Cherry Creek Fish Passage Enhancement
Section 206 of Water Resources Development Act
St. Maries, Benewah County, Idaho

Draft Environmental Assessment

June 29th, 2001

Responsible Agency: The responsible agency for this project is the U.S. Army Corps of Engineers, Seattle District.

Abstract: This EA evaluates the potential impacts of a proposed culvert replacement by the Seattle District, US Army Corps of Engineers (Corps) on Cherry Creek near the city of St, Maries, Benewah County, Idaho under authority of Section 206 of the Water Resources Development Act of 1996. The proposed project consists of replacing the existing culvert with a larger, fish-friendly box culvert. The streambed will be lowered approximately two feet at this location and the culvert will be countersunk into the new streambed and aligned and sized to mimic the natural stream to the greatest degree possible, allowing the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate which. will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel. The Corps will use best management practices to minimize any potential impacts to aquatic and terrestrial resources during construction.

THE OFFICIAL COMMENT PERIOD ON THIS ENVIRONMENTAL ASSESSMENT ENDS ON JULY 31, 2001.

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1.0 INTRODUCTION

1.1 Background

In a letter dated November 22, 1999 Jack Buell, Benewah County Board of Commissioners, requested the U.S. Army Corps of Engineers, Seattle District (Corps) assistance of the Corps in planning and designing a fish and wildlife restoration project. The proposed project, authorized by Section 206 of the Water Resources Development Act of 1996, would consist of removing or replacing an existing 60 inch culvert that now blocks fish passage on Cherry Creek, in Benewah County, Idaho.

On January 5, 2000 Angelo Vitale, fisheries biologist for the Coeur d' Alene Tribe sent a letter to the Corps endorsing the proposed project. The Tribe has documented a general decline in upstream migration by westslope cutthroat trout into Cherry Creek from St. Joe River and attributed this decline to the culvert which at times is a complete barrier to migration.

In February 2000 the Corps began a feasibility study addressing improving fish passage at Cherry Creek. A preliminary restoration plan identified several alternatives and selected replacing the culvert and restoring Cherry Creek to a primarily free running stream as the preferred alternative to providing fish passage. The proposed project consists of replacing the existing culvert with a larger, fish-friendly box culvert. The streambed will be lowered approximately two feet at this location and the culvert will be countersunk into the new streambed and aligned and sized to mimic the natural stream to the greatest degree possible, allowing the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate which. will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel.

1.2 Authority

Section 206 of the Water Resources Development Act of 1996 provides authority to the Corps of Engineers for aquatic ecosystem restoration and protection if the project will improve the quality of the environment, is in the public interest, and is cost effective.

1.3 Purpose and Need

The primary project purpose is to provide for upstream fish passage. A culvert confines Cherry Creek under Sheperd's Road where there is a manually operated flap gate on the downstream end of the culvert. The purpose of the flap gate is to prevent floodwaters on the St. Joe River from backing up into Cherry Creek. The levees on Cherry Creek are not designed to withstand floodwater elevations on the river. The culvert is a fish passage barrier for two reasons:

a. The flap gate is difficult and dangerous to open and close. It is generally left open, but it must be closed when the water reaches flood levels to prevent high river water from backing up into Cherry Creek and breeching the Cherry Creek Levee. Under current conditions, in order to close the gate, someone has to go into Cherry Creek on the downstream end of the culvert and use a chainsaw to cut the

posts that hold the flap gate open. For the gate to be opened again, it has to be manually pulled up against the water pressure. This difficulty results in the gate being left closed when it should be open for fish passage. In addition, the flap gate is so heavy that the low head differential between upstream and downstream does not open the gate enough to allow fish passage in low-flow conditions.

b. The elevation of the culvert is above the lowest water elevation by approximately two feet. During low water periods, upper Cherry Creek is isolated from lower Cherry Creek and the St. Joe River. Fish are prevented from migrating upstream to spawning area and/or thermal refuge. Low water generally coincides with the bull trout migration period.

The culvert is not seated properly in the surrounding fill. Water regularly travels along the outside of the culvert, exacerbating the low water problems. Under the existing without project condition the culvert is a bottleneck that prevents use of the watershed by bull trout and cutthroat. It has been documented that the operation of the gate at the culvert mouth limits movements from the St. Joe River into Cherry Creek, and at times is a complete barrier to migration. The Coeur D'Alene Tribe has documented a general decline in upstream migration by westslope cutthroat trout into Cherry Creek with the most precipitous decline coinciding with the recent installation of the gated culvert at the mouth of Cherry Creek. It is likely that the current operation of the gated culvert would lead to the extinction of the adfluvial subpopulation of westslope cutthroat trout within Cherry Creek.

1.4 Project description

The project consists of replacing the existing culvert with a larger, "fish-friendly" box culvert. The new box culvert will be 6 feet wide by 8 in height and will be countersunk into the new streambed approximately two feet and aligned and sized to mimic the natural stream to the greatest degree possible. This will allow the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate which will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel.

Access to the construction site will be from the existing Sheperds road and the right bank immediately adjacent to the road. Construction will be mid-late November when the water level is the lowest in Cherry Creek and there is the least use by fish species. Pre-construction activities will consist of placing coffer dams upstream and downstream of the existing culvert. The area in between the coffer dams will be pumped dry and the existing culvert will then be removed. The bottom of the new culvert will be placed 2 feet below the stream bed. Native material, or gravels, will be placed back up to stream bed level and the gate will be installed. The area surrounding the new culvert will be backfilled and the road that runs on top of it will be replaced. Existing vegetation is minimal, although any scrubby bushes growing on the embankment on top of the existing culvert may need to be removed. To control erosion best management practices will be implemented. Construction is estimated to take 7 to 10 days. No special procedures for reintroduction of flow are required.

1.5 Project location

map
Location Map inserted Here

2.0 ALTERNATIVES

In order to comply with the National Environmental Policy Act (NEPA), CEQ rules, and Corps regulations, Seattle District performs a analysis of potential alternatives to purpose and need of the project. They include the following:

2.1 No action alternative

Under the existing without project condition the culvert is a bottleneck that prevents use of the watershed by bull trout and cutthroat. It has been documented that the operation of the gate at the culvert mouth limits movements from the St. Joe River into Cherry Creek, and at times is a complete barrier to migration. The Coeur D'Alene Tribe has documented a general decline in upstream migration by westslope cutthroat trout into Cherry Creek with the most precipitous decline coinciding with the recent installation of the gated culvert at the mouth of Cherry Creek. With the no action alternative it is likely that the current operation of the gated culvert would lead to the extinction of the adfluvial subpopulation of westslope cutthroat trout within Cherry Creek.

2.2 Alternatives not considered in detail

These alternatives were considered during the planning process but it was quickly decided that they didn't warrant the time and expenditure to study in detail.

Removal of existing road and culvert

This alternative would consist of removing the road and the culvert and allowing Cherry Creek to naturally flow this section of stream. This alternative was considered but was eliminated from further detailed consideration because 34 residential units rely on the road as main access to the highway.

Construction of new bridge

The alternative would consist of removing the culvert and the road and replacing it with a bridge. This alternative was considered but was eliminated from detailed planning because the potential costs exceeded the ability of the local sponsor. Also, this alternative had the potential to exceed the financial limitations of this authority.

Enlarging existing culvert

This alternative would consist of modifying the existing culvert to allow for greater fish passage. This alternative was eliminated from further consideration as the construction of this modification was not considered to be feasible.

2.3 Action Alternatives

These alternatives were carried into the detailed feasibility study phase of the project:

Concrete structure with water passageway alternative
This alternative consists of replacing the culvert with a concrete box structure that would have water passageway gate (i.e., waterman gate) to provide fish passage. The proposed flap gate is a mechanical device which is a float-actuated water control valve.
The gate would be attached to an of the concrete structure. A buoyant gate is hinged on the top of the culvert so that it floats on the surface of the water until it is closed by counterfloats extending above and behind the hinge point. The position of the counterfloats on the arms is adjusted to meet the required gates closure for flood level waters. Once the predetermined flood level is achieved the gate automatically closes and stays closed during the flood event. Once the flood waters recede the gate opens allowing water through for fish passage. This alternative would maintain flood protection while allowing fish passage. However, this structure has been designed for tidal influenced wetlands and the Corps was unsure of its suitability for a stream environment. Ultimately this alternative was eliminated due to concerns about its feasibility to be installed as well as excess cost compared to other alternatives.

Preferred alternative - Replacement of existing culvert with box culvert
This alternative consists of replacing the existing culvert with a larger, fish-friendly box culvert. The streambed will be lowered approximately two feet at this location. The culvert will be countersunk into the new streambed and aligned and sized to mimic the natural stream to the greatest degree possible. This will allow the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate. The screw gate will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel.

3.0 AFFECTED ENVIRONMENT

3.1 Climate

Due to its northern latitude location, St. Maries has a definite four-season climate. The winters are cool and wet, while the summers are warm and relatively dry. The normal annual temperature at is approximately 48 ^{o} F. The mean high temperature is approximately 66^{o}F, with winter lows of approximately 27^{o}F. Extreme temperatures of 109^{o}F and -26^{o}F have been observed since record keeping began in 1897.

The growing season in and around St. Maries has an average length of 126 days, with an annual precipitation of approximately 39.5 inches. Seventy percent of the annual precipitation falls in the period October through March.

3.2 Air Quality/Noise

Air quality in the area is good. This area has few inhabitants in the immediate proximity. Noise levels in the project vicinity are usually very low. Increased levels may arise from the nearby road or machinery at the sewage treatment fields.

3.3 Visual/esthetic environment

Cherry Creek is located in a rolling, hilly area on and above the banks of the St. Joe River.

3.4 Physical and geologic environment

The project is located in Northern Idaho, just west of the City of St. Maries in Benewah County. Reference figure 1 for a vicinity map. Downstream of the project area, the creek runs into the St. Joe River. Upstream of the project the creek flows freely through forested areas, draining approximately 4 miles of high quality habitat.

Air quality in the area is good. This area has few inhabitants in the immediate proximity. Noise levels in the project vicinity are usually very low. Increased levels may arise from the nearby road or machinery at the sewage treatment fields.

3.5 Hydrology/Water and sediment quality

The total drainage area for Cherry Creek is 8.03 square miles (20.81 square kilometers). The extreme lower 0.8 km is slackwater. The substrate in the project area is sedimented but good spawning gravels exist above the slack water with good riparian, instream cover, and riffle/run/pool complex ratio. Cherry Creek is a significant tributary to the St. Joe River.

The lower 48.2 km of the St. Joe river have been largely converted from a riverine to lacustrine system from the construction of the Post Falls dam in 1906, and the resulting increased lake level elevation. As a result, water depth and velocity, as well as sediment transport capacity in this stretch of river has been altered. A secondary and relatively minor impact evident in the St. Joe River drainage is the presence of a road along the length of river from St. Maries upstream approximately 167 km (Rankel 1971). Miles of streambank were likely denuded for road construction but little channel alteration has occurred. Lack of habitat is the major factor limiting fish populations in the lower St. Joe River downstream from St. Joe City, and in the St. Maries River downstream from Lotus Crossing (Apperson et al. 1988). Instream cover and spawning habitat are generally absent in these areas. Logging occurs within the St. Joe River and has likely resulted in the introduction of fine sediment into this system.

Water quality issues in lower reaches of the St. Joe River include bank erosion, nutrient enrichment from point and non-point sources, excessive growth of aquatic plants, and bacterial contamination. Riverbank erosion is a primary water quality issue in the lower St. Joe River.

Davis (1961) and Calkin and Jones (1911) describe the drainage in detail. Sedimentary rock (Algonkin or pre-Cambrian) underlies the upper drainage. The upper river flows through forest covered mountains and steep narrow canyons and is characterized by long shallow riffles and deep pools. Quaternary sedimentary rock and glacial deposits form wide valleys and meadows in the lower drainage. The lower river has a wider channel, deeper pools, and shallower gradient than the upper river. Slackwater, formed by the post falls dam, extends 67 miles up the St. Joe from Coeur D' Alene Lake with depths up to 60 feet. Bottom substrates range from bedrock, gravel, or coarse silt-sand in the upper river to a well-scoured clay and mulch bottom in the slackwater area (Falter 1969). The entire drainage drops in elevation from 7,649 feet at the headwaters to 2,214 feet at the confluence with Coeur D' Alene Lake.

Peak stream runoff occurs in May and June as a result of melting snowpack. Flows decrease throughout the summer and increase with the onset of fall-winter precipitation. The St. Joe river has more than 40 primary tributaries including the north fork of the St. Joe river that enters near Avery and the St. Maries river that enters at St. Maries, upstream of the project site.

3.6 Biological resources

3.6.1 Fish

There are no population estimates for native, non-game, or exotic species. Westslope cutthroat trout are present. It is uncertain whether or not bull trout exist or use Cherry Creek (see Appendix A -BA bull trout). Apperson et al. 1988 reported warmwater game fish present in the slackwater (lower 0.8 km), good resident cutthroat production above slackwater, and limited migratory cutthroat trout within the lower reach. The exotic brook trout also have been found in Cherry Creek. Native non-game species that may be present in Cherry Creek include large scale suckers. Exotic warmwater species with the system would likely include: large mouth bass, northern pike, yellow perch, and brown bullhead (M. Owen pers. comm.).

The St. Joe River was once considered one of the finest trout streams in America (Hunt 1952). Around the turn of the century (1901 to 1905), *The Courier*, the local newspaper of St. Maries, Idaho, frequently reported capture of 3.2 to 4.1 kg trout in the St. Joe River. Furthermore, it was reported that on some fishing trips anglers returned with as many as 50 to 100 "speckled trout" (presumable westslope cutthroat trout) averaging 1.4 to 2.3 kg in a few hours.

Apperson et al. (1988) stated that the slackwater areas of the lower St. Joe and St. Maries rivers do not support resident trout fisheries, primarily because of the absence of habitat and warm summer water temperatures. However, lower reaches of cooler tributaries to these systems have been used by adult trout during the summer. The slackwater reaches of both the St. Joe River and St. Maries River provide a short seasonal fishery for migratory trout. In 1987, the IDF&G employed gillnetting and electrofishing techniques to sample the fishery present in the slackwater portions of the St. Joe River and St. Maries River. No trout were collected with gill nets in either river system (Apperson et al. 1988). Other species that were captured in low numbers, included mountain whitefish, yellow perch, largemouth bass, black crappie, pumpkinseed, tench, and sculpins. Electrofishing conducted in slackwater areas during the summer of 1987 provided additional species compositional information, with suckers, squawfish, yellow perch, and bullheads being dominant at 26%, 21%, 31%, and 16%, respectively of the total catch (Apperson et al. 1988). Species composition was generally similar to that obtained by gill netting. Species composition in the slackwater areas of the two rivers has not changed appreciably since 1948 when hoopnetting revealed that 99% of the fishery was comprised of tench, suckers, squawfish, brown bullheads, yellow perch, and common sunfish (Jeppson 1960).

During electrofishing surveys conducted in 1986 (Apperson et al. 1988), cutthroat trout were found in nearly all of the drainages surveyed. Other salmonids were found in most drainages, but the species composition was variable (Horton and Mahan 1988). The results indicated that populations were dominated by either cutthroat or brook trout (Apperson et al. 1988); rainbow trout were found in low abundance. Bull trout were found in four of the tributaries surveyed: Mica, Thomas, Trout, and Cherry Creeks (Aspersion et al. 1988).

Snorkeling surveys indicated that overall trout densities ranged from 1.0 to 132.5 fish per $100m^2$ in tributaries to the St. Joe river (Apperson et al. 1988). Cutthroat or hybrid rainbow-cutthroat trout were observed in all but one of the tributaries snorkeled (Apperson et al. 1988), the highest densities of cutthroat trout were observed in streams that had been closed to fishing. Rainbow trout were observed in only one stream system, while brook trout were observed in all tributaries surveyed; bull trout were not observed during snorkeling surveys (Apperson et al. 1988). The lower St. Joe River tributaries have generally depressed densities of trout; Thurow and Bjornn (1978) reported a mean density of 8.3 age 1 and older cutthroat trout per 100 m^2 in the lower St. Joe river tributaries compared to an average of 12 per 100 m2 in the tributaries to the upper St. Joe river.

3.6.2. Other aquatic organisms

Ellis (1940) investigated the St. Joe River during a biological survey of the area. Ellis (1940) stated that "a good bottom fauna typical of the local stream conditions was found at all stations on the St. Joe River." The physical habitat conditions along the St. Joe river have changed since the time of Ellis's survey, but have not resulted in a significant impairment to the general health of the aquatic resources found within the drainage.

3.6.3. Wildlife

Since the project is located under a road in a residential area there is probably limited use by wildlife. It is likely to be used or inhabited by species that are typically associated with riparian habitats and have a high tolerance for human disturbance.

Wildlife is limited in the project are due to the lack of riparian vegetation and suitable habitat. Ospreys, eagles, and red-tailed hawks are present in the general vicinity of the project area and may perch along some of the trees near the project. Quail, kestrels, and Great Blue Heron were observed near the project area. No perch trees are located within the project area. Furbearers, rodents, and other small mammals may be found on the riverside of the floodwall. Turtles were observed downstream of the project area

3.6.4 Flora

The banks of Cherry Creek are vegetated with many of the regional indigenous species. These species included snowberry, wild rose, alder, cottonwood, and willow. Tall field grasses are covering the backside of the levee upstream of the project area. There were two or three unidentifiable early succession weeds that were present in recently disturbed areas, though these species seemed to be succumbing to the native species present.

3.6.5 Threatened and endangered species

This section is addressed in detail in Appendix A. Biological Assessment of Cherry Creek Levee Restoration Project. Based on conversations with the USFWS a previous BA prepared by the Corps for the USFWS for a project approximately 500 feet upstream from this restoration project, the Corps identified gray wolf (*Canis lupus*), bald eagle (*Haliaeetus leucocephalus*), bull trout (*Salvelinus confluentus*), Ute Ladies'-tresses (*Sprianthes diluvialis*), and Westslope cutthrout trout (*Onchorhynchus mykiss gairdneri*) as listed and species of concern that may occur within the area of the restoration project. There areno designated critical habitat, proposed species, candidate species indicated to be present near the project site.

The gray wolf is a resident of northern Idaho. Populations of wolves in the western United States are in areas with the highest concentration of deer and elk. They have colonized parts of Montana, and have been periodically documented in Washington, Idaho, and Wyoming. Documentation of the presence of wolves has increased in Idaho since the 1970's, although no breeding or pack activity has been confirmed. Gray wolves occurring in Idaho south of I-90 are listed as nonessential experimental population, with special regulations defining their protection and management, as outlined in the final rules published in the federal register vol. 59, no. 224-november 22, 1994. These regulations include special provision regarding "take" of gray wolves. For section 7 interagency coordination purposes, wolves designated as nonessential experimental that are not within units of the National Park system or national wildlife refuge system are treated as proposed species. As such, federal agencies are only required to confer with the US Fish and Wildlife Service (the service, USFWS) when they determine that an action they authorize, fund, or carry out "is likely to jeopardize the continued existence" of the species.

Correspondence with the Idaho Department of Fish and Game indicated that there are no bald eagle nests or roosting sites located near the project site. However, St. Joe river basin is a known area for wintering bald eagles and it is highly likely that they may pass through the project area during foraging or migration. Bull trout (*Salvelinus confluentus*) and Ute ladies'-tresses (S*piranthes diluvialis*) are both listed as threatened and may exist in the project area.

The St. Joe River drainage is considered to consist of one population of bull trout. A small number of bull trout use the river as a migratory corridor. In June 1995, the USFWS status review found listing bull trout as threatened or endangered was warranted under the endangered species act. In the same finding, the USFWS precluded listing the bull trout due to higher priority listing actions. After a court ordered reconsideration of the earlier finding, the USFWS issued a proposed rule to list in 1997 and issued the final rule to list the Columbia river bull trout population segment as threatened in June of 1998.

Ute ladies' tresses were listed as threatened by the USFWS on January 17, 1992. Historical range covered Colorado, Idaho, Montana, Nebraska, Nevada, Utah,

Washington, and Wyoming. Currently it can be found in Colorado, Idaho, Montana, Utah, Washington, and Wyoming.

Westslope cutthroat trout (O*ncorhynchus clarki lewisi*) are a species of concern that may be present in the project area. The U.S. Fish and Wildlife service has been petitioned to list the westslope cutthroat trout as threatened. Petitioned species receive no protection under the endangered species act. However, a petition is an early step in the listing process. The service has made a positive 90-day finding, published June 10, 1998, in the Federal Register (63FR 31691), that the petition presented substantial information that listing this species may be warranted. The service is now surveying the status of the species range-wide, preparatory to making a finding.

3.7 Cultural resources

Seattle District Archaeologist, David Grant, contacted the Idaho State Historic Preservation Office (ISHPO) on June 6, 2001 to initiate a record search for previously recorded historic properties and prior cultural resources work in or near the project area. Suzi Neitzel, Deputy State Historic Preservation Officer (Deputy SHPO), informed Grant on June 6, 2001 that prior archaeological reconnaissance work in the greater project area located two prehistoric sites on the north side of the St. Joe River. There were, however, no recorded historic properties within a one-mile radius of the project area. Cherry Creek is located within the Couer d'Alene Tribal reservation and is an important resource to the Tribal fisheries.

3.8 Recreation

The project area is not considered a recreational area, but is used occasionally for fishing.

3.9 Socioeconomics

The area along Cherry Creek in the project vicinity consists of the City of St. Maries sewage finishing/chlorinating ponds and the related effluent/irrigation spray field operation, 34 residential units, 30 detached out-buildings/garages, and about 2 miles of the county owned Shepherd's Lagoon Road.

4.0 EFFECTS OF ALTERNATIVES

4.1 CLIMATE

No action alternative

Under this alternative climate would not be affected.

Concrete structure with water passageway

Under this alternative climate would not be affected.

Preferred alternative -culvert replacement

Under this alternative climate would not be affected.

4.2 AIR QUALITY/NOISE

No action alternative
Under this alternative air quality or noise would not be affected

Concrete structure with water passageway alternative
Under this alternative there will be a temporary and localized reduction in air quality due to emissions from equipment operating during dredging and disposal. Ambient noise levels will increase slightly while equipment is operating.

During construction, there may be a temporary and localized reduction in air quality due to emissions from heavy machinery operating during barge transport, pile driving, fill placement, and grading. These emissions will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

Ambient noise levels may increase slightly while construction equipment is operating. However, these effects will be temporary and localized, and occur only during daylight working hours. As a result, impacts are anticipated to be minor.

Preferred alternative -culvert replacement
Under this alternative there will be a temporary and localized reduction in air quality due to emissions from equipment operating during dredging and disposal. Ambient noise levels will increase slightly while equipment is operating. However, work is only expected to take place over one week. This would minimize any affect on air quality/noise. These effects are regarded as insignificant.

4.3 VISUAL/ESTHETIC ENVIRONMENT

No action alternative
Under this alternative the visual/esthetic environment would not be affected.

Concrete structure with water passageway alternative
Under this alternative, there would be a temporary disturbance to the visual esthetics of the area. Construction activity may be unsightly for the term of the project. However, the project would have no long term effects on visual esthetic of the area.

Preferred alternative -culvert replacement
Under this alternative, there would be a temporary disturbance to the visual esthetics of the area. However, construction is only expected to last 10 days and the project would have no long term effects on visual esthetics of the area.

4.4 PHYSICAL AND GEOLOGIC ENVIRONMENT

No action alternative
Under this alternative, the physical and geologic environmental would not be affected.

Concrete structure with water passageway alternative
Under this alternative, the physical and geologic environmental would not be affected.

Preferred alternative -substrate supplement
Under this alternative, the physical and geologic environmental would not be affected.

4.5 WATER AND SEDIMENT QUALITY

No action alternative
Under this alternative the water and sediment quality would not be affected.

Concrete structure with water passageway alternative
Under this alternative water quality is expected to be temporarily degraded during substrate removal. Degraded water quality includes, suspended sediments and lower dissolved oxygen. These effects are expected to last during the time of construction through several hours after work is completed. After construction the levels are expected to return to normal levels. It is possible that the pH would be elevated to temporary unacceptable levels as a result of the concrete pouring.

Preferred alternative -culvert replacement
Under this alternative construction operations may degrade water quality on a very localized and temporary basis, not over the long term nor harbor-wide. These water quality alterations are expected to be short-term and will not cause problems in the Cherry Creek/St. Joe River system. Given the relatively small quantities of sediment typically suspended, the short duration of suspension, and the dilution that occurs during dispersion, the suspension of sediments around the project site is not likely to lead to appreciable reductions in dissolved oxygen nor increases in turbidity. Best management practices will be used and the material used will be clean and free of any contamination

The following management actions would be implemented during construction activities. These conditions are included in project contracting specification documents; a Corps inspector would be on-site to ensure that contractors abide by these requirements.

1. Riparian and wetland areas will be avoided as staging or refueling areas.
2. Equipment will be stored, serviced, and fueled away from aquatic habitats or other sensitive areas.
3. The project will used clean material to minimize the release of fines into the aquatic environment.
4. Existing roadways or travel paths will be used for access to project sites.
5. Excavation and transport equipment machinery will be limited in capacity, but sufficiently sized to complete required activities.
6. All garbage will be removed from the project site and disposed of properly; undisturbed vegetated buffer zones will be retained along the project to the greatest extent possible to reduce sedimentation rates, channel instability, and aquatic habitat impacts.
7. Riprap will be limited to the extent absolutely needed and the use of bio-engineered techniques employed where possible.
8. The corps will stockpile native riparian vegetation removed during construction and replant it in the riparian corridor after construction of engineered features.

9. Will isolate the work area from the open water to prevent sediment delivery and turbidity in the river.

4.6 BIOLOGICAL RESOURCES

4.6.1 Fish

No action alternative

Under this alternative the fish present in Cherry Creek would not be affected.

Concrete structure with water passageway alternative

According to conversations with the IDFG, USFWS, and the Couer d' Alene Tribe biologist, the timing of this alternative would occur when very few fish are present. However, implementing this alternative may have temporary effects on some fish. Fish that will be present could be impacted by the project through noise, activity, and the increased amount of turbidity during construction. It is unlikely that noise and activity will have any significant effect. Removing the substrate would result in a temporary degradation of the water quality, increasing turbidity, possible lowering of dissolved oxygen and the potential displacement of fish species. These effects would be limited to the immediate substrate removal sites. Should fish species coincidentally be present in the construction area, it is highly likely that these fish would remove themselves from the area immediately upon commencement of the actual construction. This removal would be temporary in nature and fish could re-enter the area once operations ceased and suspended sediments settled. Suspended sediments are not expected to remain in the water column for very long and dissolved oxygen should return to original levels with that same timeframe. The completion of the project would improve fish passage.

Preferred alternative -culvert replacement

According to conversations with the IDFG, USFWS, and the Couer d' Alene Tribe biologist, the timing of this alternative would occur when very few fish are present. However, implementing this alternative may have temporary effects on some fish. Fish that will be present could be impacted by the project through noise, activity, and the increased amount of turbidity during construction. It is unlikely that noise and activity will have any significant effect. Removing the substrate would result in a temporary degradation of the water quality, increasing turbidity, possible lowering of dissolved oxygen and the potential displacement of fish species. These effects would be limited to the immediate substrate removal sites. Should fish species coincidentally be present in the construction area, it is highly likely that these fish would remove themselves from the area immediately upon commencement of the actual construction. This removal would be temporary in nature and fish could re-enter the area once operations ceased and suspended sediments settled. Suspended sediments are not expected to remain in the water column for very long and dissolved oxygen should return to original levels with that same timeframe. This alternative would improve fish passage, except during flood events. However, it is unlikely the fish will move upstream during an flood event.

4.6.2. Other aquatic organisms

No action alternative

Under this alternative the aquatic organisms would not be affected.

Concrete structure with water passageway alternative
Implementing this alternative will have adverse effects on invertebrate species within the immediate dredging location and minimum effects on invertebrates at the disposal sites. Direct mortality of some invertebrates is unavoidable in the construction area because of the nature of removing the substrate to install the concrete structure. Benthic communities are expected to recolonize the area soon after work is completed.

Preferred alternative -culvert replacement
Best management practices will be used to minimize turbidity releases into Cherry Creek. However, during construction or rainy weather there could be a release of sediment into the stream. Any effect of sediment input to Cherry Creek is likely to be of minor consequence since the biological effect of episodic inputs has been found generally to be temporary. Most likely, any disturbance to benthic populations will be quickly restored by drift from upstream (Tsui and McCart 1981).

4.6.3. Wildlife
No action alternative
Under this alternative the wildlife would not be affected.

Concrete structure with water passageway alternative
Wildlife will not be significantly impacted by this alternative. A few small mammals and small birds may temporarily lose a small amount of low quality habitat. Any improvements in vegetation will be of some benefit to wildlife.

Preferred alternative -culvert replacement
Under this alternative the wildlife would not be affected. No measurable change would be realized from implementing the preferred alternative

4.6.4 Flora
No action alternative
Under this alternative the flora would not be affected.

Concrete structure with water passageway alternative
There will be almost no loss of riparian vegetation in this alternative. Some tall field grasses, early succession weeds, and some alder may be removed as part of this alternative.

Preferred alternative -culvert replacement
There will be almost no loss of riparian vegetation in this alternative. Some tall field grasses, early succession weeds, and some alder may be removed as part of this alternative.

4.6.5 Threatened and endangered species
No action alternative
Under this alternative, threatened and endangered species would not be affected.

Concrete structure with water passageway alternative
Under this alternative, the Corps determined in its biological assessment that this alternative may affect, but not likely to adversely affect bull trout. A determination of no effect was made for the Ute Ladies'-tresses and a not likely to jeopardize the continued existence determination for gray wolf.

Preferred alternative -culvert replacement
Under this alternative the project will not result in a net loss or degradation of key gray wolf prey species or their habitats. The project will not result in the construction of any new roads or encourage new roads in gray wolf habitat. Project activities will not occur in the vicinity of a known den or a rendezvous site.

Correspondence with the Idaho Department of Fish and Game indicated that there are no bald eagle nests or roosting sites located near the project site. However, St. Joe River basin is a known area for wintering bald eagles and it is highly likely that they may pass through the project area during foraging or migration.

Best management practices will be used to avoid impact to various fish species that may serve as food for bald eagles. Migrating waterfowl may avoid the area of construction due to noise. Regardless, impacts to bald eagle food or prey would be minimal as a result of this project.

One of the two major threats to the bald eagle at present and for the foreseeable future is destruction and degradation of its habitat. This occurs through direct cutting of trees for shoreline development, human disturbance associated with recreational use of shorelines and waterways, and contamination of waterways from point and non-point sources of pollution. The project will not introduce any contamination or pollution into the project area.

Best management construction techniques will reduce impacts to aquatic resources. No impact on bull trout food stocks, prey species or foraging areas will likely occur. Although preferred water temperature varies by life history stage, consistently cold water is required at all critical life history stages for bull trout. Increases in stream temperatures can cause direct mortality, displacement by avoidance (Bonneau and Scarnechia 1996), or increased competition with species more tolerant of warm temperatures (Rieman and McIntyre 1993, Craig and Wissmar 1993). This project will not increase the water temperature. There will be almost no loss of established riparian vegetation. Sedimentation can also increase water temperature of streams (i.e., By filling pools and reducing channel depth, increasing riffle area and channel width, which results in increased solar insulation [MBTSB 1998]). However, an increase in sedimentation is not expected to occur.

Cover is an important component of habitat complexity that is used by bull trout at all life history stages. Cover can include woody debris, overhanging vegetation, undercut banks, cobble and boulder substrate, water depth and turbulence, and aquatic vegetation

(Graham et al. 1981, Pratt 1984, Hoelscher and Bjornn 1989, Goetz 1991, Pratt 1992, Murphy 1995). Minimal cover will be lost as a result of this project.

This project will enhance the upstream or downstream movement of bull trout and it will increase useable bull trout habitat. Appropriate conservation measures will be employed to avoid direct effects to adult bull trout during construction.

Bull trout show affinity for stream bottoms and a preference for deep pools of cold water streams, lakes, and reservoirs (Goetz 1989). Because of this strong association with the stream bottom throughout their life history they can be adversely affected by activities that directly or indirectly change substrate composition and stability. The Corps will isolate the work area from the open water to prevent sediment delivery and turbidity in the river. Therefore, no significant accumulation of sediment is anticipated.

This alternative will not facilitate the introduction of non-native species, such as brook trout or brown trout, that may compete, hybridized with, or prey on bull trout. Also, the project will not significantly disrupt behavior patterns of migrating bull trout.

This alternative will not cause a disturbance or loss of habitat to Ute ladies' tresses. This species may be adversely affected by modifications of its habitat associated with livestock grazing, vegetation removal, excavation, construction, stream channelization, and other actions that alter hydrology. This project is not believed to cause any changes in hydrology to Ute ladies' tresses because the project consisted of simply reinforcing of an existing levee.

4.7 CULTURAL RESOURCES

No action alternative

Under this alternative cultural resources would not be affected.

Concrete structure with water passageway alternative

The proposed project consists of the replacement of a culvert in an existing roadbed over an artificial channel next to a railroad grade. It is unlikely that this alternative would disturbed cultural deposits at the project site.

Preferred alternative -culvert replacement

The proposed project consists of the replacement of a culvert in an existing roadbed over an artificial channel next to a railroad grade. Although it is unlikely that undisturbed cultural deposits exist at the site, David Grant will conduct an archaeological reconnaissance of the project area and submit a report to ISHPO and the Coeur d'Alene Tribal Historic Preservation Officer prior to construction. The reconnaissance will be conducted as an adjunct activity to another cultural resources reconnaissance necessitated by the removal of a timber crib wall in the town of St. Maries just east of the Cherry Creek culvert replacement project. The timber crib wall replacement is currently scheduled for August 2001 and the proposed culvert replacement is scheduled for November 2001. The Corps will also coordinate with the Coeur d'Alene Tribe and obtain a concurrence from ISHPO. The Corps' anticipates that the proposed project will

have no adverse effect on properties eligible for listing on the National Register of Historic Places.

4.8 RECREATION

No action alternative
Under this alternative recreation would not be affected.

Concrete structure with water passageway alternative
This project is an area that is not considered a recreational area or is open for public use. This alternative would not likely impact public use or recreation.

Preferred alternative -culvert replacement
This project is an area that is not considered a recreational area or is open for public use. This alternative would not likely impact public use or recreation.

4.9 Socioeconomics

No action alternative
Under this alternative socioeconomics would not be affected.

Substrate removal alternative
Under this alternative socioeconomics would not be affected

Preferred alterantive -substrate supplement
Under this alternative socioeconomics would not be affected

4.10 Cumulative effects

With spawning and rearing habitat being continually lost to development along the St. Joe River watershed, the importance of a healthy, useable tributary takes on increasing significance. The upper stretch of Cherry Creek is largely undeveloped and will likely remain that way. What makes this project so appealing is that the culvert is the bottleneck to this entire system, and the environmental return in terms of habitat available is so much greater than just what will be accomplished in the project area.

Cutthroat trout are a species of special concern in Idaho State and at risk of being listed for protection under the Endangered Species Act. It is estimated that, with improved passage, the stream could eventually support 15 times the number of adfluvial cutthroat presently found. Bull trout, listed under the Endangered Species Act use Cherry Creek as rearing habitat and it is an important staging area during upstream spawning tributaries in the St. Joe River watershed.

5.0 ENVIRONMENTAL COMPLIANCE

5.1 Archeological Resources Protection Act of 1979

The Corps will fully comply with this act. David Grant will conduct an archaeological reconnaissance of the project area and submit a report to ISHPO and the Coeur d'Alene Tribal Historic Preservation Officer prior to construction. The reconnaissance will be conducted as an adjunct activity to another cultural resources reconnaissance necessitated

by the removal of a timber crib wall in the town of St. Maries just east of the Cherry Creek culvert replacement project. The timber crib wall replacement is currently scheduled for August 2001 and the proposed culvert replacement is scheduled for November 2001. The Corps will also coordinate with the Coeur d'Alene Tribe and obtain a concurrence from ISHPO. The Corps' anticipates that the proposed project will have no adverse effect on properties eligible for listing on the National Register of Historic Places.

5.2 Clean Air Act, as amended

The clean air act required states to develop plans, called state implementation plans (sip), for eliminating or reducing the severity and number of violations of national ambient air quality standards (NAAQS) while achieving expeditious attainment of the NAAQS. The act also required federal actions to conform to the appropriate sip. An action that conforms with a sip is defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The Corps' determination is that emissions associated with this project will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

5.3 Clean Water Act, as amended

It was determined that work for this project qualified for a nationwide permit 33 temporary construction, access and dewatering and 27 wetland and riparian restoration and creation activities. EPA provided Clean Water Act Section 401 water quality certification for nationwide permit 33 for activities on tribal lands in a letter to the Walla Walla District dated February 11, 1997. Nationwide 27 applies to restoration projects that serve the purpose of restoring "natural" wetland hydrology, vegetation, and function to altered and degraded non-tidal wetlands and "natural" functions of riparian areas. This NWP does not authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed.

5.4 Coastal Zone Management Act of 1972, as amended

The coastal zone management act of 1972, as amended, requires federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved state coastal zone management program. This law has been determined to be not applicable, as the project does not occur in an area regulated under this act.

5.5. Endangered Species Act of 1973, as amended

In accordance with section 7(a)(2) of the endangered species act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. Currently the US Army Corps of Engineers is undergoing informal consultation with the US Fish and

Wildlife Service. A biological assessment has been prepared and is attached to this draft of the EA. The BA will be reviewed by the Services.

5.6 Estuary Protection Act
This law has been determined to be not applicable, as the project does not occur in an area regulated under this act.

5.7 Fish and Wildlife Coordination Act, as amended
The Fish and Wildlife Coordination Act (16 usc 470) requires that wildlife conservation receives equal consideration and is coordinated with other features of water resource development projects. The Corps will continue to consult with the US Fish and Wildlife Service throughout this project during the plans and specification phase.

5.8 Land and Water Conservation Fund Act of 1965, as amended
The Corps has determined the project to be in full compliance.

5.9 National Environmental Policy Act of 1969, as amended
The environmental assessment incorporated within this report is in partial fulfillment of NEPA requirements. This EA will be available for review by the agencies for 30 days..

5.10 National Historic Preservation Act of 1966, as amended
The Corps will fully comply with this act. David Grant will conduct an archaeological reconnaissance of the project area and submit a report to ISHPO and the Coeur d'Alene Tribal Historic Preservation Officer prior to construction. The reconnaissance will be conducted as an adjunct activity to another cultural resources reconnaissance necessitated by the removal of a timber crib wall in the town of St. Maries just east of the Cherry Creek culvert replacement project. The timber crib wall replacement is currently scheduled for August 2001 and the proposed culvert replacement is scheduled for November 2001. The Corps will also coordinate with the Coeur d'Alene Tribe and obtain a concurrence from ISHPO. The Corps' anticipates that the proposed project will have no adverse effect on properties eligible for listing on the National Register of Historic Places.

5.11 Rivers and Harbors Act of 1899, as amended
Under Section 10 of the Rivers and Harbors Act, a project can not obstruct navigable water of the United States. The Corps has determined that the project is in full compliance. The proposed work would not obstruct navigable water of the United States.

5.12 Wild and Scenic River Act, as amended
The Corps has determined the project to be in full compliance. This project would not have any direct and adverse effect on the values for which a river was established as a designated component of the national wild and scenic river system. Cherry Creek is not designated a Wild and Scenic River.

5.13 Section 904 of the 1986 Water Resources Development Act

Section 904 of the 1986 water resources development act requires that the plan formulation and evaluation process consider both quantifiable and unquantifiable benefits and costs of the quality of the total environment, and preservation of cultural and historical values. This project is in full compliance.

5.14 Section 307 of the 1990 Water Resources Development Act

Section 307 of the 1990 Water Resources Development Act establishes, as part of the water resources development program, an interim goal of no overall net loss of the nation's remaining wetlands, and a long-term goal of increasing the quality and quantity of the nation's wetlands. The recommended plan is in full compliance.

5.15 E.O. 11988, Floodplain Management

The study is in full compliance. The considered alternatives support avoidance of development in the flood plain, continue to reduce hazards and risks associated with floods and to minimize the impact of floods on human safety, health and welfare, and restores and preserves the natural and beneficial values of the base flood plain.

5.16 E.O. 11990, Protection of Wetlands

The project is in full compliance.

5.17 E.O.12898, Environmental Justice

Executive order 12898 requires the federal government to achieve environmental justice by identifying and addressing disproportionately high adverse effects of its activities on minority and low-income populations. It also requires the analysis of information such as the race, national origin, and income level for areas expected to be impacted by environmental actions. The project will not negatively affect low-income or minority populations. It is not likely the proposed work will have a significant effect on Native American fishery rights or resources.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

No federal resources will be irreversibly and irretrievably committed to this project until the “finding of no significant impact” (FONSI) is signed.

7.0 REFERENCES

TABLE OF CONTENTS

1.0. ABSTRACT.

This Biological Assessment (BA) is submitted under authority of Section 7 of the Endangered Species Act of 1973. This BA evaluates the potential impacts of a proposed culvert replacement by the Seattle District, US Army Corps of Engineers (Corps) on Cherry Creek near the city of St, Maries, Benewah County, Idaho under authority of Section 206 of the Water Resources Development Act of 1996

The Corps proposed plan is to replace the existing culvert with a larger, fish-friendly box culvert. The culvert will be countersunk into the new streambed and aligned and sized to mimic the natural stream to the greatest degree possible. This will allow the stream to flow freely through the culvert, even during the lowest water periods. The US Fish and Wildlife Service identified gray wolf (Canis lupus), bald eagle (Haliaeetus leucocephalus), bull trout (Salvelinus confluentus), and Ute ladies'-tresses (Spiranthes diluvialis) as potential threatened or endangered species which may occur in the project vicinity. The Corps will use best management practices to minimize any potential impacts to these species during construction. In this BA, the Corps has determined that the effects of the culvert replacement project may effect, but are not likely to adversely affect bald eagle, bull trout, and Ute ladies'-tresses and is not likely to jeopardize the continued existence of gray wolf.

2.0. INTRODUCTION.

On November 22, 1999 Jack Buell, Benewah County Board of Commissioners, sent a letter to the U.S. Army Corps of Engineers, Seattle District (Corps) requesting the assistance of the Corps in planning and designing a fish and wildlife restoration project under Section 206 of the Water Resources Development Act of 1996. Section 206 of the Water Resources Development Act of 1996 provides authority to the Corps of Engineers for aquatic ecosystem restoration and protection if the project will improve the quality of the environment, is in the public interest, and is cost effective. The proposed project would consist of removing or replacing an existing 60 inch culvert that now blocks fish passage on Cherry Creek, in Benewah County, Idaho.

On January 5, 2000 Angelo Vitale, fisheries biologist for the Coeur d' Alene Tribe sent a letter to the Corps endorsing the removal or replacement of the culvert on Cherry Creek. The Tribe has documented a general decline in upstream migration by westslope cutthroat trout into Cherry Creek from St. Joe River and attributed this decline to the culvert which at times is a complete barrier to migration.

In February 2000 the Corps began a feasibility study addressing improving fish passage at Cherry Creek. A preliminary restoration plan identified several alternatives and selected replacing the culvert and restoring Cherry Creek to a primarily free running stream as the preferred alternative to providing fish passage. The proposed project consists of replacing the existing culvert with a larger, fish-friendly box culvert. The streambed will be lowered approximately two feet at this location. The culvert will be countersunk into the new streambed and aligned and sized to mimic the natural stream to

the greatest degree possible. This will allow the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate. The screw gate will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel.

3.0. PROJECT SPECIFIC INFORMATION.

3.1. Project purpose/need

The primary project purpose is to provide for upstream fish passage. A culvert containing Cherry Creek runs under Sheperd's Road. There is a manually operated flap gate on the downstream end of the culvert. The purpose of the flap gate is to prevent floodwaters on the St. Joe River from backing up into Cherry Creek. The levees on Cherry Creek are not designed to withstand floodwater elevations on the river. The flap-gated culvert is a fish passage barrier for several reasons:

c. The culvert has a flap gate that is difficult and dangerous to open and close. The flap gate is generally left open, but it must be closed when the water reaches flood levels to prevent high river water from backing up into Cherry Creek and blowing out the Cherry Creek Levee. Under current conditions, in order to close the gate, someone has to go into Cherry Creek on the downstream end of the culvert and use a chainsaw to cut the posts that hold the flap gate open. For the gate to be opened again, it has to be manually pulled up against the water pressure. This difficulty results in the gate being left closed when it should be open for fish passage. In addition, the flap gate is so heavy that the low head differential between upstream and downstream does not open the gate enough to allow fish passage in low-flow conditions.

d. The elevation of the culvert is above the lowest water elevation by approximately two feet. During low water periods, upper Cherry Creek is isolated from lower Cherry Creek and the St. Joe River. Fish are prevented from migrating upstream to spawning area and/or thermal refuge. Low water generally coincides with the bull trout migration period.

The culvert is not seated properly in the surrounding fill. Water regularly travels along the outside of the culvert, exacerbating the low water problems noted above. Under the existing without project condition the culvert is a bottleneck that prevents use of the watershed by bull trout and cutthroat. It has been documented that the operation of the gate at the culvert mouth limits movements from the St. Joe River into Cherry Creek, and at times is a complete barrier to migration. The Coeur D'Alene has documented a general decline in upstream migration by westslope cutthroat trout into Cherry Creek with the most precipitous decline coinciding with the recent installation of the gated culvert at the mouth of Cherry Creek. It is likely that the current operation of the gated culvert would lead to the extinction of the adfluvial subpopulation of westslope cutthroat trout within Cherry Creek.

3.1. PROJECT DESCRIPTION.

The project consists of replacing the existing culvert with a larger, fish-friendly box culvert. The new box culvert will be 6 feet wide by 8 in height. The culvert will be countersunk into the new streambed approximately two feet and aligned and sized to mimic the natural stream to the greatest degree possible. This will allow the stream to flow freely through the culvert, even during the lowest water periods. The box culvert will be fitted with a screw gate. The screw gate will be shut during high water events to maintain flood control on Cherry Creek. The bottom of the culvert will be filled with gravel. Access to the construction site will be from the existing Sheperds road and the right bank immediately adjacent to the road. Construction will be mid-late November when the water level is the lowest in Cherry Creek and there is the least use of fish species. Pre-construction activities will consist of placing two coffer dams, one upstream and one downstream of the existing culvert. The area in between the coffer dams will be pumped dry and re-routed downstream of creek. The existing culvert will then be removed. The bottom of the new culvert will be placed 2 feet below the stream bed. Native material, or gravels, will be placed back up to stream bed level and gate will be installed. The area surrounding the new culvert will be backfilled and the road that runs on top of it will be replaced. Existing vegetation is minimal, although any scrubby bushes growing on the embankment on top of the existing culvert may need to be removed. To control erosion best management practices will be implemented. Construction is estimated to take 7 to 10 days. Flow is anticipated to be low. No special procedures for reintroduction of flow are required.

3.2. PROJECT LOCATION.

The project site is located on Shepard's road and Cherry Creek, near the town of St. Maries, Benewah County, Idaho (T 46N, R 2W, Sec 20).

3.2.1. PROJECT MAPS. map 1

map2

map 3

map 4

3.3. ACTION AREA/PROJECT AREA.

The St. Joe River originates on the western side of the Bitteroot Mountain Range near the Idaho-Montana border. The St. Joe River drains an area of approximately 2,668 km^2 and flows in a westerly direction entering the southern end of Lake Coeur d' Alene near St. Maries, Idaho. Mean annual discharge discharge for the St. Joe River near Calder is 2,339 cfs (USGS 1994). The upper river flows over rocky substrates through deep mountain gorges with alternating rapids and deep pools. Stream width and pool depth average 10.1 m and 2.0 m respectively, in the headwaters of the St. Joe River (Rankel 1971). In contrast, the lower river flows slowly through land with gentle topography characterized by lowland meadows. Streams widths and mid-channel depths in the lower river average 80.0 and 9.0 m, respectively. The St. Maries River is the largest tributary to the St. Joe River. Other tributaries of significance include Cherry, Thomas, Street, Rochat, Bond, Falls, Trout, Hugus, Moose, Mica, and Big creeks.

The lower 48.2 km of the St. Joe River have been largely converted from a riverine to lacustrine system from the construction of the Post Falls Dam in 1906, and the resulting increased lake level elevation. As a result, water depth and velocity, as well as sediment transport capacity in this strech of river have been altered. A secondary and relatively minor impact evident in the St. Joe River drainage is the presence of a road along the length of river from St. Maries upstream approximately 167 km (Rankel 1971). Miles of streambank were likely denuded for road construction but little channel alteration has occurred. Lack of habitat is the major factor limiting fish populations in the lower St. Joe River downstream from St. Joe City, and in the St. Maries River downstream from Lotus Crossing (Apperson et al. 1988). Instream cover and spawning habitat are generally absent in these areas. Logging occurs within the St. Joe River and has likely resulted in the introduction of fine sediment into this system.

Water quality issues in lower reaches of the St. Joe River include bank erosion, nutrient enrichment from point and non-point sources, excessive growth of aquatic plants, and bacterial contamination. River bank erosion is a primary water quality issue in the lower St. Joe River.

Ellis (1940) investigated the St. Joe River during a biological survey of the area. Ellis (1940) stated that "a good bottom fauna typical of the local stream conditions was found at all stations on the St. Joe River." The physical habitat conditions along the St. Joe River have changed since the time of Ellis's survey, but have not resulted in a significant impairment to the general health of the aquatic resources found within the drainage.

Fisheries surveys have been conducted intermittently in the St. Joe River and its tributaries since the mid 1970s by the Idaho Department of Fish and Game (IDF&G). Electrofishing surveys conducted during 1986 indicated that mountain whitefish was the dominant game fish captured in the St. Joe River on all sampling dates; suckers dominated the total catch (Apperson et al. 1998). During the 1986 survey, suckers, squawfish, and mountain whitefish dominated the catch in the section from Huckleberry Campground downstream to Falls Creek (Horton and Mahan 1988). No cutthroat trout

and only three rainbow trout caught during the August sampling, during which water temperatures exceeded 20°C in both sections (Apperson et al. 1988). Cutthroat trout and rainbow trout were caught in both sections in October (Apperson et al. 1988).

4.0. SPECIES SPECIFIC INFORMATION.

4.1. SPECIES THAT MAY OCCUR IN PROJECT AREA.

Based on conversations with the USFWS a previous BA prepared by the Corps for the USFWS for a project approximately 500 feet upstream from this restoration project, the Corps identified gray wolf (*Canis lupus*), bald eagle (*Haliaeetus leucocephalus*), bull trout (*Salvelinus confluentus*), Ute Ladies'-tresses (*Sprianthes diluvialis*), and westslope cutthrout trout (*Onchorhynchus mykiss gairdneri*) as listed (first four) and species of concern (westlope cutthroat) that may occur within the area of the restoration project. There are no proposed species, candidate species, or designated critical habitat, indicated to be present near the project site.

Threatened
Bald eagle (*Haliaeetus leucocephalus*)
Bull trout (*Salvelinus confluentus)*
Ute ladies'-tresses (*Spiranthes diluvialis*)

Experimental Nonessential
Gray wolf (*Canis lupus*)

There was no designated critical habitat, proposed species, or candidate species indicated to be present near the project site.

4.2. STATUS OF SPECIES THAT MAY OCCUR IN PROJECT AREA.

4.2.1. GRAY WOLF.

Gray wolves occurring in Idaho south of I-90 are listed as a nonessential experimental population, with special regulations defining their protection and management, as outlined in the final rules published in the Federal Register Vol. 59, No. 224-November 22, 1994. These regulations include special provision regarding "take" of gray wolves. For section 7 interagency coordination purposes, wolves designated as nonessential experimental that are not within units of the National Park System or National Wildlife Refuge System are treated as proposed species. As such, Federal agencies are only required to confer with the U.S Fish and Wildlife Service (the Service, USFWS) when they determine that an action they authorize, fund, or carry out "is likely to jeopardize the continued existence" of the species.

4.2.2. BALD EAGLE.

The bald eagle was listed as endangered throughout the conterminous U.S. in April, 1976, but threatened in the states of Washington, Idaho, Montana, and Minnesota. The USFWS has proposed to remove the bald eagle from the list of Endangered and Threatened Wildlife in the lower 48 states of the United States (Federal Register July 6th

1999 Volume 64, Number 128). This action has been proposed because the available data indicated that this species has recovered.

4.2.3. BULL TROUT.

In June 1995, the USFWS status review found listing bull trout as Threatened or Endangered was warranted under the Endangered Species Act. In the same finding, the USFWS precluded listing the bull trout due to higher priority listing actions. After a court ordered reconsideration of the earlier finding, the USFWS issued a proposed rule to list in 1997 and issued the final rule to list the Columbia River bull trout population segment as threatened in June of 1998.

4.2.4. UTE LADIES' TRESSES.

Ute ladies' tresses were listed as Threatened by the USFWS on January 17, 1992. Historical range covered Colorado, Idaho, Montana, Nebraska, Nevada, Utah, Washington, and Wyoming. Currently it can be found in Colorado, Idaho, Montana, Utah, Washington, and Wyoming.

4.3. SPECIES LIFE HISTORY.

Detailed descriptions of the life history of proposed, threatened, and endangered species that may occur within the project area were not considered necessary for this assessment. However, as a convenience for the reviewer, detailed life history profiles can be found in Appendix 1-A of this document.

5.0. EFFECTS OF THE ACTION.

5.1. DATA SOURCES.

In addition to the list obtained from the USFWS, correspondence was conducted with the Idaho Department of Fish and Game, Couer D' Alene Tribe, US Environmental Protection Agency, Idaho Division of Environmental Quality, and Idaho Department of Lands to discuss possible impacts of the project. Also literature review was conducted to provide a synopsis of the existing information describing the aquatic resources of the St. Joe River Basin, Idaho. Another objective of this literature review was to identify important environmental factors and events that may have been impacted by this project.

5.2. GENERAL IMPACTS.

Effects of Turbidity

Best management practices will be used to minimize turbidity releases into Cherry Creek. However, during rainy weather there could be a release of sediment into the river. The potential affects of the increased turbidity are discussed below.

Turbidity effects on fish:.

A large episodic event of sediment into the lower Cherry Creek could affect fish populations in three ways: direct effects through suspended sediment and turbidity, sediment becoming trapped in salmonid nests (redds) and therefore influencing reproductive success, and the potential loss of fish habitat. Suspended sediments and

turbidity would potentially effect fish in the Cherry Creek directly by temporarily reducing feeding and growth, introducing respiratory impairment, reducing the fishes tolerance to disease and toxicants, and increasing the physiological stress.

The biggest concern of a large release of sediment would be that the sediment would become trapped in salmonid redds and effect the development of the embryos and sac fry in redds. A large input of sediment into the lower Cedar River may result in the coating of eggs and embryos and the filling of interstitial spaces in the redd gravel so completely that the flow of water containing oxygen through the redd is impeded or stopped. However, there is no salmonid spawning habitat located downstream of the project in Cherry Creek. Therefore, any impacts to redds or spawning habitat is unlikely.

Another potential major problem that could occur is that a large sediment pulse into the lower Cedar is that fish habitat would be lost or eliminated by the filling of interstitial space in riffles of gravel and cobbles, and decreasing of juvenile-rearing and adult habitat by filling of pools. Salmonid fry, particularly, require the protection of streambed "roughness" conditions for winter survival. When heavy deposits eliminate pool habitat, reduced growth and loss of populations often result. It is impossible to estimate the potential loss of salmonid production if a large sediment pulse occurs. However, the project will use best management practices that will minimize any sediment release into Cherry Creek.

Turbidity/Sediment effects on invertebrates: More is known about the effects of suspended sediment on macroinvertebrates. The most common direct effect observed in experiments with fine sediments has been a pronounced increase in downstream drifting. Such increased drift has been attributed primarily to a decrease in light with consequent drift responses similar to behavioral drift in a diel periodicity. Extraordinary drift under prolonged high levels of suspended sediment may deplete benthic invertebrate populations.

Severe damage to benthic invertebrate populations can be caused by heavy sediment deposits. The affected organisms consist mainly of the insect orders Ephemeroptera, Plecoptera, and Trichoptera, (EPT), which generally are the forms most readily available to foraging fish. Virtually no research has been conducted on the effect of sediment on the meiofauna of streambeds, despite increasing appreciation of the ecological importance of these small organisms to fisheries.

Any effect of sediment input to Cherry Creek is likely to be of minor consequence since the biological effect of episodic inputs has been found generally to be temporary. Rapid recovery often results from invertebrate drift from upstream reaches.

5.3. PROJECT IMPACT TO LISTED SPECIES.

5.3.1. GRAY WOLVES.

5.3.1.1. Level of use of the project area.

The gray wolf is a resident of northern Idaho. Populations of wolves in the Western United States are in areas with the highest concentration of deer and elk. They have colonized parts of Montana, and have been periodically documented in Washington, Idaho, and Wyoming. Documentation of the presence of wolves has increased in Idaho since the 1970's, although no breeding or pack activity has been confirmed. Gray wolves have little tolerance for humans and human activity.

5.3.1.2. Effect of the project on primary food stocks, prey species, and foraging areas.

Negative impacts affecting the ungulate prey base is detrimental to wolves. The wolf is a predator on ungulates and thus is influenced by their numbers (Mech 1970, Peterson et al. 1984). Wolf numbers decline with inadequate prey, or if prey is not vulnerable due to good habitat and/or weather (Peterson et al. 1984). Ungulate calving and fawning grounds and wintering areas are particularly important for wolves. Ungulate use of the project is unlikely, as it is not a known calving, fawning, or wintering area for elk or deer.

5.3.1.3. Impacts from project construction.

The project will not result in a net loss or degradation of key gray wolf prey species or their habitats. The project will not result in the construction of any new roads or encourage new roads in gray wolf habitat. Project activities will not occur in the vicinity of a known den or a rendezvous site.

5.3.2. BALD EAGLES

5.3.2.1. Level of use of the project area.

Correspondence with the Idaho Department of Fish and Game indicated that there are no bald eagle nests or roosting sites located near the project site. However, St. Joe River basin is a known area for wintering bald eagles and it is highly likely that they may pass through the project area during foraging or migration.

5.3.2.2. Effect of the project on primary food stocks, prey species, and foraging areas.

Bald eagle food habits are extremely varied. Small prey are taken when abundant. However, larger fish, water birds, and small mammals are also taken as live prey. During winter, carrion such as carcasses discarded by trappers, winter-kill deer, and spawned-out salmon also attract eagles.

Migrant eagles begin to appear on traditional wintering grounds during late October. Peak numbers occur during January and February. The primary motivations during winter are feeding and conserving energy. Bald eagles congregate near sources of food, generally river, lakes, and the marine shoreline. When not actively feeding or searching for food, they will appear to "loaf" in favorite perch trees.

Best management practices will be used to avoid impact to various fish species that may serve as food for bald eagles. Migrating waterfowl may avoid the area of construction

due to noise. Regardless, impacts to bald eagle food or prey would be minimal as a result of this project.

5.3.2.3. Impacts from project construction.
One of the two major threats to the bald eagle at present and for the foreseeable future is destruction and degradation of its habitat. This occurs through direct cutting of trees for shoreline development, human disturbance associated with recreational use of shorelines and waterways, and contamination of waterways from point and non-point sources of pollution. The project will not introduce any contamination or pollution into the project area.

5.3.3. BULL TROUT.

5.3.3.1. Level of use of the project area.
The St. Joe River drainage is considered to consist of one population of bull trout. A small number of bull trout use the river as a migratory corridor.

5.3.3.2. Effect of the project on primary food stocks, prey species, and foraging areas.
Bull trout are opportunistic feeders with food habits primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton and small fish (Boag 1987; Goetz 1989; Donald and Alger 1993).

Adult migratory bull trout are primarily piscivorous, known to feed on various fish species (Fraley and Shepard 1989; Donald and Alger 1993). Bull trout evolved with, and in some areas, co-occur with native cutthroat trout (*Oncorhynchus clarki* ssp.), resident (redband) and migratory rainbow trout (*O. mykiss*), chinook salmon (*O. tshawytscha*), sockeye salmon (*O. nerka*), mountain whitefish (*Prosopium williamsoni*), various sculpin (*Cottus spp.),* sucker (Catastomidae) and minnow species (*Cyprinidae spp.)* (Rieman and McIntyre 1993).

Best management construction techniques will reduce impacts to aquatic resources. No impact on bull trout food stocks, prey species or foraging areas will likely occur.

5.3.3.3. Impacts from project construction.
Although preferred water temperature varies by life history stage, consistently cold water is required at all critical life history stages for bull trout. Increases in stream temperatures can cause direct mortality, displacement by avoidance (Bonneau and Scarnechia 1996), or increased competition with species more tolerant of warm temperatures (Rieman and McIntyre 1993, Craig and Wissmar 1993). This project will not increase the water temperature. There will be a minimal loss of established riparian vegetation. Sedimentation can also increase water temperature of streams (i.e., by filling pools and reducing channel depth, increasing riffle area and channel width, which results in increased solar insulation [MBTSB 1998]). However, an increase in sedimentation will not occur.

Cover is an important component of habitat complexity that is used by bull trout at all life history stages. Cover can include woody debris, overhanging vegetation, undercut banks, cobble and boulder substrate, water depth and turbulence, and aquatic vegetation (Graham et al. 1981, Pratt 1984, Hoelscher and Bjornn 1989, Goetz 1991, Pratt 1992, Murphy 1995). Minimal cover will be lost as a result of this project. The incorporation of large woody debris will provide a slight increase in instream habitat.

This project will not likely affect the upstream or downstream movement of bull trout, nor will it fragment bull trout habitat, reduce habitat patch size or isolate remaining subpopulations. Appropriate conservation measures will be employed to avoid direct effects to adult bull trout during construction.

Bull trout show affinity for stream bottoms and a preference for deep pools of cold water streams, lakes, and reservoirs (Goetz 1989). Because of this strong association with the stream bottom throughout their life history they can be adversely affected by activities that directly or indirectly change substrate composition and stability. The Corps will isolate the work area from the open water to prevent sediment delivery and turbidity in the river. Therefore, no significant accumulations of sediment is anticipated.

The project is not within or above known or suspected bull trout spawning habitat. Most scientific literature suggests that the project area is unlikely to be used by bull trout for spawning, incubation, and juvenile rearing life history stages. Bull trout are among the most cold water adapted fish and require very cold water for incubation, juvenile rearing, and to initiate spawning. Juvenile rearing and spawning typically occur in the smaller tributaries and headwater streams that may be upstream of anadromous salmonids (Underwood et al. 1995, Reiman et al. 1997). There are no known areas of groundwater upwelling or influence in the project area that would be suitable for redd construction.

The project will not facilitate the introduction of non-native species, such as brook trout or brown trout, that may compete, hybridized with, or prey on bull trout. Also, the project will not significantly disrupt behavior patterns of migrating bull trout.

5.3.4. UTES LADIES'TRESSES.

5.3.4.1. Distribution of Ute ladies' tresses in project vicinity.

Ute ladies' is known to inhabit wetland and riparian areas, including spring habitats, and mesic to wet meadows and flood plains. In Washington, it has been found at 1,500 feet in elevation. In other parts of its range it is found up to about 6,000 feet, below the lower margin of montane forests, generally in moist areas in open shrub or grassland, or in the transitional zone. There has been no known occurrence of Ute ladies' tresses in the vicinity of the project.

5.3.4.2. Disturbance (trampling, uprooting, collecting, etc.) of individual plants and loss of habitat.

This project will not cause a disturbance or loss of habitat to Ute ladies' tresses.

5.3.4.4. Changes in hydrology where Ute ladies' tresses are found.
This species may be adversely affected by modifications of its habitat associated with livestock grazing, vegetation removal, excavation, construction, stream channelization, and other actions that alter hydrology. This project is not believed to cause any changes in hydrology to Ute ladies' tresses because the project consisted of simply reinforcing of an existing levee.

6.0. INTERDEPENDENT AND INTERRELATED EFFECTS.

Interdependent and interrelated actions are actions that have no independent utility apart from the primary action. Both the interdependent and interrelated activities are assessed by applying the "but for" test, which asks whether any action and its associated impacts would occur "but for" the action. The Corps has determined that there are no interdependent or interrelated effects as a result of this project.

7.0. CUMULATIVE EFFECTS.

Cumulative effects include the effects of future state, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

No other future non-Federal actions were identified that could be considered cumulative effects of the action specified in this consultation.

8.0. CONSERVATION MEASURES.

Corps personnel will build the project in a manner that will avoid and minimize potential negative effects to fish and habitat. They will use the following best management practices during construction:

1. Riparian and wetland areas will be avoided as staging or refueling areas.
2. Equipment will be stored, serviced, and fueled away from aquatic habitats or other sensitive areas.
3. The project will used clean material to minimize the release of fines into the aquatic environment.
4. Existing roadways or travel paths will be used for access to project sites.
5. Excavation and transport equipment machinery will be limited in capacity, but sufficiently sized to complete required activities.
6. All garbage will be removed from the project site and disposed of properly; undisturbed vegetated buffer zones will be retained along the project to the greatest extent possible to reduce sedimentation rates, channel instability, and aquatic habitat impacts.
7. riprap will be limited to the extent absolutely needed and the use of bio-engineered techniques employed where possible.
8. The Corps will stockpile native riparian vegetation removed during construction and replant it in the riparian corridor after construction of engineered features.
9. Will isolate the work area from the open water to prevent sediment delivery and turbidity in the river.

9.0. DETERMINATION OF EFFECTS.

Table 2. Determination Summary Table

Species	Listing Status	Effect Determination
Gray wolf	Experimental	Not likely to jeopardize
Bald eagle	Listed Threatened	Not likely to adversely affect
Bull trout	Listed Threatened	Not likely to adversely affect
Ute ladies'-tresses	Listed Threatened	Not likely to adversely affect

9.1. GRAY WOLF

The project will not result in a net loss or degradation of key gray wolf prey species or their habitats. Ungulate use of the project is unlikely, as it is not a known calving, fawning, or wintering area for elk or deer. The project will not result in the construction of any new roads or encourage new roads in gray wolf habitat. Project activities will not occur in the vicinity of a den or a rendezvous site. Thus, the Corps believes the project **is not likely to jeopardize the continued existence** the gray wolf.

9.2. BALD EAGLE.

Based on the analysis of effects the Corps has determined that this project **may affect, but not likely to adversely affect bald eagle.** The level of use of the area by bald eagles is minimal. The project will not have an effect on the eagle's primary food stocks and foraging area in the area influenced by the project. The project will not cause bald eagles to avoid or abandon the area, nor will it remove any current or potential habitat.

9.3. BULL TROUT.

A draft document provided by the USFWS, Olympia titled "A Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale February 1998" was used in making a determination of effect for bull trout. The document provided a dichotomous key for making ESA determination of effects. The following questions and answers are detailed within this document.

Question 1. Are there any proposed/listed fish species and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

NO……No effect
YES (or Unknown) ……...Go to 2

As previously discussed in this document, both the USFWS and IDFG indicated that bull trout may occur in project vicinity. Therefore, the answer to question one would be "yes".

Question 2. Will the proposed action(s) have any effect whatsoever on the species; designated or proposed critical habitat; seasonally or permanently occupied habitat; or unoccupied habitat necessary for the species' survival?

NO……No effect
YES……Go to 2

This is a tougher question to answer. Initially the answer that would come to mind would be "no." However, the USFWS definition of "any effect whatsoever" includes small effects, effects that are unlikely to occur, and beneficial effects. A "no effect" determination is only appropriate if the proposed action will literally have no effect whatsoever on the species and/or critical habitat, not a small effect, an effect that is unlikely to occur, or a beneficial effect. Since the project occurs in the floodplain there exists a chance, even though remote, that there could be a small effect on bull trout. Therefore, the answer to question two is "yes".

Question 3. Does the proposed action(s) have potential to: result in "take" of any proposed/fish species?

NO……Go to 4
YES……Likely to adversely effect

The Endangered Species Act (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct". The USFWS (USFWS, 1994) further defines "harm" as "significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "harass" as "actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding, or sheltering". As described in the "project description" section, this project is unlikely to cause harm or harassment as defined by the USFWS. Therefore, the answer to question three is "no".

Question 4. Does the proposed action(s) have potential to or cause an adverse effect to any proposed/listed fish species habitat, such as: adverse effects to critical habitat constituent elements or segments; impairing the suitability of seasonally or permanently occupied habitat; or impairing or degrading unoccupied habitat necessary for survival of the species locally?

NO ……Not likely to adversely effect
YES……Likely to adversely affect (including adverse effects to critical habitat)

In order to help answer this question an evaluation of project was done using a relevant indicators matrix. The matrix listed several "relevant indicators" to simplify arriving at an effects determination. The matrix used is from the USFWS "A Framework to Assist

in Making Endangered Species Act Determination of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale draft 1998."

Table 3. Checklist for documenting environmental baseline and effects of the completed action on relevant indicators.

Pathways:	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION**		
Indicators	Properly Functioning	At Risk	Not Prop. Functioning	Restore	Maintain	Degrade
Subpopulation Characteristics Subpopulation size			x	x		
Growth and Survival			x		x	
Life History Diversity and Isolation			x	x		
Persistence and Genetic Integrity	Unknown				x	
Water Quality: Temperature	x				x	
Sediment		x			x	
Chem. Contam./Nut		x			x	
Habitat Access: Physical Barriers			x		x	
Habitat Elements: Substrate		x			x	
Large Woody Debris	x				x	
Pool Frequency		x			x	
Pool Quality		x			x	
Off-channel Habitat			x		x	
Refugia	x			x		
Channel Cond/Dyn.: Width/Depth Ratio	x				x	
Streambank Cond.		x			x	
Floodplain Connectivity			x	x		
Flow/hydrology: Peak/Base Flows		x		x		
Drainage Network Increase		x			x	
Watershed: Road Dens. & Loc.		x			x	
Disturbance		x			x	

History						
Riparian Reserves	x				x	
Disturbance Regime		x			x	
Integration of Species and Habitat Conditions			x	x		

Further evaluation of the project reveals that the project will not destroy or alter bull trout habitat by dredging, diversion, in-stream vehicle operation or rock removal, or other activities that result in the destruction or significant degradation of cover, channel stability, substrate composition, temperature, and migratory corridors used by bull trout for foraging, cover, migration, and spawning.

The project will not significantly disrupt behavior patterns of migrating or spawning bull trout. Nor will the project facilitate the introduction of non-native species, such as brook trout or brown trout, that may compete, hybridize with, or prey on bull trout.

The project will not discharge or release toxic chemicals, silt, or other pollutants into waters supporting bull trout that result in death or injury of the species. The project also will not destroy or alter riparian habitat that results in a significant degradation of cover, channel stability, substrate composition, temperature, and migratory corridors used by bull trout for foraging, cover, migration, and spawning.

Based on the preceding information the answer to question four would be "no". Therefore the determination would be **not likely to adversely affect**.

9.4. UTE LADIES' TRESSES.

Ute ladies' tresses have not been found in the general vicinity of the project as they are generally found at relatively low elevations in mesic or wet meadows along permanent streams, and about springs and major desert lakes. These sites are commonly subject to intermittent and unpredictable innundation, and the plants often emerge form shallow water. Therefore, based on the unlikely prospect of the Ute ladies tresses occurring in the project area and the fact the project only reinforced simply replaces an existing floodwall, the Corps has determined that the project **may affect, but not likely to adversely affect** the Ute ladies'-tresses.

10.0. REFERENCES.

Apperson, K.A., M. Mahan, W. D. Horton. 1988. North Idaho Streams Fishery Research River and Stream Investigations. Job Completion Report, Project No. F-73-R-10.

Boag, T.D. 1987. Food habits of bull charr, *Salvelinus confluentus*, and rainbow trout, *Salmo gairdneri*, coexisting in a foothills stream in northern Alberta, Canada, Can. Field-Nat. 101: 56-62.

Bonneau, J.L. and D.L. Scarnechia. 1996. Distribution of juvenile bull trout in a thermal gradient of a plunge pool in Granite Creek, Idaho. Transactions of the American Fisheries Society 125:628-630.

Craig, S.D., and R.C. Wissmar. 1993. Habitat conditions influencing a remnant bull trout spawning population, Gold Creek, Washington. Draft Report. Fisheries Research Institute, University of Washington.

Donald, D. B. and D.J. Alger. 1993. Geographic distribution, species displacement, and niche overlap for lake trout and bull trout in mountain lakes. Canadian Journal of Zoology. 71: 238-247.

Ellis, M.M. 1940. Pollution of the Coeur d' Alene River and adjacent waters by mine wastes. Report to U.S. Bur. of Fisheries. 61p.

Fraley, J.J. & B. B. Shepard. 1989. Life History, ecology, and population status of migratory bull trout (*Salvelinus confluentus*) in the Flathead Lake and River System, Montana, Northwest Science 63: 133-143.

Goetz, F. 1991. Bull trout life history and habitat study. Final Report to the Deschutes National Forest. Contract No. 43-04GG-9-1371. Deschutes National Forest, Bend, Oregon.

Hoelscher, B., and T.C. Bjorn. 1989. Habitat, density and potential production of trout and char in Pend Oreille Lake tributaries. Project F-71-R-10, Subproject III, Job No. 8. Idaho Department of Fish and Game, Boise, ID.

Horton, W.D. and M.F. Mahan. 1988. Idaho Fish and Game. Federal Aid in Fish Restoration. Job Performance Report, Project F-73-R-9.

MBTSG (Montana Bull Trout Scientific Group). 1998. The relationship between land management activities and habitat requirements of bull trout. Report prepared for the Montana Bull Trout Restoration Team, Helena, Montana.

Murphy, M.L. 1995. Forestry impacts on freshwater habitat of anadromous salmonids in the Pacific Northwest and Alaska-Requirements for protection and restoration.

U.S. Dep. of Commerce, Coastal Ocean Program, Decision Analysis Series No. 7, 156 p.

Pratt, K.L. 1992. A review of bull trout life history. Pages 5-9 in Howell, P.J. and D. V. Buchanan, editors. Proceedings of the Grearhart Mountain bull trout workshop. Oregon Chapter of the American Fisheries Society, Corvallis, OR.

Pratt, K.L. 1984. Pend Oreille trout and char life history study. Idaho Department of Fish and Game, Boise, Idaho.

Rankel, G. 1971. St. Joe River Cutthroat and Northern Squawfish Studies. Idaho Department of Fish and Game.

Rieman, B.E. and J.D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. USDA Forest Service, Intermountain Research Station. General Technical Report INT-302

USGS. 1994. Water Resources Data - Idaho. Volume 2. U.S. Geological Survey. Boise, Idaho.