# Environmental Assessment

## Idaho Post-Flood Levee Rehabilitation

### Locations:

**Horseshoe Bend, City of Horseshoe Bend**
**Chapman, City of Fruitland**
**Sweetwater, City of Sweetwater**

**Prepared by**

**US Army Corps of Engineers**
**Walla Walla District**
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**Table of Contents**


| | |
|---|---|
| **1. INTRODUCTION** | **Page** |
| **2. AUTHORITY** | 1 |
| **3. PURPOSE AND NEED** | 5 |
| 3.1 Levee Damages | 5 |
| 3.1.1 Horseshoe Bend | 9 |
| 3.1.2 Chapman Levee | 12 |
| 3.1.3 Sweetwater Levee | 18 |
| **4. ALTERNATIVE ACTIONS FOR HORSESHOE BEND LEVEE** | 21 |
| 4.1Alternatives Considered | 21 |
| 4.1.1 Alternative: 1 No Action | 21 |
| 4.1.2 Alternative 2: Dredge the Channel to Substantially Remove the Island That Has Created the Narrow Channel Flowing Along the Levee. | 22 |
| 4.1.3 Alternative 3: Replace the Bottom Half of the Riprap Revetment with a Sheet Pile Retaining Wall. Restore the Slope and the Riprap Revetment Along the Upper Portions of the Levee, Between the Top Line of the Sheet Piles and the Top-of-Slope Along the Roadway. | 22 |
| 4.1.4 Alternative 4: Replace the Riprap Revetment with a Gabion Basket Revetment. | 22 |
| 4.1.5 Alternative 5 Preferred Alternative: Restore the Riverbank and Levee Cross Section and Reconstruct the Revetment Along its Full Length to “As Was” Condition. | 23 |
| 4.2 Screening of Alternatives Horseshoe Bend Levee | 26 |
| 4.3 Horseshoe Bend: Affected Environment and Environmental Consequences | 28 |
| 4.3.1 Water Quality/Sediment Quality | 29 |
| 4.3.2 Aquatic Environment | 30 |
| 4.3.3 Terrestrial Environment | 30 |
| 4.3.4 Threatened and Endangered Species | 31 |
| 4.3.5 Socio-economics | 32 |
| 4.3.6 Cultural Resources | 32 |
| 4.3.7 Cumulative Effects | 33 |
| **5. ALTERNATIVE ACTIONS FOR CHAPMAN LEVEE** | 34 |
| 5.1 Alternatives Considered | 34 |
| 5.1.1 Alternative 1: No Action | 34 |
| 5.1.2 Alternative 2 Preferred Alternative: Restore to “As Was” Condition by Repairing the Sloughed Areas. | 34 |
| 5.2 Screening of Alternatives Chapman Levee | 35 |
| 5.3 Chapman Levee: Affected Environment and Environmental Consequences | 36 |
| 5.3.1 Water Quality/Sediment Quality | 36 |
| 5.3.2 Aquatic Environment | 37 |
| 5.3.3 Terrestrial Environment | 37 |
| 5.3.4 Threatened and Endangered Species | 38 |
| 5.3.5 Socio-economics | 38 |
| 5.3.6 Cultural Resources | 38 |
| 5.3.7 Cumulative Effects | 39 |

**Table of Contents (continued)**


| | |
|---|---|
| **6. ALTERNATIVE ACTIONS FOR SWEETWATER** | 40 |
| 6.1 Alternatives Considered | 40 |
| 6.1.1 Alternative 1: No Action | 40 |
| 6.1.2 Alternative 2: Relocate Affected Properties Above the 100-Year Flood Plain | 40 |
| 6.1.3 Alternative 3: Dredge the West Bank of Lapwai Creek | 40 |
| 6.1.4 Alternative 4 is the Preferred Alternative: Restore Levee to 'As Was" Condition by Restoring the Levee Core | 41 |
| 6.2 Screening of Alternatives Sweetwater Levee | 43 |
| 6.3 Sweetwater Affected Environment and Environmental Consequences | 45 |
| 6.3.1 Water Quality/Sediment Quality | 45 |
| 6.3.2 Aquatic Environment | 46 |
| 6.3.3 Terrestrial Environment | 46 |
| 6.3.4 Threatened and Endangered Species | 47 |
| 6.3.5 Socio-economics | 49 |
| 6.3.6 Cultural Resources | 49 |
| 6.3.7 Cumulative Effects | 50 |
| **7. ENVIRONMENTAL REVIEW REQUIREMENTS** | 51 |
| 7.1 Federal Statutes | 51 |
| 7.2 State Permits | 54 |
| 7.3 Federal Permits | 54 |
| **8. CONSULTATION AND COORDINATION** | 54 |
| **9. REFERENCES** | 55 |


**Figures**


| **Title** | **Page** |
|---|---|
| Figure 1-1: Over View, Horseshoe Bend and Chapman Levees | 2 |
| Figure 1-2: Over View, Sweetwater Levee | 3 |
| Figure 3-1: Horseshoe Levee Repair Area | 6 |
| Figure 3-2: Chapman Levee Repair Area | 7 |
| Figure 3-3: Sweetwater Levee Repair Area | 8 |
| Figure 3-4: Horseshoe Bend Levee Damage Extent-1300 feet | 10 |
| Figure 3-5: Horseshoe Bend Levee Damage | 11 |
| Figure 3-6: Horseshoe Bend Levee Damage | 12 |
| Figure 3-7: Chapman Levee Damage Overview | 13 |
| Figure 3-8: Chapman Levee Damage Location | 14 |
| Figure 3-9: Chapman Levee General View of Failed Slope During Flood Event | 15 |
| Figure 3-10: Chapman Levee Post Flood Photo, Upstream of Damaged Site | 16 |
| Figure 3-11: Chapman Levee Close-up of Failed Slope During Flood Event | 17 |
| Figure 3-12: Chapman Levee Downstream End Near Sewage Treatment Plant | 18 |
| Figure 3-13: Middle of Sweetwater Levee Looking South | 19 |

**Table of Contents (continued)**


| | |
|---|---|
| Figure 3-14: Sweetwater Levee Riprap Along Riverward Side of Levee in Area of Seepage | 20 |
| Figure 3-15: Sweetwater Levee, Sandbags Protecting Structure on Landward Side of Levee | 21 |
| Figure 4-1: Horseshoe Bend Levee Proposed Staging and Access Plan | 24 |
| Figure 6-1:Sweetwater Levee Damaged Section, Lapwai Creek, and Proposed Equipment Staging | 42 |


## Tables


| **Title** | **Page** |
|---|---|
| Table 4-1. Screening of Alternatives Horseshoe Bend 1: No Action | 26 |
| Table 4-2 Screening of Alternatives Horseshoe Bend 2: Dredge the Channel | 27 |
| Table 4-3 Screening of Alternative Horseshoe Bend 3: Sheet Pile Retaining Wall | 27 |
| Table 4-4 Screening of Alternative Horseshoe Bend 4: Gabion Basket Revetment | 28 |
| Table 4-5 Screening of Alternative Horseshoe Bend 5: Restore the Riverbank and Levee Cross Section to Full Length | 28 |
| Table 4-6: Determinations for the area potentially affected by this action. | 31 |
| Table 5-1 Screening of Alternatives Chapman 1: No Action | 35 |
| Table 5-2 Screening of Alternative Chapman 2: Restore to as was Condition | 36 |
| Table 6-1. Screening of Alternatives Sweetwater 1: No Action | 43 |
| Table 6-2 Screening of Alternatives Sweetwater 2: Relocate Affected Properties to 100-Year Flood Plain | 44 |
| Table 6-3 Screening of Alternative Sweetwater 3: Dredge the West Bank of Lapwai Creek | 44 |
| Table 6-4 Screening of Alternative Sweetwater 4: Restore to “As Was” Condition | 44 |
| Table 6-5. Summary of Determination of Effects on Listed Species and Critical Habitat | 48 |


## Appendices


A – U.S. Army Corps of Engineers Biological Assessment-Sweetwater Levee, 2012

# 1. **INTRODUCTION**

The Walla Walla District Corps of Engineers (Corps) proposes to rehabilitate three damaged levee systems located in the State of Idaho under the Public Law (PL) 84-99 levee rehabilitation program. This environmental assessment (EA) considers and describes the environmental effects of these levee rehabilitations. These non-federal levees include Horseshoe Bend, managed by the City of Horseshoe Bend; Chapman, managed by Payette County; and Sweetwater, managed by Nez Perce County (figures 1-1 and 1-2).

Horseshoe Bend Levee is located near the City of Horseshoe Bend; in Boise County (Section 27, T7N, R2E, Payette River Mile 57). The levee is owned and operated by the City of Horseshoe Bend.

Chapman levee is located between Payette and Fruitland, in Payette County (Section 10, T8N, R5W, Payette River Mile 3.5). The levee is owned and operated by Payette County.

Sweetwater Levee is located on Lapwai Creek, a small tributary of the Clearwater River in northern Idaho (SE1/4 of Section 14, T35N, R4W, Lapwai Creek River Mile 6.1). The levee is owned and operated by Nez Perce County.

The levees sustained extensive damaged during flood events that occurred in 2010 and 2011. The Corps proposes to work with local and regional Sponsors in the State of Idaho, to complete rehabilitation of three levee systems.

Figure 1-1: Over View, Horseshoe Bend and Chapman Levees

Figure 1-2: Over View, Sweetwater Levee

One of the missions of the Corps is administering the Flood and Coastal Emergency Act authorized by Public Law (PL) 84-99 (33 U.S.C.701n), Emergency Response to Natural Disasters. One of the purposes of this law is to undertake activities including levee rehabilitations for post flood responses. Under the authority of PL 84-99, an eligible flood protection system can be rehabilitated if damaged by a flood event.

Assistance provided under the law includes a Rehabilitation and Inspection Program. The intent is to ensure continued, reliable protection-flood damage reduction to protect human life and improved property, reduce human suffering, help communities recover from the effects of a disaster, and mitigate damage and future threats. The Corps follows Engineering Regulation 500-1-1 (ER 500-1-1), the Levee Rehabilitation and Inspection Program, which provides for inspections of damaged flood control structures to determine eligibility into the program.

To be included in this voluntary program, several criteria must be met to satisfied eligibility including: 1) there must have been a verifiable flood event on the river basin(s) during the defined flood season (April 1 through July 18); 2) the levee must have been inspected, evaluated and accepted into the Corps Rehabilitation and Inspection Program (RIP) with a current "Active" status prior to the onset of the flood, and still be "Active," based on the project's latest Continuing Eligibility Inspection, at the time of the flood; and 3) the rehabilitation assistance is economically justifiable.

During the 2010 and 2011 timeframe, levee sponsors from the City of Horseshoe Bend, Payette County, and Nez Perce County, requested the Corps to perform field investigations to determine eligibility for rehabilitation assistance. Inspection results indicated the reliability of all three levees was "Minimally Acceptable," with one or more deficient conditions existing requiring improvement or correction, thus meeting the criteria for PL 84-99 (33 U.S.C. 701n) rehabilitation assistance (Corps Horseshoe Bend, Chapman and Sweetwater Project Information Reports (PIR's) 2011).

In the performance of the proposed levee rehabilitations, the Public Sponsors would provide all lands, easements, and rights-of-way, and suitable borrow and dredged or excavated material disposal areas, and perform all relocations determined by the Corps to be necessary for the rehabilitation effort. The Public Sponsors would contribute, in cash, in-kind services, or a combination thereof, a contribution toward the rehabilitation effort in an amount equal to 20 percent of total rehabilitation effort costs. The Corps would provide technical services including engineering damage assessments, levee rehabilitation engineering and design services, and facilitation of construction activities.

The levees of concern are thought to be built prior to 1947 by local interests for flood control. Original construction authority is uncertain, but appear to be a combination of being locally constructed, with subsequent Corps and local support during flood fights and past rehabilitation efforts. All were repaired, at one time or another, by the Corps following flood events in 1950, 1965, and 1997.

## 2. AUTHORITY

The Corps of Engineers has authority under PL 84-99 to supplement local efforts in the repair of both Federal (Corps-constructed, locally operated and maintained) and non-Federal (constructed by non-Federal interests or by the Work Projects Administration (WPA)) flood control projects damaged by flood. These projects have been inspected by the Corps under the Rehabilitation and Inspection Program and were found eligible for rehabilitation assistance.

## 3. PURPOSE AND NEED

The purpose of the proposed action is to maintain flood protection to affected areas near the City of Horseshoe Bend, and areas of Payette and Nez Perce Counties. Rehabilitations would include repairing the levees to "as was condition" in a manner that would not change the character, scope, or size of the original fill design.

During 2010, snow pack throughout the Snake River Basin was below normal at the end of May. However, a series of storms resulted in heavy rains in Idaho and Wyoming in early June 2010. While there was little snow pack, the ground was saturated resulting in increased runoff to the river systems. The flood flows caused marked deterioration and erosion damage to Horseshoe Bend levee. Many of the revetment stones (rip-rap) became displaced. This same year, Chapman sustained seepage flow and water saturation which caused slumping damage on levee sections. In June, 2011 high flows caused by spring runoff caused addition damage to both levees. High flows also caused damage to Sweetwater levee resulting in seepage through the levee cross section (Corps Horseshoe Bend, Chapman, and Sweetwater PIRs 2011). Proposed Horseshoe Bend, Chapman and Sweetwater levee repair areas are found in figures (3-1 to 3-3).

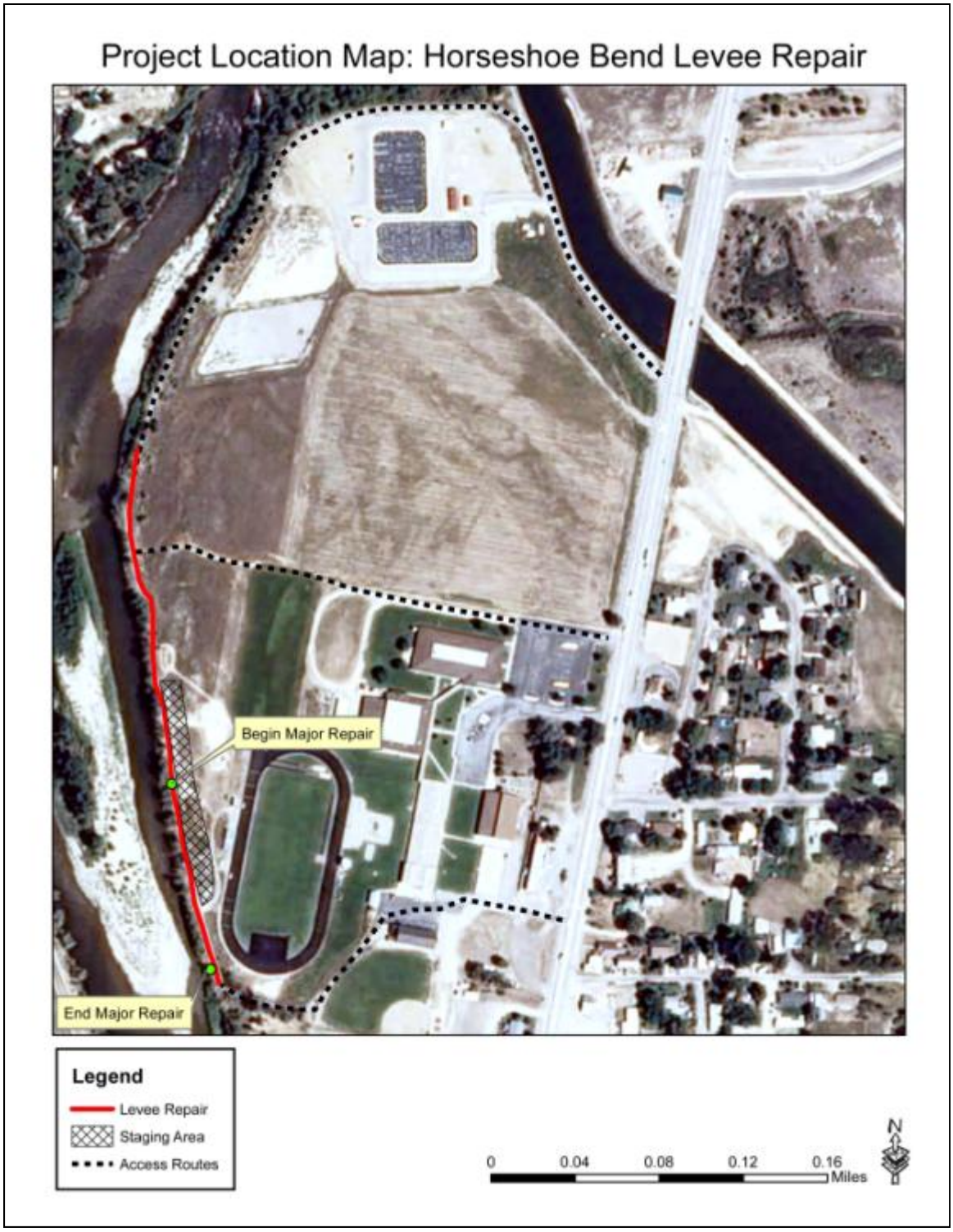


Figure 3-1: Horseshoe Levee Repair Area

Figure 3-2: Chapman Levee Repair Area

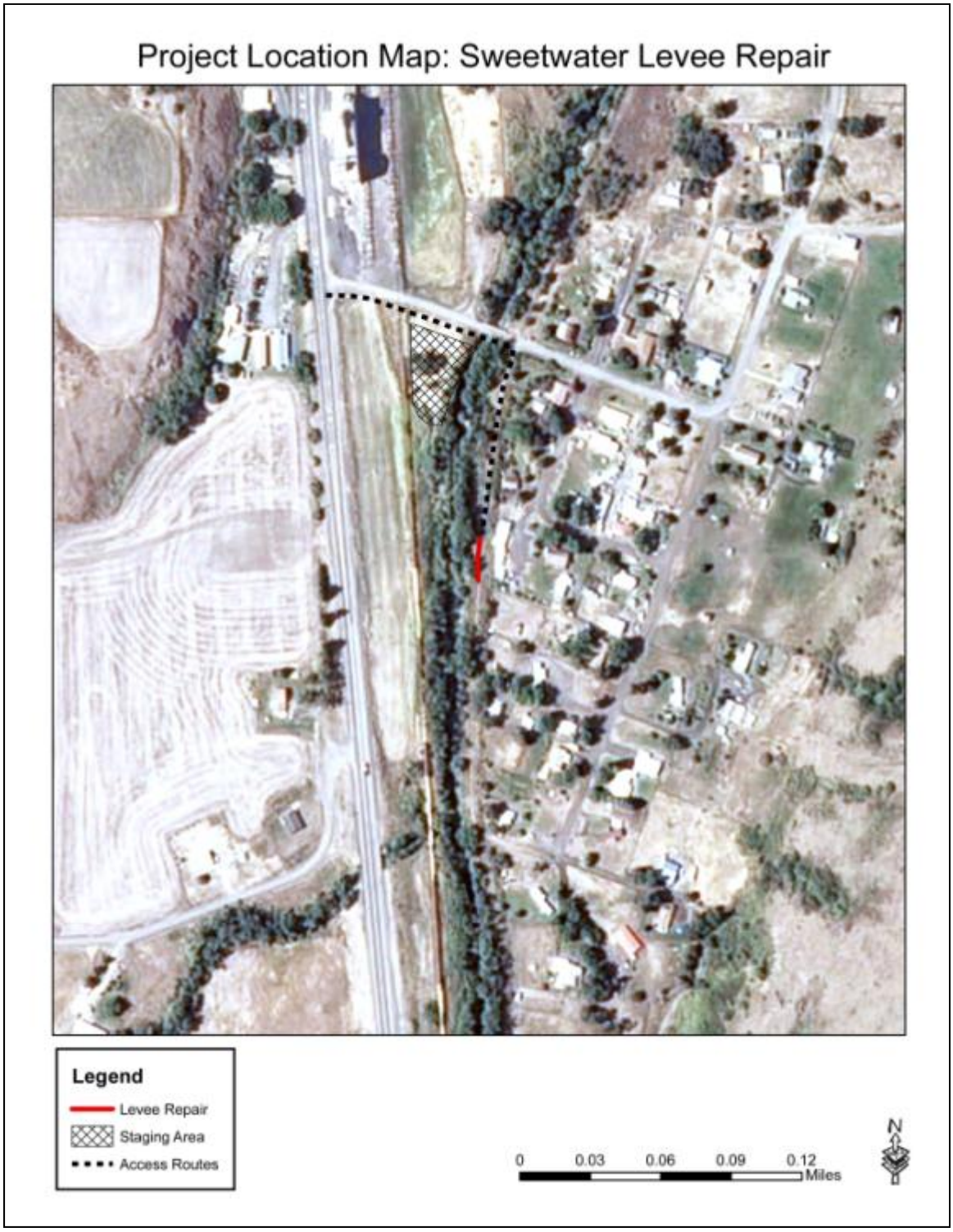

Figure 3-3: Sweetwater Levee Repair Area

## 3.1 Levee Damages

### 3.1.1 Horseshoe Bend

Horseshoe Bend levee is approximately 7,250 feet long and is located on the right bank of the Payette River adjacent to the City of Horseshoe Bend. The levee is between 15-18 feet wide on the top and extends the entire length of the river around the community of Horseshoe Bend. It is composed of dredged material, and protected by revetment. The levee protects approximately 51 acres including 12 residences, a middle school (with football field and running track), a restaurant and a municipal water pump station. The damaged segment of levee is approximately 1,300-feet along the right bank of the Payette River on the west side of The City of Horseshoe Bend, behind the school (figures 3-4 to 3-6).

Flood flows from spring runoff caused marked deterioration and erosion damage along the levee revetment. The upper portions of the revetment slopes were disturbed and damaged in isolated areas. Much of the fine material required for holding the larger revetment stones in place (larger than 18- to 24-inches) washed away. Areas of revetment with medium to small stones (<18”) were also displaced. A significant portion of medium and larger stones (>12”) were moved down slope, toward the toe-of-slope. Toe stone appears to be disturbed or displaced.

In 2011, spring runoff caused substantial additional damage along the affected segment of levee. Generalized revetment disturbance and deterioration was exacerbated by the 2011 flood event along the full length of the affected segment. The sustained high flows contributed to displacement and disturbance along the toe of the levee slope, where much of the toe stone was disturbed or washed away entirely. Higher on the slope, flood flows damaged isolated areas of revetment; erosion caused progressive slumping that intruded into the roadway along the top of the slope. These two locations experienced the most extensive damages, although there are several more isolated areas where bank sloughing occurred.

Figure 3-4: Levee Damage Extent-1300 feet

Figure 3-5: Horseshoe Bend Levee Damage

Figure 3-6: Horseshoe Bend Levee Damage

### 3.1.2 Chapman Levee

Chapman levee is a stabilized bank consisting of coarse crushed rock product. The original Chapman levee was 2,450 feet long on the left bank of the Payette River. It protected 47 acres of improved pasture and 2,400 feet of paved road in the 10-year flood plain. Local representatives advised the levee includes an additional 2,500 feet from the downstream end of the sewage ponds extending upstream to Highway 95. This upstream end of the levee protects an irrigation canal and the land side of the sewage ponds and water pumping plant (the water pumping plant is located upstream from the sewage ponds). The Chapman levee serves as a road to access sewage treatment ponds.

Damage to this levee is on the land-side of the levee (protecting the sewage ponds, pumping plant and improved agricultural land). Damages include extensive slumping on the land side of the levee along three segments; from the upstream end of the levee their lengths are 339 feet, 189 feet, and 61 feet. These damages were caused by seepage flow and saturation of the levee during sustained high flows during the 2010 flood season (Corps Chapman PIR, 2011). All of the distress is on the land side slope, along an irrigation drainage ditch. Long segments of the slope slumped down into the irrigation ditch, leaving hundreds of feet of levee fill with a near

vertical scarp along the edge of the levee roadway. The river-side of the levee is fully intact. The repair for this project would be limited to areas where slumping intrudes into the roadway cross section. All repairs would occur on the left bank of the river (figures 3-7 to 3-13).

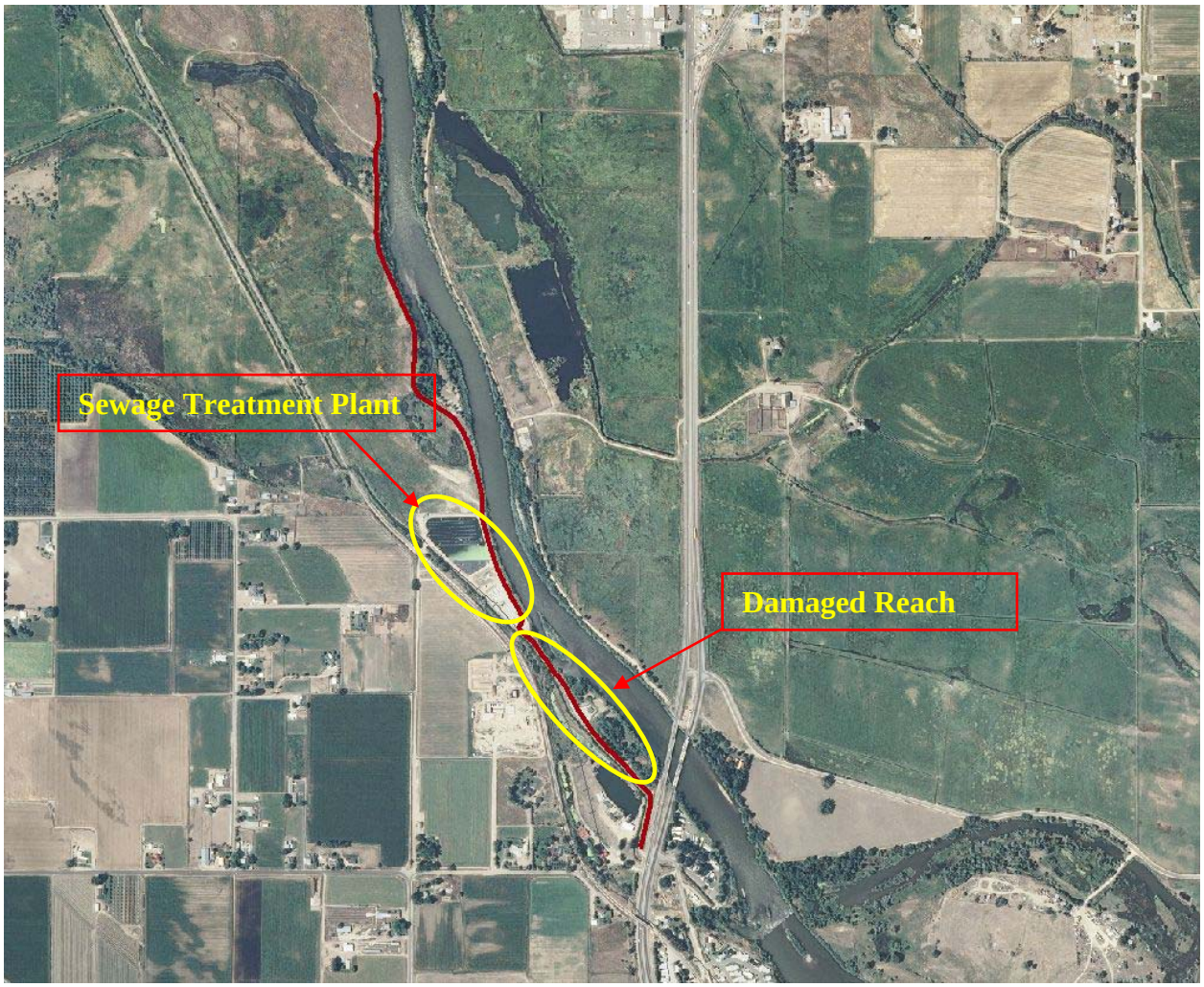

Figure 3-7: Chapman Levee Damage Overview

►

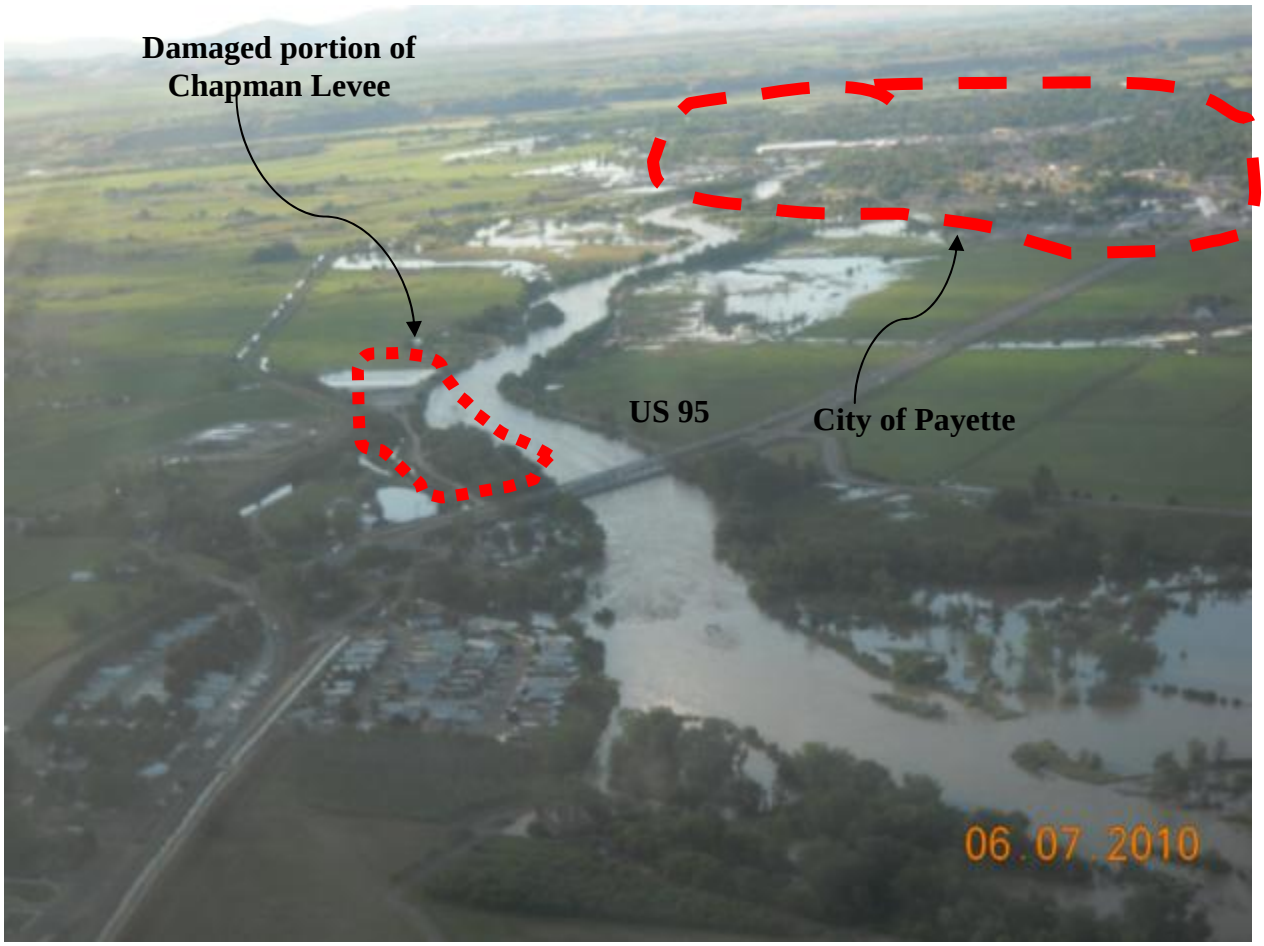

Figure 3-8: Chapman Levee Damage Location

Figure 3-9: Chapman Levee General View of Failed Slope During Flood Event

Figure 3-10: Chapman Levee Post Flood Photo, Upstream of Damaged Site

Figure 3-11: Chapman Levee Close-up of Failed Slope During Flood Event

Figure 3-12: Chapman Levee Downstream End Near Sewage Treatment Plant

### 3.1.3 Sweetwater Levee

Sweetwater Levee Project consists of sandy gravel embankment armored with riprap rock. The project extends approximately 3,000 linear feet along the right bank of Lapwai Creek. The project is urban, protecting the community of Sweetwater consisting primarily of residences. The levee protects 20 structures. There are 12 residences and around 8 shops (private garages, outbuildings, and storage buildings) protected by the Sweetwater Levee in the 10 year flood plain. Total estimated value of the property and contents is $ 1.5 million (Corps Sweetwater PIR, 2011).

Based on discussions with Corps and county personnel it is believed that the levee was constructed sometime around 1947 for flood control (Corps Sweetwater Archeological Survey and Determination of Effect, 2012). The Corps likely assisted in rebuilding the Sweetwater levee after it was destroyed in 1965. Minor repair work and inspections have taken place on the levee in subsequent years.

High flows in April 2011 caused hydraulic loading causing water infiltration into the levee. The infiltration was caused by prolonged hydraulic loading during the April 2011 flood event. This

loading caused infiltration with finer levee materials piping into the levee's core. Piping occurs when water persistently penetrates a levee. The next flood event would likely lead to progressive piping and breach if the levee is not repaired.  The finer levee core materials have piped through the coarser downstream shell resulting in flooding to adjacent properties. Proposed repairs would include rehabilitation of the levee's core (figures 3-13 to 3-15).

Figure 3-13: Middle of Sweetwater Levee Looking South

Figure 3-14: Sweetwater Levee Riprap Along Riverward Side of Levee in Area of Seepage

Figure 3-15: Sweetwater Levee, Sandbags Protecting Structure on Landward Side of Levee

## 4. ALTERNATIVE ACTIONS FOR HORSESHOE BEND LEVEE

### 4.1Allternatives Considered

#### 4.1.1 Alternative: 1 No Action

Under the No Action Alternative, Horseshoe Bend levee would not be repaired and its original alignment and geometry would not be restored. The current condition of the levee would not withstand a future moderate flood event (Corps Horseshoe Bend PIR, 2011). Future flood waters would breach the levee with a high potential for additional flood damages to surrounding properties including the adjacent school, homes, and businesses located near the project.

Continued erosion of the levee and stream bank would add sediment to the river and affect the aquatic environment. Fine sediment can fill in spaces between gravel and cobble, decreasing the habitat value for aquatic insects. If high flows erode through the levee, fish could become stranded outside the main river channel. Annual maintenance costs for the No Action Alternative would be approximately $57,000.00 per year.

4.1.2 Alternative 2: Dredge the Channel to Substantially Remove the Island That Has Created the Narrow Channel Flowing Along the Levee.

Under Alternative 2, the channel would be dredged to substantially remove an island that has created the narrow channel flowing along the levee. Dredging the channel would be a temporary measure. It would also be a relatively ineffectual approach to stream-bank protection at this location because seasonal flow variations are substantial. Because the channel is relatively narrow near the project site, bed load movement in the river bed would likely cause dredging benefits to be short term. It is highly likely that dredging would have to be performed on an annual basis. Costs for this alternative were not evaluated.

4.1.3 Alternative 3: Replace the Bottom Half of the Riprap Revetment with a Sheet Pile Retaining Wall. Restore the Slope and the Riprap Revetment Along the Upper Portions of the Levee, Between the Top Line of the Sheet Piles and the Top-of-Slope Along the Roadway.

The sheet pile alternative would be a low-visual-impact approach for using a composite system that relies on sheet piles for a portion of the levee height, with a conventional riprap revetment between the top of the sheet pile and the edge of the roadway. A painted sheet pile retaining wall would serve as an enhancement to the current project; as such a retaining wall would withstand impact from floating trees as well as undercutting by a shifting channel. This would meet the requirement to protect the levee profile and hence ensure the levee can provide flood protection.

Construction would involve moving existing riprap to facilitate sheet pile installation, which would probably involve a suspended hydraulic vibratory hammer operated from a small crane. Sheet piles would be installed vertically, in a line parallel to the levee, along the planned line of edge-of-water.

Successive sheets would be slid into slots along the edges of previously installed sheets and advanced to the required penetration depth to create a continuous vertical panel. Once the line of sheet piles was installed, fill would be placed behind the sheets to construct the embankment slope. That surface would be capped with a placed-stone revetment. Sand and gravel fill would be placed on the river side of the sheet pile wall to minimize its exposed area and visual impact. This alternative would cost approximate $390,000.000.

4.1.4 Alternative 4: Replace the Riprap Revetment with a Gabion Basket Revetment.

Provided they are installed on the levee base, gabions can serve as a protective surface to the levee core material. However, gabions are easily torn by floating trees, spilling their fill material quickly into the river. They can be easily undermined by river currents; once the lowest one begins to slough into the river; all gabions above it also begin to slough. Because of vulnerability to trees and undercutting, this alternative would require continuing and expensive annual maintenance. To replace a lower gabion would require un-stacking those above it.

Replacing the riprap revetment with a gabion basket revetment would cost approximately $450,000.00. Since these costs do not account for all of the required work and since the acquisition strategy is an unknown, actual costs could be substantially higher. Continuing inspections would be required to ensure their integrity.

4.1.5 Alternative 5 Preferred Alternative: Restore the Riverbank and Levee Cross Section and Reconstruct the Revetment Along its Full Length to “As Was” Condition.

Under this alternative, the river-side cross section on the right bank, extending approximately 1300 feet would be rehabilitated (the total length of the levee is approximately 7,250 feet long). The levee and its revetment would be repaired to restore the original alignment and cross section. The repairs require re-grading of the riverbank slopes; and reconstructing the revetment. Some imported fill would be needed to repair the two large slump/erosion areas. Along most of the levee, the alluvial materials excavated for the revetment toe would be sufficient to facilitate re-grading the slopes prior to revetment construction. Imported riprap would be needed to construct the revetment above the toe.

The proposed rehabilitation would involve restoring eroded and slumped areas of the levees to the original slope using fill in the form of gravel and rock. Sand and gravel fill would be used to restore the riverbank and levee cross section; riprap would be used to reconstruct the revetment.

Existing roads provide access to the levee, including those on the top of the levee itself. Although no new roads would be constructed for this project, minor improvements to the primary access road would be required to make the existing road passable for heavy trucks (figure 4-1). Repairs would cost approximately $246,350.00.

Figure 4-1: Horseshoe Bend Levee Proposed Staging and Access Plan

The stumps and smaller trees and shrubs would need to be removed to repair the levee. An excavator would remove the stumps and small trees and shrubs and dispose of them at an off-site location.

The damaged revetment toe would be excavated. An excavator would dig a toe trench and place large riprap (toe rock) into the trench. On-site rip-rap would be reused to re-construct the revetment toe. Excavated sand and gravel would be re-used to restore the river bank and levee cross section. Riprap would be used to construct the required placed-stone revetment. The revetment would be constructed as a placed stone layer, not a conventional dumped stone revetment.

Dump trucks would haul random fill material to reestablish original lines and grades along the badly eroded segments of the levee; to restore the original levee contour. Approximately 1,600 cubic yards of the fill material (sand and gravel fill) would be imported by dump trucks from a commercial source. The material would not be dumped, but would be placed and keyed by an excavator to present a relatively smooth surface. Riprap would be used to cover the river-side surface of the levee. The imported materials would be graded and compacted to prepare a surface for the revetment. Once the levee cross section is restored, revetment stone would be placed along the length of the entire project area. Current estimates call for 2,720 tons of rock for the levee toe and revetment. This work would involve the use of tracked excavators equipped with a thumb to properly place and key the stone.

Excavation, grading, and revetment construction along the toe would involve in-water work. Some of the work would be performed (in the water) by excavators. In these locations where the river is immediately adjacent to the levee, only the bucket of the excavator would enter the water. There would be minimal disturbance to the river during replacement of toe rock. Dump trucks would haul random fill and riprap to the damage sites.

Based on proposed work activities on the Horseshoe Bend Levee, the proposed work would entail work activities in the open channel of the Payette River that include stream alteration. This would require a State of Idaho Stream Alteration Permit for any in-water activities. The City of Horseshoe Bend would apply for this permit and ensure compliance with Clean Water Act requirements.

The proposed rehabilitation, including staging and vehicle access encompasses over an acre of land, but less than five acres. A National Pollution Discharge Elimination System (NPDES) Section 402 Construction General Permit for Storm water would be required.

Since all proposed repairs are confined to the exiting footprint of the structures and there would be no change to the original character, scope, or size of the original design, the project would be exempt from Section 404 under the Clean Water Act (33 CFR 323.4.a.2).

The project proponents would propose to repair the damaged levees prior to the next flood season, but the work is more likely to be completed during summer 2012. The work would take a few weeks to complete. The project is projected to cost $246,350.00.

## 4.2 Screening of Alternatives Horseshoe Bend Levee

The Corps identified screening criteria to determine which alternatives to consider further. These criteria are:

- Must restore to pre-2010 condition
- Must improve safety by protecting municipal and private property
- Must be cost effective
- Minimal cultural impacts
- Minimal environmental impacts

Table 4-1 to 4-5 lists the screening criteria and indicates if the alternative met the criteria.

**Table 4-1. Screening of Alternatives 1: No Action**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | No | No repairs would take place. |
| Improve Safety | No | The current condition of the levee would not withstand a future moderate flood event. Flood waters would breach the levee with a high potential for additional flood damages to surrounding properties including the adjacent school, homes, and businesses located near the project. |
| Cost | No | $57,000.00 annual maintenance. |
| Min Cultural Effects | No | Further damage and future reconstruction could diminish the integrity of the site and its potential eligibility for the National Register. |
| Min Environ Effects | No | This alternative would eventually lead to breaching of the levee. This could displace fish over the floodplain. This could also impact sewage treatment ponds, releasing pollutants into the river. There would be no effect on Endangered Species Act (ESA) listed species. |

**Table 4-2 Screening of Alternatives 2: Dredge the Channel**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | No | Ineffectual approach to stream-bank protection at this location as seasonal flow variations are substantial. Because levee revetment is currently missing, levee core material would continue to be lost at an accelerated rate during high flows, resulting in damages to property, including the middle school, which is directly behind the levee. |
| Improve Safety | No | Risk to life and property would remain. Because the channel is relatively narrow near the project site, bed load movement in the river bed would likely cause dredging benefits to be short term. |
| Cost | Unknown | A benefit to cost ratio was not estimated for this alternative. |
| Min Cultural Effects | Yes | The area has no known cultural resources within the stream channel or on the island. The area has likely been substantially altered by the river; there would be no effect to cultural resources should this alternative be selected. |
| Min Environ Effects | No | There would be no effect on ESA listed species. This alternative would cause a major disturbance to the riverbed. Water quality would be degraded during construction. The degraded water quality and loss of aquatic insects would have a negative impact on fish. |

**Table 4-3 Screening of Alternative 3: Sheet Pile Retaining Wall**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | Would serve as an enhancement to the current project, as such a retaining wall would withstand impact from floating trees as well as undercutting by a shifting channel. |
| Improve Safety | Yes | Would meet requirement to protect the levee profile and ensure the levee can provide flood protection. |
| Cost | No | $390,000.00 to repair, at a minimum. Many unknown additional costs. |
| Min Cultural Effects | No | Would result in modifications to the original structure of the levee. These modifications may impact the historic nature of the levee and may result in adverse affects to the qualities of the site that make it potentially eligible to the National Register. |
| Min Environ Effects | No | This alternative would have no effect on ESA listed species. There would be an impact to fish and wildlife during construction as the piles are driven. Would require a great deal of earthwork which could increase sediment loading on the Payette. There would be an impact to fish and wildlife during construction as the piles are driven. The sound and shockwave produced could disturb or injure fish and wildlife nearby. Scour along the base of the sheet pile could create deeper water which could be used as cover by fish. |

**Table 4-4 Screening of Alternative 4: Gabion Basket Revetment**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | Provided they are installed on a levee base, gabions can serve as a protective surface to the levee core material. |
| Improve Safety | No | Gabions are easily torn by floating trees, spilling their fill material quickly into the river. Would require continuing inspections to ensure their integrity. Easily undermined by river currents; once the lowest one begins to slough into the river, all gabions above it also begin to slough. |
| Cost | No | $450,000.00 to repair, at a minimum. Many unknown costs. |
| Min Cultural Effects | No | Would result in modifications to the original structure of the levee. These modifications may impact the historic nature of the levee and may result in an adverse affects to the qualities of the site that make it potentially eligible to the National Register. |
| Min Environ Effects | No | This alternative would have no effect on ESA listed species. May have impacts on fish. The gabion baskets would be very poor wildlife habitat. |

**Table 4-5 Screening of Alternative 5: Restore the Riverbank and Levee Cross Section to Full Length**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | Restores the capacity of the levee to protect the community directly behind the levee. |
| Improve Safety | Yes | Levee would likely not withstand another high water event. Would reduce possible impacts to life safety and property damages. |
| 20-Year Project Life | Yes | With proper annual maintenance this repair can last 20-years. |
| Cost | Yes | $246,350.00 to repair Benefit: Cost ratio is 2.5:1 |
| Min Cultural Effects | Yes | Restore the levee to its original condition; the work is considered replacement in-kind. This alternative would not result in adverse effects to the overall integrity of the site. |
| Min Environ Effects | Yes | This alternative would have no effect on ESA listed species. There would be some disturbance to fish and wildlife during construction. Fish and wildlife would likely move away from the noise without being harmed. |

Alternatives that did not meet the screening criteria were removed from further consideration. The only alternative that met the criteria was the Proposed Action, therefore it was the only alternative carried forward for additional analysis. The No Action alternative was also carried forward as required by The National Environmental Policy Act (NEPA) for comparison.

## 4.3 Horseshoe Bend: Affected Environment and Environmental Consequences

This section identifies and describes the environmental resources at Horseshoe Bend levee the Corps determined are relevant to the proposed alternative being considered and evaluates the effects of the alternative on those resources. The Corps considered but did not identify any potential affects to noise pollution, air quality, landforms, soils or recreation.

### 4.3.1 Water Quality/Sediment Quality

The Payette River is a 62-mile (100 km) river in southwestern Idaho, and is a major tributary of the Snake River. Its headwaters originate in the Sawtooth and Salmon River mountains at elevations above 10,000-feet. The cumulative length of the Payette exceeds 182-miles, through an agricultural valley which then empties into the Snake River near the city of Payette, at an elevation of 2,125-feet. The South Fork of the Payette has its headwaters in the Sawtooth Wilderness, part of the Sawtooth National Recreation Area. Flows on the Payette are regulated by several reservoirs including Black Canyon for power generation and irrigation, but not for flood control. Black Canyon Dam is located on River Mile 38.5 and impounds the Payette River. Major land uses include rangeland and irrigated agriculture.

The hydrology of the river is complex, with numerous irrigation water withdrawal and return drains affecting both the flow and quality of the river. The presence of Black Canyon Dam has greatly altered the amount and type of sediment in the lower Payette River. Summer water temperatures in the lower Payette River are warm and exceed water quality standards for both cold water biota and salmonid spawning. However, it was determined that other factors, including habitat modification and flow alteration, were also significant causes of impairment of beneficial uses. In addition, warm water temperatures that exceed water quality standards originate from Black Canyon Reservoir. Because of these conditions, a temperature Total Maximum Daily Load (TMDL) was not developed (State of Idaho, December 1999). A Total Maximum Daily Load, or TMDL, is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards. TMDLs were also not written for flow alteration and habitat modification because these are not pollutants as described under Section 303(d) of the Clean Water Act.

#### 4.3.1.1 No Action

There would be no change to water quality in the Payette River under the Proposed Action. However, a future flood event is likely to cause additional levee deterioration and erosion damages. This may increase sediment loading due to past displacement of the riprap revetment.

#### 4.3.1.2 Proposed Action

There would be a minor short-term effect on water quality during levee rehabilitation. There would be a short-term increase in turbidity during excavation, grading, and revetment construction along the toe of the levee during the in-water work. Idaho Department of Environmental Quality would issue a Stream Channel Alteration Permit. Best Management Practices would be used to monitor effectiveness and ensure Clean Water Act compliance.

Upland activities would impact up to five acres with the potential for storm water runoff. These activities would include heavy equipment operations, minor clearing of vegetation and minor road improvements. A National Pollution Discharge Elimination System (NPDES) Section 402 Construction General Permit for Storm water would be required.

### 4.3.2 Aquatic Environment

Due to the wide range in elevation, the Payette River has a variety of fish and fish habitats near the levee area. Salmon and steelhead were eliminated in the drainage by Black Canyon Dam, which was first completed in 1924. From its mouth upstream to Black Canyon Dam, the river supports a mixed fishery for coldwater and warm water species. Mountain whitefish make up the bulk of game fish in this section of river, with smallmouth bass, largemouth bass, channel catfish, black crappie, rainbow trout, and brown trout making significant contributions. Upstream from Black Canyon Dam, the gradient of the river increases with coldwater species increasing in abundance. The South Fork of the Payette River supports excellent populations of wild rainbow trout. The North Fork of the Payette River has been severely altered by railroad and highway construction and provides only a marginal fishery for salmonids.

#### 4.3.2.1 No Action

There could be some change to the aquatic environment under the No Action alternative. Continued erosion of the levee and stream bank would add sediment to the river and may affect the aquatic environment. Fine sediment can fill in spaces between gravel and cobble, decreasing the habitat value for aquatic insects. If high flows erode through the levee, fish could become stranded behind the levee outside the main river channel.

#### 4.3.2.2 Proposed Action

Construction activities during levee rehabilitation would have a minor effect on the aquatic environment. There would be some disturbance to fish during construction but would likely move away from the noise without being harmed. There would be minimal disturbance to the streambed during placement of riprap at the toe of the levee. Fish that could be minimally affected include whitefish, bass, crappie, rainbow trout, and brown trout. Excavation for the toe trench would displace some fine sediment, carrying it downstream where it would settle out. Habitat for aquatic insects can be negatively impacted if there is too much fine sediment. The fill and rip-rap would be placed with an excavator, not dumped from a truck. This would minimize any impacts on the aquatic environment since spreading material by dumping would increase sediment displacement. As with all construction activities near water, accidental release of fuel, oil, and other contaminants may occur, resulting in injury or death to fish and other aquatic organisms. Use of machinery in the action area could result in a small amount of oil and hydraulic fluid leakage during operations. However, the Corps would strictly adhere to all environmental laws and Best Management Practices including implementation of spill prevention measures.

### 4.3.3 Terrestrial Environment

Large trees on the Horseshoe Bend levee were removed just prior to the levee damage. A few small trees/shrubs (cottonwoods, false indigo, willow, hawthorn) are present. The trees and shrubs provide a small amount of habitat for birds. Geese together with mallards, gadwalls, northern pintails, American wigeon, green-winged and cinnamon teal, lesser scaup, redheads and wood ducks can be found near the Payette River.

Snowy and common egrets, great blue herons, American bitterns and white pelicans are often seen along the river. While large mammals are scarce, small mammals are common. Muskrat, mink and beaver have habitat along the river. Raccoon, skunk, red fox and coyote are all found near the river, but like their larger counterparts, can be difficult to observe.

#### 4.3.3.1 No Action

The No Action Alternative would not change the terrestrial habitat or the use of that habitat.

#### 4.3.3.2 Proposed Action

Operation of equipment during construction could have a minor, negative effect on terrestrial species, especially small mammals and birds. These animals tend to avoid the activity and find suitable habitat close by. Once the levee is restored, small mammals such as mink would find an ample supply of cover among the pieces of large riprap. Stumps and smaller trees and shrubs would need to be removed to repair the levee. An excavator would remove the stumps and small trees and shrubs and dispose of them at an off-site location.

### 4.3.4 Threatened and Endangered Species

The Corps reviewed the current list of threatened and endangered species that pertain to the area affected by this action under jurisdiction of the U.S. Fish and Wildlife Service (USFWS). The compiled species list is shown in Table 4-6. None of these listed species are found near the proposed rehabilitation sites. Repair of the levee would not affect any Endangered Species Act (ESA) listed species.

**Table 4-6: Determinations for the area potentially affected by this action.**

| **ESA** | | |
|---|---|---|
| **Common Name** | **Species Determination** | **Critical Habitat Determination** |
| **USFWS** | | |
| Bull Trout | No Effect | No Effect |
| Canada Lynx | No Effect | No Effect |
| Snake River Physa Snail | No Effect | None Designated |
| Slickspot Peppergrass | No Effect | No Effect |
| **MSA** | | |
| No Adverse Effects | | |
| **FWCA** | | |
| Not Applicable | | |
| **MBTA** | | |
| No Take | | |
| **BGEPA** | | |
| Disturbance Unlikely to Occur | | |

#### 4.3.4.1 No Action

None of these listed species are found near the proposed rehabilitation sites. The No Action Repair of the levee would not affect any Endangered Species Act (ESA) listed species.

#### 4.3.4.2 Proposed Action

This proposed action would have no effect on ESA listed species. There would be some disturbance to fish and wildlife during construction. Fish and wildlife would likely move away from the noise without being harmed. There would also be no adverse effects to Essential Fish Habitat covered by the Magnuson-Stevens Act.

### 4.3.5 Socio-economics

Horseshoe Bend is one of four incorporated cities in Boise County and is located 19 miles north of Boise. The area near the damaged levee is a small urban setting protecting the community of Horseshoe Bend, primarily residences, a school, restaurant and a municipal water pump station.

#### 4.3.5.1 No Action

Under the No Action Alternative, the current condition of the levee would not withstand a future moderate flood event. Flood waters would breach the levee with a high potential for additional flood damages to surrounding properties, including the adjacent school, homes, and businesses located near the project. Further levee damages are likely during the next flood event.

#### 4.3.5.2 Proposed Action

Benefits of the proposed work are based on the probability of failure of the damaged levee during the next high water event and on the estimated damages which would result from flooding by high river flows.

The levee protects the adjacent school, a municipal water pump station, a restaurant and approximately 12 residences. The protected area is approximately 51 acres. Total estimated value of the property and contents is $ 33 million.

Repair of the levee would reduce damages caused by flooding starting at $57,063 for flood protection from a 100-year flood event.

### 4.3.6 Cultural Resources

There is one historic property located within the Area of Potential Affect (APE) for the Horseshoe Bend levee repair. Horseshoe Bend levee was constructed circa 1947 for flood control. Based on this date, the levee itself is considered a historic property. The levee wraps around the city of Horseshoe Bend but given the length, only the portion that falls within the project area was recorded as a historic property. It has not been evaluated for eligibility to the National Register of Historic Places and therefore, it is treated as if it is eligible.

#### 4.3.6.1 No Action

The no action alternative would not result in effects to cultural resources. The levee has already been impacted by flooding. Failure to repair the levee could lead to additional damage and possibly to the complete reconstruction of portions of the levee. Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register.

#### 4.3.6.2 Proposed Action

This proposed action would not result in adverse effects to the overall integrity of the site. Implementation of the proposed action would also not result in significant impacts to cultural resources. Under this alternative, the levee would be reconstructed to its condition prior to being damaged by flooding. Although this would involve disturbance to the historic property, the reconstruction would restore the levee to its original condition; the work is considered replacement in-kind.

### 4.3.7 Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." Analysis of cumulative effects focuses on issues that are relevant to the decision to be made and are "truly meaningful" (CEQ 1997), (i.e., important issues of national, regional, or local significance).

The Payette River and its tributaries have been altered by past and ongoing actions such as installation of dams, levees, and land developments such as farming and other human uses. These activities have altered the terrestrial and aquatic ecosystem with these watersheds and will continue to do so. Foreseeable activities near the area include the Corps proposal to rehabilitate Chapman levee, located on river mile 3.5 near the Payette River in the summer of 2012. However, these repairs are on the land side of the levee which would not impact the aquatic environment on the river. This action would not impact environmental resources in the area.

The proposed action would involve some disturbance to fish and wildlife during construction. Fish and wildlife would likely move away from the noise without being harmed. The aquatic environment would not be expected to be significantly affected by the levee rehabilitation. The rehabilitation would stabilize the damaged banks reducing fine sediment and protect habitat value for aquatic insects. The levee rehabilitation would have beneficial effects on water quality as the repairs would reduce sedimentation through bank stabilization.

The proposed rehabilitation would consist of restoring existing structures to their previous condition. This project would result in minor short-term construction-related impacts to the immediate damaged areas with minor impacts to fish and wildlife. However, cumulatively, these minor affects, when added to other past, present, and reasonably foreseeable future actions, would not be expected to be significant.

## 5. ALTERNATIVE ACTIONS FOR CHAPMAN LEVEE

### 5.1 Alternatives Considered

#### 5.1.1 Alternative 1: No Action

Under the No Action Alternative, there would be no repairs to the levee. A future flood event would cause continued sloughing into the irrigation ditch on the back side of the levee, rendering it inoperable. Damages from 2010 resulted in long segments of the slope to slump down into an irrigation ditch, leaving hundreds of feet of levee fill with a near vertical scarp along the edge of the roadway. Failure of the levee would allow water to enter the irrigation canal where it would travel downstream through a cut in a railroad bend. Flooding could then expand to cover around 200 acres of improved pasture. It would likely return downstream of 6th avenue in the City of Fruitland. The land side of the sewage ponds is not armored and water flowing through the irrigation canal adjacent to the sewage ponds could erode them. This alternative was not assessed for annual costs to perform flood fight activities to protect the nearby sewage ponds, irrigation ditch, and water plant and pasture land.

#### 5.1.2 Alternative 2 Preferred Alternative: Restore to "As Was" Condition by Repairing the Sloughed Areas**.**

Repairs would restore the levee to pre-flood conditions, to a roadway width of 18 feet. Since levee material has sloughed into the irrigation ditch, reducing the ditch carrying capacity, this alternative restores the capacity of the levee to protect the infrastructure directly behind the levee. This repair will reduce possible impacts to life safety and property damages.
Project rehabilitations would be limited restoring to pre-flood conditions in areas where slumping intrudes into the adjacent roadway cross section where the irrigation ditch parallels the toe of the slope. Overall repairs will restore the levee to pre-flood conditions, to a roadway width of 18 feet and include three segments on the landside upstream end of the levee. Their lengths are 339 feet, 189 feet, and 61 feet for a total length of 589 feet.

The repair would be accomplished by construction of a landside buttress (support structure) along the margin of the levee. The buttress would allow seepage through the levee without sloughing into the irrigation ditch.

Areas where slumping has occurred, containing sand and gravel along the land side of the levee, would be excavated to reach firm soils suitable to support the fill materials. Approximately 1000 cubic yards of this material would be excavated and transported to a commercial land fill. It would be replaced with approximately 1,900 cubic yard of crushed rock buttress fill. The specified crushed rock material would be delivered to the work site by dump trucks, and installed and compacted using tracked excavators, to a specified cross section. This product would consist of 3-inch to 5/8-inch crushed rock product. This kind of material – angular and well graded in its range of sizes – would be placed with bucket-tamping for compaction to construct 1½H:1V slope on the outside of a buttress fill. This approach allows for steeper side slopes to prevent intrusion

into the drainage ditch, while providing a free-draining buttress fill to support the edge of the access road, The well graded crushed rock product would also be resistant to ditch flow erosion.

The project proponents would like to repair the damaged levees prior to the next flood season (spring of 2012) but more likely to be completed in summer 2012. The work would take a few weeks to complete. There would be no in water work. Repair costs would be approximately $151,055.66.

## 5.2 Screening of Alternatives Chapman Levee

The Corps identified screening criteria to determine which alternatives to consider further. These criteria are:

- Must restore to pre-2010 condition
- Must improve safety by protecting private property
- Must be cost effective
- Minimal cultural impacts
- Minimal environmental impacts

Table 5-1 to 5-2 lists the screening criteria and indicates if the alternative met the criteria.

**Table 5-1 Screening of Alternatives 1: No Action**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | No | Levee material would continue to slough into the irrigation ditch on the back side of the levee, rendering it inoperable. |
| Improve Safety | No | Risk to protected infrastructure would continue to increase as levee material is lost. |
| Cost | Unknown | This option was not assessed for annual costs to perform flood fight activities to protect the nearby sewage lagoons, irrigation ditch, and water pumping plant, and pasture land. |
| Min Cultural Impacts | No | Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register. |
| Min Env Impacts | Yes | This alternative would have minimal impact on the environment. There would be no effect to ESA listed species. There would be no effect on fish or wildlife. |

**Table 5-2 Screening of Alternative 2: Restore to as was Condition**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | Levee material has sloughed into the irrigation ditch, reducing the ditch carrying capacity. This alternative restores the capacity of the levee to protect the infrastructure directly behind the levee to as was condition. |
| Improve Safety | Yes | This repair will reduce possible impacts to life safety and property damages. |
| Cost | Yes | $151,055.66 to repair. Benefit: Cost Ratio is 15.2:1 |
| Min Cultural Impacts | Yes | There would be no effect to cultural resources should this alternative be selected. |
| Min Env Impacts | Yes | No woody vegetation would be affected by this alternative. There would be no effect on ESA listed species. There would be minimal impacts to amphibians. |

Alternatives that did not meet the screening criteria were removed from further consideration. The only alternative that met the criteria was the Proposed Action, therefore it was the only alternative carried forward for additional analysis. The No Action Alternative was also carried forward as required by NEPA for comparison.

## 5.3 Chapman Levee: Affected Environment and Environmental Consequences

This section identifies and describes the environmental resources at Horseshoe Bend levee the Corps determined are relevant to the proposed alternative being considered and evaluates the effects of the alternative on those resources. The Corps considered but did not identify, any potential affects to noise pollution, air quality, land forms, soils or recreation.

### 5.3.1 Water Quality/Sediment Quality

Chapman levee is located on the lower Payette River. Water quality issues are somewhat similar to Horseshoe Bend levee with summer water temperatures being warm, exceeding water quality standards for both cold water biota and salmonid spawning. Other factors, including habitat modification and flow alteration, cause impairment of beneficial uses. In addition, warm water temperatures that exceed water quality standards originate from Black Canyon Reservoir. Black Canyon is located on river mile 38.5, upstream of Chapman.

Sources of pollutants include both point sources and nonpoint sources. Point sources are limited mainly to municipal wastewater treatment plants and confined animal feeding operations. Nonpoint sources are associated with agricultural, urban, suburban, and rural areas (State of Idaho, 1999).

Chapman levee is located on the South Fork of the Payette River. Suspended sediment data for the South Fork Payette River show that during years of normal flow, the water column sediment levels are well below the suspended sediment target; however, during years of high flow, when erosion can be significant, the sediment target is exceeded (Idaho Department of Environmental Quality Payette River, South Fork Sub basin, http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/payette-river-south-fork-subbasin.aspx).

#### 5.3.1.1 No Action

There would be no change to water quality in the Payette River under the No Action Alternative since damages are not located on the river side of the levee.

#### 5.3.1.2 Proposed Action

There would be no effect to water quality since there would be no in-water work. The river-side of the levee is fully intact. All of the damage is on the land-side slope.

### 5.3.2 Aquatic Environment

From the mouth of the Payette River upstream to Black Canyon Dam, the Payette River supports a mixed fishery for coldwater and warm water species. Mountain whitefish make up the bulk of game fish in this section of river, with smallmouth bass, largemouth bass, channel catfish, black crappie, rainbow trout, and brown trout making significant contributions.

#### 5.3.2.1 No Action

Since the levee slumped into an irrigation ditch and not the river, there would be no change to the aquatic environment under the No Action alternative.

#### 5.3.2.2 Proposed Action

The proposed action would not affect the aquatic environment. All of the repair work is on the land-side of the levee. The river would not be impacted. An accidental release of fuel, oil, and other contaminants could occur during construction. The Corps would strictly adhere to all environmental laws as part of the action in order to ensure proper storage and use of petroleum based containments to prevent accident spills.

### 5.3.3 Terrestrial Environment

The Chapman Levee serves as a road to access sewage treatment ponds. Some riparian habitat exists on the river-side of the levee. On the land-side of the levee, an irrigation ditch may provide some habitat for amphibians and small mammals. Vegetation along the base of the levee consists mainly of reed canary grass, but some cattails also exist. The river-side of the levee is well forested. The river is separated from the levee by a dense riparian forest.

#### 5.3.3.1 No Action

The No Action Alternative would not change the terrestrial habitat or the use of that habitat. The levee/roadway would continue to erode into the irrigation ditch.

#### 5.3.3.2 Proposed Action

For the proposed action, there could be a small amount of impact to the terrestrial environment from the proposed project. The repair work is on the land-side of the levee which contains an irrigation ditch. This ditch could contain amphibians and small mammals which could be removed or buried and disturbed by the repairs. The vegetation between the river and the levee would not be affected if the levee was repaired.

Animals would likely avoid the construction area. There would be little to no impact on animals along the haul routes. All work would be done during daylight hours. Some small trees and shrubs would be removed on top of the levee to provide access. These trees and shrubs provide a small amount of habitat, mainly for birds.

### 5.3.4 Threatened and Endangered Species

There are no populations of listed, threatened or endangered species in the lower Payette River at the proposed project locations. Repair of the levee would not affect any ESA listed species (Corps No Effect Memo, 2012).

### 5.3.5 Socio-economics

This upstream end of the levee protects an irrigation canal and the land side of the sewage ponds. Just upstream of the sewage ponds is the water pumping plant. This building is approximately one year old and cost $2.1 million. There are 200 acres of improved pasture and 2400 feet of paved road located in the 10-year flood plain. The municipal facilities (total value of sewage lagoons, water pumping plant) and pasture land area estimated to be $5.1 million (Corps Chapman PIR, 2012).

Estimation of Average Annual Damages prevented was completed using standard flood damage analysis methods. Repair of the levee would reduce damages caused by flooding starting at 13,100 cubic feet per second (CFS) flow levels (2 year flood) ultimately (resulting in an average annual damaged prevented of $185,000) for the 10 year flood event (Corps Chapman PIR, 2011).

#### 5.3.5.1 No Action

Failure of the levee would threaten the municipal facilities and pasture land. The land side of the sewage ponds is not armored and water flowing through the irrigation canal adjacent to the sewage ponds could erode them. Flood water could also affect downstream areas by cutting through a railroad bend with potential flooding expansion flooding covering approximately 200 acres of improved pasture. It would likely return downstream of 6th avenue in the City of Fruitland.

#### 5.3.5.2 Proposed Action

Levee repairs would provide protection to valuable municipal facilities and private property. This project would therefore have a positive impact on socio-economics in the surrounding community.

### 5.3.6 Cultural Resources

There is one historic property located within the Chapman levee repair area. Based on discussions with Corps personnel and county representatives it is believed that the levee was constructed sometime around 1947 for flood control. Although an historic property, this levee has been determined not eligible to the National Register based on past modification and reconstruction.

#### 5.3.6.1 No Action

Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register. Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register.

#### 5.3.6.2 Proposed Action

This levee has been determined not eligible for listing in the National Register based on past modification and reconstruction. There would be no effect to cultural resources should any of these alternative be selected.

### 5.3.7 Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." Analysis of cumulative effects focuses on issues that are relevant to the decision to be made and are "truly meaningful" (CEQ 1997), (i.e., important issues of national, regional, or local significance).

As with Horseshoe Bend levee, the lower Payette River near where Chapman levee lies and its tributaries have been altered by past and ongoing actions such as installation of dams, levees, roads/bridges, urban development, farming, and municipal waste water sources that contribute to point and non-point source pollution and sediment loading. These activities have altered the terrestrial and aquatic ecosystem within these watersheds and will continue to do so. The Idaho Department of Transportation is actively conducting bridge repairs on the U.S. 95 interchange near Fruitland. The repairs include overlaying the concrete deck, pier caps and columns to extend the life of the bridge. These repairs do not involve in water work and would have no affect on the aquatic environment.

Point and nonpoint effects are more noted on the lower Payette River. The TMDL on the lower Payette River area (River Mile 38.5 to River Mile 0) does not meet Clean Water Act Standards. Approximately 380,000 acres of irrigated and non-irrigated lands are located in this area. Temperature, nutrients and bacteria are pollutants of concern (State of Idaho, 1999). The Corps in not aware of any reasonably foreseeable future actions in the proposed levee area that would further impact water quality.

The Corps has determined that ESA species and critical habitats will be spatially or temporally separated from this action.

Failure of the levee would impact pasture land and municipal facilities including the sewage ponds. The proposed rehabilitations consist of restoring the levee structure to its previous condition. This would result in minor short-term construction related impacts to wildlife. However, cumulatively, these minor impacts, when added to other past, present, and reasonably foreseeable future actions, would not be expected to be significant.

# 6. ALTERNATIVE ACTIONS FOR SWEETWATER

## 6.1 Alternatives Considered

### 6.1.2 Alternative 1: No Action

Under the No Action Alternative, the levee would not be repaired. Seepage and piping through the levee would continue to remove the fine materials that make up the levee core. As the ability of water to move through the levee increases, risk to people and property protected by the levee would increase. Flooding to homeowners previously protected by the levee would continue to increase due to seepage through the levee. Annual flood fights would be required by the local community to protect homes behind the levee. As fine materials in the levee continue to be lost, the risk of a levee breach would increase with each high water event. Potential property damage would occur during the next five-year flood event. This alternative was not assessed for annual costs to perform flood fight activities to protect the nearby homes (costs for this alternative were not assessed).

### 6.1.3 Alternative 2: Relocate Affected Properties Above the 100-Year Flood Plain

This alternative would involve relocating homes to reduce risks to property. Costs for relocating residents out of the flood plain are predicted at over one million dollars (due to construction and environmental cleanup).

### 6.1.4 Alternative 3: Dredge the West Bank of Lapwai Creek

No repairs to the levee would occur. Dredging would be performed on the west (right) bank of Lapwai Creek to increase the capacity of the channel. This is considered a temporary fix for high flows and a maintenance problem. Dredging the channel would likely not be able to be accomplished due to the levee being near critical habitat. For this alternative, annual high flows

may require continued dredging activities to protect nearby homes. Any benefits of dredging would be short term due to bed load movement in the channel during high water. It is highly likely that maintenance dredging would have to be performed on an annual basis. This alternative was not evaluated for cost.

### 6.1.5 Alternative 4 is the Preferred Alternative: Restore Levee to 'As Was" Condition by Restoring the Levee Core

Restoring to the as-was condition involves reconstructing an impervious core on the levee to stop seepage through the levee (figure 6-1). The repair area would be 40 feet by 500 feet. Construction of the project would be conducted on top of the levee with use of approximately 7 miles of existing roads. To insure the core intercepts the leak, the core would need to penetrate the natural ground line under the levee by 2' and be 500' in length. The levee protects 20 structures.

The objective is to dig a trench down the center of the levee and replace the material with fine-grained soil which would block the flow of water through the levee during high flows. Geotextile fabric would be used to line the trench to separate the levee material from the fine material to be placed

An excavator would travel to the area where water is presumed to have flowed through the levee. The excavator would dig a trench down the centerline of the levee to a depth of 10 to 12 feet below the surface of the levee. The sides of the trench would be on a 1 vertical to 1 horizontal slope for safety reasons. Removed material would be loaded onto dump trucks for temporary stockpile or disposal at a county-owned site. Once the trench is dug, geotextile fabric would be used to line the trench to separate the levee material from the fine material to be placed. Next, fine fill material would be hauled to the site in dump trucks. The excavator would place the fill in the trench and compact it. Previously removed fill material would be used to fill the remainder of the levee and finish the levee top to the original contour.

The fill material excavated during the project would be disposed of at a second location on private land. Rehabilitation activities would take place within 20 to 40 feet from Lapwai Creek. Transport of fill and disposal materials will be along existing roads.

The Sponsor performed vegetation maintenance to clear a few small trees (cottonwood) and shrubs (mostly sumac) from the middle section of the top of the levee in February 2012.

Work would likely be conducted between May and October 2012 and would take approximately two weeks to complete. There would be no in water work. The estimated cost for the preferred alternative is $ 111,236.90.

Figure 6-1:Sweetwater Levee Damaged Section, Lapwai Creek, and Proposed Equipment Staging

## 6.2 Screening of Alternatives Sweetwater Levee

The Corps identified screening criteria to determine which alternatives to consider further. These criteria are:

- Must restore to pre-2010 condition
- Must improve safety by protecting private property
- Must be cost effective
- Minimal cultural impacts
- Minimal environmental impacts

Table 6-1 to 6-4 lists the screening criteria and indicates if the alternative met the criteria.

**Table 6-1. Screening of Alternatives 1: No Action**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | No | Seepage and piping through the levee would continue to remove the fine materials that make the levee core. As the ability of water to move through the levee increases, risk to people and property protected by the levee would increase and would not allow for pre-2010 flood protection. |
| Improve Safety | No | Flooding to homeowners previously protected by the levee would continue to increase due to infiltration through the levee. Annual flood fights would be required by the local community to protect homes behind the levee. As fine materials in the levee continue to be lost, the risk of a levee breach would increase with each high water event. |
| Cost | Unknown | Cost for no action was not assessed. Flood damages would begin to occur at a five–year flood event. |
| Min Cultural Impacts | No | Failure to repair the levee could lead to additional damage and possibly to the complete reconstruction of portions of the levee. Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register. |
| Min Env Impacts | Yes | This alternative would not affect fish or wildlife. There also would be no effect to ESA listed steelhead or any other listed species. Vegetation would not be impacted. |

**Table 6-2 Screening of Alternatives 2: Relocate Affected Properties to 100-Year Flood Plain**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | No | No repairs to the levee would be performed. |
| Improve Safety | No | Raising homes would reduce risks to property, but risk to life would remain as the future flooding could impact properties. |
| Cost | No | Extremely high costs (over one million dollars) are predicted to move or raise homes out of the flood plain (due to construction costs, environmental cleanup). |
| Min Cultural Impacts | Unknown | Further evaluation of cultural resources would be required. |
| Min Env Impacts | Unknown | Effects on the environment were not evaluated for this alternative because it is not feasible. |

**Table 6-3 Screening of Alternative 3: Dredge the West Bank of Lapwai Creek**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | No repairs to the levee would be performed. |
| Improve Safety | No | Risk to life and property would remain. Any benefits of dredging would be short term due to bed load movement in channel during high water. |
| Cost | Unknown | This alternative was not evaluated for cost. |
| Min Cultural Impacts | Yes | No cultural resources were noted on the west bank of the creek during the survey of the staging area or on the east side of the creek between the levee and the stream bank. |
| Min Env Impacts | Unknown | Effects on the environment were not evaluated for this alternative because it is not feasible. However, there could be aquatic habitat disturbance with removal of substrate benthic organisms. |

**Table 6-4 Screening of Alternative 4: Restore to "As Was" Condition**

| Criteria | Meets Criteria | Comment |
|---|---|---|
| Restore to Pre-2010 Conditions | Yes | Restores the capacity of the levee to protect homes directly behind the levee. Eliminates annual costs to perform flood fights to protect property each time the water rises. |
| Improve Safety | Yes | Repairing the levee will reduce negative impacts to life safety and property damages by reducing seeping and eventual levee failure. |
| Cost | Yes | $111,236.90 to repair. Benefit: Cost Ratio is 1.2:1 |
| Min Cultural Impacts | Yes | There would be no effect to cultural resources should this alternative be selected. |
| Min Env Impacts | Yes | This alternative would have minor impacts to the environment. There would be temporary disturbance to wildlife during construction. There could be a minor impact on fish if there was an accidental spill of fuel or oil. |

Alternatives that did not meet the screening criteria were removed from further consideration. The only alternative that met the criteria was the Proposed Action, therefore it was the only alternative carried forward for additional analysis. The No Action Alternative was also carried forward as required by NEPA for comparison.

## 6.3 Sweetwater Affected Environment and Environmental Consequences

This section describes the environmental resource areas the Corps determined are relevant to the alternatives being considered and evaluates the effects of the alternatives on those resources. The Corps considered, but did not identify, any potential affects to noise pollution, air quality, landforms or soils as these projects would have negligible effects.

### 6.3.1 Water Quality/Sediment Quality

Lapwai Creek drains an area of 5,950 acres and has a stream length, including all tributaries, of approximately 27 miles. Lapwai Creek flows five miles before discharging into Winchester Lake, near Winchester, Idaho. From the outflow of Winchester Lake, the creek continues northward for approximately 25 miles and enters the Clearwater River approximately 11 miles east of Lewiston, Idaho. U.S. Highway 95 abuts the west bank. The Lapwai Creek Watershed lies within Nez Perce and Lewis Counties, as well as in Nez Perce and Lewis Judicial Districts (Richardson, Rasmussen, and Chandler 2009).

The Lapwai Creek watershed is characterized by extreme fluctuations in stream flow. Flows are greatest from January through April and lowest from July through September. During the winter and spring high flow, it is not unusual for peak flows to increase several thousand-fold over summer base flows. Flash floods are common due to the narrow channels and moderate to steep gradients. A 10-year flood event can cause large flash floods that scour flood plains and deposit large quantities of bed-load materials. This places considerable stress on the aquatic and riparian resources and adds to maintenance costs of roads and bridges.

Water quality problems in Upper Lapwai Creek are primarily impacting aquatic life such as cold and warm water fish species. Sediment, nutrients and bacteria from existing land-use practices are adversely impacting water quality.

Solar radiation currently raises water temperatures in Lapwai Creek above the prescribed state water quality standards for salmonid spawning and coldwater biota. Management activities within the watershed, such as removing riparian shade trees, harvesting of conifer over story, grazing in riparian areas, and introducing bed load sediment which results in increased stream surface area, can increase the amount of solar radiation entering a stream (Winchester Lake Watershed Advisory Group, 2000).

#### 6.3.1.1 No Action

There would be no change to water quality in Lapwai Creek under the No Action Alternative. However, a future flood event is likely to cause additional deterioration and erosion damages. During a high water event, there would be continued seepage through the levee core, causing additional piping, erosion and subsequent breach.

#### 6.3.1.2 Proposed Action

The proposed rehabilitation would be land-based; there would be no change to water quality in Lapwai Creek under the proposed action. No measurable elevations of suspended sediment and

turbidity would occur in streams inhabited by listed fish species as a result of the proposed project. Properly installed silt fence would be placed between the work area and the creek to capture any fine sediment. The fine sediment used to create the levee core would be covered with random fill material so it would not wash out in the future.

### 6.3.2 Aquatic Environment

The lower portion of Lapwai Creek contains steelhead/rainbow trout, Chinook salmon, and various minnow species. Salmon and trout are cold water species which do not tolerate high water temperatures well. Flows in Lapwai Creek have been altered by irrigation diversions. The stream has also been straightened for flood management purposes. These actions have impacted the aquatic habitat within Lapwai Creek and its tributaries.

#### 6.3.2.1 No Action

There would be no change to the aquatic environment under the No Action Alternative. The levee may continue to leak during high flows. This leakage would not be significant enough to affect the aquatic environment.

#### 6.3.2.2 Proposed Action

Construction activities during levee rehabilitation could have a minor effect on the aquatic environment. A silt fence would be constructed along the top of the levee to minimize any fine sediment from making its way into the floodway. The only potential for effects to the aquatic environment would be from accidental spills of petroleum products. The likelihood of this type of impact is low.

### 6.3.3 Terrestrial Environment

Terrestrial wildlife can be found in low numbers along the roads used as the haul route and within the floodplain of Lapwai Creek. Large mammals such as deer and small mammals such as raccoons and mink inhabit the riparian zone habitat and adjacent lands.

#### 6.3.3.1 No Action

The No Action Alternative would not change the terrestrial habitat or the use of that habitat. There would be no impact to the terrestrial environment.

#### 6.3.3.2 Proposed Action

There could be a minor impact on the terrestrial environment through disturbance from the construction equipment. Animals would likely avoid the construction area. There would be little to no impact on animals along the haul routes. All work would be done during daylight hours. Some small trees and shrubs would be removed on top of the levee to provide access. These trees and shrubs provide a small amount of habitat, mainly for birds. There are still ample trees between the levee and the creek to provide excellent habitat.

### 6.3.4 Threatened and Endangered Species

Snake River steelhead, a threatened species, is found in Lapwai Creek near the Sweetwater Levee. Repair of the levee would not directly affect this species. Potential indirect effects could occur if there was an accidental spill of petroleum products from the construction equipment. This type of effect is unlikely to occur (Corps Sweetwater Biological Assessment, 2012).

Snake River fall Chinook salmon (listed as a threatened species) and Snake River steelhead are likely to occur within or downstream of the action area. The action is within designated critical habitat for ESA-listed Snake River Basin fall Chinook salmon and Snake River Basin steelhead, and within Essential Fish Habitat for Chinook and coho salmon.

Magnuson-Stevens Act

- Essential Fish Habitat Affected by the Project

The consultation requirement of section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs Federal agencies to consult on actions that may adversely affect Essential Fish Habitat (EFH). Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH.

The habitat affected by this project are for Pacific coast salmon, as designated by the Pacific Fishery Management Council (PFMC), in the State of Idaho for the freshwater life stages of Chinook salmon and coho salmon. The areas nears the proposed levee rehabilitation are designated as EFH for various life-history stages of Chinook and coho salmon.

National Marine Fisheries Service (NMFS) listed Snake River (SR) fall-run Chinook salmon as threatened on April 22, 1992 and their threatened status was reaffirmed on June 28, 2005. The designated habitat for SR fall Chinook salmon consists of river reaches of the Columbia, Snake and Salmon Rivers and all tributaries of the Snake and Salmon Rivers presently or historically accessible to SR fall Chinook salmon.

Bull trout are not known to occur in Lapwai Creek near the proposed project area, but may exist in its headwaters at Winchester Lake. The proposed project would have no effect on bull trout or their designated critical habitat.

#### 6.3.4.1 No Action

The No Action alternative would not change the ESA listed species habitat or the use of that habitat

#### 6.3.4.2 Proposed Action

Based on the circumstances and precautions, the Corps believes there would be no adverse effects to EFH or on species covered by the MSA. There are no bull trout in Lapwai Creek. Table 6-5. Provides a summary of species and critical habitat determinations.

Table 6-5. Summary of Determination of Effects on Listed Species and Critical Habitat.

| Species | Species Determination | Critical Habitat Determination |
|---|---|---|
| **NMFS** | | |
| SR Fall Chinook | No Effect | No Effect |
| SR Steelhead | May Affect, Not Likely to Adversely Affect | No Effect |
| **USFWS** | | |
| Bull trout | No Effect | No Effect |
| Canada lynx | No Effect | No Effect |
| Spalding's' catchfly | No Effect | None Designated |

Operation of equipment requires the use of fuel and lubricants, which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. The main concern that may occur from the proposed project is the accidental spill of fuel, lubricants, hydraulic fluid, or similar contaminants into the riparian zone or runoff into the water. Any such spills could adversely affect habitat, injure or kill aquatic food organisms, or directly impact rearing steelhead.

The following impact minimization measures would be implemented by the Corps:

- Fuel and lubricants would be stored outside the riparian zone
- Refueling within the riparian zone would be avoided
- All fueling or staging would not be allowed within 50 feet of surface waters
- Equipment would be staged outside the riparian zone when not in use
- Equipment would be inspected for leaks and cleaned prior to entering the work site. Any detected leaks would be repaired before the vehicle enters the work site.
- A spill prevention and control plan would be developed and discussed with equipment operators prior to beginning work
- Silt fences would be installed or other appropriate erosion control measures

The Corps has determined the proposed levee rehabilitation project may affect, but is not likely to adversely affect Snake River steelhead. The Corps also determined there would be no effect on Snake River fall Chinook salmon, Columbia Basin bull trout, Canada lynx, and Spalding's catchfly. There would also be no effect on designated critical habitat for fall Chinook, steelhead, bull trout, and Canada lynx due to the spatial separation of where work activities are proposed in relation to Lapwai Creek. Based on information provided in the Corps Biological Assessment and the analysis of effects, the Corps concludes that the effects on Chinook and Coho salmon EFH are unlikely to occur, but could be caused by accidental discharge of petroleum products.

The proposed action has the potential to result in short-term adverse effects on water quality habitat parameters which are required by fish species. Effects on EFH resulting from the proposed action are unlikely to occur when the presented minimization measures are implemented. Effects on Chinook and salmon resulting from the proposed action are not reasonably likely to occur.

### 6.3.5 Socio-economics

There are 12 residences and around 8 shops (private garages, outbuildings, and storage buildings) protected by the Sweetwater Levee which are located in the 10 year flood plain. Total estimated value of the property and contents is $ 1.5 million (Corps Sweetwater PIR, 2011).

#### 6.3.5.1 No Action

Without the rehabilitation, flood damages would increase and threaten nearby residential property. A nearby bridge could be damaged and lost during the next flood event (10 year event).

#### 6.3.5.2 Proposed Action

The rehabilitation would preserve residential properties and prevent nearly $18, 000.00 in damages in during a 10-year flood event.

### 6.3.6 Cultural Resources

The APE for this project includes the portion of the Sweetwater Levee proposed for repair, the staging area to the west of the creek and borrow and disposal sites. There is one historic property located within the APE – the Sweetwater levee itself. Based on discussions with Corps and county personnel it is believed that the levee was constructed sometime around 1947 for flood control (Corps Sweetwater Archeological Survey and Determination of Effect, 2012).

The levee is larger than the area that is being repaired for this project. Due to the scale and scope of the project only the portion that falls within the project area was recorded as a historic property. More recordation is required before a determination of eligibility can be made for the levee. Therefore, the property is considered undetermined for listing in the National Register and will be treated as if it is eligible.

The borrow material for the Sweetwater Levee project would come from a nearby quarry source on private land. The fill material excavated during the project would be disposed of at a second location on private land. Due to the nature of our cost share agreement and the Corps involvement in selecting these locations, the borrow source and disposal site are included in the area of potential effect for this levee. The borrow material for the other projects is coming from existing stockpiles either owned by the sponsors or from a commercial enterprise selected by the contractor. Therefore, these sources are not included in the area of potential effect for Horseshoe Bend or Chapman.
The Nez Perce Tribe received the final report for Sweetwater and commented on the need to include the borrow and disposal sites in the APE for cultural resources. It was determined that

due to Corps involvement in selecting those locations; they did need to be surveyed for cultural resources. The areas were surveyed on March 9, 2012 and no cultural resources were located. The report will be revised to reflect the additional survey area and findings and will be provided to the Nez Perce Tribal Historic Preservation Office (THPO).

#### 6.3.6.1 No Action

The levee has already been impacted by flooding. Failure to repair the levee could lead to additional damage and possibly to the complete reconstruction of portions of the levee. Further damage and future reconstructions could diminish the integrity of the site and its potential eligibility to the National Register.

#### 6.3.6.2 Proposed Action

Under the proposed action, the levee would be reconstructed to its condition prior to being damaged by flooding. While the levee is a historic property, the repair of the levee is not anticipated to make any character defining alterations to the property. Although this would involve disturbance to the historic property, the reconstruction would restore the levee to its original condition; the work is considered replacement in-kind. This alternative would not result in adverse effects to the overall integrity of the site.

### 6.3.7 Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." Analysis of cumulative effects focuses on issues that are relevant to the decision to be made and are "truly meaningful" (CEQ 1997), (i.e., important issues of national, regional, or local significance).

Sweetwater levee, located on Lapwai Creek, and its tributaries have been altered by past and ongoing actions such as installation of roads/bridges, urban development, farming, water withdrawal for human and agricultural use, and other human uses. These activities have altered the terrestrial and aquatic ecosystem with these watersheds and will continue to do so. The Corps is not aware of any foreseeable future actions near the proposed work area.

Biological 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 the Corps 2012 Sweetwater Biological Assessment. Future federal actions that are unrelated to the proposed action, and have not already undergone consultation under the ESA, are not considered here because they require separate consultation pursuant to Section 7 of the ESA. The Nez Perce Tribe is working on several stream restoration and habitat protection projects along Lapwai Creek. In the future there may be changes to the irrigation withdraws in the upper parts of the watershed which would have major benefits on steelhead and other resident fish in Lapwai Creek.

Based on the research conducted during the 2012 Corps Archeological study for Sweetwater levee, the Corps has determined that the Sweetwater Levee is a historic property. The proposed repairs are not an adverse effect, but ultimately the scope of the current study was not sufficient

to complete a determination of National Register of Historic Places (NRHP) eligibility for the levee itself. While the impacts are not an adverse effect, the recordation that occurred was not sufficient to complete a formal evaluation of the entire system for listing on the NRHP. Therefore, the NRHP status is undetermined, and the Sweetwater Levee remains eligible for listing on the NRHP.

Failure of the levee would impact private property. The proposed rehabilitations consist of restoring the levee structure to its previous condition. This would result in minor short-term construction related impacts to wildlife. However, cumulatively, these minor impacts, when added to other past, present, and reasonably foreseeable future actions, would not be expected to be significant.

## 7. ENVIRONMENTAL REVIEW REQUIREMENTS

### 7.1 Federal Statutes

#### 7.1.1 National Environmental Policy Act (NEPA)

This Environmental Assessment is being prepared and circulated to agencies and the public for review and comment pursuant to the requirements of the Act. Full compliance with NEPA will be achieved when the other environmental review requirements have been concluded and the Finding of No Significant Impact (FONSI), if one is determined to be appropriate, is signed.

#### 7.1.2 Clean Water Act

Since all proposed levee repairs are confined to the existing footprint of the structures and there would be no change to the original character, scope, or size of the original design, the project would be exempt from Section 404 under the Clean Water Act (33 CFR 323.4.a.2).

Proposed Chapman and Sweetwater rehabilitations would not involve in-water work and these areas are exempt from all other Clean Water Act Regulations.

The proposed rehabilitation of Horseshoe Bend, including staging and vehicle access encompasses over an acre of land, but less than five acres. A National Pollution Discharge Elimination System (NPDES) Section 402 Construction General Permit for Storm water would be required. Storm water would be addressed through the United States Environmental Protection Agency.

#### 7.1.3 Endangered Species Act (ESA)

The Corps requested an informal consultation in February 2012 with NMFS on Snake River steelhead. The Corps Biological Assessment has determined there would be no effect on U.S. Fish and Wildlife Service (USFWS) listed species. The Corps is expecting a response and concurrence from NMFS in March 2012.

No consultation is required for Horseshoe Bend or Chapman as there are no threatened or endangered species near the proposed work areas.

### 7.1.4 National Historic Preservation Act (NHPA)

The National Historic Preservation Act (NHPA) of 1966, as amended, directs federal agencies to assume responsibility for all cultural resources under their jurisdiction. Section 106 of NHPA requires agencies to consider the potential effect of their actions on properties that are listed, or are eligible for listing, on the National Register of Historic Places (NRHP). The NHPA implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, requires that the federal agency consult with the Tribal Historic Preservation Officer (THPO) for projects on Reservation lands, the State Historic Preservation Officer (SHPO) and interested parties to ensure that all historic properties are adequately identified, evaluated and considered in planning for proposed undertakings.

There is one historic property located within the APE for the Horseshoe Bend levee repair. Horseshoe Bend levee was constructed circa 1947 for flood control. Based on this date, the levee itself is considered a historic property. The levee is constructed of dirt and gravel with larger boulders present at the base of the levee (approximately 2 feet in size). The primary construction material appears to be loose sandy soil mixed with rolled river cobbles of various sizes. There is some river cobble armoring present on the river side of the levee. The levee wraps around the city of Horseshoe Bend but given the length, only the portion that falls within the project area was recorded as a historic property. The levee is 15-18 feet wide on the top. It is difficult to determine the width at the base of the levee since it was constructed into existing deposits on the land side. The levee is 8-10 feet high on the river side and is between 1-2 feet high on the land side. It has not been evaluated for eligibility to the National Register of Historic Places and therefore, it is treated as if it is eligible.

There is one historic property located within the APE for the Chapman levee repair. Based on discussions with Corps personnel and county representatives it is believed that the levee was constructed sometime around 1947 for flood control. Based on this date the levee itself was recorded as a historic property. The levee is constructed primarily of dirt with basalt cobble armoring on the river side (east) and a gravel surfaced road on top. The land side of the levee is mostly dirt mixed with small river cobbles. The top of the levee is between 15-18 feet wide and a frequently used road runs along it. The base of the levee is between 30-40 feet and the height is 7-8 feet. The levee sits between 0-50 feet from the bank of the Payette River. There is an irrigation ditch on the land side of the levee that is between 3-6 feet from the base of the levee.

The APE for this project includes the portion of the Sweetwater Levee proposed for repair, the staging area to the west of the creek and the borrow and disposal sites. There is one historic property located within the APE – the Sweetwater levee itself. Based on discussions with Corps and county personnel it is believed that the levee was constructed sometime around 1947 for flood control. The levee is constructed of soil and gravel that may have been imported to the site from another location. There is no evidence that the material was excavated from the creek or another adjacent area. The sides of the levee are armored with angular basalt that varies in size. The rocks at the base of the levee (aka toe) are large boulders approximately 2-3 feet in size.

There are rounded river cobbles present in places on the top of the levee but they appear to be a more recent addition. The top of the levee is 15-18 feet wide and there is an overgrown access road that runs down it. The base of the levee is between 25-35 feet wide and the height is approximately 6 feet. The levee is larger than the area that is being repaired for this project. Due to the scale and scope of the project only the portion that falls within the project area was recorded as a historic property. More recordation is required before a determination of eligibility can be made for the levee. Therefore, the property is considered undetermined to the National Register and will be treated as if it is eligible.

While the levees are historic property, the repair of the levee is not anticipated to make any character defining alterations to the property. PL 84-99 specifically does not allow for anything more than the restoration of the former state of an existing levee. These modifications may impact the historic nature of the levee and may result in an adverse affects to the qualities of the site that make it potentially eligible to the National Register. These modifications would have to be reviewed in the context of the overall levee to determine the nature and degree of these affects. The proposed repairs at all three levees would result in no adverse effects to the historic property.

## 7.2 State Permits

### 7.2.1 Idaho Stream Alteration Permit

Based on proposed work activities at Horseshoe Bend Levee, the proposed work would entail work activities in the open channel of the Payette River that include stream alteration. This would require a State of Idaho Stream Alteration permit authorization for any in-water activities. The City of Horseshoe Bend would apply for this permit through the Idaho Department of Environmental Quality.

## 7.3 Federal Permits

National Pollutant Discharge Elimination System (NPDES) Construction General Permit (Section 402) would be obtained.

# 8. CONSULTATION AND COORDINATION

This EA is being distributed for public and agency review and comment and is also available through the Walla Walla District Corps of Engineers web site at:
http://www.nww.usace.army.mil/IdahoPostFlood/default.asp

The distribution list includes the following:

Federal Agencies
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Environmental Protection Agency

Idaho State Agencies
Idaho Department of Fish and Game
Idaho Department of Environmental Quality
Idaho Department of Water Resources
Idaho State Historic Preservation Office
Idaho Transportation Department

Local Governments
City of Horseshoe Bend
City of Fruitland
City of Payette
City of Lapwai
Payette County
Nez Perce County
Boise County
Nez Perce Soil and Water Conservation District
Natural Resources Conservation Service

Tribes

Nez Perce Tribe
Shoshone-Bannock Tribes
Shosone-Paiute Tribes of Duck Valley

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# APPENDIX A

## U.S. Army Corps of Engineers Biological Assessment-Sweetwater Levee, 2012

US Army Corps of Engineers
Walla Walla District

BUILDING STRONG®

# IDAHO LEVEE REHAB

**LAPWAI CREEK, SWEETWATER, IDAHO**

**PUBLIC LAW 84-99**

**PM-EC-2012-0087B**

## Federal Natural Resources Law Compliance
## and
## Biological Evaluation

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

Date

13 March 2012

**Summary**

This biological assessment is for the rehabilitation of the Sweetwater levee on Lapwai Creek at Sweetwater, Idaho, Nez Perce County. The U.S. Army Corps of Engineers proposes to repair damage to the levee which began leaking during a high water event in April 2011. An impervious core of fine sediment will be used to create an underground curtain down the center of the levee, parallel to the creek in the damaged area to arrest the flow of water through the levee.

The repair of the levee is authorized by Public Law 84-99. Under this authority an eligible flood protection system can be rehabilitated if damaged by a flood event.

The Action Area includes the Sweetwater levee and the haul route to and from both the fill source and the disposal area, a total distance of about 7 miles. This project does not include any in-water work. Work would take place between May 1 and October 1 and would take a maximum of two weeks to complete (currently scheduled for May 4-15).

A total of 5 species are listed under the Endangered Species Act in Nez Perce County. These species include the following.

1. Snake River fall Chinook (*Onchorhynchus tshawytscha*)
2. Snake River Basin steelhead (*O. mykiss*)
3. Columbia Basin bull trout (*Salvelinus confluentus*)
4. Canada lynx (*Lynx canadensis*)
5. Spalding's catchfly (*Silene spaldingii*)

Critical habitat is designated for fall Chinook, steelhead, bull trout, and Canada lynx within Nez Perce County, but no critical habitat is designated for any of these species within the Action Area.

The Corps has determined the proposed project will have no effect on fall Chinook, bull trout, Canada lynx, and Spalding's catchfly. The project many affect, but is not likely to adversely affect steelhead. There would be no effect on critical habitat for any of these species.

The Corps determination under the Magnuson-Stevens Act is there will be no adverse effects on Essential Fish Habitat.

With proper impact minimization measures and best management practices in place migratory birds protected by the Migratory Bird Treaty Act are not likely to be affected by the proposed project.

Bald and golden eagles, protected by the Bald and Golden Eagle Protection Act will not be adversely affected by the propose project.

If additional information regarding this document is required, please contact Ben Tice, Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7267, or by email at ben.j.tice@usace.army.mil. Other correspondence can be mailed to:

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**GLOSSARY** ..... **VI**

**USGS U.S. GEOLOGICAL SURVEY** ..... **VI**

**1. ENDANGERED SPECIES ACT OF 1973: BIOLOGICAL ASSESSMENT** ..... **- 1 -**

1.1. INTRODUCTION ..... - 1 -
1.2. BACKGROUND ..... - 1 -
*1.2.1. Project History* ..... *- 1 -*
*1.2.2. Documentation of Relevant Correspondence* ..... *- 1 -*
1.3. PROJECT DESCRIPTION ..... - 2 -
*1.3.1. Authority* ..... *- 2 -*
*1.3.2. Project Area and Action Area* ..... *- 2 -*
1.3.2.1. Footprint ..... - 2 -
1.3.2.2. HUC, Township, Range, Section ..... - 3 -
1.3.2.3. Quantification of Area Potentially Affected ..... - 3 -
*1.3.3. Project Purpose and Objectives* ..... *- 4 -*
*1.3.4. Project Description* ..... *- 7 -*
1.3.4.1. Project Activities ..... - 7 -
1.3.4.2. Project Elements ..... - 8 -
*1.3.5. Project Timeline* ..... *- 8 -*
*1.3.6. Operational Characteristics of the Proposed Action* ..... *- 8 -*
*1.3.7. Proposed Best Management Practices* ..... *- 8 -*
1.3.7.1. Impact Minimization Measures ..... - 8 -
*1.3.8. Mitigation* ..... *- 9 -*
*1.3.9. Mitigation Required Under Other Permits* ..... *- 9 -*
*1.3.10. Interdependent and Interrelated Actions* ..... *- 9 -*
*1.3.11. Ongoing and Previous Projects in the Action Area* ..... *- 9 -*
1.4. STATUS OF SPECIES AND CRITICAL HABITAT ..... - 9 -
*1.4.1. Species Lists from NMFS and USFWS* ..... *- 9 -*
*1.4.2. Identification of Listed Species and Critical Habitat* ..... *- 10 -*
*1.4.3. Identification of Designated Critical Habitat* ..... *- 10 -*
*1.4.4. Status of Species* ..... *- 11 -*
1.4.4.1. SR Fall Chinook ..... - 11 -
1.4.4.2. SR Steelhead ..... - 12 -
1.4.4.3. Bull Trout ..... - 15 -
1.4.4.4. Canada Lynx ..... - 17 -
1.4.5.1 SRB Steelhead Critical Habitat ..... - 18 -
1.5 ENVIRONMENTAL BASELINE ..... - 20 -
*1.5.1. Historic Conditions* ..... *- 20 -*
*1.5.2. Current Conditions* ..... *- 20 -*
*1.5.3. Matrix of Pathways and Indicators (MPI)* ..... *- 21 -*
*1.5.4. Baseline Conditions Justification* ..... *- 22 -*
1.6. EFFECTS OF THE ACTION ..... - 24 -
*1.6.1. Approach to the Assessment* ..... *- 24 -*
*1.6.2. Project Effects* ..... *- 25 -*
*1.6.3. Effects on Listed Species* ..... *- 25 -*
*1.6.4. Approach to the Analysis* ..... *- 26 -*
*1.6.5. Exposure Analysis* ..... *- 26 -*
*1.6.6. Response Analysis* ..... *- 27 -*
*1.6.7. Effects on Listed Species* ..... *- 28 -*
1.6.7.1. Elevated Suspended Sediment and Turbidity ..... - 28 -
1.6.7.2. Chemical Contamination ..... - 28 -

*1.6.8. Effects on Critical Habitat* ..... *- 28 -*
*1.6.9. Cumulative Effects* ..... *- 28 -*
*1.6.10. Determination* ..... *- 29 -*
1.7. CONCLUSIONS ..... - 29 -

**2. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976, AS AMENDED - 30 -**

2.1. DESCRIPTION OF THE PROPOSED ACTION ..... - 30 -
2.2. EFFECTS OF THE PROPOSED ACTION ..... - 30 -
*2.2.1. Effects on EFH* ..... *- 30 -*
*2.2.2. Effects on Managed Species* ..... *- 30 -*
*2.2.3. Effects on Associated Species, Including Prey Species* ..... *- 30 -*
*2.2.4. Cumulative Effects* ..... *- 31 -*
*2.3. Proposed Conservation Measures* ..... *- 31 -*
2.4. CONCLUSIONS ON EFH ..... - 31 -

**3. FISH AND WILDLIFE COORDINATION ACT OF 1958, AS AMENDED ..... - 31 -**

**4. MIGRATORY BIRD TREATY ACT OF 1918, AS AMENDED ..... - 31 -**

**5. BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940, AS AMENDED ..... - 31 -**

**6. REFERENCES ..... - 33 -**

**Glossary**

| | |
|---|---|
| BA | Biological Assessment |
| BGPA | Bald and Golden Eagle Protection Act |
| BMP | Best Management Practice |
| CFR | Code of Federal Regulations |
| CFS | Cubic Feet Per Second |
| Corps | U.S. Army Corps of Engineers |
| CR | Clearwater River |
| CRRU | Clearwater River Recovery Unit |
| dbh | Diameter at breast height |
| DPS | Distinct Population Segment |
| EFH | Essential Fish Habitat |
| ESA | Endangered Species Act of 1973, as amended |
| ESU | Evolutionarily Significant Unit |
| FPC | Fish Passage Center |
| HUC | Hydrologic Unit Code |
| ICBTRT | Interior Columbia Basin Technical Recovery Team |
| IMM | Impact Minimization Measure |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| NEPA | National Environmental Policy Act of 1969, as amended |
| NMFS | National Marine Fishery Service |
| PCE | Primary Constituent Element |
| PFMC | Pacific Fishery Management Council |
| PL | Public Law |
| SR | Snake River |
| SRB | Snake River Basin |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |

# 1. Endangered Species Act of 1973: Biological Assessment

## 1.1. Introduction

The U.S. Army Corps of Engineers (Corps) proposes to repair a damaged levee along Lapwai Creek at Sweetwater, Idaho. The levee began to leak during a high water event (1,720 cfs) on March 31, 2011. An impervious core of fine sediment will be used to create an underground curtain down the center of the levee, parallel to the creek in the damaged area to arrest the flow of water through the levee.

## 1.2. Background

### 1.2.1. Project History

Immediately following the devastating flood of January 1965, the Lapwai Creek channel through Sweetwater and the previously constructed levees were completely destroyed. The riprapped levees were destroyed and the channel had been completely washed out in some reaches. The business section of the city was destroyed. Emergency channel work was performed in Sweetwater in 1965. However, the entire emergency work was constructed of stream-run gravels, and was vulnerable to high flows and side-slope deterioration. Later in 1965, the town of Sweetwater and the Nez Perce County Commissioners requested the Corps investigate the possibility of permanent channel improvements.

Although flood water storage was considered as a possible solution, it was determined that storage was not economically justified. The possibility of city relocation was also considered, but was found to be impractical. Single-purpose channel renovation, with levees with riprap, was determined to be the most equitable solution for the city of Sweetwater.

### 1.2.2. Documentation of Relevant Correspondence

This project was discussed informally with Dale Brege of the National Marine Fisheries Service (NMFS) at the very early planning stage of the project in 2011. No previous Endangered Species Act (ESA) consultations are known.

The Corps of Engineers likely assisted in rebuilding the Sweetwater levee after it was destroyed in 1965. Minor maintenance work by Nez Perce County and inspections by Corps personnel have taken place on the levee in subsequent years.

A biological opinion from NMFS was prepared for the replacement of several bridges along Lapwai Creek on 12 November 2010. This document discusses the same ESA listed species as those covered by this assessment. Some species information from that document has been incorporated here.

A site visit was conducted by Ben Tice, Corps Biologist, on 6 October 2011. The damage to the levee could not be seen. There was no damage on the levee surface or side slopes. There reportedly had been some seepage through the levee during high flows in March and April, 2011.

## 1.3. Project Description

### 1.3.1. Authority

The repair of the Sweetwater levee is authorized by Public Law (PL) 84-99. Under this authority an eligible flood protection system can be rehabilitated if damaged by a flood event. The levee would be restored to its pre-disaster status. All systems considered eligible for PL 84-99 rehabilitation assistance have to be in the Corps' Rehabilitation and Inspection Program prior to the flood event, which the levee near Sweetwater was. Acceptable operation and maintenance by the public sponsor are verified by levee inspections conducted by the Corps on a regular basis. The county was and is in compliance with the program requirements.

### 1.3.2. Project Area and Action Area

#### 1.3.2.1. Footprint

The project area is located between the town of Sweetwater, Idaho and Lapwai Creek (Figure 1). The levee separates buildings in the town from the creek. The repair length is approximately 300 feet, directly adjacent to Sweetwater. The Action Area means *all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action*. The Action Area includes the entire Sweetwater levee and the haul route to and from both the fill source (3 miles northeast) and the disposal area (4 miles south east) following existing paved roads (Figure 2).

Figure 1. Location of the Sweetwater levee.

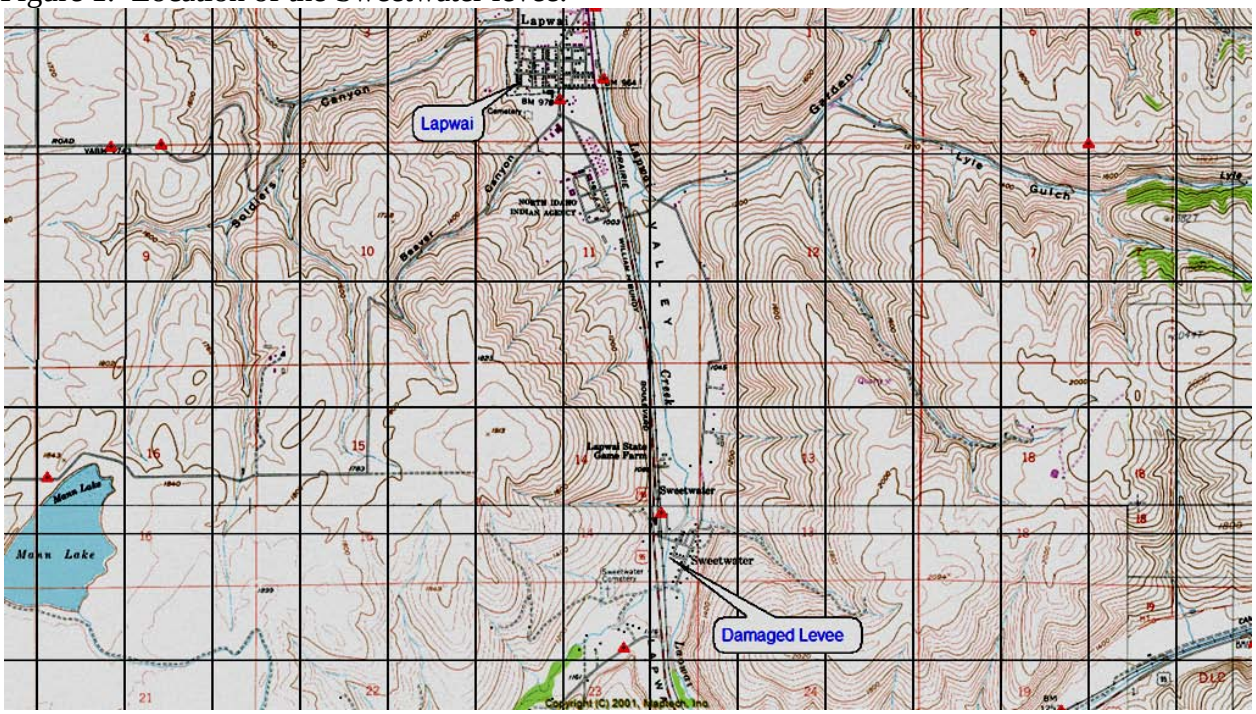
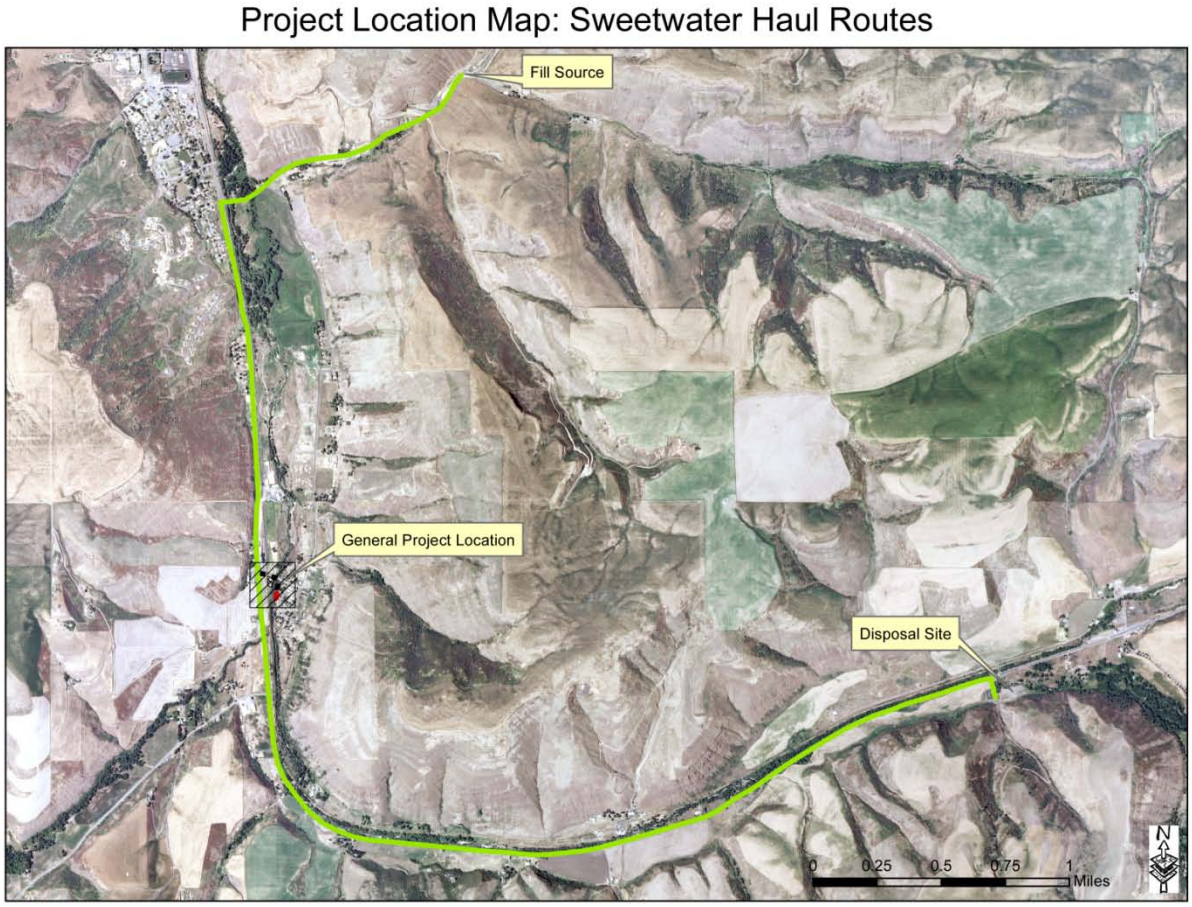


Figure 2. Haul route for repairing the Sweetwater Levee.




#### 1.3.2.2. HUC, Township, Range, Section

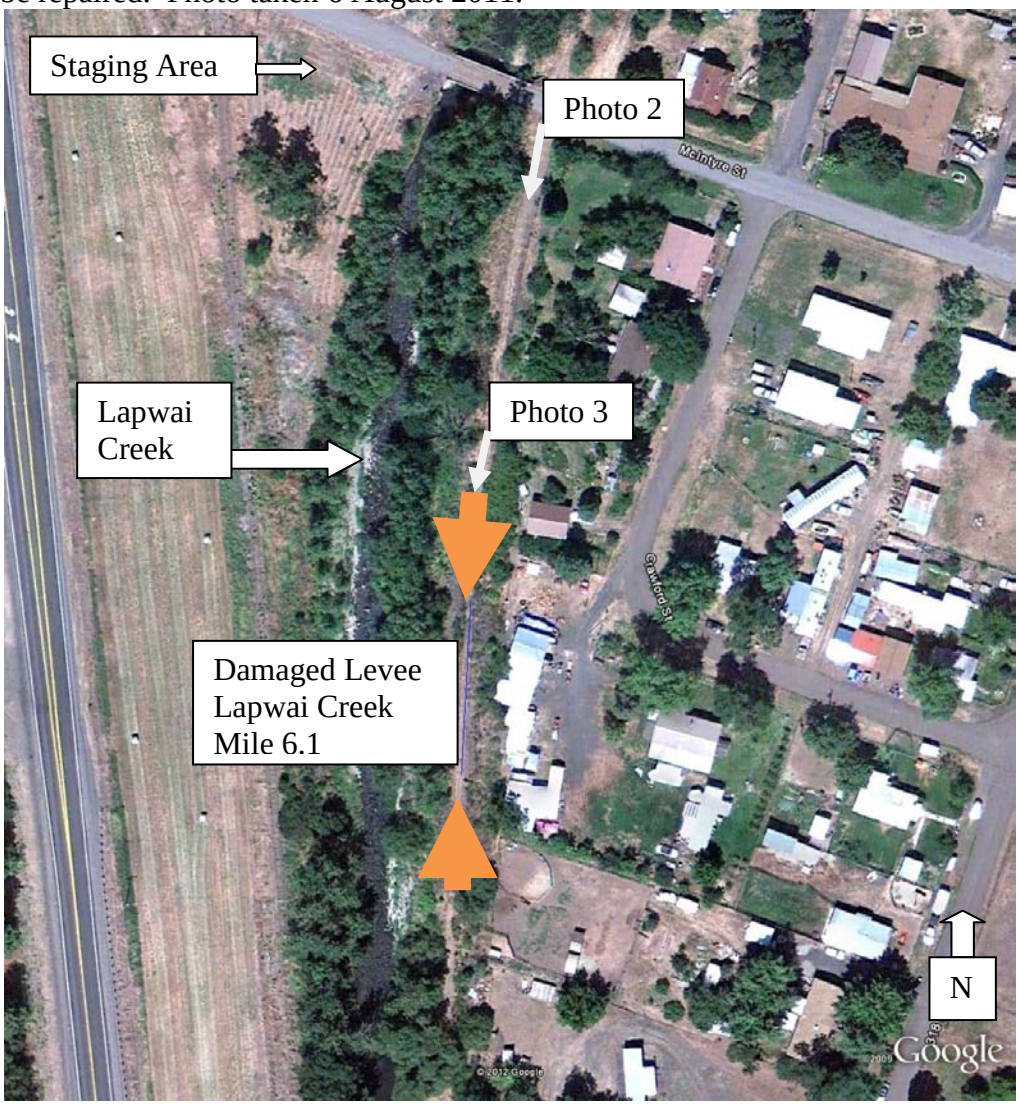
The USGS Hydrological Unit Code (HUC 1706030613 – Lapwai Creek), Section 14, Township 35 North, Range 4 West, Boise Meridian. (Latitude and Longitude 046$^{o}$22'16.29" North, 116$^{o}$47'36.44" West). The project is located in Nez Perce County.

#### 1.3.2.3. Quantification of Area Potentially Affected

Construction of the project will all be conducted on top of the levee with use of approximately 7 miles of existing roads. All repair work will be performed within the existing levee (12 foot width and 300 feet length) footprint. Construction activities will be within 20 to 40 feet from Lapwai Creek. Transport of fill and disposal materials will be along existing roads. There will be approximately 65 truckloads of material hauled from the levee to the disposal site. Twenty loads of material would be hauled from the fine-grained material site to the levee. Finally 52 truckloads of material will be hauled from the disposal site, back to the levee. This project does not include any in-water work. Repair work would be approximately 20 to 40 feet from Lapwai Creek. A band of riparian forest 20 to 40 feet wide separates the top of the levee from the creek (Photo 1). Photos 2 and 3 (both looking south) show the top of the levee. In photo 3, note the

brush that would be removed on the left side of the photo. Photo 4 shows the fine-grained material source. Photo 5 shows the disposal area. Photo 6 shows the equipment staging area.

Photo 1. Sweetwater, Idaho and Lapwai Creek. White (smaller) arrows designate where photos 2 and 3 were taken. Both photos were taken looking south. Orange arrows frame the section to be repaired. Photo taken 6 August 2011.




### 1.3.3. Project Purpose and Objectives

The purpose of this project is repair of the Sweetwater levee to protect the town of Sweetwater from flood damage. The objective is to dig a trench down the center of the levee and replace the material with fine-grained soil which will block the flow of water through the levee during high flows.

Photo 2. Northern end of the Sweetwater levee looking south.

Photo 3. Middle of Sweetwater levee looking south. Note shrubs and small trees on the left side of the photo would be removed to provide access to the damaged portion of the levee.

Photo 4.  Silty-loam material source.

Photo 5.  County-owned material disposal site.

Photo 6. Equipment staging area.

### 1.3.4. Project Description

#### 1.3.4.1. Project Activities

The project would begin with Nez Perce County clearing a few small trees (3 inch dbh) (cottonwood) and shrubs (mostly sumac) in a swath 12 feet wide from the middle section of the top of the levee (photo 3). The brush would be removed with power saws and a front-end loader. The brush and small trees would be checked for bird nests prior to its removal. The Corps will be contacted for further guidance if an active nest is found. The brush would be hauled to an offsite location where it will be burned.

Next an excavator would travel to the area where water is presumed to have flowed through the levee. The excavator would dig a trench down the centerline of the levee to a depth of 10 to 12 feet below the surface of the levee. The sides of the trench would be on a 1 vertical to 1 horizontal slope for safety reasons. Removed material would be loaded onto dump trucks for temporary stockpile or disposal at a county-owned site. Once the trench is dug, geotextile fabric would be used to line the trench to separate the levee material from the fine material to be placed. Next fine fill material would be hauled to the site in dump trucks. The excavator would place the fill in the trench and compact it. Previously removed fill material would be used to fill the remainder of the levee and finish the levee top to the original contour.

#### 1.3.4.2. Project Elements

The project includes the following elements.

1. Brush Removal/disposal
2. Trenching of levee centerline
3. Material stockpile/disposal
4. Placement of geotextile fabric
5. Fine soil delivery/placement
6. Fine soil compaction
7. Regrading levee to original contour

### 1.3.5. Project Timeline

Work will likely be conducted between May 4 and May 15, but could be done any time between May 1 and October 1, 2012. The work would take about two weeks to complete. Flows during this time period are generally below 20 cfs.

### 1.3.6. Operational Characteristics of the Proposed Action

No special operations are necessary once the levee is repaired. Maintenance will include keeping the top of the levee open (clear of woody vegetation) for inspection access and flood-fighting efforts if necessary. This is a requirement of the Corps levee program.

### 1.3.7. Proposed Best Management Practices

The Corps proposes the following best management practices as part of the proposed action.

#### 1.3.7.1. Impact Minimization Measures

The following impact minimization measures will be required by the Corps:

1) Fuel and lubricants will be stored outside the riparian zone.
2) Refueling within the riparian zone will be avoided.
3) Equipment will be staged outside the riparian zone when not in use.
4) Equipment will be inspected for leaks and cleaned prior to entering the work site. Any detected leaks will be repaired before the vehicle enters the work site.
5) A spill prevention and control plan will be developed and discussed with equipment operators prior to beginning work.
6) Will employ silt fences or other appropriate erosion control measures.
7) Vegetation on top of the levee will either be cut prior to the nesting season, or bird nests will be searched for prior to cutting. If an active nest is found the vegetation will not be cut and Corps staff will be notified.

### 1.3.8. Mitigation

No mitigation is proposed as there would be only minimal impacts to the environment from the proposed work.

### 1.3.9. Mitigation Required Under Other Permits

No mitigation under other permits is required.

### 1.3.10. Interdependent and Interrelated Actions

Interdependent actions are those that have no independent utility apart from the proposed action. Interrelated actions are part of a larger action and depend on the larger action for their justification. No interdependent actions have been identified. An interrelated action to the proposed project is separation of the creek from its floodplain. In this case there is a well vegetated floodplain about 20 to 40 feet wide between the creek and the levee. The historic floodplain was likely much wider.

### 1.3.11. Ongoing and Previous Projects in the Action Area

A levee was constructed along Lapwai Creek near Sweetwater, Idaho many years ago (sometime prior to 1965). The original levee was destroyed during major flooding in 1965. The levee was rebuilt soon after. The levee core was rebuilt with material removed from the streambed. Some small riprap appears to have been added to the creek side of the levee. Repairs to the levee may have occurred around 1971.

The Lewiston Orchards Project was originally constructed by private interests, beginning in 1906. Most of the project features have been rehabilitated or rebuilt by the Bureau of Reclamation. The project facilities include four diversion structures (Webb Creek, Sweetwater, West Fork, and Captain John), feeder canals, three small storage reservoirs (Soldiers Meadow, Mann Lake, and Lake Waha), a domestic water system including a water filtration plant which is no longer in use, and a system for distribution of irrigation water. The domestic water supply which initially was provided by surface water resources now comes entirely from groundwater resources developed by the Lewiston Orchards Irrigation District. A full irrigation water supply is delivered to project lands totaling over 3,900 acres and a dependable domestic water system is now provided for some 16,000 residents. This irrigation system removes some water from the Lapwai Creek drainage. This negatively affects fish habitat conditions.

## 1.4. Status of Species and Critical Habitat

### 1.4.1. Species Lists from NMFS and USFWS

The Corps reviewed the current list of threatened and endangered species that pertain to the proposed project area under the jurisdiction of NMFS[1] and USFWS[2] for Nez Perce County, on February 7, 2012.

[1] http://www.nmfs.noaa.gov/pr/species/esa/fish.htm

Snake River fall Chinook salmon and Snake River Basin steelhead are likely to occur within or downstream of the action area. The action is within designated critical habitat for ESA-listed Snake River Basin fall Chinook salmon and Snake River Basin steelhead, and within Essential Fish Habitat for Chinook and coho salmon.

### 1.4.2. Identification of Listed Species and Critical Habitat

Table 1. Federal Register notices for final rules that list threatened and endangered species, designated critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: 'T' means listed as threatened under the ESA; 'E' means listed as endangered; "P" means proposed for listing or designation.

| Species | Listing Status | Critical Habitat | Protective Regulations |
|---|---|---|---|
| **Chinook salmon (*Oncorhynchus tshawytscha*)** | | | |
| Snake River fall-run | T 6/28/05; 70 FR 37160 | 12/28/93; 58 FR 68543 | 6/28/05; 70 FR 37160 |
| **steelhead (*O. mykiss*)** | | | |
| Snake River Basin | T 1/05/06; 71 FR 834 | 9/02/05; 70 FR 52630 | 6/28/05; 70 FR 37160 |
| **bull trout (*Salvelinus confluentus*)** | | | |
| Columbia River DPS | T 6/10/98; 63 FR 31647 31674 | 9/02/05; 70 FR 56211 56311: 10/18/10; 75 FR 63898 | |
| **Canada lynx (*Lynx canadensis*)** | | | |
| Contiguous U.S. DPS | T 3/24/00; 63 FR 16051 16086 | 2/25/09; 74 FR 8615 8702 | |
| **Spalding's catchfly (*Silene spaldingii*)** | | | |
| | T 10/10/01; 66 FR 51597 51606 | | |

### 1.4.3. Identification of Designated Critical Habitat

Critical habitat has been designated for Snake River fall Chinook, Snake River steelhead, and Columbia Basin bull trout. Critical habitat has also been designated for Canada lynx, but there is none designated near the action area.

The only ESA-listed species expected to be present in the action area during the work window is Snake River Basin steelhead. Snake River fall Chinook salmon use only the lower reaches of Lapwai Creek, downstream of the action area, for juvenile rearing. Snake River fall Chinook spawning occurs in the mainstem Clearwater River both upstream and downstream of the mouth of Lapwai Creek.

Hatchery origin spring/summer Chinook salmon are found throughout the Clearwater River drainage including Lapwai Creek. Wild spring/summer Chinook are thought to be extirpated from the Clearwater drainage due to the Lewiston Dam eliminating their passage on the lower

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[2] Idaho (http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf )

- Nez Perce County

mainstem Clearwater River at Lewiston, Idaho, from 1927 to 1973. Consequently, spring/summer Chinook salmon are not listed under the ESA in the Clearwater River drainage. Therefore, spring/summer Chinook will only be considered in this assessment to fulfill the consultation requirement of section 305(b) of the Magnuson-Stevens Act (MSA) and Essential Fish Habitat (EFH).

### 1.4.4. Status of Species

#### 1.4.4.1. SR Fall Chinook

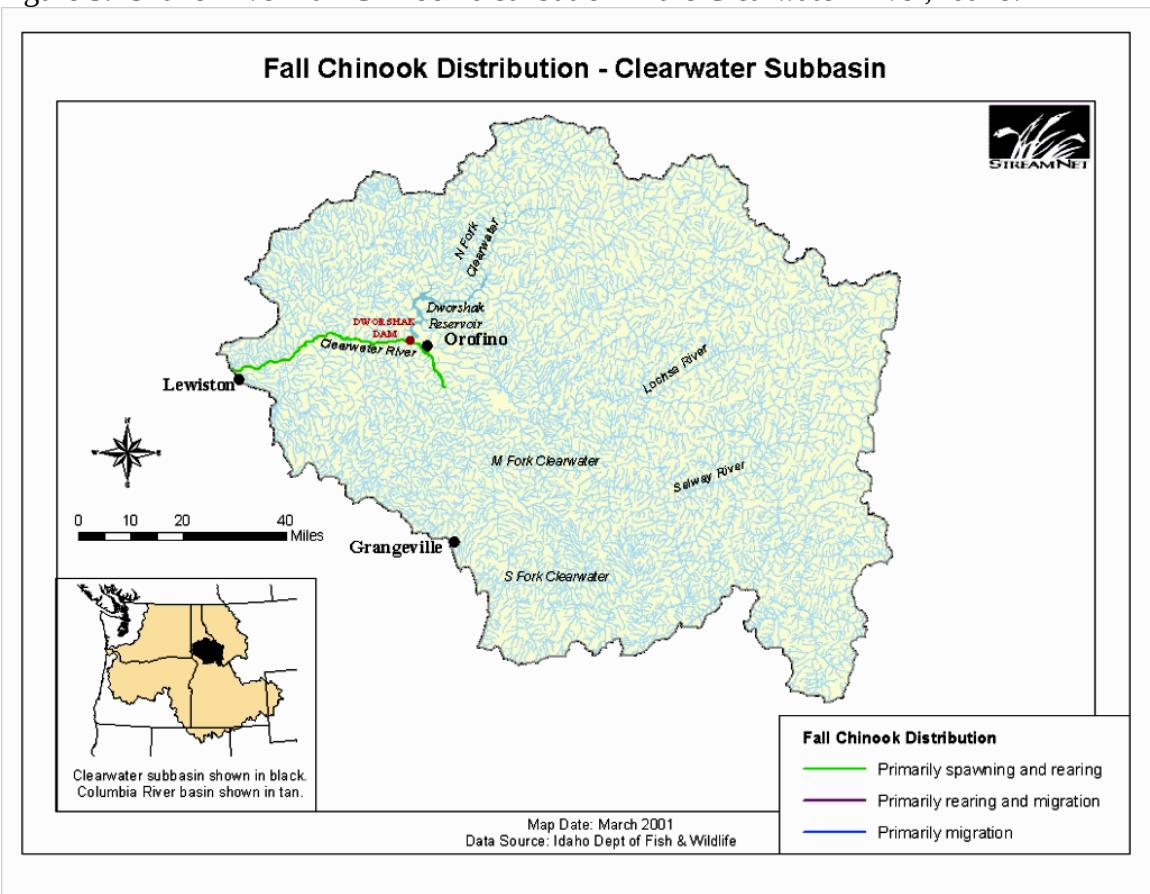
##### 1.4.4.1.1. Listing History

The NMFS listed Snake River (SR) fall-run Chinook salmon as threatened on April 22, 1992 (57 FR 14653) and their threatened status was reaffirmed on June 28, 2005 (70 FR 37160). The designated habitat for SR fall Chinook salmon consists of river reaches of the Columbia, Snake and Salmon Rivers and all tributaries of the Snake and Salmon Rivers presently or historically accessible to SR fall Chinook salmon.

##### 1.4.4.1.2. Effect Determination Summary

Snake River fall Chinook salmon spawning and rearing occurs only in larger, mainstem rivers such as the Salmon, SR, and Clearwater River (CR) (Figure 3). Cold-water releases from Dworshak Dam, aimed at augmenting flows for adult migration, may cause stunted growth rates in juveniles in the late summer and early fall, causing these fish to overwinter. Overwintering and early rearing of fall Chinook salmon in Lake Wallula backwater areas has been documented and it would be logical to assume that the potential for overwintering and rearing exists in the lower SR as well. Young Chinook could rear in the lower reaches of Lapwai Creek, however, none are likely to be found near the project area. The proposed project would have no effect on SR fall Chinook or their designated critical habitat, so they will not be discussed further in this biological assessment.

Figure 3. Snake River Fall Chinook distribution in the Clearwater River, Idaho.




### 1.4.4.2. SR Steelhead

#### 1.4.4.2.1. Listing History

Snake River Basin (SRB) steelhead, were listed as a threatened ESU on August 18, 1997 (62 FR 43937); a revised listing as a Distinct Population Segment (DPS) was issued on January 5, 2006 (71 FR834). This DPS includes all natural-origin populations of steelhead in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho. One of the hatchery stocks in the basin is listed (originating from Dworshak Reservoir) and most hatchery stocks are included in the listing under the 2004 NMFS hatchery stock policy (June 14, 2004, 69 FR 33102).

#### 1.4.4.2.2. Life History/Biological Requirements

The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) identified six major population groups in the DPS: (1) The Grande Ronde River system; (2) the Imnaha River drainage; (3) the CR drainage; (4) the Salmon River; (5) Hells Canyon; and (6) the lower Snake. The SR historically supported more than 55% of total natural-origin production of steelhead in the Columbia River Basin. It now has approximately 63% of the basin's natural production potential.

SR steelhead migrate a substantial distance from the ocean (up to 940 miles) and use high elevation tributaries (up to 6,562 feet above sea level) for spawning and juvenile rearing. SR steelhead occupy habitat that is considerably warmer and drier (on an annual basis) than other steelhead DPS. Managers classify up-river summer steelhead runs into two groups based primarily on ocean age and adult size upon return to the Columbia River. A-run steelhead are predominately age-1-ocean fish while B-run steelhead are larger, predominated by age-2-ocean fish. SRB steelhead are generally classified as summer run, based on their adult run timing pattern. They enter fresh water from June to October and, after holding over the winter, spawn during the following spring from March to May. SRB steelhead usually smolt as 2- or 3-year-olds; outmigration occurs during the spring and early summer periods, coinciding with snowmelt in the upper drainages. Median and 90% passage dates at Lower Granite Dam for PIT tagged groups from the Imnaha River were: wild steelhead trout - May 2 and May 9; and hatchery steelhead trout (FPC 2012) - May 31 and June 16. Hatchery steelhead trout displayed small peaks in arrival timing at Lower Granite and Little Goose Dams in mid-May to mid-June; however, the general trend at each dam was a long protracted emigration (Blenden et al. 1996).

A-run populations are found in the tributaries to the lower Clearwater River, the upper Salmon River and its tributaries, the lower Salmon River and its tributaries, the Grand Ronde River, Imnaha River, and possibly the SR mainstem tributaries below Hells Canyon Dam. B-run steelhead occupy four major subbasins, including two on the CR (Lochsa and Selway) and two on the Salmon River (Middle Fork and South Fork Salmon); areas that are for the most part not occupied by A-run steelhead. Some natural B-run steelhead are also produced in parts of the mainstem Clearwater and its major tributaries. There are alternative escapement objectives of 10,000 and 31,400 (Idaho) for B-run steelhead. The B-run steelhead, therefore, represent at least one-third and as much as three-fifths of the production capacity of the DPS (NMFS).

Steelhead adult migration preferred temperatures are between approximately 39.2°F and 48.2°F (4°C and 9°C)(Bell 1990). Steelhead preferred temperatures fall between 50°F and 55.4°F (10 °C and 13°C), while the upper lethal limit for steelhead is 75°F (23.9 °C) (Spence et al. 1996).

With one exception (the Tucannon River production area), the tributary habitat used by SRB steelhead DPS is above Lower Granite Dam. Annual return estimates are limited to counts of the aggregate return over Lower Granite Dam. Returns to Lower Granite Dam fluctuated widely in the 1980s and remained at relatively low levels through the 1990s. The 2001 run size at Lower Granite Dam was substantially higher relative to the 1990s. The 2002 through 2005 return years have declined annually, but continue to remain higher than the 1990s return years. Counts of wild steelhead, which began in 1994, show a marked increase in 2001 and a decreasing trend through 2006.

#### 1.4.4.2.3. Distribution

The SRB steelhead DPS is distributed throughout the Snake River drainage system, including tributaries in southwest Washington, eastern Oregon and north/central Idaho (Good et al. 2005). The SRB steelhead do not occur above Dworshak Dam. The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) identified 26 populations in the following six major population groups for this species: Clearwater River, Grande Ronde River, Hells Canyon, Imnaha River,

Lower Snake River, and Salmon River. The North Fork Clearwater population in is extirpated. The ICBTRT noted that SR steelhead remain spatially well distributed in each of the six major geographic areas in the SRB (Good et al. 2005). Environmental conditions are generally drier and warmer in these areas than in areas occupied by other steelhead species in the Pacific Northwest. SRB steelhead were blocked from portions of the upper Snake River beginning in the late 1800s and culminating with the construction of Hells Canyon Dam in the 1960s.

#### 1.4.4.2.4. Factors for Decline

##### 1.4.4.2.4.1. Historical Pressures on the Species

Historic fishing pressure began the decline of steelhead populations over 100 years ago. Construction of dams, roads, railroads, and levees/shoreline protection, as well as irrigation withdrawals has altered the rearing habitat of juvenile salmon and the migratory habitat of juveniles and adults. Increased predation on juvenile salmonids due to the habitat changes is also a contributor to the declining salmonid population. Prior to the construction of McNary Dam, a large percentage of the shoreline consisted of shallow water with a small particle size substrate. Today, much of the shoreline consists of deeper water bordered by riprap. This change in habitat type is likely a factor in the decline of the Columbia Basin salmonid populations. A steelhead snag fishery in Mission Creek (a tributary of Lapwai Creek) operated until about 30 years ago (Johnson and Stangl 2000). This likely had some effect on local steelhead numbers.

##### 1.4.4.2.4.2. Current Pressures on the Species

Hydrosystem projects create substantial habitat blockages in this ESU; the major ones are the Hells Canyon Dam complex (mainstem Snake River) and Dworshak Dam (North Fork Clearwater River). Minor blockages are common throughout the region. Habitat in the SR Basin is warmer and drier and often more eroded than elsewhere in the Columbia River Basin or in coastal areas.

##### 1.4.4.2.4.3. Limiting Factors for Recovery

The reduced amount of suitable habitat may be the main factor limiting steelhead recovery. Suitable habitat includes relatively low water temperature, sufficient flow, clean substrate, and complex structure for cover.

#### 1.4.4.2.5. Local Empirical Information

There is little available information on historic fish abundance in the Lapwai Creek drainage. Based on the channel morphology, anecdotal accounts of numerous steelhead killed in a flash flood (Lewiston Morning Tribune, April 24 and 25, 1986), and operation of a steelhead snag fishery in Mission Creek until about 30 years ago (Johnson and Stangl 2000), the Lapwai Creek drainage likely produced larger numbers of anadromous fish in the past. Johnson and Stangl (2000) describe Mission Creek, which is upstream of and slightly smaller than Sweetwater Creek, as providing spawning and rearing habitat for steelhead from its mouth upstream to a natural falls at stream mile 8.7. They also note that it historically was a major spawning area for

anadromous fish. Recent studies by the Nez Perce Tribe (Chandler 2004; Chandler and Richardson 2006) document the presence of steelhead in Upper Lapwai, Mission, Webb, and Sweetwater Creeks, and their studies also document the presence of *O. mykiss* in the stream sections above the Sweetwater Dam.

The ICBTRT identified Lapwai Creek as a major spawning area within the Lower Mainstem Clearwater River population. Chandler and Richardson (2005) found water temperatures at all four of their Lapwai Creek sampling sites to exceed temperature criteria for juvenile salmonid rearing. They also noted habitat alterations from channel confinement, residential development, cattle and horse grazing, irrigation diversions, fish passage barriers, and agricultural activity. However, Chandler and Richardson (2005) found steelhead/resident *O. mykiss* in three of four sites sampled in Lapwai Creek.

##### 1.4.4.2.5.1. Current Local Population Information

Steelhead historically and currently use Lapwai Creek for spawning and rearing (Chandler and Parot 2003; Kucera et. al.1983). Chandler and Parot (2003) indicated that there can be substantial timing variability for spawning from year to year. A-run steelhead adults have been noted spawning in Lapwai Creek from February to May with juveniles emerging from redds from early April to early July. Nez Perce Tribe surveys conducted in summer 2003 in Lapwai Creek between the city of Winchester and the mouth discovered steelhead in 29 of the 35 sites electrofished. Age class composition of Lapwai Creek steelhead surveys were primarily composed of sub-yearling parr with a moderate number of residual yearlings and a few sexually mature adults.

Within the Lower Mainstem Clearwater River population, the ICBTRT identified six major spawning areas (i.e., Potlatch, Lower South Fork Clearwater Tributaries, Big Canyon, Lapwai, Clear, and Lawyer) Portions of the Potlatch River and Big Canyon Creek basins, Upper Lapwai Creek, and Mission Creek, have relatively high steelhead abundance that is indicative of productive streams.

##### 1.4.4.2.5.2. Ongoing Monitoring

Passage of adult and juvenile steelhead is monitored at the Snake River dams. There are also several other monitoring programs by other Federal, state and tribal organizations throughout the watershed.

#### 1.4.4.3. Bull Trout

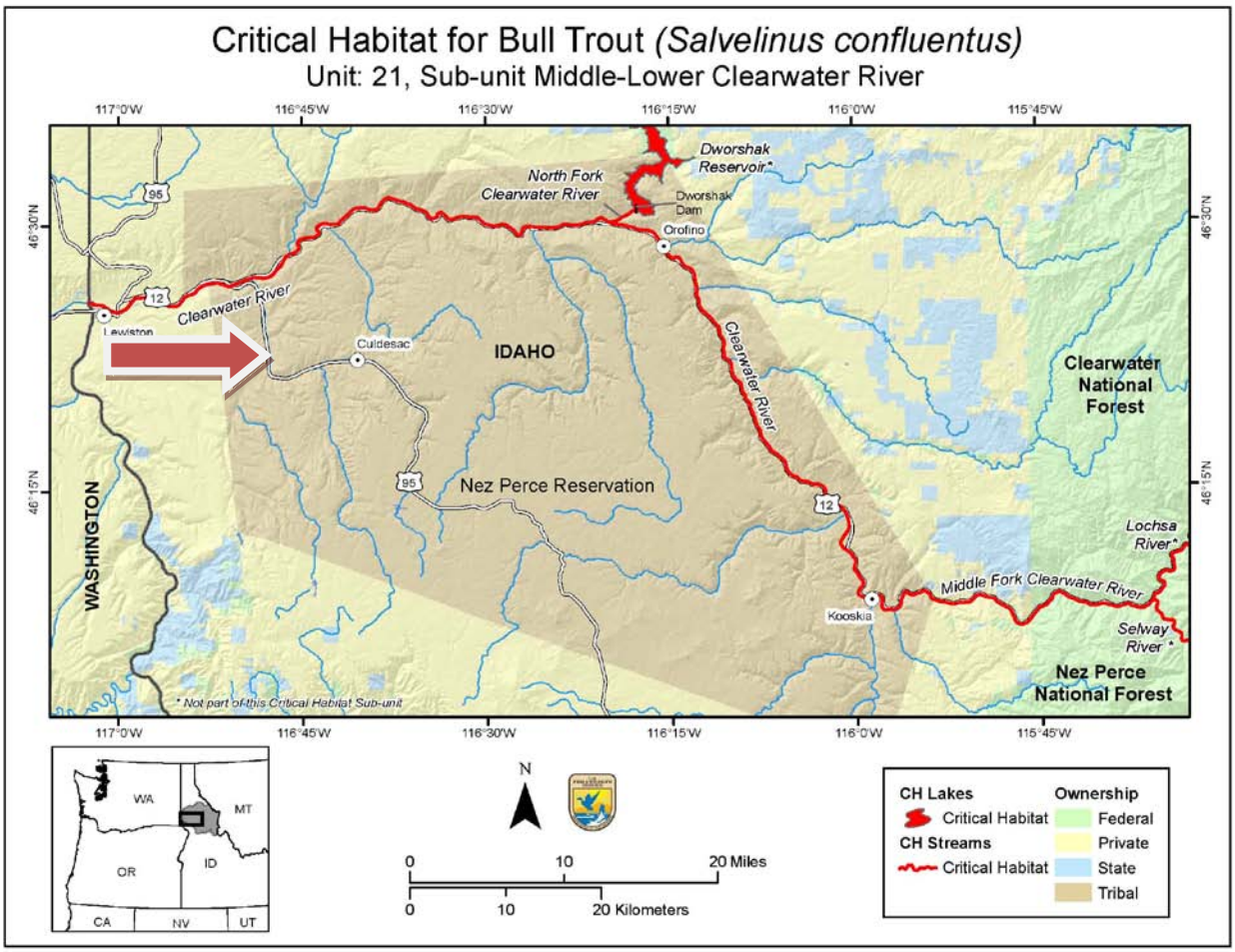
##### 1.4.4.3.1. Listing History

The USFWS issued a final rule listing the Columbia River population of bull trout as a threatened species on June 10, 1998 (63 FR 31647). Bull trout are currently listed throughout their range in the coterminous United States as a threatened species. In the Columbia River Basin, bull trout historically were found in about 60% of the basin. They now occur in less than half of their historic range. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada. The Clearwater River Recovery Unit (CRRU) 21 forms part of the range

of the Columbia River DPS. The CRRU includes the entire Clearwater River upstream from the confluence with the Snake. Bull trout are distributed throughout most of the large rivers and associated tributary systems within the CRRU, and they exhibit adfluvial, fluvial and resident life history patterns. The CRRU consists of 7 core areas, with a total of 45 local populations and 27 potential local populations distributed among the core areas (USFWS 2002).

The CRRU is located east of Lewiston, Idaho, and extends from the Snake River confluence at Lewiston on the west to headwaters in the Bitterroot Mountains along the Idaho–Montana border on the east in Nez Perce, Latah, Lewis, Clearwater, Idaho, and Shoshone Counties. In the CRRU, 1,679.0 miles of streams and 16,610.1 acre of lake and reservoir surface area are designated as critical habitat. Lapwai Creek is not included in the designation (Figure 4).

Figure 4. Bull trout critical habitat in the Clearwater River sub-unit. (Note arrow depicts the project location).




#### 1.4.4.3.2 Effect Determination Summary

Bull trout are not known to occur in Lapwai Creek near the project area, but may exist in its headwaters at Winchester Lake (Streamnet.org 2012). The proposed project will have no effect on bull trout or their designated critical habitat so they will not be discussed further in this BA.

#### 1.4.4.4. Canada Lynx

##### 1.4.4.4.1. Listing History

The Canada lynx was listed as a threatened species in 2000. In 2003, in response to a court-order to reconsider the listing, USFWS clarified their final listing decision.

##### 1.4.4.4.2. Effect Determination Summary

In western states, most lynx occurrences (83%) were associated with Rocky Mountain Conifer Forest, and most (77%) were within the4,920-6,560 ft (1,500-2,000 m) elevation zone (McKelvey et al. 1999). Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al. 2000). There are no known local populations or individuals of Canada lynx in the action area. Lynx are not likely to be found in the developed area around Sweetwater and at this low elevation (1,100 feet). No critical habitat is designated in Nez Perce County. The proposed project will have no effect on Canada lynx or its designated critical habitat.

#### 1.4.4.5. Spalding's Catchfly

##### 1.4.4.5.1. Listing History

Spalding's catchfly was listed as a threatened species on October 10, 2001. A final recovery plan for this plant was released October 15, 2007.

Spalding's catchfly is native to portions of Idaho, Montana, Oregon, Washington, and British Columbia, Canada. Fifty-eight percent of Spalding's catchfly populations occur either entirely or partially on private land; the remaining populations occur on federal lands (U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Refuges, National Park Service, and Department of Defense), and state and tribal lands.

##### 1.4.4.5.2. Effect Determination Summary

Spalding's Catchfly is endemic to the Palouse region of south-east Washington and adjacent Oregon and Idaho, and is disjunct in northwestern Montana and British Columbia, Canada. This species is found predominantly in the Pacific Northwest bunchgrass grasslands and sagebrush-steppe, and occasionally in open-canopy pine stands.

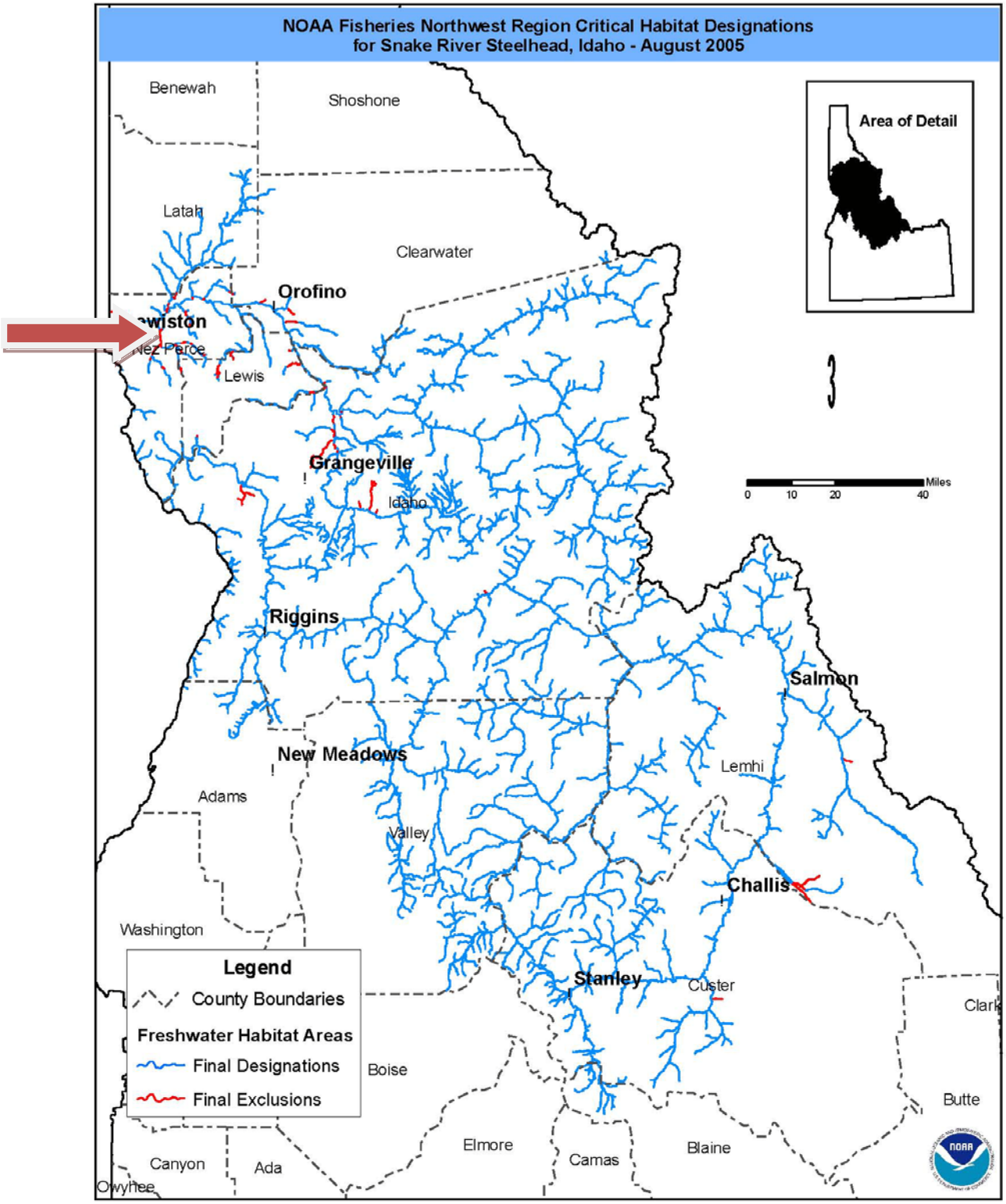
There are no known local populations of Spalding's catchfly in the action area. The habitat types this species needs is not present. The proposed project will have no effect on Spalding's Catchfly. No critical habitat has been designated for this species.

#### 1.4.5.1 SRB Steelhead Critical Habitat

##### 1.4.5.1.1 Geographical Extent of Designated Critical Habitat

NMFS designated critical habitat for SRB steelhead in the Hells Canyon, Imnaha River, Lower Snake/Asotin, Upper Grande Ronde River, Wallowa River, Lower Grande Ronde, Lower Snake/Tucannon, Upper Salmon, Pahsimeroi, Middle Salmon-Panther, Lemhi, Upper Middle Fork Salmon, Lower Middle Fork Salmon, Middle Salmon-Chamberlain, South Fork Salmon, Lower Salmon, Little Salmon, Upper Selway, Lower Selway, Lochsa, Middle Fork Clearwater, South Fork Clearwater, and Clearwater subbasins, and the Lower Snake/Columbia River migration corridor (NMFS 2005). There are 289 watersheds within the range of this DPS. Fourteen watersheds received a low conservation value rating, 44 received a medium conservation value rating, and 231 received a high conservation value rating. The lower Snake/Columbia River rearing/migration corridor downstream of the spawning range is considered to have a high conservation value and is the only portion designated in 15 of the high value watersheds. Of the 8,225 miles of habitat areas eligible for designation, 8,049 miles of stream and 4 square miles of lake are designated. Figure 5 shows the designated and excluded stream reaches in Idaho. The project area is within an excluded area.

Figure 5. Snake River Steelhead designated critical habitat in Idaho. Note project area (at arrow) is colored red. This is a reach that was excluded from the critical habitat designation.



## 1.5 Environmental Baseline

This section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem within the action area. The environmental baseline is a "snapshot" of a species' health at a specified point in time. It does not include the effects of the action under review in the consultation. The geographic area for which the environmental baseline is being established is discussed in the Action Area section of this document.

The baseline includes State, tribal, local, and private actions already affecting the species or that will occur contemporaneously with the consultation in progress. Unrelated Federal actions affecting the same species or critical habitat that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that may benefit listed species or critical habitat.

### 1.5.1. Historic Conditions

Dam development in the Columbia River Basin began in the 1800s. Mainstem dam development began with Rock Island Dam (a non-Federal project) on the Columbia River in 1933 and continued through 1975 with the completion of Lower Granite on the Snake River. Bonneville Dam was the first Federal dam on the mainstem. It was completed in 1938. The major period of construction on the mainstem Columbia and Snake Rivers was from the 1950s through the 1970s. Federal agencies have built 30 major dams with hydropower facilities on the Columbia and its tributaries. Overall, there are some 255 Federal and non-Federal projects that have been constructed in the basin.

Much of Lapwai Creek was straightened and bordered by levees near residential areas, including the action area, many years ago. Riparian vegetation was removed from several areas (photo 7).

### 1.5.2. Current Conditions

Columbia and Snake River dams still exist and affect fish populations. Anadromous fish populations have been depressed for decades. In recent years there has been somewhat of a rebound in fish numbers, including steelhead. Within and around the action area the Nez Perce Tribe conducts habitat restoration projects that help the local steelhead population.

Lapwai Creek in the action area now has a well developed riparian forest along much of its length (compare the vegetation seen in photo 1 to the absence of vegetation in photo 7). However, the creek is still confined and separated from its floodplain. This has a negative effect on habitat conditions.

Photo 7. Historic photo of the Sweetwater levee. Notice channel straightening and tree removal.

### 1.5.3. Matrix of Pathways and Indicators (MPI)

A key document developed by NMFS in collaboration with the USFWS, Forest Service, and Bureau of Land Management as a method to evaluate effects of human activities on fish and their habitat is the September 4, 1996, *Making Endangered Species Act (Act) Determinations of Effect for Individual or Grouped Actions at the Watershed Scale*. The document is based on a "Matrix of Pathways and Indicators" (MPI) (NMFS 1996), a tool for characterizing environmental baseline conditions for anadromous fish habitat and predicting the effect of human activities on these conditions. The matrix of pathways and indicators provides generalized ranges of functional values for aquatic, riparian, and watershed elements that collectively describe properly functioning conditions for aquatic habitat essential to the long-term survival of anadromous fish.

The MPI is used to summarize important environmental parameters and levels of condition for each. USFWS adopted a similar strategy in 1997 based on NMFS' matrix (USFWS 1998). The NMFS matrix is divided into six overall pathways (major rows in the matrix):

- Water Quality
- Channel Condition and Dynamics
- Habitat Access
- Flow/Hydrology
- Habitat Elements
- Watershed Conditions

Each represents a significant pathway by which actions can have potential effects on Snake River Basin steelhead.

There has not been an on-site evaluation of current habitat indicators using the MPI within the action area for this project. However, after review of the description of the proposed action, and using the matrix to determine the potential impacts of the proposed action, the Corps has determined that the proposed action will not restore nor degrade the function of habitat indicators of the environmental baseline, but will maintain existing baseline conditions within the action area. For the purposes of the MPI checklist, "maintain" means that the function of an indicator does not change (i.e., it applies to all indicators regardless of functional level).

Table 2. Checklist for Documenting Environmental Baseline and Effects of Proposed Action on Relevant Anadromous Salmonid Habitat Indicators.

| PATHWAYS | ENVIRONMENTAL BASELINE | | | EFFECTS OF THE ACTION | | |
|---|---|---|---|---|---|---|
| **Indicators** | **Properly Functioning** | **At Risk** | **Not Properly Functioning** | **Restore** | **Maintain** | **Degrade** |
| 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 Conditions: Road Dens. & Loc. | | X | | | X | |
| Disturbance History | | | X | | X | |
| Riparian Reserves | | X | | | X | |
| Watershed Name: Lapwai Creek | | | Location: Sweetwater, ID | | | |

### 1.5.4. Baseline Conditions Justification

The water quality: Temperature parameter is “not properly functioning.” Water temperatures within the action area sometimes exceed water quality standards for temperature during the summer months. The project would not have any effect on water temperature.

The water quality: Sediment parameter is assumed to be “at risk.” Often in straightened streams accelerated bank erosion can cause increased levels of fine sediment in the substrate. A silt fence will be placed between the work site and the creek to stop all fine sediment from the project from reaching the creek. The project would not have any effect on sediment in the creek.

The water quality: Chemical Contaminants/Nutrients is assumed to be “at risk.” Development along streams often contributes to increased contaminants and nutrients in the streams. The project would not affect the water quality of the creek.

The habitat access: Physical Barriers is assumed to be “at risk” near the action area due to lower than normal flows. The proposed project would not add any physical barriers.

The habitat elements: Substrate parameter is “properly functioning.” The streambed cobble and gravel appears to be of sufficient size for steelhead spawning and early rearing.

The habitat elements: Large Woody Debris parameter is “not properly functioning.” The straightened channel is not very conducive of capturing very much large woody debris, though there does now appear to be a relatively good source for woody debris recruitment. The project would not change the amount of large woody debris along the shoreline.

The habitat elements: Pool Frequency parameter is “not properly functioning.” The number of high quality pools is likely limited due to the straightened channel, limited large woody debris and low flows. The project would not change the pool frequency.

The habitat elements: Pool Quality parameter is “not properly functioning.” Pool characteristics have been altered by working in and straightening the creek. The project would not affect the pool quality of the creek.

The habitat elements: Off-Channel Habitat parameter is “not properly functioning.” Little to no off channel habitats exists along the creek. The proposed project would not change the amount of off-channel habitat in the creek.

The habitat elements: Refugia parameter is “not properly functioning.” Refugia sources such as large woody debris are limited. The project would not modify the available refugia in the creek.

The channel condition and dynamics: Width to Depth Ratio parameter is assumed to be “at risk”. The straightening and armoring of the banks likely altered the historic width to depth ratio. The project would not have any effect on the creek’s width to depth ratio.

The channel condition and dynamics: Streambank Condition parameter is “at risk.” Levees line portions of Lapwai Creek. Large rock was used to reduce bank erosion which has modified the condition of the creek banks. The project would not affect the streambank.

The channel condition and dynamics: Floodplain Connectivity parameter is “not properly functioning.” Levees were constructed to confine the creek, not allowing the creek to access much of its floodplain. The project would not change the creek’s floodplain connectivity.

The flow/hydrology: Peak/Base Flows parameter is "not properly functioning." The creek is affected by irrigation withdraws in the upper tributaries to Lapwai Creek. The hydrograph has been modified from its historic condition. Base flows are lower than historic levels. Flow data has been collected on Lapwai Creek since 1975. Annual peak flows have occurred in every month from December (1975, 1997 and 1991) to June (2010). Average daily flows for May ranged from about 40 cfs in 2007 to 250 cfs in 2011. A peak flow of 1910 cfs occurred in May 1979. Average daily flows for July are predominately below 10 cfs. The levee would overtop at a flow above 5000 cfs. The project would not have any effect on creek flows.

The flow/hydrology: Drainage network increase parameter is "at risk." Urban development with its impervious surfaces such as roads has increased local runoff. Irrigation projects have rerouted some flows from the upper drainage into adjoining basins. The project would not modify the watershed's drainage network.

The watershed conditions: Road Density and Location parameter is "at risk." The road network has expanded over the past century. The project would not change the road density of the watershed.

The watershed conditions: Disturbance History parameter is "not properly functioning." Lapwai Creek was dramatically altered with construction of levees along its lower reaches. Heavy equipment was used directly in the creek to push up levees. Irrigation projects have also greatly affected the basin. The project would not affect the disturbance history of the watershed.

The watershed conditions: Riparian Reserves parameter is "at risk." In general there is likely less riparian forest along the creek than historic levels. Roads and levees have decreased the area where trees can grow. In many places along its length no riparian trees are present. The project would not impact the riparian reserves of the creek corridor.

## 1.6. Effects of the Action

This section includes an analysis of general effects of the proposed action, as well as specific effects on the species and Primary Constituent Elements (PCE) of critical habitat. Effects from any interrelated and interdependent activities are also discussed.

### 1.6.1. Approach to the Assessment

The Corps approached its analysis of potential effects through a series of steps, modeled after the approach NMFS typically uses in its analyses.

1. The first step is designed to identify aspects of proposed actions that may have direct and indirect effect on the physical, chemical, and biotic environment of an action area. As part of this step, the spatial extent of these direct and indirect effects, including changes in that spatial extent over time are identified.

2. The second step will determine if there is an occurrence (either spatially, temporally, or both) of ESA-listed species or designated critical habitat to potential stressors that may result from the proposed action. This is based on local distribution information and timing of the proposed action.

3. Once occurrence is determined, then the potential for exposure to potential stressors is analyzed through a series of steps.

4. If it is determined that a given species or critical habitat for a given species may potentially be exposed to potential stressors, then an analysis of a potential response must take place. Once we identify which listed resources may be exposed potential stressors and the nature of that exposure, an examination of the scientific and commercial data available is used to determine whether and how those listed resources are likely to respond given their exposure.

5. The exposure and response analyses are used to assess the likelihood of listed individuals and their habitat to be adversely affected from the stressors of the action.

### 1.6.2. Project Effects

The proposed project is separated from the creek by a relatively healthy riparian forest. Silt fencing will be used to keep sediment from being deposited into the floodplain (inside the levee). The only potential for adverse effects is accidental spillage of petroleum products. Measures such as spill response kits will be available to minimize impacts should this occur.

Factors such as these must be taken into account when analyzing the potential adverse affects on each species or their critical habitat, and ultimately making an effects determinations.

### 1.6.3. Effects on Listed Species

The main concern that may occur from the proposed project is the accidental spill of fuel, lubricants, hydraulic fluid, or similar contaminants into the riparian zone or runoff into the water. Any such spills could adversely affect habitat, injure or kill aquatic food organisms, or directly impact rearing steelhead. All fueling or staging will not be allowed within 50 feet of surface waters and equipment used must be clean and free of fuel and lubricant leaks prior to beginning work to prevent toxic materials from entering surface water. It is unlikely that machine fluids (not including fuels) will be present on-site or spilled in volumes or concentrations large enough to harm salmonids in or downstream from the project site. If a spill were to occur, it would be at least 20 feet away from the creek and is likely to be contained and cleaned up before it contacted water.

Heavy equipment (excavator, dump trucks) operation adjacent to Lapwai Creek will create noise and vibration. This noise is not expected to influence fish within the creek. Machinery operation adjacent to the stream will be intermittent with actual activity near the stream occurring only in daylight hours on any given day.

### 1.6.4. Approach to the Analysis

The approach to the effects analysis used the following questions to determine the extent, if any, of potential effects, and justify the effects determination for Snake River steelhead. There would be no effect on the other ESA-listed species.

1. Is the proposed action likely to produce potential stressors or subsidies that would reasonably be expected to act directly on individual organisms or to have direct or indirect consequences (positive or negative) on the environment?

    a. An answer of "no' to #1 would result in a "no effect" determination by the Corps.
    **b. An answer of "yes" to #1 would result in moving to #2.**

2. If the proposed action is likely to produce those potential stressors, are endangered or threatened individuals likely to be exposed to one or more of those potential stressors or subsidies or one or more of the proposed action's direct or indirect consequences on the environment?

    a. An answer of "no' to #2 would result in a "no effect" determination by the Corps.
    **b. An answer of "yes" to #2 would result a "may affect" determination by the Corps, and moving to #3.**

3. If listed individuals are likely to be exposed, are those listed individuals likely to respond, positively or negatively, to that exposure?

    a. An answer of "no' to #3 would result in a "not likely to adversely affect" determination by the Corps.
    **b. An answer of "yes" to #3 would result in moving to #4.**

4. If listed individuals are likely to respond, are those responses likely to be sufficient to reduce their individual performance?

    **a. An answer of "no' to #4 would result in a "not likely to adversely affect" determination by the Corps.**
    b. An answer of "yes" to #4 would result in a "likely to adversely affect" determination by the Corps. This determination, for any potential effect, and for any given species, would result in a "may affect, likely to adversely affect" determination for that species.

### 1.6.5. Exposure Analysis

In order to analyze exposure of potential effects of the proposed action, it must be determined if potential stressors could be produced as a result of the action, as proposed. Ground disturbing activities are widely accepted to produce potential stressors. Based on these assumptions, the Corps assumes that there may be a potential stressor produced as a result of the proposed action, and ESA-listed species may be exposed to those stressors.

Those species that are listed in Nez Perce County, but that do not occur within the action area either spatially or temporally, will not be exposed to potential stressors, and, according to 2.a. in Section 1.6.4 (above), a "no effect" determination can be made for those species (Table 6).

Conversely, according to 2.b. in Section 1.6.4, a "may affect" determination must be made for those species (steelhead) that occur in spatial and temporal proximity of the proposed action in the action area (Table 6).

Table 6. Effect determinations based on spatial and temporal proximity of the species to the proposed action.

| Species | Effect Determination |
|---|---|
| **NMFS** | |
| SR Fall Chinook | No Effect |
| SRB Steelhead | May Affect |
| **USFWS** | |
| Bull trout | No Effect |
| Canada lynx | No Effect |
| Spalding's' catchfly | No Effect |

Exposure to potential stressors will be reduced by the implementation of the proposed BMPs, such as spill response kits and performing all refueling and maintenance at least 50 feet from the creek.

### 1.6.6. Response Analysis

If the individuals are exposed to potential stressors, then an analysis of the response must take place to gauge the effect on the individual. For example, there could be a range of responses to the exposure, and variability in response. An individual fish may respond directly or indirectly to exposure to stressors. Examples are:

- Species
  - Mortality
  - Behavioral modification
  - Reduced predator avoidance
  - Reduced growth and reproduction
  - Physiological
  - Habitat alteration

- Critical habitat
  - Alteration of spawning gravels
  - Reduction in prey species
  - Water quality
  - Reduction in riparian vegetation

Responses are a function of the likelihood of exposure and the extent of that exposure to potential stressors, combined with reductions in that likelihood and extent due to BMPs.

Responses are specific to the type of stressors and will be identified as such in each potential effect section. However, responses to stressors will not be evaluated beyond the determination phase of 4.a. and 4.b. in section 1.6.4 above, as generalized effects are widely known.

The exposure profile combined with the response profile will determine the effect to the species (and designated critical habitat in later sections). Potential effects will be minimized by the implementation of proposed conservation measures in the form of IMMs and BMPs.

### 1.6.7. Effects on Listed Species

#### 1.6.7.1.Elevated Suspended Sediment and Turbidity

No measurable elevations of suspended sediment and turbidity will occur in streams inhabited by listed fish species as a result of the proposed project. Properly installed silt fence will be placed between the work area and the creek to capture any fine sediment. The fine sediment used to create the levee core will be covered with random fill material from the previous excavation work so it is not likely to wash out in the future.

#### 1.6.7.2.Chemical Contamination

Operation of equipment requires the use of fuel and lubricants, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can cause lethal and sublethal chronic effects to other aquatic organisms (Neff 1985). Construction equipment will be staged outside of the riparian zone, and all equipment will be cleaned and fueled in these staging areas. Equipment will be inspected and cleaned prior to accessing the work site. These impact minimization measures will significantly reduce hydrocarbon and other contaminant levels.

The IMMs and BMPs stated above will likely reduce the risk of chemical contamination to a level that is insignificant or discountable. Effects from chemical contamination on ESA-listed species are, therefore, not reasonably certain to occur.

### 1.6.8. Effects on Critical Habitat

Critical habitat is not designated in or around Lapwai Creek in the Sweetwater area. Project effect determination to critical habitat for each ESA-listed species is presented in Table 7.

### 1.6.9. 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 BA. Future federal actions that are unrelated to the proposed action, and have not already undergone consultation under the ESA, are not considered here because they require separate consultation pursuant to Section 7 of the ESA.

The Nez Perce Tribe is working on several stream restoration and habitat protection projects along Lapwai Creek. In the future there may be changes to the irrigation withdraws in the upper parts of the watershed which would have dramatic benefits on steelhead and other resident fish in Lapwai Creek.

#### 1.6.10. Determination

Each effect was evaluated based on the exposure and response to potential stressors. Although each individual effect had a determination made for it, it is the combined determination for the proposed action for each species and critical habitat that is the ultimate determination that needs to be made. These determinations are based on findings in the exposure and response analyses.

A "no effect" determination was made for those species or critical habitats that are temporally or spatially separated from potential stressors of the action, and could, therefore, not be exposed to potential stressors of the proposed action. Those species that had a "may affect" determination after the exposure analysis went through the response analysis for each potential stressor.

A "not likely to adversely affect" determination was made for those species or critical habitats unlikely to have a response sufficient to reduce their individual performance. A "no effect" determination was made for critical habitat because none exists in the Sweetwater area.

The combined summary of species and critical habitat determinations is shown in Table 7.

Table 7. Summary of Determination of Effects on Listed Species and Critical Habitat.

| Species | Species Determination | Critical Habitat Determination |
|---|---|---|
| **NMFS** | | |
| SR Fall Chinook | No Effect | No Effect |
| SR Steelhead | May Affect, Not Likely to Adversely Affect | No Effect |
| **USFWS** | | |
| Bull trout | No Effect | No Effect |
| Canada lynx | No Effect | No Effect |
| Spalding's' catchfly | No Effect | None Designated |

### 1.7. Conclusions

The Corps has determined the proposed levee rehabilitation project may affect, but is not likely to adversely affect Snake River steelhead. The Corps also determined there would be No Effect on Snake River fall Chinook salmon, Columbia Basin bull trout, Canada lynx, and Spalding's catchfly. There would also be No Effect on designated critical habitat for fall Chinook, steelhead, bull trout, and Canada lynx.

## 2. Magnuson-Stevens Fishery Conservation and Management Act of 1976, as Amended

The consultation requirement of section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs Federal agencies to consult with NMFS on all actions, or proposed actions that may adversely affect Essential Fish Habitat (EFH). Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council (PFMC) designated EFH for ground fish, coastal pelagic species, and Chinook salmon, Coho salmon, and Puget Sound pink salmon (PFMC 1999).

- 17060306 – Clearwater River is identified as current EFH for Chinook and currently accessible, but unutilized historic EFH for Coho

### 2.1. Description of the Proposed Action

The proposed action and action area for this assessment are described in the ESA portion of this document.

### 2.2. Effects of the Proposed Action

Based on information provided in this BA and the analysis of effects presented in the ESA portion of this document, the Corps concludes that the effects on Chinook and Coho salmon EFH are unlikely to occur, but could be caused by accidental discharge of petroleum products. The proposed action may result in short-term adverse effects on water quality habitat parameters.

#### 2.2.1. Effects on EFH

Effects on EFH resulting from the proposed action are unlikely to occur when the presented IMMs and BMPs are implemented.

#### 2.2.2. Effects on Managed Species

Effects on Chinook and salmon resulting from the proposed action are not reasonably likely to occur.

#### 2.2.3. Effects on Associated Species, Including Prey Species

Effects on prey species are unlikely to occur.

#### 2.2.4. Cumulative Effects

Chinook and coho salmon have been impacted by a wide array of factors related to hatchery impacts, harvest impacts, hydropower impacts, habitat impacts, and ocean conditions. These factors continue to play a role in the response of salmon populations. Future stream restoration and irrigation modification projects have the potential to benefit salmon.

### 2.3. Proposed Conservation Measures

IMMs and BMPs are listed in the ESA portion of this document.

### 2.4. Conclusions on EFH

Based on the circumstances and precautions, the Corps believes there will be no adverse effects to EFH or on species covered by the MSA, as described in the ESA portion of this document.

## 3. Fish and Wildlife Coordination Act of 1958, As Amended

The Fish and Wildlife Coordination Act (FWCA) authorizes the USFWS the authority to evaluate the impacts to fish and wildlife species from proposed Federal water resource development projects that could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depend on that that body of water or its associated habitats. This action does not involve activities subject to the FWCA. It is not a water resource development project and it will not control or modify a natural stream.

## 4. Migratory Bird Treaty Act of 1918, As Amended

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof.

Migratory birds are not likely to be affected by the proposed project. The brush and small trees to be removed would be checked for bird nests prior to its removal. The Corps will be contacted for further guidance if an active nest is found. In addition, IMMs and BMPs described in the ESA portion of this document are designed to reduce the impacts to sensitive species, and, as such, should minimize or avoid unintentional take. Therefore, the proposed action will not result in taking migratory birds, their nests, eggs, or parts thereof.

## 5. Bald and Golden Eagle Protection Act of 1940, As Amended

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American

Tribes. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined on 50 CFR 22.3.

Throughout most of the western United States golden eagles are mostly year-long residents (Polite and Pratt 1999), breeding from late January through August with peak activity in March through July (Polite and Pratt 1999). They may also move down-slope for winter or upslope after the breeding season (Polite and Pratt 1999).

No bald or golden eagle nests are known to occur on Lapwai Creek near Sweetwater. Disturbance of nesting bald or golden eagles is unlikely to occur. Bald eagles could be seen during the winter months in the area, but are more likely to be seen along the Clearwater River, several miles downstream from Sweetwater.

The proposed project will not adversely affect bald or golden eagles.

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