



**US Army Corps  
of Engineers**®  
Portland District

## **Final Environmental Assessment**

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# **GREEN PETER RESERVOIR / QUARTZVILLE ROAD RECREATION IMPROVEMENTS LINN COUNTY, OREGON**



March 2014

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## INTRODUCTION

The U.S. Army Corps of Engineers, Portland District, (Corps) is proposing recreation improvements at Green Peter Reservoir. The reservoir is located on the Middle Santiam River on the west slope of the Cascade Range northwest of Sweet Home in Linn County, Oregon and is part of the Corps' Green Peter Project completed in 1967, one of 13 multi-purpose dams and reservoirs managed by the Corps in the Willamette River Basin. Foster Reservoir, which regulates flow from Green Peter, is located 5 miles downstream. Green Peter Reservoir has a primitive, high mountain lake character and is a popular destination for recreation, as is Foster Reservoir. The Green Peter Project is located in various sections within Townships 12 and 13 South and Ranges 2 and 3 East. The elevation within the Green Peter Project ranges from 750 to 1,980 feet.

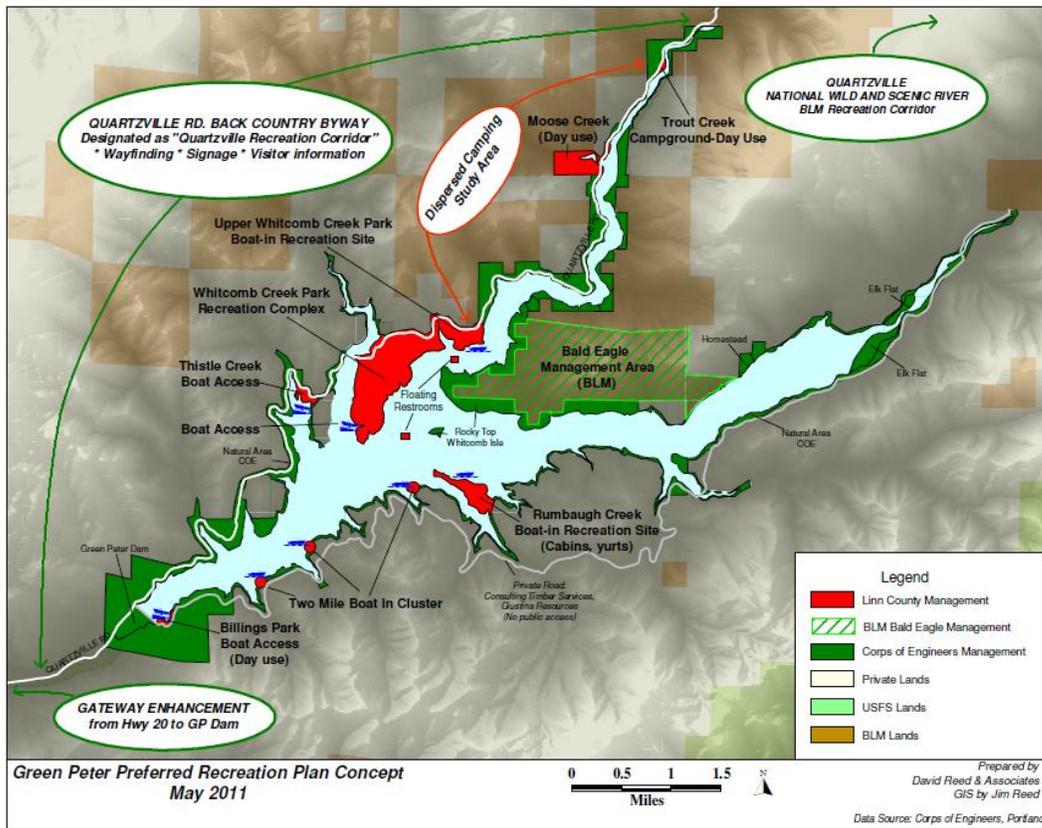
Whitcomb Creek Park and Thistle Creek Boat Ramp are the main developed recreation areas at Green Peter and are operated by the Linn County Parks and Recreation Department (Linn County) under a lease agreement with the Corps, while Moose Creek Park, Billings Park, and Trout Creek Campground are currently operated by the Corps. All five areas are accessible by vehicle on paved roads (Figure 1). The Quartzville Road Corridor and Backcountry Scenic Byway parallels Corps managed land along the north shore of the reservoir and crosses Bureau of Land Management (BLM) and U.S. Forest Service (USFS) managed lands before it ends to the east at Highway 22.

Money spent by visitors to Corps lakes adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around Corps lakes (Corps 2010). Green Peter Reservoir is located in a rural area, with the nearest cities being Sweet Home and Lebanon, both of which are small cities. It is an easy drive from the larger cities of Salem, Albany, Corvallis, and Eugene/Springfield. The Corps estimates that 263,000 visits were made to Green Peter Reservoir in 2011 and 706,000 visits to Foster Reservoir. Boating, waterskiing, camping and fishing are the most popular recreation activities at Green Peter, with some swimming, canoeing, kayaking, and sailing. The reservoir is known for its excellent rainbow trout and kokanee fishing, with large daily limits. The reservoir also supports a good population of smallmouth bass. In 2010, the Corps estimated that the operation of Green Peter Reservoir results in approximately \$8.8 million in visitor spending within a 30-mile radius of the reservoir, creating 90 jobs, approximately \$6.2 million in total sales, \$2.5 million in labor income, and \$3.9 million in value added; i.e. wages and salaries, payroll benefits, profits, rents, and indirect business taxes (Corps 2010).

Steep topography throughout the project area limits suitable development and reservoir access. Shoreline access is generally confined to developed recreation areas, roadside pullouts and old logging roads. Historically unregulated, dispersed camping occurs on pullouts along Quartzville Road between the road and reservoir. Although Corps regulations do not allow for camping outside of designated recreation areas, the regulation has not been enforced because of limited developed camping sites and because of the lack of personnel resources to control dispersed camping. Throughout the years, efforts have been made to mitigate for public safety, environmental impacts and fire prevention, including the addition of steel fire rings at over 50 pullouts, and regulatory signage throughout the Quartzville Corridor.

The Corps will be making a decision on many of the recommendations identified in the 2011 Recreation Concept Plan, specifically closure of Quartzville Road to dispersed camping and improvements at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground. Whitcomb Creek Park provides 39 campsites and, as noted above, is currently leased to and operated by Linn County. Moose and Trout Creeks are currently operated by the Corps, but would be leased to and operated by Linn County if the Preferred Alternative is implemented. The lease of Moose Creek would be by the Corps, while the lease of Trout Creek would be by both the BLM and Corps.

**Figure 1. Green Peter Reservoir in Linn County, Oregon including Green Peter Dam at lower left, Quartzville Road along the northern edge of the reservoir showing the limits of current dispersed camping, Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground.**



These efforts were made in cooperation with an interagency working group including the Corps, BLM, and USFS to address concerns from adjacent private timber land owners. There are still public safety concerns and the natural resources have been severely degraded in these sites due to overuse, human waste, and vandalism. Greater oversight of the land could be achieved by leasing to the County.

In 2009, the Corps eliminated dispersed camping from the Whitcomb Bridge, which accesses Whitcomb Creek Park, to increase opportunities for day use access and restricted dispersed camping along Quartzville Road. The Corps also implemented a seasonal camping closure in an effort to focus limited resources when it would be most beneficial to a majority of the visitors (i.e. when dispersed camping activity is low). The Corps also began closing several dispersed campsites damaged by vandalism and dumped garbage. Funding constraints prevents the Corps from replacing steel fire rings as they are destroyed or removed by visitors. A reorganization and relocation of park ranger staff has led to reduced patrols in the area. Corps park rangers stationed at Fern Ridge and Cottage Grove patrol the area once a week during the recreation season and rely heavily on other agencies to regulate fire restrictions and public safety.

**Figure 2. Whitcomb Creek Park (left), Trout Creek Campground (center), and Moose Creek Park (right).**



The 1987 Green Peter Master Plan (Corps 1987) identified a number of measures including improvements at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground. The plan has not yet been fully implemented. The Corps, Linn County Parks, and David Reed and Associates collaborated to develop a Recreation Concept Plan for Green Peter Reservoir (Linn County 2011). This plan involved public scoping meetings and resulted in development of a concept plan to identify opportunities to enhance recreation at Green Peter Reservoir. This plan identified three phases of recreation improvements to take place over 15 years as funding opportunities become available for specific planning and implementation efforts. These planned recreation improvements rely heavily on alternative funding sources and partnerships for development in order for Linn County Parks and Recreation to assume responsibility to operate them in a manner to generate revenue for long term sustainability.

### **CURRENT PROBLEMS WITH RECREATION AT GREEN PETER**

Unregulated dispersed camping occurs at nearly every pullout between Quartzville Road and the shoreline of Green Peter Reservoir. The 36 C.F.R. § 327.7(a) permits camping only at sites and/or areas designated by the Corps District Commander. The current locations of dispersed camping at Green Peter are not at designated sites and, consequently, do not receive funding to support the activity. Limited funding and staffing prevents the Corps from designating and developing the dispersed camping for long term sustainability, and nowhere else within the Portland District is dispersed camping authorized. In addition, the Corps is concerned about public safety, employee safety, and protecting natural and cultural resources in the area.

Many pullouts used for dispersed camping are not large enough to accommodate vehicles and camping equipment. Vehicles, boat trailers, and other equipment typically encroach upon the roadway, presenting a hazard to people and property (Figure 3). Many of the pullouts would remain open to accommodate single vehicles for day use access. Other activities sometimes associated with the unregulated camping environment include disturbances, theft, assaults, and rowdiness including gunfire that put enforcement staff in uncomfortable and potentially unsafe situations when they attempt to contact individuals and groups to control activities. It requires substantial enforcement resources from all agencies involved including the Linn County Sheriff Department and Oregon Department of Forestry to maintain public safety and resource protection in this area. It is expected that public safety agencies would be able to reduce their time on Corps managed lands in the Quartzville Corridor within the first few years after closure of dispersed camping.

Heavy use through the summer at dispersed camping sites creates resource damage including vandalized trees, vegetation damage, hardened surfaces from soil compaction, sanitation issues from improper disposal of human waste and garbage, and potential fire threats to nearby timber resources. Fire threats and degradation of resources would continue if the overuse is not addressed.

**Figure 3. Dispersed camping on pullouts along Quartzville Road with log truck traffic very near, creating undesirable and unsafe recreation conditions.**



## **PUBLIC OUTREACH**

The 2011 Recreation Plan for Green Peter Reservoir noted that prior outreach efforts indicated a large number of visitors to the reservoir are most concerned about safety and security, especially related to dispersed camping in the Quartzville Recreation Corridor. Other concerns expressed by visitors included a critical lack of basic recreation facilities for both boat access and shoreline recreation, a need for improved stewardship ethics by visitors, increased visitor management and law enforcement, and fire danger. Safety has been identified as an issue for public agency employees as well; Corps park rangers have expressed concerns about contacting some large groups and small dispersed groups and the Oregon Department of Forestry has expressed concerns about contacting large groups for fire violations.

During the summer recreation season of 2012, Willamette Valley Project Natural Resource Management (NRM) staff conducted weekly patrols of the Corps land along Quartzville Road and Green Peter Reservoir. Uniformed staff members patrolled the area in pairs with the goals of enforcing Corps regulations and informing as many people as possible about the potential upcoming changes related to the Green Peter Reservoir Recreation plan. When contacting visitors, Corps staff distributed a map of the Quartzville Corridor that provides information about camping regulations on lands managed by the Corps, USFS, and BLM. The section of the map that describes Corps lands included some brief information about phase one of the Green Peter Recreation Plan and included a link to the plan on the Linn County website.

From May 29 through September 30, 2012, NRM staff contacted almost 300 visitors during 18 weekday patrols along Quartzville Road. About 200 copies of the maps were either handed to a visitor or left on vehicles or camping equipment. In addition, contracted Linn County Sheriff deputies were provided copies of the map to distribute to visitors during their weekend patrols. Deputies conducted 279 hours of patrols on Corps land from May 17 through September 30, 2012 (106 of these hours were during Memorial Day and Labor Day weekends when all camping sites were occupied). Deputies spoke with campers about the potential upcoming changes whenever possible. In 2013, NRM staff continued to contact visitors and inform them about the potential upcoming changes.

In general, visitors understood the reasons why the Corps was considering the elimination of dispersed camping along Quartzville Road. Many visitors described their own concerns about resource damage, sanitation, and safety. People were especially disturbed by the amount of litter that dispersed campers often leave behind after camping.

Some visitors expressed disappointment that they may no longer be able to camp along Quartzville Road and Green Peter Reservoir, especially in cases where camping there had been a family tradition. Some visitors said they would be glad to pay for the privilege to camp in their favorite spots if there was some kind of system to reserve and pay for sites along the road. With the exception of homeless campers who can't afford to pay for camping, most visitors thought it was a good idea to make the Trout Creek area into a developed campground with a fee.

Of the 295 contacts recorded in the ranger patrol logs, only 11 visitors were described as being negative toward potential changes, 2 of which were very negative. One visitor said that he was

circulating a petition among frequent campers to protest the elimination of roadside camping, but no petition was submitted to the Corps. Visitors cited a variety of reasons why they felt Whitcomb Creek Campground was not a good alternative to dispersed camping at Green Peter Reservoir including that it was too expensive, too far from the water/shoreline, that campsites would be too small and close together, and that too many restrictions are in place at developed campgrounds (i.e. quiet hours).

Overall, the 2012 outreach efforts were successful in reaching a lot of regular campers that use the Quartzville Corridor. Many campers who were contacted during 2013 were already aware of the upcoming changes due to the flyers posted at all the restrooms and from news articles that have highlighted the topic over the past year. If a decision is made to move forward with the elimination of dispersed camping, most users will already be aware of the plans and will understand the reasons for the decision.

The Corps conducted additional public outreach by staffing a table at a multi-agency open house in Sweet Home, Oregon on February 25, 2013. This open house was widely publicized in the Sweet Home area and the proposed changes at Green Peter were listed as a specific item of interest. Over 60 direct contacts were made regarding Quartzville Corridor issues. Nearly all of the interested public expressed that they were looking forward to the improvements. In addition BLM and the USFS, both of which own and manage lands which are used for dispersed camping near the Green Peter Project, have expressed support for closure of dispersed camping on Corps' lands along Quartzville Road; BLM and USFS lands are discussed further in the Cumulative Effects section.

## **PURPOSE AND NEED FOR ACTION**

### **Purpose:**

The purpose of the project is to improve recreation conditions at Green Peter Reservoir by implementing actions identified in the 2011 Recreation Concept Plan. Providing quality, safe recreation opportunities to the public is consistent with objectives in the 1987 Corps Green Peter Lake Master Plan.

### **Need:**

The need to improve recreation conditions at Green Peter Reservoir is to increase safety and health conditions for campers and to reduce harmful impacts to the environment by eliminating dispersed camping, and therefore being in compliance with the above mentioned 36 C.F.R. §327.7(a), and to fulfill previously identified actions in the Recreation Concept Plan.

## **ALTERNATIVES**

### **1) Preferred Alternative: Implement the four actions identified in the Recreation Concept Plan:**

Four aspects of recreation improvements are identified and evaluated in the Preferred Alternative of this Environmental Assessment (EA). These proposed actions are described below (for

dimensions and square footage of the various components described below, see the section on Ground Disturbance under Effects of the Proposed Action). Design drawings are provided in Appendix 1.

The actions identified in the 2011 Recreation Concept Plan are the following:

- 1) Eliminating dispersed camping along Quartzville Corridor on Corps land (from the dam to mile post 17.2, just past Trout Creek).
- 2) Expansion of recreation facilities at Whitcomb Creek Park (out-granting to Linn County for management would continue).
- 3) Improvement of facilities at Trout Creek for management as a group camp site and out-granting to Linn County Parks for management.
- 4) Improvement of facilities at Moose Creek for management as a day use site that can accommodate groups, and out-granting to Linn County Parks for management.

### ***Quartzville Corridor Roadside Improvements and Permanent Camping Closure***

The Corps would administratively eliminate dispersed camping along Quartzville Road at Green Peter Reservoir; this would include a press release, signage, and enforcement by the Linn County Sheriff's Office and the Corps. Closure of the Quartzville Corridor for camping is not intended to prevent public day use. Many gravel roadside pull-offs would not be restored to native vegetation, and these would continue to be available for day use parking and reservoir access. Day use parking would still be available for 4 of the 5 sites proposed for physical closure in 2014. In the last site proposed for physical closure, parking within walking distance of the reservoir would remain. Public use would continue to be available at nearby sites.

### ***Expansion of Whitcomb Creek Park Facilities***

Whitcomb Creek Park comprises 328 acres and is the largest and most highly developed park on the Green Peter Project land. It currently has 39 campsites, group campsites, a swim beach, and a boat ramp. The 1987 Master Plan proposed 124 campsites for Whitcomb Creek Park that were never developed. The actions identified in the 2011 Recreation Concept Plan that are included in this EA are detailed below and the Areas of Potential Effect (APE), i.e. the area of ground disturbance, are shown in Figure 4.

*Whitcomb Creek Park Existing RV Campground and RV Campground Expansion:* Development includes approximately 40 new recreational vehicle (RV) sites, 6 pull-through RV Sites for vehicles pulling trailers or for the longer RV, 3 restrooms with showers, a drain field, 1 additional vault restroom, 1 overlook shelter, and 1 park ranger resident area (temporary trailer).

*Whitcomb Creek Park Shelter Camping and Group Shelter:* This addition to Whitcomb Creek Park would allow for up to 14 camping shelters with a quality experience by providing an excellent view of the reservoir. A rustic group camping area with 9 tent sites would be provided on a knoll, also with a good view of the reservoir. A trail system wide enough to accommodate ATV's for maintenance purposes and 3 composting toilets are also included. Additionally, 2 parking areas would serve as a trailhead for the camping shelters, and the other one would serve

as a trailhead for the group camping area. The other area is an expansion/redevelopment of the existing group camping area. Included in this redevelopment would be 2 group picnic shelters, several tent/shelter sites and a connecting trail system. The parking lot and restroom are existing infrastructure.

*Whitcomb Creek Park Entry and RV Dump Station:* Visitation would be expected to increase with the proposed expansions. In order for vehicles to enter and exit the park safely and to prevent congestion on Quartzville Road, the entrance would be widened. A staffed kiosk would be built in order to provide increased security by registering users and provide information to the public. An RV dump station would be built near the entrance to properly dispose of waste from the increased RV use. Quartzville Road and a small portion of Park Road would be widened to accommodate traffic queuing onto Quartzville Road. The extra width on Quartzville Road would serve as a traffic lane entering into the Park while leaving the County Road open for the traveling public and for commercial operations. An addition of a camera at the Kiosk would provide the camping public with a sense of safety and comfort knowing vehicles are being monitored as they enter and leave the Park. An RV dump station with a storage tank, and a square-shaped maintenance storage area would be constructed. The availability of water would be a factor in placing the dump station at this location. A well would be excavated to supply the necessary water for the dump station. The area where this facility is planned is heavily wooded with Douglas-fir trees and a thick understory of salal, vine maple, sword fern, and various other plants.

*Upper Whitcomb Creek Park/Campground:* This site would be developed to provide additional boat-in campsites. This relatively simple development plan would allow users to reserve and rent the site as a group or individually. A composting toilet or a vault toilet would serve this site. There would be 7 tent sites constructed; these tent sites could, alternatively, be developed as small camping shelters. A picnic table and barbeque stand would accompany each tent/shelter site. A large covered group shelter is located centrally; there would be a few trees and some vegetation removed in order to develop the group shelter. The openness of this site and limited vehicle access allows for minimal resource impacts in the camping area. Tent/shelter sites can be constructed without any tree removal and minimum vegetation disturbance. A parking area for 8 to 10 cars is located near Quartzville Road for the purpose of allowing a hike-in camping experience. Several Douglas-fir trees and the ground vegetation would be removed to develop this small parking area. Improvements would be made to the maintenance road to also serve as a trail to the site.

A boat ramp improvement may occur in the future near the southern end of Whitcomb Creek Park; this was originally part of the Preferred Alternative outlined in this EA, but was removed from the current plans. Linn County Parks will work with the Oregon State Marine Board to design and build an extension to the boat ramp that will allow access to the reservoir during lower water levels, which are common during summer. The current design of Whitcomb Creek Park does not provide enough parking, and the parking available does not accommodate the size of boats and trucks that are typically in use now. Boat ramp and parking improvements is now considered a reasonably foreseeable future action and is discussed in the Cumulative Effects section later in the text.

### ***Improvements at Moose Creek Park***

Proposed enhancement and management changes would increase day use access opportunities and provide groups with a safe area to congregate in a minimally developed setting. A soil berm would be constructed and planted with native vegetation along Quartzville Road which would provide the needed separation of the Moose Creek Park from the road. Tall growing deciduous trees would be planted on the berm. Conifers, spaced appropriately to retain ability to monitor the site from Quartzville Road, would also be planted. The entry and exit between the planted berm would provide a 90-degree angle to Quartzville Road. The large boulders currently in place would be removed and replaced by a rustic fence. A gate structure would be installed and the center of the parking area would be filled with a soil berm and planted with native vegetation to create an island. Signage would be placed on the island where vehicles would be able to see it as they enter the site. A picnic shelter and fixed fire circle with log seating arranged around its perimeter would be installed. Disturbed areas would be restored to a soil surface with native grasses. Standard-depth parking stalls (20 feet) and some extra deep stalls (30 feet) would be provided. A nature trail, involving no tree removal, would be constructed and picnic tables would be installed between the parking area and the Moose Creek area in various locations. The existing functioning restrooms are adequate for the redevelopment of this site. This area would be out-granted to Linn County Parks for management under a park and recreation lease with the Corps. The APE is shown in Figure 5.

### ***Improvements at Trout Creek Campground***

Specific components of proposed improvements at the Trout Creek Campground include closing off the 2-angled entrances/exits and developing one entry/exit that is at an angle of 90 degrees to Quartzville Road. The existing entry points would be blocked with soil filled berms and planted with native plant materials. Also, parking along Quartzville Road would be eliminated by filling the area with soil and adding native vegetation. A rustic fence would be installed to keep vehicles from parking in this area and would provide a barrier between the camping area and Quartzville Road which would help provide a safe recreational area. About 9 small Douglas-fir trees ranging from 8 inches to 14 inches diameter at breast height (dbh) would be removed for this new entry. Some excavation would occur on the west side of the park road. Removal of up to 10 second growth Douglas-fir trees would be required to get the approximately 40 to 50 parking stalls planned for this site. Rustic fencing and wooden bollards would be installed to keep vehicles from randomly driving in areas that are inappropriate. This would protect the native vegetation on the site. The existing random tent camping in the Douglas-fir grove would be organized and identified with numbered markers and picnic tables. Users would park in designated parking stalls and walk on gravel trails short distances to their assigned tent camping sites. The gravel trails would encourage users to stay on the paths and help direct movement, therefore allowing the ground vegetation to become reestablished. Signage depicting the reestablishment of ground vegetation would be placed throughout the redeveloped site. Four group camping shelters would be placed along the waterside of the park road at strategic locations. These shelters would be available for reservation, with rental fees. An elevated barbeque stand and picnic tables would be installed for each shelter. The parking area is approximately 39,000 square feet; most of the area is already impacted except there would be a need to remove approximately 10 Douglas-fir trees to develop the parking plan. This area would

be out-granted to Linn County Parks for management under a Park and Recreation lease with BLM and the Corps. The APE is shown in Figure 6.

All staging for the actions described above at the 4 locations would occur on previously disturbed ground.

## **2) No Action Alternative:**

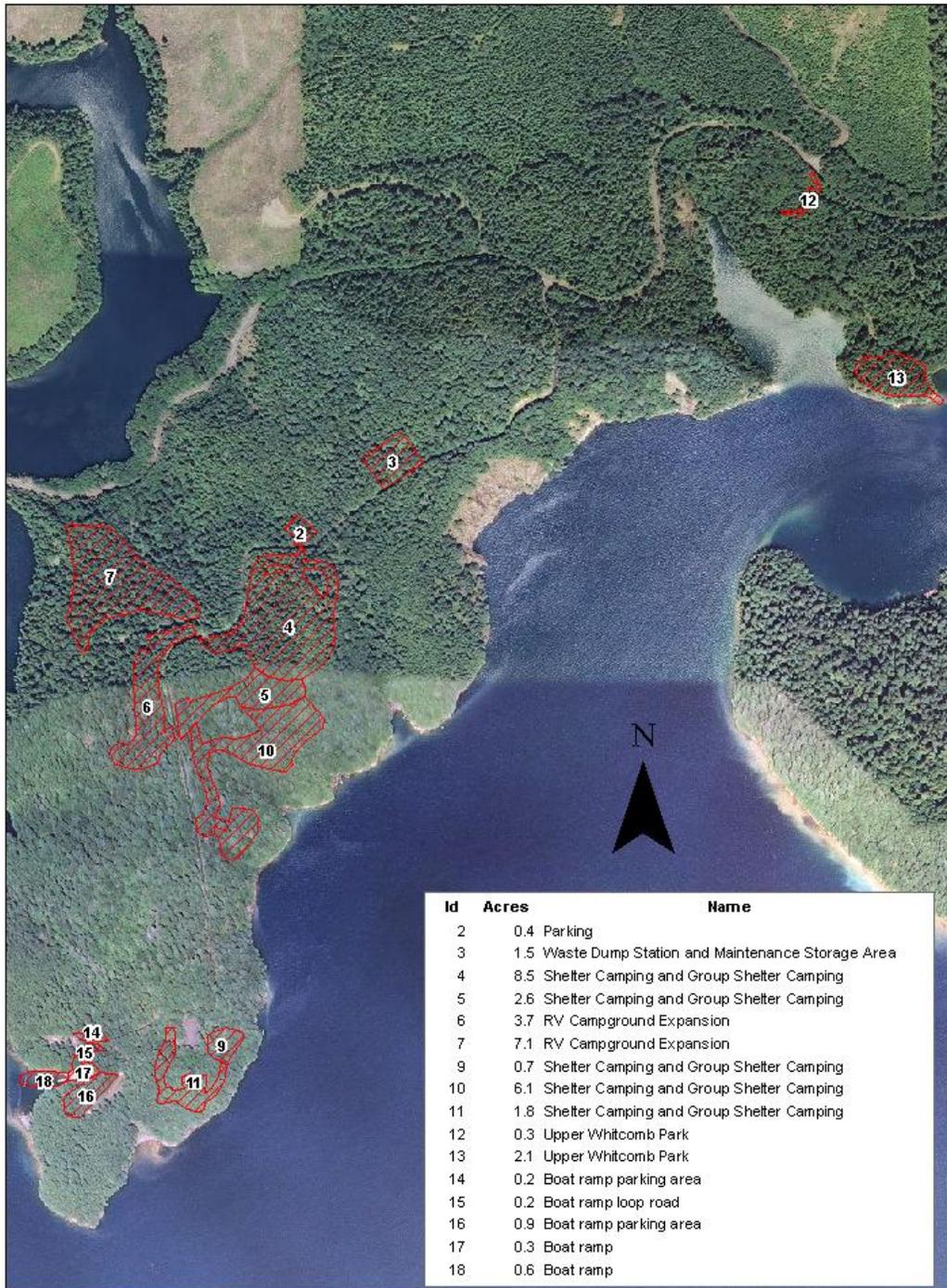
No improvements to recreation facilities would occur under the No Action Alternative. With no action, camping safety concerns and resource degradation from continued dispersed camping would continue.

### **Alternative Considered but Dismissed from Further Consideration - Closure of Dispersed Camping along Quartzville Road**

Closure of Quartzville Road to dispersed camping is the first component of the Preferred Alternative described above. This alternative would administratively eliminate vehicle access to roadside camping sites along Quartzville Road at Green Peter Reservoir via a press release, signage, and enforcement by the Linn County Sheriff's Office and the Corps. These sites would be restored to native vegetation where feasible. Closure of the Quartzville Corridor for camping is not intended to prevent public day use, however. Many gravel roadside pull-offs would not be treated, and these would continue to be available for day use parking and reservoir access. Day use parking would still be available for 4 of the 5 sites proposed for physical closure in 2014. Although sites would be unavailable for day use for a short time as the prescriptions are applied to each site, public use and reservoir access would continue to be available at nearby sites.

This alternative was considered but dismissed from further consideration because, as a stand-alone measure, it does not meet the Purpose and Need of the project and does not meet the intent of the 2011 Recreation Plan for Green Peter Reservoir. While elimination of dispersed camping is needed to improve safety and the quality of natural resources, improvements to existing, authorized camping areas (i.e. Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground) are desired in part to provide additional recreational resources to compensate for those lost by elimination of dispersed camping along Quartzville Road.

**Figure 4. Whitcomb Creek Park: Area of Impact**



1,000 500 0 1,000 Feet

Red polygons digitized by Cameron Bishop on 7-26-2012  
Aerial imagery from 2009

**Figure 5. Moose Creek Day Use Area: Area of Impact**



Red polygon Digitized by Cameron Bishop on 7-26-2012  
Aerial imagery from 2009

**Figure 6. Trout Creek Campground: Area of Impact**



Red polygon Digitized by Cameron Bishop on 7-26-2012  
Aerial imagery from 2009

## AFFECTED ENVIRONMENT

The area of consideration evaluated in this EA is the entirety of the Green Peter Project lands. Whitcomb Creek Park is a heavily wooded site with a diversity of flora and fauna and is situated on a prominent peninsula on the north shore of Green Peter Reservoir, on a gently sloping bench that then slopes steeply to water. The site is exposed to prevailing southwest winter winds, with Whitcomb Creek to the west, Quartzville Creek Arm to the southeast, and open water to the south. Soils are variable, ranging from shallow/dry soils on points, slopes, and low ridge tops, to generally deep, productive soils on benches. Productivity for tree growth is good to excellent, with most areas well suited to park facilities development.

### **Vegetation**

The vast majority of the assessment area and adjacent lands currently are early and mid-seral conifer-dominated forests (Salix Assoc. 2012). The forest is predominantly second-growth Douglas-fir that naturally reseeded following extensive timber harvest prior to land acquisition for the reservoir in the late 1950s-60s. Older residual trees from 70 to 90 years-old are widely scattered throughout and common in some areas including the campground while virtually absent in others. The Quartzville Watershed is not as rich in special habitats as adjacent watersheds (BLM-USFWS 2000). Douglas-fir is the most common tree, with nearly pure stands in some locations, and mixed with western hemlock and bigleaf maple elsewhere. The area in general is developing diversity in tree structure and species composition (Salix Assoc. 2012). Western red cedar, dogwood, cascara, chinquapin, bitter cherry, and Pacific yew are minor tree species. A healthy and diverse mixed native midstory is present, dominated by salal, Pacific rhododendron, and hazelnut on dry sites, and vine maple, sword fern, and red huckleberry on moist sites. Native understory species include sword fern, mountain Oregon grape, trailing blackberry, and woodsorrel (Salix Assoc. 2012). Invasive weeds are limited mainly to Scotch broom, a shrub, and false-brome, a grass, found in a few locations on previously disturbed sites, as well as Himalayan blackberry and reed canarygrass.

The forest is generally healthy and diverse. Standing dead trees infected with laminated root rot are found in a few locations. Decay from stem and root injuries, soil compaction, and camper-inflicted injuries affects isolated trees at some campsite locations. Overcrowding in dense stands has resulted in natural mortality of some smaller trees. While not a forest health risk, standing dead trees near facilities do pose a visitor safety hazard. In a few isolated areas, large amounts of small deadwood pose a fire risk.

### **Wetlands**

Wetlands around Green Peter Reservoir are uncommon because of the steep banks around the reservoir. Creeks in the Quartzville Basin range from ephemeral to large and permanently flowing. Most are unpolluted except some near Quartzville Road that have been impacted by human use; non-native vegetation including Himalayan blackberry and reed canarygrass have infested these areas. But native vegetation is characteristic of most of the Basin. A wetland has been formed by beaver activity from damming of a culvert on the upstream side of Quartzville Road at Thistle Creek.

## Fish and Wildlife

### *Special Status Species*

The Endangered Species Act (ESA)-threatened northern spotted owl occurs primarily in late seral stage conifer forest with structure that meets the required prey, cover, and nest locations. The typical habitat consists of moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees [ $> 30$  inches diameter at breast height (dbh)] with a high incidence of large cavities and broken tree tops. Northern spotted owl pairs occupy the same territories year after year as long as suitable nesting habitat is present. The breeding cycle begins in late winter (late February to early March) when the pair begins to roost together (Thomas et al. 1990). One to three eggs are produced in March or April. Incubation lasts for approximately 30 days, and juvenile owls leave the nest 3 to 5 weeks post hatching. Juveniles are dependent on adults for food items until August or September. Juveniles become independent in September or October.

No ESA-listed anadromous salmonids under the jurisdiction of National Marine Fisheries Service (NMFS) that could reside in Linn County (Chinook salmon, coho salmon, and steelhead) occur in Green Peter Reservoir. Fish passage was abandoned at the dam during the 1980s.

ESA-listed species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) that occur in Linn County include Oregon chub, bull trout, northern spotted owl, Fender's blue butterfly, golden paintbrush, Willamette daisy, Bradshaw's desert parsley, Kincaid's lupine, and Nelson's checker-mallow. Of these, only the northern spotted owl has potential to occur in the vicinity of the dam. Bull trout previously occurred but apparently were eradicated in the South Santiam system; the last reported sighting was in 1953 (Oregon State Game Commission, cited in ESEC & SSWC 2000).

The Oregon Biodiversity Information Center (ORBIC) maintains an extensive database of Oregon biodiversity concentrating on rare and endangered plants, animals, and ecosystems. A search through the ORBIC database was conducted on three different intervals from the project boundaries of Green Peter Reservoir: 2 kilometers (km), 5 km, and 10 km (approximately 1.2, 3.1, and 6.2 miles respectively). In addition to some of the species described above, ORBIC listed the following State-listed species within a 5 km (3.1 mile) radius of the project boundary of Green Peter Reservoir: American peregrine falcon, bald eagle, Oregon slender salamander, foothill yellow-legged frog, northern Pacific pond turtle, and Townsend's big-eared bat. The Oregon slender salamander occurs in forested habitat along the western slope of the Cascade foothills from the Columbia River gorge to Lane County. The main habitat constituents include adequate moisture, large dead wood, and older forests. This species is often found in decaying logs in the 50 to 75 cm (20 to 30 in) diameter class and snags (Nussbaum et al. 1983). While this species may be found in any forest seral stage as long as down woody debris is present there is a preference for late successional forests. Habitat loss and degradation are the primary threats to remaining populations. Activities that may pose threats are the disturbance of surface microhabitats and compaction of soils, both of which are often associated with either clearcut timber harvest practices or

urbanization of habitat areas. The foothill yellow-legged frog can be found in low gradient streams with exposed bedrock or cobble substrate. For rearing, habitat requirements include scour pools or riffles in gentle gradient sections of streams, often off-channel from the main stream (Rombough 2008). The Northern Pacific pond turtle inhabits marshes, sloughs, moderately deep ponds, and slow moving portions of creeks and rivers. They occur from sea level to approximately 6,000 feet in elevation. Basking sites (e.g. partially submerged logs, rocks and mud banks) are required. Nesting occurs in upland areas with sparse vegetative cover and dominated by short grasses or forbs (Holland 1994). Quartzville Creek above the reservoir is a Conservation Opportunity Area because it contains habitat for the Cascade torrent salamander, Larch Mountain salamander, and Oregon slender salamander (ODFW 2006). The bullfrog, a non-native that is capable of predation on other amphibians, occurs in the Quartzville Basin, but is apparently not common, probably due to cold water temperatures characteristic of the area.

The preferred habitat of the American peregrine falcon preferred nesting habitat includes sheer cliffs 75 feet in height or greater. Peregrine falcons are also known to nest on manmade structures such as buildings. They forage within a variety of forest types. The bald eagle can be found perching and nesting in forests in close proximity to rivers, lakes and reservoirs with plentiful prey items. Harlequin ducks nest from April to June and adults require fast-flowing streams with loafing sites nearby and dense shrub or timber/shrub vegetation on the bank. Nests are located on the ground under vegetation, rock, or large woody debris. Midstream loafing sites are important. Adults with broods prefer low gradient streams with adequate macroinvertebrate abundance. Although the harlequin duck is not State listed, the Portland Audubon Society (2013) lists Quartzville Creek as an Oregon Important Bird Area because of the use by harlequin ducks; it is estimated that 20 to 25% of Oregon's harlequin duck breeding population occurs in the Quartzville Creek Basin. The Audubon Society also notes that the area is important for bald eagles, osprey, and American dippers. Band-tailed pigeons, which are associated with spring habitat (Marshall et al. 2003), have nested in large numbers (approximately 150 pairs) within 1 mile of the reservoir.

Townsend's big-eared bat, a rare species, is typically associated with caves or similar protected locations. They have been known to roost within large hollows within coniferous trees, and occur at the Green Peter Project. Other roost sites include manmade structures, including bridges (Verts and Carraway 1998).

Resident native fish, all non-federally listed, occurring in the Quartzville Basin include coastal cutthroat trout, rainbow trout, mountain whitefish, northern pikeminnow, largescale sucker, sculpin, and dace. Resident non-native species include kokanee (hatchery releases), largemouth bass, and smallmouth bass.

## **Cultural Resources**

Three archeological surveys have covered portions of the APE within the Green Peter Project including one specifically done to address the Preferred Alternative, which covered the entirety of the APE; this does not include Quartzville road because its closure is only an administrative

action. More information regarding the archeological surveys that have been done in the vicinity of the project area can be found in the report done for this project titled, “Cultural Resources Assessment of Green Peter Reservoir Project Lands, Linn County, Oregon” (Rooke 2013). The two earlier surveys (Musil 1992; Hazen 1997) only covered portions of the project area. All three of these reports are on file with the Oregon State Historic Preservation Office (SHPO). Identified archeological sites within and near the APE include pre-contact sites that consist mostly of lithic material and a historic-era logging site. There are no known Traditional Cultural Properties (TCPs) in the vicinity, but coordination is ongoing with Native American Tribes to ensure there are no such sites within or near the area that would be disturbed with implementation of the Preferred Alternative.

## **Hydrology**

Green Peter and Foster Dams function together for the purposes of flood risk management, hydropower, water quality improvement, irrigation, fish and wildlife habitat, and recreation. Based on these needs, the Corps maintains a water control diagram, or “rule curve” to anticipate water uses and meet the Corps' legal responsibilities and limitations. Foster Dam re-regulates flow from Green Peter and is located 5 miles downstream.

For flood risk management, the Corps maintains low water levels in the winter and gradually fills the reservoirs through the spring. In the fall, the Corps gradually drains the reservoirs to regain capacity for flood damage reduction. Lake levels vary between mid-May and early September and may vary from year to year, depending on inflow to the reservoir. The ESA calls for release of a minimum amount of water to maintain river flows for fish and wildlife downstream of Foster Dam. These releases also help maintain water quality and provide for purchase of irrigation water.

Green Peter dam generates hydropower and is also one of the first reservoirs in the Willamette River system to be used for downstream water flow targets. Foster is normally maintained at a consistent level during the summer. Combined with downstream flow requirements and evaporation during the drier summer months, Green Peter Reservoir regularly lowers throughout the summer months.

## **Water Quality**

Green Peter and Foster Dams work together for various purposes noted above, including timing of releases that promote good water quality.

For flood risk management, the Corps maintains low water levels in the winter and gradually fills the reservoirs through the spring. In the fall, the Corps gradually drains the reservoirs to regain capacity for flood damage reduction. Lake levels vary between mid-May and early September and may vary from year to year, depending on inflow to the reservoir. The ESA calls for release of a minimum amount of water to maintain river flows for fish and wildlife downstream of Foster Dam. These releases also help maintain water quality and provide for purchase of irrigation water.

The water column in Green Peter Reservoir develops a distinct temperature stratification during summer. Intakes for the power plant are located in the deeper, cooler water so that water discharge downstream is cooler in the summer than would otherwise be the case. The chemistry of the water in the lake is typical of Cascade drainages: Dilute and soft. Phosphorus and chlorophyll concentrations are low, and water transparency is average, indicating conditions characterized by a moderate amount of dissolved nutrients (mesotrophic conditions). Phytoplankton (microscopic photosynthesizing organisms) is represented by diatoms typically occurring in lakes of higher trophic states (i.e. those that have greater biological production). Blooms of phytoplankton and excessive growth of macrophytes (macroscopic aquatic plants) do not occur in Green Peter Reservoir (Johnson 1985).

The water quality at the Green Peter Project is generally good except that dispersed camping has created local water quality problems along the lower part of Quartzville Creek.

## EFFECTS OF THE PROPOSED PROJECT

### Threatened and Endangered Species:

Scientific names of all species mentioned in the text of the EA are listed in Appendix 2.

***Preferred Alternative:*** Because of lack of presence, implementation of the Preferred Alternative would have *no effect* on ESA-listed species under the jurisdiction of National Marine Fisheries Service. Also, no designated critical habitat occurs in the reservoir or within the proposed project area also resulting in a *no effect* to critical habitat. The proposed action would *not affect* any Essential Fish Habitat (EFH) under the Magnuson-Stevens Fisheries Conservation and Management Act since none is located in Green Peter Reservoir.

Whitcomb Park includes habitat that is suitable for foraging and dispersal of northern spotted owls. No nests have been reported within Whitcomb Creek Park. The closest nest within the Willamette National Forest is approximately 2 miles from the southern Green Peter Project boundary and is outside of the 1.5-mile buffer typically associated with active nests (Corps 2012; USFS personal communication). A geospatial search of historic nesting data shows numerous nest locations within BLM and private timber land located to the north and east of the proposed project locations. The closest historical (2004) nest location is approximately 1.6 miles from Whitcomb Park. A total of four nests have been located within 2 miles of Whitcomb Park. Currently, designated critical habitat is located approximately 5 miles to the east of the Green Peter Project boundary. The Corps submitted a biological assessment for northern spotted owls for recreation improvements at Green Peter Reservoir, Linn County, Oregon dated February 12, 2013 (Corps 2013a) which made a determination of *may affect but not likely to adversely affect* northern spotted owls, concluding that juvenile dispersers would be the most likely to use Whitcomb Park but would likely be precluded from doing so by recreational use of the area, even without the proposed construction.

As described above, a search through the ORBIC database was conducted on three different intervals from the project boundaries of Green Peter Reservoir (the distances being 2, 5, and 10

kilometers equivalent to 1.2, 3.1, and 6.2 miles). The northern spotted owl, Oregon chub and bull trout were the only ESA-listed species under the jurisdiction of USFWS listed in the database. Oregon chub are endemic to the Willamette River valley, including the South Santiam Sub-basin where there is one population located within Foster Reservoir approximately 6.8 miles from the proposed project site. They inhabit slack water, typically off-channel areas that have little to no water flow and aquatic vegetation (USFWS 1998). Bull trout historically occupied the South Santiam River basin, with the last observations made in 1953. They inhabit cold-water streams that are relatively pristine and require clean stream substrates for spawning and rearing (Buchanan et al. 1997).

Because of lack of presence, determinations of *no effect* were made for all other ESA-listed species for Linn County other than northern spotted owls: Oregon chub, bull trout, Fender's blue butterfly, golden paintbrush, Willamette daisy, Bradshaw's desert parsley, Kincaid's lupine, and Nelson's checker mallow. Determinations of *no effect* were also made for designated critical habitat for northern spotted owls (discussed above), Oregon chub, bull trout, Fender's blue butterfly, Willamette daisy, and Kincaid's lupine because no critical habitat occurs in the vicinity of the project (Corps 2013a).

***No Action Alternative:*** The No Action Alternative *may affect but would not likely adversely affect* northern spotted owls, because juvenile dispersers may use Whitcomb Park and be disturbed by recreational noise.

#### **Wildlife (non-Federally listed):**

***Preferred Alternative:*** Implementation of the Preferred Alternative could negatively impact sensitive species and species of concern noted in the above section. The closest observance of the Oregon slender salamander is approximately 2.4 km (1.5 miles) from the Whitcomb Park proposed project area. Based on the current seral stage of the proposed work area, habitat requirements of the species, and known population locations, it is unlikely that this species would be adversely affected. An American peregrine falcon nest site has been recorded approximately 4 miles to the east of the proposed project location at Whitcomb Park. Two bald eagle nests are located proximal to Green Peter Reservoir, one within the BLM Bald Eagle Management Area (approximately 1 mile from Whitcomb Creek Park) and in the Fools Canyon area approximately 3 miles from Whitcomb Creek Park. Documented sightings of the northern Pacific pond turtle are approximately 6 miles from Whitcomb Park. This species would not be affected by the proposed project. The nearest known sightings of the foothill yellow-legged frog are approximately 6 miles to the southwest of Whitcomb Park within the South Santiam Sub-basin. Recorded breeding/foraging areas of the harlequin duck have been identified in the Quartzville Creek drainage approximately 6.5 miles from the proposed project location. There have been two recorded observances of the Townsend's big-eared bat within 10 km (6.2 miles) of the proposed project. Both occurrences were along the South Santiam River near Cascadia State Park, approximately 6 miles from Whitcomb Creek Park.

Removal of small trees and woody material on the forest floor would likely adversely affect some vertebrate species. Manning and Edge (2008), for example, studied small mammal responses to woody debris reduction on the forest floor in southwest Oregon and found woody

debris to be important habitat for some rodents. Cover on the ground, occurring in the form of woody debris, would be reduced with implementation of the Preferred Alternative and would therefore result in poorer habitat for some species. Reduction in availability of potential nest sites low to the ground could have negative effects on some bird species. All work would occur in uplands, non-riparian areas and implementation of the project would not cause a concern for substantial increases in runoff to nearby waters.

Elimination of dispersed camping along Quartzville Road would improve aquatic conditions that have become impaired along the lower part of Quartzville Creek in association with dispersed camping and improve habitat for stream-dependent species including the uncommon salamanders that occur in the area (Cascade torrent, Larch Mountain, and Oregon slender salamanders) as well as native fish and water-dependent birds.

**No Action Alternative:** With the No Action Alternative, continued disturbance to vegetation along Quartzville Road would result from dispersed camping. Area of disturbance to vegetation could increase with expansion of recreational activities outside of areas currently disturbed, resulting in disturbance to habitat used by native species of wildlife.

### **Vegetation:**

**Preferred Alternative:** Some trees to be removed have commercial timber value. Tree removal, associated treatments, and some site work can be covered by log sale proceeds. Tree marking, logging access, and harvest operations should be managed by a consulting forester, with coordination between Linn County Park's staff and park planners. A logging contractor with light-touch harvest equipment and experience in a parks setting would be secured in order to minimize damage to vegetation.

Heavy use through the summer at dispersed camping sites creates resource damage including vandalized trees, vegetation damage, hardened surfaces from soil compaction, sanitation issues from improper disposal of human waste and garbage, and potential fire threats to nearby timber resources. Fire threats and degradation of natural resources would be greatly lessened with implementation of the Preferred Alternative.

Tree removal would occur with implementation of the Preferred Alternative. A total of approximately 50 trees, mostly Douglas-fir, would be removed. All Douglas-fir trees to be removed would be second growth trees, including some very small trees. All trees removed would be unsuitable for nesting of northern spotted owls because of their young age. Some native understory vegetation would also be removed with implementation of the preferred alternative as described above, mainly salal, vine maple, sword fern, Pacific rhododendron, and red huckleberry. Non-natives to be removed would be mostly Scotch broom and false brome.

Sensitive species including vascular plants, fungi, lichens, liverworts, and mosses occur on-site and are listed along with their degrees of sensitivity and preferred habitats in a report provided in Appendix 3 (Messinger 2012). A site survey by Salix Associates (2012) and a database query of the Oregon Biodiversity Information Center (ORBIC 2012) yielded numerous occurring and potentially occurring species at the Green Peter Project; these species are either USFWS species

of concern, State candidate species, species with a Global or State rank of 1 or 2, and species on Heritage lists 1 or 2. Messinger (2012) concluded that implementation of the Preferred Alternative would be unlikely to affect these species, as they occur in specific habitats that would not be impacted with implementation of the Preferred Alternative including rock outcrops, ponds, streams, and riparian zones. Non-riparian forested habitats would be impacted by implementation of the Preferred Alternative, but surveys yielded none of the sensitive species in these areas.

For areas left undisturbed with implementation of the Preferred Alternative, if vegetation succession progresses without disturbance, the conifer forests dominating the area likely would continue their transition toward late seral stand conditions. Salix Assoc. (2012) predicted that, without disturbance, the area would likely contain substantial mid to late successional forest within several decades. They also predicted that over the very long term, barring catastrophic conditions such as wildfire and if climatic conditions do not change substantially, most of the areas eventually could be dominated by western hemlock climax forests. This would increase the potential for nesting northern spotted owls in the area, as well as the presence of various Survey and Manage species (BLM 2013).

***No Action Alternative:*** With the No Action Alternative, continued disturbance to vegetation along Quartzville Road would result from dispersed camping. Area of disturbance to vegetation could increase with expansion of recreational activities outside of areas currently disturbed.

If vegetation succession progresses without disturbance, the conifer forests dominating the area likely would continue their transition toward late seral stand conditions. Salix Assoc. (2012) predicted that, without disturbance, the area would likely contain substantial mid to late successional forest within several decades. They also predicted that over the very long term, barring catastrophic conditions such as wildfire and if climatic conditions do not change substantially, most of the areas eventually could be dominated by western hemlock climax forests. This would increase the potential for nesting northern spotted owls in the area, as well as the presence of various Survey and Manage species (BLM 2013). Areas where tree removal would occur under the Preferred Alternative, however, are characterized by younger trees than much of the surrounding areas, so transition to old growth in areas to be disturbed under the Preferred Alternative would take longer than much of the surrounding area.

### **Hydrology:**

***Preferred Alternative:*** No changes to hydrology would occur with implementation of the Preferred Alternative. Flow regulation would not change

***No Action Alternative:*** No changes to hydrology would result from the No Action Alternative. Flow regulation would not change.

### **Ground Disturbance:**

***Preferred Alternative:*** Ground disturbance would occur with implementation of the Preferred Alternative and is summarized below:

*Whitcomb Creek Park (Existing RV Campground and RV Campground Expansion):*

- 1) New roads: 60,000 square feet total; 12 feet by 2,500 feet by depth of 1 foot and camping spurs at 10 feet by 60 feet by depth of 1 foot (for 40 sites), and 6 pull-through sites at 10 feet by 100 feet by depth of 1 foot
- 2) Trails: 13,600 square feet of trails; some of this trail system already exists (no depth needed)
- 3) Overlook shelter: 196 square feet; 14 feet by 14 feet by depth of 1 foot
- 4) 1 vault restroom: 168 square feet; 12 feet by 14 feet by depth of 2 feet
- 5) 3 restrooms with showers: 940 square feet total; 40 feet by 21 feet by depth of 2 feet for each restroom with effluent tank of 10 feet by 10 feet by depth of 10 feet and underground drain field
- 6) Park ranger resident area: 1,200 square feet; 30 feet by 40 feet. Concrete pad, with, or without utilities for a temporary trailer to accommodate the park ranger, attendant, or host.

*Whitcomb Creek Park (Shelter Camping and Group Shelter Camping):*

- 1) Group camping parking area: 10,000 square feet; 50 feet by 200 feet by depth of 1 foot with spaces for approximately 12 vehicles
- 2) 2 Shelter camping parking areas with spaces for approximately 6 vehicles in each area: 11,000 square feet total; 50 feet by 110 feet by depth of 1 foot for each shelter
- 3) Trail system: 36,000 square feet; 4,500 feet by 8 feet (no depth needed)
- 4) Rustic group camping shelter: 672 square feet total; 24 feet by 24 feet by depth of 1 foot; and 9 tent camping areas at 8 feet by 12 feet by depth of 1 foot
- 5) 3 Composting toilets: 504 square feet total; 12 feet by 14 feet by depth of 1 foot each toilet
- 6) Overlook shelter: 196 square feet; 14 feet by 14 feet by depth of 1 foot
- 7) 14 camping shelters: 1,344 square feet total; 8 feet by 12 feet by depth of 1 foot for each

*Whitcomb Creek Park (Park Entry, Waste Dump Station, Large RV Turn-around, and Maintenance Storage Area):*

- 1) Maintenance storage area: 40,000 square feet; 200 feet by 200 feet by depth of 1 foot
- 2) RV dump station storage tank: 100 square feet; 10 feet by 10 feet by depth of 10 feet
- 3) Entry information kiosk (constructed on existing roadway)

*Upper Whitcomb Creek Park:*

- 1) Parking area: 5,000 square feet; 50 feet by 100 feet by depth of 1 foot
- 2) 1 group picnic shelter: 392 square feet; 14 feet by 28 feet by depth of 1 foot
- 3) 7 shelter camp sites; 672 square feet total; 8 feet by 12 feet by depth of 1 foot for each
- 4) 1 composting toilet: 168 square feet; 12 feet by 14 feet by depth of 1 foot
- 5) Multiple trails: 5,000 to 8,000 square feet total; 5 feet to 8 feet wide by 1,000 linear feet (no depth needed)

*Trout Creek Campground:*

- 1) 4 group camping shelters: 1,024 square feet total; 16 feet by 16 feet by depth of 1 foot each

*Moose Creek Park:*

- 1) 1 group picnic shelter: 392 square feet; 14 feet by 28 feet by depth of 1 foot

The sum of the total ground disturbance for implementation of the Preferred Alternative would be approximately 188,568 to 191,568 square feet, equivalent to 4.33 to 4.40 acres. The majority of this area (187,152 to 190,152 square feet) would be in Whitcomb Creek Park.

**No Action Alternative:** With the No Action Alternative, continued ground disturbance along Quartzville Road would result from dispersed camping. Area of ground disturbance could increase with expansion of recreational activities outside of areas currently disturbed, resulting in a larger area of disturbed ground, with compacted soil.

**Cultural Resources:**

**Preferred Alternative:** Field surveys were conducted in 2013 over the entire area planned for recreation improvement, and these surveys are being coordinated with the SHPO and the Tribes. The Corps determined that the preferred alternative would result in a *No Adverse Effect* (Corps 2013b) per Section 106 of the National Historic Preservation Act (NHPA).

There would be no ground disturbance associated with the APE for Quartzville Road, and thus the cultural resources survey done for implementation of the Preferred Alternative did not include this area. The administrative closure of the camping areas along Quartzville Road would actually benefit any previously unrecorded sites in that closure would reduce the ground disturbance caused by dispersed camping activities.

For Moose Creek Park and Whitcomb Creek Park, the entirety of the APE was covered by the Rooke (2013) cultural resources survey. Only one cultural resource was recorded within the APE at Whitcomb Creek Park which included a historic-era logging site. The cultural resource report recommended that this site is not eligible for listing on the National Register of Historic Places (NRHP), and the Corps agreed with this determination.

There is a known archeological site within the vicinity of the APE for Trout Creek Campground. The 2013 cultural resource survey confirmed the location of this site, but did not identify any other historic properties. The Corps has not made a determination of eligibility for this site and thus it will be treated as eligible for listing on the NRHP. Corps does not believe implementation of the Preferred Alternative would have any direct effects on Trout Creek Campground cultural resources via continued usage of the park. The Corps has identified multiple actions that could be taken to mitigate the possible effects caused by the usage of the park and is coordinating those proposals with interested parties. Given that this action should have no direct effects to the known site, and considering the implementation of mitigative steps for any possible indirect effects, the Corps has made a determination that implementation of the Preferred Alternative would have *No Adverse Effect* to the known site.

The cultural site near Trout Creek Campground is being impacted by routine use of the site. The Corps believes that leasing the park to the County will result in more stringent oversight, which would allow for better control of impacts to the known site and facilitate more careful monitoring of the site for impacts.

**No Action Alternative:** With continuation of current operations, the No Action Alternative could affect cultural resources that may be present in dispersed camping areas along Quartzville Road. Under the No Action Alternative, any potential recreational impacts to the site near Trout Creek Campground would likely continue.

### **Water Quality:**

**Preferred Alternative:** No changes to water quality would occur with implementation of the Preferred Alternative, except perhaps improvement to water quality in the lower parts of Quartzville Creek that may result from elimination of dispersed camping. No in-water work would occur nor management of flows would occur with implementation of the Preferred Alternative.

**No Action Alternative:** No changes to water quality would result from the No Action Alternative, except that increased water quality problems in the lower parts of Quartzville Creek may occur with continuation of dispersed camping.

### **Air Quality and Noise:**

**Preferred Alternative:** All machinery to be employed during construction of the proposed project would meet noise and emission standards of the Clean Air Act. Noise resulting from rowdiness associated at times with dispersed camping would be eliminated. More noise associated with increased use of Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground would be expected.

**No Action Alternative:** No changes to air quality and noise would result from the No Action Alternative.

### **Utilities and Public Services:**

**Preferred Alternative:** Under the Preferred Alternative, dispersed camping along Quartzville Road would be eliminated. Additional camping sites would be constructed at Whitcomb Creek Park and other improvements made at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground as described above under the Ground Disturbance section. In addition, new roads, trails, restrooms, shelters, and an RV dump station would be constructed, also as described above under the Ground Disturbance section. Dispersed camping is free. The cost of camping at Whitcomb Creek Park is currently \$20 per night for tent sites and \$200 per night for the group site. Fees in the near future are expected to be similar to current rates, and to increase over time with inflation.

**No Action Alternative:** No changes to utilities and public services would result from the No Action Alternative.

### **Land Use:**

**Preferred Alternative:** Under the Preferred Alternative, dispersed camping along Quartzville Road would be eliminated. Additional camping sites would be constructed at Whitcomb Creek Park and other improvements made at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground as described above under the Ground Disturbance section.

**No Action Alternative:** No changes to land use would result from the No Action Alternative.

### **Environmental Justice:**

**Preferred Alternative:** Implementation of the Preferred Alternative would not adversely affect any particular group of people to a greater extent than other groups, as all work would occur on public (Corps) land. No private property would be impacted by implementation of the Preferred Alternative.

**No Action Alternative:** No changes regarding environmental justice would result from the No Action Alternative. There are currently no issues with environmental justice with recreational use at the Green Peter Project.

### **Recreation:**

**Preferred Alternative:** Under the Preferred Alternative, camping along Quartzville Road would be eliminated and additional camping would be provided at Whitcomb Creek Park. Whitcomb Creek Park is heavily forested but design of the new camp sites would preserve the wooded and shaded setting. Dispersed camping in very close proximity to Green Peter Reservoir would be eliminated. The nature of dispersed camping is different than that at Whitcomb Creek Park in that it can be noisy even during later hours, while the park tends to be more quiet and reserved. Other improvements would be made at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground as described above under the Ground Disturbance section.

BLM and USFS have expressed support for closure of dispersed camping on Corps' lands along Quartzville Road. This may lead to some increased dispersed camping especially on nearby BLM lands, although it is unlikely to be a substantial increase because all dispersed camping along Quartzville Road on Corps land occurs in close proximity to the reservoir, and recreation by dispersed campers here generally centers on activities that the deep and expansive waters of the reservoir provides, such as swimming, boating, and fishing. Water activities that the reservoir provides are not available with dispersed camping on nearby BLM and USFS lands.

**No Action Alternative:** No changes to recreation would result from the No Action Alternative.

## **Hazardous, Toxic, and Radioactive Waste:**

*Preferred Alternative:* No effect, as hazardous, toxic, and radioactive wastes would not be introduced into the area as a result of implementation of the Preferred Alternative.

*No Action Alternative:* No changes regarding hazardous, toxic, and radioactive waste would result from the No Action Alternative. There are currently no issues with hazardous, toxic, and radioactive waste with recreational use at the Green Peter Project.

## **Aesthetics:**

*Preferred Alternative:* Under the Preferred Alternative, elimination of camping along Quartzville Road would improve natural resources along Quartzville Road by planting of native vegetation. Visual aesthetics associated with viewing of Green Peter Reservoir from Quartzville Road would improve.

Removal of trees associated with improvements at Whitcomb Creek Park, Moose Creek Park, and Trout Creek Campground would have some negative effects to visual aesthetics associated with Douglas-fir dominated woodland habitat. Whitcomb Creek Park is heavily forested but design of the new camp sites would preserve the wooded and shaded camp setting.

*No Action Alternative:* No changes to aesthetics would result from the No Action Alternative, except that additional degradation of natural resources may occur with continuation of dispersed camping.

## **CUMULATIVE EFFECTS**

The area of consideration for the Cumulative Effects analysis is Green Peter Project lands owned and leased by the Corps and BLM as well as Quartzville Road between the dam and Trout Creek Campground (see Figure 1) and Quartzville Creek within the area designated as a wild and scenic river (extending 9.66 miles from the confluence with Green Peter Reservoir. Cumulative Effects are caused by the aggregate of past, present, and reasonably foreseeable future actions (Bass et al. 2001). This EA considers the contributions of these actions, combined with the Preferred Alternative and with the No Action Alternative, on Cumulative Effects to the natural resources that could affect the quality of the human environment.

### **Preferred Alternative**

The Green Peter Project was completed in 1967 and Green Peter Reservoir was opened to the public in 1969. Under a lease agreements with the Corps and BLM, the Linn County Parks and Recreation Department began operating and maintaining recreation facilities. Linn County has also been responsible for managing recreation facilities on nearby Foster Reservoir downstream.

Second growth timber is characteristic of the Green Peter area, as it was likely logged in the late 1800s and/or early 1900s. The Corps prepared the first public use plan for Green Peter Reservoir

in 1970. Subsequent planning studies and analyses resulted in the 1987 Master Plan for Resource Use. Recognizing outstanding recreation potential of Green Peter Reservoir, the Corps provided funds for a joint planning effort with Linn County to update the recreation master plan, and to explore opportunities for expanding the county's role in recreation management and operations. David Reed & Associates was contracted in January 2010 to provide planning services to assist in the project.

A recent past action evaluated in 2012 and implemented in 2013, for which environmental documentation was prepared, involved the removal of the fingerling passage equipment at Green Peter Dam (Corps 2012a; 2012b). The work involved removal of the mechanical components of the fingerling passage facility, which was abandoned in the early 1990s. The equipment had several hazardous materials including oil in the gearboxes, lead in the paint primer, and asbestos in the brakes. The wire ropes were rusted, making the equipment in danger of falling into the forebay. Removal of the equipment returned the area to a safe condition and allowed the ability to evaluate passage conditions through the bypass pipes at the dam, in accord with the Biological Opinion for the Willamette River Basin (NMFS 2008). Implementation of the Preferred Alternative would not affect the ability to evaluate passage conditions. This past action would have no bearing on actions proposed as part of the Preferred Alternative.

Past, pre-NEPA actions at Green Peter Reservoir certainly had some negative environmental impacts that by today's standards would be considered intensely under NEPA, namely construction of the dam itself and its direct impacts to salmonid movement in the watershed. The dam was constructed, however prior to listing of salmonid runs (and prior to ESA itself). Also, forest clearing for recreation development and road construction would, by today's standards be considered under NEPA. Implementation of the Preferred Alternative of course is being done long after these actions of the 1960s had negative environmental effects and will not make these past effects worse, i.e. no impacts will occur to old growth forests and no impacts will occur to fish runs.

Reasonably foreseeable future actions include addressing other issues identified in the 2011 Recreation Concept Plan. The purpose and need for the Plan included addressing the following issues:

- 1) Public safety and sanitation concerns, campfire risk, vandalism, and adverse resource impacts from dispersed camping along the road in the Quartzville Recreation Corridor.
- 2) Undesirable conditions at boat-in sites, primarily sanitation and campfire safety, creating a need to re-evaluate feasibility of the number of existing sites and to realign priorities.
- 3) Illegal harvest or destruction of vegetation; soil erosion resulting from use of non-surfaced access roads; illegal digging or artifact collecting at cultural resource sites.
- 4) Use of the private logging road along the south shore for uncontrolled access to project lands.
- 5) Social conflicts between users, often due to lack of facilities to accommodate user demand.
- 6) Inadequate recreation facilities and outdated campground design at Whitcomb Creek Park.
- 7) Critical function of undeveloped Billings Park to meet public access demands and meet stewardship responsibilities.

- 8) Elk disturbance and habitat damage to soils and vegetation, caused by off-road vehicles in winter months.
- 9) Need for interpretive and regulatory signing to promote safety, awareness and respect for natural and cultural resource values.

Implementation of the Preferred Alternative would address the majority of these 9 points discussed in the 2011 Recreation Concept Plan. Those that would not be met and could conceivably be pursued in the near future (and be considered reasonably foreseeable future actions) include improvement of the Thistle Creek boat ramp (part of point 2), point 4, point 7, and point 8. All of these actions would improve recreation at Green Peter Reservoir and would add to the enhancement outlined in the Preferred Alternative. Disturbance of natural resources with implementation of these potential future actions, when combined with actions of the Preferred Alternative, would not be expected to be minor based on our knowledge of the site. However, environmental evaluation of these sites would be required. For point 2 and possibly point 7 (if a boat ramp were to be constructed at Billings Park), a 404(b)(1) evaluation would be required and either use of a nationwide permit or procurement of a state water quality certificate would be pursued; either would place environmental restrictions and best management practices on construction. The ESA would likely not need to be considered beyond what was done for the Preferred Alternative as there are no ESA-listed fish that occupy Green Peter Reservoir. Additional ESA consultation with USFWS may be necessary if new species are listed or with, for example, establishment of northern spotted owl nests in the vicinity. Any ground-disturbing activities associated with future work would also require cultural resource surveys and compliance with the State Historic Preservation Act.

Another boat ramp improvement may occur in the future near the southern end of Whitcomb Creek Park (Figure 4); this was originally part of the Preferred Alternative outlined in this EA but was removed. The current Whitcomb ramp has little space to accommodate the trends of larger vehicles and boats and becomes extremely congested during the summer season, sometimes requiring waits of up to two hours to launch. A ramp extension would make launching boats easier, and the ramp would remain usable for longer into the summer recreation season.

As noted above in the Public Outreach section, dispersed camping occurs on nearby BLM and USFS lands higher in the Quartzville drainage. Developed camping sites are available on BLM land at Yellowbottom Recreation Site (22 campsites) along Quartzville Road/Creek approximately 10 miles northeast of Whitcomb Creek Park, and day use is available approximately 5 miles to the northeast at Dogwood Recreation Site. Activities on BLM lands include fishing, swimming/wading, and gold panning in the shallow waters of Quartzville Creek as well as old growth hiking. Camping on USFS land is available substantially to the east near Highway 22 at Marion Forks Campground (15 campsites) and Riverside Campground (37 campsites).

### **No Action Alternative**

The No Action Alternative would have no bearing on the past improvements to the fingerling passage equipment at Green Peter Dam and ability to monitor fish per the Willamette River

Biological Opinion, nor would it have bearing on pre-NEPA actions described above except that continued allowance of dispersed camping along Quartzville Road could lead to more intense and extensive degradation of resources including negative impacts to vegetation, soil compaction, and water quality problems in the lower parts of Quartzville Creek.

None of the 9 issues in the 2011 Recreation Concept Plan, and listed above, would be addressed with the No Action Alternative. Safety concerns would remain, and natural resource degradation would continue with dispersed camping along Quartzville Road. The reasonably foreseeable future action identified above (part of point 2 and points 4, 7, and 8) may still occur with the No Action Alternative implemented presently, but may be less likely because the points that are addressed with implementation of the Preferred Alternative were chosen because they have been deemed as the most important aspects of recreation improvements identified in the 2011 Recreation Concept Plan.

### COMPLIANCE REQUIREMENTS

- a. National Environmental Policy Act: This EA is in compliance with the requirements of the National Environmental Policy Act. This EA addresses potential impacts of project alternatives and solicits comments from the public and government agencies to aid in the determination of the significance of the proposed project to the quality of the human environment.
- b. Endangered Species Act: A biological assessment for Federally-listed species potentially occurring in the vicinity of the proposed project was submitted to the U.S. Fish and Wildlife Service (USFWS) dated February 12, 2013. A *May Affect, Not Likely to Adversely Affect* determination was made for the northern spotted owl. A concurrence letter from the Service was received dated August 26, 2013. Also, determinations of *No Effect* were made for other potentially occurring species under the jurisdiction of USFWS, including Oregon chub, bull trout, Fender's blue butterfly, golden paintbrush, Willamette daisy, Bradshaw's desert parsley, Kincaid's lupine, and Nelson's checker mallow. Determinations of *No Effect* were also made for designated critical habitat for northern spotted owl, Oregon chub, bull trout, Fender's blue butterfly, Willamette daisy, and Kincaid's lupine because no critical habitat occurs in the vicinity of the project. The preferred alternative would have *No Effect* to species under the jurisdiction of the National Marine Fisheries Service (i.e. salmon and steelhead) as no in-water work would occur, and no waters would be affected.
- c. Magnuson-Stevens Fishery Conservation and Management Act: The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevens Act and established requirements for Essential Fish Habitat (EFH) for commercially important fish. No work would occur in-water; and no EFH occurs on the project lands.
- d. Migratory Bird Treaty Act and Migratory Bird Conservation Act: Efforts would be made to minimize the potential for loss of bird nests during clearing of vegetation by avoiding clearing during spring and early summer.

- e. Clean Water Act: No fill or excavation would occur in wetlands. Nearby waters would not be affected. All work would occur on uplands.
- f. Clean Air Act: Emission requirements of the Clean Air Act would be required as part of the contract specifications to be met by all machinery employed during construction of the proposed project.
- g. National Historic Preservation Act: Field surveys were conducted in 2013 over the entire area proposed for recreation improvement (but not along Quartzville Road), and these surveys were coordinated with the SHPO and the Tribes. The Corps determined that the Preferred Alternative would result in *No Adverse Effect* (Corps 2013b) because of the presence of a site nearby to Trout Creek Campground. Concurrence from SHPO was received via letter dated December 24, 2013.
- h. Native American Graves Protection and Repatriation Act: This Act provides for the repatriation or disposition of Native American (and Native Hawaiian) cultural items and human remains to Native Americans. It also establishes requirements for the treatment of Native American human remains and sacred or cultural objects found on federal land. This Act also provides for the protection, inventory, and repatriation of Native American cultural items, human remains, and associated funerary objects. There are no recorded historic properties within the immediate project area and the probability of locating human remains in this highly disturbed area is low. However, if human remains are discovered during construction, the Corps and/or the Contractor would be responsible for following all requirements of the Act.
- i. Coastal Zone Management Act: *Not Applicable*, as the project is not near the coast, and would not affect the coastal zone.
- j. Wild and Scenic Rivers Act: In 1988, Quartzville Creek was designated as a recreational river in the National Wild and Scenic River System; this designation applies to the stretch of Quartzville Creek extending 9.66 miles upstream from the upper end of Green Peter Reservoir. Therefore all of Quartzville Creek within the Green Peter Project is designated. Recreational river areas are readily accessible by road or railroad and have a greater degree of development along their shorelines (1/4 mile corridor on either side of the river) than rivers designated as wild rivers or scenic rivers.  
  
A river management plan for the Quartzville Creek area was developed by BLM (1992). The management objectives of the BLM plan include recreation, road management, water quality, botanical/ecological, riparian area, wildlife, fisheries, visual resources, cultural resources, and timber and special forest products. Implementation of the Preferred Alternative is consistent with the management objectives of the BLM plan.
- k. Fish and Wildlife Coordination Act: This is not applicable as this is not a water resources project.

- l. Marine Protection, Research, and Sanctuaries Act: *Not Applicable*, as the project is not near the coast and would not affect coastal areas.
- m. Marine Mammal Protection Act: *Not Applicable* because there are no marine mammals that occur within the Green Peter Project.
- p. Bald and Golden Eagle Protection Act: Golden eagles are not expected in the vicinity of the project. Bald eagles are known to occur within the Green Peter Project and use the reservoir and Quartzville Creek for foraging. Implementation of the Preferred Alternative would be conducted in an area that may provide some bald eagle perching opportunities. Perching opportunities are not a limiting resource for bald eagles in the area, however. The project construction could result in some avoidance of the area by bald eagles during the construction activities, however there would be no lasting or long-term effects to bald eagles. The proposed project *complies with* this Act.
- q. Comprehensive Environmental Response, Compensation, and Liability (CERCLA) and Resource Conservation and Recovery Act (RCRA): There is no indication that any hazardous, toxic and radioactive waste (HTRW) are in the vicinity of the project area. Presence of HTRW would be responded to within the requirements of the law and Corps regulations and guidelines.
- r. Analysis of Impacts on Prime and Unique Farmlands: *Not Applicable*, as no farmlands are present in the proposed project area.
- s. Executive Order 11988, Flood Plain Management: *No Effect* as floodplains in the proposed project area would not be altered.
- t. Executive Order 119900, Protection of Wetlands: No wetlands would be affected by construction of the proposed project. All work would occur on uplands.
- u. Executive Order 12898, Environmental Justice: No subsistence, low-income or minority communities would be affected by implementation of the Preferred Alternative. The proposed action is *in compliance* with this Order because no environmental justice implications exist for the project area.
- v. Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance: This Executive Order states that Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies and environmentally preferable materials, products, and services; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; strengthen the vitality and livability of the communities in which Federal facilities are located; and inform Federal employees about and involve them in the achievement of these goals. Implementation of the Preferred Alternative would have *no adverse effects* on the components of this Executive Order.

## COORDINATION AND RESPONSED TO COMMENTS

As described above in the Public Outreach section, substantial public input was obtained prior to the public review of the Draft EA.

The Draft EA was prepared to address the requirements of the National Environmental Policy Act (NEPA) and was issued for 30-day public and agency review under Public Notice CENWP-PM-E-14-03. The Draft EA was sent to government agencies and other groups. Government agencies included U.S. Environmental Protection Agency, USFS, BLM, National Marine Fisheries Service, USFWS, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Department of Parks and Recreation, and Linn County.

Public comments are addressed below. After consideration of all public comments, it was determined that implementation of the Preferred Alternative would have no significant impact on the quality of the human environment, and a Finding of No Significant Impact (FONSI) was signed which concludes the NEPA process. Implementation of the Preferred Alternative will begin in 2014.

**Comment 1:** The proposed improvements to upgrade campgrounds and remove dispersed camping from Quartzville Road will improve conditions in this important high seasonal use recreation area.

**Response 1:** After analysis through the NEPA process, the Corps believes that implementation of the Preferred Alternative will result in improved conditions.

**Comment 2:** Camping on Quartzville Road is the only way to camp along the reservoir close to campers' boats. It is picturesque along the reservoir.

**Response 2:** It is recognized that closure to camping along Quartzville Road will eliminate the ability to camp in close proximity to the reservoir and to campers' boats. Dispersed camping along Quartzville Road is not authorized by the Corps but has been allowed over the years. Dispersed camping causes degradation of natural resources and littering, and there have been problems with rowdiness. It also presents unsafe camping conditions because of the close proximity of camp sites to Quartzville Road and traffic, including large trucks. The Trout Creek Campground is available for temporary boat mooring.

**Comment 3:** Dispersed camping along Quartzville Road should be allowed in the future, with fees required to camp. This would tend to lessen the number of problem causers.

**Response 3:** It is not believed that requiring a fee would eliminate the problems of resource degradation and rowdiness, although it may lessen them. Safety issues would remain a large concern, however.

**Comment 4:** The Draft EA incorrectly states that Moose and Trout Creeks would be out-granted to Linn County Parks for management under and park and recreation lease with the Corps.

Moose and Trout Creek are located on lands managed by the BLM. The lands were withdrawn by PLO 2952 for use by the Corps for the construction, operation, and maintenance of the Green Peter Reservoir Project. As stated in withdrawal PLO 2952: “Authority to change the use specified by this order or to grant rights to others to use the lands, including grants of leases, licenses, easements and rights-of-way is reserved to the Secretary of the Interior...” The Corps cannot lease BLM-managed lands; only BLM has the authority to enter into a third party lease. The BLM already has in place a Recreation and Public Purpose Lease (OR 36783) with Linn County on approximately 501 acres in the Quartzville area. This lease can be amended to include the Moose Creek Park and Trout Creek Campground.

**Response 4:** Moose Creek Park development will occur wholly within the boundaries of the Corps of Engineers property, and the Corps will lease the property to Linn County. This was agreed to in a discussion between the Real Estate offices of BLM and the Corps, and noted in Corps (2014).

Most of Trout Creek Campground is located on land owned by BLM (Tract A). BLM will take action to lease these lands to Linn County. The portion of Trout Creek that is on Corps lands will be leased by the Corps to Linn County. This was agreed to in a discussion between the Real Estate offices of BLM and the Corps, and noted in Corps (2014).

**Comment 5:** The EA states that approximately 19 trees at least 8 inches in diameter or larger would be removed at Trout Creek Campground. These trees are considered Oregon and California Grant Timber and must be purchased; specific requirements regarding purchase can be coordinated with the BLM Field Manager or delegated staff.

**Response 5:** Agreed, the trees are located on land owned by the BLM (Tract A). They will coordinate with Linn County regarding the trees. This was agreed to in a discussion between the Real Estate offices of BLM and the Corps, and noted in Corps (2014).

**Comment 6:** Comments on wording on pages 3, 5, 7, and 26 of the Draft EA.

**Response 6:** Suggestions incorporated into this Final EA.

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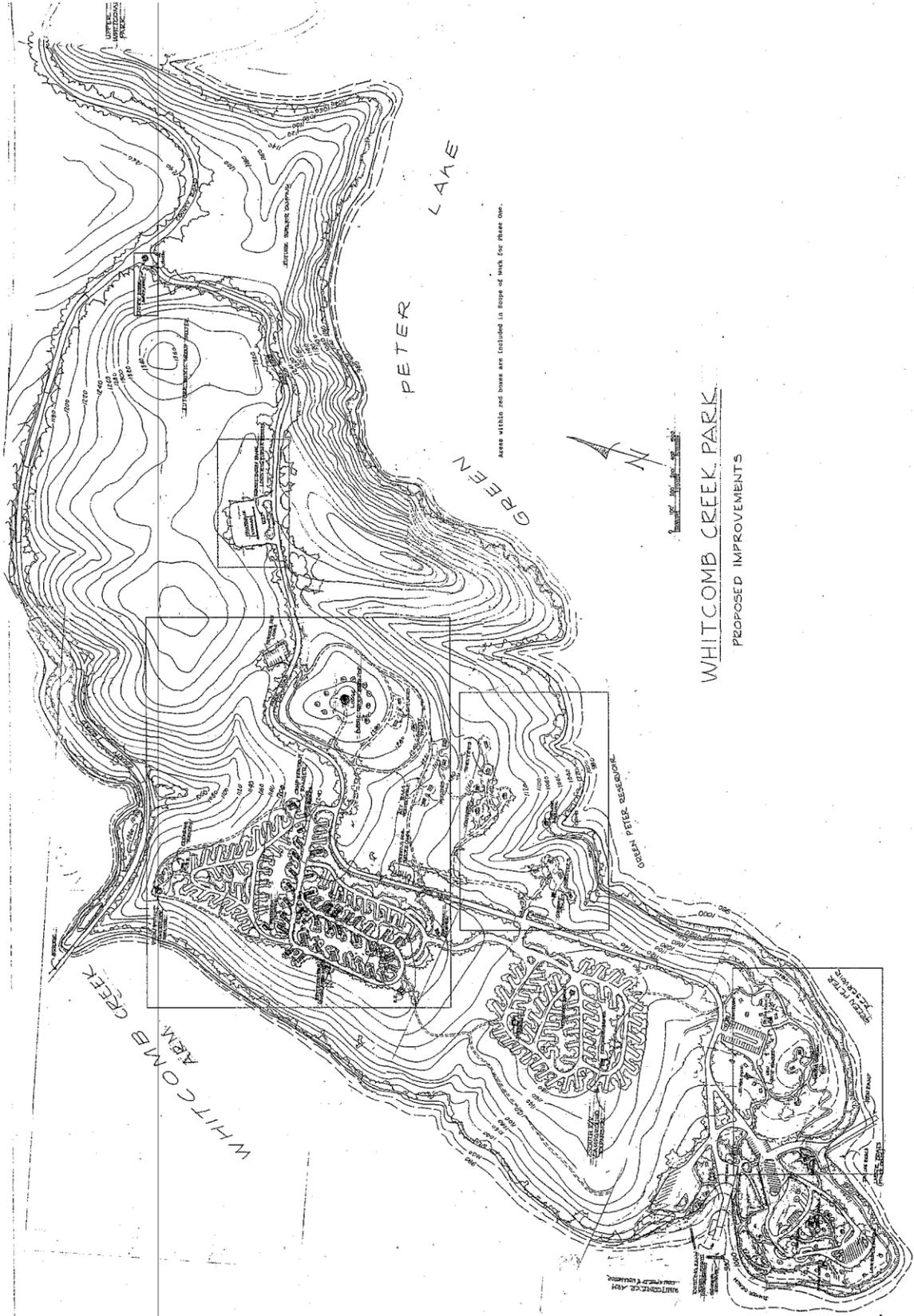
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## **APPENDIX 1**

### **Design Drawings**



**WHITCOMB CREEK PARK**  
PROPOSED IMPROVEMENTS

Areas within and shown are included in Scope of Work. See Phase One.



Scale bar: 0 10 20 30 40 50 Feet

WHITCOMB CREEK  
ARM

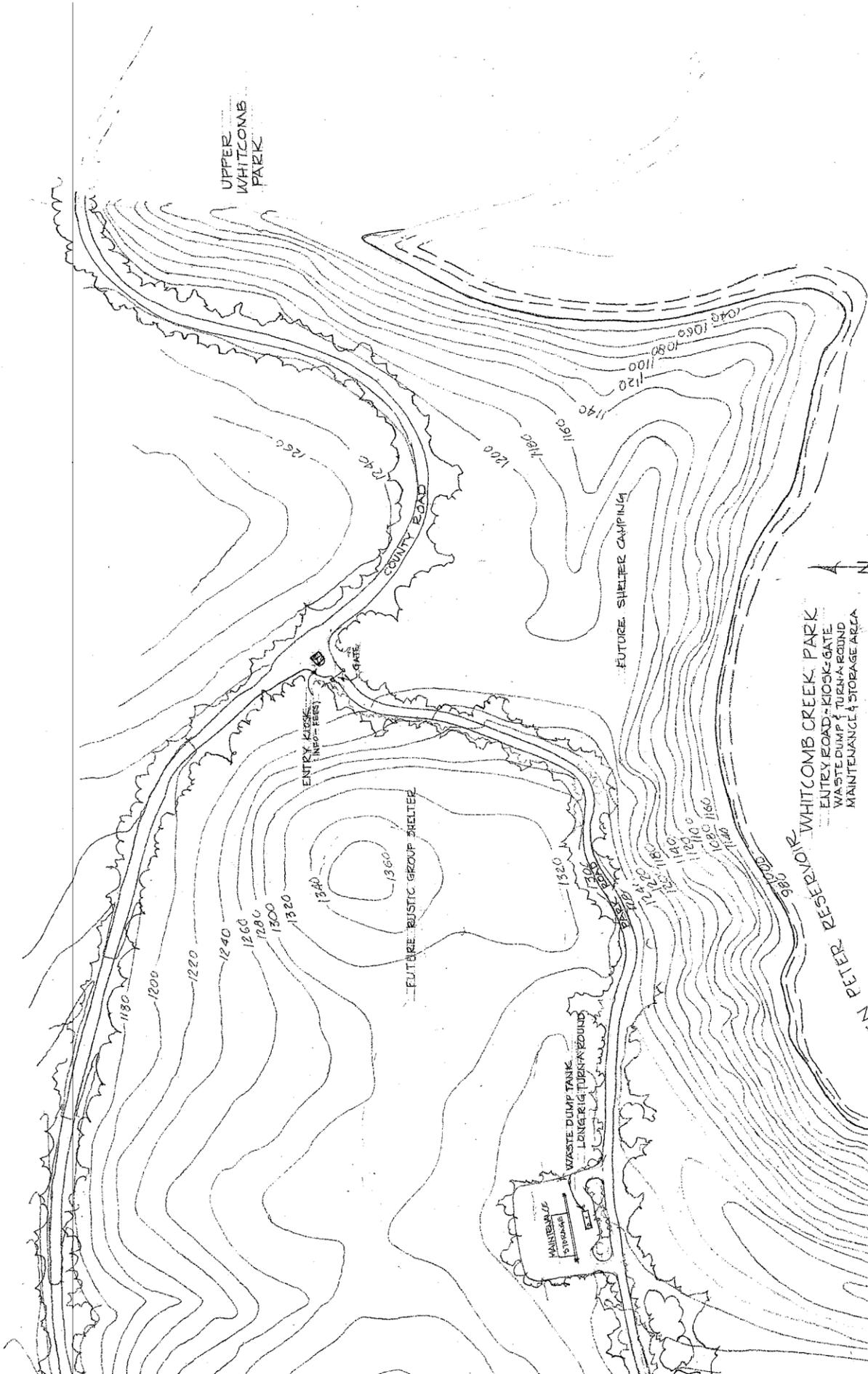
PETER  
LAKE

GREEN

PETER RESERVOIR

SEVEN FISH  
TRAP

DATE: 10/1/01  
SCALE: AS SHOWN



UPPER  
WHITCOMB  
PARK

COUNTY ROAD

ENTRY KIOSK  
INFO - FEES

GATE

FUTURE BUSIC GROUP SHELTER

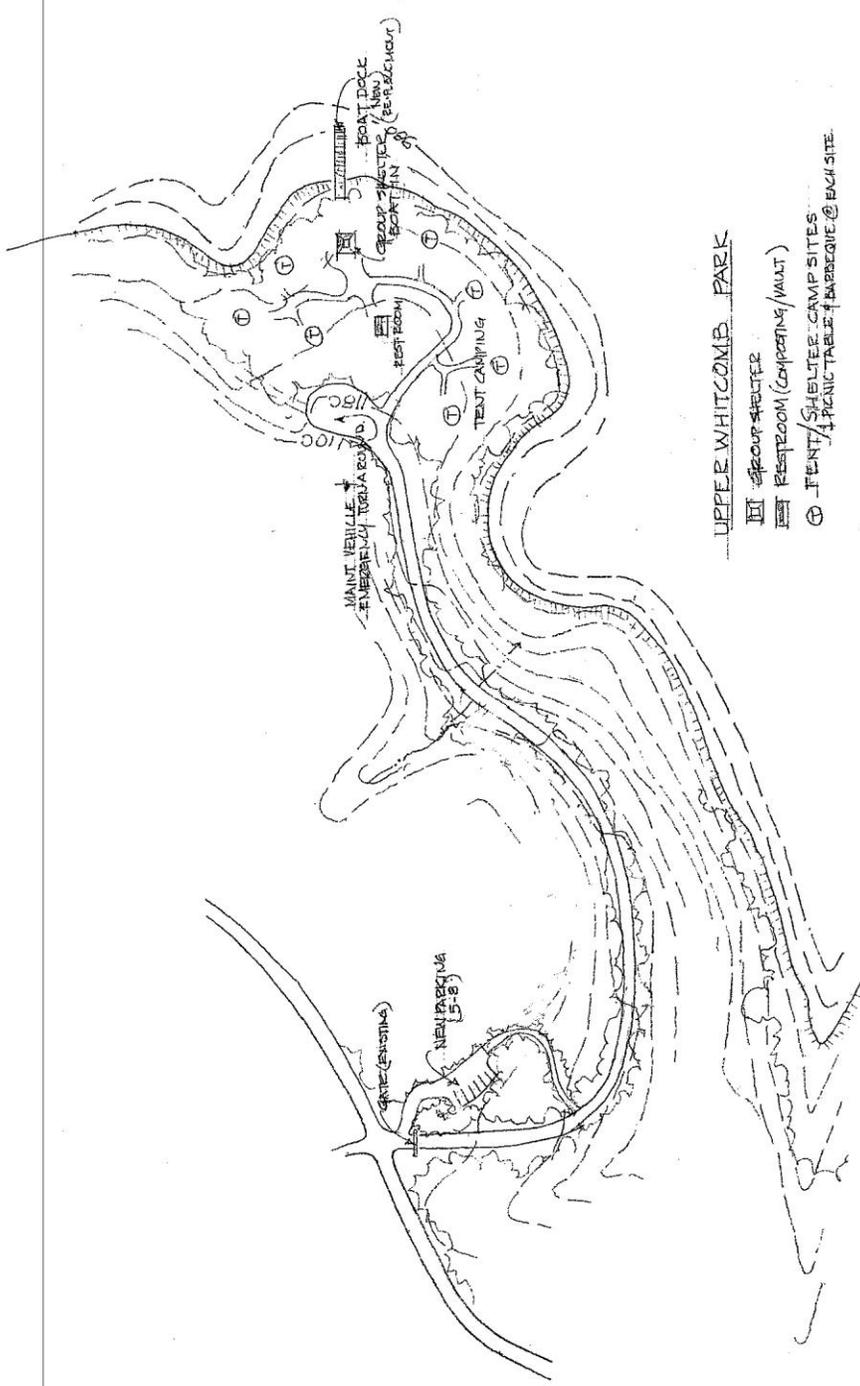
FUTURE SHELTER CAMPING

WASTE DUMP TANK  
LONG RIG TUBS

MAINTENANCE

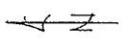
WHITCOMB CREEK PARK  
ENTRY ROAD - KIOSK-GATE  
WASTE DUMP TUBS - ROUND  
MAINTENANCE & STORAGE AREA



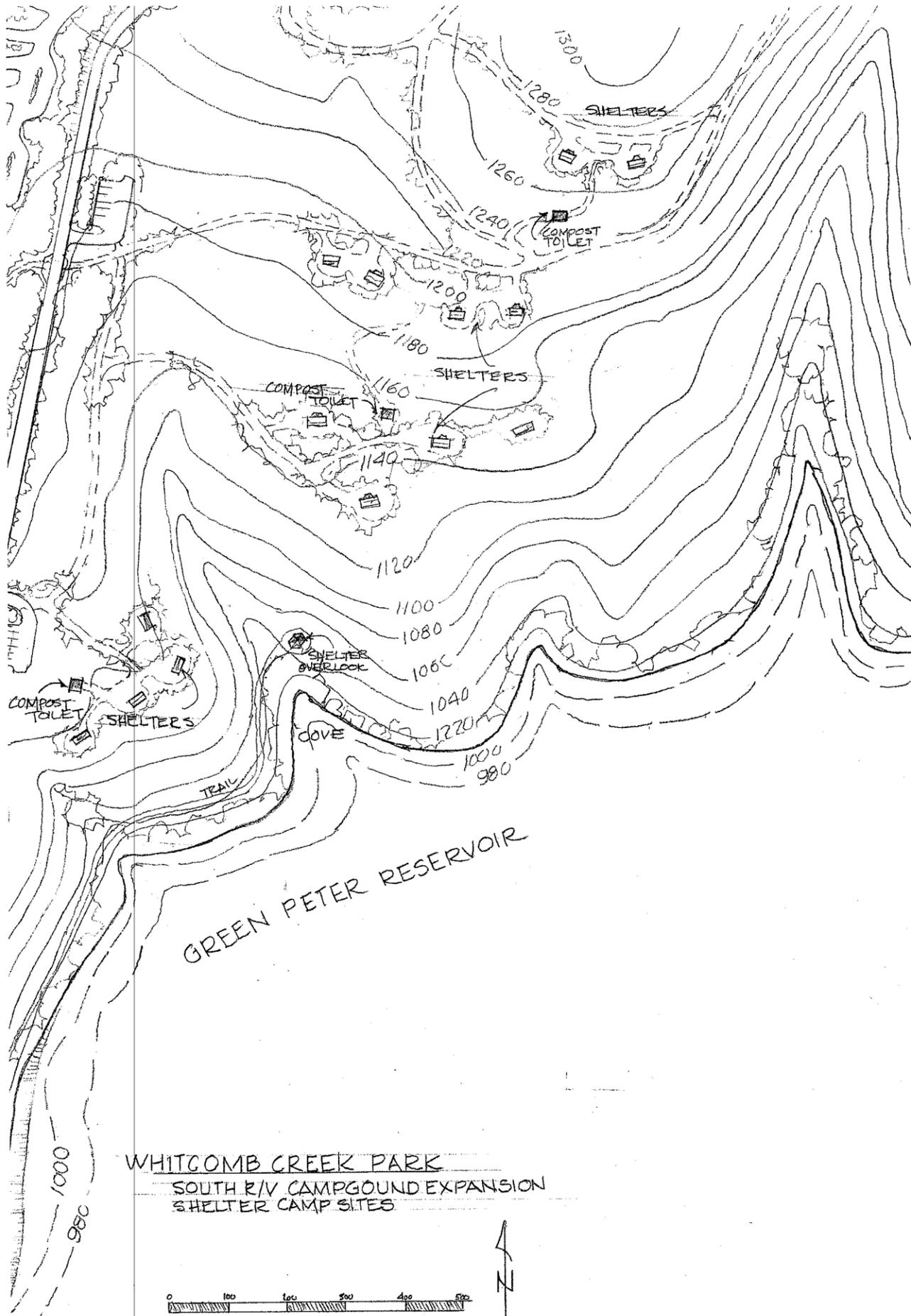


UPPER WHITCOMB PARK

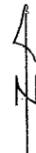
- ▭ GROUP DECK
- ▨ RESTROOM (COMPOST/VALVE)
- ⊕ TENT/SHELTER CAMP SITES
- ⊕ PICNIC TABLE BARBECUE @ EACH SITE

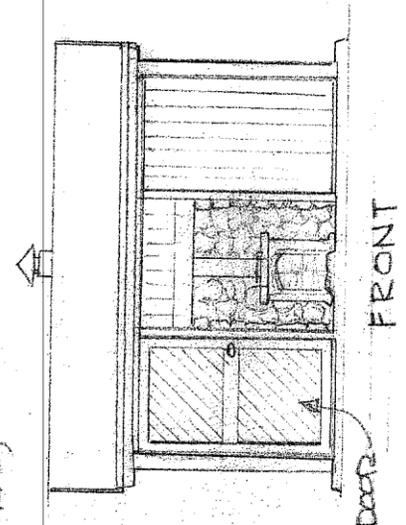
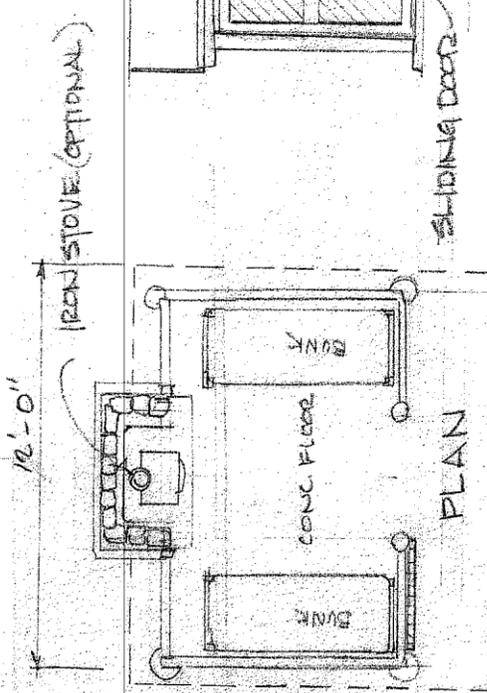






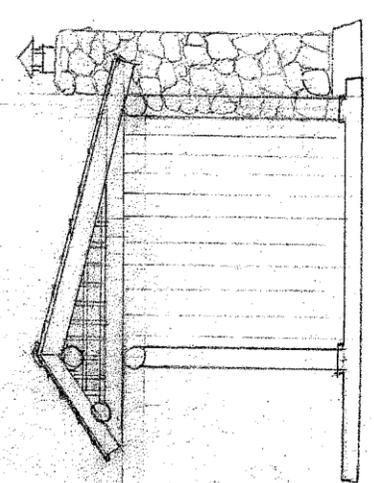
**WHITCOMB CREEK PARK**  
 SOUTH R/V CAMPGROUND EXPANSION  
 SHELTER CAMP SITES





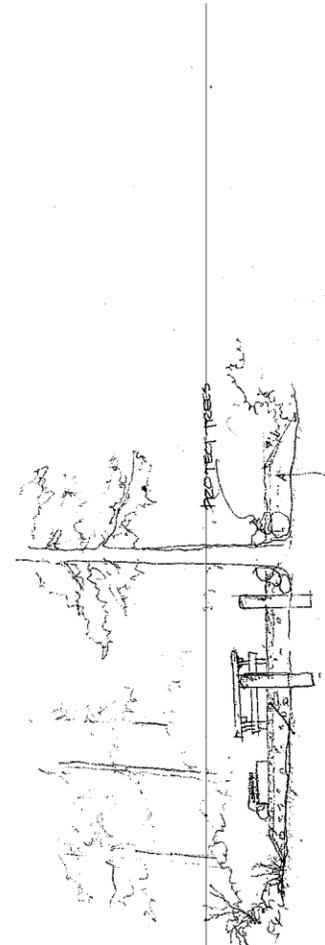
MODIFIED ADIRONDACK  
SHELTER  
1/4" = 1'-0"

OPTION: FIRING LOCATE OUTSIDE  
6' FROM ENTRY



END VIEW

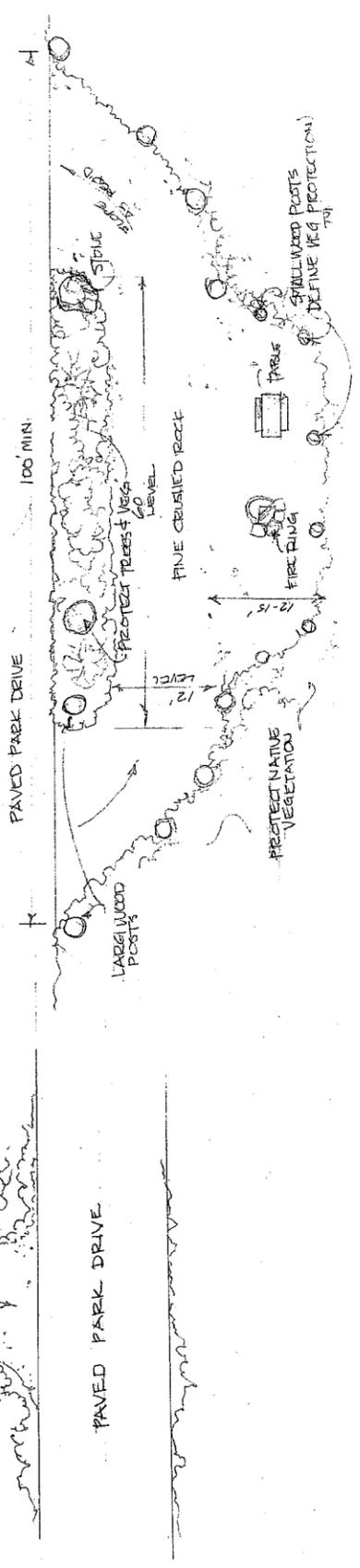
WHITCOMB CREEK CO. PARK  
TYPICAL

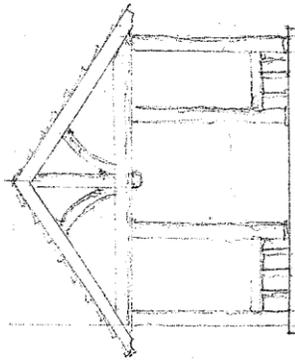
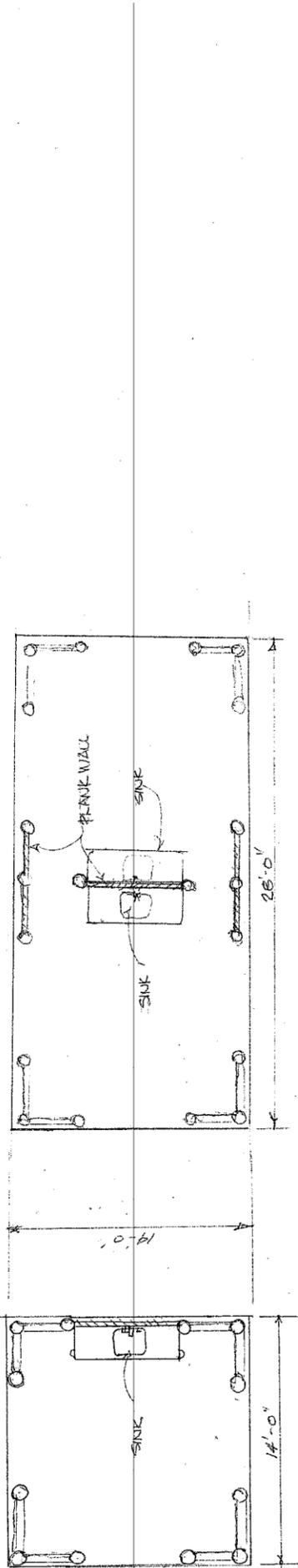


NOTE: FILL DRIVE & CAMP AREA TO LEVEL W/ 3/4" MINUS CRUSHED ROCK - 6" MIN DEPTH TO LEVEL TOP W/ 1/4" MINUS CRUSHED ROCK. SEED CLOSURES OF NATIVE GRASSES & FORBES.

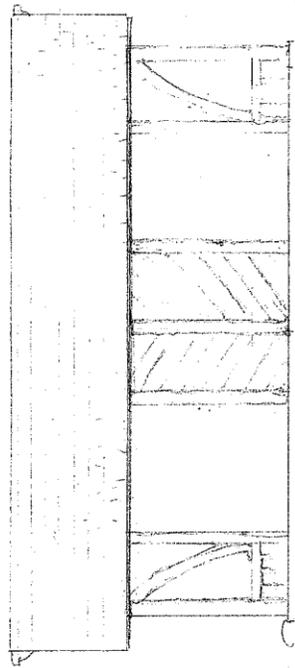
TYPICAL R/V BACK-IN CAMPSITE  
SCALE 1/8" = 1'-0"

TYPICAL PULL-THROUGH R/V CAMPSITE  
SCALE 1/8" = 1'-0"

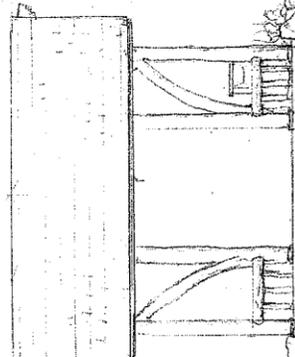




END ELEV.



DOUBLE GROUP SHELTER



SINGLE GROUP SHELTER

GROUP PICNIC SHELTERS 1/4" = 1'-0"  
JS





## APPENDIX 2

### Scientific Names of Flora and Fauna Mentioned in Text

#### Plants

Vine Maple	<i>Acer circinatum</i>
Bigleaf Maple	<i>Acer macrophyllum</i>
Mountain Oregon Grape	<i>Berberis nervosa</i>
False-brome	<i>Brachypodium sylvaticum</i>
Chinquapin	<i>Castanopsis chrysophylla</i>
Golden Paintbrush	<i>Castilleja levisecta</i>
Dogwood	<i>Cornus</i> spp.
Hazelnut	<i>Corylus cornuta</i>
Scotch Broom	<i>Cytisus scoparius</i>
Willamette Daisy	<i>Erigeron decumbens</i>
Salal	<i>Gaultheria shallon</i>
Bradshaw's Desert Parsley	<i>Lomatium bradshawii</i>
Kincaid's Lupine	<i>Lupinus oregonum</i> (= <i>sulphureus</i> ssp. <i>kincaidii</i> )
Woodsorrel	<i>Oxalis</i> spp.
Reed Canarygrass	<i>Phalaris arundinacea</i>
Sword Fern	<i>Polystichum munitum</i>
Bitter Cherry	<i>Prunus emarginata</i>
Douglas-fir	<i>Psuedotsuga menziesii</i>
Himalayan Blackberry	<i>Rubus armeniacus</i>
Blackberry	<i>Rubus</i> spp.
Trailing Blackberry	<i>Rubus ursinus</i>
Cascara	<i>Rhamnus purshiana</i>
Pacific Rhododendron	<i>Rhododendron macrophyllum</i>
Nelson's Checker-mallow	<i>Sidalcea nelsoniana</i>
Pacific Yew	<i>Taxus brevifolia</i>
Western Red Cedar	<i>Thuja plicata</i>
Western Hemlock	<i>Tsuga heterophylla</i>
Red Huckleberry	<i>Vaccinium parvifolium</i>

#### Birds

American Dipper	<i>Cinclus mexicanus</i>
Band-tailed Pigeon	<i>Columba fasciata</i>
American Peregrine Falcon	<i>Falco peregrinus anatum</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Harlequin Duck	<i>Histrionicus histrionicus</i>
Osprey	<i>Pandion haliaetus</i>
Northern Spotted Owl	<i>Strix occidentalis caurina</i>

**Mammals**

American Beaver	<i>Castor canadensis</i>
Elk (Roosevelt)	<i>Cervus elaphus</i>
Townsend's big-eared Bat	<i>Corynorhinus townsendii</i>

**Reptile**

Northern Pacific Pond Turtle	<i>Actinemys marmorata marmorata</i>
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**Amphibians**

Oregon Slender Salamander	<i>Batrachoseps wrighti</i>
Bullfrog	<i>Lithobates catesbeianus</i>
Larch Mountain Salamander	<i>Plethodon larselli</i>
Northern Red-legged Frog	<i>Rana aurora aurora</i>
Foothill Yellow-legged Frog	<i>Rana boylei</i>
Cascade Torrent Salamander	<i>Rhyacotriton cascadae</i>

**Fish**

Largescale Sucker	<i>Catostomus macsocheilus</i>
Sculpin	<i>Cottus</i> spp.
Bluegill	<i>Lepomis macrochirus</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Cutthroat Trout	<i>Oncorhynchus clarkii</i>
Coho Salmon	<i>Oncorhynchus kisutch</i>
Steelhead, Rainbow Trout	<i>Oncorhynchus mykiss</i>
Kokanee (Sockeye Salmon)	<i>Oncorhynchus nerka</i>
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>
Oregon Chub	<i>Oregonichthys crameri</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>
Bull Trout	<i>Salvelinus confluentus</i>
Dace	<i>Thinichthys</i> spp.

**Insect**

Fender's Blue Butterfly	<i>Icaricia icarioides fenderi</i>
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**Fungus**

Laminated Root Rot	<i>Phellinus weirii</i>
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## APPENDIX 3

# Special Status Botanical Species and Habitats in Proposed Linn County Parks Project Area: A Biological Evaluation

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### Summary

Potential habitat for special status fungi, bryophytes, and vascular plants occurs at Greenpeter within the area proposed for disturbance by the Linn County Park expansion plan. These species are analyzed based on their proximity to the project, their legal and Heritage status and their habitat requirements. Fourteen sensitive species sites, of two lichens and a moss were recently reported from Whitcomb Peninsula. Most potentially occurring species (and all occurring species) require special habitats, which, regardless of species composition, must not be disturbed or indirectly altered by the project. These habitats include coniferous old-growth, ponds, wetlands, streams, riparian areas, cliffs, rock outcrops. Avoidance and future protection of these habitats should be a condition of any real estate instrument issued. A few species may occur in general conifer forest habitat, but except in the case of fungus species for which it is impractical to survey, an inventory project had a high likelihood of locating them and did not locate any. I find that the project will not harm sensitive botanical species **if appropriate protection is provided to special habitats.**

### Introduction

The following discussion integrates data from the State Natural Heritage database, preliminary results of a contract inventory of habitat and biodiversity, experience and expertise of Corps biologists, agency gray literature, and published scientific papers to assess the potential occurrence of sensitive species in the project footprint, and to assess the likelihood and extent of project effects to these species.

### Heritage database query

To determine potentially occurring species in the project area, I queried the Oregon Biodiversity Information Center's database (ORBIC 2012) for occurrences within 2, 5, and 10km of the Greenpeter Project Boundary. Twenty-six botanical species listed by the Center occur within 10km of Green-Peter Lake: 10 fungi including lichens, 4 bryophytes, and 12 vascular plants (see Table 1). Three vascular plants and a lichen are known within 5km of the Project, and a single moss species occurs within 2 kilometers,

and is in fact within the project boundary near Whitcomb peninsula. Most species returned in the query are habitat specialists of rock outcrops, ponds, wetlands, streams, and riparian or moist hardwood stands. A few occur in general conifer forest habitats. None are listed or proposed for Federal ESA status. We will discuss those considered by USFWS as ‘Species of Concern’; State candidate species; species with a Global or State rank of 1 or 2; and species on Heritage lists 1 or 2. The Heritage list is probably the most objective measure of conservation concern, as it is based exclusively on biology, is updated frequently and is little influenced by extraneous political and bureaucratic factors.

Of the species occurring within 10km of the project, only *Ophioglossum pusillum*, *Cimicifuga elata*, *Castilleja rupicola*, *Bryoria subcana* occur between 2 and 5km.

*Trichostomum crispulum* occurs rock outcrops on Quartzville Road, and is the only species occurrence within 2km.

**Table 1.** Heritage Species within 10km of Green Peter Reservoir. Species discussed in the text are shown in bold.

Species	Common name	Fed	State	G-rank	S-rank	H-list	Hab
<b>Fungi including lichens</b>							
<i>Phaeocollybia californica</i>	Fungus			<b>G2?</b>	<b>S2?</b>	1	Gen for
<i>Stereocaulon spathuliferum</i>	Lichen			<b>G4G5</b>	<b>S1</b>	2	Rock
<i>Bryoria subcana</i>	Lichen			<b>G3G4</b>	<b>S2</b>	2	Gen for
<i>Pilophorus nigricaulis</i>	Lichen			<b>G3</b>	<b>S2</b>	2	Rock
<i>Pseudocyphellaria mallota</i>	Lichen			<b>G4</b>	<b>S2</b>	2	Riparian hardwood
<i>Hypotrachyna riparia</i>	Lichen			<b>G1</b>	<b>S1</b>	3	Riparian hardwood
<i>Acanthophysium farlowii</i>	Fungus			<b>G3?</b>	<b>S1?</b>	3	Gen for
<i>Sowerbyella rhenana</i>	Fungus			G3G5	S3	3	
<i>Nephroma occultum</i>	Lichen			G4	S3	4	
<i>Pseudocyphellaria perpetua</i>	Lichen			G4	S3	4	
<b>Bryophytes</b>							
<i>Calypogeia sphagnicola</i>	Liverwort			<b>G4</b>	<b>S2</b>	2	Bog
<i>Trichostomum crispulum</i>	Moss			<b>G4G5</b>	<b>S1</b>	3	Rock
<i>Plagiothecium piliferum</i>	Moss			<b>G5</b>	<b>S2</b>	3	Alder, rock
<i>Thamnobryum neckeroides</i>	Moss			<b>G4</b>	<b>S2</b>	3	Maple, rock
<b>Vascular plants</b>							
<i>Corydalis aquae-gelidae</i>	Cold-water corydalis	SOC	C	<b>G3</b>	<b>S3</b>	1	In stream
<i>Ophioglossum pusillum</i>	Adder's-tongue			<b>G5</b>	<b>S1</b>	2	Bog
<i>Utricularia gibba</i>	Humped bladderwort			<b>G5</b>	<b>S1</b>	2	Pond

<i>Wolffia borealis</i>	Dotted water-meal		G5	S1	2	Pond
<i>Wolffia columbiana</i>	Columbia water-meal		G5	S1	2	Pond
<i>Polystichum californicum</i>	California sword-fern		G4	S2	2	Cliff
<i>Castilleja rupicola</i>	Cliff paintbrush	SOC	G3G4	S3	4	Cliff
<i>Huperzia occidentalis</i>	Fir club-moss		G5	S3	4	
<i>Montia howellii</i>	Howell's montia	C	G3G4	S3S4	4	Parking lots
<i>Cimicifuga elata</i> var. <i>elata</i>	Tall bugbane	C	G4T4	S4	4	Gen for
<i>Erigeron cascadensis</i>	Cascade daisy		G4	S4	4	
<i>Vaccinium oxycoccos</i>	Wild bog cranberry		G5	S4	4	

### Contract biodiversity and habitat inventory results

A contract with Salix Associates to characterize habitat and biodiversity at Greenpeter is currently in progress. Preliminary results include the *Trichostemum* site above among 14 rare lichen and bryophyte finds on Whitcomb Peninsula. Note that only one of these species appear in the Heritage database query – and it was reported by the contractor. These sites are displayed in Figure 1.

*Platyhypnidium riparioides* (G4, S2, no list, do not track) is an aquatic moss. It is widespread but uncommon and probably undercollected (Christy 2006). The Salix inventory located four sites on Whitcomb peninsula, 3 on rocks in creeks, and one on rock at the reservoir edge.

*Leptogium platynum* (G3G4, S1S2, list 3) is a lichen of rock outcrops (Stone 2009). The Salix inventory located six locations on Whitcomb peninsula.

*Trichostomum crispulum* (G4G5 S1 list 3) is a moss of rock outcrops, only recently reported from Oregon (Weiss 2010). The Salix inventory located four locations on Whitcomb Peninsula.

All fourteen of these sites are associated with special habitats, either rocks or creeks, that must be left undisturbed by this project. These species and their habitats will not be harmed by the project if this requirement is followed.

### Potentially occurring species analyses

The disturbance proposed by the park expansion project will occur primarily in two habitat types. The Moose Creek, Trout Creek, and a portion of the Whitcomb Peninsula project will occur in previously heavily disturbed sites experiencing current recreation impacts. These areas do not contain potential habitat for sensitive species, and will not be discussed further. The remainder of the effects will primarily be felt in general conifer forest, although with a hardwood component and some characteristics of valuable late successional habitat.

***This analysis assumes that special habitats (including ponds, wetlands, rock outcrops, oak stands, and old growth stands) within the project area will not be harmed directly***

*or indirectly by development activity, and after development will be actively protected by the lessee under terms of the lease agreement.* This requirement will substantially reduce the number of sensitive botanical species to be analyzed, inventoried, and targeted for specific protection and management actions. Special habitat identified by inventory within the project area are displayed in Table 2.

### **Species of general conifer forest**

General forest which may include potential habitat for the following four species will be disturbed by the proposed park expansion at Whitcomb Peninsula.

The mushroom *Phaeocollybia californica* is dependent on tree hosts through mycorrhizal connections. The Heritage database records 20 occurrences from Multnomah to Coos County. Additional sites are known on the Olympic Peninsula and in northern California. The species Global and State ranks are in question because it is difficult to inventory nearly invisible and completely unidentifiable underground mycelia: such species can only be found during unpredictable, often intermittent seasonal fruiting. Two methods of confirming presence for this species are currently available: fruiting season visits over the course of many years, and DNA analysis of soils (Cushman and Huff 2007a). Neither are reliable methods to confirm absence.

Given the uncertainty of its conservation rank and the unavailability of survey methods that can locate – or confirm the absence of -- this species, it is impractical to consider whether the project will have an effect on *Phaeocollybia californica*.

The horse-hair lichen *Bryoria subcana* is epiphytic in moist general forest. It is found on the west coast from central California to southeast Alaska, and additionally in New York State, Britain, and Europe. The Heritage database lists 14 sites in Oregon. Although considered a primarily coastal species here, there is a confirmed site in the South Santiam watershed on Moose Creek, and additional sites in USFS lichen plots in the western Cascades. The Moose Creek site, whose identity is confirmed in the literature (Geiser *et al.* 2004), supports only about 1 gram of this lichen (Glavitch *et al.* 2005). It is about 12km by air from Whitcomb peninsula.

Glavitch *et al.* (2005), based on 2 coastal sites and the Moose Creek site, suggest that *B. subcana* depends on high rainfall, high number of days with measurable precipitation, and low dewpoints. Based on climate and proximity to a known site, there is a reasonable likelihood that this lichen could be found on Whitcomb peninsula.

However, lichen surveys during the Salix inventory did not reveal the species and the contract lichenologist indicated that habitat there is not suitable (Stone *in lit.*). Absence of the species or its habitat indicate that *Bryoria subcana* will not be harmed by the park expansion project.

*Acanthophysium farlowii* is a spring-fruiting decay fungus of dead twigs attached to living hemlock, fir, and Douglas fir. There are two sites known in the Pacific Northwest. The site in the Santiam watershed is poorly documented, with an accuracy radius of 4km, no associated collection data, and no literature cited. Although much ink has been spilled over this little rotter it is likely overlooked and undersampled. However, an interagency

grid survey over the range of the Northern Spotted Owl did not yield any new sites of this species.

The difficulty of surveying for this species -- reflected in the questionable global and state ranks assigned by the Heritage program -- led the Interagency Special Status/Sensitive Species Program to recommend broad habitat management guidelines for species. These include retention of forest patches (Cushman and Huff 2007b).

The proposed action does not include wholesale logging of any stand, so in the unlikely event the species occurs here, habitat would remain, and populations would have a reasonable chance of persisting.

*Cimicifuga elata* var. *elata* (tall bugbane) is a flowering plant mainly found on steep north slopes associated with big-leaf maple and western red-cedar. There are several known sites in the Foster Project footprint, and many in the South Santiam watershed. As indicated by its Heritage ranks and occurrence on Heritage list 4, it is not a rare plant. Its appearance as a State Candidate is outdated – status was assigned prior to fieldwork which located many new sites. The Heritage database now contains 171 records of this variety. Salix inventory would have revealed the presence of the species or suitable habitat.

Negative survey results and the low level of conservation concern combine to indicate this species will not be harmed by the park expansion project.

### **Species of riparian hardwoods**

*Pseudocyphellaria mallota* is an epiphytic lichen found in both North and South America. Of 22 occurrences in the Heritage system, all but 3 occur in the Western Cascades of Linn, Lane and Douglas Counties. Nearly 20 additional sites are known on the Olympic Peninsula of Washington. The lichen is most often located as a 1cm thallus on litterfall or twigs in very moist but not necessarily undisturbed or old-growth forest. Canopy surveys have not been attempted at most known sites (see Ward 2006). This strongly suggests that the rarity of this species is more a function of its rarity in litterfall than its absolute rarity.

Litterfall was examined in the Salix survey and *Pseudocyphellaria mallota* was not found.

*Hypotrachyna riparia* is known from only a few sites on Oregon ash in privately owned Cascade foothill stream corridors of Linn County. It is likely that Salix surveys would have revealed this species if present.

*Plagiothecium piliferum*, a moss of moist rock and wood in riparian zones, is widespread, undercollected, and probably would have appeared in Salix inventory, as would *Thamnobryum neckeroides*, a large, not easily overlooked moss also associated with moist riparian rocks and tree bases.

Based on a reasonable level of survey effort, these four species are absent from the project area and will not be harmed.

### **Species of rock outcrops and cliffs**

*Stereocaulon spathuliferum* and *Pilophorus nigricaulis* are lichens that were not located in the habitat inventory by Salix Associates. Furthermore they occur on rock outcrops, which are special habitats that will be protected during the project.

*Trichostomum crispulum* occurs in four rock outcrop sites and will be protected along with other species of this special habitat.

*Castilleja rupicola* and *Polystichum californicum* are vascular plant species that will be protected by the same avoidance and future defense of special habitats.

### **Species of ponds**

*Utricularia gibba*, the humped bladderwort, a submerged carnivorous plant with floating flowers, and the floating aquatics *Wolffia borealis* and *Wolffia columbiana*, known as water-meal for their tiny size, only occur in standing water. The nearest site known for these species is in Lewis Creek Park at Foster Lake.

Recent habitat surveys in Whitcomb peninsula located a small seasonal pond with an overstory of red alder at UTM 10N 539797, 4926233. Because it is ephemeral, this pond is unlikely habitat for these three aquatics. Additionally, it will be buffered and avoided as a special habitat during and after the project. Thus the project will not harm *Utricularia* or *Wolffia* species.

### **Species of wetlands**

No habitat for *Calypogeia sphagnicola*, a liverwort of sphagnum fens, occurs in the project area. *Ohioglossum pusillum*, a fern ally, if present, would be protected during and after this project by the protection of its habitat.

### **Species of streams**

*Corydalis aquae-gelidae* is a flowering plant of cold perennial streams in the Cascades of Oregon. Most of the 59 sites in the Heritage database are in Clackamas County. Four are in Linn County between 2600 and 4000 feet. This species could be found in cold shaded streams flowing into Greenpeter reservoir, but it was not found in the project area, and so will not be harmed by the project.

### **Species of parking lots and road shoulders**

*Montia howellii* is a minute flowering plant commonly found in muddy verges, dike tops, highway shoulders, gravel parking lots, and other disturbed sites. The Heritage ranks and list status indicate an appropriate low level of conservation concern, while its continued presence on the state Candidate list is not consistent with current knowledge. No analysis of this project's effect on this common species is needed.

## **Conclusion**

Most species occurring or potentially occurring in the project area occur in specific habitats of limited extent, such as rock outcrops, ponds, streams, riparian zones. These

habitats will be avoided during the project and actively protected from damage as part of the management plan of the parks. Lichen, bryophyte and vascular plant species of general forest habitats, were searched for during a biodiversity inventory project and not found. Two fungus species are impractical to survey for or would have refugia in remaining habitat nearby. It is thus unlikely that this project will have strong negative effects on botanical sensitive species.

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