Programmatic Biological Assessment

Regional General Permit 27 for Lake Pend Oreille and Pend Oreille River, Idaho

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Chapter 1. Background and Project History

1.1. Regional General Permits

The Regional General Permit (RGP) is an alternative permitting procedure available to the U.S. Army Corps of Engineers (Corps) District Engineer in accordance with the Corps permitting regulations (33 Code of Federal Regulations [CFR] 325.2(e)(2)). The RGP may be used to authorize the construction of activities that are "similar in nature and cause only minimal individual and cumulative environmental impacts" (33 CFR 323.2(h)(1)).

A RGP authorizing mooring buoys, floats, piers, water withdrawal systems, marine launching rails, mooring piles, and portable boat-lift stations in Lake Pend Oreille was issued by the Seattle District of the Corps in 1981. Later, when regulatory responsibility in Idaho was transferred to the Walla Walla District (the District), the RGP was reissued as Regional General Permit 27 (1986). RGP 27 has been reissued every 5 years since then, following a public interest review, including opportunity for public comment.

In August 2007, the District reissued RGP 27 with minor revisions for an interim period of 1 year, through August 30, 2008. The District then reissued RGP 27 for another 5 years to be effective from March 22, 2010 to March 21, 2015. This reissuance contained the modifications described below.

- The permissible length of piers and docks permitted was increased up to 100 feet waterward of the ordinary high water mark regardless of depth at the end of the structure.
- The maximum permissible deck area of joint-use piers or floating docks (including ramps) was increased to 1,100 square feet, extending no further than 100 feet waterward of the ordinary high water mark.
- The use of beaded Styrofoam flotation was prohibited.
- The permissible length of marine launching rails was extended from 55 feet to 120 feet.
- The "line of navigation" was defined as, "the line formed by connecting the pier heads of existing piers and docks located 200 yards along the shoreline in both directions from the proposed pier or dock.

A complete description of activities and conditions included in the currently proposed RGP 27 is provided in Chapter 2.

This programmatic biological assessment (PBA) has been prepared pursuant to the requirements of Section 7 of the Endangered Species Act (ESA), to evaluate the effects of RGP 27 reissuance on species listed or proposed for listing and on their designated critical habitat.

1.1.1. Review by the Corps

To be authorized by RGP 27, an applicant must meet the parameters of the project descriptions (Chapter 2.2) and the conservation measures and special conditions of the RGP. The Corps may add other special conditions to protect aquatic values on a case by case basis. The applicant will be required to submit a joint application for permit, Form NWW 1145-1; drawings of the proposed project, including plan view and cross-section view; and a vicinity map, including a copy of the plat map of the property where the work is proposed. The Corps will review the application and confirm the project's authorization by the RGP in writing as appropriate.

The Corps project manager will review the application to determine if the project meets the terms and conditions of the RGP and if the activity may be authorized under the RGP 27. Approval under RGP 27 is also contingent on compliance with conservation measures required as a result of the ESA consultation process and are made conditions of RGP 27.

1.1.2. Monitoring and Tracking

The Corps will submit annual tracking reports to the U.S. Fish and Wildlife Service (FWS) on the use of RGP 27. Tracking reports will include a summary map of the locations of the actions permitted under RGP 27 for the previous year. The report will also include a table of the actions as found in Appendix B. This information will be provided to the FWS by March 31st of each year for the 5 year duration of the RGP 27.

Permittees are to submit project completion reports (Appendix B) to the Corps within 90 days of the project completion.

1.1.3. Compliance and Enforcement

The Corps may do random compliance inspections of any activities authorized under RGP 27 as time, funding and staff availability allow. If an action is found to be in non-compliance with the permit conditions/conservation measures and/or the reasonable and prudent measures, the Corps will notify the FWS so they have the option to take enforcement action. The Corps will also notify the permittee of the non-compliance and follow the Corps procedures for permit non-compliance.

All permittees are required to submit a Compliance Certification notifying the Corps that the project was completed in compliance with the authorization. The Corps routinely inspects 10% or more of these certified projects as well as project sites that are the subject of suspected non-compliance obtained through public complaints.

1.2. Past and Current Authorizations

The District has authorized 1,696 final actions under RGP 27 since it was first issued in 1986. The majority of these actions were for docks and piers. Figure 1 shows the numbers of permits verified under RGP 27 from 2002 through September of 2014. Figure 3 shows the distribution of RGP 27 actions verified between 2010 and 2014.

The data does not distinguish between new structures and repair or maintenance of existing structures, but these are generally new structures. Maintenance of existing structures is either an exempt activity (33 CFR 323.4 (a)(2)) or is authorized under Nationwide Permit (NWP) 3 (33 CFR 330 Appendix A (B)(3)). A general review of permit descriptions indicate most are fixed piers, with a small number of floating docks. Approximately 20% include boat lifts.

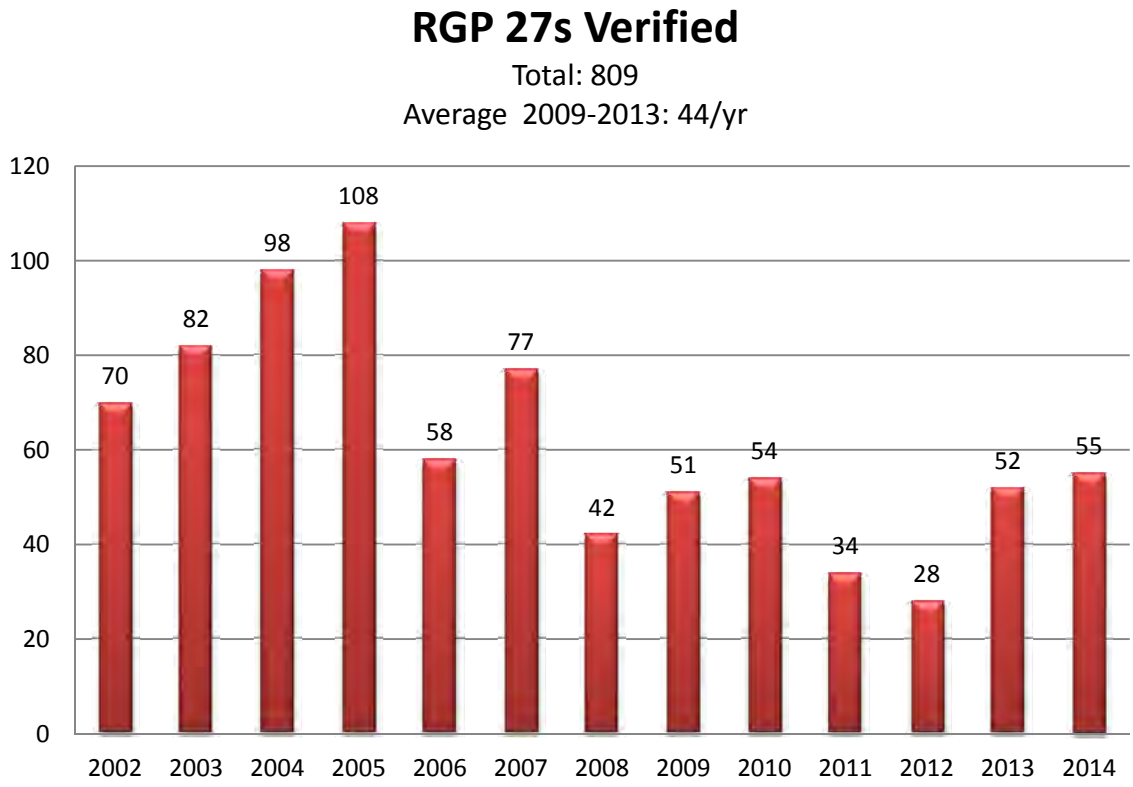

Figure 1. Number of activities authorized by RGP 27 by year (2002 - June 2014).

Based on the last 5 years of data, between 200 and 250 RGP 27 permit verifications would be expected over the next 5 year period. The majority of these would include a dock or pier, with a lesser number of associated structures (e.g. boat lift, launch rails, water intake lines). Boat lifts are more commonly requested than launching rails. The ease of installation and operation of boat lifts seem to be making launching rails obsolete.

Chapter 2. Covered Activities

The purpose of RGP 27 is to expedite the authorization of recurring activities that are similar in nature and have minor individual and cumulative impacts on the aquatic environment. This RGP will minimize the amount of paperwork, time and funding required to authorize qualifying projects by making available for public use, and already-issued Corps general permit that includes ESA Section 7 coverage and 401 water quality certification.

This permit will authorize installation, replacement or modification of the following non-commercial structures:

- Piers and floating docks
- Marine launching rails
- Mooring piles
- Portable boatlift stations
- Small diameter (≤ 2") water line intakes and associated submersible pumps
- Mooring buoys

Each activity must comply with the conservation measures listed below. The complete list of conservation measures is found in Chapter 7 of this PBA.

Work to be authorized by RGP 27, and conditions that apply to each activity, are described below. Figure 2 illustrates the types of structures that could be authorized.

2.1. Piers and Floating Docks

Single-use and joint use piers and floating docks are authorized under the following terms:

- One pier or floating dock is authorized for each riparian property owner.
- The facility will be for noncommercial activities only.
- Piers or floating docks will extend into the waterway no further than the line of navigation. In no case will the pier or dock extend more than 100 feet waterward of the elevation 2,062.5 NGVD, regardless of depth.
- Total deck area of a single-use pier or floating dock, including the access ramp, will not exceed 700 square feet. Total deck area of a joint-use pier or floating dock, including portions of the access ramp extending waterward of elevation 2,062.5 NGVD, will not exceed 1,100 square feet.
- Only open-pile pier construction is authorized. The maximum size for steel piles is 10-inch in diameter. Piling will be driven or set in excavated footings. No more than 10 cubic yards will be excavated for footings. Footings will be backfilled with native material, concrete, sand, gravel, grout or epoxy. All excavation and filling of footings will be done in the dry during low water conditions. All excess excavated material will be disposed of in an upland location in a manner that precludes it from reentering waters of the United States. Piles may be bolted to bedrock if conditions preclude other attachment methods.

- No other structures, such as living quarters, toilets, fueling facilities, or hard-covered boat moorages shall be constructed or installed on any dock or pier.
- Floating docks shall be designed to contain encapsulated flotation material under all conditions. Open cell polystyrene (beaded Styrofoam) is not allowed under any circumstance nor is the reuse of industrial drums.
- Piers and floating docks will be constructed perpendicular to the shore and no more than 8 feet of shoreline vegetation will be disturbed at the access point to the pier or dock.
- In-water pile driving will use a bubble curtain and a 6-inch minimum thick wood, rubber or synthetic cushion block between the driving apparatus and the pile while driving the piles.

2.2. Marine Launching Rails

One marine launching rail per riparian property ownership is authorized under the following terms:

- The marine launching rail will be for noncommercial use.
- Marine launching rail systems will be anchored to the surface of the bed of the waterway or on low profile concrete plank ties, untreated wood ties, or similar structures resting on the bed. If the area is bedrock, they may be fastened by drilled anchor bolts. If a boat launching ramp exists on the property, the marine launching rail system will be installed on the existing ramp surface.
- Marine launching rail systems will not extend more than 120 feet waterward of the elevation 2,062.5 NGVD.
- Construction of marine launching rails will be done in the dry during low water conditions.

2.3 Mooring Piles

A maximum of four mooring piles per riparian property ownership is authorized under the following terms:

- Mooring piles will be for a noncommercial use.
- Piles will be single, separate and not constructed so as to form a multi-piled dolphin.
- Mooring piles shall not be installed more than 55 feet waterward of the ordinary high water mark or to length of the permitted dock, whichever is less.
- In-water pile driving will use a bubble curtain AND a 6-inch minimum thick wood, rubber or synthetic cushion block between the driving apparatus and the pile. Steel piles may not be larger than 10-inches in diameter.

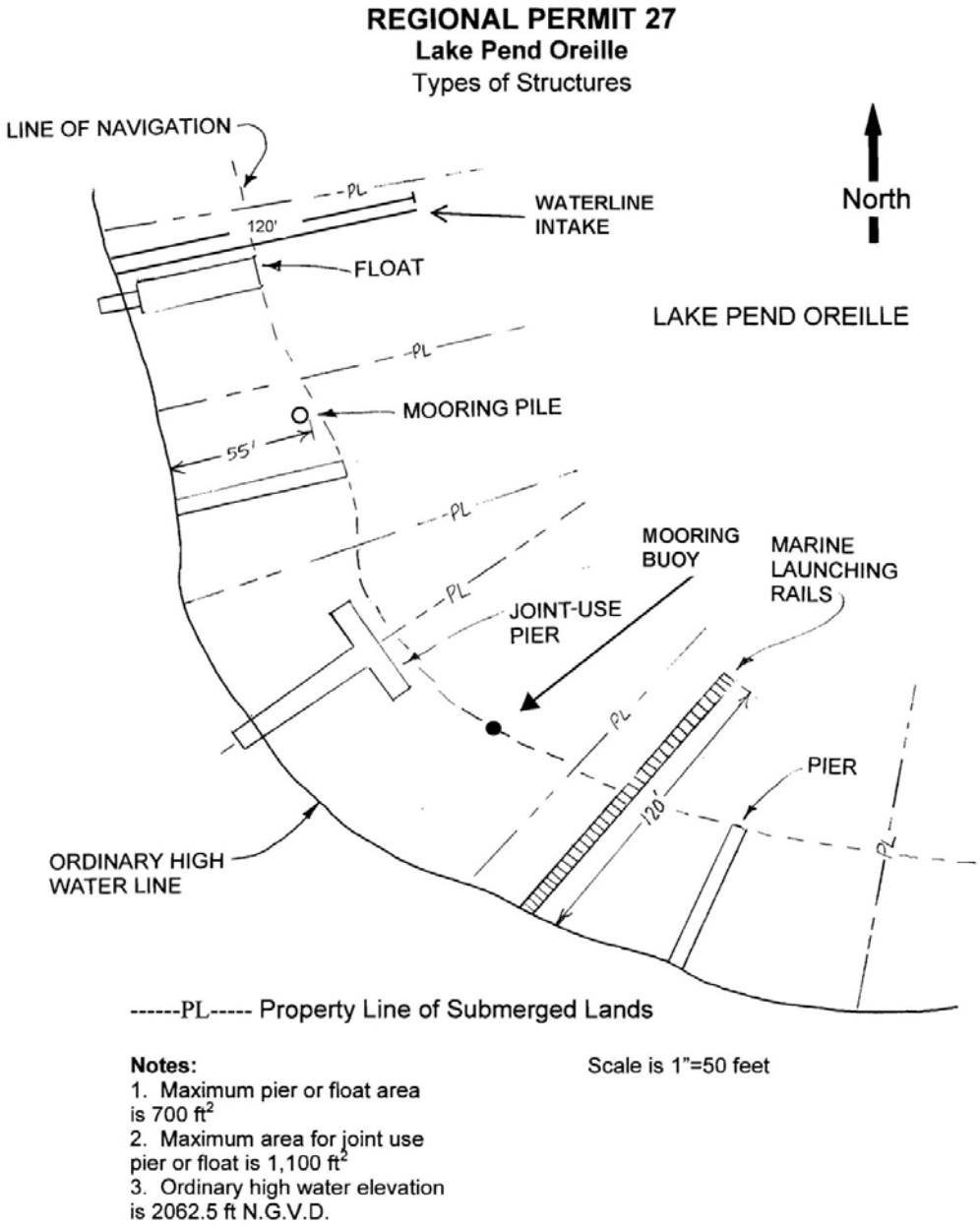

Figure 2. Types of structures to be authorized by RGP 27.

2.4 Portable Boat Lift Stations

A maximum of two portable boat lift stations per private riparian property ownership are authorized under the following terms:

- Portable boat-lift stations will be for noncommercial use.
- Portable boat-lift stations shall not be installed more than 55 feet waterward of the ordinary high water mark or the length of the permitted dock, whichever is less.
- Portable boat-lift stations will be located adjacent to existing authorized docks or piers. They shall not extend waterward of the existing, authorized float or pier.
- Canopies shall be made of canvas or synthetic cloth and can be part of the boat-lift station or a framework attached to the floating dock or pier.

2.5 Small diameter waterline intakes

A maximum of one small diameter waterline intake per private riparian property ownership is authorized under the following terms:

- Waterline intakes will be for noncommercial use.
- The diameter of the intake line shall not exceed 2 inches.
- The waterline can be attached to an existing dock or pier, placed on the lake bottom and held down by concrete blocks or similar means, or trenched into the lake bottom in the dry during lake drawdown period.
- A submersible pump can be part of the structure either attached to a dock or pier, or lying on the lake bottom.
- Waterlines will not extend more than 120 feet waterward of the elevation 2,062.5 NGVD.

2.6 Mooring Buoys

A maximum of one, single boat mooring buoy per private riparian property ownership is authorized under the following terms:

- Mooring buoys will be for noncommercial use.
- Mooring buoys shall not be installed more than 55 feet waterward of the ordinary high water mark or to length of the permitted dock, whichever is less.

2.7 Regional General Permit Coverage Area

The geographic area of coverage for Regional General Permit 27 includes Lake Pend Oreille, the Pend Oreille River and their tributaries that are inundated by the summer pool elevation of 2,062.5 National Geodetic Vertical Datum (NGVD) in Bonner and Kootenai Counties, Idaho (Figure 3). This includes navigable waters of the United States that are located upstream of the Albeni Falls Dam and includes Priest River, Pack River, the Clark Fork River, and any other tributary and backwater area to elevation 2,062.5 NGVD. Several areas

within the geographical area described above are excluded from coverage under RGP 27. As shown on Figure 3, these excluded areas include:

- The mouths of Gold Creek, West Gold Creek, Granite Creek, Trestle Creek, Lightning Creek, Strong Creek (near Hope) and Priest River for a radius of 100 yards.
- Areas that provide important wildlife habitat:
    - Clark Fork Delta, from the confluence of Lightning Creek and the Clark Fork River, west to the range line between R.1E. and R.2E.,
    - Denton Slough, located in Sections 7, 18 & 19, T.56N., R.2E.,
    - Pack River including the Pack River Flats, north of Trestle Creek on the east, and north of Sunnyside Sportsman's Access (Hawkins Point) on the west,
    - Sagle Slough, south of the north section line of Section 11, T.56N., R.2W.,
    - Morton Slough, including the left bank (east shoreline) of the Pend Oreille River from the half section line of Section 16, T.56N., R.3W., south to the south section line of Sec. 21, T.56N., R.3W.,
    - Cocolalla Slough/Creek, upstream from the Spokane International Railroad Bridge across the slough,
    - Scenic Bay of Lake Pend Oreille, which provides important kokanee spawning habitat, and
- Areas within 0.5 mile of an active bald eagle nest.

In these exclusion areas, an alternative permit processing procedure, such as a letter of permission or standard permit, will be required to authorize the types of projects covered under this regional general permit.

2.8 Action Area for the Covered Activities

The action area is defined as all areas to be affected directly or indirectly by the proposed action, including those areas that extend beyond the area immediately adjacent to the action. RGP 27 is intended to cover the specified activities on the shorelines of Lake Pend Oreille and its tributaries to elevation 2,062.5 NGVD, exclusive of sensitive areas delineated in Figure 3.

The action area is primarily delineated according to the project's most widely distributed impact zone, both for aquatic and terrestrial impacts. For both the terrestrial and aquatic environments, this consists of the area where construction noise would create sound levels above the ambient condition, since noise will be the impact that is most widely distributed on the environment.

The covered activities have the potential to result in aerial and underwater sound generation associated with construction and use of the facilities. The driving of steel piles with an impact pile driver is expected to be the loudest noise produced by the construction of facilities covered under this permit. The type of pile most commonly used for piers and docks is a 10-inch diameter steel pile.

Aerial sound generation during driving of 14-inch steel piles may reach levels as high as 104 A-weighted decibels (dBA) at 50 feet (Washington State Department of Transportation

2006). Assuming that ambient sound in the area occurs at daytime levels of 45 dBA, a level representative of farmland (U.S. Environmental Protection Agency 1971) and typical for quiet rural areas, and assuming that sound attenuates in the terrestrial environment at 7.5 dB for each doubling distance, then the action area for aerial construction sound (the area where construction sound can be heard above ambient noise levels) would include all areas within 0.75 mile of a project site.

Motorboat activity on the lake would be an indirect effect of dock construction. The loudest recreational motorboats on the lake are assumed to generate sound levels of 90 dBA (the California legal limit for vessels constructed before 1993; current vessels are restricted to 75 dBA). These vessels have access to all portions of the lake (except areas limited by county no-wake or non-motorized ordinances), including the sensitive areas that are excluded from the action area, but they generally are incapable of travel in tributary streams above elevation 2,062.5 NGVD, other than the mainstream of the Clark Fork. Loud recreational vessel traffic is assumed to be restricted in the Clark Fork to the main navigational channel, and to potentially travel upstream as far as the Cabinet Gorge Dam. These vessels would produce noise in excess of ambient levels within 1,500 feet of their operation. The action area for above water effects therefore includes all areas within 1,500 feet of Lake Pend Oreille and the Clark Fork upstream to Cabinet Gorge Dam, as well as all areas within 0.75 mile of the action area for pile driving.

The aquatic portion of the area of impact was defined by calculating sound attenuation using a practical spreading loss model for water less than 200 meters (660 feet) deep, recommended by the FWS (Davidson) and adapted to account for baseline noise levels approximately equal to Sea State Zero, or 90 decibels (dB)[1] for 100-Hertz (Hz) frequencies, representative of the quietest conditions found in Lake Pend Oreille (National Research Council 2003, Guedel 1992). Baseline noise levels in Lake Pend Oreille rise considerably during seasonal recreational use, with increases of up to 50 dB in the daily average noise level during summer weekends, and a 10 to 15 dB change between midday and late-night noise levels (Cummings 1987). A conservative baseline noise estimate for midweek daytime activity during the summer months would be 120 dB. During the other times of the year, ambient noise levels would be less (perhaps 90 to 110 d B depending on location and lake surface conditions). These baseline noise levels are used to find the minimum distance at which sound levels generated by pile-driving activities are indistinguishable from background noise levels. These distances define the underwater extent of the action area for impact pile-driving activities.

As a reasonable worse case estimate, the action area for underwater noise was calculated based on driving a 14-inch steel pile as this data was readily available. The action area for underwater impacts includes all areas where the sound generated by impact driving a 14-inch steel pile within the action area would exceed ambient sound levels. The peak sound pressure level generated by driving a 14-inch steel pile without sound attenuation (cushion blocks or bubble curtain) is approximately 195 dB_{PEAK} at 20 meters (200 dB_{PEAK} at 10

[1] All underwater noise levels in this document are expressed as dB re: 1µPa. Pile driving noise levels are expressed as dB_{PEAK}.

meters)[2]. (See Chapter 5 for a complete discussion of methods and assumptions of the bioacoustic analysis.) Assuming that the ambient underwater noise level during summer is 120 dB, and assuming that underwater sound attenuates via the practical spreading model, then pile-driving activities could increase sound above ambient levels everywhere in the lake on a line-of-sight to the pile-driving activity (the distance to ambient is calculated to be over 1,000 miles by the practical spreading model. Note: the practical spreading model has not been shown to be reliable over 1,000 meters). This would also be the case for non-summer-time conditions because ambient sound levels are even lower.

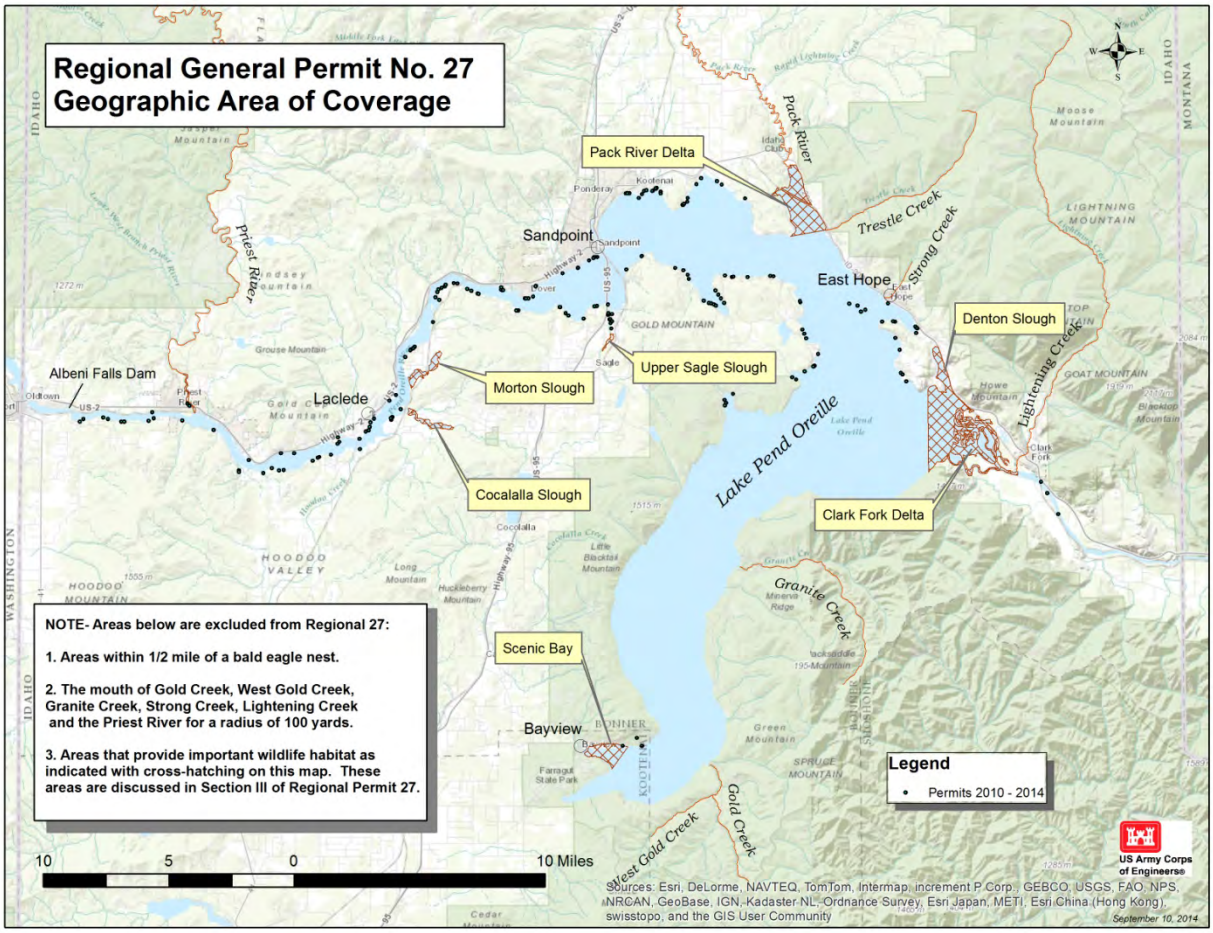

Figure 3. RGP 27 Geographic area of coverage with exclusion areas.

Attenuation devices required for driving of steel piles (cushion blocks and bubble curtains) can each provide 5 dB of attenuation. When both are employed, source peak sound levels (at 10 meters from the pile) would be reduced to 190 dB_{PEAK}. Reduction in source peak sound levels by 10 dB would not reduce the action area, as the distance calculated by the practical spreading model would be approximately 288 miles.

[2] Source: http://www.dot.ca.gov/hq/env/bio/fisheries_bioacoustics.htm

Thus the underwater portion of the action area includes all of Lake Pend Oreille and its tributaries to elevation 2,062.5 NGVD, but would not be expected to extend more than 100 meters up any of its tributary streams above that elevation.

Chapter 3. Status of Species and Critical Habitat

3.1 Species Covered

Table 1 indicates the federally listed species covered under this PBA that may occur or are likely to occur in the action area. The status of designated critical habitat, the effects determination for the proposed action, and a brief justification for the effects determination are also summarized in Table 1.

Table 1. Summary of findings by species.

Listed Species or Critical Habitat Unit	Designated Critical Habitat	Effects Determination	Justification
Bull trout, Columbia River DPS (Threatened)	Designated	May affect, likely to adversely affect	The proposed action is expected to cause slight degradation of several baseline indicators related to littoral productivity and the shoreline environment, and to increase predator habitat. Such impacts would be minimized and would be expected to have especially minor effects because of conservation measures. Therefore, the proposed action is not expected to harm or otherwise result in take of bull trout, or to result in adverse modification of bull trout designated critical habitat from physical habitat disturbance. However, there is a potential for bull trout to be exposed to underwater noise levels above the injury or disturbance thresholds if bull trout occur in the vicinity of impact pile driving.
Canada lynx (Threatened)	Designated	No affect	The action area does not contain suitable or designated critical habitat for the species.
Grizzly bear (Threatened)	None designated	No affect	The action area does not contain suitable habitat for the species. In the unlikely event that a grizzly bear migrates through the action area, effects on the bear would derive from human responses unrelated to the activities covered under the proposed action.

3.2 Species Descriptions

3.2.1 Columbia River Bull Trout (*Salvelinus confluentus*)

Bull trout of the Columbia River distinct population segment (DPS) were designated as threatened under the ESA on June 10, 1998 (63 *Federal Register* [FR] 31647). All naturally spawning populations of bull trout in the continental United States were included

in the listing. On January 9, 2001 (66 FR 1628), Washington stocks of Dolly Varden were also listed as threatened because of their similarity in appearance to bull trout. A final critical habitat determination for Columbia River DPS bull trout was issued on September 26, 2005 (70 FR 56212). A revised designation of critical habitat was proposed on January 14, 2010. The final revised designation was published on October 18, 2010 (75 FR 63898).

The decline of the species can be attributed to increases in water temperature, poor water quality, degradation and fragmentation of habitat, poaching (especially of large spawners) and overharvesting. Bull trout are also threatened by interactions with nonnative fish, such as brook trout (with which they hybridize), and with numerous introduced species that prey on bull trout or compete for limited resources, such as lake trout.

Biological Requirements

Bull trout exhibit resident and migratory life history strategies through much of their current range (Rieman and Mcintyre 1993), although anadromous bull trout have been excluded from the Pend Oreille system by human-made barriers. Resident bull trout complete their life cycles in the tributary streams in which they spawn and rear. They are strongly influenced by water temperature and are seldom found in streams exceeding summer temperatures of 18°C. Bull trout eggs require very cold incubation temperatures for normal embryonic development, and cold water temperatures may result in higher egg survival rates and faster growth rates in fry (Pratt 1992).

All life history stages of native char are associated with complex forms of cover, including large woody debris (LWD), undercut banks, boulders, and pools. Spawning typically occurs in late summer and early fall in low gradient streams with loose, clean gravel and water temperatures between 5 and 9°C (Washington Department of Fish and Wildlife 2000). Many spawning areas are associated with cold water springs or areas where stream flow is influenced by groundwater (U.S. Fish and Wildlife Service 1997). Overwintering habitat varies with life history form, but always requires cool, clean water with insects, macro-zooplankton, and small fish for larger adults (Washington Department of Fish and Wildlife 2000).

Bull trout are opportunistic feeders with food habits related primarily to their life history strategy. Juvenile resident and migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton, amphipods, mysids, crayfish, and small fish. Subadult bull trout rapidly convert to eating fish, feeding indiscriminately on any fish species of appropriate size, including juvenile bull trout in the area (Washington Department of Fish and Wildlife 2000).

Designated Critical Habitat

Critical habitat for Columbia River DPS bull trout was designated on September 26, 2005 (70 FR 56212). This original designation did not include Lake Pend Oreille, but did include a number of the lake's tributary streams, including Gold Creek, Granite Creek, Johnson Creek, Lightning Creek, North Gold Creek, Pack River, Sullivan Springs, Trestle Creek, and West Gold Creek. The revised designation published in October 18, 2010

significantly expanded the critical habitat for bull trout. It now includes Lake Pend Oreille and the Pend Oreille River (Figure 4).

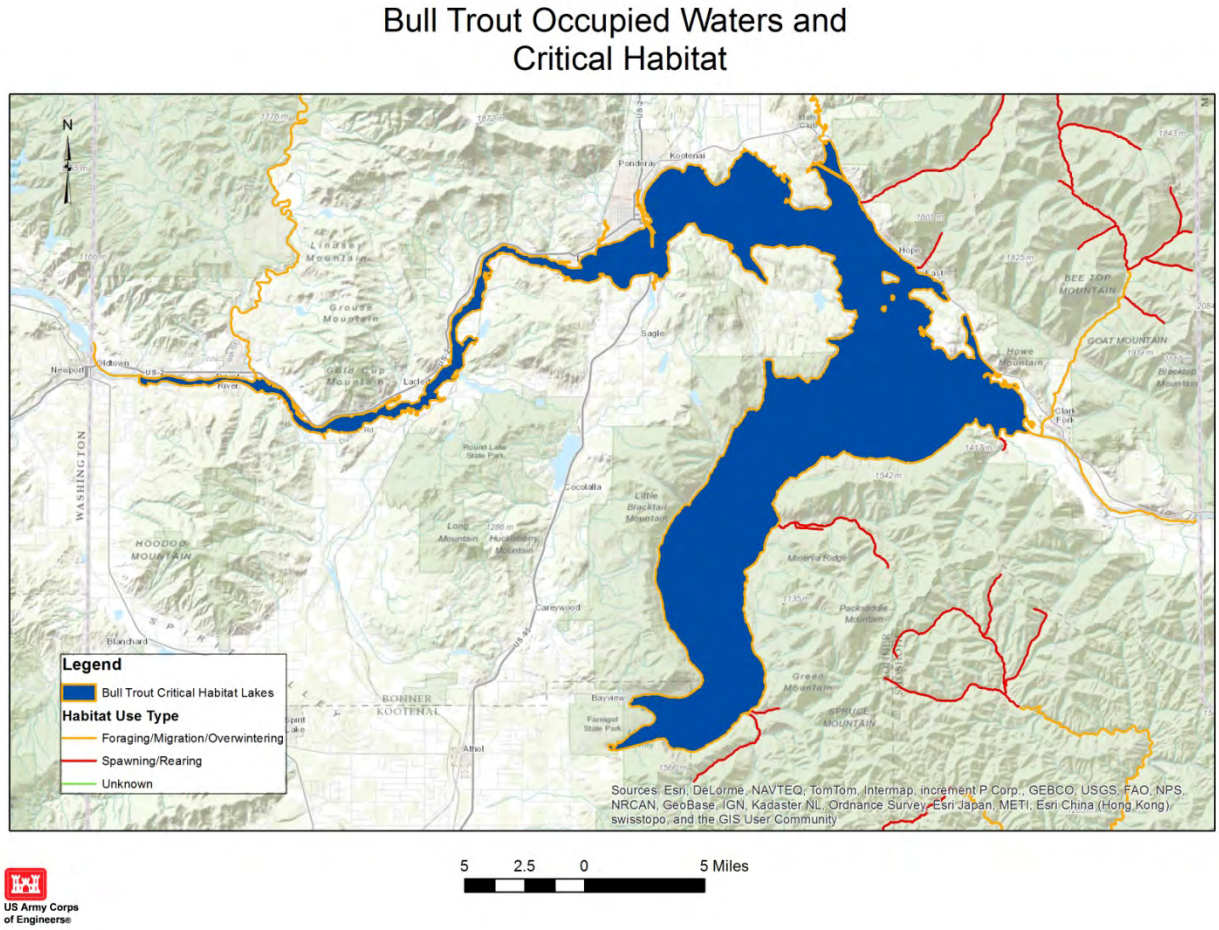

Figure 4. Bull trout designated critical habitat waters within the RGP 27 coverage area.

Factors of Decline

Lake Pend Oreille and its tributaries lie entirely within the Clark Fork watershed, which constitutes one recovery unit within the bull trout recovery plan. In this area, principal factors contributing to the decline of bull trout include dams, nonnative species, forestry, agricultural practices, transportation systems, mining, and suburban/exurban growth (U.S. Fish and Wildlife Service 2002). Other factors are identified below.

- Dams and dam operations have greatly fragmented habitat and have affected reservoir and lake levels, water temperature, and water quality.
- Nonnative species introductions have been responsible for increased predation and have increased competition for a limited forage base.
- Forest practices, although much less destructive than in former times, have left a legacy of degraded habitat, including increased sediment in streams, increased peak flows, hydrograph and thermal modifications, loss of instream woody debris, channel instability, and increased access by anglers and poachers.

- Though not a large-scale problem in the Pend Oreille drainage, agricultural practices have resulted in water diversions for irrigation, increased temperatures in the remaining instream flows, and riparian and sediment impacts associated with grazing.
- Transportation systems have caused channelization, passage barriers, sediment production, unstable slopes, and impacts related to maintenance activities. Failure of abandoned logging roads and associated drainage structures has resulted in heavy sediment deposition in many drainages.
- Mining has caused sediment impacts and, in some areas, extreme water quality problems.
- Growth and residential sprawl are causing ongoing habitat loss.

Population Trends of the Species
In the status summary prepared for the final listing rule (U.S. Fish and Wildlife Service 1998), a total of 65 subpopulations of bull trout were recognized in the Clark Fork River basin. In the Lower Clark Fork Recovery Subunit, one subpopulation was identified in the action area for this assessment: Lake Pend Oreille and the Pend Oreille River (downstream of the lake to Albeni Falls Dam). This subpopulation, which includes at least 17 local populations, and is in aggregate one of the largest in the DPS, was considered to have a declining trend. Exceptionally good trend data are available for the Lake Pend Oreille subpopulation, with redd count data going back for over 20 years (U.S. Fish and Wildlife Service 2002). Currently, the Lake Pend Oreille subpopulation is assessed as having 2,500 to 10,000 individuals, with a stable short-term trend (U.S. Fish and Wildlife Service 2008).

3.2.2. Canada Lynx *(Lynx canadensis)*

The Canada lynx was listed as threatened on March 24, 2000 (65 FR 16052). Critical habitat was designated on November 9, 2006 (71 FR 66007), and a proposal to substantially increase the area of critical habitat was published on February 28, 2008 (73 FR 10860). On September 12, 2014 (79 FR 54781) a final rule was published, again revising the designation of critical habitat. However, the latest additions to critical habitat do not affect the action area for the proposed action.

Biological Requirements
Lynx normally use forest stands greater than 150 years of age with LWD such as fallen trees or upturned stumps available for denning. Dens are typically situated on northeast aspects in stands of Engelmann spruce, subalpine fir, and lodgepole pine. A high density of fallen logs greater than 1 foot in diameter appears to be required. Minimal human disturbance, proximity to travel corridors, nearby foraging habitat, and a stand size of at least 5 acres appear to be additional components of prime lynx denning habitat (Washington Department of Fish and Wildlife 1993, Koehler and Aubrey 1994).

Designated Critical Habitat
Canada lynx critical habitat was designated on November 9, 2006 (71 FR 66007), and a

proposal to substantially increase the area of critical habitat was published on February 28, 2008 (73 FR 10860). The final rule was published on February 25, 2009 (74 FR 8616). An additional revised designation was proposed on September 26, 2013 (78 FR 59429). On September 12, 2014 (79 FR 54781) a final rule was published, again revising the designation of critical habitat. There is no designated critical habitat for lynx in the action area, and the proposed additions to critical habitat do not affect the action area for the proposed action.

Factors of Decline
Principal causes of lynx decline include habitat loss, overharvesting, inadequate regulatory mechanisms, and the naturally fragmented condition of habitat near the species' traditional southern range limits in the United States. Of these, FWS (65 FR 16082) concluded that the principal factor contributing to lynx decline was the lack of guidance for conservation of lynx in U.S. National Forest land and resource plans and U.S. Bureau of Land Management land use plans, and that federal land management has the largest single role in the conservation of lynx in the contiguous United States because of the preponderance of lynx forest types on U.S. Forest Service, U.S. Bureau of Land Management, and National Park Service lands, particularly in the western United States.

Population Trends of the Species
Lynx were formerly fairly common in Idaho, distributed through most of the forested regions of the state north of the Snake River plain. There are 22 documented museum specimens collected between 1874 and 1917, but only four were collected after that date, the most recent in 1955, and it was in Bonner County. A 1946 account noted lynx presence in 8 of the 10 northernmost counties, and mentioned that trappers took 25 to 30 lynx per year, in addition to those taken by predator control agents. Verified sightings of lynx were relatively common in the 1960s, but progressively declined, to the point where there were no verified sightings after 1981 (McKelvey et al. 1999).

3.2.3. Grizzly Bear (*Ursus arctos)*

The grizzly bear was listed as threatened on July 28, 1975 (40 FR 31734). Historically, the grizzly bear occurred from the Great Plains west to the coast of California and south into Texas and Mexico. Currently, grizzly bears remain in only five areas in the lower 48 states of the United States: the Greater Yellowstone Ecosystem, the Northern Continental Divide, the Cabinet-Yaak area, the Selkirk Mountains, and the North Cascade Mountains. Two additional areas, the San Juan Mountains in Colorado, and the Selway-Bitteroot Mountains in Idaho, may also support grizzly bear populations. Human-caused mortality and habitat loss and degradation are currently the greatest threats to grizzly bear populations in the lower 48 states (U.S. Fish and Wildlife Service 1993).

Biological Requirements
Grizzly bears historically occurred in a wide variety of habitat types, suggesting a broad range of tolerances. Their digestive system and teeth are adapted to allow grizzly bears

to exploit a wide variety of food sources. Although typically carnivores, they can be successful omnivores. When conditions demand it, grizzly bears can survive on an almost exclusively herbaceous diet (U.S. Fish and Wildlife Service 1993).
Upon emergence from the den, grizzlies generally seek lower elevations and drainage bottoms where there is abundant new plant growth and ungulate winter range. Through spring and early summer, the bears follow plant growth back up to higher elevations, transitioning back to fruit and nut sources in the later summer and fall (U.S. Fish and Wildlife Service 1993).

The spatial and temporal distribution of food has a pronounced influence on grizzly bear movements. Other factors, including human encroachment, weather conditions, and interactions with other bears, can also affect the home range of individual bears. In one instance in the Cabinet-Yaak recovery zone, a male bear had a home range of over 1,100 square miles between 1987 and 1992 (U.S. Fish and Wildlife Service 1993). The large home range of grizzly bears, particularly males, also contributes to the genetic diversity of the species by enabling males to mate with numerous females. As a result, an abundant and varied food supply and large tracts of land providing relative isolation and freedom from human encroachment are important components of grizzly bear habitat and reproduction.

Although not known to be territorial, adult grizzly bears are normally solitary wanderers. Each bear appears to have a minimum distance within which another bear or person cannot enter (Herrero 1970, Mundy and Flook 1973). Mating season is the only time when adult males and females are seen together, and this cohabitation is typically short lived and only during the estrous period (U.S. Fish and Wildlife Service 1993).

Mating appears to occur between May and July. Both males and females may take several mates, particularly in areas of high density (Craighead et al. 1969). Grizzly bears do not mate until they are between 3.5 and 8.5 years old, and typically produce a litter of one to four cubs (Herrero 1978, Russell et al. 1978).

Cover is another important component of grizzly bear habitat. Grizzly bears use forest cover for bedding, and may use densely forested areas to avoid human contact (U.S. Fish and Wildlife Service 1993). Open parks also provide important habitat for foraging and are typically within 1 mile of a forested area used by an individual bear.

The unavailability of food, deep snow, and cold temperatures forces bears to hibernate during the winter. Dens are excavated between September and November on steep slopes where wind and topography cause an accumulation of deep snow. Den sites usually occur at higher elevations well away from development and human activity (U.S. Fish and Wildlife Service 1993).

Designated Critical Habitat
FWS proposed critical habitat on November 5, 1976 (41 FR 48757). A final rule was never published; therefore there is no designated critical habitat for the grizzly bear.

Factors of Decline
The 1975 federal listing of grizzly bears stated that human encroachment into grizzly bear habitat has directly contributed to the decline of the species. Access road and trail construction into formerly inaccessible areas has made bears more susceptible to illegal poachers, human-bear conflicts, and livestock-bear conflicts. In addition, research has shown that grizzly bear populations survive where frequency of contact with humans is relatively low (Mace et. al 1996). Typical bear responses to encounters with roads and trails include spatial avoidance, decreased survival, and altered temporal patterns.

Lake Pend Oreille lies adjacent to the Selkirk Grizzly Bear Recovery Zone (SRZ), which covers northern Idaho, extreme northeastern Washington, and part of neighboring Canada. It is estimated that, at a minimum, 26 to 36 bears reside in the SRZ (Johnson and Cassidy 1997). The decline in grizzly bear populations is directly attributed to human encroachment into and loss of viable bear habitat. In addition, the grizzly bear population in the U.S. portion of the SRZ is too small to support a minimum population and is currently dependent on maintaining its connectivity with the SRZ populations in Canada. Development activities in Canada may isolate these two populations, which, in turn, could lead to their respective further decline or extinction.

Population Trends of the Species
Lake Pend Oreille is south of the SRZ. The SRZ is the only grizzly bear recovery zone that crosses the Canadian/U.S. border because the habitat in the U.S. portion is insufficient to support a minimum population. The population estimate for the entire ecosystem is unknown, but between the years 1985 and 1990, 26 to 36 bears were known to occur in a study area that comprised approximately 33% of the ecosystem (U.S. Fish and Wildlife Service 1993).

In 1999, FWS published a 12-month finding on petitions to change the status of grizzly bear populations in the Selkirk Area in Idaho and Washington (50 Code of Federal Regulations [CFR] Part 17, May 17 1999). In that finding, FWS stated that grizzly bear populations within the SRZ appeared to be responding to protective measures that reduce mortality. However, grizzly bears in the SRZ remain in danger of extinction because of habitat alteration and human intrusion into grizzly bear habitat and potential isolation by activities across the border in Canada.

Chapter 4. Environmental Baseline

The environmental baseline represents the current base set of conditions to which the effects of the proposed action would be added. The environmental baseline (50 CFR Part 402.02) consists of 1) the past and present effects of all federal, state, or private actions and other human activities in the action area, 2) the anticipated effect of all proposed federal projects in the action area that have already undergone formal or early Section 7 consultation, and 3) the impact of state or private actions that are contemporaneous with the consultation in process.

4.1. Description

The Clark Fork/Pend Oreille River watershed covers a total of 25,200 square miles with approximately 1,300 square miles located downstream of Albeni Falls Dam, the downstream limit of the action area (Smith 1995). Dams effectively isolate Lake Pend Oreille and its tributary streams from the upper Clark Fork (above Cabinet Gorge Dam) and the Pend Oreille River (below Albeni Falls Dam), so this discussion focuses on conditions in Lake Pend Oreille and its tributaries to elevation 2,062.5 NGVD, which collectively represent the Lower Clark Fork recovery unit for bull trout, and which potentially include terrestrial habitat for the wildlife species addressed in this document.

Lake Pend Oreille is the largest and deepest natural lake in Idaho, and by volume is the fifth largest lake in the United States. Located almost entirely in Bonner County, the lake's surface area is approximately 143 square miles (95,000 acres) with about 175 miles of shoreline. Lake levels are controlled by Albeni Falls Dam operated by the Corps near the Idaho/Washington boundary. In addition to the Clark Fork River, other tributaries to the lake include Lightning Creek (tributary to Clark Fork near its mouth), Pack River, Sand Creek, Trestle Creek, and numerous smaller streams entering the lake at various locations. Surface water outflow from the lake consists only of the Pend Oreille River. Groundwater contributions from the lake to the Spokane Valley-Rathdrum Prairie Aquifer have been estimated between 3.8 and 7% of the total aquifer recharge (U.S. Environmental Protection Agency et al. 2007).

Flow and water quality in the lake and its tributary streams have, to varying degrees, been altered by land use (primarily forestry, grazing, dry-land agriculture, mining and sub/exurban development). Stream hydrology and morphology have been altered near the lake as a result of the seasonal fluctuations in lake level produced by manipulation of Albeni Falls Dam discharges. The precise nature of the fluctuations is rather complex. The water level of Lake Pend Oreille fluctuates between a summer elevation of 2,062.5 feet NGVD, and winter elevations of 2,051 to 2,055 feet (thus, a change of 7.5 to 11.5 feet). The Albeni Falls Dam is operated to provide for kokanee spawning in fall, and for protection of incubating kokanee eggs in winter and spring. Lake elevation is targeted at an elevation of either 2,051 feet or 2,055 feet in winter, depending on the outcome of a consultative process that considers the seasonal precipitation forecast, number of female kokanee spawners, success of lower Columbia chum salmon spawning, and recent history of Lake Pend Oreille winter elevations. These criteria are reviewed by September of each year by an interagency team consisting of representatives from numerous agencies, including the FWS. The team recommends a lake elevation for the coming winter, and FWS submits an operation request to the Corps for consideration by the interagency Technical Management Team, which oversees the week-to-week operation of the federal Columbia River power system. The Corps makes its decision in consideration of the Technical Management Team's evaluation.

The action area is entirely within the Albeni Falls Dam impoundment to elevation 2,062.5 feet NGVD, and thus includes areas within both Lake Pend Oreille, the impounded portions of the Pend Oreille River and its tributaries, including the lower part of Priest River, Pack River Delta, and the Clark Fork Delta. Prior to dam construction the Pend Oreille River and Lake both displayed a highly variable seasonal hydrograph. River flows measured prior to dam

construction varied from about 5,000 to 150,000 cubic feet per second, while lake levels showed a variation from about 2,046 to 2,069 feet NGVD. Dam construction greatly diminished both river and lake flow variation. Under the current management regime shown in Figure 5, the lake maintains an elevation of between 2,051 and 2,062 feet NGVD for most of the year, with transitions between those states lasting a period of weeks. At high lake levels, appreciable flow velocities (commonly 5 to 6 miles per hour) may occur in the impounded portion of the Pend Oreille River. Such events happen roughly every other year during the period of peak spring runoff. However, landowners are cognizant of this condition and it is not strongly associated with elevated frequencies of damage to shorelines or associated facilities, such as docks and piers. Besides these flow variations, certain water quality impairments have been identified in the lake and its tributaries.

Foremost among these is high nutrient inputs to the lake from the Clark Fork, which contributes 92% of the lake's total inflow and from storm water runoff and septic tank leakage along the lake's shoreline (U.S. Environmental Protection Agency et al. 2007). The nutrient inputs are primarily derived from nonpoint sources. These nutrient inputs have caused algal blooms and contribute to aquatic weed growth. In 2002, a total maximum daily load plan for nearshore nutrients was approved by EPA. Plan implementation is currently underway. A 2004 water quality trend analysis (Land & Water 2004) concluded that there has been a statistically significant increase in total nitrogen loading to the lake since the 1980s, but that there has been no significant trend for other water quality constituents including total phosphorus, copper, zinc, and pelagic clarity. Among the tributary streams, Pack River and Sand Creek provide the highest phosphorus inputs to the lake, and these two streams, along with Lightning Creek, provide the highest nitrogen inputs (Environmental Protection Agency 1993).

Other identified water quality limitations in the Lake Pend Oreille watershed include dissolved gas supersaturation associated with operation of the Cabinet Gorge and Albeni Falls dams, copper and zinc derived from mining sources and deposited in the Clark Fork delta, and high water temperatures in the Clark Fork and in the Pend Oreille River above Albeni Falls Dam. In addition, numerous smaller tributaries to Lake Pend Oreille are on the 303(d) list for temperature impairment, and some are listed for sedimentation, nutrient/eutrophication biological indicators, total phosphorus, and combined biota/habitat assessments (Idaho Department of Environmental Quality 2008).

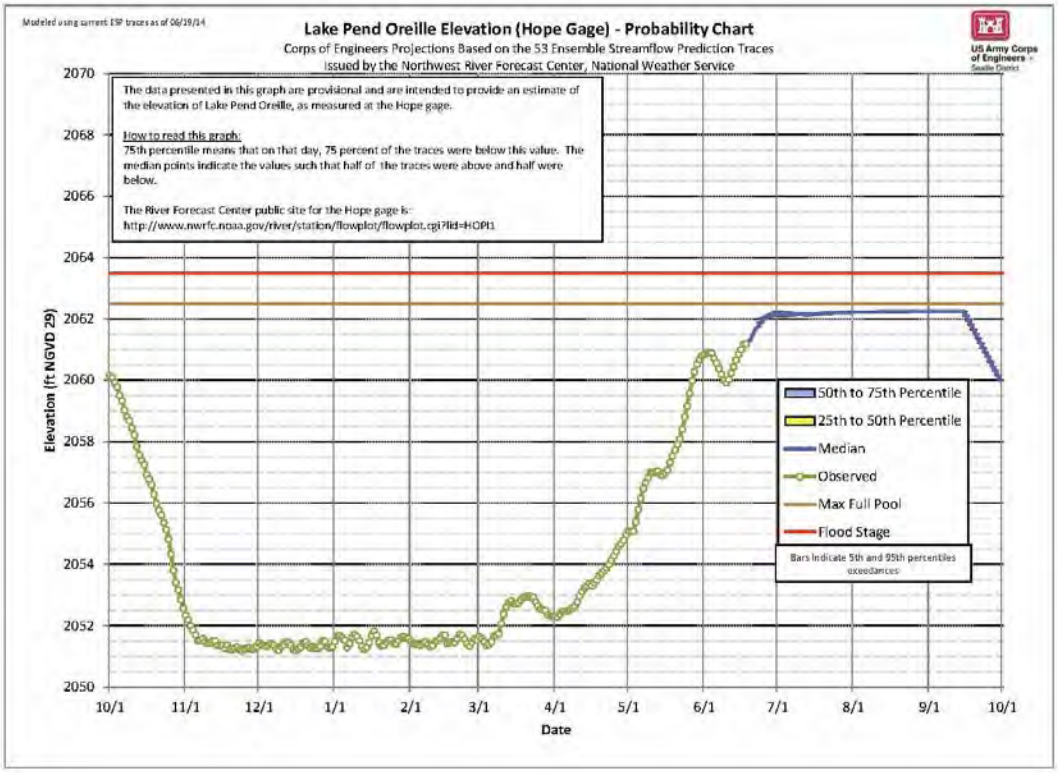

Figure 5. Lake Pend Oreille gage data.

Water milfoil is also establishing and spreading as an aquatic weed that can impair beneficial uses in the lake and the Clark Fork and Pend Oreille Rivers (Environmental Protection Agency et al. 2007). In 2012 an isolated population of Asian clams (*Corbicula fluminea*) was discovered in the lake. The primary biological impairment of the Pend Oreille system, though, is the introduction of nonnative aquatic species. The introduction of mysis shrimp, while providing critical forage for larger fish, has led to depletion of plankton populations in the lake, affecting early life stages of important forage species. The principal invasive fish species of concern are lake trout and brook trout that can compete with and sometimes prey upon native fish such as bull trout. There is limited potential to control these species, although an incentive program has succeeded in reducing lake trout populations in the lake (U.S. Fish and Wildlife Service 2002).

Land use changes have extensively altered stream habitat in the Pend Oreille system. About 83% of the lake's watershed is forested and nearly 65% of the lakeshore is in national forest. Much of the northern and eastern parts of the watershed are public lands comprised of mountainous or hilly terrain deeply cut by streams and mostly forested. The broad, fertile valleys and river bottoms, predominately in the western part of the watershed, are mostly in private ownership. Forestry and forest road construction, the primary landscape activity in the

basin, has affected streams by causing increased sediment in streams, increased peak flows, hydrograph and thermal modifications, loss of instream woody debris, and channel instability (U.S. Fish and Wildlife Service 2002).

Though not a widespread issue in the Pend Oreille watershed, agriculture has been responsible for some irrigation water diversions that destabilized stream channels, severely interrupted migratory corridors (blockages and dewatering) and, in some cases, entrained fish that are then lost to the ditches. Flow reductions and irrigation returns may have also resulted in an increased water temperature regime.

The most current and rapidly increasing form of land use change, though, is sub/exurban development, along with emplacement of the infrastructure (principally roads) supporting that development. Human population growth in western Montana and northern Idaho has accelerated since the 1980s, a trend that appears likely to continue. In Bonner County, which includes nearly all of Lake Pend Oreille and the Pend Oreille River in Idaho, population grew 38% between 1990 and 2000, more than three times the rate of overall U.S. population growth (Environmental Protection Agency et al. 2007). Development pressures on aquatic systems include point and nonpoint source water pollution, channel modification for flood control or other purposes, loss of riparian vegetation and instream structure, increased water diversions (now mainly for aesthetic pond construction), and altered flow regimes due to changes in watershed vegetation cover and impervious surface.

4.2. Historical Trend of Environmental Baseline

It is not known if there was formerly an unequivocal barrier to anadromous migration downstream of Lake Pend Oreille, but it is known that salmon were never reported upstream of Metaline Falls in Washington (U.S. Fish and Wildlife Service 2002). Certainly, flow variation in the Clark Fork and the lake levels of Lake Pend Oreille changed profoundly with the construction of Albeni Falls Dam (in 1952) and the dams upstream on the Clark Fork, the lowest of which is Cabinet Gorge Dam (also constructed 1952) nine miles upstream of Lake Pend Oreille.

Within the Pend Oreille River the construction of hydroelectric-dams and the creation of slow water reservoirs has inundated historic shoreline habitats, restricted sediment transportation, reduced floodplain habitats for terrestrial and fish species, and greatly reduced pools, riffles, and other instream habitats. Shoreline development and recreational use has reduced the quality of the fish and wildlife habitat by eliminating riparian vegetation, displacing willow habitat with fill materials, and increasing noise and pollutants from boating activity on the river reservoirs. The revised hydrograph caused by dam operations has produced severe erosion of shorelines and resultant sedimentation of adjacent lakebeds which severely affect quality of spawning gravels and general shoreline habitat.

Altered seasonal water level fluctuations have caused the shoreline environment to deteriorate by reducing riparian vegetation, eroding beaches and shorelines, and decreasing the productivity of littoral habitats. Summer water temperatures in the Pend Oreille River and

many Lake Pend Oreille tributaries rise above 15°C, which makes for unsuitable habitat for coldwater-dependent fish such as bull trout. Current habitat conditions favor warmer-water fish such as brown and lake trout and smallmouth bass, which prey on foraging and migrating juvenile salmonids.

Various levels of shoreline development in the form of docks, bulkheads, marinas, residences, roads, and riprap occur along the shorelines of Lake Pend Oreille and the Pend Oreille River. The majority of the shorelines within the action area are rural to undeveloped, a consequence of 65% of the lakeshore being in U.S. Forest Service ownership; however, near the population centers along the north and west portions of the lake and along the Pend Oreille River, shoreline development has altered long reaches of shoreline environment. Shoreline development has reduced riparian vegetation and subsequently LWD recruitment, displaced willow habitat with fill materials, and altered wave and scour patterns adjacent to new shoreline structures.

Chapter 5. Effects of the Action

This section discusses anticipated effects from the activities proposed for authorization under RGP 27. The ESA requires that federal agencies consider several types of effects, as defined below.

Direct effects are effects from actions that would immediately remove or destroy habitat, harm (injure or kill) species, or adversely modify designated critical habitat. Direct effects include actions that would potentially remove or destroy habitat, or displace or otherwise influence the species, either positively (beneficial effects) or negatively (adverse effects).

Indirect effects are those effects that are caused by the proposed action and occur later in time, but are still reasonably certain to occur. Indirect effects may include impacts on food resources, or foraging areas, and impacts from increased long-term human access/activities.

Effects from interdependent and/or interrelated actions include effects from actions that (1) have no independent utility apart from the primary action, or (2) are part of a larger action and depend on the larger action for their justification, and/or (3) are required as part of the action, including maintenance and/or use of the project, as well as other actions that would be carried out to implement, maintain, and/or operate the project.

Conservation measures are measures proposed to minimize or compensate for project effects on the species under review. Unless stated otherwise, the effects determinations, as defined below are based on the assumption that conservation measures will be incorporated into the project.

The effect determinations are the specific conclusions of the biological assessment concerning the overall effect of the covered activities on each species and/or critical habitat type. The possible effect determination categories for listed species and their designated critical habitat

are (1) No Effect; (2) May Affect, Not Likely to Adversely Affect; or (3) May Affect, Likely to Adversely Affect.

5.1. Authorized Activities and Their Effects

Regional General Permit 27 would expedite the authorization of recurring activities that are similar in nature and have minor individual and cumulative adverse impact on the aquatic environment. Table 2 lists each activity to be authorized through RGP 27, the associated construction and operation components, and the direct and indirect effects. In the following sections, each direct and indirect effect is discussed in greater detail. Refer to Chapter 2 for detailed descriptions of each covered activity.

Table 2. RGP 27 covered activities and their direct and indirect effects.

Authorized Activity	Construction and Operation Impact Mechanisms	Direct Effects	Indirect Effects
Pier and floating dock installation	Heavy equipment operation Pile placement Boat mooring Shore modification	Noise Water quality changes Riparian vegetation removal	Increased boating activity Shading Predator habitat creation
Boat launch rail installation	Heavy equipment operation	Noise Water quality changes Riparian vegetation removal	Increased boating activity
Mooring pile placement	Heavy equipment operation Pile driving Boat mooring	Noise Water quality changes	Increased boating activity Shading
Portable boat lift installation	Heavy equipment operation Pile driving Boat mooring	Noise Water quality changes Riparian vegetation removal	Increased boating activity Shading Predator habitat creation
Water intake line installation	Equipment operation	Noise Water quality changes Alteration of bottom sediment	Water withdrawal
Mooring buoy installation	Heavy equipment operation Boat mooring	Noise	Increased boating activity Shading

5.2. Direct Effects

The primary direct effects of the activities covered by RGP 27 include:

- temporary impacts on water quality from increased turbidity due to pile driving, placement of concrete, and potential minor fuel and oil spills;
- temporary noise generated from pile driving and operation of construction equipment; and
- riparian vegetation removal.

The following sections describe these direct effects in detail.

5.2.1. Water Quality

Performance of the covered activities may affect water quality by suspending sediments and by accidentally releasing hazardous materials (leaks of fuel, oil, paint and other materials) during construction.

Temporary Increases in Turbidity

Most covered activities have little potential to cause increases in turbidity. Installation of marine launching rails would be performed in the dry and turbidity could only result if rainfall or snowmelt during construction were to convey turbid runoff from the construction area to the lake. Similarly, the great majority of floating dock and pier construction would be performed in the dry. A random survey of 100 dock and mooring facilities around the lake (primarily in the river between Albeni Falls Dam and Lake Pend Oreille proper) found 91 piers or floating docks placed without driven piles, 7 piers or floating docks placed with driven piles, and 2 moorings placed with driven piles (C. Earle pers. obs. 2008). The newer structures generally had steel piles; the older ones, wood. The piers and floating docks placed without driven piles were almost all built of timber or concrete placed on footings, which would have been placed in the dry. The structures with driven piles usually had only two such piles, placed at the outward end of a floating dock. Pile driving at Lake Pend Oreille is almost always done during high water using a barge-mounted rig, and thus is typically done in the wet. Other anchors for a floating dock were usually on concrete footings. Overall, it appears that in-water work would only be required for about 10 percent of the authorized structures.

Informal questioning of the three largest contractors on the Pend Oreille system indicate that about 600-700 piles are driven each year during residential dock construction, and the vast majority of piles used now are 10-inch steel. A small number of do-it-yourselfers may choose to pour concrete piles in cardboard forms. Most newer piers have piles on 10-foot centers and may include up to 12 piles per pier.

Disturbance, placement, and relocation of sediments and substrate materials while performing the covered activities could temporarily increase turbidity in the water column and could result in sedimentation, or coverage of benthic habitat and organisms. A variety of species (including bull trout) may either avoid or be attracted to construction sites due to elevated turbidity and suspension of benthic organisms in the water column during performance of covered activities.

The duration and intensity of turbidity depends on the quantity of materials in suspension, the particle size of suspended sediments, the volume and velocity of the receiving water in the affected area, and the physical and chemical properties of the suspended sediments and the duration of exposure to turbidity (Newcombe and MacDonald 1991, National Marine Fisheries Service 2001).

Turbidity within several meters of pile-driving activities may temporarily exceed background levels, which are typically very low in the lake's water column (Environmental Protection Agency et al. 2007). In salmonids, turbidity has been linked to a number of behavioral and

physiological responses indicative of stress (Berg and Northcote 1985; Servizi and Martens 1992). However, such responses have been associated with very high levels of suspended sediments.

Servizi and Martens (1992) found that gill damage was absent in sub-yearling coho salmon exposed to concentrations of suspended sediments lower than 3,143 milligrams per liter (mg/1). Suspended sediment concentrations above 2,000 mg/1 were found necessary to induce physiological stress (as indicated by elevated blood plasma cortisol levels) in sub-yearling coho salmon (Redding et al. 1987). Adult and sub-adult salmonids are generally even more tolerant of elevated suspended sediment levels (Stober et al. 1981), and are more able to avoid localized areas of elevated turbidity associated with construction activities.

The levels of effects illustrated above are associated with suspended sediment generation from dredging projects, which would be significantly greater than what would be anticipated, under any soil conditions, with driving a 14-inch pile. No information on total suspended solids (TSS) or turbidity generation from the driving of piles could be obtained from the literature.

All activities conducted under RGP 27 will be required to be compliant with Idaho State water quality standards. Idaho State water quality standards for aquatic life, recreation, or domestic water supply use allows that turbidity "below any applicable mixing zone set by the Department, will not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days".

The relationship between nephelometric turbidity units (NTU) and TSS concentrations can be affected by a number of factors, including water color, presence of phytoplankton, and so on. One study relating the two water quality metrics was performed for Puget Sound lowland streams (Packman et al. undated). Although not directly analogous, this study can provide some perspective regarding the level of turbidity that needs to occur to produce effects referred to above. The relationship they found for urbanizing streams was:

In(TSS)=1.32In(NTU)+C, with C not significantly different than zero in most cases.

Their data indicate that under the conditions of their measurements, 50 NTU of turbidity would roughly equal 80 to 100 mg/1 TSS. The duration of increased turbidity (or TSS concentration) would be on the order of 20 minutes or less (assuming a 15-minute drive time for each pile). Using this relationship, the maximum turbidity limits allowed by the State of Idaho water quality standards is roughly 20 times less than the concentration of TSS shown to have any effect on salmonids. Newcombe and MacDonald (1991) identify types of effects on fish that have been observed for various exposures (concentration of TSS and duration of exposure). The lowest effect that they record, coughing response by fish, is associated with exposure to 100 mg/1 for 0.25 hour (Hughes 1975 cited in Newcombe and MacDonald 1991). This is comparable to the most severe turbidity response anticipated by pile driving under this permit. Further, bull trout of any size would be capable of avoiding a turbidity plume before injury could occur.

Hence, short-term, localized increases in turbidity associated with the covered activities will

not likely result in more than temporary, localized physiological effects on bull trout, their habitat, or their prey. Such effects would be expressed, if at all, at the lower limit of measurable responses.

Water Quality Certification of RGP 27 by the State of Idaho Division of Environmental Quality has not yet been received for this reissuance of the RGP.

Lynx and grizzly bears would not be affected by turbidity changes associated with any pile driving authorized under the permit.

Accidental Hazardous Material Releases

Construction machinery will at times operate below the ordinary high water mark. No machinery will enter the water, except for a backhoe or excavator bucket, or operate directly within waters other than to place or remove materials via excavator arm extension or other similar device. Although only barge mounted machinery will operate directly within waters, there is a risk that construction materials or equipment fluids (e.g., fuel, oil, hydraulic fluid, antifreeze, and paint) may leak or spill into the water. The risk to aquatic life depends on the type of contaminant that may be accidentally spilled or leaked, the time of the year, amount of material spilled or leaked, and the effectiveness of containment efforts.

Petroleum-based products contain polycyclic aromatic hydrocarbons, which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects on a wide range of aquatic organisms (Neff 1985). The potential risk of an accidental spill of hazardous materials or leakage of a petroleum-based product during performance of a covered activity is small due to conservation and minimization measures, as described in Chapter 7. There remains a reasonable likelihood, given the number of permits expected to be issued under RGP 27 (~50 in a typical year, based on activity during the past 5 years), that one or more spills could potentially occur during the 5-year permit term. The spill volume would likely be small; spills from equipment of this type rarely exceed 10 gallons, and due to the easy access to the spill site, containment efforts are usually implemented quickly and are highly effective. Nonetheless, any bull trout present in the near vicinity of such a spill could be harmed.

In order to ensure that any material spills are quickly addressed, all contractors operating under RGP 27 are required to have onsite a spill response kit. Additionally, any equipment operating over water will be required to replace hydraulic fluid with vegetable or mineral oil, which is far less toxic to fish and other aquatic organisms.

The use of wet concrete in ambient water may result in a short-term, localized increase in pH levels. In order to completely avoid this potential impact, all concrete footings would be required to be installed in the dry. As a conservation measure, RGP 27 prohibits the direct installation of wet concrete into the water column or the direct contact of wet concrete and the water column. Concrete footings and pilings are customarily installed in the dry, when access to the work area is easy. Any concrete piling installed in-water would be required to use washed, fully cured concrete.

Water quality can also be affected through the leaching of chemical preservatives from treated wood used for construction. In order to minimize this risk, no creosote, pentachlorophenol, chromated copper arsenate, or comparably toxic compounds not approved for the appropriate environment (i.e., freshwater) can be used for any portion of the activities covered under RGP 27. Any project using ammoniacal copper zinc arsenate-treated wood must use wood treated by the manufacturer and installed per the post-treatment best management practices developed by the Western Wood Preservers Institute (http://www.wwpinstitute.org/aquatics.html). These best management practices will reduce the potential for leaching of any harmful chemicals into the water.

The suspension of contaminated sediments during performance of the covered activities is expected to be minimal because no sites designated as contaminated under the Superfund program occur within the coverage area, and very little soil disturbance would occur as a result of activities covered under RGP 27.

Although the covered activities may result in short term and localized effects on water quality, effects on federally listed species are likely to be immeasurable. Activities covered by RGP 27 would be relatively small in scale. Additionally, the conservation measures cited in Chapter 7 would be employed to protect water quality and further reduce potential impacts.

5.2.2. Noise

Pile driving within the water column and/or the use of noise-producing construction equipment may be required to perform some of the covered activities. Noise from pile driving and heavy equipment operation can affect fish, mammals, birds, and other wildlife. The following section describes potential pile driving and construction noise effects on federally listed species in both the aquatic (underwater) and terrestrial (sub-aerial) environment.

Aquatic Noise

RGP 27 allows piles to be impact driven for floats and piers and mooring piles. Sound pressure levels produced by in-water impact pile driving can harm fish. While pile driving may be performed with a vibratory pile driver, in some instances it may also be necessary to proof vibratory driven piling with an impact hammer pile driver. The only listed species potentially affected by underwater noise is the bull trout (either directly or through effects on their prey species). Therefore, the potential effect on bull trout from the use of an impact hammer pile driver is analyzed.

The action area is primarily delineated according to the project's most widely distributed impact zone. The aquatic portion of the area of impact was defined by calculating sound attenuation using a practical spreading loss model for water less than 200 meters (660 feet) deep, recommended by FWS (Davidson) and adapted to account for baseline noise levels approximately equal to Sea State Zero, or 90 dB[3] for 100-Hz frequencies, representative of the quietest conditions found in Lake Pend Oreille (National Research Council 2003, Guedel

[3] All underwater noise levels in this document are expressed as dB re: 1µPa. Pile driving noise levels are expressed as dB_{PEAK}.

1992). Baseline noise levels in Lake Pend Oreille rise considerably during seasonal recreational use, with increases of up to 50 dB in the daily average noise level during summer weekends, with a 10 to 15 dB change between midday and late-night noise levels (Cummings 1987). A conservative baseline noise estimate for mid-week daytime activity during the summer months, when pile driving is likely to occur, would be 120 dB. During periods with less activity on the lake, ambient noise levels could be perhaps 90 to 110 dB depending on location and lake surface conditions. These baseline noise levels were used to find the minimum distance at which sound levels generated by pile-driving activities are indistinguishable from background noise levels. This distance defines the underwater extent of the action area for pile-driving activities.

RGP 27 restricts steel piles to a maximum of 10-inch diameter. The three largest pile dock contractors on the lake have indicated that nearly all new residential piers and docks are constructed using 10-inch diameter steel piles. Fourteen inch steel piling is used for this analysis since this data was readily available. RGP 27 requires the use of a bubble curtain and a wood, rubber or synthetic cushion block to be used as a sound attenuation measure during impact installation or proofing of steel piling to decrease sound levels underwater. Results on the effectiveness of bubble curtains in reducing sound pressure waves are varied. Under favorable conditions, and with proper installation and operation, bubble curtains can decrease noise levels by up to 30 dB (Vagle 2003 in Washington State Department of Transportation 2006). However, 5 dB attenuation is usually assumed for conservatism and is used for this analysis. Cushion blocks can also typically provide 5 dB or greater attenuation (Theiss et al. pers. comm.) For this reasonable worst case analysis, source sound levels recorded from impact driving of a 14-inch steel pile are used, with bubble curtain and cushion blocks attenuation applied.

For a 14-inch steel piling, we assume that unattenuated peak sound pressure levels are equal to 195 dB_{PEAK} at 20 meters.[4] Peak sound pressure levels for 10-inch steel piling would be expected to be less. The estimated source sound level at 10 meters (back-calculating using 4.5 dB transmission loss per doubling of distance) would be 200 dB_{PEAK}. Applying attenuation of a bubble curtain (5 dB) and a cushion block (5 dB) results in a source level of 190 dB_{PEAK} at 10- meters from the driven pile.

The maximum extent of pile driving sound effects can then be calculated as:

Equation 1 . $$R_1=(10^{(TL/15)})(R_2)$$

Where R1 is the distance at which sound attenuates to background, TL is the difference between peak sound level and background sound level, and R2 is the distance from the source at which peak sound level is measured. Using this equation the calculation for the distance where sound will attenuate to background noise during summer (active) conditions is:

$$TL = 190 \text{ dB} - 120 \text{ dB} = 70 \text{ dB and } R_2 = 10 \text{ meters}$$

[4] Source: http://www.dot.ca.gov/hqlenv/bio/fisheries_bioacoustics.htm

therefore:

$R_1 = 10^{(70/15)}(10) = 464{,}19$ meters (~288 miles)

According to this model, underwater sound above ambient summer conditions is calculated to radiate 288 miles from the pile-driving source, although underwater sound will not penetrate through landmasses. This calculation indicates that noise from driving a 14-inch steel pile (with full attenuation) would be above ambient throughout all lake areas within line of site of the pile driving activity. This would be the same situation when pile driving occurs in quieter seasons.

FWS has established threshold levels for disturbance and injury to bull trout. Thresholds for noise effects are identified for bull trout in either peak (180 dB_{PEAK} for injury) or root-mean-square (RMS) levels (150 dB_{RMS} for behavior). By substituting the animals' injury or disturbance threshold level for the ambient level in *Equation 1,* effect threshold distances can be estimated. For instance, the injury threshold for bull trout used by FWS is 180 dB_{PEAK}. Therefore TL is 10 dB (190-180). For this injury threshold, *Equation 1* gives the following solution.

$$R_1 = 10^{((190-180)/15}(10) = 46 \text{ meters (152 feet)}$$

Thus, pile driving has the potential to injure bull trout that occur within 152 feet of the noise source. This calculation has been completed for all thresholds (Table 3).

Table 3. Injury and disturbance thresholds for bull trout in Lake Pend Oreille and the Pend Oreille River from the practical spreading loss model.

Species	Injury Threshold	Injury Threshold Distance	Disturbance Threshold	Disturbance Threshold Distance
Bull Trout	180 dB_{PEAK}	46 meters 152 feet	150 dB_{RMS}	398 meters 1,305 feet

All distances calculated in this table assume driving of 14-inch steel piles with a bubble curtain and cushion block, generating a source sound pressure level (after attenuation) of 190 $dB_{PEAK.}$

Construction and Operational Vessel and Equipment Noise

Equipment and vessels necessary to complete the activities covered in this PBA also produce underwater noise. Construction equipment operating on water could include barges, motor boat/work skiffs, and vibratory pile drivers. Construction equipment tends to produce the same type of slow-rise-time noise as do motor boats and ship engines. Jones & Stokes (2006) estimated that noise produced by a rather large ocean-cable-installation vessel is about 154 dB_{RMS}. JASCO (2005) estimated that noise produced by a rock-dumping vessel is approximately 177 dB (neither peak nor RMS identified) at 1 meter, and Richardson et al. (1995, cited in Jones and Stokes 2006) estimated that an equipment support vessel produces noise levels at 152 dB_{PEAK} at 1 meter. Therefore, some of the same considerations applicable for boating traffic are appropriate for construction equipment in determining impacts on fish. Noise levels associated with construction activity are not anticipated to reach the injury threshold; however, they are expected to reach the disturbance threshold which could affect fish behavior, habitat use, and migration patterns, should fish be present during construction.

Noise Effects on Bull Trout
The noise analysis using the spreading loss model predicts that bull trout may be disturbed by noise as far as 1,305 feet from pile-driving activities. Disturbance could take the form of impaired or delayed feeding, migration disruption, impaired ability to detect and evade predators (Hastings and Popper 2005), or displacement into less desirable habitats. However, the actual pile driving activity at any one site would likely be less than an hour over a single day.

Bull trout could be injured by noise if they occur within 46 meters (152 feet) of pile-driving activities. Injury includes both mortality and sublethal effects such as injury to gas-filled spaces within the body, injury to sensing hairs along the lateral line, and temporary or permanent hearing loss (Hastings and Popper 2005).

Indirect noise effects on bull trout may consist of locally reducing prey availability by killing prey or driving them from the area. Pile driving may thus result in temporary local reductions in forage fish availability, locally altering prey supplies for bull trout.

Noise Effects on Designated Critical Habitat
Critical habitat exists for bull trout in the action area. Lake Pend Oreille and the impounded portions of the Pend Oreille River and certain tributary streams are designated as critical habitat for bull trout. Sound pressure waves produced by pile driving activities would temporarily reduce the value of critical habitat within the action area. Pile-driving activities could temporarily affect foraging opportunities identified in the primary constituent elements for freshwater areas by affecting benthic macroinvertebrates and other potential forage species (i.e., kokanee salmon) within critical habitat. Any localized, temporary impact on foraging opportunities that might result from pile driving is not expected to have a measurable effect. No modification or other permanent impacts on physical habitat would result from noise associated with pile-driving activities.

Terrestrial Noise
Noise produced by impact pile driving and by the operation of construction equipment can also affect the behavior of other avian and terrestrial wildlife. The peak sound level produced by the use of an impact pile driver to drive a 14-inch steel pile is 104 dB at 50 feet (Thalheimer 2000, cited in Washington State Department of Transportation 2006). The peak sound level produced for a 10-inch steel pile would be expected to be somewhat less. Other construction equipment, such as a barge, motor boat/work skiff, dump truck, pickup truck and excavator/backhoe produce terrestrial noise as well. These types of equipment can generate between 55 dBA (pickup truck) and 85 dBA (backhoe) (Thalheimer 2000, cited in Washington State Department of Transportation 2006).

Terrestrial point noise attenuates at 6 dB per every doubling of distance, or 7.5 dB per doubling of distance in soft sites (i.e., areas with sound attenuating features such as vegetation, buildings, topography, etc.). The water surface does little to attenuate noise, so noise is assumed to attenuate at 6 dB over water; forest and shrub vegetation and buildings

function well to attenuate noise, so noise is assumed to attenuate at 7.5 dB over land. Noise attenuation over water is largely irrelevant to this analysis, because all covered species other than bull trout are terrestrial.

Ambient terrestrial noise is assumed to be 45 dBA, a value attributed by EPA (1971) to a quiet agricultural area. In practice most areas where covered activities would be performed are likely to be quite a bit louder due to residential activities, so a 45 dBA ambient value represents a conservative estimate.

Thus an impact hammer striking a piling generates 104 dB A at 50 feet, which is anticipated to attenuate to ambient levels of 45 dBA at 4,000 feet (0.75 mile) from the source in terrestrial areas. Other equipment required to perform the covered activities (including pickup trucks barges, motor boats/skiffs, and excavator/backhoe, will attenuate to ambient levels in rural residential areas between 50 feet (pickup truck) and 1,100 feet (backhoe).

Canada lynx and grizzly bears are the only listed terrestrial species that may occur within the action area that could be affected by pile driving and other construction noise. Potential impacts associated with terrestrial noise to these species are not expected to occur because none of these species are likely to approach within 0.75 mile of covered activities, at least during daylight hours, due to the general level of human activity in the action area.

5.2.3. Riparian Vegetation Removal

Pier and floating dock construction and marine launching rail installation may entail some removal of riparian vegetation. Riparian vegetation can provide shading that moderates nearshore water temperature during summer months. In-water vegetation provides refuge for small fish, such as juvenile bull trout or bull trout forage fish. Plant roots provide bank stabilization, while riparian trees can generate coarse woody debris inputs that increase in-water habitat complexity while providing organic matter that increases primary and secondary productivity in the aquatic food chain (Carrasquero 2001).

The removal of shoreline vegetation decreases water shading and has been linked to increased water temperatures. Low water temperature (less than 15°C) is required to support bull trout (Carrasquero 2001). However, Lake Pend Oreille is a large, open, regulated reservoir and overall water temperature within the reservoir is not significantly affected by shoreline vegetation. Water temperature in nearshore areas of the lake may receive some measurable effect from shoreline vegetation, primarily along north facing shorelines. Water temperatures in nearshore areas along south facing shoreline areas are not expected to be measurably affected by shoreline vegetation.

Removal of riparian trees would reduce the potential for LWD recruitment, which, in-turn, reduces habitat components for salmonids. LWD is an important in-water component contributing to the production of invertebrate prey for salmonids. LWD also traps sediments and stabilizes and protects shorelines from wave scour and erosion. However, because LWD is popularly perceived as unsightly and impedes uses such a swimming and boating, it is

unlikely that LWD along recreational shoreline properties on Lake Pend Oreille would remain in place long enough to provide substantial habitat value. Removal of riparian trees and shrubs reduces the supply of terrestrial insects to the adjoining water body, reducing a forage source for young bull trout and for small fish that provide bull trout prey.

The potential magnitude of the aforementioned effects depends greatly upon the existing condition of riparian habitats. A reconnaissance of existing waterfront properties on Lake Pend Oreille performed for this analysis in May 2008 indicated that the great majority (more than 90%) of such properties, whether or not they have docks or marine launching rails, currently have only ornamental vegetation (primarily lawn) apart from some scattered remnant native trees. It is thus unlikely that performance of activities covered by Regional Permit 27 would significantly alter the extent or condition of existing riparian vegetation. Moreover, RGP 27 limits the extent of shoreline or riparian vegetation that can be impacted by the covered activities to no more than 8 linear feet of shoreline vegetation. Most existing recreational properties have 100 feet or more of shoreline, so activities performed under RGP 27 can at most produce only localized alteration of riparian habitat. Removal of vegetation on adjacent upland property is primarily regulated by county or city ordinances outside of the jurisdiction of the Corps.

Removal of riparian vegetation may also expose bare soil that can be eroded, contributing sediment to the adjacent waters. Such sediment delivery can cause a variety of effects in addition to those previously mentioned in the discussion of turbidity, including alteration of substrate composition and impairment of benthic productivity.

RGP 27 includes several requirements and special conditions intended to minimize the potential effects of riparian vegetation removal. They include:

- No more than 8 linear feet of existing riparian vegetation will be cleared on any property to construct a pier or floating dock.
- Existing native shoreline or riverbank vegetation will be protected to the extent possible to minimize soil disturbance, erosion, delivery of sediment to the waterway and minimize the affect of construction activity on aquatic biota, including bull trout.
- Disturbed shoreline or riverbank will be protected by appropriate soil erosion control practices to minimize sediment delivery into the water, which may result in an adverse impact on aquatic biota, including bull trout.
- Disturbed soils will be revegetated with native plant species.

In consideration of these measures and the existing condition of riparian areas in the affected area, it is unlikely that implementation of RGP 27 would result in measurable impairment of riparian conditions in the action area, or in measurable effects on any listed species.

5.3. Indirect Effects

The primary indirect effects of the covered activities under RGP 27 include:

- predaceous fish habitat creation,
- shading and a resulting reduction in littoral productivity,
- increased boating activity, and
- water withdrawal.

The following sections describe these indirect effects in detail.

5.3.1. Predaceous Fish Habitat

New piers and floating docks potentially provide cover habitat for ambush predators such as smallmouth bass. While no studies have quantified the effects of overwater structures on predator-prey interactions, the Corps and FWS now consider any new overwater structure to impact juvenile salmonid migration and to provide habitat for predators of juvenile salmonids (Shapiro 2002). Certainly, smallmouth bass (a known predator of juvenile salmonids) have a strong affinity to overwater structures and use such habitat for spawning, rearing, and foraging (Carrasquero 2001). Northern pikeminnow are another predator of juvenile salmonids. In reservoirs and lakes, the northern pikeminnow appears to prefer areas without floating platforms or docks, while in fast-flowing waters northern pikeminnow appear to prefer in-water structures because they create low-velocity habitat (Carrasquero 2001, McLellan and O'Connor 2001). Thus, the construction of overwater structures seems to benefit smallmouth bass in reservoirs or lakes, but has not been shown to alter predation by other predatory gamefish.

It can be inferred that piers and floating docks permitted under RGP 27 could contribute to increased predation to juvenile bull trout, and to a variety of small fish (most notably juvenile kokanee) that provide forage for adult bull trout. However, increased predation on bull trout is not expected to be significant. Adfluvial juvenile bull trout are not expected to migrate to the reservoir from their rearing areas until they are between one and three years of age (Wydoski and Whitney 2003), although some can migrate to the reservoir as young of year. At that time they are still small enough to become prey for other piscivorous fish in Lake Pend Oreille, including lake trout, largemouth and smallmouth bass, northern pikeminnow, northern pike, tiger muskie and other trout species. However, bull trout typically avoid waters where the temperature exceeds 15°C and prefer temperatures less than 10°C. Consequently they are likely to avoid nearshore areas during the summer, when nearshore water temperatures generally exceed 15°C. Earlier and later in the year they may occur in the nearshore (although the nearshore is nearly free of docks after lake drawdown occurs), but predation risk decreases because smallmouth bass largely cease to feed at water temperatures below 10°C.

Regional Permit 27 includes measures that would minimize the impact on bull trout from overwater structures. These measures include restricting dock size, and leaving in-water and shoreline habitat features in place.

5.3.2. Shading

The construction of piers, floating docks, and boat lifts causes increased shading of in-water habitats. The reduction in light affects phytoplankton and aquatic macrophytes, and this condition can reduce littoral productivity and decrease the abundance of salmonid prey organisms. Consequently, increased shading can affect the structure of local plant and animal communities and species diversity (Carrasquero 200 I, NMFS 200 I). Greatest levels of impacts on phytoplankton production occur with shading at water depths of 1 to 2 meters.

Under RGP 27, it is estimated that approximately 250 facilities will be authorized during the 5-year term of the permit. To minimize impacts on littoral productivity, deck size of new piers and floats will be restricted. Conservatively assuming that all new facilities are single owner docks built to the maximum allowable size (100 feet long and 700 square feet area), this represents shading of 2,000 linear feet of shoreline and a total nearshore area of 4.02 acres. Lake Pend Oreille, including the impounded portion of the Pend Oreille River, has a shoreline length of approximately 175 miles, so the proposed action may result in new overwater structures (docks) along 0.22% of the lake shoreline, covering the same portion of habitat in areas within 100 feet of the shoreline. This represents a small alteration of littoral productivity.

5.3.3. Increased Boating Activity

Even small boats with large outboard motors can produce sound pressure levels in excess of 175 dB (Heathershaw et al. 2001 in Washington State Department of Transportation 2006).

Installation of floats, piers, and boat lifts can be expected to cause increased levels of boating activity, both in their immediate vicinity and in the larger lake, because the total amount of mooring space in the lake is increased. Potential impacts from increased boating activity are greatest in shallow water, where they can include increased turbidity from prop wash, uprooting of aquatic plants, pollution from exhaust, and accidental fuel spills and oil leaks (Shapiro 2002, National Marine Fisheries Service 2001). Wave action from increased boating activity can also increase shoreline erosion and uproot emergent vegetation, degrading habitat condition along the shoreline and within the nearshore.

Effects on bull trout from increased turbidity can injure or stress affected fish as described above.

The reduction of aquatic plants can reduce littoral productivity and decrease the abundance of bull trout prey organisms. Pollution from boats, such as an accidental spill or release of petroleum products or other hazardous material could cause short-term exposure to bull trout, potentially resulting in injury or death to bull trout, as well as potential impacts prey species and aquatic vegetation.

5.3.4 Water Withdrawal

The amount of water withdrawn by these small intakes would not be noticeable. Their use would be seasonal and intermittent. The estimated withdrawal of water by a small pump of this type is 92 gallons/minute that would equate to 0.41 acre-feet per day if run continuously. Active storage of the lake is approximately 1.2 million acre-feet of water. The percent of water removed per day per individual intake line would then be approximately 3.42×10^{-5} % if the pump was run continuously for a 24 hour period.

Though juvenile bull trout may utilize shallow water areas in lacustrine habitats, they are temperature sensitive and avoid water temperatures of 15^{o}C or above. Bellgraph, et al. (2012) found only 2 adult bull trout in the shallow water area during the spring at a water temperature of 15.8^{o}C. They further found that temperatures in the areas they snorkeled exceeded 15^{o}C during the summer and fall seasons when the water intakes would be in operation. Saffel and Scarnecchia (1995) found that juvenile bull trout densities were highest in stream reaches where the water temperature was below 13.9^{o}C. The likelihood of juvenile bull trout using the shallow areas of lacustrine environments where these water intakes would be operated during the summer and early fall is discountable. During the winter months these areas would not be available for bull trout as they would be dry.

Along with the withdrawal of water would be the vibration and underwater noise generated by the submersible pumps used. Vibration and underwater noise (<80 db) generated by submersible pumps would likely cause an avoidance response in all fish species during periods of operation. Operation would be seasonal and intermittent. This response would not rise to the level of injury and would be insignificant.

In a meeting between the Corps and the USFWS on September 27, 2013, it was agreed that the small diameter water lines could be installed in certain areas of Lake Pend Oreille with no affect to bull trout or their designated critical habitat if specific criteria are met. Figure 6 shows the areas agreed to. An effects screen is found in Appendix A to provide project managers a tool to determine if proposed projects are “no affect”, covered under this consultation or will require individual consultation.

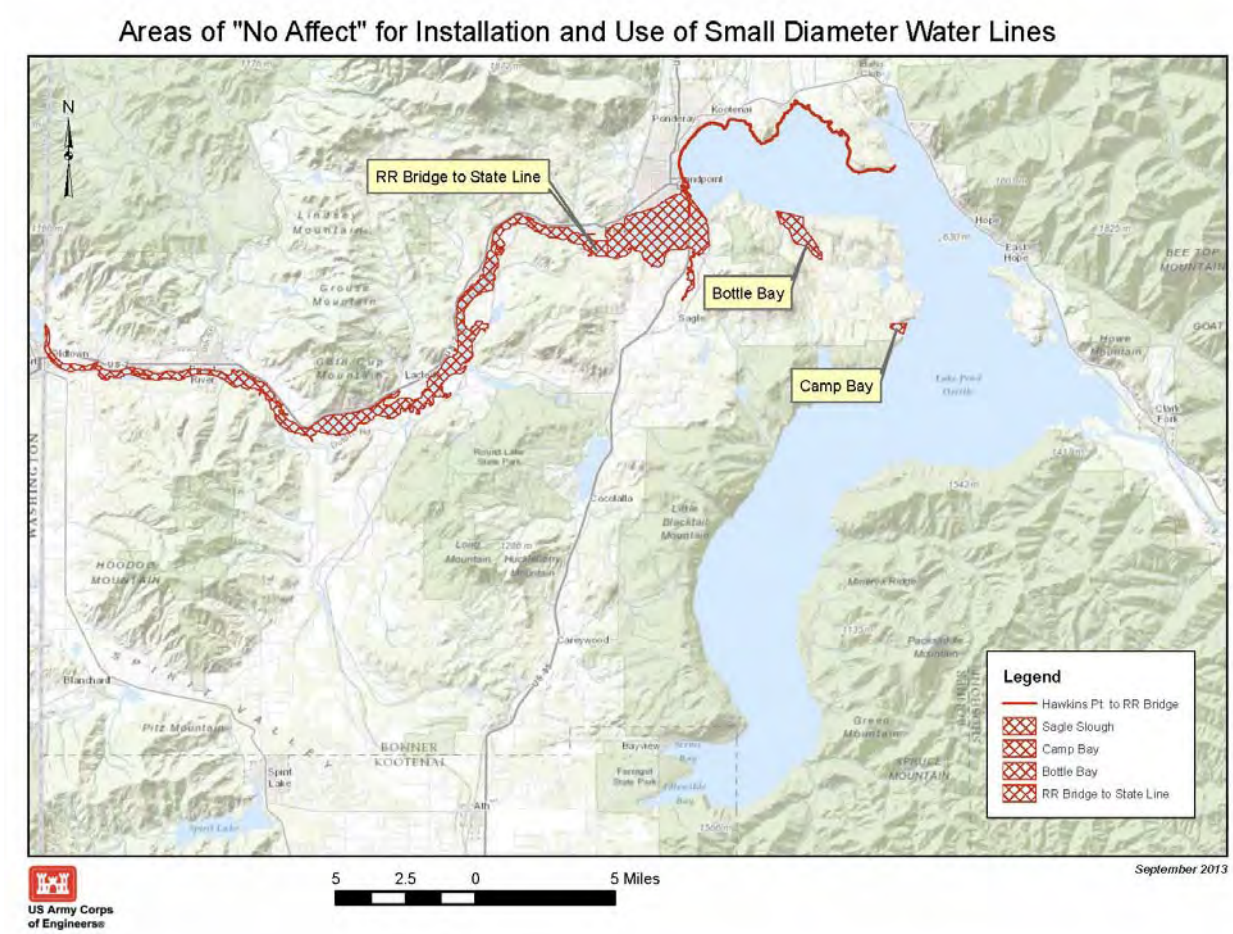

Figure 6. Areas of "No Affect" for installation of small diameter water lines.

5.4. Effects from Interdependent and Interrelated Actions

No interdependent or interrelated actions would be associated with the activities authorized by RGP 27. The covered activities would be single and complete actions; therefore no effects from interdependent or interrelated actions would occur.

5.5. Effects to the Environmental Baseline

With the incorporation of the conservation measures described below, there would be no degradation of the environmental baseline. Historical alterations to the environmental baseline from the impoundment of waters and intensive agricultural and timber harvest have greatly altered and degraded aquatic and shoreline habitats. Implementation of the conservation measures would maintain shoreline condition with the maintenance of riparian areas.

5.6. Conservation Measures

Conservation measures are included in the text of RGP 27 and are presented in detail in Chapter 7. These measures serve to reduce many potential effects of the proposed action to insignificant levels. Potentially significant residual effects are named below.

5.7. Effect Determinations

5.7.1. Bull Trout

The information and analysis presented in this PBA support the finding that the covered activities warrant an effect determination of **May Affect, Likely to Adversely Affect** for bull trout of the Columbia River DPS.

A determination of **May Affect** is warranted for all of the covered activities based on the following rationale:

- Bull trout are documented as occurring in the waters where these covered activities will occur and are known to occur in the action area defined for these covered activities.

- Some of these covered activities will require in-water work and will affect habitat conditions for bull trout within the action area defined for the covered activities.

A determination of Likely to Adversely Affect is warranted based on the following rationale:

- Elevated underwater sound may result from pile-driving activities, which may exceed the FWS threshold for injury (180 dB_{Peak}) within 398 feet, and the threshold for disturbance (150 dB_{RMS}) within 1,305 feet. There is a strong likelihood that some bull trout may be present within these distances.

- Given the number of permits issued annually, there is a potential for an accidental spill of petroleum distillates or other harmful materials during project construction. Exposure of bull trout to even very low concentrations of petroleum distillates can result in injury or death.

Bull Trout Designated Critical Habitat

The information and analysis presented in this PBA support the finding that the covered activities warrant an effect determination of Not Likely to Adversely Effect for Columbia River DPS bull trout designated critical habitat.

A determination of Not Likely to Adversely Effect is warranted based on the following rationale:

- Critical habitat has been designated in the action area; the covered activities will occur within designated critical habitat.

- The covered activities will involve in-water work and will modify designated critical habitat.

- Modifications to designated critical habitat will not rise to the level of significance.

5.7.2. Canada Lynx

The covered activities will have **No Effect** on Canada lynx. The action area does not contain suitable habitat for the species, and actions will be restricted to the shoreline areas with relatively high human activity.

5.7.3. Grizzly Bear

The covered activities will have **No Effect** on the grizzly bear. The action area does not contain suitable habitat for the species, and actions would be restricted to the shoreline areas with relatively high human activity.

Chapter 6. Cumulative Effects

6.1. Scope

In the context of the ESA, cumulative effects encompass the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the covered area. Future federal actions, including those that are unrelated to the proposed action, are not considered in the cumulative effects analysis because they require separate consultation pursuant to Section 7 of the ESA. This cumulative effects analysis addresses impacts in the context of general trends in population and land use in Bonner County, which includes nearly the entire action area for the proposed action. The action area also includes a small portion of Kootenai County, but that land consists largely of park lands where the proposed action would not be implemented.

6.2. Population

Human population growth in western Montana and northern Idaho has been accelerating since the 1980s, a trend that appears likely to continue. In Bonner County, population grew 38% between 1990 and 2000, more than three times the rate of overall U.S. population growth (Environmental Protection Agency et at. 2007), but has grown only about 12% since 2000 (U.S. Census Bureau 2008). The total population of Bonner County is only about 40,699 (U.S. Census Bureau 2013) people. The population density of about 24 people per square mile indicates a predominantly rural area, but the largest town (Sandpoint, pop. 7,577 in 2013) is

on Lake Pend Oreille, and a large fraction of the County's population lives on or near the lake or the Pend Oreille River. The resident population increases substantially in the summer months due to general tourism and arrival of long-term summer residents with second homes on the Pend Oreille system.

Future growth rates are difficult to predict. Bonner County population growth in recent years has occurred primarily in response to immigration, and a large fraction of the immigrants are financially independent, meaning that their economic status is tied more to national than to local conditions. There is little native industry that is not related to tourism and the service economy, household income is low, and real estate prices are high. In addition, the area is far from major population centers and the recent rapid increases in energy and transportation costs are likely to have a disproportionate adverse impact on economic growth. It appears likely that the low growth rates observed since 2000 may continue into the future, and in fact, may slow even more.

6.3. Residential, Commercial, and Infrastructure Development

Population growth typically results in increasing residential and commercial development. Improvements and upgrades to infrastructure (including highways, other transportation facilities, pipelines, power lines, and power plants) will likely track closely with increased residential and commercial development. Primary pathways of potential effects of land development include direct habitat loss, decreased water quality, contamination of waterways and uplands, changes to runoff patterns, habitat fragmentation, isolation of populations, and loss of habitat diversity. As development increases, the general quantity and quality of habitat suitable for threatened and endangered species will most likely decrease.

Mitigating factors in this projection include the large fraction (approximately 62% [U.S. Fish and Wildlife Service 2002]) of the Lake Pend Oreille shoreline currently in protected status (primarily national forest), and the recent and projected slow economic growth discussed above. Statistics relevant to social characteristics taken during the 2000 census found that populations in Bonner County remain concentrated in small towns, which may allow future infrastructure development to progress more slowly than in areas with large urban population centers (U.S. Census Bureau 2008). Nonetheless, any amount of build-out associated with population growth will likely lead to further habitat degradation. Actions taken to mitigate for the potential impacts of development, such as avoidance of habitat critical to species survival and strong urban/rural boundaries, may help slow the rate of habitat degradation.

Chapter 7. Conservation Measures

RGP 27 incorporates a number of requirements and special conditions that would minimize impacts on shoreline and aquatic habitats, ensuring that the environmental baseline habitat is maintained. The following requirements and special conditions constitute conservation measures:

- All authorized structures will be for noncommercial, residential activities only.

- No more than one pier or floating dock, one marine launching rail, four mooring pilings, two portable boat lift stations, one water intake line, or one mooring buoy in aggregate are authorized for each riparian property owner.
- In no case will a pier or dock extend more than 100 feet waterward of the ordinary high watermark, regardless of depth.
- Total deck area of a single-use pier or floating dock, including the access ramp, will not exceed 700 square feet. Total deck area of a joint-use pier or floating dock, including portions of the access ramp extending waterward of elevation 2,062.5 NGVD, will not exceed 1,100 square feet.
- Only open-pile pier construction is authorized. The maximum size for steel piles is 10-inch in diameter. Piling will be driven or set in excavated footings. No more than 10 cubic yards will be excavated for footings. Footings will be backfilled with native material, concrete, sand, gravel, grout or epoxy. All excavation and filling of footings will be done in the dry during low water conditions. All excess excavated material will be disposed of in an upland location in a manner that precludes it from reentering waters of the United States.
- No other structures, such as living quarters, toilets, fueling facilities, or permanently covered boat moorages will be constructed or installed on any dock or pier.
- Floating docks will be designed to contain encapsulated flotation material under all conditions. Open cell polystyrene (beaded Styrofoam) is not allowed under any circumstance nor is the reuse of industrial drums.
- Piers and floating docks will be constructed generally perpendicular to the shore and no more than 8 feet of shoreline vegetation will be disturbed at the access point to the pier or dock.
- In-water pile driving will utilize a bubble curtain and a 6-inch minimum thick wood, rubber or synthetic cushion block between the driving apparatus and the pile while driving any steel piles.
- Marine launching rail systems will be anchored to the surface of the lakebed or on low profile concrete plank ties, untreated wood ties, or similar structures resting on the bed. In areas of bedrock, the rails may be attached with drilled and anchored bolts. If a boat launching ramp exists on the property, the marine launching rail system will be installed on the existing ramp surface.
- Marine launching rail systems will not extend more than 120 feet waterward of the ordinary high water mark.
- Construction of marine launching rails will be done in the dry during low water conditions.
- Mooring piles will be single, separate and not constructed so as to form a multi-piled dolphin.
- Mooring piles shall not be installed more than 55 feet waterward of the ordinary high water mark or to length of the permitted dock, whichever is less.
- Portable boat-lift stations shall not be installed more than 55 feet waterward of the ordinary high water mark or the length of the permitted dock, whichever is less.
- Portable boat-lift stations will be located adjacent to existing authorized floats and piers.

- Portable boat-lift station canopies will be made of canvass or synthetic cloth and will be part of the boat-lift station and may be attached to the dock, pier, or boat lift.
- The diameter of intake lines shall not exceed 2 inches.
- The waterline can be attached to an existing dock or pier, placed on the lake bottom and held down by concrete blocks or similar means, or trenched into the lake bottom in the dry during the lake drawdown period.
- A submersible pump can be part of the structure, either attached to a dock or pier or lying on the lake bottom.
- Waterlines will not extend more than 120 feet waterward of the 2,062.5 NGVD elevation.
- Mooring piles and mooring buoys shall not be installed more than 55 feet waterward of the ordinary high water mark or to length of the permitted dock, whichever is less.
- Existing native shoreline or riverbank vegetation will be protected to the extent possible to minimize soil disturbance, erosion, delivery of sediment to the waterway and minimize the affect of construction activity on aquatic biota, including bull trout.
- Disturbed shoreline or riverbank will be protected by appropriate soil erosion control practices to minimize sediment delivery into the water, which may result in an adverse impact on aquatic biota, including bull trout.
- Disturbed soils will be revegetated with native plant species.
- All construction debris will be disposed of in an upland location in compliance with local or state ordinances or regulations and in a manner that precludes it from reentering waters of the United States, including wetlands.
- Wood materials used to construct any of the activities described in this Regional Permit 27 shall comply with the Environmental Protection Agency (EPA). Contact the EPA at http://www.epa.gov/oppad001/reregistration/cca or Idaho Department of Environmental Quality at: https://www.deq.idaho.gov/media/488795wood_products_guidance_final.pdf.
- Steel piles must be 10-inches in diameter or less. Wood pile diameter is not limited.
- Installation of light penetrative decking (e.g. grating or clear translucent material) will be required for docks constructed between 100 yards and ¼ mile on each side of the mouth of exclusion streams. Light penetrative decking will also be required for construction of docks near known kokanee spawning areas to reduce potential impacts to kokanee as they are a potential prey base for bull trout. Grating or clear translucent material will be required to cover the entire surface area of the piers and ramps; grating must have at least 60% open area and clear translucent material must have greater than 90% light transmittance (as rated by the manufacturer).
- All contractors operating under RGP 27 are required to have onsite a spill response kit. Additionally, any equipment operating over water will be required to replace hydraulic fluid with vegetable or mineral oil, which is far less toxic to fish and other aquatic organisms.
- No in or overwater concrete pouring will be permitted.

These conservation measures become required conditions of each permit issued by the Corps under RGP 27.

Chapter 8. References

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APPENDIX A

Effects Screen for Small Diameter

Water Intake Projects

Effects to Bull Trout

Lake Pend Oreille and the Pend Oreille River

No Effect

1. Project is within the "no affect" area in Figure 6 on Lake Pend Oreille or the Pend Oreille River and meets the following:

    a. If the pipe is to be buried, trenching and installation is conducted in the dry during the winter drawdown.

    b. The intake will only be used between 1-June and 15-September each year.

NLAA Covered Under the Programmatic Consultation

1. Project is outside of the "no affect" area on Figure 6.

2. Project location is not within ¼ mile of the mouth of a spawning tributary identified on Figure 3.

3. The intake will only be used between 1-June and 15-September each year.

APPENDIX B

Monitoring and Tracking Reports

Project Completion Form

Permit No.: NWW-_____-_____

Applicant:_____

Date:_____

Name of Project:_____

Date Project Completed:_____

Location of Project:_____

Objective of Project:_____

Was project completed as designed (including reclamation of work areas)? (Yes/No): _____

If No, please explain:

_____

_____

_____

Were the objectives of the project met (i.e., how was *success* defined?) – explain:

_____

_____

_____

Attach photos which document compliance with project implementation measures.

If project included turbidity monitoring, report results:

_____

_____

_____

Regional General Permit 27 Tracking Report

Permit No.	Project Name	Date Completed	Action Type	Location	Completed as designed
NWW-2014-XXXXXXX	Joe Blow's Dock	3/12/2014	Pier or floating dock	Lake Pend Oreille	yes