in the lower interflow zone is assumed to have a concentration of 1 mg/L nitrate nitrogen and natural precipitation is assumed to have a nitrogen concentration of 0.3 mg/L nitrate nitrogen. As hydraulic conductivity and the volume of ground water flowing through the interflow zone increases, the percent of the total nitrogen budget represented by wastewater effluent decreases.

<b>Table 3. Yearly Nitrogen Budget (%) for Modeled Scenarios.</b>			
<b>Scenario:</b>	<b>% of Yearly Nitrogen Budget</b>		
	<b>Ground Water N %</b>	<b>Effluent N %</b>	<b>Natural Recharge N %</b>
Low K	0.3	99.0	0.7
Medium K	2.6	96.6	0.7
High K	21.3	78.1	0.6
Very High K	57.5	42.2	0.3

**Conclusions**

Hydrogeologic conditions at the CBCS wastewater facility impose limits on wastewater treatment options. The presence of low permeability soils in the shallow subsurface and the presence of nearby surface water features may limit the use of a rapid infiltration and subsurface drip irrigation systems. Low permeability, near-surface soils may result in ground water mounding problems. Nearby surface

water features, if hydrologically connected with shallow ground water, may require expensive and time consuming permitting processes.

Some uncertainty exists regarding the hydrogeological conceptual model for the CBCS wastewater facility area. The flow path that wastewater discharged to the subsurface at the CBCS facility would take is dependent on site-specific conditions. Under certain conditions, some wastewater may discharge to nearby surface water features.

Under the right site-specific conditions, some portion of the wastewater from a Rapid Infiltration system could discharge to nearby surface waters. Discharge to surface water would require an NPDES permit. Acquiring an NPDES permit would be an expensive and time consuming process. It is unlikely that an NPDES permit for discharge to Coeur d'Alene Lake would be issued.

Ground water flow beneath the site is most likely dominated by the regional downward hydraulic gradient. If this is the case, most of the wastewater would be expected to move primarily downward, through the sequence of basalt flows and interflow zones to a deeper, higher hydraulic conductivity interflow zone. If ground water movement is primarily downward to a deeper aquifer, then rapid infiltration could be a viable option. An investigation to determine site-specific hydrogeologic conditions would probably require drilling at least one monitoring/test well and would be fairly expensive.

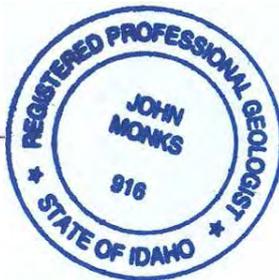
Subsurface disposal of wastewater, whether by rapid infiltration or subsurface shallow drip irrigation, has the potential to impact water quality in surface and ground water at the CBCS facility. Mass-balance modeling indicates that rapid infiltration or subsurface shallow drip wastewater treatment systems could result in statistically significant lowering of ground water quality. Subsurface disposal of wastewater would likely require an expensive subsurface site investigation, the results of which could be unfavorable.

Forest land application of wastewater at agronomic rates may be a more suitable wastewater treatment method than rapid infiltration or shallow subsurface drip irrigation. If you have any questions please call me at 208-263-1991.

Sincerely,



John Monks, P.G.  
*Hydrogeologist*



**References Cited:**

Breckinridge, Roy M. and Kurt L. Othberg, 2005, Surficial Geology Map of the Worley Quadrangle, Kootenai County, Idaho, Idaho Geologic Survey, Moscow, Idaho, Digital Web Map 39.

Camp, V. E., P. R. Hooper, D. A. Swanson, and T. L. Wright, 1982, Columbia River Basalts in Idaho: physical and chemical characteristics, flow distribution, and tectonic implications, *in* Bill Bonnicksen and R. M. Breckinridge, editors, *Cenozoic Geology of Idaho*: Bureau of Mines and Geology Bulletin 26, p. 55–75.

Lindholm, G.F. and Vaccaro, J. J., 1988, Region 2, Columbia Lava Plateau, *in* Back, W., Rosenheim, J.S., and Seaber, P. R., eds., *Hydrogeology*, Boulder Colorado, Geological Society of America, *The Geology of North America*, v. O-2.

Wood, W. W., and Fernandez, L. A., 1988, Volcanic Rocks, *in* Back, W., Rosenheim, J.S., and Seaber, P. R., eds., Hydrogeology, Boulder Colorado, Geological Society of America, The Geology of North America, v. O-2.

**WELL DRILLER'S REPORTS**

RECEIVED

3/3/00

Form 200-7  
11/9  
FEB 07 2000

IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

Office Use Only  
Inspected by \_\_\_\_\_  
Twp \_\_\_\_\_ Rge \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 \_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 \_\_\_\_\_  
Lat: \_\_\_\_\_ Long: \_\_\_\_\_

IDWR/North

1. WELL TAG NO. D 0010939  
DRILLING PERMIT NO. \_\_\_\_\_  
Other IDWR No. 754964

11. WELL TESTS:  
 Pump  Bailor  Air  Flowing Artesian

2. OWNER:  
Name State of ID Department of Parks & Rec  
Address PO BOX 83720  
City Boise State ID Zip 83720

Yield gal./min.	Drawdown	Pumping Level	Time
20			

3. LOCATION OF WELL by legal description:  
Sketch map location must agree with written location.

Twp. 48 North  or South   
Rge. 04 East  or West   
Sec. 32 NW 1/4 SE 1/4 1/4  
Gov't Lot \_\_\_\_\_ County \_\_\_\_\_  
Lat: \_\_\_\_\_ Long: \_\_\_\_\_  
Address of Well Site Mowry State Park  
City \_\_\_\_\_

POSTED

Water Temp. \_\_\_\_\_ Bottom hole temp. \_\_\_\_\_  
Water Quality test or comments: \_\_\_\_\_  
Depth first Water Encounter 165

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
12	0	4	Silt		X
12	4	7	Silty Sand		X
12	7	11	Sand and Gravel		X
12	11	14	Basalt Black AND Brown Fractured		X
12	14	21	Basalt Black Hard		X
8	21	22	Basalt Black Hard		X
8	22	25	Basalt Brown W/Clay		X
8	25	36	Clay Orange W/Basalt		X
8	36	42	Basalt Black And Brown Fractured W/Clay		X
8	42	60	Basalt Black Vesecular		X
8	60	146	Basalt Black W/Brown Medium		X
8	146	153	Basalt Grey Hard		X
8	153	158	Basalt Grey Medium		X
8	158	205	Sand	X	
8	205	265	Clay		X
8	265	270	Clay W/Sand		X
8	270	289	Clay		X
8	289	300	Basalt Black Vesecular		X
	250	300	Back Filled w/Pea Gravel		
	225	250	Back Filled Pea Gravel And Bentonite		
	220	225	Back Filled Bentonite Hole Plug		
	200	220	Back Filled Pea Gravel		

(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	AMOUNT	METHOD
Material	From To Sacks or Pounds	
Cement	5 21 20 bgs	Tremmy

Was drive shoe used?  Y  N Shoe Depth(s) 21  
Was drive shoe seal tested?  Y  N How? Air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8	.5	21	.322	Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	2	195	.280	Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	192	195	.280	Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Length of Headpipe 3 Length of Tailpipe \_\_\_\_\_

9. PERFORATIONS/SCREENS  
Perforations Method \_\_\_\_\_  
Screens Screen Type Stainless Steel

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
195	200	.030		5	S.S.	<input type="checkbox"/>	<input type="checkbox"/>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:  
165 ft. below ground Artesian pressure \_\_\_\_\_ lb.  
Depth flow encountered \_\_\_\_\_ ft. Describe access port or control devices: \_\_\_\_\_

Completed Depth 200' (Measurable)  
Date: Started 11-8-99 Completed 12-8-99

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 Fogle Pump & Supply Firm No. 537

Firm Official \_\_\_\_\_ Date \_\_\_\_\_  
and  
Driller or Operator \_\_\_\_\_ Date 1/12/2000  
(Sign once if Firm Official & Operator)

48N 4W 32 FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7 1-73 **RECEIVED** STATE OF IDAHO DEPARTMENT OF WATER RESOURCES **RECEIVED** USE TYPEWRITER OR  
**WELL DRILLER'S REPORT**  
 APR 5 1984 State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

<b>1. WELL OWNER</b> Name <u>Virgil Carroll</u> Address <u>Box - 141016 Spokane W.B.</u> Owner's Permit No. <u>Q 95-83-N-14</u>		<b>7. WATER LEVEL</b> Department of Water Resources Static water level <u>246</u> feet below land surface. Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: <input type="checkbox"/> Valve <input type="checkbox"/> Cap <input type="checkbox"/> Plug Temperature _____ OF. Quality _____																																																																																																																	
<b>2. NATURE OF WORK</b> <input checked="" type="checkbox"/> New well <input type="checkbox"/> Deepened <input type="checkbox"/> Replacement <input type="checkbox"/> Abandoned (describe method of abandoning) _____		<b>8. WELL TEST DATA</b> <input type="checkbox"/> Pump <input type="checkbox"/> Bailor <input checked="" type="checkbox"/> Air <input type="checkbox"/> Other _____ Discharge G.P.M. _____ Pumping Level _____ Hours Pumped _____																																																																																																																	
<b>3. PROPOSED USE</b> <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Irrigation <input type="checkbox"/> Test <input type="checkbox"/> Municipal <input type="checkbox"/> Industrial <input type="checkbox"/> Stock <input type="checkbox"/> Waste Disposal or Injection <input type="checkbox"/> Other _____ (specify type) _____		<b>9. LITHOLOGIC LOG</b> APPX - 102000 <table border="1"> <thead> <tr> <th rowspan="2">Hole Diam.</th> <th colspan="2">Depth</th> <th rowspan="2">Material</th> <th rowspan="2">Water Yes No</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>6"</td> <td>0</td> <td>2</td> <td>Loamy (p. soil)</td> <td></td> </tr> <tr> <td></td> <td>2</td> <td>8</td> <td>Brn. Clay (Firm)</td> <td></td> </tr> <tr> <td></td> <td>8</td> <td>42</td> <td>Brn. - Hard w/ Fragments</td> <td></td> </tr> <tr> <td></td> <td>42</td> <td>48</td> <td>Brn. Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>48</td> <td>60</td> <td>Clay</td> <td></td> </tr> <tr> <td></td> <td>60</td> <td>140</td> <td>Basalt - med. w/ Fragments</td> <td></td> </tr> <tr> <td></td> <td>140</td> <td>225</td> <td>Hard Basalt -</td> <td></td> </tr> <tr> <td></td> <td>225</td> <td>230</td> <td>Brn. Clay Frag. Basalt</td> <td></td> </tr> <tr> <td></td> <td>230</td> <td>232</td> <td>Gray Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>232</td> <td>235</td> <td>R.O.G. Gray Clay</td> <td></td> </tr> <tr> <td></td> <td>235</td> <td>240</td> <td>Brn. Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>240</td> <td>245</td> <td>Yellow Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>245</td> <td>275</td> <td>lt. Green Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>275</td> <td>322</td> <td>Quartz Sand - Fine</td> <td></td> </tr> <tr> <td></td> <td>322</td> <td>360</td> <td>WATER</td> <td></td> </tr> <tr> <td></td> <td>360</td> <td>405</td> <td>DK. Brn. Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>405</td> <td>405</td> <td>Sandstone - Hard</td> <td></td> </tr> <tr> <td></td> <td>405</td> <td>415</td> <td>WATER</td> <td></td> </tr> <tr> <td></td> <td>415</td> <td>435</td> <td>Hard Basalt</td> <td></td> </tr> <tr> <td></td> <td>435</td> <td>455</td> <td>Brn. Clay - Firm</td> <td></td> </tr> <tr> <td></td> <td>455</td> <td>520</td> <td>Sand Stone</td> <td></td> </tr> </tbody> </table>		Hole Diam.	Depth		Material	Water Yes No	From	To	6"	0	2	Loamy (p. soil)			2	8	Brn. Clay (Firm)			8	42	Brn. - Hard w/ Fragments			42	48	Brn. Clay - Firm			48	60	Clay			60	140	Basalt - med. w/ Fragments			140	225	Hard Basalt -			225	230	Brn. Clay Frag. Basalt			230	232	Gray Clay - Firm			232	235	R.O.G. Gray Clay			235	240	Brn. Clay - Firm			240	245	Yellow Clay - Firm			245	275	lt. Green Clay - Firm			275	322	Quartz Sand - Fine			322	360	WATER			360	405	DK. Brn. Clay - Firm			405	405	Sandstone - Hard			405	415	WATER			415	435	Hard Basalt			435	455	Brn. Clay - Firm			455	520	Sand Stone	
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<b>4. METHOD DRILLED</b> <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Air <input type="checkbox"/> Hydraulic <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Cable <input type="checkbox"/> Dug <input type="checkbox"/> Other _____		<b>10.</b> Work started <u>4-4-13</u> finished <u>10-6-13</u>																																																																																																																	
<b>5. WELL CONSTRUCTION</b> Casing schedule: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____ Thickness <u>1/4</u> inches Diameter <u>6</u> inches + <u>1</u> feet <u>19</u> feet Was casing drive shoe used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was a packer or seal used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Perforated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No How perforated? <input type="checkbox"/> Factory <input type="checkbox"/> Knife <input type="checkbox"/> Torch Size of perforation _____ inches by _____ inches Number _____ From _____ To _____ _____ perforations _____ feet _____ feet _____ perforations _____ feet _____ feet _____ perforations _____ feet _____ feet Well screen installed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Manufacturer's name _____ Type _____ Model No. _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Size of gravel _____ Placed from _____ feet to _____ feet Surface seal depth <u>19</u> Material used in seal: <input type="checkbox"/> Cement grout <input checked="" type="checkbox"/> Pudding clay <input type="checkbox"/> Well cuttings Sealing procedure used: <input type="checkbox"/> Slurry pit <input type="checkbox"/> Temp. surface casing <input checked="" type="checkbox"/> Overbore to seal depth Method of joining casing: <input type="checkbox"/> Threaded <input type="checkbox"/> Welded <input type="checkbox"/> Solvent <input type="checkbox"/> Weld <input type="checkbox"/> Cemented between strata Describe access port <u>1/4" opening</u>		<b>11. DRILLERS CERTIFICATION</b> I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>J &amp; J Drilling Inc</u> Firm No. <u>319</u> Address <u>5113 S Link Rd</u> Date _____ <u>Bozeman, W.B. 89016</u> Signed by (Firm Official) <u>[Signature]</u> and _____ (Operator) <u>[Signature]</u>																																																																																																																	
<b>6. LOCATION OF WELL</b> Sketch map location must agree with written location. Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Neotoma</u> <u>4 W</u> NW 1/4 <u>NE</u> 1/4 Sec. <u>32</u> , T. <u>40 N</u> , R. <u>4 W</u> EW.		<b>USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT</b>																																																																																																																	

RECEIVED  
SEP 26 2008  
IDWR/North

Form 208-7 IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

Office Use Only  
Well ID No. \_\_\_\_\_  
Inspector by \_\_\_\_\_  
Twp. 1/4 Rge. 1/4 Sec. 30  
Lot: \_\_\_\_\_ Lot 15: \_\_\_\_\_

1. WELL TAG NO. DOB55307  
DRILLING PERMIT NO. 853308  
Water Right or Injection Well No. \_\_\_\_\_

2. OWNER:  
Name: Geneco Inc.  
Address: 2771 Squaw Road  
City: Rosalia State: Id Zip: 89170

3. LOCATION OF WELL by legal description:  
Twp. 48N  
Rge. 04W  
Sec. 30 S/E 1/4 S/W 1/4  
Gov't Lot \_\_\_\_\_ County Kootenai  
Address of well site: E Windy Bay, Flinders Road  
City: Worley

4. USE: Domestic  
5. TYPE OF WORK: New Well  
6. DRILL METHOD: Air Rotary

7. SEALING PROCEDURES:

Seal Material	From	To	WT/Volume	Method	Seal Placement
<u>Benfonite</u>	<u>3</u>	<u>66</u>	<u>750 lbs</u>	<u>pour</u>	

Was drive shoe used? yes Shoe Depth 64'  
Was drive shoe seal tested? yes How? air

Diameter	From	To	Gauge	Material	Casing or Liner	Welded or Threaded
<u>8"</u>	<u>+2</u>	<u>96</u>	<u>25C</u>	<u>steel</u>	<u>casing</u>	<u>welder</u>
<u>4"</u>	<u>NO LINER</u>			<u>PVC</u>	<u>liner</u>	<u>glued</u>

Length of Headpipe \_\_\_\_\_ Length of Tailpipe \_\_\_\_\_  
Packer? NO

9. PERFORATIONS/SCREENS/PACKER TYPE:  
Perforation Method NA  
Screen Type & Method of Installation \_\_\_\_\_

From	To	Slot Size	Number	Diam.	Material	Casing or Liner
		<u>NO LINER</u>			<u>PVC</u>	<u>liner</u>

10. FILTER PACK

Filter Material	From	To	WT/Volume	Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:  
290 ft below ground Artesian pressure \_\_\_\_\_ lb  
Depth flow encountered 290 ft.  
Describe access port or control device: cap

12. WELL TESTS:

Pump	Bailer	X Air	Flowing Artesian
<u>2</u>			

Water Temp: 51° Surface Hole Temp \_\_\_\_\_  
Water Quality test comments: good, slightly cloudy  
Depth first water encounter 290

13. LITHOLOGIC LOG (Describe reports or abandonment)

Bore Dia.	From	To	Remarks: (Lithology, water quality & temp.)	Water Y/N
8"	0 ft.	2 ft.	Brown Dirt	
8"	2 ft.	7 ft.	Brown Clay	
8"	7 ft.	23 ft.	Broken Basalt	
8"	23 ft.	27 ft.	Brown Dirt and Basalt	
8"	27 ft.	54 ft.	Med. Hard Basalt	
8"	54 ft.	72 ft.	Broken Basalt	
8"	72 ft.	120 ft.	Hard Basalt	
8"	120 ft.	125 ft.	Med. Hard Basalt	
8"	125 ft.	245 ft.	Hard Black Basalt	
8"	245 ft.	270 ft.	Soft Comp. Basalt with Voids	
8"	270 ft.	285 ft.	Brown clay & basalt	
8"	285 ft.	365 ft.	Brown clay and sand	
8"	305 ft.	345 ft.	broken clay and basalt	
8"	345 ft.	370 ft.	Broken Basalt	
8"	370 ft.	430 ft.	Hard Basalt	
8"	430 ft.	437 ft.	Soft basalt	
8"	437 ft.	450 ft.	fine brown sand	

Note: Filled hole to 375 with basalt cuttings  
Customer did not want ner

Completed Depth 375 (Measurable) 375  
Date Started 9/2/08 Completed 9/15/08

14. DRILLER'S CERTIFICATION  
Company Name: ALLWAYS DRILLING, INC  
FIRM #: 510  
Principal Driller: [Signature] Date 9/2/08  
Driller or Operator 2: \_\_\_\_\_ Date \_\_\_\_\_  
Operator 1: [Signature] Date 9/2/08

48N 04W 30

**ALLWEST TESTING AND ENGINEERING LLC TEST PIT REPORT**

J:\110058\Acadwg\Sheets\Exhibit110058\_TeePits.dwg , 11/8/2011 9:24:17 AM , Thompson, Zach , DWG To PDF 200 Dp.plt  
©2011 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT OR ITS CONTENTS WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.



WEST 280 PRAIRIE AVENUE  
COEUR D'ALENE, IDAHO 83815-7710  
PHONE: (208) 762-3644 FAX: (208) 762-3708  
E-FILE: J110058\Acadwg\Exhibit1 DATE: November 2011 JOB: 110058

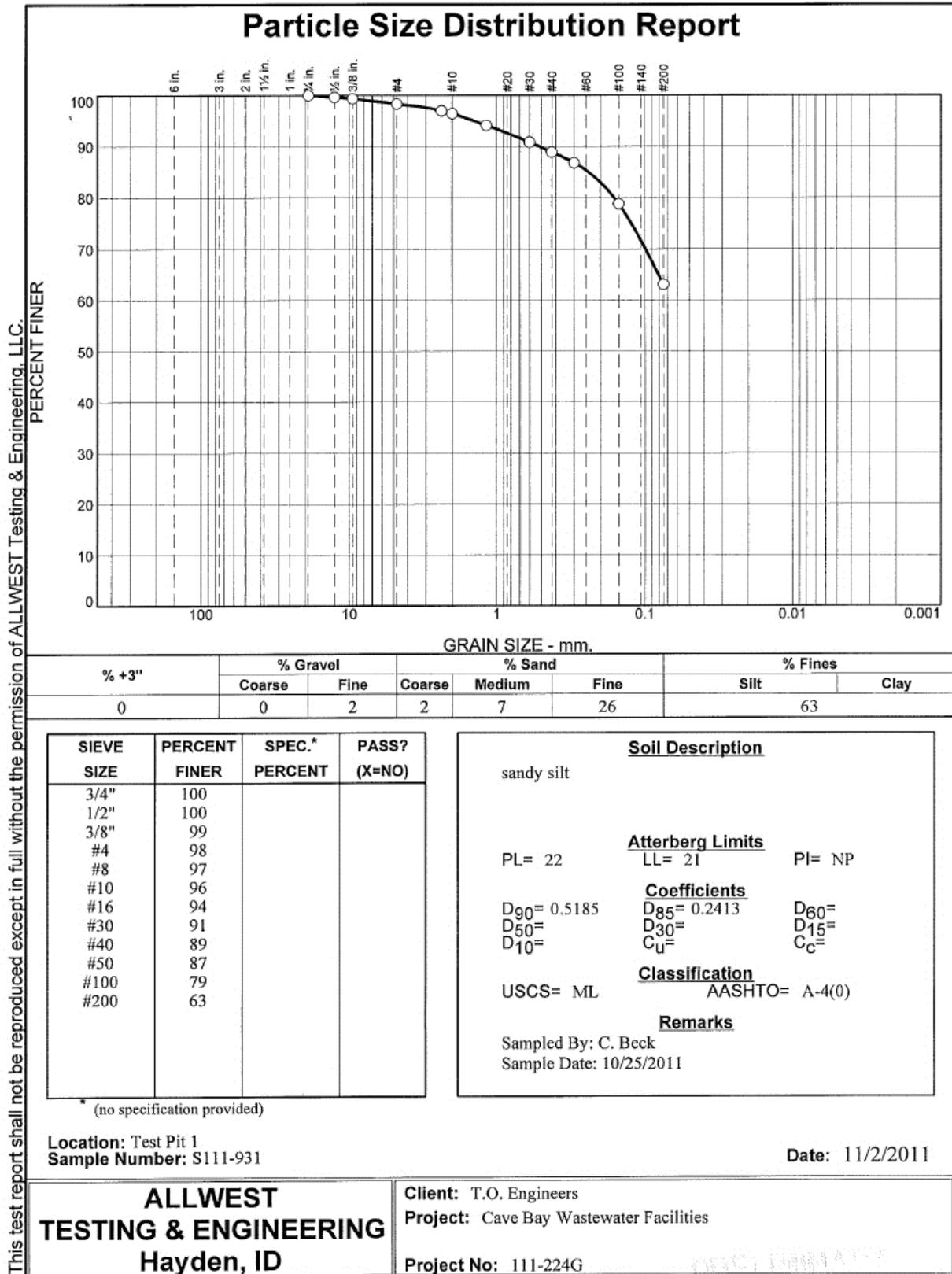
# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-1</b>		
		LOCATION: <b>Cave Bay</b>		
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>	
Depth 0.0	ASTM D2487 Symbol	Description of Materials	WL	Tests or Notes
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist		Bulk Sample
	ML	COLLUVIUM - Fine sandy SILT with trace gravel , Light Brown, Medium Dense, Damp to Moist		
5.0'	GM	COLLUVIUM - Silty GRAVEL, Light Brown, Medium Dense to Dense, Humid to Damps		Piezometer installed to a depth of 7.0'
7.0'		Bottom of Test Pit		

(See Report and Standard Plates for elevation and descriptive terminology.)

PRELIMINARY



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Tested By: S Brady

Checked By: C McKissen

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-2</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.0			
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist	
		COLLUVIUM - Silty GRAVEL, Light Brown, Medium Dense, Humid	
	GM		
6.0'	CH/MH	RESIDUUM - Silty CLAY, Dark Brown, Stiff to Very Stiff, Moist	
7.0'		Bottom of Test Pit	Piezometer installed to a depth of 7.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

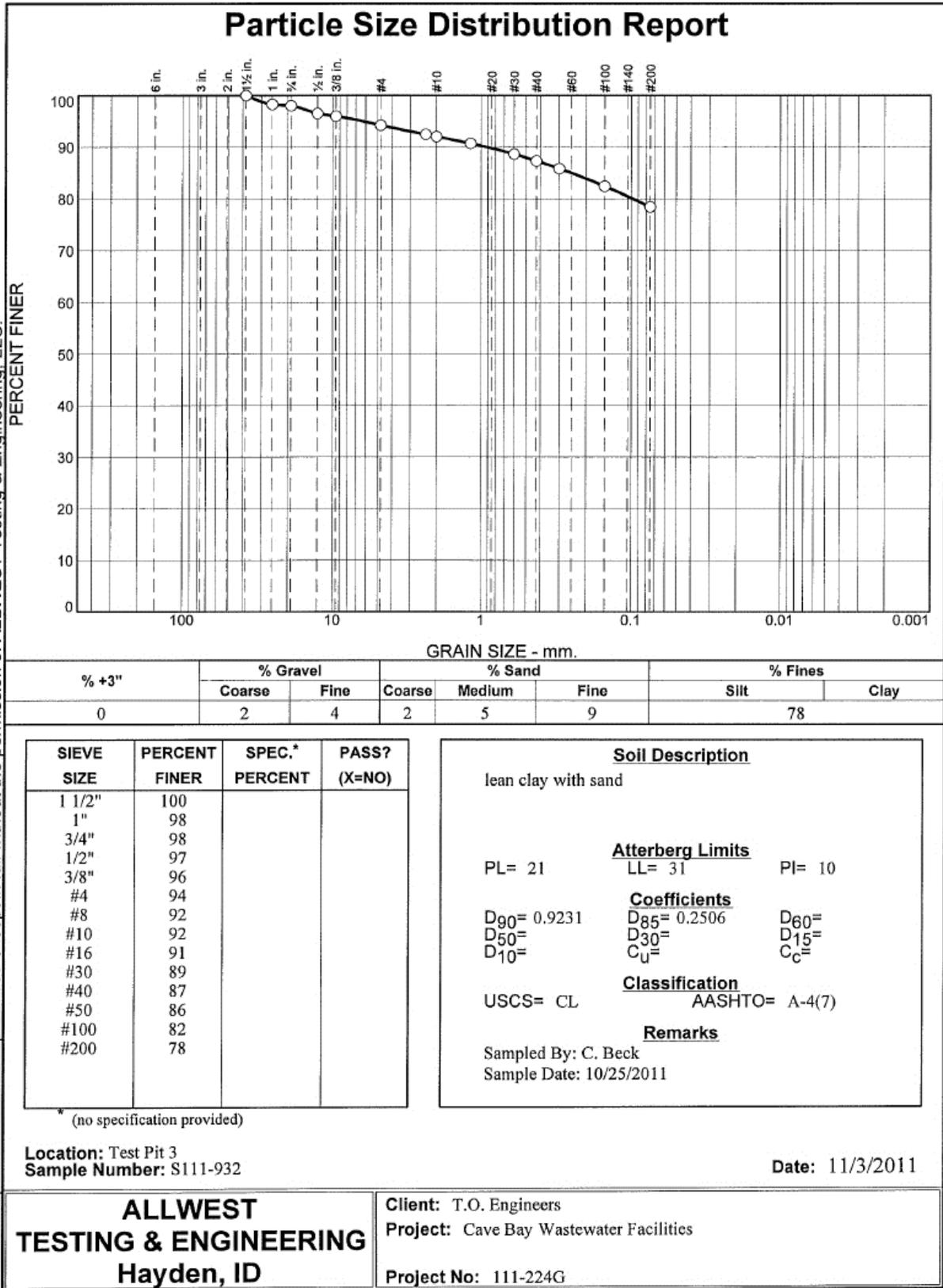
# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-3</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.0			
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist	Bulk Sample
	ML	COLLUVIUM - Fine Sandy SILT with Gravel, Light Brown, Medium Dense, Humid	
3.0'	CL/SC	RESIDUUM - Silty CLAY, Dark Brown, Stiff to Very Stiff, Moist	
7.0'		Bottom of Test Pit	Piezometer installed to a depth of 7.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

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Tested By: S Brady

Checked By: C McKissen

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-4</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth 0.0	ASTM D2487 Symbol	Description of Materials	WL
0.5'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid	
1.5'	ML	COLLUVIUM - SILT with Gravel and Cobbles, Light Brown, Medium Dense, Humid	
6.0'	GM	COLLUVIUM - GRAVEL with Silt, Light Brown, Medium Dense to Dense, Humid to Damp	
		Bottom of Test Pit	Piezometer installed to a depth of 6.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

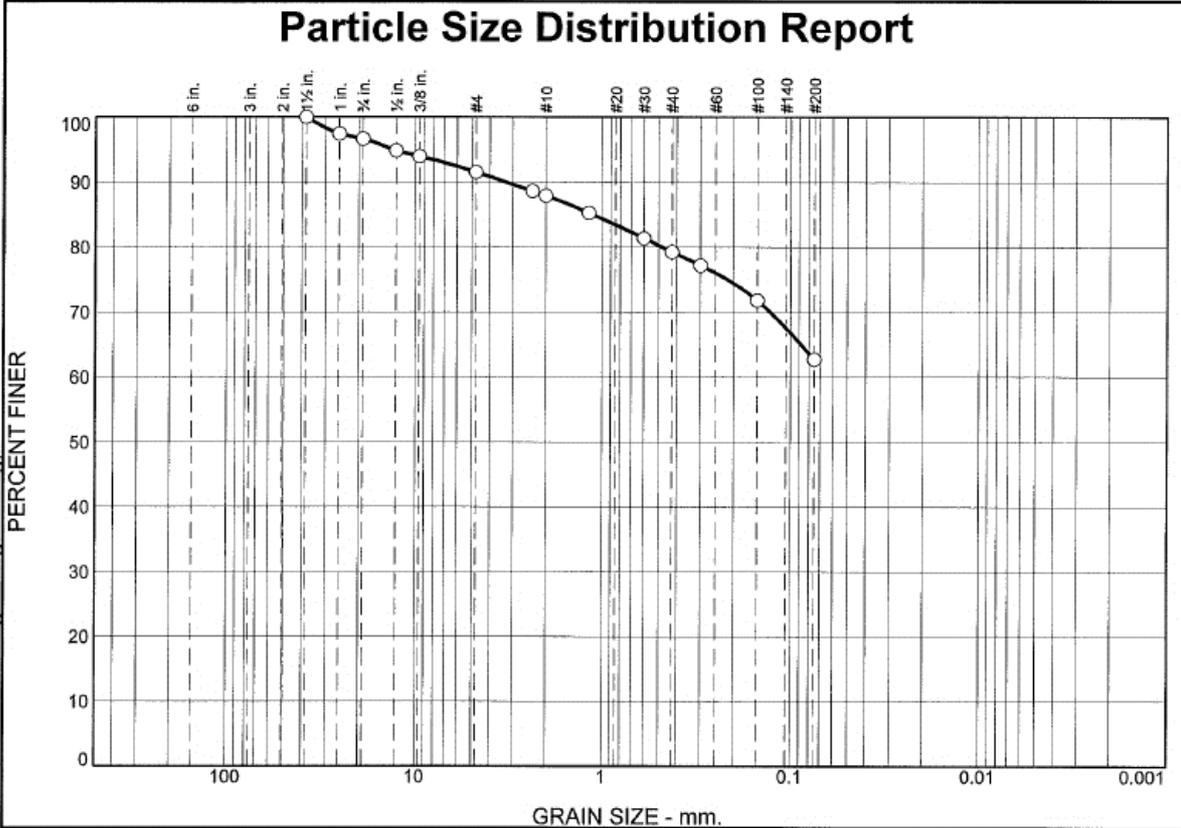
# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-5</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth 0.0	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.5'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid	Bulk Sample
2.0'	ML	COLLUVIUM - Sandy SILT with Gravel and Cobbles, Light Brown, Medium Dense to Dense, Humid to Damp	
5.0'	GM	COLLUVIUM - GRAVEL with Silt and Cobbles, Light Brown, Medium Dense to Dense, Humid to Damp	
6.5'	GP	COLLUVIUM - Poorly graded GRAVEL, Cobbles and Boulders up to 24 inches	
		Bottom of Test Pit	Piezometer installed to a depth of 6.5'

(See Report and Standard Plates for elevation and descriptive terminology.)

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% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	3	5	4	9	16	63	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100		
1"	97		
3/4"	97		
1/2"	95		
3/8"	94		
#4	92		
#8	89		
#10	88		
#16	85		
#30	81		
#40	79		
#50	77		
#100	72		
#200	63		

**Soil Description**  
sandy silt

**Atterberg Limits**  
 PL= NP      LL= NV      PI= NP

**Coefficients**  
 D<sub>90</sub>= 3.2669      D<sub>85</sub>= 1.1243      D<sub>60</sub>=  
 D<sub>50</sub>=              D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= ML              AASHTO= A-4(0)

**Remarks**  
 Sampled By: C. Beck  
 Sample Date: 10/25/2011

\* (no specification provided)

Location: Test Pit 5  
 Sample Number: S111-933

Date: 11/3/2011

<b>ALLWEST TESTING &amp; ENGINEERING</b> Hayden, ID	Client: T.O. Engineers Project: Cave Bay Wastewater Facilities Project No: 111-224G
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Tested By: S Brady                      Checked By: C McKissen

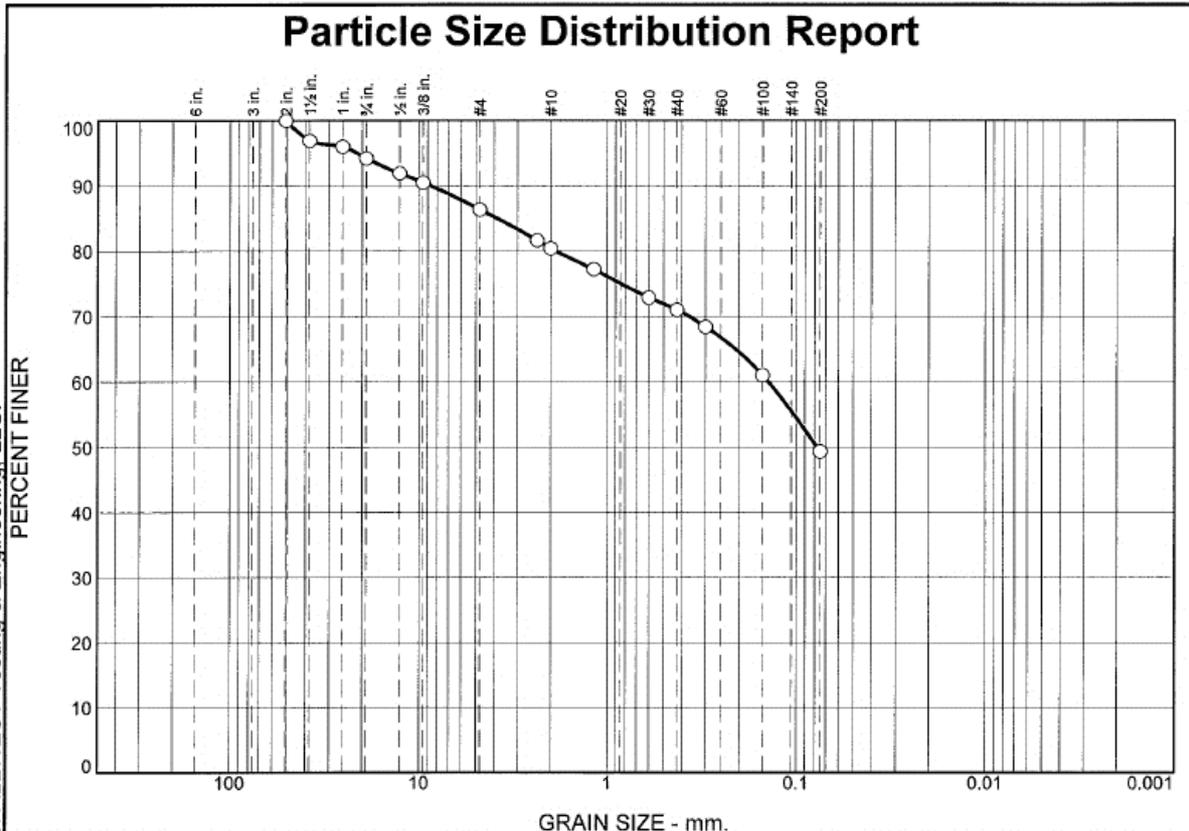
# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-6</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.0			
0.3'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid COLLUVIUM - GRAVEL with Silt and Sand, Light Brown, Medium Dense to Dense, Humid to Damp	Bulk Sample
	GM/SM		
6.0'		Bottom of Test Pit	Piezometer installed to a depth of 6.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

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% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	6	8	6	9	22	49	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100		
1 1/2"	97		
1"	96		
3/4"	94		
1/2"	92		
3/8"	90		
#4	86		
#8	82		
#10	80		
#16	77		
#30	73		
#40	71		
#50	68		
#100	61		
#200	49		

**Soil Description**  
silty sand

**Atterberg Limits**  
PL= 22      LL= 23      PI= 1

**Coefficients**  
D<sub>90</sub>= 8.7018      D<sub>85</sub>= 3.8791      D<sub>60</sub>= 0.1401  
D<sub>50</sub>= 0.0777      D<sub>30</sub>=              D<sub>15</sub>=  
D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
USCS= SM      AASHTO= A-4(0)

**Remarks**  
Sampled By: C. Beck  
Sample Date: 10/25/2011

\* (no specification provided)

Location: Test Pit 6  
Sample Number: S111-934

Date:

**ALLWEST TESTING & ENGINEERING**  
Hayden, ID

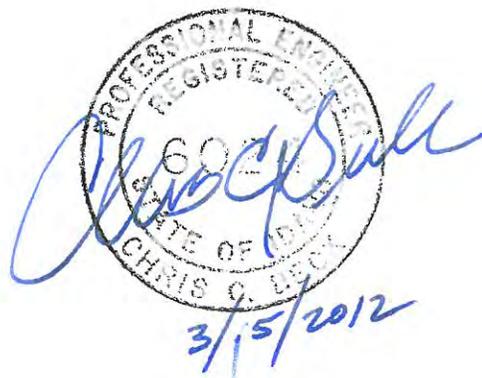
Client: T.O. Engineers  
Project: Cave Bay Wastewater Facilities  
Project No: 111-224G

Tested By: S Brady

Checked By: C McKissen

**GEOTECHNICAL ENGINEERING EVALUATION  
WASTEWATER FACILITIES PLAN  
CAVE BAY COMMUNITY SERVICES, INC  
KOOTENAI COUNTY, IDAHO**

March 15, 2012





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March 15, 2012

Mr. Scott McNee, P.E.  
T-O Engineers  
280 W. Prairie Avenue  
Coeur d'Alene, Idaho 83815

**RE:      Geotechnical Engineering Evaluation  
          Wastewater Facilities Plan  
          Cave Bay Community Services, Inc.  
          Kootenai County, Idaho  
          ALLWEST Project No. 111-224G**

Dear Mr. McNee:

**ALLWEST Testing & Engineering, LLC (ALLWEST)** has completed the authorized geotechnical evaluation for the proposed improvements to the wastewater facilities for Cave Bay Community Services (CBCS) in Kootenai County, Idaho. The purpose of this evaluation was to assess the soil and geologic conditions for the potential expansion of the storage lagoons and the installation of a land application system. The expansion of the wastewater system will be completed on Cave Bay Community Services, Inc. (CBCS) property and adjacent properties.

### **SCOPE OF WORK**

Our scope of work was completed in accordance with our proposal dated June 27, 2011 with a reduced number of test pits and corresponding laboratory tests. Specifically, we completed the following scope of work:

1. Completed a site reconnaissance by walking the project area and observing exposed soil conditions, vegetation, surface drainage and erosion features.
2. Reviewed the USDA Natural Resources Conservation Service and Idaho Geologic Survey mapping information for the project site area.

3. Observed the excavation of four test pits on the CBCS property and two test pits on the adjacent property owned by Stephen Dreher. Logged the soil profiles and collected bulk soil samples from the test pits.
4. Installed 2-inch-diameter piezometers in the test pits. Ground water was not encountered in the test pits at the time of excavation.
5. Performed laboratory tests to assess the gradation, Atterberg limits, maximum dry density and optimum moisture content for soil samples from the test pits.
6. Reviewed the results of the field evaluation and laboratory testing with respect to the proposed improvements to the wastewater facilities.
7. Prepared this final report.

### **PROPOSED CONSTRUCTION**

We understand the improvements to the existing wastewater facilities will likely include the installation of a land application system and the expansion of the two lagoons. The expansion of the lagoons may include raising the height of the embankments or the construction of a new cell.

### **SITE CONDITIONS**

The natural topography in the area of the existing lagoons and the Dreher property consists of gently to steeply sloping hillsides. Vegetation on the properties consists of a moderately dense stand of evergreen trees with an undergrowth of deciduous bushes and native grasses and weeds.

### **GENERAL GEOLOGIC CONDITIONS**

The geologic conditions in the area of the CBCS and Dreher properties were mapped on the Idaho Geologic Survey Geologic Map of the Worley Qaudrangle, Idaho by Breckenridge and Othberg, 2005. The mapping indicates the bedrock geology is Columbia River basalt with Latah Formation interbeds. The surficial geology consists of colluvial deposits of basalt and aeolian deposits of loess.

### **GENERAL SOIL CONDITIONS**

The USDA Natural Resource Conservation Service (NRCS) (formerly known as the Soil Conservation Service) has mapped the soils on and around the property in the Soil

Survey of Kootenai County, 1981 as Lacy-rock outcrop complex and Lacy-Bobbitt association. The Lacy-rock outcrop complex is located on rolling to steep mountainsides and canyon positions where basalt bedrock outcrops. The typical soil profile is very stony clay loam. The Lacy soil is described as shallow, well-drained soil formed in material weathered from basalt and a small amount of loess in the upper part of the profile. The permeability is estimated to be moderate and run-off is rapid. The water erosion hazard is very high. The rock outcrop is made up of exposures of bare basalt bedrock, with a few inches of soil over the bedrock in some areas. Crevices in the rock contain some soil material.

The soil conditions found on the Dreher property, where land application is anticipated, is mapped as Lacy-Bobbitt Association. The Lacy soils are described as shallow, well-drained soil formed in material weathered from basalt and a small amount of loess in the upper part of the profile. The permeability is estimated to be moderate and run-off is rapid. The water erosion hazard is very high. The Bobbitt soil is described as moderately deep, well-drained soil formed in material weathered from basalt and a thin mantle of loess and volcanic ash. The permeability is estimated to be moderate.

### **EXPLORATION AND SAMPLING**

Six test pits were excavated on the property on October 25, 2011. The approximate locations of the test pits are shown on the Test Pit Location Map in Appendix A of this report. The test pits were excavated by a rubber-tired backhoe using a 30-inch-wide bucket. The soil conditions encountered in the test pits were visually described and classified in general accordance with ASTM D 2487 and D 2488 and the subsurface profiles were logged. Bulk soil samples were obtained from the test pits excavations. The test pits were loosely backfilled at the conclusion of the field evaluation. The backfill will consolidate with time. If the test pits are located within structural areas or within proposed lagoons, the backfill should be re-excavated and the materials replaced and compacted to a minimum of 92 percent of the maximum dry density as determined by ASTM D 1557 (Modified Proctor).

### **SUBSURFACE CONDITIONS**

Topsoil was encountered at the ground surface in each of the test pit locations. The depth of topsoil ranged from 4 to 9 inches. Four test pits were completed in the area of the existing wastewater lagoons, TP-1 through TP-4. In those test pits, underlying the topsoil we encountered colluvium consisting of silty gravel, sandy silt and silt with gravel. The colluvium was light brown in color and the relative density ranged from medium dense to dense. The relative moisture content ranged from humid to moist. Underlying the colluvium in TP-2 and TP-3 is silty clay described as dark brown. The

relative density of the silty clay is stiff to very stiff. The color was described as dark brown and the relative moisture content was described as moist.

Two test pits were excavated on the Dreher property, TP-5 and TP-6. In those test pits, underlying the topsoil, we encountered colluvium ranging from sandy silt, gravel with silt, poorly graded gravel and gravel with silt and sand. The colluvium was described as light brown. The relative density of the colluvium was described as medium dense to dense with a relative moisture content ranging from humid to damp.

Ground water was not encountered in the test pits at the time of excavation. Piezometers were installed in the test pits to monitor ground water levels. The piezometers were 2-inch-diameter PVC pipes drilled with ¼-inch-diameter holes at approximately 6 inches on center. The test pits were back filled around the piezometers and the top of the backfill was capped with a lean concrete mix. The ground water levels in the piezometers have been recorded and are presented in the following table:

Date	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6
10/25/2011	None	None	None	None	None	None
3/6/2012	None	-1.9	None	-3.0'	None	None
3/13/2012	None	-1.0'	None	-6.9'	None	None

Detailed descriptions of the conditions encountered in the test pits are presented on the Test Pit Logs attached with this report. The subsurface conditions may vary between test pit locations. Such changes in conditions would not be apparent until construction. If the subsurface conditions do change from those observed in the test pit locations, the construction timing, plans and costs may change

### LABORATORY TESTING

Laboratory testing was performed to assess some of the soil engineering parameters. The particle-size distribution of four soil samples from the test pits were assessed in general accordance with ASTM C 136. Four samples were also tested to assess the liquid limit, plastic limit and plasticity index in general accordance with ASTM D 4318. The maximum dry density and optimum moisture content for two soil samples were assessed in general accordance with ASTM D 1557 (Modified Proctor). The results of the laboratory testing are attached to this report.

### CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are presented to assist the planning and design of the CBCS wastewater expansion and improvements in Kootenai County, Idaho. The recommendations are based on our understanding of the proposed construction and the

conditions encountered in the test pits. If the scope of the construction changes, or if conditions are encountered during construction which are different than those described in this report, we should be notified so we can review our recommendations and provide revisions if necessary.

### **Land Application**

The soil conditions encountered in the two test pits on the Dreher property in the area of the proposed land application consisted of a thin mantle of topsoil overlying colluvial deposits of gravelly silt and silty gravel. Basalt bedrock was encountered below the colluvium at 72 to 78 inches below the ground surface. The NRCS estimates the permeability of the soils in this area (Lacy-Bobbitt association) ranges from 0.6 to 2.0 inches per hour.

### **Excavation Characteristics**

The soils encountered in the test pits can generally be excavated with standard soil excavation equipment. Dense cobbles and boulders may be encountered and will likely require larger excavation equipment and may hamper the excavation of narrow trenches. Basalt bedrock will be encountered below the colluvium. The basalt is hard to very hard and will likely require drilling and blasting for excavation. Excavations deeper than four feet should be sloped no steeper than 1.5:1 (horizontal to vertical). Alternatively, the excavations can be shored or braced in accordance with OSHA requirements.

### **Site Preparation**

Topsoil was encountered at the ground surface in each of the test pits. The thickness of the topsoil ranged from 4 inches to 9 inches. The topsoil should be excavated and removed from areas of lagoon expansion and fill placement. The topsoil should be removed from the proposed improvement areas and stockpiled and re-used for landscaping.

### **Structural Fill**

Structural fill is defined as soil placed or moved on a site which will support any structural element including wastewater lagoon embankments, buildings, retaining walls, pavement or sidewalks. Structural fill includes the footprint area and 5 feet beyond the structural element. Non-structural fill is soil placed 5 feet beyond the structural element. Prior to placing structural fill, topsoil and organic material should be removed. The ground surface should be relatively level. Benching of existing slopes may be required to achieve a relatively level surface. The benches should be level with a bench width of 4 to 10 feet depending on the width of the planned compaction equipment. The maximum bench height should be 2 feet. Benching and structural fill placement should be initiated at the base of the slope. A Bench Fill Schematic is attached to this report. Structural fill should be placed on undisturbed native soil.

Structural fill should be placed in six-inch-thick loose lifts at near optimum moisture content and compacted to at least 92 percent of the maximum dry density as determined by Modified Proctor. Non-structural fill should be placed in twelve-inch-thick, loose lifts and compacted to at least 85 percent of the maximum dry density as determined by Modified Proctor.

We recommend the structural fill consist of sands or gravels (GW, GP, SW, or SP) with minor amounts of fines (material passing #200 sieve). Structural fill should be free of organic matter, frozen soil and deleterious debris. The on-site soils may be suitable for use as structural fill. However, due to the presence of silt, the moisture content may exceed optimum and it may be difficult to obtain required compaction in the native soils. It may be necessary to import material for structural fill.

### **Lagoon Construction**

Expansion of the lagoon will require excavation and placement of structural fill. Grading of the lagoon should be designed for a slope of 2:1 (horizontal to vertical). Fill slopes should be constructed according to the structural fill section of this report. The slopes should be benched into the hillside to create a stable mass according to the Structural Fill section of this report. A bench fill schematic is included in the project plans for reference. The bench width will vary but should be wide enough to accommodate compaction equipment. The bench height should be the minimum practical to allow keying into the existing slope.

Tree stumps are present on the interior slope of the lagoon. We recommend the stumps be excavated and removed. The removal of the stumps will create a void space which will require backfill. The void should be backfilled and compacted in accordance with the structural fill section of this report. Access for compaction of the backfill will be limited. Alternative methods of compaction, such as a sheeps foot roller on a trackhoe, should be considered.

All exterior slopes should be re-vegetated as soon as possible after construction is complete. Minor sloughing should be expected until vegetation is established.

### **Wet Weather Construction**

The site preparation and grading will be more effective if it is completed during dry weather conditions. If the site grading is undertaken during wet periods of the year, the native silt soils will be susceptible to pumping or rutting under rubber-tired equipment. Soft or pumping areas should be excavated and backfilled with structural fill in accordance with the recommendations in this report.

### **Additional Services Recommended**

We recommend ALLWEST Testing & Engineering, LLC be retained to review the exposed soil and geologic conditions and to confirm our preliminary recommendations. Compaction testing should be performed by an experienced engineering technician at the time of construction to verify the recommended levels of compaction are achieved. If we are not retained to provide recommended construction monitoring services, we cannot be responsible for soil engineering related construction errors or omissions.

### **DEVIATIONS**

Any proposed deviation from the attached schematics or construction notes must be approved by the design engineer prior to implementation. Any deviation in the materials, configuration, compaction levels, or source material for backfill should be reviewed to assess its impact on the project. If we are not informed of any intended changes, we cannot be held responsible for construction related errors or omissions resulting from the changes.

### **LIMITATIONS**

This report has been prepared to assist the planning and construction of the proposed wastewater improvements for the Cave Bay Community Services, Inc. located in Kootenai County, Idaho. Our services consist of professional opinions and conclusions made in accordance with generally accepted geotechnical engineering principles and practices. This acknowledgement is in lieu of all warranties either expressed or implied.

We appreciate the opportunity to perform these geotechnical engineering services. If you have any questions or comments, please feel free to contact me at (208) 762-4721.

Sincerely,

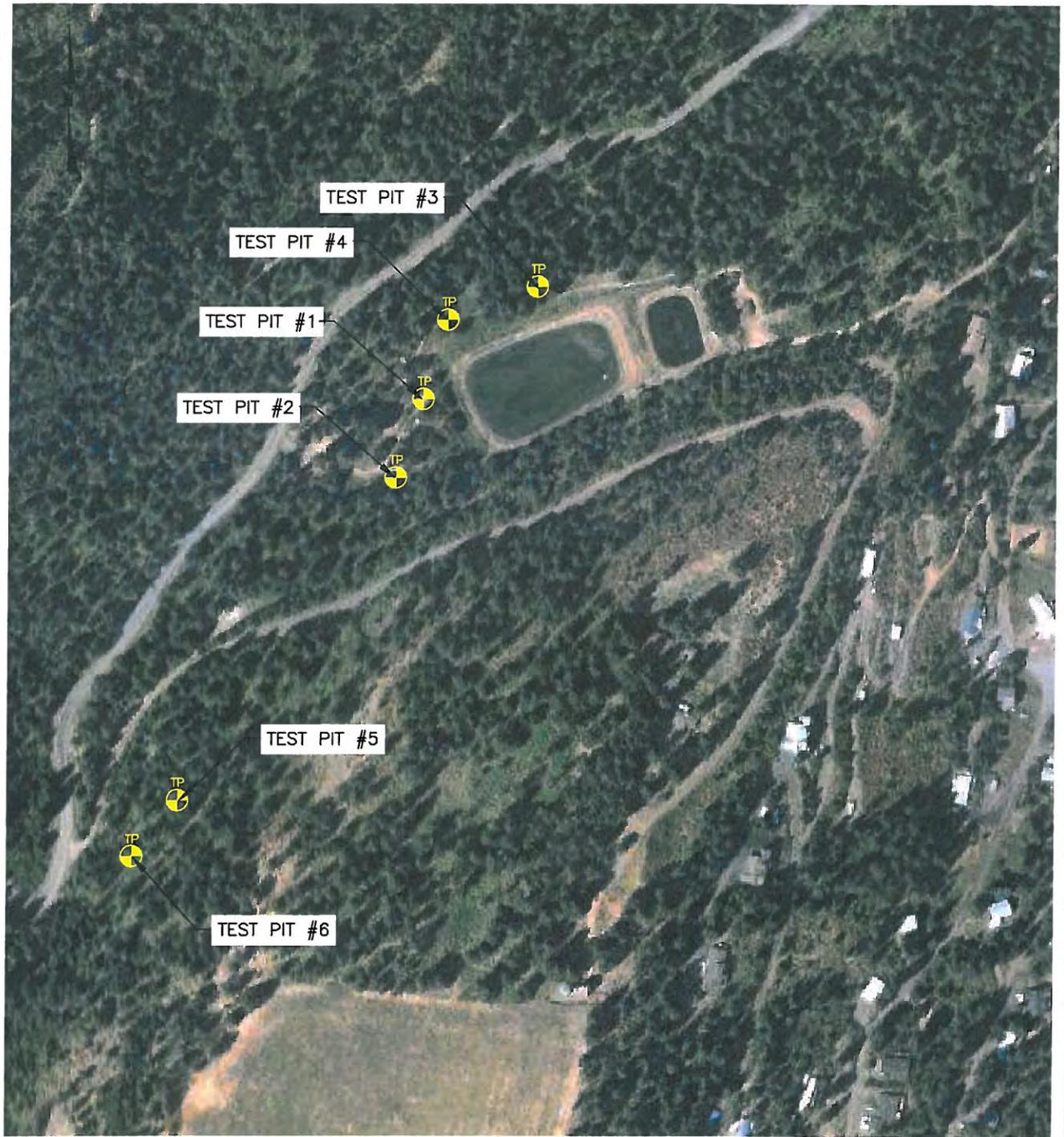
**ALLWEST Testing & Engineering, LLC**



Chris C. Beck, P.E.  
Principal Engineer

Attached:    Test Pit Location Map  
                  Test Pit Logs  
                  Laboratory Results

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**T-O ENGINEERS**

WEST 280 PRAIRIE AVENUE  
COEUR D'ALENE, IDAHO 83815-7710  
PHONE: (208) 762-3644 FAX: (208) 762-3708  
E-FILE: J:\110058\Acaddwg\Exhibits\ DATE: November 2011 JOB: 110058

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>	TEST PIT: <b>TP-1</b>
	LOCATION: <b>Cave Bay</b>
	DATE: <b>10/25/2011</b> SCALE: <b>1" = 2'</b>

Depth	ASTM D2487 Symbol	Description of Materials	WL	Tests or Notes
0.0				
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist		Bulk Sample
	ML	COLLUVIUM - Fine sandy SILT with trace gravel, Light Brown, Medium Dense, Damp to Moist		
5.0'	GM	COLLUVIUM - Silty GRAVEL, Light Brown, Medium Dense to Dense, Humid to Damps		Piezometer installed to a depth of 7.0'
7.0'		Bottom of Test Pit		

(See Report and Standard Plates for elevation and descriptive terminology.)

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>	TEST PIT: <b>TP-2</b>
	LOCATION: <b>Cave Bay</b>
	DATE: <b>10/25/2011</b> SCALE: <b>1" = 2'</b>

Depth	ASTM D2487 Symbol	Description of Materials	WL	Tests or Notes
0.0				
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist		
		COLLUVIUM - Silty GRAVEL, Light Brown, Medium Dense, Humid		
	GM			
6.0'				
	CH/MH	RESIDUUM - Silty CLAY, Dark Brown, Stiff to Very Stiff, Moist		
7.0'		Bottom of Test Pit		Piezometer installed to a depth of 7.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-3</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.0			
0.7'	ML	TOPSOIL - Sandy SILT, Dark Brown, Loose to Medium Dense, Damp to Moist	Bulk Sample
	ML	COLLUVIUM - Fine Sandy SILT with Gravel, Light Brown, Medium Dense, Humid	
3.0'			
	CL/SC	RESIDUUM - Silty CLAY, Dark Brown, Stiff to Very Stiff, Moist	
7.0'		Bottom of Test Pit	Piezometer installed to a depth of 7.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>	TEST PIT: <b>TP-4</b>
	LOCATION: <b>Cave Bay</b>
	DATE: <b>10/25/2011</b> SCALE: <b>1" = 2'</b>

Depth	ASTM D2487 Symbol	Description of Materials	WL	Tests or Notes
0.0				
0.5'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid		Piezometer installed to a depth of 6.0'
1.5'	ML	COLLUVIUM - SILT with Gravel and Cobbles, Light Brown, Medium Dense, Humid		
	GM	COLLUVIUM - GRAVEL with Silt, Light Brown, Medium Dense to Dense, Humid to Damp		
6.0'		Bottom of Test Pit		

(See Report and Standard Plates for elevation and descriptive terminology.)

# LOG OF TEST PIT



PROJECT: <b>Cave Bay Wastewater Facilities</b>		TEST PIT: <b>TP-5</b>	
		LOCATION: <b>Cave Bay</b>	
		DATE: <b>10/25/2011</b>	SCALE: <b>1" = 2'</b>
Depth	ASTM D2487 Symbol	Description of Materials	WL Tests or Notes
0.0			
0.5'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid	Bulk Sample
2.0'	ML	COLLUVIUM - Sandy SILT with Gravel and Cobbles, Light Brown, Medium Dense to Dense, Humid to Damp	
	GM	COLLUVIUM - GRAVEL with Silt and Cobbles, Light Brown, Medium Dense to Dense, Humid to Damp	
5.0'	GP	COLLUVIUM - Poorly graded GRAVEL, Cobbles and Boulders up to 24 inches	Piezometer installed to a depth of 6.5'
6.5'		Bottom of Test Pit	

(See Report and Standard Plates for elevation and descriptive terminology.)

# LOG OF TEST PIT



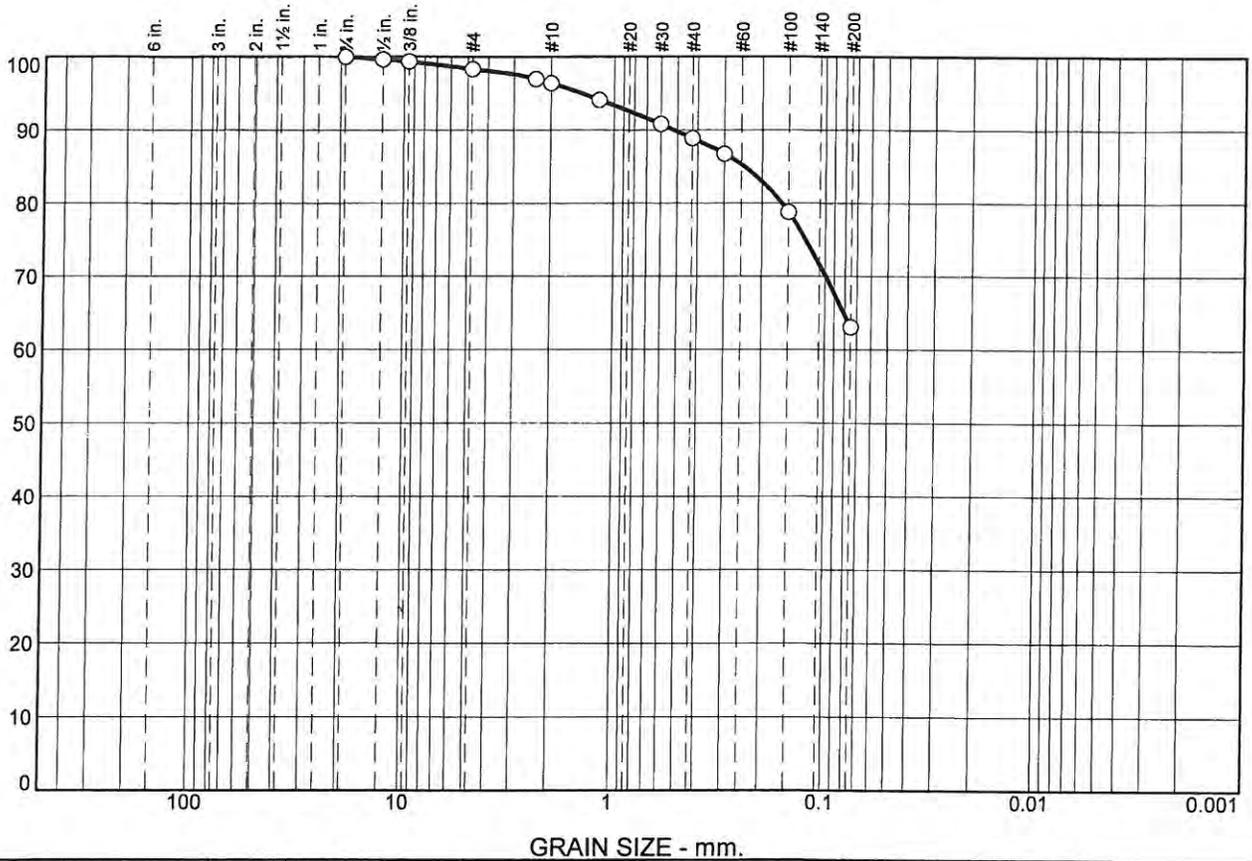
PROJECT: <b>Cave Bay Wastewater Facilities</b>	TEST PIT: <b>TP-6</b>
	LOCATION: <b>Cave Bay</b>
	DATE: <b>10/25/2011</b> SCALE: <b>1" = 2'</b>

Depth	ASTM D2487 Symbol	Description of Materials	WL	Tests or Notes
0.0				
0.3'	ML	TOPSOIL - SILT, Medium Brown, Loose, Humid COLLUVIUM - GRAVEL with Silt and Sand, Light Brown, Medium Dense to Dense, Humid to Damp		Bulk Sample
	GM/SM			
6.0'		Bottom of Test Pit		Piezometer installed to a depth of 6.0'

(See Report and Standard Plates for elevation and descriptive terminology.)

# Particle Size Distribution Report

PERCENT FINER



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	2	2	7	26	63	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	100		
3/8"	99		
#4	98		
#8	97		
#10	96		
#16	94		
#30	91		
#40	89		
#50	87		
#100	79		
#200	63		

\* (no specification provided)

**Soil Description**  
sandy silt

**Atterberg Limits**  
PL= 22      LL= 21      PI= NP

**Coefficients**  
D<sub>90</sub>= 0.5185      D<sub>85</sub>= 0.2413      D<sub>60</sub>=  
D<sub>50</sub>=                      D<sub>30</sub>=                      D<sub>15</sub>=  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**  
USCS= ML                      AASHTO= A-4(0)

**Remarks**  
Sampled By: C. Beck  
Sample Date: 10/25/2011

**Location:** Test Pit 1  
**Sample Number:** S111-931

**Date:** 11/2/2011

**ALLWEST  
TESTING & ENGINEERING  
Hayden, ID**

**Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities

**Project No:** 111-224G

**Checked By:** *aw*

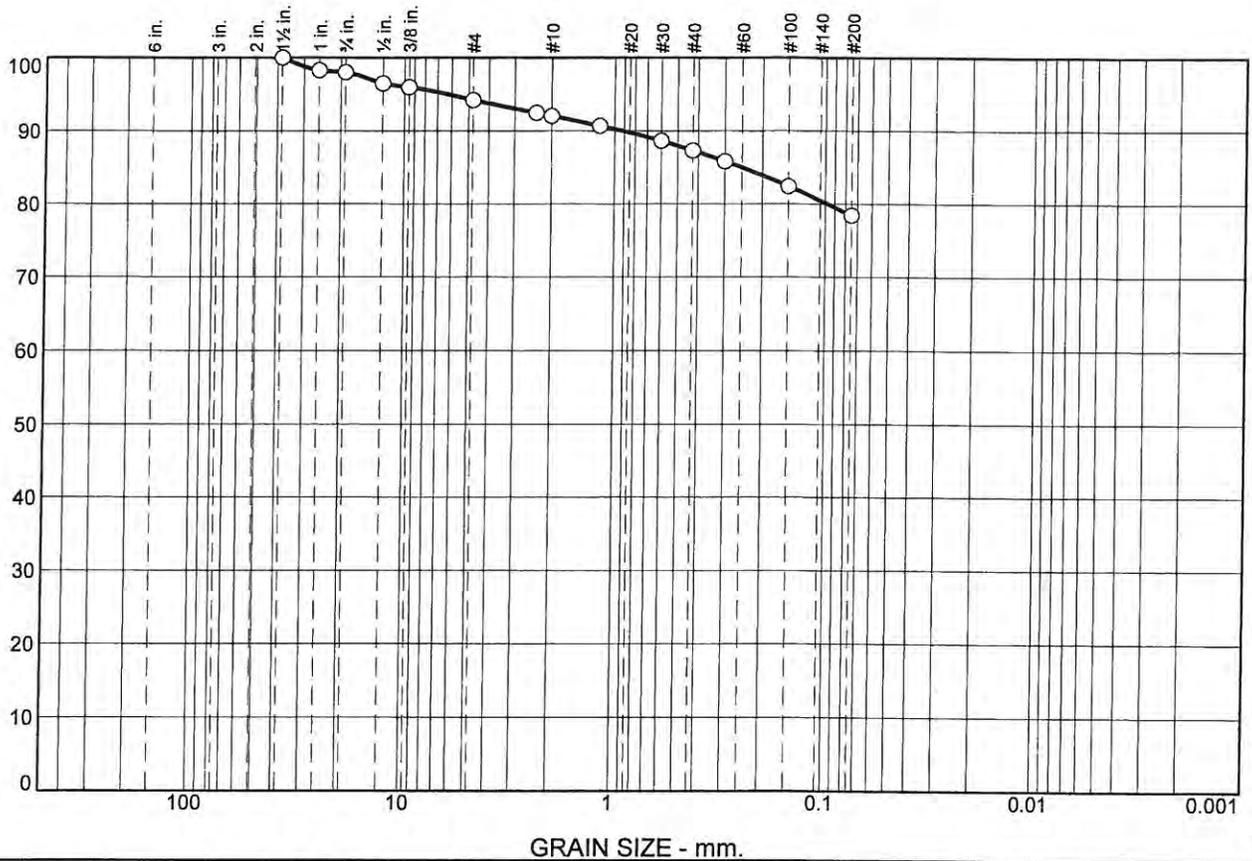
**Tested By:** S Brady

**Checked By:** C McKissen

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# Particle Size Distribution Report

PERCENT FINER



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	2	4	2	5	9	78	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100		
1"	98		
3/4"	98		
1/2"	97		
3/8"	96		
#4	94		
#8	92		
#10	92		
#16	91		
#30	89		
#40	87		
#50	86		
#100	82		
#200	78		

\* (no specification provided)

**Soil Description**

lean clay with sand

**Atterberg Limits**

PL= 21      LL= 33      PI= 12

**Coefficients**

D<sub>90</sub>= 0.9231      D<sub>85</sub>= 0.2506      D<sub>60</sub>=  
D<sub>50</sub>=                  D<sub>30</sub>=                  D<sub>15</sub>=  
D<sub>10</sub>=                  C<sub>u</sub>=                  C<sub>c</sub>=

**Classification**

USCS= CL                  AASHTO= A-6(8)

**Remarks**

Sampled By: C. Beck  
Sample Date: 10/25/2011

**Location:** Test Pit 3  
**Sample Number:** S111-932

**Date:** 11/3/2011

**ALLWEST  
TESTING & ENGINEERING  
Hayden, ID**

**Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities

**Project No:** 111-224G

**Checked By:** *mm*

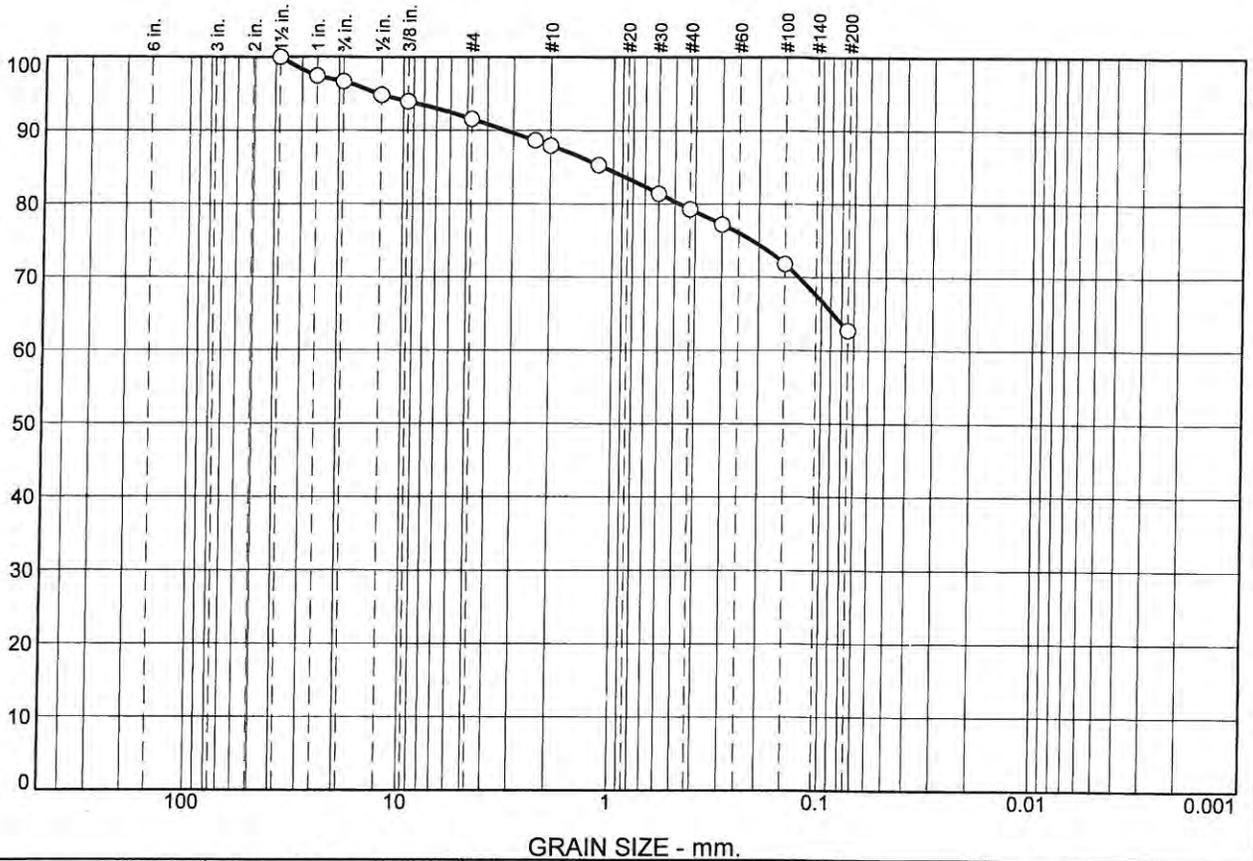
**Tested By:** S Brady

**Checked By:** C McKissen

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# Particle Size Distribution Report

PERCENT FINER



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	3	5	4	9	16	63	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100		
1"	97		
3/4"	97		
1/2"	95		
3/8"	94		
#4	92		
#8	89		
#10	88		
#16	85		
#30	81		
#40	79		
#50	77		
#100	72		
#200	63		

\* (no specification provided)

**Soil Description**

sandy silt

**Atterberg Limits**

PL= NP      LL= NV      PI= NP

**Coefficients**

D<sub>90</sub>= 3.2669      D<sub>85</sub>= 1.1243      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**

USCS= ML      AASHTO= A-4(0)

**Remarks**

Sampled By: C. Beck  
Sample Date: 10/25/2011

**Location:** Test Pit 5  
**Sample Number:** S111-933

**Date:** 11/3/2011

**ALLWEST  
TESTING & ENGINEERING  
Hayden, ID**

**Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities

**Project No:** 111-224G

**Checked By:** *[Signature]*

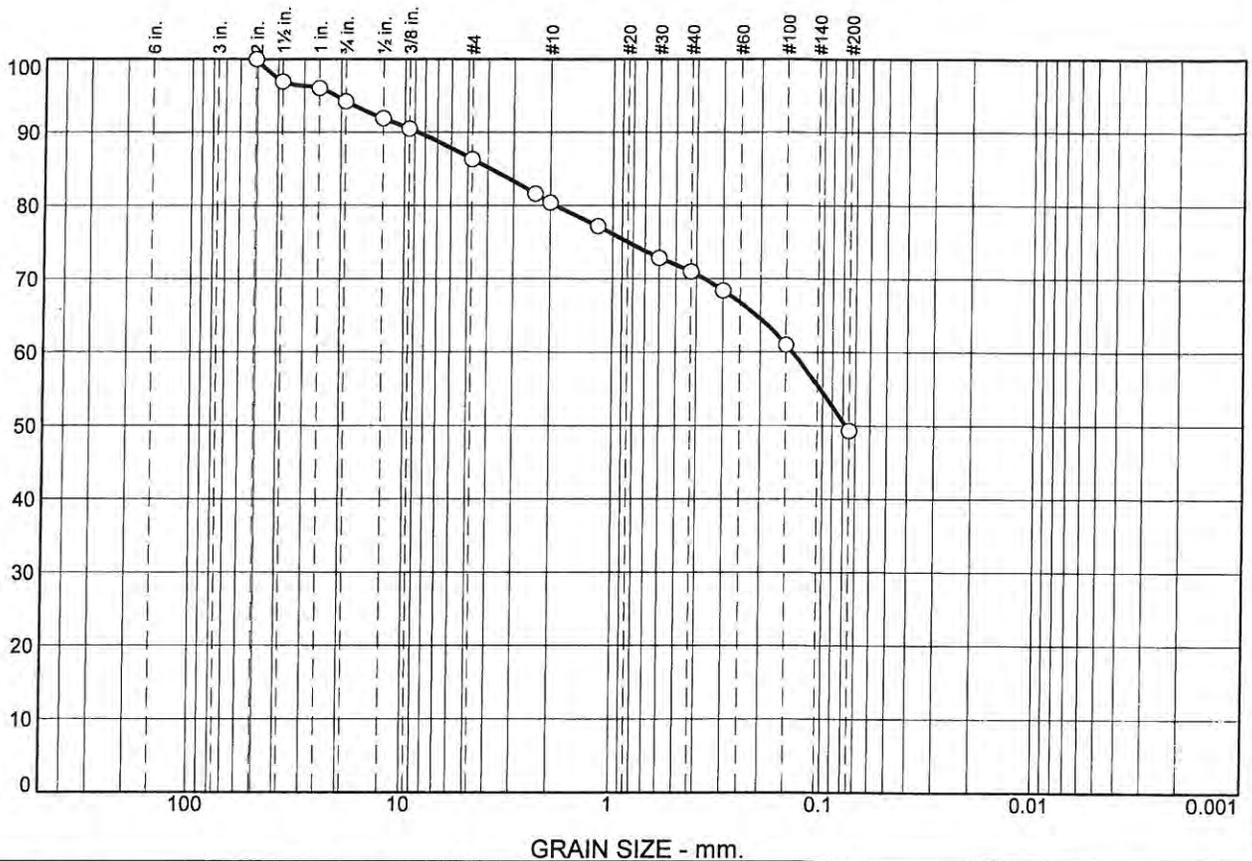
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**Tested By:** S Brady

**Checked By:** C McKissen

# Particle Size Distribution Report

PERCENT FINER



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	6	8	6	9	22	49	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100		
1 1/2"	97		
1"	96		
3/4"	94		
1/2"	92		
3/8"	90		
#4	86		
#8	82		
#10	80		
#16	77		
#30	73		
#40	71		
#50	68		
#100	61		
#200	49		

\* (no specification provided)

**Soil Description**

silty sand

**Atterberg Limits**

PL= 22      LL= 23      PI= 1

**Coefficients**

D<sub>90</sub>= 8.7018      D<sub>85</sub>= 3.8791      D<sub>60</sub>= 0.1401  
D<sub>50</sub>= 0.0777      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**

USCS= SM      AASHTO= A-4(0)

**Remarks**

Sampled By: C. Beck  
Sample Date: 10/25/2011

**Location:** Test Pit 6  
**Sample Number:** S111-934

**Date:**

**ALLWEST  
TESTING & ENGINEERING  
Hayden, ID**

**Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities

**Project No:** 111-224G

**Checked By:**

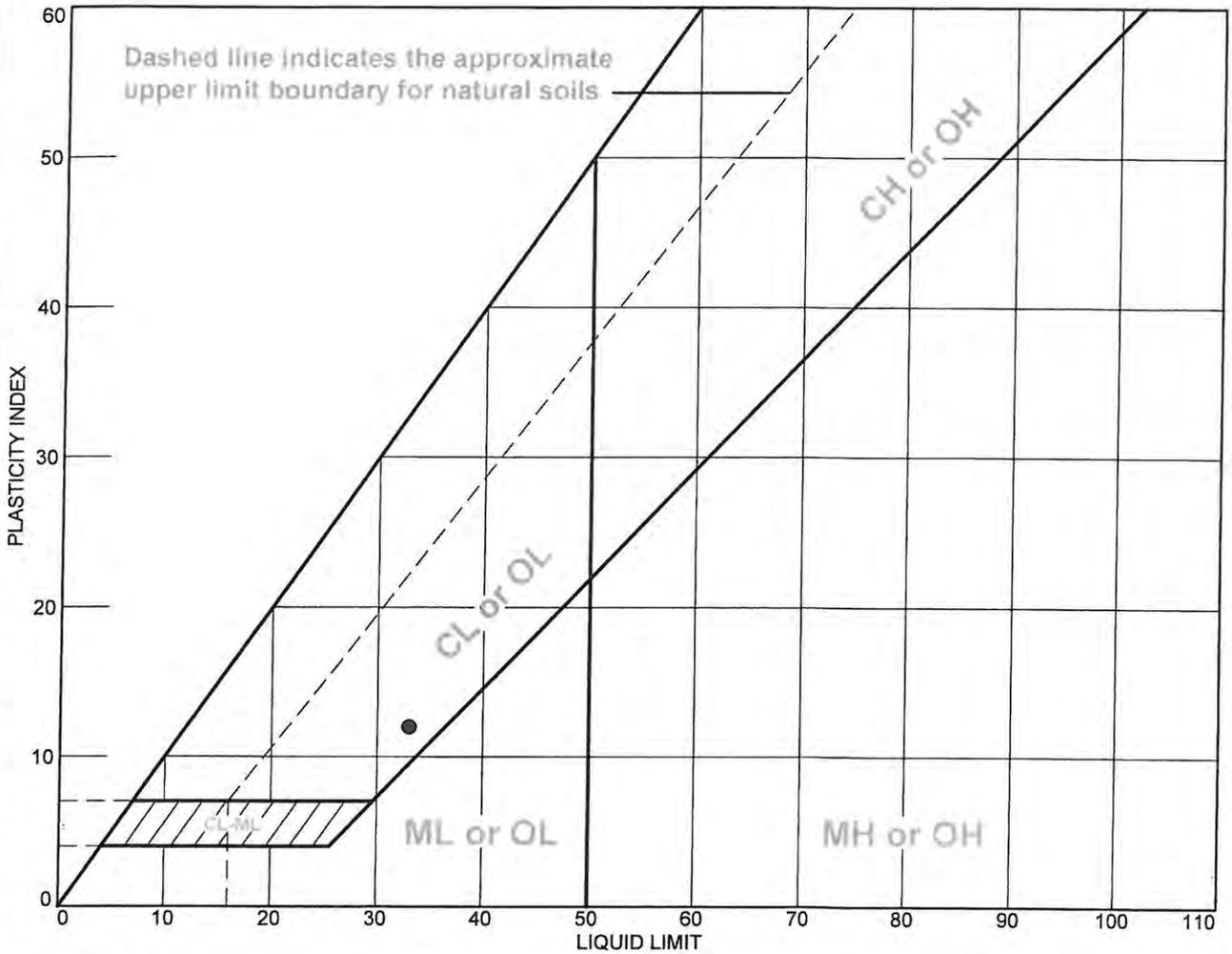
**Tested By:** S Brady

**Checked By:** C McKissen

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# LIQUID AND PLASTIC LIMITS TEST REPORT



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MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
lean clay with sand	33	21	12	87	78	CL

**Project No.** 111-224G      **Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities  
**Location:** Test Pit 3      **Sample Number:** S111-932

**ALLWEST TESTING & ENGINEERING**  
 Hayden, ID

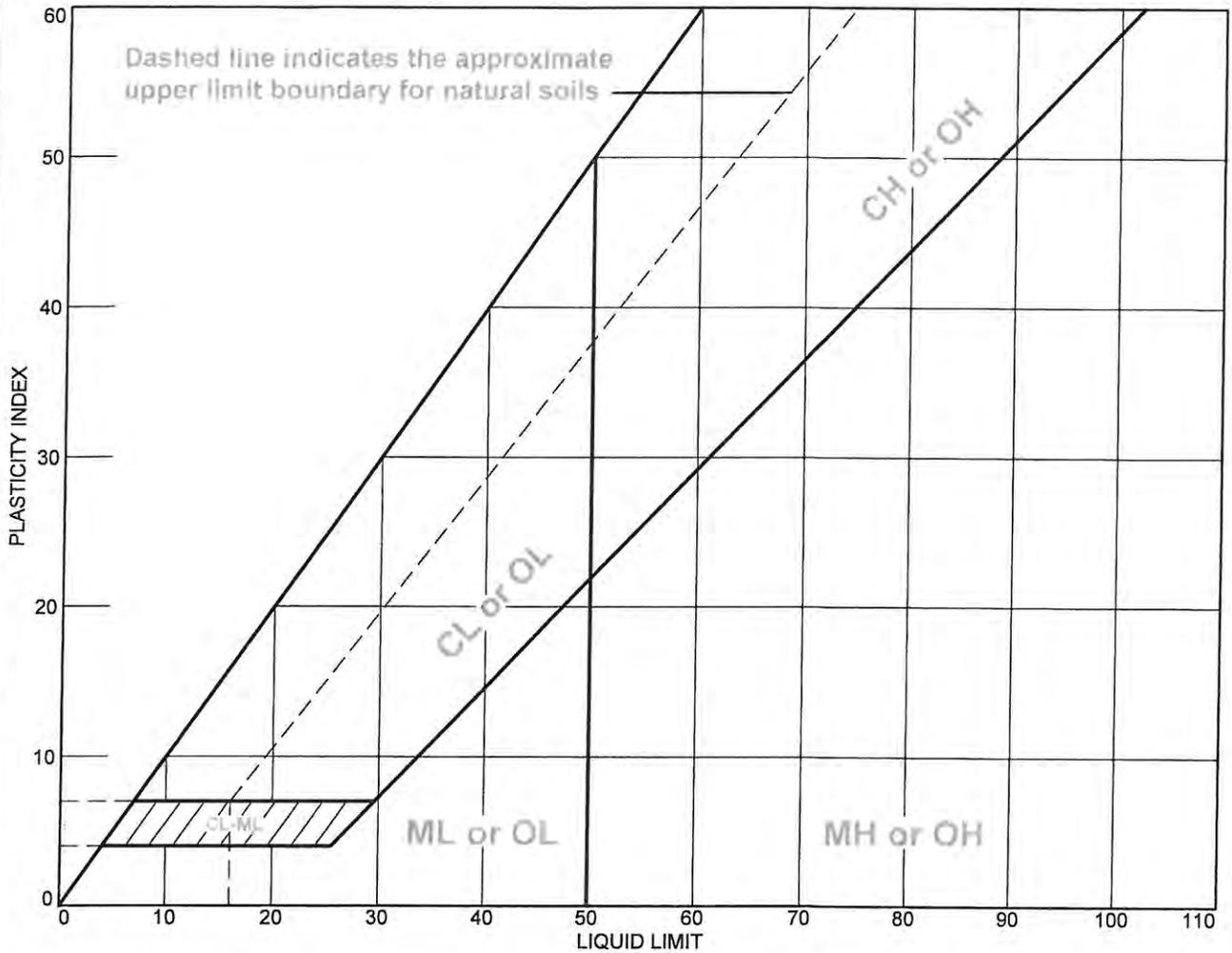
**Remarks:**  
 • Sampled By: C. Beck  
 Sample Date: 10/25/2011

**Checked By:** *[Signature]*

**Tested By:** M Maher

**Checked By:** C McKissen

# LIQUID AND PLASTIC LIMITS TEST REPORT



This test report shall not be reproduced except in full without the permission of ALLWEST Testing & Engineering, LLC.

MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
• sandy silt	NV	NP	NP	79	63	ML

**Project No.** 111-224G      **Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities  
**• Location:** Test Pit 5      **Sample Number:** S111-933  
  
**ALLWEST TESTING & ENGINEERING**  
 Hayden, ID

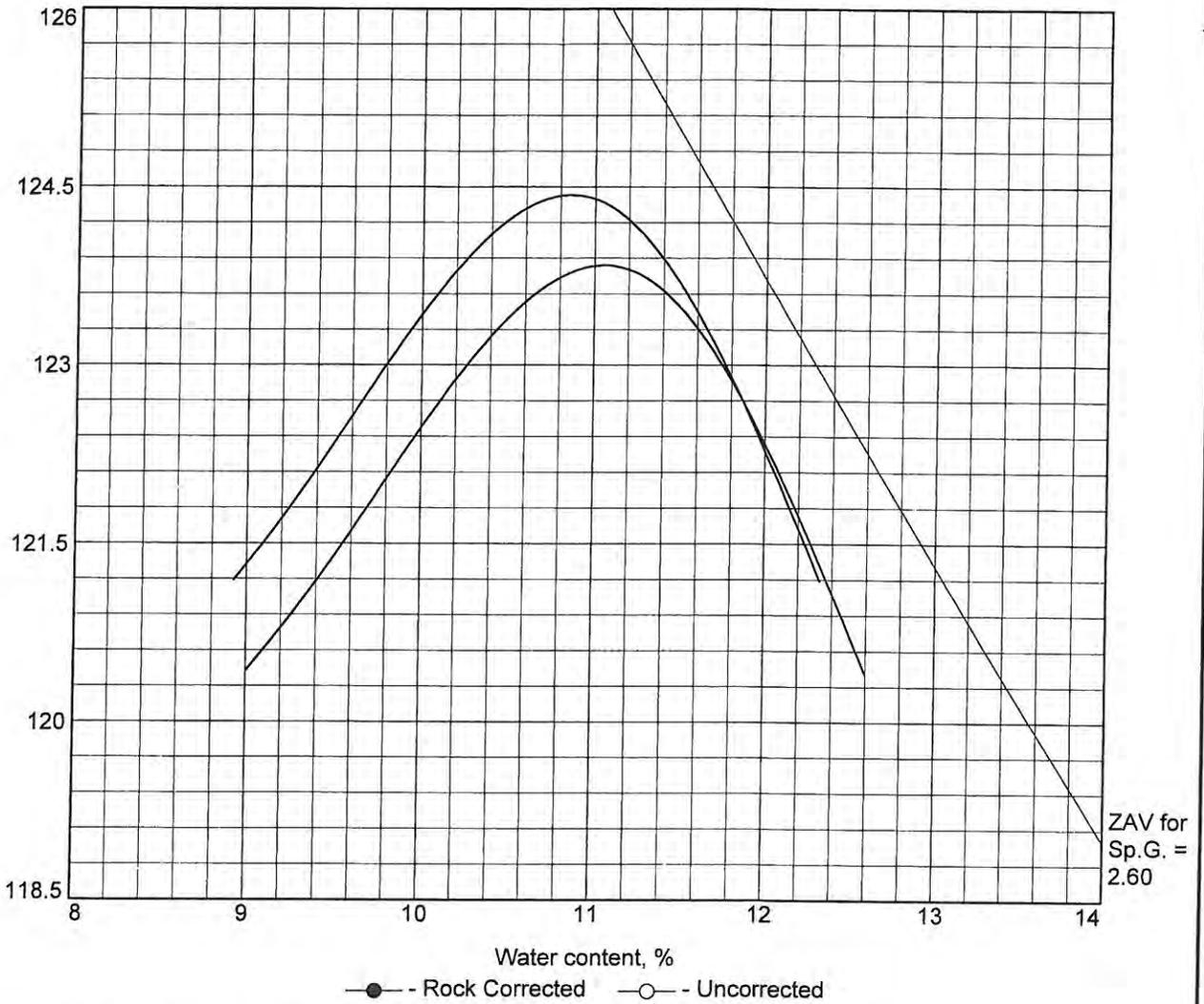
**Remarks:**  
 • Sampled By: C. Beck  
 Sample Date: 10/25/2011  
 MATERIAL EXHIBITED DILATION BUT DID NOT ROLL THREADS; PLASTIC LIMIT CANNOT BE ACHIEVED  
  
 Checked By: *OM*

**Tested By:** M Maher

**Checked By:** C McKissen



# Moisture Density Curve



Test specification: ASTM D 1557-07 Method A Modified  
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	ML	A-4(0)	NA		21	NP	2	63

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 124.4 pcf	123.8 pcf	sandy silt
Optimum moisture = 10.9 %	11.1 %	

**Project No.** 111-224G    **Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities  
**Location:** Test Pit 1    **Sample Number:** S111-931

**Remarks:**  
 Sampled By: C. Beck  
 Sample Date: 10/25/2011

**ALLWEST TESTING & ENGINEERING**  
  
 Hayden, ID

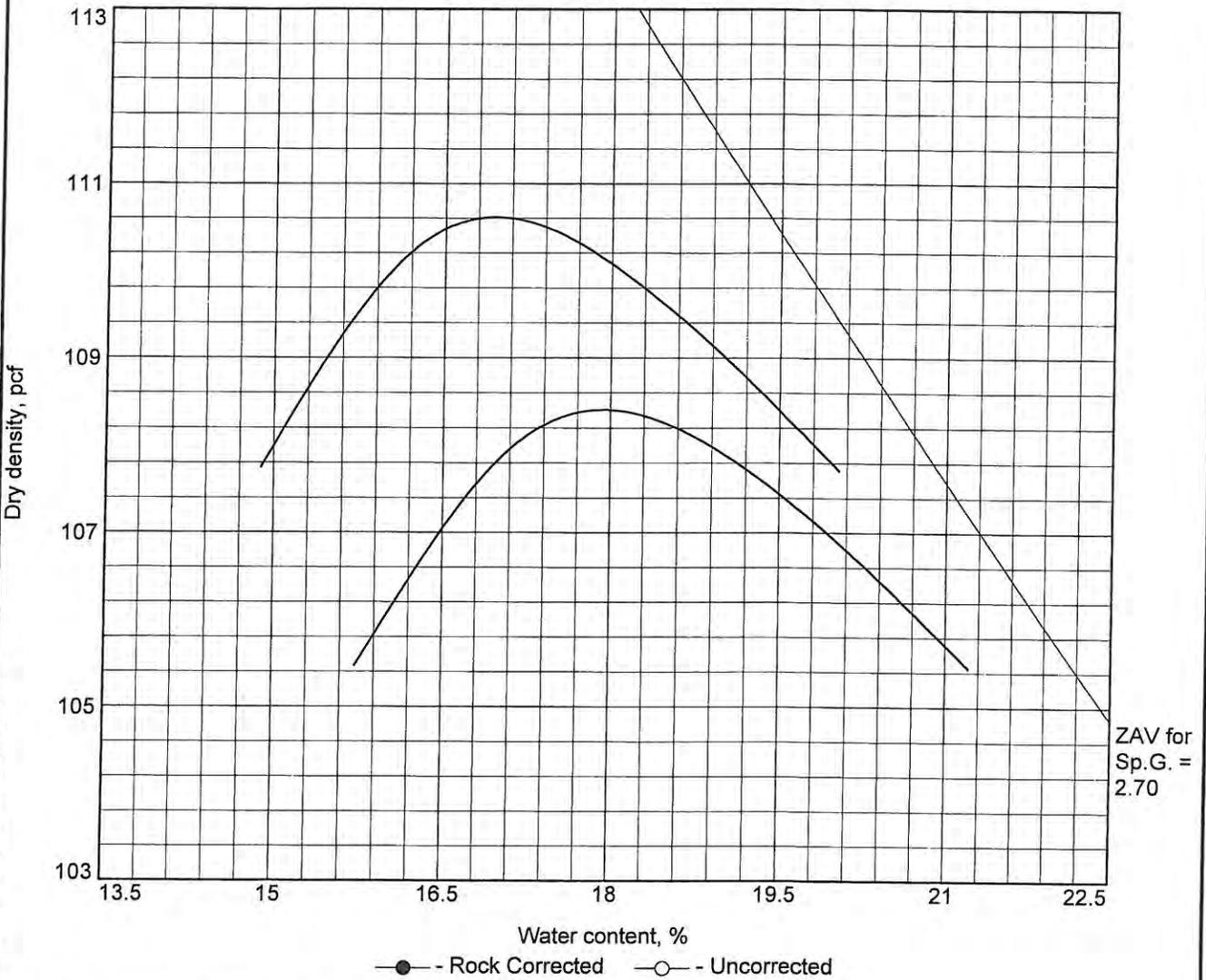
**Checked By:** *mm*

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**Tested By:** S Brady

**Checked By:** C McKissen

# Moisture Density Curve



Test specification: ASTM D 1557-07 Method A Modified  
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	CL	A-6(8)	NA		33	12	6	78

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 110.6 pcf	108.4 pcf	lean clay with sand
Optimum moisture = 16.9 %	17.9 %	

**Project No.** 111-224G    **Client:** T.O. Engineers  
**Project:** Cave Bay Wastewater Facilities  
**Location:** Test Pit 3    **Sample Number:** S111-932

**Remarks:**  
 Sampled By: C. Beck  
 Sample Date: 10/25/2011

**ALLWEST TESTING & ENGINEERING**  
  
 Hayden, ID

**Checked By:** *[Signature]*

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**Tested By:** S Brady

**Checked By:** C McKissen

**LIQUID AND PLASTIC LIMIT TEST DATA**

11/15/2011

**Client:** T.O. Engineers

**Project:** Cave Bay Wastewater Facilities

**Project Number:** 111-224G

**Location:** Test Pit 6

**Sample Number:** S111-934

**Material Description:** silty sand

**%<#40:** 71

**%<#200:** 49

**USCS:** SM

**AASHTO:** A-4(0)

**Tested by:** M Maher

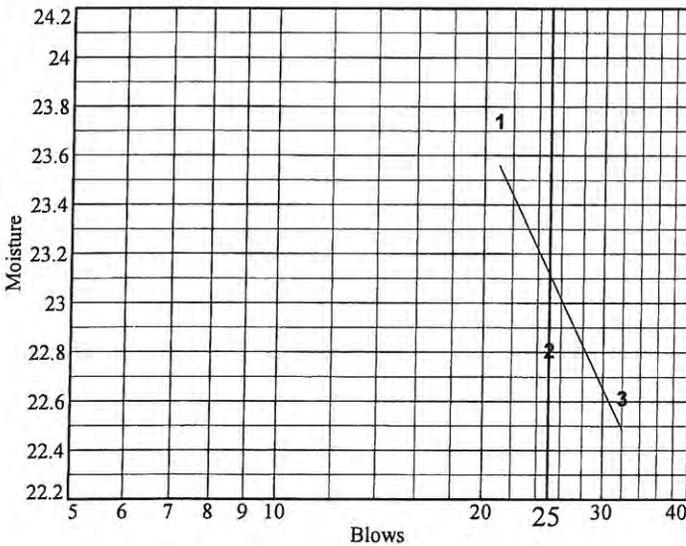
**Checked by:** C McKissen

**Testing Remarks:** Sampled By: C. Beck

Sample Date: 10/25/2011

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
<b>Wet+Tare</b>	32.43	29.62	34.99			
<b>Dry+Tare</b>	27.01	24.86	29.28			
<b>Tare</b>	4.18	3.99	4.03			
<b># Blows</b>	21	25	32			
<b>Moisture</b>	23.7	22.8	22.6			



Liquid Limit= 23  
 Plastic Limit= 22  
 Plasticity Index= 1

**Plastic Limit Data**

Run No.	1	2	3	4
<b>Wet+Tare</b>	21.22	27.91		
<b>Dry+Tare</b>	18.01	23.60		
<b>Tare</b>	4.00	4.00		
<b>Moisture</b>	22.9	22.0		

**LIQUID AND PLASTIC LIMIT TEST DATA**

11/15/2011

Client: T.O. Engineers  
 Project: Cave Bay Wastewater Facilities  
 Project Number: 111-224G  
 Location: Test Pit 3  
 Sample Number: S111-932

Material Description: lean clay with sand

%<#40: 87

%<#200: 78

USCS: CL

AASHTO: A-6(8)

Tested by: M Maher

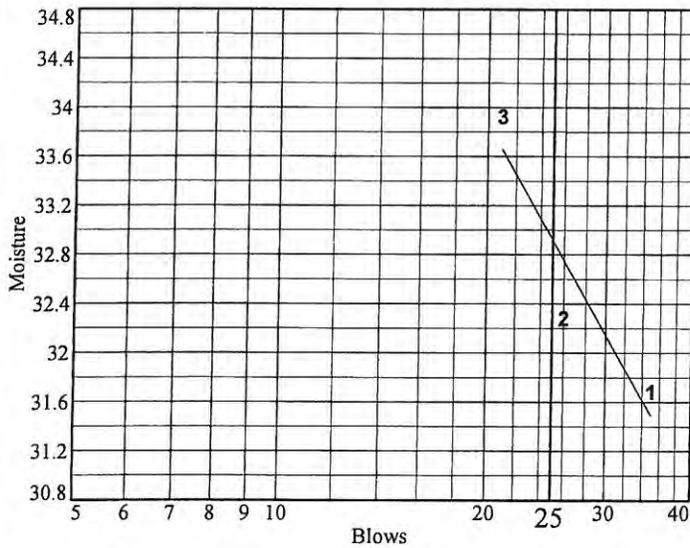
Checked by: C McKissen

Testing Remarks: Sampled By: C. Beck

Sample Date: 10/25/2011

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	34.89	34.88	34.08			
Dry+Tare	27.52	27.40	26.47			
Tare	4.26	4.23	4.04			
# Blows	35	26	21			
Moisture	31.7	32.3	33.9			



Liquid Limit= 33  
 Plastic Limit= 21  
 Plasticity Index= 12  
 Natural Moisture= NA

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	16.50	15.65		
Dry+Tare	14.42	13.63		
Tare	4.20	4.12		
Moisture	20.4	21.2		

**LIQUID AND PLASTIC LIMIT TEST DATA**

11/17/2011

Client: T.O. Engineers  
 Project: Cave Bay Wastewater Facilities  
 Project Number: 111-224G  
 Location: Test Pit 1  
 Sample Number: S111-931

Material Description: sandy silt

%<#40: 89

%<#200: 63

USCS: ML

AASHTO: A-4(0)

Tested by: M Maher

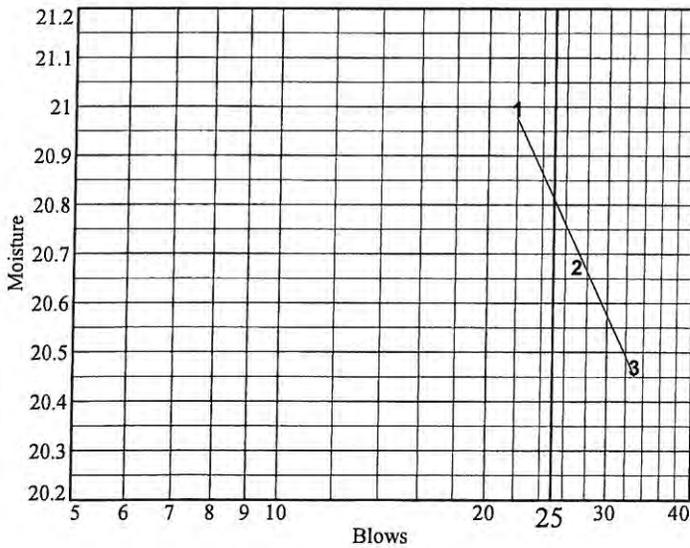
Checked by: C McKissen

Testing Remarks: Sampled By: C. Beck

Sample Date: 10/25/2011

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	34.37	32.66	30.67			
Dry+Tare	29.14	27.75	26.14			
Tare	4.23	4.00	4.01			
# Blows	22	27	33			
Moisture	21.0	20.7	20.5			



Liquid Limit= 21  
 Plastic Limit= 22  
 Plasticity Index= NP  
 Natural Moisture= NA

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	42.23	41.25		
Dry+Tare	35.36	34.68		
Tare	4.20	4.10		
Moisture	22.0	21.5		



**MOISTURE DENSITY TEST DATA**

11/17/2011

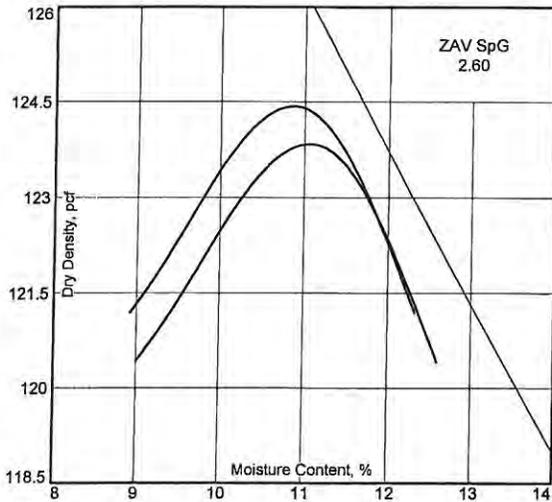
Client: T.O. Engineers  
 Project: Cave Bay Wastewater Facilities  
 Project Number: 111-224G  
 Location: Test Pit 1  
 Sample Number: S111-931  
 Description: sandy silt  
 USCS Classification: ML  
 Natural Moisture: NA  
 Testing Remarks: Sampled By: C. Beck  
 Sample Date: 10/25/2011  
 Tested by: S Brady

AASHTO Classification: A-4(0)  
 Plasticity Index: NP  
 Liquid Limit: 21  
 Checked by: C McKissen

**Test Data and Results**

**Test Specification:**

Type of Test: ASTM D 1557-07 Method A Modified  
 Mold Dia: 4.00 Hammer Wt.: 10 lb. Drop: 18 in. Layers: five Blows per Layer: 25



Point No.	1	2	3	4
Wt. M+S	13.62	13.79	13.97	13.85
Wt. M	9.38	9.38	9.38	9.38
Wt. W+T	751.1	867.0	714.7	803.5
Wt. D+T	714.8	803.8	654.7	725.4
Tare	230.9	126.0	123.3	126.2
Moist.	7.5	9.3	11.3	13.0
Moist.*	7.4	9.2	11.1	12.8
Dry Den.*	119.0	121.6	124.3	119.3

**Rock Corrected Results:** Max. Dry Den.= 124.4 pcf Opt. Moist.= 10.9%  
**Uncorrected Results:** Max. Dry Den.= 123.8 pcf Opt. Moist.= 11.1%

**Rock Correction Data:**

Correction Method: ASTM D 4718-87  
 Percentage of Oversize Material (%> #4): 2 Bulk Specific Gravity of Oversize Material: 2.60  
 Oversize Material Moisture Content: 1.5

\*Note: the rock correction was applied to every test point's density and moisture value.

---

APPENDIX E  
MAILING LIST

---

**CAVE BAY COMMUNITY SERVICE, INC.**  
**Customer Contact List**  
January 8, 2013

Customer	Contact	Street1	Street2	City	State	Zip
ADAMS, GEOFFREY & DANIELLE	GEOFFREY & DANIELLE ADAMS	6621 141ST PL NE		REDMOND	WA	98052
ALLAN, CHIEF	CHIEF ALLAN	22125 CANDLELIGHT DRI		WORLEY	ID	83876
ALLEN-KELSAY, BARBARA	BARBARA ALLEN-KELSAY	22161 S CARROLL DR		WORLEY	ID	83876
ALLEN, JASON	JASON ALLEN & JODI WADE	3221 PERCHING BIRD LN		N LAS VEGAS	NV	89084
ANDERSON, JANEY	JANEY ANDERSON	2801 S PARK LN		SPOKANE	WA	99212
ANDERSON, JANEY 2	JANEY ANDERSON	2801 S PARK LN		SPOKANE	WA	99212
BACON, DOUGLAS & LORRAINE	DOUGLAS & LORRAINE BACON	9102 N TWILIGHT CT		SPOKANE	WA	99208
BAIRD, JERRY & LAURA	JERRY & LAURA BAIRD	14315 E VALLEY WAY		SPOKANE	WA	99216
BARKER, RAY & SARA	RAY BARKER	PO BOX 9408		MOSCOW	ID	83843
BARRETT, JOSEPH & MARILEE	JOSEPH & MARILEE BARRETT	PO BOX 385		WORLEY	ID	83876
BOGLE, KAREN	KAREN BOGLE	20870 S CAVE BAY RD		WORLEY	ID	83876
BOWMAN, DREW & PAIGE	CHARLES BOWMAN	8501 N FOREST BLVD		SPOKANE	WA	99208
BRAMAN, GEORGE & MIDGE	GEORGE & MIDGE BRAMAN	22505 MONTECOLA CT		WORLEY	ID	83876-7786
BRANSON, GARY & SHIRLEY	GARY & SHIRLEY BRANSON, CO-MANAGERS	C/O 5105 E RAILROAD AVE		SPOKANE VALLEY	WA	99212
BREWER, ROB & SANDY	ROB & SANDY BREWER	PO BOX 437		WORLEY	ID	83876
BRODERICK, JOHN & MARY BETH	JOHN & MARY BETH BRODERICK	4940 CENTERWOOD ST		LAKE OSWEGO	OR	97035
BUNGE, JANE	JANE BUNGE	6585 W CLIFF CT		WORLEY	ID	83876
BURGESS, WILLIAM & FRAN	WILLIAM & FRAN BURGESS	22754 S MADRONA LP		WORLEY	ID	83876
BURNS, GAVIN & BILLIE JO	GAVIN & BILLIE JO BURNS	6760 W BRIGANTINE DR		WORLEY	ID	83876
CAMPBELL, HOWARD & ELAINE	HOWARD & ELAINE CAMPBELL	6219 S YALE ST		SPOKANE	WA	99223-1747
CAMPBELL, LLOYD & PATRICIA	LLOYD & PATRICIA CAMPBELL	17210 E BELMONT RD		MICA	WA	99023
CARBONE / RUST, JACKIE & DOUGLAS	JACKIE CARBONE AND DOUGLAS RUST	3601 BELMONT RD		COEUR D'ALENE	ID	83815
CASH, DON & LUCY	Don Cash	22320 S LAKESHORE DR		WORLEY	ID	83876
CLAUSEN, CARL	CARL CLAUSEN	3308 11TH ST		LEWISTON	ID	83501-5302
CLAUSEN, NORMA	NORMA CLAUSEN	1612 CEDAR AVE		LEWISTON	ID	83501-5946
COLLINS, JIM & KRIS	JIM & KRIS COLLINS	P O BOX 25		WORLEY	ID	83876
CONNELL, MIKE & HANON, GREG	Mike Connell	505 SW SUNDANCE CT		PULLMAN	WA	99163
COOPER, CRAIG & HEATHER	CRAIG & HEATHER COOPER	3904 S BERNARD ST		SPOKANE	WA	99203
CORBEILL, COLLEEN	Colleen Corbeill	5202 W BROKEN T RD		RATHDRUM	ID	83858
CROWLEY, TOM	TOM CROWLEY	10378 W SHALE CT		POST FALLS	ID	83854
DARNOLD, TREVOR & JENIFER	TREVOR & JENIFER DARNOLD	7190 W BRIGANTINE DR		WORLEY	ID	83876
DATAMAC	JACK W FAIRLEY	2707 HIGHWAY 95N		COTTONWOOD	ID	83522
DAVEY, DOUG & JUDY	DOUG & JUDY DAVEY	15467 VIA LA GITANA		CARMEL VALLEY	CA	93924-9600
DAVIS, JUDY	Judy Davis	402 N HAUSER		COLFAX	WA	99111
DE SONIA, RONALD & KAREN	RONALD & KAREN DE SONIA	12413 E LENORA DR		SPOKANE VALLEY	WA	99216
DEAN, JEFF & ROBIN	Jeff Dean	7615 N H ST		SPOKANE	WA	99208
DRAKE, KEITH & JOYCE	KEITH & JOYCE DRAKE	22912 S MADRONA		WORLEY	ID	83876
DRECHSEL, JAMES & JANIS JOY	JAMES & JANIS JOY DRECHSEL	1702 E SATRE AVE		COEUR D ALENE	ID	83815
DREHER, STEPHEN & MELINDA	STEPHEN & MELINDA DREHER	PO BOX 400		WORLEY	ID	83876
DRONENBERG, ROBERT & SANDRA	ROBERT & SANDRA DRONENBURG	7203 N CLANEY CT		SPOKANE	WA	99208
DUNFORD & VENEZIANO	DUNFORD & VENEZIANO	ANNETTE VENEZIANO	1666 HILLCREST DR	MOSCOW	ID	83843
DUNFORD, DANE & DIANE	DANE & DIANE DUNDFORD	20982 S CAVE BAY RD		WORLEY	ID	83876
ENG, PAUL & CAROL	PAUL & CAROL ENG	522 W 37TH AVE		SPOKANE	WA	99203-1406
ENGIBOUS, JIM & EM	JIM & EM ENGIBOUS	231608 S MADRONA LP		WORLEY	ID	83876
EVERSON, DALE & DARLENE	DALE & DARLENE EVERSON	1241 PONDEROSA DR		MOSCOW	ID	83843
FAWCETT, DONNA	DONNA FAWCETT	1659 S AGATE CIR		ST GEORGE	UT	84790
FLEMING, SHIRLEY	SHIRLEY FLEMING	C/O TRACIE FLEMING	630 PINE AVE	PLUMMER	ID	83851
FLORY, EDWIN	ED FLORY	22794 S MADRONA LP		WORLEY	ID	83876
FLOWER, C. RICK & BARBARA	RICK FLOWER	6872 W BRIGANTINE DR		WORLEY	ID	83876
FREDERICK, MARY K & IRVIN, BARBARA	BARBARA IRVIN	5325 RIDGEVIEW DR		MOSES LAKE	WA	98837
GAUDETTE, TERESA	TERESA GAUDETTE	P O BOX 531		KAKE	AK	99830
GEORGE, THOMAS & MELINDA	THOMAS & MELINDA GEORGE	7047 20TH AVE NE		SEATTLE	WA	98115
GEURIN, KEN & BARBARA	KEN GEURIN	495 S KELLY RD		COEUR D ALENE	ID	83814
GIBEAULT, MICHAEL & ESTHER	MICHAEL & ESTHER GIBEAULT	5535 N FOREST BLVD		SPOKANE	WA	99205
GITTINS, ELEANOR	ELEANOR H GITTINS	C/O RICHARD GITTINS	1560 HILLCREST CT	CLARKSTON	WA	99503
GREINER, CAREY	CAREY GREINER	11100 KUERTZMILL DR		CINCINNATI	OH	45249
GRIFF, DARIN & SHARI	DARIN & SHARI DARIN	3403 E ST JAMES AVE		HAYDEN LAKE	ID	83835
GROENIG, DAVID & JENNIE	DAVID & JENNIE GROENIG	2903 E 25TH AVE APT 625		SPOKANE	WA	99223
GROOMS, ROBERT & EILEEN	ROBERT & EILEEN GROOMS	11624 SUN VIEW CIR		SPOKANE	WA	99206-7023
GROSSMAN, ROD & KELLY	ROD GROSSMAN	15390 VANTAGE HIGHWAY		ELLENSDALE	WA	98926
HAGER, ROGER	ROGER G HAGER	PO BOX 18		OAKESDALE	WA	99158
HARRIS, WAYNE & KAYE	WAYNE & KAYE HARRIS	BOX 137		KENDRICK	ID	83537
HASH, NANCY	Nancy Hash	1184 BEAR CREEK RD		PRINCETON	ID	83857
HATCH, SHARON	SHARON HATCH	3031 MAYFAIR DR		LEWISTON	ID	83501
HATHAWAY, JAMES & CORINA	JAMES & CORINA HATHAWAY	22225 S CAVE BAY RD		WORLEY	ID	83876
HAYDEN, HELEN	HELEN HAYDEN	3410 GREENWICH ST		COEUR D'ALENE	ID	83815
HECK, GREG AND LORI	GREG & LORI HECK	6209 ST ANDREWS DR		MUKILTEO	WA	98275
HEYN, LAURA	LAURA HEYN	12514 E STOUGHTON RD		VALLEYFORD	WA	99036
HILL, JEFF & KARIN	JEFF HILL	6645 W CLIFF CT		WORLEY	ID	83876-9778
HILL, SCOTT E.	SCOTT E HILL	22270 S CANDLELIGHT DR		WORLEY	ID	83876
HOGAN, THOMAS & JUDY	THOMAS J HOGAN	2402 GOLD CREEK RD		GOLD CREEK	MT	59733
HOWARD, BEN & HANNAH	BENJAMIN & HANNAH HOWARD	P O BOX 356		UNALAKLEET	AK	99684
JEFFRIES, JOHN & SHAWNA	JOHN JEFFRIES	405 N THIRD		OAKESDALE	WA	99158
JOHNSON, BRIAN & DEBRA	BRIAN & DEBRA JOHNSON	285 PINTALL LN		MOSCOW	ID	83843
KECK, ARLAN	ARLAN KECK	PO BOX 163		POTLATCH	ID	83855

CAVE BAY COMMUNITY SERVICE, INC.  
Customer Contact List  
January 8, 2013

Customer	Contact	Street1	Street2	City	State	Zip
KEHNE, JON & PEGGY	JON & PEGGY KEHNE	801 SOUTHVIEW		COLFAX	WA	99111
KEIM, DENNIS & OLSON, JOEL	JOEL OLSON	1123 S BREEZY WAY		POST FALLS	ID	83854
KENT, GARY & JUDY	GARY & JUDY KENT	3420 W INDIAN TRAIL RD		SPOKANE	WA	99208
KINCAID, CRIS & PAMELA	CRIS & PAMELA KINCAID	351 HALPIN RD		PULLMAN	WA	99163
KINKELA, DAVID & PAMELA	DAVID & PAMELA KINKELA	22777 S HIGH DR		WORLEY	ID	83876
KIRKPATRICK, ALLEN & KRISTIE	ALLEN & KRISTIE KIRKPATRICK	701 CRESTVIEW DR		COLFAX	WA	99111
KNOBF, JERRY	JERRY KNOBF	14709 SE 80TH Ct		NEWCASTLE	WA	98059
KNOTT, JERRY & BRAUNDA	JERRY & BRAUNDA KNOTT	22100 S CARRROLL DR		WORLEY	ID	83876
KOENIG, ANN	ANN KOENIG	2629 WILLOW DR		LEWISTON	ID	83501
KRACKE, KEVIN & KIMBERLY	KEVIN & KIMBERLY KRACKE	PO BOX 2145		LEWISTON	ID	83501-1465
KRAHENBUHL, CHARLES & CAROL	CHARLES & CAROL KRAHENBUHL	PO BOX 430		WORLEY	ID	83876-0430
LAIRD, GORDON & KATHY	GORDON & KATHY LAIRD	20637 S CAVE BAY RD		WORLEY	ID	83876
LAMPERT LAND CO	DAVID LAMPERT	8306 W LAMPERT RD		WORLEY	ID	83876
LANG, MILTON & JANEL	MILTON & JANEL LANG	410 SW SKYLINE DR		PULLMAN	WA	99163
LARGENT, LARRY & KRISTEN	LARRY & KRISTIN LARGENT	22144 S CANDLELIGHT DR		WORLEY	ID	83876
LEARN, JANICE	JANICE LEARN	3323 W 2ND		SPOKANE	WA	99224
LEIFER, CLYDE & JOYCE	CLYDE & JOYCE LEIFER	951 LEIFER RD		ST JOHN	WA	99171
LEIFER, JOE & PATTY	JOE & PATTY LEIFER	511 BELL LN		ST JOHN	WA	99171
LEINWEBER, EUGENE	EUGENE LEINWEBER	132855 SR 26		COLFAX	WA	99111
LIGHTFIELD, KRISTINE & KIRK	KRISTINE LIGHTFIELD	24307 E PINEHURST LN		LIBERTY LAKE	WA	99019
LOOMIS, LARRY & SHEILA	LARRY & SHEILA LOOMIS	1050 PARADISE RIDGE RD		MOSCOW	ID	83843
LORENZEN, JOEL & DEBRA	JOEL & DEBRA LORENZEN	1661 E GLENHAVEN DR		PHOENIX	AZ	85048
LOUTHIAN, WILLIAM & KIMBERLEE	WILLIAM & KIMBERLEE LOUTHIAN	4306 S ORLANDO CT		SPOKANE	WA	99223-6145
MAGYAR, ROBERT & JILL	ROBERT & JILL MAGYAR	106 FLINT ST		MOSCOW	ID	83843
MANN, GARY & DONNA	GARY & DONNA MANN	2009 E SMYTHE RD		SPANGLE	WA	99031
MARTIN, VINCE & CHRIS	Vince & Chris Martin	12120 E 21ST AVE		SPOKANE	WA	99206
MASSON, BONNIE, PATRICIA MARENGO	BONNIE MASSON	22304 S CANDLELIGHT DR		WORLEY	ID	83876
MAYER, NICHOLAS & SARA	NICHOLAS & SARA MAYER	133051 SR 26		COLFAX	WA	99111
McCRORY, WILLIAM & LISA	William McCrory	6065 N HARCOURT		COEUR D'ALENE	ID	83815-8473
MEDLEY, LARRY & JULIE	LARRY & JULIE MEDLEY	20108 E MISSION		GREENACRES	WA	99016
MELLIICK, EVA	EVA MELLIICK	21478 S CAVE BAY RD		WORLEY	ID	83876
MELNIKOFF, ARNOLD & GLORIA	ARNOLD & GLORIA MELNIKOFF	5317 N ELTON		SPOKANE	WA	99212-1666
MEREDITH, GLEN R (C-B)	GLEN MEREDITH	PO BOX 65		WORLEY	ID	83876-0065
MEYER, PHILLIP & BETH	PHILLIP & BETH MEYER	302 NW PARK WEST DR		PULLMAN	WA	99163
MILLHAM, CHARLES & BONNIE MAY	CHARLES & BONNIE MAY MILLHAM	PO BOX 31		PULLMAN	WA	99163
MINK, LELAND & MARY	LELAND & MARY MINK	PO BOX 447		WORLEY	ID	83876
MIYAMAE, JAN	JAN MIYAMAE	3514 N DOWNER		SHOREWOOD	WI	53211-2603
MONTAGUE (2), STEVEN & KAREN	Steven	11923 E DIANA CT		SPOKANE	WA	99206
MONTAGUE, LINCOLN & MISTI	LINCOLN & MISTI MONTAGUE	22435 S CARRROLL DR		WORLEY	ID	83876
MONTAGUE, STEVE & KAREN	STEVE & KAREN MONTAGUE	11923 E DIANA CT		SPOKANE	WA	99206
MOORE, DAVID & CHRISTY	DAVID & CHRISTY MOORE	22606 MADRONA LP		WORLEY	ID	83876
MOULTON, RIAL & TAMI	RIAL & TAMI MOULTON	3611 N DALE RD		SPOKANE	WA	99212-1948
MUELLER, ROLAND & ERIN	ROLAND & ERIN MUELLER	415 TIMBER LN		POST FALLS	ID	83854
MUELLER, SHAUN P & JANET L		101 E MANITOBA		ELLENSBURG	WA	9926
MURRAY, DANIEL & KOLLEEN	DANIEL & KOLLEEN MURRAY	4924 S PITTSBURG		SPOKANE	WA	99223
NEFF, MARLUND	MARLAND NEFF	22349 S CARROLL DR		WORLEY	ID	83875-9745
NEUMANN, DAVID & GAIL	DAVID & GAIL NEUMANN	22425 S CARROLL DR		WORLEY	ID	83876
NEWBRY, WILLIAM & SUSAN	BILL & SUSAN NEWBRY	342 N LAUREL		GENESEE	ID	83832
NILSON, ROGER & CAROL	ROGER & CAROL NILSON	BOX 2		COLTON	WA	99113
NORMINGTON, DELAMAR & NANCY	DELMAR NORMINGTON	971 MAXFIELD DR		OGDEN	UT	84404
NORWOOD, CYNTHIA	CYNTHIA NORWOOD	PO BOX 31175		SPOKANE	WA	99203-3019
OBERST, FRANK & LUANNA	FRANK & LUANNA OBERST	5603 S HOGAN LN		SPOKANE	WA	99223-8200
OLSON, BEN & MISTIQUE		6354 LANDCASTER RD		ST JOHN	WA	99171
ORVIK, ALENE	ALENE ORVIK	PO BOX 2		WORLEY	ID	83876-0002
OTTERNESS, ROBERT & VICKI	Robert & Vicki Otterness	21156 S CAVE BAY DR		WORLEY	ID	83876
PATTEN, RAMONA	RAMONA PATTEN	14914 W BURNETT RD		NINE MILE FALLS	WA	99026
PAYNE, RALPH & SHIRLEY	RALPH & SHIRLEY PAYNE	105 VALLEY VIEW DR		TROY	ID	83871
PRATT, WILLIAM & PAM	WILLIAM & PAM PRATT	5945 W HEINE RD		COEUR D'ALENE	ID	83814-7424
PRICE, RALPH & DORINA	RALPH & DORINA PRICE	110 N ORCHARD HEIGHTS WAY		NAMPA	ID	83651
QUANN, JAMES & BARBARA	JAMES & BARBARA QUANN	3604 E BAYCOURT		SPOKANE	WA	99223
RAINWATER, CLYDE & MARION	CLYDE & MARION RAINWATER	2016 E 55TH AVE		SPOKANE	WA	99223
REID, BRUCE & KAREN	BRUCE & KAREN REID	10837 FOREST AVE S		SEATTLE	WA	98178
RENNEBAUM, FRITZ & BECKY	FRITZ & BECKY RENNEBAUM	22602 S MADRONA LP		WORLEY	ID	83867
RISTINE, GARY & STEPHANIE	GARY & STEPHANIE RISTINE	500 E CHERRY LN APT C3		ELLENSBURG	WA	98926
ROBERTS, FRANK & SUSAN	FRANK & SUSAN ROBERTS	6860 W SALISHAN WAY		SPIRIT LAKE	ID	83869
ROBOHN, FRED & CONNIE	FRED ROBOHN	PO BOX 30717		SPOKANE	WA	99223-3011
ROCHE, JOHN & KATHLEEN	JOHN & KATHLEEN ROCHE	PO BOX 40		LIBERTY LAKE	WA	99019-0040
ROECKS, BETTIE	BETTIE ROECKS	10116 E 15TH AVE		SPOKANE VALLEY	WA	99296
ROMANICK, CHARLES	CHARLES ROMANICK	504 W BARNES RD		SPOKANE	WA	99218
RUMFORD, LUCILLE (DALE)	LYNN SEEHORN	C/O DALE RUMFORD	1051 BRUSH CREEK RD	DEARY	ID	83823
SAFFLE, DAVE & CARLA	DAVE SAFFLE	1317 W ALICE AVE		SPOKANE	WA	99205-2709
SANDERS, DAVE & LYNNE	DAVE SANDERS	PO BOX 470		WORLEY	ID	83876
SANDERS, ROBERT & DEBBIE; BULL, DICK	ROBERT SANDERS	10712 E 47th AVE		SPOKANE	WA	99206
SCHMIDT, KEVIN & SHEILA	KEVIN & SHEILA SCHMIDT	1923 N GREENACRES RD		GREENACRES	WA	99016-9545
SCHNEIDER, WAYNE & JOANN	WAYNE & JOANN SCHNEIDER	1894 S RIVERBIRCH AVE		EAGLE	ID	83616

CAVE BAY COMMUNITY SERVICE, INC.  
Customer Contact List  
January 8, 2013

Customer	Contact	Street1	Street2	City	State	Zip
SELLMAN, WILL & CECE	WILL & CECILIA SELLMAN	106 COUGAR RIDGE DR		LENORE	ID	83541
SEVEDGE, VICKI	VICKI SEVEDGE	5848 E BETTY ELYSE LN		SCOTTSDALE	AZ	85254
SHIMIZU, KEIJI & MARILYN	KEIJI & MARILYN SHIMIZU	910 S BANNEN RD		SPOKANE VALLEY	WA	99037-8610
SMITH, ALAN & TAMRA	ALAN & TAMRA SMITH	1291 DRISCOLL RIDGE		TROY	ID	83871
SMITH, HENRY & LUCY	HENRY & LUCY SMITH	21337 CAVE BAY RD		WORLEY	ID	83876
SMITH, JASON & BARBARA	JASON SMITH	21447 S CAVE BAY RD		WORLEY	ID	83876
SPANGLER, NORMA	NORMA SPANGLER	1002 W 32ND AVE		SPOKANE	WA	99203
SPOONER, GENE	GENE SPOONER	429562 HWY 20		NEWPORT	WA	99156
SPURGEON & DAVIS	LEEMAN EVELYN LISA JEFF SPURGEON, DA\ LISA & JEFF DAVIS		2587 E ST JAMES AVE	HAYDEN	ID	83835
STAUFFER, LARRY & ZOE ANN	LARRY & ZOE ANN STAUFFER	5005 S DEARBORN RD		SPOKANE	WA	99223
STURGIS, GERALD AND VIRGINIA	GERALD AND VIRGINIA STURGIS	22820 MADRONA LP		WORLEY	ID	83876
TASAKOS, LINDA	LINDA TASAKOS	5421 W FAIRWAY LN UNIT 5		RATHDRUM	ID	83858
THOMAS, KATHY	KATHY THOMAS	PO BOX 183		WILSON CREEK	WA	98860
THORSON - JOHNSON, DELFRED & SUSAN	DELFRED THORSON	15921 E ELDER RD		ROCKFORD	WA	99030
TINGSTAD, ED & LAURA	ED & LAURA TINGSTAD	650 SE MEADOW VALE		PULLMAN	WA	99163
TORNOW, LARRY	LARRY TORNOW	PO BOX 1226		CHEHALIS	WA	98532
TUCKER, RAY & GERALDINE	RAY & GERI TUCKER	6752 W CLIFF CT		WORLEY	ID	83876
TURPEN, BRIAN &	BRIAN TURPEN	PO BOX 3980		SPOKANE	WA	99220
TUTCHER, FALING, GERALD BONNIE	GERALD TUTCHER	2428 11TH AVE		LEWISTON	ID	83501-3467
UNKNOWN DONOR						
VANT HUL, MARK	MARK VANT HUL	PO BOX 1798		HAVRE	MT	59501
VAN FOSSEN, RUTH	Ruth Van Fossen	22575 S CARROLL DR		WORLEY	ID	83876
VAN FOSSEN, THOMAS & LETICIA	THOMAS & LETICIA VAN FOSSEN	PO BOX 416		WORLEY	ID	83876-0416
VANTREASE, DAVID & PATTY	DAVID & PATTY VANTREASE	6706 BRIGANTINE DR.		WORLEY	ID	83876
VODICKA, ROBERT & ANNE	ROBERT & ANNE VODICKA	944 GLEN OAK DR		SLEEP HOLLOW	IL	60118
VOGELMAN, ROBERT & DONNA	ROBERT & DONNA VOGELMAN	304 S CONKLIN RD LOT 8		SPOKANE VALLEY	WA	99037
WALKER, MICHAEL & JANE	MICHAEL D WALKER	21629 S CAVE BAY RD		WORLEY	ID	83876
WARDIAN, JEFF & LISA	JEFF & LISA WARDIAN	23110 E COLLEEN CT		LIBERTY LAKE	WA	99019
WELCH, RICHARD & MARYANN	RICHARD & MARYANN WELCH	8421 NE 169TH ST		KENMORE	WA	98028
WEST SCOTT	SCOTT WEST	235 NW ROBERT ST		PULLMAN	WA	99163
WETTER, ERIC & SARAH	ERIC & SARAH WETTER	21775 S CAVE BAY RD		WORLEY	ID	83876
WHITE, ED & VEONA	ED & VEONA WHITE	6775 W CLIFF CT		WORLEY	ID	83876
WHITE, TIM & KAREN	TIM & KAREN WHITE	4171 WATKINS DR		RIVERSIDE	CA	92507
WILHELM, JERALD & DARLENE	JERALD & DARLENE WILHELM	PO BOX 112		WORLEY	ID	83876
WILHELM, JOHN & CAROLE	JOHN & CAROLE WILHELM	22927 S HIGH DR		WORLEY	ID	83876
WILKINS, JACKIE SUE	Jackie Sue Wilkins	1600 NW NICOLE CT		PULLMAN	WA	99163
WILLIAMS, BRAD & MARY KAY	BRAD & MARY KAY WILLIAMS	621 W MALLON STE 603		SPOKANE	WA	99201
WILLIAMS, BRENT & DIANNE	BRENT & DIANNE WILLIAMS	7702 S PINEVIEW LN		SPOKANE	WA	99206
WILSON, JOANNE	JOANNE WILSON	3410 W PINEHILL DR		COEUR D'ALENE	ID	83815
WILSON, STEVE	STEVE WILSON	PO BOX 527		WORLEY	ID	83876-0527
WOHLERS, WILLIAM & SUSAN, O'CONNER, LAURA	WILLIAM & SUSAN WOHLERS	BRYAN & LAURA O'CONNER	41 HIDE AWAY LN	GOLD CREEK	MT	59733
WORLEY, ERLE T.	ERLE WORLEY	23096 S HIGH DR		WORLEY	ID	83876
WRIGHT, JAMES & MARY BETH	JAMES AND MARY BETH WRIGHT	10 ESTATE WAY		YAKIMA	WA	98908
YARBER, CHRISTOPHER & COURTNEY	CHRISTOPHER & COURTNEY YARBER	2020 E PINEHILL LN		SPOKANE	WA	99224
YOUNG, ROSE	ROSE YOUNG	434 LINDEN DR		LEWISTON	ID	83501

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APPENDIX F  
PUBLIC INVOLVEMENT

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*Cave Bay Community Services, Inc.*

# SPECIAL MEETING

## CBCS, Inc. Wastewater Facilities Plan

September 15, 2012  
Open House 9:00 a.m. – Noon  
CBCS Shop Building

Copies of the Draft Wastewater Facilities Plan will be available for review and comment starting September 10th with the comment period closing on September 25, 2012. PDF copies of the plan will be emailed to all CBCS members on the official CBCS e-mail list and will be available on the Cave Bay web site, [cavebaycommunity.com](http://cavebaycommunity.com). Paper copies will also be available in the CBCS Board room in the Shop Building from 9:00 a.m. – 6:00 p.m. prior to the September 15 meeting.

The September 15 “Open House” will provide an opportunity for community members to ask questions of John Tindall, DEQ, Idaho representative and Scott McNee, T-O Engineers representative concerning the CBCS, Inc. Wastewater Facilities Plan.

**All community members are encouraged to stop by the “Open House”  
to learn more about our Wastewater Facilities Plan.**

# PUBLIC MEETING SIGN-IN SHEET

CAVE BAY COMMUNITY SERVICES, INC.  
 Wastewater Facilities Plan  
 September 15, 2012  
 9:00 a.m. to 12:00 p.m.

Name (Please print or write clearly)	Title/Representing	Address (City, State, and ZIP)	Phone
FRED ROBORN	CBCS	23068 S. MADRONA	505-599-8927
Dave Dunford		20982 S. Chambers	208-686-2029
Dave Kinkela	CBCS	22777 S. High Dr.	253-229-4025
Dave + Chris Moore	"	22604 S. Madrona Ln	209-686-8357
JOHN TINDALL	IDEO	2110 IRONWOOD PKY, CA	208-666-4029
Pamela Kinkela		22777 S. High Dr. Worley ID 5572	253-279-9493
Robin + Jeff Dean		20930 S. Cave Bay Rd.	509-464-2341
Gail Neumann		22425 S. Carroll	208-596-8083
Henny + Lucy Smith		21337 S. Cave Bay Rd.	509-220-1777
Floyd Campbell		20846 Cave Bay Rd.	509-999-5352
MONTY WETTER	CB	21775 S. CB Road	208-686-5785
LARRY LARGENT		22144 S. Candlelight Dr	208-686-1008
Bob BEWER		21296 CAVE BAY RD	509-710-6971
Ed Don CASH	"	22360 S. Lakeshore Dr.	Cell 215-0017
Dianne Luanna Oberst		20664 S. Cave Bay Rd	509-991-2632

# PUBLIC MEETING SIGN-IN SHEET

CAVE BAY COMMUNITY SERVICES, INC.  
 Wastewater Facilities Plan  
 September 15, 2012  
 9:00 a.m. to 12:00 p.m.

Name (Please print or write clearly)	Title/Representing	Address (City, State, and ZIP)	Phone
Gloria Melnikoff & Arnold Melnikoff		5317 N. Elton Spokane, WA 99212	(509) 922-6515
Fritz Rennebaum		22602 S. Madrona Sp. Bay	208-659-0203
Jim Engibars		23160 " "	686-1028
Mary Mink		PO Box 447, Waukey	208-771-0818
Beverly Santore		6206 W Brigantine Dr.	686-1028
Karelman		6734 Brigantine Dr. Waukey	686-1841
Charles Krakenbuhl		21138 S Cave Bay Rd	686 0301
Tamra + Alan Smith		22022 Candlelight dr	-

CAVE BAY COMMUNITY SERVICES  
BOARD OF DIRECTORS  
13 October 2012

**ATTENDEES:**

Gavin Burns, VPres  
Fred Robohn, Treas  
Joe Barrett, Dir

Bill Newbry, Dir  
Charlie Krahenbuhl, Dir  
Darlene Wilhelm

Mary Mink, Sec  
Monte Wetter, Dir

**CALL TO ORDER**

Vice President Gavin Burns called the meeting to order at 9:05am. A quorum is present.

**MINUTES**

B Newbry moved, J Barrett seconded the minutes from September 7, 2012 be approved.  
Motion carried.

**FINANCIAL REPORT**

F Robohn presented the financial report. General Fund: \$71,827.45; Boat Slip Fund: \$85,399.50; Water Improvement Fund: \$23,408.09; Sewer Improvement Fund: \$17,023.41 making a total of \$197,658.45. Total payment of \$89,124.60 has been paid for current construction work on the lagoons.

The playground fund has received \$2096.50. **CONTRIBUTIONS FOR THE PLAYSET MAY BE DIRECTED TO FRED ROBOHN AT P O BOX 115, WORLEY, ID 83876.** The total cost of the equipment is \$3000.

After discussion, B Newbry moved, J Barrett seconded Cave Bay establish liens on three properties. The property owners will be declared members not in good standing and be denied Cave Bay services until the account is brought current and membership reapplied for before the board.  
Motion carried.

**MAINTENANCE REPORT**

Activities for September included:

- Replace multifunction valve at well house chlorine pump
- Check antifreeze in all equipment
- Paint bulletin board
- Drain new lagoon sprinkler system
- Repair Dock A
- Turn off water to park
- Paint road markers for snow plowing
- Drain old lagoon sprinkler system; pick up hoses and sprinklers and store for winter
- Service lawn mower
- Spray weeds at park
- Repair road by shop where semi got stuck
- Apply sealer-stain to Dock A
- Average daily water use: 32,132 gallon
- Average daily lagoon input: 4,564 gallon

Red Truck

F Robohn moved, M Wetter seconded the sale of the red truck without the plow nor controls nor pump to Wayne Robison for \$1200 payable in cash or certified check. Motion carried.

## **REPORTS**

### Drinking Water

C Krahenbuhl prepared a drinking water plan of correction and Brenda Morris has reviewed it. The plan will be submitted to DEQ. In the near future, Cave Bay should expect to install hydrants in the dead end areas of the water system; inspect the storage tanks; address individual residential back flow preventers; and install pressure relief valves at the pumps.

### Lagoon Project

The community informational meeting was held September 15 at the Cave Bay offices. There were no comments received during the allotted comment time period. C Krahenbuhl moved, J Barrett seconded the Forest Irrigation Alternative Class C be adopted as the preferred plan for the lagoon system. Motion carried. A letter indicating same will be sent to DEQ.

Correspondence from Barry Burnell, Water Quality Division Administrator for Idaho DEQ included the fully executed Compliance Agreement Schedule between Cave Bay Community Services and the Idaho Department of Environmental Quality showing the effective date of the schedule is September 28, 2012.

In order to comply with requirements of applying for DEQ loan, Cave Bay will need to formalize some of its activities. A risk management policy for the waste water system has been generated. It covers installation, repair, emergency response, operation, and maintenance for the Cave Bay waste water system. J Barrett, M Wetter, and B Newbry were appointed to a committee charged with the responsibility of reviewing and developing a personnel policy including job descriptions to meet increasing requirements and complexities of the Cave Bay system.

### Murray Property

Areas have been marked for repair.

### Dock Repair

Boards are splitting and nails are lifting on C dock. It was decided to direct the maintenance people to install a variety of fasteners now and see what performs the best by spring. That would determine the fix for the remainder of the dock.

## **NEW BUSINESS**

### Henry Smith Carport

J Barrett moved, M Wetter seconded Henry Smith be allowed to erect a carport on his property within Cave Bay easement with the caveat that if Cave Bay work was necessary, he would be required to remove the structure blocking work activity. Motion carried.

### Roads

Darlene Wilhelm is investigating the ownership and maintenance responsibility of Cave Bay Road. An old gentleman's agreement indicated Cave Bay Road is a public roadway and under the auspices of Worley Highway District, but that Cave Bay would maintain it.

M Mink moved, J Barrett seconded Jerry Wilhelm be allowed to investigate the purchase of a pull type grader on a GSA auction with a budget limit of \$1000. Motion carried.

## **ADJOURNMENT**

The next meeting will be held November 17, 2012 at 9:00 am and C Krahenbuhl will bring the goodies.

The meeting adjourned at 12:43pm.

Respectfully submitted,

Mary Mink, Secretary

Gavin Burns, Vice President

CAVE BAY COMMUNITY SERVICES  
BOARD OF DIRECTORS  
SPECIAL MEETING  
6 April 2013

**ATTENDEES:**

Dave Kinkela, Pres	Bill Newbry, Dir	Mary Mink, Sec
Fred Robohn, Treas	Gavin Burns, Dir	Charlie Krahenbuhl, Dir
Barbara Allen Kelsey, Dir	Connie Robohn, Bookkeeper	Rick Flower
Barbara Flower	Ed White	Scott Hill
Raymond Tucker	Geri Tucker	Barb Gaerin
Ken Gavrin	Dave Sanders	Fritz Rennebaum
Don Cash	Bill Pratt	Pam Pratt
Karen Bogle	Darlene Wilhelm	Elaine Campbell
Howard Campbell	Nic Mayer	

**CALL TO ORDER**

President Dave Kinkela called the meeting to order at 9:05 am. A board quorum is present.

**MINUTES**

B Newbry moved, G Burns seconded the minutes from March 9, 2013 be approved. Motion carried.

**FINANCIAL REPORT**

Monthly Report

F Robohn presented the financial report. General Fund: \$57,494.23; Boat Slip Fund: \$71,716.11; Water Improvement Fund: \$22,660.49; Sewer Improvement Fund: \$35,245.06 making a total of \$187,115.89. \$16,000 has been received from Idaho Department of Environmental Quality to partially reimburse the cost of the engineering study. An additional approximately \$8,000 will be forthcoming to complete that 50 percent reimbursement. Fred responded positively to a question concerning how closely Cave Bay has followed their budgets. He also noted that because of the historical additional assessment for water and sewer, we have been able to pay for all the charges related to the sewer improvements up to now out of the budget. C Krahenbuhl moved, M Mink seconded acceptance of the financial report. Motion carried.

Acceptance of Wastewater DEQ Loan

Charlie Krahenbuhl summarized the lagoon project to date. The Bay has been aware that the lagoon system needed attention since the engineering study was done about a dozen years ago. After the emergency two years ago, DEQ put the Bay on notice that the system would need to be updated. The Bay followed the state guidelines to select an engineering firm (TO Engineers of Coeur d'Alene) who have experience with systems such as ours. The next step was to develop a facility plan which considered current needs and future development of the Bay. The plan looked out 30 years and has been approved. It consists mainly of increasing the height of the lagoons, lining them and increasing the irrigation system. Kootenai County has granted a conditional use permit and the Bay is in negotiation for purchase of additional property near the lagoon. Last year, Idaho DEQ notified the Bay that we were not in the top group to receive loan money, but as new money is available the Bay was encouraged to reapply. In order to apply, the Cave Bay membership must approve acceptance of the loan if it is granted. Construction is scheduled for completion in the fall of 2015.

If the current plan is not implemented, there are other options:

1. Grassland irrigation rather than forest land. Acquiring land would be an issue and it would require more than in a forest application.
2. Full blown waste treatment plant to allow effluent to enter Lake Coeur d'Alene after very high treatment and expense of building and operating the plant.
3. Injection which requires treatment of a higher level and the soils are not conducive.
4. Perform a lottery to see which residences are allowed to use the limited system- somewhat in jest but actually quite real as a necessary impact of not addressing need.

The question of downtime during construction was raised. It is hoped to use one pond while lining the second and therefore limited disruption to the system.

Various borrowing institutions were considered as well as grant opportunities:

1. Other Federal entities (the board heard a presentation from US Department of Agriculture) charge 3 to 4 percent interest and their money comes with bushels of regulations - many more than we are exposed to with State money.
2. Loans from private institutions charge a higher interest rate and are reluctant to lend to homeowners associations. (Fred did approach our bank.)
3. Kootenai County is deemed too wealthy for grants. The average income in our community would need to be below the poverty level (which is about \$30,000) in order for us to qualify.

The dollar amount we are using is a working estimate which the engineering company projected including a \$200,000 - \$300,000 contingency. When the project is put out for bid, a more definite dollar number will be known.

Fred Robohn reported there is a corporate quorum present and in counting the mailed and meeting ballots declared the measure passed. He requested a second count which was done at the meeting by Gavin Burns. The official count is 162.5 "yes" votes and 48 "no" votes.

F Robohn moved, M Mink seconded to acknowledge the majority vote of the community (where a corporate quorum was represented at a special board meeting) to accept a loan from Idaho Department of Environmental Quality if granted. The motion passed.

## **MAINTENANCE REPORT**

D Kinkela reported from Gary's notes the maintenance activity for February.

- Remove snow plow from pickup
- Installed a debris barrier from black plastic culvert material for the swim beach
- Installed new swim barrier
- Rebuilding boat launch ramp dock
- Clean up at park
- Trim trees at boat ramp
- Clean out sander truck
- Removing sanding gravel from Brigantine Drive (in progress)
- Red truck was picked up Friday, April 5
- Went with Dane to pick up Dodge truck the Bay purchased in Pullman, WA
- Average March water usage was 16,185 gallon/day
- Average lagoon input was 3592 gallon/day

D Kinkela announced the red truck was sold to Harry Vogus for \$1500.

## REPORTS

### Land Acquisition

After discussion, B Newbry moved, F Robohn seconded the board accept an agreed amount with which to negotiate for the proposed land purchase. The land must be compatible with the needs of Cave Bay or the offer is null and void. Motion carried.

### Required Plan of Operation for Wastewater Land Application System

TO Engineers have been asked develop the plan of operation for the 3.3 acre irrigation system installed last year which is scheduled to go into operation 1 May-31 Oct under the new permit. The plan must be approved by DEQ within a year of permit issue-Oct 22, 2012. The Engineers will also generate the first annual report and it is planned the Bay could follow that template and file future annual reports.

### Maintenance Position

The personnel policy is in progress. After discussion pertaining to the proposed duties associated with the irrigation system, C Krahenbuhl moved, F Robohn seconded the board ask Brenda Morris to respond to a request for proposal (RFP) to fully operate the land irrigation system according to Idaho Department of Environmental Quality requirements with general maintenance to be performed by Cave Bay personnel. (Operation of the land application is under Cave Bay permit and oversight of the system.) An RFP will be promptly developed. The motion carried.

### Murray Property

This project is weather dependant and is in progress.

### Dock Repair

The contractor is in the final stages of installing rub rails on the docks of persons who have made that arrangement.

### Signage Lake Shore Drive

The sign has been received and will be installed soon.

## NEW BUSINESS

### Land Application Plan

This topic was covered under Reports.

### 2013-2014 Board Elections

Barbara Allen Kelsey, Bill Newbry and Charlie Krahenbuhl have agreed to stand election for their retiring positions on the board. Others are also encouraged to become a candidate. If you are interested, send a short biography to Fred Robohn to be published in the material that is sent out before the Annual Meeting in June.

## GOOD OF THE ORDER

### Annual Meeting Date

The previous date selected for the Annual Meeting is Father's Day weekend. The new date will instead be June 29, 2013.

Playground Equipment

The play equipment has been completely paid for by contribution. F Robohn stated there were many generous residents who made that happen.

Gavin's Birth Announcement

There is a brand new 9 pound, 4 ounce baby boy at home with The Burns family.

Porch Decoration

Monte Wetter is encouraged to come home and tend to Christmas poinsettias adorning his porch.

M Mink moved, B Newbry seconded the board move into executive session to discuss personnel. Motion carried.

The board returned to regular session. B Newbry moved, F Robohn seconded the board reinstate member discussed in executive session. Motion carried.

**ADJOURNMENT**

The next meeting will be held May 4, 2013 with goodies provided by G Burns. The June meeting will be June 8, 2013 and B Allen Kelsey will bring treats. The meeting adjourned at 12:23pm.

Respectfully submitted,

Mary Mink, Secretary

Dave Kinkela, President

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**APPENDIX G**  
**IDEQ-EID OUTLINE AND CHECKLIST**

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Form 5-B

Outline and Checklist for Environmental Information Documents (EIDs)

Applicant/Borrower and DEQ Grant or Loan #

Environmental Reviewer

Date

Y=yes N=no N/A=not applicable

A. COVER SHEET

- 1. Is the project properly identified with the applicant's name and address?  Y  N
- 2. Is the project contact person named on the cover sheet, along with address, phone number, and email address? Please provide the name and contact information for the environmental review contact if different from project contact person.

3. Is it clear what the project will cost and how it will be funded?  Y  N

4. Is the environmental information document (EID) or environmental assessment a stand-alone document, a separate chapter in the engineering report or facility plan, or an appendix in the engineering report or facility plan? Select one

A recommended format for showing the costs and funding follows:

ESTIMATED CONSTRUCTION COSTS			
Secondary treatment	<input type="text"/>	New interceptors	<input type="text"/>
Advanced treatment	<input type="text"/>	Recycled water distribution	<input type="text"/>
Inflow and infiltration correction	<input type="text"/>	Combined sewer overflows	<input type="text"/>
Sewer system rehabilitation	<input type="text"/>	Storm water sewers	<input type="text"/>
New collector sewers	<input type="text"/>	<b>Total estimated cost</b>	<input type="text"/>

FUNDING	
DEQ share <input type="text"/>	Other share <input type="text"/> (list sources in box below)
<b>Total funding</b> <input type="text"/>	<input type="text"/>

5. Does the cover sheet provide information about the estimated user costs of the project?  Y  N

The recommended format for item A.5 follows:

A.	Current Average Monthly User Charge per EDU	\$
B.	Change in Operation & Maintenance Monthly Charge per EDU	\$
C.	Change in Debt Service Monthly Charge per EDU	\$
D.	Future Average Monthly User Charge per EDU (A+B+C)	\$

6. Does the cover sheet provide a one-paragraph abstract of the EID?  Y  N

**B. PURPOSE AND NEED FOR THE PROPOSED PROJECT**

1. Does the document provide a clear discussion of the need for the proposed project relative to public health, water quality problems, and other concerns, with particular emphasis on the severity and extent of the problem(s)? Describe sources of information used to assess the need.  Y  N
2. Does the document describe conformity, or lack thereof, with any existing NPDES or reuse permits?  Y  N

**C. ALTERNATIVES, INCLUDING THE PROPOSED ACTION**

1. Does the document briefly describe all alternatives studied in the planning document, including the no-action alternative?  Y  N
2. Does the document discuss the low-cost alternative?  Y  N
3. Does the document comparatively analyze the alternatives with respect to relevant environmental impacts, costs to mitigate environmental impacts, and capital and operating costs?  Y  N
4. Does the document discuss the apparent best alternative in detail, including the following:  Y  N
- a) Treatment, collection, and discharge/disposal methods  Y  N
  - b) Location of proposed new facility, or footprint of project components (if other than a new facility)  Y  N
  - c) Methods of sludge disposal  Y  N
  - d) Permit requirements  Y  N
  - e) Environmental impacts (See Section D, Affected Environment)  Y  N
  - f) Notes and Discussion:

5. If the selected alternative is not the most cost-effective one, does the document provide a justification for the option chosen?  Y  N  N/A

**D. AFFECTED ENVIRONMENT**

The purpose of this section is to verify that the selected alternative is environmentally sound and verify that any adverse environmental impacts are avoided, minimized, or mitigated. To validate the selection of the preferred alternative, it is important at this point to identify the major human-made and natural features of the environment that will be affected by the proposed project. Direct, indirect, short-term, long-term, and cumulative impacts must be considered. This information is one part of the information that will be used to determine whether a full environmental impact statement (EIS) will be required.

1. Is a description and map of the proposed project planning area included in the facility planning document or EID (if stand alone document)?  Y  N

Do the description and map take into account the following criteria?

a) A description of the proposed project planning area boundaries  Y  N

b) Key topographic and geographic features of the area  Y  N

c) The population distribution  Y  N

d) Industrial and commercial features of the planning area  Y  N

2. Has a map of the proposed project planning area been provided that includes all pertinent details?  Y  N

3. Has the area of potential effects (APE), if different from the proposed project planning area, been identified?  Y  N

a) Once the APE has been identified, have the direct, indirect, short-term, long-term, and cumulative effects related to the proposed project been characterized?  Y  N

b) Has a map of the APE been included?  Y  N

4. Describe the following major features of the proposed project.

a) The length and diameter of collector and interceptor sewer lines and force mains

A 4-inch pressure irrigation main will be extended from the interim forest irrigation area to the Dreher Property. Impact type sprinklers with flow control nozzles will be installed in the additional 5.8 acres of forest land.

b) The number, size, and location of pumping stations

New irrigation pumping station will be constructed and will have 2 irrigation pumps with wet wells. The pumping system will be upgraded to handle 90gpm. The 4 existing lift stations will remain.

c) The location and description of treatment facilities

Treatment will be in the existing lagoon which will be modified to add additional storage capacity. Land application will be on 5.8 acres of forest land on the Dreher Property which is adjacent to the existing CBCS property.

d) The location and description of each type of on-site septic system, community system, or large soil absorption system that will be used

Residence have septic tanks that pump effluent through a septic tank effluent pump (STEP) collection system which will discharge to two lined and aerated lagoons with a combined capacity of 3.5 million gallons. Effluent from the lagoons will be applied to 9.1 acres of adjacent forest land.

e) Any other facets of the planned construction (such as location of outfall for a surface water discharge or location of reuse site).

No effluent will be applied within 100 feet of streams or Lake Coeur d'Alene. 5 septic tanks near Lake Coeur d'Alene that may be experiencing inflow and infiltration will be evaluated and may be repaired or replaced.

f) If relevant, explain how the wastewater project fits into a regional plan

The project will bring the Cave Bay Wastewater Facility into compliance with IDEQ wastewater regulations which is consistent with regional plans.

g) The schedule of construction

Construction will begin May 2014 and end October 2015.

5. Are flow projections and their sources described for existing and projected (20-year minimum) for treatment and wastewater flows (40 year minimum for collection)?

Y     N

a) Is an evaluation of operation and maintenance changes resulting from system improvements included?

Y     N

b) Is the contribution of flow from residential, commercial, and industrial sources characterized, along with any related problems?

Y     N

c) Have any related problems been identified? If yes, describe below.

Y     N

5 residences near the shoreline may be experiencing inflow and infiltration.

6. Have all environmental features affected by the proposed project been characterized and mitigation of any resulting environmental impacts discussed in the planning document?

Y     N

*NOTE: Section D.6 of the EID constitutes the heart of the environmental review for the selected alternative of any wastewater construction project. This information will be most important in determining whether a full environmental impact statement (EIS) will be required. It is important at this point to identify all environmental features that will be affected by the proposed project.*

Has each of the following major human-made and natural features and related relevant questions for each feature been included? The list of major human-made and natural features should be considered for each proposed project.

*NOTE: These questions should be answered as appropriate, and additional information provided when necessary. Much of the information provided in Section D of the EID can be referenced when completing Section F. Alternatively, the applicant may wish to combine Sections D and F of the EID outline into one section in the final document.*

a) Physical aspects (topography, geology, and soils)

i) Are there physical conditions (e.g., steep slopes, shrink-swell soils, etc.) that might be adversely affected by or might adversely affect construction of the facilities?

Y     N

- ii) Are there similar physical conditions in the planning area that might make development unsuitable?  Y  N
- iii) Are there any unusual or unique geological features that might be affected?  Y  N
- iv) Are there any hazardous areas (e.g., slides, faults) that might affect construction or development?  Y  N

(v) Discussion There are shallow soils and steep slopes nearby that could cause groundwater mounding. However, construction and land application in these areas are avoided by the selected alternative. See the EID Section 5.2 Topography, geology and soils.

#### b) Climate

- i) Are there any unusual or special meteorological constraints in the planning area that might result in an air quality problem (e.g., may be an issue for certain types of treatment systems with emission considerations)?  Y  N
- ii) Are there any unusual or special meteorological constraints in the planning area that affect the feasibility of the proposed alternative?  Y  N

iii) Discussion See EID Section 5.1 Climate

#### c) Population

i) Are the growth rates excessive because of:

- (1) exceeding by 25% the 20-year population growth rate expectations for the state (Idaho Division of Financial Management), and  Y  N
- (2) having a change of greater than 500 estimated residential units over the life of the project?  Y  N

ii) Do the plans call for sufficient extra capacity?  Y  N  N/A

iii) Discussion See EID Section 2.2.2 Forecasted Conditions and 5.3 Population.

#### d) Economics and social profile

- i) Does documentation exist that suggests that the local populace can afford to build the project?  Y  N
- ii) Will certain landowners benefit substantially from the development of land due to collection or interceptor routing or wastewater treatment plant (WWTP) location and size?  Y  N  Unknown

iii) Will the facilities adversely affect land values?  Y  N

iv) Environmental justice (Executive Order No. 12898):

(1) Will any low-income or minority groups be adversely affected by the proposed project?  Y  N

(2) Are any benefits from this project going to accrue in a non-discriminatory manner?  Y  N

v) Discussion

See EID Section 5.4. Social Profile. The 5 residences which may have tank repair or replacement may have a greater benefit however, repair or replacement would also improve overall system efficiency and water quality.

e) Land use

i) Is the location of the WWTP or other facilities incompatible with local land use plans?  Y  N

ii) Will inhabited areas be adversely impacted by the project site?  Y  N

iii) Will new development that is stimulated by a new wastewater facility have adverse effects on older, existing land uses (e.g., agriculture, forest land, etc.)?  Y  N

iv) Will this project contribute to changes in land use in association with recreation, mining, or other large industrial or energy development?  Y  N

v) Discussion

See EID Section 5.5 Land Use.

\*f) Floodplain development (no floodway construction is allowed)

i) Has the community determined if any part of the planned wastewater project will be located within a 100-year floodplain? (Attach maps used to arrive at decision.)  Y  N

ii) If some part of the planned wastewater facility will be located within a 100-year floodplain, and no practicable alternative to this exists, has the community indicated that measures will be included in the design of the facilities to minimize or avoid adverse effects to the floodplain?  Y  N

iii) Will the facility be able to fully function and operate during a 100-year flood event?  Y  N

iv) If a 100-year floodplain will be impacted by the proposed project, has the applicant indicated how the public will be notified of this and how public input will be considered?  Y  N  N/A

v) If the project or some part of it will be in a 100-year floodplain, is the borrower currently participating in the National Flood Insurance Program?  Y  N

## vi) Discussion

The construction activities are outside of the floodplain. See EID Appendix A, Maps and Section 5.6 Floodplains.

## \*g) Wetlands

- i) Is any portion of the project planning area located within wetlands as defined and mapped by the U.S. Fish and Wildlife Service or as determined through site visits by the U.S. Army Corps of Engineers (COE), the Soil Conservation Service, or a qualified private consultant?  Y  N
- ii) If part of the proposed project will be located in or will affect wetlands, as determined by maps and/or site investigations, will a 404 dredge and fill permit be required from the COE? (Attach maps, site investigations, or correspondence used to reach decision.)  Y  N
- iii) Have alternatives to keeping the project outside the identified wetlands been proposed in the EID or engineering report/facility plan?  Y  N
- iv) If part of the proposed project will be located in an identified wetland, and no practicable alternative exists, has a wetlands assessment of measures to minimize or mitigate adverse affects been made?  Y  N
- v) If a Wetland Delineation Report has been prepared for the proposed project site, did the COE concur with DEQ findings on the Wetland Delineation Report?  Y  N

## vi) Discussion

Not applicable. All wetlands will be avoided. See EID Appendix A, Maps and Section 5.7 Wetlands

## h) Wild and scenic rivers

- i) Does the planning area contain a designated or proposed wild and scenic river?  Y  N

## ii) Discussion

See EID Appendix A, Maps and Section 5.9 Wild and Scenic Rivers.

## \*i) Cultural resources

- i) Has the State of Idaho historic preservation officer (SHPO) and/or the tribal historic preservation officer (THPO) been consulted to determine if there are any properties (historic, architectural, or archaeological) in the planning area that are listed, or eligible for listing, on the National Register of Historic Places?  Y  N

NOTE: Contact the appropriate THPO, as the lead authority for the Coeur d'Alene Tribe of Idaho and the Nez Perce tribal lands in Idaho. Contact the SHPO as the lead authority for all other tribal lands in Idaho.

- ii) Has the SHPO or THPO requested a site survey to determine the presence or absence of cultural resources in the proposed project area?  Y  N
- iii) If cultural resources have been identified in the project area, will the project have direct or indirect adverse impacts on any listed or eligible property?  Y  N
- iv) Has the community developed mitigation measures to avoid or reduce adverse impacts to cultural resources identified in the proposed project area?  Y  N  N/A

v) Discussion 

Area of Potential Effect/Proposed Project Planning Area is in the boundaries of the Coeur d'Alene Tribe Reservation. See EID Appendix B, Agency Correspondence and Section 5.10 Cultural Resources and Section 8, Agencies Consulted.
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\*j) Flora and fauna

- i) Has a current U.S. Fish and Wildlife Service threatened and endangered species list specific to the proposed project site been provided?  Y  N
- ii) Are there any designated threatened or endangered species or critical habitats in the proposed project planning area?  Y  N
- iii) If listed species or habitats are present, has a biological assessment been prepared by a qualified expert for designated threatened or endangered species?  Y  N
- iv) Will the project have direct or indirect adverse impacts on any such designated species or habitats?  Y  N
- v) Will the project have direct or indirect adverse impacts on other fish and wildlife, or their habitats, including migratory routes, wintering, or calving areas?  Y  N
- vi) Does the planning area include a sensitive habitat area designated by a local, state, or federal wildlife agency?  Y  N
- vii) If a Biological Assessment (BA) has been prepared for threatened or endangered species, did the applicable agency/agencies (U.S. Fish and Wildlife Service or National Marine Fisheries Service) concur with DEQ findings on the BA, if necessary?  Y  N

viii) Discussion 

The project planning area includes areas of shoreline of Lake Coeur d'Alene. The lake has bull trout and bull trout critical habitat. The project activities would have no effect to bull trout or other federally listed species or designated critical habitat. See EID Section 5.11 Flora, Fauna and Natural Communities and 5.11.3 Threatened and Endangered Species.
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## k) Recreation and open space

- i) Will the project eliminate or modify recreational open space, parks, or areas of recognized scenic or recreational value?  Y  N
- ii) Is it feasible to combine the project with parks, bicycle paths, hiking trails, waterway access, and other recreational uses?  Y  N

## iii) Discussion

See EID Section 5.12 Recreation and Open Space.

## \*l) Agricultural lands

- i) Does the planning area contain any important farmlands (prime, unique, statewide importance, local importance, etc.) as defined by the U.S. Department of Agriculture?  Y  N
- ii) If yes, will the project directly or indirectly encourage the irreversible conversion of environmentally significant agricultural lands to uses that result in the loss of these lands as an environmental or essential food production resource?  Y  N  N/A

## iii) Discussion

Effluent will be applied to 5.8 acres of additional forest land. Silvicultural Plan will be prepared. See EID Section 5.13 Agricultural.

## \*m) Air quality

- i) Will there be any direct air emissions from the project (as from construction equipment) that will not meet federal and state emission standards contained in the air quality state implementation plan (SIP)?  Y  N
- ii) Is the project service area located in an area without an approved or conditionally approved SIP?  Y  N
- iii) Does the project violate national ambient air quality standards in an attainment or unclassified area?  Y  N
- iv) Will the facilities cause odor or noise nuisance problems?  Y  N

## v) Discussion

The project planning area is in attainment. Lagoon aerators will be upgraded and will minimize odors. See EID Section 5.14 Air Quality and Noise.

n) Water quality, quantity, and sole source aquifers

- i) Are present stream classifications in the receiving stream being challenged as too low to protect present or recent stream uses?  Y  N
- ii) Is there a substantial risk that the proposed discharge will not meet existing stream standards or will not be of sufficient quality to protect present or recent stream uses?  Y  N
- iii) Will project construction and development served by the project result in nonpoint water quality problems (sedimentation, urban storm water, etc.)?  Y  N
- iv) Will the project adversely affect water rights?  Y  N
- v) Will stream habitat be affected as a result of the change in flow or stream-bank modification?  Y  N
- vi) Will the project adversely affect the quality or quantity of a ground water source?  Y  N
- vii) Does the project adversely affect a sole-source aquifer or streamflow source area or recharge area?  Y  N
- viii) Does the project adversely affect a source water area for a public drinking water system?  Y  N
- xi) Could other water conservation measures be implemented to reduce wastewater generation?  Y  N

x) Discussion

Project is located over a the recharge area for the Spokane Rathdrum Prairie Aquifer and will have no discharges to surface waters. The project will improve collection, treatment and disposal of wastewater and will reduce the long term degradation of ground water and surface water. See EID Section 5.8 Water Quality , Quantity and Sole Source Aquifers.

o) Public health

- i) Will there be adverse direct or indirect noise impacts from the project?  Y  N
- ii) Will there be a vector problem (e.g., mosquito) generated by the project?  Y  N
- iii) Will there be unique public health problems as a result of the project (e.g., increased disease risk)?  Y  N

iv) Discussion

See EID Section 5.15 Public Health and 5.14 Air Quality and Noise.

p) Solid waste/sludge management

- i) Will sludge disposal occur in an area with inadequate sanitary landfills or on land not suited to land application?  Y  N
- ii) Are there special sludge problems that make disposal difficult (hazardous, difficult to treat)?  Y  N
- iii) Is the selected sludge technology controversial?  Y  N
- iv) Does the sludge management plan conform to the EPA 503 regulation for municipal sludge?  Y  N

v) Discussion

Effluent is already being land applied to 3.29 acres of forest land owned by CBCS as permitted under the existing Reuse Permit. The same method of application will be expanded to an additional 5.8 acres of forest land. Areas that are not suitable for application will be avoided. The project complies with IDEQ wastewater regulations.

q) Energy

- i) Are there additional cost-effective measures to reduce energy consumption or increase energy recovery that could be included in the project?  Y  N
- ii) Have air quality issues of energy recovery been addressed?  Y  N  N/A

iii) Discussion

See EID Section 1.16 Energy

r) Reuse/land application or subsurface disposal system

- i) Has a new or unproved technique been selected?  Y  N
- ii) Will rapid infiltration basins be in use?  Y  N
- iii) Will slow-rate land application be used?  Y  N
- iv) Will subsurface sewage disposal be used?  Y  N
- v) Has application for a permit been made in accordance with Idaho Code, State Wastewater Reuse Rules, and the Individual/Subsurface Sewage Disposal Rules?  Y  N
- vi) Is there public controversy about the project?  Y  N
- vii) Will the project require additional water rights or impact existing water rights?  Y  N
- viii) Is the project multi-purpose?  Y  N

ix) Discussion

The existing system is currently operating under a Reuse permit to apply effluent to the 3.29 acres of CBCS forest land. This permit will be modified to include the additional 5.8 acres.

s) Regionalization

- i) Are there jurisdictional disputes or controversy over the project?       Y     N
- ii) Have intermunicipal agreements been signed?                                       Y     N     N/A
- iii) Have intermunicipal agreements been discussed with surrounding communities?       Y     N     N/A

iv) Discussion

The project planning area is approximately 6 miles from the nearest wastewater treatment facility (in Worley). Regionalization is discussed in EID Section 3.1.5 Regionalization.

**E. MAPS, CHARTS, AND TABLES**

- 1. Do the maps, charts, and other graphic materials used in the EID help the reader clearly discern project features?       Y     N
- 2. Are all graphs, charts, tables, and other graphics clearly labeled and referenced properly in the text of the EID?                                       Y     N

**F. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT**

- 1. Are the direct, indirect, short-term, long-term, and cumulative impacts of the project upon human-made and natural features clearly identified, and is mitigation provided? (Refer to Section D of this form.)       Y     N
- 2. Are additional potential or existing impacts that are worthy of discussion in the EID noted?                                       Y     N     N/A
- 3. Are there obvious areas of impact that have not been considered in this evaluation? List them below.                                       Y     N     N/A

- 4. Have unavoidable adverse impacts that cannot be fully mitigated been listed and discussed?                                       Y     N     N/A

**G. MEANS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS**

- 1. Have mitigation measures been clearly listed for direct, indirect, short-term, long-term, and cumulative impacts?       Y     N     N/A
- 2. Have means of achieving mitigation measures been given?                                       Y     N     N/A
  - a) The means to achieve the mitigation measures must identify and establish all the following:

- i) The mitigation measures identified for implementation are enforceable, and
- ii) Verification that parties committing to mitigation measures has the authority and ability to fulfill the commitments, and
- iii) Appropriate monitoring is conducted during implementation of the mitigation measures

#### H. PUBLIC PARTICIPATION

- |  |                                    |                         |                           |
|--|------------------------------------|-------------------------|---------------------------|
| 1. During the planning process if the environmental review process has determined that something other than a categorical exclusion (with no supporting documentation) is appropriate, has the public been given at least 14 days to review and comment on the alternatives under consideration for the proposed project and commensurate environmental impacts of each alternative? This is to ensure that environmental information is available before decisions are made and actions are taken. The comment period begins with the date the public notice is published. The notice need not be published more than once, unless the project is highly controversial. If the project is deemed controversial, then the public notice will be tailored to suit the circumstance. Include a copy of the public notice in the EID. | <input checked="" type="radio"/> Y | <input type="radio"/> N |                           |
| 2. Have dates and meeting locations for all public hearings and meetings concerning the engineering report or facility plan and EID been described in the EID? Include copies of the meeting minutes of when an alternative was selected.  | <input checked="" type="radio"/> Y | <input type="radio"/> N |                           |
| 3. Have all substantive issues raised by the public in meetings, hearings, and by correspondence been described in the EID? Include copies of public comments received.  | <input checked="" type="radio"/> Y | <input type="radio"/> N | <input type="radio"/> N/A |
| 4. Have substantive public concerns been addressed in the engineering report or facility plan and final environmental document?  | <input checked="" type="radio"/> Y | <input type="radio"/> N | <input type="radio"/> N/A |
| 5. Have significant substantive comments received from state and federal agencies been described and considered in the engineering report or facility plan and final environmental document? Include copies of state and federal agency comments received.   | <input checked="" type="radio"/> Y | <input type="radio"/> N | <input type="radio"/> N/A |

#### I. REFERENCES CONSULTED

- |   |                                    |                         |
|---|------------------------------------|-------------------------|
| Is there a list of all reference documents consulted in preparation of the EID? | <input checked="" type="radio"/> Y | <input type="radio"/> N |
|---|------------------------------------|-------------------------|

#### J. AGENCIES CONSULTED

- |  |                                    |                         |
|--|------------------------------------|-------------------------|
| 1. Is there a list of all agencies and agency experts or individuals consulted during the preparation of the EID?  | <input checked="" type="radio"/> Y | <input type="radio"/> N |
| 2. Does the list of consulted agencies include dates the agency response was received or dates consultation was attempted? (Include correspondence such as emails on attempted consultations.) | <input checked="" type="radio"/> Y | <input type="radio"/> N |

**K. MAILING LIST**

- 1. Has a mailing list been included in the EID?  Y  N
  
- 2. Does the mailing list include the names and addresses of all attendees of public meetings, affected local residents, relevant environmental groups, DEQ and local officials, and agencies that were consulted or who were provided information regarding proposed project?  Y  N

NOTE: Asterisk items are not required for projects identified as Tier II. Please see Form 5C for discussion of Tier II.