7.0 RECREATION RESOURCES

In compliance with 18 CFR4.51, PacifiCorp has prepared a report on recreation resources summarizing the resources in the study area. This License Application is based on a number of detailed studies, presented in greater detail in the FTR for Recreation Resources (PacifiCorp 1998d). The objectives of these studies were to: (1) characterize existing recreation resources, (2) assess recreation impacts associated with the project, and (3) identify measures to protect and enhance recreation resources if needed. Integrated studies conducted as part of the relicensing process to accomplish these objectives include:

- Recreation supply,
- Recreation demand,
- Recreation capacity and suitability, and
- Recreation needs analysis.

The first 3 studies were used to prepare the recreation needs analysis. Recreation needs, both existing and future, were then identified for the study area in the fourth study. Summaries of these 4 studies are described in this section.

This report discusses:

- Existing recreation resources, including summaries of recreation resource studies presented in the FTR;
- Proposed enhancement measures;
- Agency and tribal consultation;
- Continuing impacts; and
- Implementation, schedule, and cost information.

The primary study area for recreation resources (Figure 7.1-1) consists of approximately 14,568 acres of land within a 0.5-mile radius of Yale Lake. This area includes all developed facilities surrounding Yale Lake, as well as dispersed undeveloped recreation sites along the reservoir shoreline and in the immediate area. To place the Yale Project in perspective, additional recreation resources in the Lewis River basin and the region were also identified in a secondary study area (Figure 7.1-2). This large area includes other PacifiCorp facilities at Lake Merwin and Swift Reservoir, a number of private facilities along State Route 503 and elsewhere, and surrounding federal and state recreation areas.

7.1 EXISTING RECREATION RESOURCES

Existing recreation resources in the primary study area surrounding Yale Lake are the focus of this License Application. These resources are described below including

recreation supply, recreation use and demand, recreation capacity and suitability, recreation needs, agency plans and resources that affect the project, and existing measures implemented by PacifiCorp. Recreation resources found in the secondary study area within the Lewis River basin, discussed in detail in the FTR for Recreation Resources (PacifiCorp 1998d), include:

- Gifford Pinchot National Forest (GPNF)
- Mount St. Helens National Volcanic Monument (Monument)
- Merrill Lake (DNR)
- Siouxon Lands (DNR)
- Columbia River Gorge National Scenic Area (CRGNSA)
- Private recreation vehicle (RV) parks and resorts (4)
- Private golf course (1)
- Swift Reservoir (PacifiCorp)
- Lake Merwin (PacifiCorp)

There are no federally designated Wild and Scenic Rivers or national scenic or national recreation trails within 15 miles of Yale Lake.

7.1.1 Recreation Supply

This section is a summary of information presented in the FTR for Recreation Resources (PacifiCorp 1998d) and describes the existing recreation resources found in the primary study area.

7.1.1.1 Yale Lake Recreation Activities

Yale Lake offers a variety of water- and land-based recreation opportunities for both day-use and overnight visitors. Ten miles long, the lake covers 3,800 surface acres and has 27 miles of shoreline at recreation pool level. Popular recreation activities include picnicking, boat and bank fishing, power boating, small boat sailing, windsurfing/ sailboarding, canoeing/kayaking, swimming, water skiing, personal watercraft (PWC)/jetski use, hiking and walking, horseback riding, bicycling, group camping, and RV and tent camping. Trail use by hikers and mountain bikers is generally limited to existing roads, such as the IP Road and Lewis River Road, and a trail south of Speelyai Canal. Horseback riding occurs primarily along a trail from the Saddle Dam area to Speelyai Canal and in the Siouxon drainage. Dispersed camping occurs primarily along the eastern lake shoreline and Siouxon Creek; some dispersed camping does occur along the Swift No. 2 bypass reach of the Lewis River upstream of the Yale Project. Sightseeing, nature observation, and outdoor photography are also popular activities. Cave exploration and rock climbing are also popular because of lava flows and caves in the eastern part of the area and nearby Ape Cave.

Legend

- Study Area
- FERC Project Boundary
- Transmission Line
- Public Land Survey
- County Line
- Topography
- Recreation
- Residential

HYDROGRAPHY
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

NORTH

0 1 2 3 Miles

Scale 1:90000

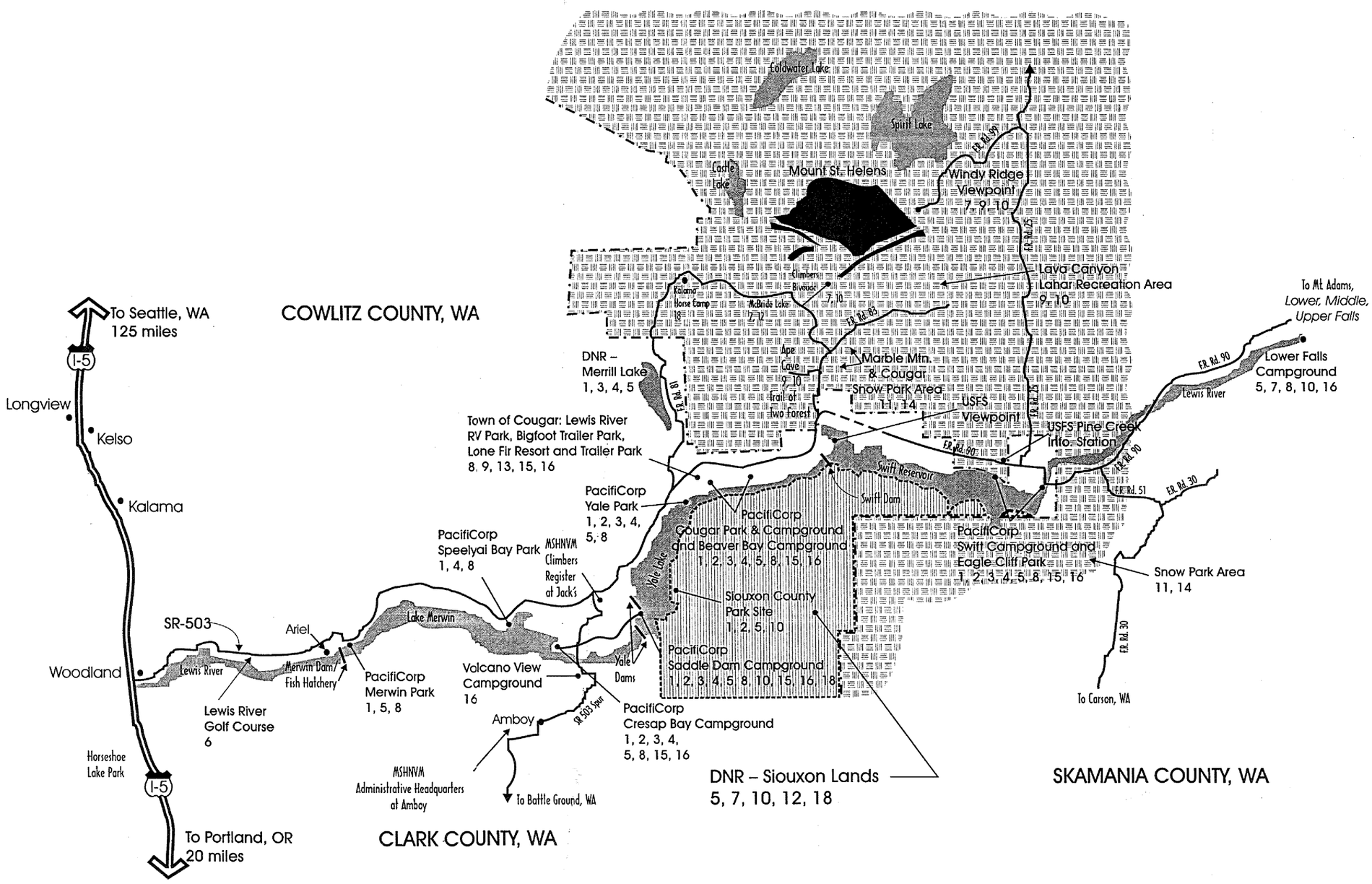
Yale Hydroelectric Project

Figure 7.1-1
Primary Study Area

Created by VESTRA Resources for PacifiCorp

/p1/proj_map/projects/yale/license/exe/recreatn/studyarea.map

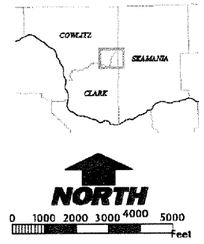
February 24, 1999



Legend

- Lakes/Rivers
- Boundary Line for Monument/GPNP
- MP = Milepost F.R. = Forest Service Road
- Federal Land (GPNF/Monument)
- DNR Siouxon Lands

1. Swimming
2. Water Skiing
3. Sailing
4. Boating & Boat Launch
5. Fishing
6. Golf
7. Viewpoints & lookouts
8. Picnic Area accessible
9. Interpretive trail & displays
10. Hiking accessible
11. Snow Mobile accessible
12. Hunting
13. Helicopter Tours
14. Cross Country Skiing
15. RV dump
16. Campground
17. Bicycle trails
18. Horse trails



Yale Hydroelectric Project

Figure 7.1-2
Recreation Resources in the Lewis River Basin

The focus of recreation at the Yale Project is water-based activities on the reservoir. Yale Lake is open for water-based recreation use year round. Pool level varies from approximately 470 feet msl during the non-peak season at drawdown to a maximum of 490 feet msl; PacifiCorp maintains a recreation pool level of between 480 and 490 feet msl during the peak recreation season (Memorial Day to Labor Day weekends) to accommodate boaters. Most vessels on Yale Lake are power boats that are trailered by vehicles to the water. These boaters are primarily fishing for kokanee, picnicking on the shoreline, and water skiing. Other vessel types used on the lake include inflatable rafts, canoes, jetskis/PWC, small sailboats, kayaks, sailboards, and pontoon boats. Annual sailboat regattas are held during 2 or more summer weekends. Regatta participants launch from Cougar Camp and total between 25 and 75 boats (small trailered sailboats such as Hobie Cats). Boating markers are placed in the water to mark hazards.

During the 1996 and 1997 recreation seasons, visitors to the 5 Yale Lake developed recreation sites were contacted and surveyed. The results from the 1996-1997 Recreation Visitor Attitudes and Preference Survey are summarized below. Visitors identified the activities they participated in (from a list of 19 activities) during their stay at Yale Lake (multiple answers were allowed; totals will sum to greater than 100 percent).

• RV/tent camping	75 percent
• Sunbathing/swimming	65 percent
• Hiking/walking	51 percent
• Sightseeing	50 percent
• Picnicking	47 percent
• Fishing	37 percent
• Power boating	29 percent
• Water skiing	24 percent
• Kayaking/canoeing/rowing/rafting	18 percent
• Mountain/road bicycling	17 percent
• Caving/rock climbing	16 percent
• Nature study/photography	15 percent
• Jetskiing/PWC use	14 percent
• Other	<10 percent

7.1.1.2 Yale Lake Recreation Facilities

Both developed and dispersed recreation facilities at Yale Lake are summarized below. In addition to describing the recreation activities available at these developed and dispersed sites, this section also summarizes the condition of these facilities.

Yale Lake Developed Recreation Facilities

As illustrated in Figure 7.1-3 and Tables 7.1-1 and 7.1-2, PacifiCorp owns and operates 5 developed recreation facilities on Yale Lake: Saddle Dam Campground and Day-Use Area, Yale Park, Cougar Park, Cougar Camp, and Beaver Bay Campground and Day-Use Area. Key elements of the developed facilities are discussed below including an

inventory of each facility and facility condition. Compliance with guidelines of the Americans with Disabilities Act (ADA) is addressed in a separate subsection following the discussion of dispersed facilities.

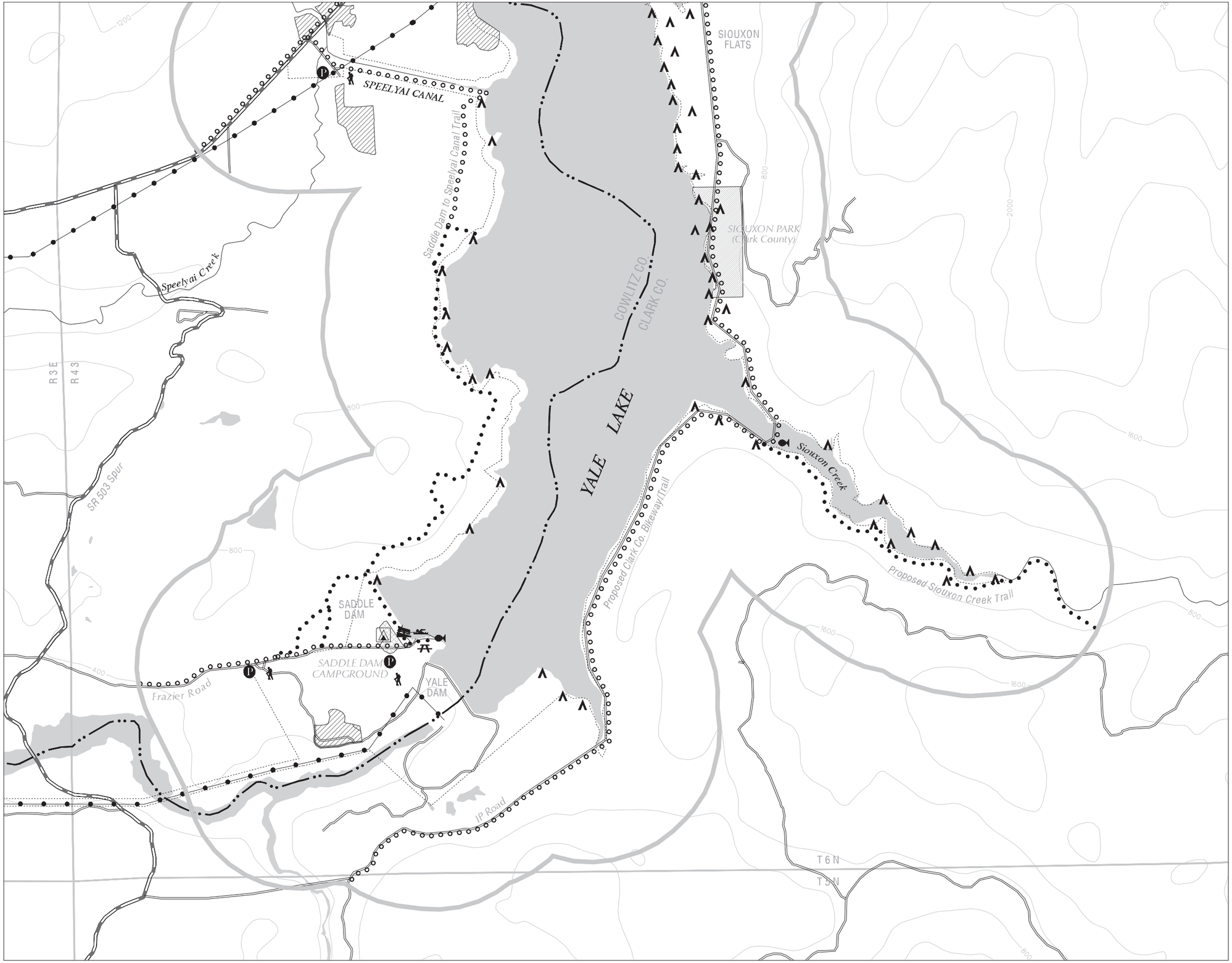
Developed Campgrounds

PacifiCorp has voluntarily developed and operated several major overnight recreation facilities on Yale Lake dating back to the late 1950s and early 1960s, including 3 developed fee campgrounds: Saddle Dam Campground, Cougar Camp, and Beaver Bay Campground (Figure 7.1-3). Cougar Camp and Saddle Dam Campground are open for the peak recreation season occurring from late May (Memorial Day weekend) to early September (Labor Day weekend). Beaver Bay Campground is typically open longer, from late April to late September, to accommodate the early spring fishing and fall hunting seasons. Recreation facilities at each of the campgrounds are discussed below.

Saddle Dam Campground - Of the 3 PacifiCorp campgrounds, Saddle Dam Campground is the smallest (10 acres) and offers 15 individual tent or RV campsites (with no hookups). During 1997, Saddle Dam was open between Memorial Day and Labor Day weekends. In 1998, the facility was temporarily closed, but is expected to reopen in 1999. Built in 1960, it is the only 1 of the 3 PacifiCorp campgrounds that does not include a separate group campsite. Saddle Dam Campground has little topography or screening vegetation between campsites; the sites are primarily laid out around the perimeter of a large gravel parking area with a central restroom. The campground is located immediately southwest of the Saddle Dam, and is surrounded by a day-use parking facility and picnic area, Saddle Dam farm (part of the Merwin Wildlife Habitat Management Area), and a forested area. A boat launch is provided at the adjacent Saddle Dam Day-Use Area, but there are no views of the water from the campground itself, which is located behind the earthen dam.

Based on an inventory and evaluation of facilities conducted during 1996, the majority of developed facilities at Saddle Dam Campground are in good condition, including the pay station, picnic tables, swimming area, signs, and restroom. Improvements were made in 1995 and included a new restroom facility with modernized flush toilets, showers, and potable water. Some of the individual campsites are in need of minor repairs, as are portions of the access road. The parking area is not well defined in some locations, resulting in parking inefficiency. The large gravel parking area is unlandscaped and is barren in appearance.

Cougar Camp - Cougar Camp offers 45 tent-only campsites with no RV hookups. During 1997 and 1998, Cougar Camp was open between Memorial Day and Labor Day weekends. Most of the sites are screened with vegetation (primarily tall conifer trees), giving the site a more rustic and natural feel; this sense is augmented by the lack of RVs. Although the campground is accessed directly off of Lewis River Road, a forested buffer separates the campground from the road. The 30-acre site is laid out in a horse-shoe shape with a winding one-way access road, and some individual campsites include private



Legend

- PacifiCorp Developed Recreation Facilities
- Clark County Recreation Site
- Residential
- Bike Route/Multi-use Trail on Roadway Right-of-Way
- Multi-use Trail
- Boat Access
- Campground
- Day Use - Picnic
- Dispersed Camping
- Fishing Access
- Food/Lodging
- Group Camping
- Interpretive
- Parking/Turnout
- RV Park
- Special Interest
- Swimming
- Trailhead

- Study Area Boundary
- Transmission Line
- County Line
- Public Land Survey
- FERC Project Boundary

Hydrography
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 1

NORTH

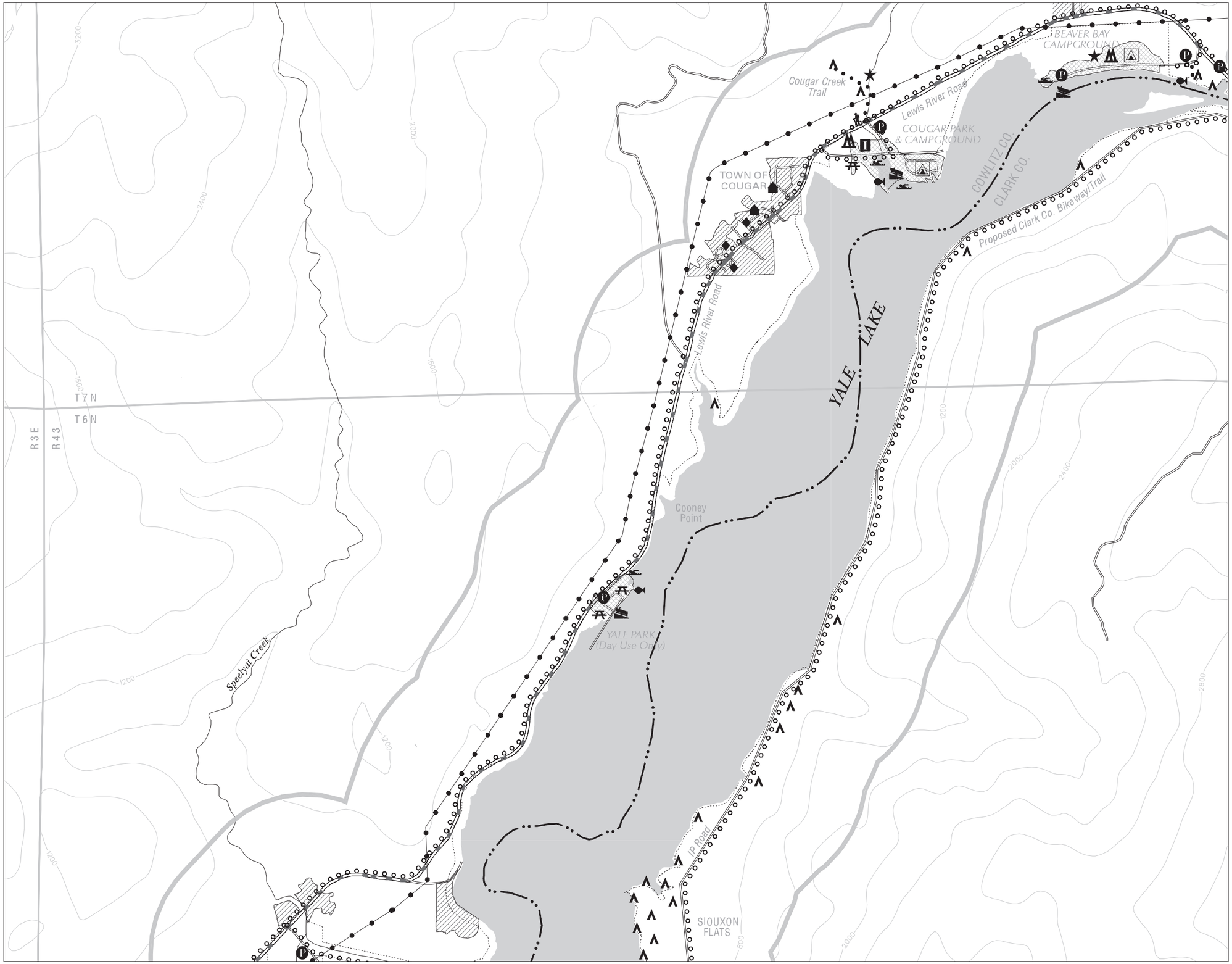
0 1000 2000 3000 4000 Feet

Scale 1:26000

Yale Hydroelectric Project

Figure 7.1-3 (1 of 3) Yale Lake Recreation Sites and Facilities

Created by VESTRA Resources for PacifiCorp
/p1/proj_map/projects/yale/license/exe/recreatn/rec_site.batchmap
April 08, 1999



Legend

- PacifiCorp Developed Recreation Facilities
- Clark County Recreation Site
- Residential
- Bike Route/Multi-use Trail on Roadway Right-of-Way
- Multi-use Trail
- Boat Access
- Campground
- Day Use - Picnic
- Dispersed Camping
- Fishing Access
- Food/Lodging
- Group Camping
- Interpretive
- Parking/Turnout
- RV Park
- Special Interest
- Swimming
- Trailhead

- Study Area Boundary
- Transmission Line
- County Line
- Public Land Survey
- FERC Project Boundary

Hydrography
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 2

NORTH

0 1000 2000 3000 4000 Feet

Scale 1:26000

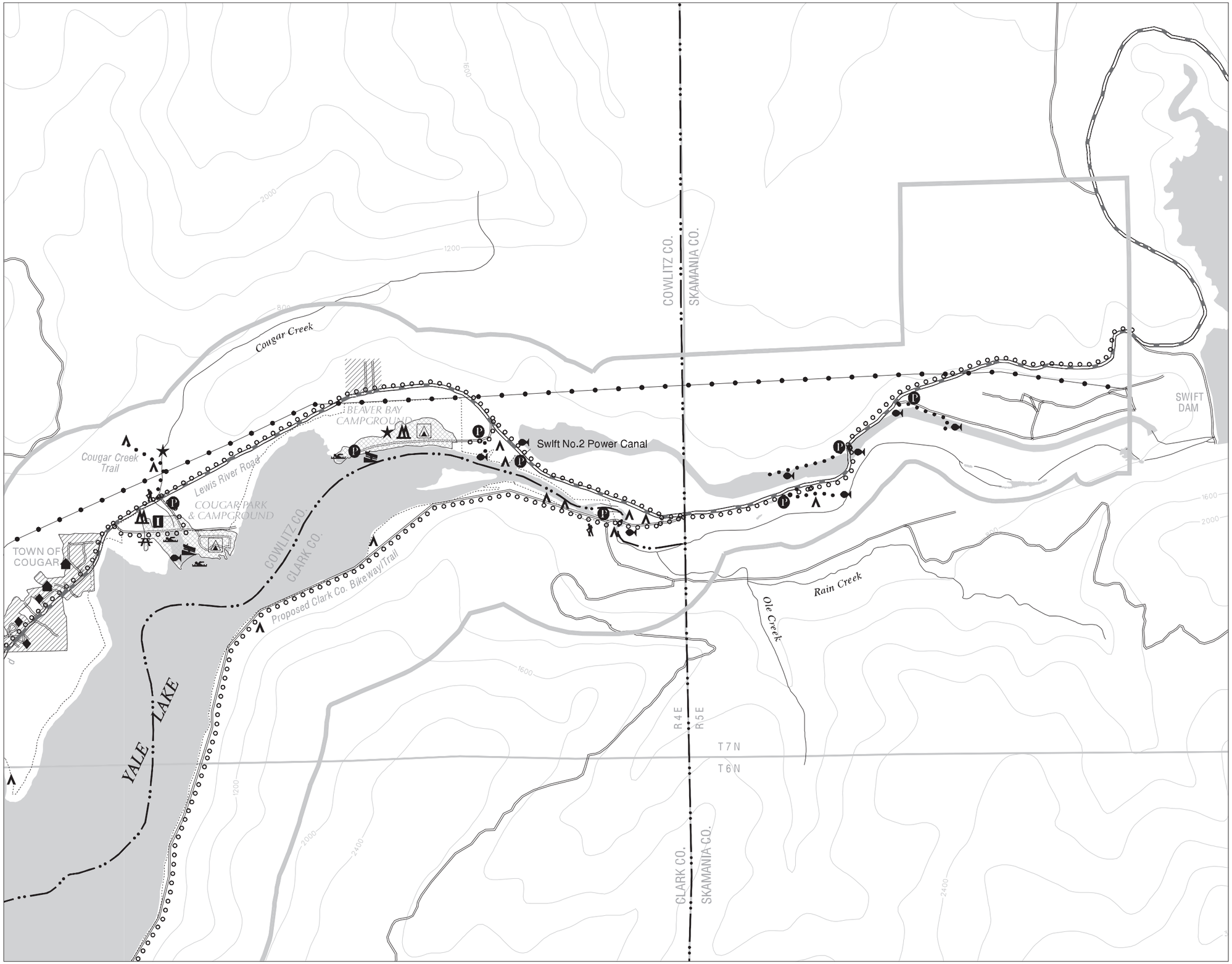
Yale Hydroelectric Project

Figure 7.1-3 (2 of 3) Yale Lake Recreation Sites and Facilities

Created by VESTRA Resources for PacifiCorp

/p1/proj_map/projects/yale/license/exe/recreatn/rec_site.batchmap

April 08, 1999



Legend

- PacifiCorp Developed Recreation Facilities
- Clark County Recreation Site
- Residential
- Bike Route/Multi-use Trail on Roadway Right-of-Way
- Multi-use Trail
- Boat Access
- Campground
- Day Use - Picnic
- Dispersed Camping
- Fishing Access
- Food/Lodging
- Group Camping
- Interpretive
- Parking/Turnout
- RV Park
- Special Interest
- Swimming
- Trailhead

- Study Area Boundary
- Transmission Line
- County Line
- Public Land Survey
- FERC Project Boundary

Hydrography
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 3

NORTH

0 1000 2000 3000 4000 Feet

Scale 1:26000

Yale Hydroelectric Project

Figure 7.1-3 (3 of 3) Yale Lake Recreation Sites and Facilities

Created by VESTRA Resources for PacifiCorp

/p1/proj_map/projects/yale/license/exe/recreatn/rec_site.batchmap

April 08, 1999

Table 7.1-1. Inventory of existing developed recreation facilities and dispersed sites and use areas at the Yale Hydroelectric Project.

Recreation Facilities/Areas	Recreation Facilities: Camping: Pay Stations	Camping: Group Reservation Sites (# spaces)	Camping: Campsites w/ Table/Fire Ring	Camping: Campsites w/ Fire Ring Only	Picnicking: Playground	Picnicking: Picnic Tables	Picnicking: Picnic Fire Rings/BBQs	Picnicking: Shade Trees	Picnicking: Grass Area	Swim/Sunbath.: Designated Swim Area w/ Boom	Swim/Sunbath.: Swimming Beach	Swim/Sunbath.: Sign/Safety Apparatus	Service Facilities: Sanitary: Restrooms-ADA Accessible	Sanitary: Restrooms-non-ADA Accessible	Sanitary: RV Tank Disposal Station	Water: Water/Drinking Faucets	Water: Hot Water Available	Water: Showers	Disposal: Trash Receptacles/Dumpsters	Disposal: Grey Water Sumps	Services: Telephone	Services: Camp Hosts	Services: Security Guards	Services: Firewood Distribution Site	Access Facilities: Vehicular: Main Paved Access Roads	Vehicular: Secondary Gravel Roads	Vehicular: Gravel Parking Area (# veh.)	Vehicular: Boat Trailer Parking	Trails: Multi-use Trails	Trails: Trail Signs	Trails: Trailhead Parking	Angler: Shoreline Fishing	Angler: Dock Fishing	Boating/PWC: Unimproved Boat Launches	Boating/PWC: Improved Boat Launches (# lanes)	Boating/PWC: w/ Dock (#)	Boating/PWC: Floating Booms	Boating/PWC: Navigation/Info. Buoys	Boating/PWC: Information Signs Onshore	Comments
DEVELOPED FACILITIES																																							
Saddle Dam Campground	1		15			10	9						1		1	6		6	6		1	1	1				200								2	1	1		1	New central restroom; 15 sites (RV&tent) surround large gravel area; site good for trailer pkg. next to campsites; mix of day and overnight users.
Beaver Bay Campground	2	15	63		1	6							1	2	1	20		8	21	7	1	2	1				40								1	1			2	New central restroom; 63 sites (RV&tent) in 3 loops off of a central spine road; lots of campsite flexibility; day-use area at end of road; primarily all overnight campers.
Cougar Campground	1		45										1			7		6	6	5		2	1	1			100								2	1	1		1	New central restroom; 45 sites (all tent) off of a loop drive; good campsite definition; adjacent Cougar Park available for day use; boat launch.
Yale Park (Day-use)	1					44	2						1			4		2	3		1		2				280								4	2			2	Central day-use site; open all year; popular boat launch and picnic site; new restroom; 2 picnic areas; good access.
Cougar Park (Day-use)	1	15			1	6										3		2	3	1			1				80								1			1	Day-use site adjacent to Cougar Camp; large older restroom; group campsite; mix of visitors from group campsite, adjacent campground, and day use.
DISPERSED SITES AND USE AREAS																																							
Saddle Dam Cove North Area				1																																			Boat-in site; common day-use area; can walk to site across dam.
Main Dam Point Area				3																																			Boat-in site; can walk to sites from barricaded road; almost always in use; handles large groups.
Siouxon Creek Area				9																																			Scattered boat-in and drive-in sites; very popular, scenic corridor; privacy available.
Siouxon County Park				7																																			Boat-in sites; once had several developed sites and dock; access from IP Road; flat areas; currently undeveloped.
Siouxon Flats Area				20																																			Similar to County property; most popular boat-in sites; good beaches; handles large groups.
North Lewis River Bridge Area				7																							10													Scenic area; access from IP Road; pools, beaches; swimming and tubing.
General East Shoreline				5																																			Scattered boat-in sites available to get away from crowds; little or no beaches.
General West Shoreline				14																																			Scattered boat-in sites available to get away from crowds; little or no beaches.
Swift No. 2 Power Canal/Bypass Area				1																							20													Day-use, fishing; one large dispersed site; access from Lewis River Rd.

Note: Shaded areas denote that facilities or services exist at this location. A number denotes the inventory of that facility type, if applicable. Refer to Comments column for other information.

Table 7.1-2. Condition of existing developed recreation facilities and dispersed sites and use areas at the Yale Hydroelectric Project.

Recreation Facilities/Areas	Recreation Facilities: Camping: Pay Stations	Camping: Group Reservation Sites (# spaces)	Camping: Campsites w/ Table/Fire Ring	Camping: Campsites w/ Fire Ring Only	Picnicking: Playground	Picnicking: Picnic Tables	Picnicking: Picnic Fire Rings/BBQs	Picnicking: Shade Trees	Picnicking: Grass Area	Swim/Sunbath.: Designated Swim Area w/ Boom	Swim/Sunbath.: Swimming Beach	Swim/Sunbath.: Sign/Safety Apparatus	Service Facilities: Sanitary: Restrooms-ADA Accessible	Sanitary: Restrooms-non-ADA Accessible	Sanitary: RV Tank Disposal Station	Water: Water/Drinking Faucets	Water: Hot Water Available	Water: Showers	Disposal: Trash Receptacles/Dumpsters	Disposal: Grey Water Sumps	Services: Telephone	Services: Camp Hosts	Services: Security Guards	Services: Firewood Distribution Site	Access Facilities: Vehicular: Main Paved Access Roads	Vehicular: Secondary Gravel Roads	Vehicular: Gravel Parking Area	Vehicular: Boat Trailer Parking	Trails: Multi-use Trails	Trails: Trail Signs	Trails: Trailhead Parking	Angler: Shoreline Fishing	Angler: Dock Fishing	Boating/PWC: Unimproved Boat Launches	Boating/PWC: Improved Boat Launches (# lanes)	Boating/PWC: w/ Dock (#)	Boating/PWC: Floating Booms	Boating/PWC: Navigation/Info. Buoys	Boating/PWC: Information Signs Onshore	Comments
DEVELOPED FACILITIES																																							
Saddle Dam Campground	4		2			4	4	4	3	4	4	4	4		2	4	4	4	4		4				2	4	4	4	4		4	4			2	1			1	Some tables need repair; parking area is not well defined; road needs repair; boat launch needs repairs -- too short and drop-off.
Beaver Bay Campground	4	2	2		2	4		4	3	4	4	4	4	1	4	4	4	1	4	2	4				2	2	2	2				4			2	1			1	Some tables and playground need repair; older restrooms, not ADA accessible; signs needed for grey water sumps; sign at boat launch needs replacement; campsites and parking not well defined; parking lot receives runoff; road needs repair.
Cougar Campground	4		4										4			4	4	4	4	4					2	4	4	4				4			2	1			1	Roads need repair; boat launch needs repair; dock needs replacement; signs need replacement.
Yale Park (Day-use)	4					4	4	4	3	4	4	4	4			4	4	4	4		4					4	4	4				4			2	1			1	RV disposal station needs repair; boat launches need repair; dock needs replacement; signs need replacement.
Cougar Park (Day-use)	4	4			4	4		4	4	2	4	4	4			4	4	4	4	4					2	2	3	4	4			4							1	Swim lagoon next to wetland seep; road/path between Park and Camp needs repair; signs need replacement.
DISPERSED SITES AND USE AREAS																																							
Saddle Dam Cove North Area																																							Generally in good condition; no sanitation facilities.
Main Dam Point Area																																							Generally in good condition; no sanitation facilities; some bank erosion; high use area.
Siouxon Creek Area																																							Several small scattered sites; generally in good condition; no sanitation facilities; some bank erosion
Siouxon County Park																																							High use area; several sites in former developed campground; some bank erosion; trash accumulation; no sanitation facilities; generally in good condition; former dock piles visible.
Siouxon Flats Area																																							High use area; several scattered sites -- large and small; some bank erosion; trash accumulation; no sanitation facilities.
North Lewis River Bridge Area																																							Several scattered sites; generally in good condition; no sanitation facilities; trail erosion; unsafe road bridge railing.
General East Shoreline																																							Small scattered sites; generally in good condition; used as over-flow sites; some bank erosion; no sanitation facilities.
General West Shoreline																																							Small scattered sites; generally in good condition; used as over-flow sites; some bank erosion; no sanitation facilities.
Swift No. 2 Power Canal/Bypass Area																																							One large site used often; generally in good condition facilities; no sanitation; some trash accumulation.

Note: Shaded areas denote that facilities or services exist at this location. Condition codes are defined as :(1) Needs Replacement, (2) Needs Repair, (3) Needs Maintenance, and (4) In Good Condition.
Developed facilities were evaluated in detail only. Refer to Comments column for other information.

beaches along the reservoir. Direct access to the reservoir is also provided by the adjacent boat launch in the day-use area. Cougar Camp was originally constructed in 1958, with improvements made in 1994 that included the installation of a modern restroom facility (flush toilets, showers, and potable water). The 15-space Cougar Park Group Campsite is located approximately 0.25 mile from the main campground next to the Cougar Park day-use site and is accessed by a footbridge over Cougar Creek and road through Cougar Park.

Based on an inventory and evaluation of facilities conducted during 1996, all the developed facilities at Cougar Campground are in good condition, including the pay station, group campsites, individual campsites, and restrooms. Portions of the access road are currently in need of minor repair. Shoreline erosion may require a couple of campsites to be abandoned or have shoreline protection added.

Beaver Bay Campground - Beaver Bay Campground, PacifiCorp's largest Yale Lake campground, is laid out linearly along an inlet at the north end of Yale Lake. The 40-acre campground, built in 1959, includes 63 individual campsites with no RV hookups and is accessed directly off of Lewis River Road, approximately 2 miles east of the town of Cougar. During 1997 and 1998, Beaver Bay was open between approximately April 22 and September 30. The campground is screened from the road by trees; it is flanked on one side by the reservoir, and on the other side by an extensive wetland complex. Beaver Bay includes approximately 3,300 feet of shoreline. Campsites are laid out in 3 distinct loop areas, but there is little or no screening vegetation between individual sites. In 1995 and 1996, timber in the campground was thinned to promote growth of understory vegetation and enhance screening. None of the sites offer direct reservoir access; campers must either cross the main access road to reach relatively private beaches along the lake, or use the adjacent day-use site at the southwest end of Beaver Bay. Shoreline campsites were eliminated several years ago due to erosion problems.

The campground includes a separate 15-space group campsite along its northern edge, adjacent to the wetland complex. The most recent improvements to the campground include the installation of a modern central restroom facility in 1995 (RV tank disposal, flush toilets, showers, and potable water) and septic drainfield modifications in 1998. A total of 2 RV tank disposal sites are available within the Lewis River projects.

Based on an inventory and evaluation of facilities conducted during 1996, many of the developed facilities at Beaver Bay Campground are in good condition. Two of the campground's restrooms are older facilities built in the 1950s and are in need of eventual replacement. Other facilities in need of maintenance and/or repair include some of the individual and group campsites (e.g., the picnic tables), the playground, and the main access road.

Developed Day-Use Areas

Each of the 3 campgrounds associated with Yale Lake includes an adjacent day-use area, offering both campers and day users direct access to the reservoir. PacifiCorp voluntarily developed and operates these day-use facilities, dating back to the late 1950s and early

1960s. In addition, PacifiCorp owns and operates Yale Park, a large day-use area on the west side of the reservoir.

Saddle Dam Day-Use Area - The day-use site at Saddle Dam includes a separate gravel parking lot and road shoulder that accommodates approximately 200 vehicles, a boat launch with 2 lanes, a designated swimming area with floating boom, 10 picnic tables and 9 barbecues (BBQs), drinking water, 1 RV tank disposal facility, and a modern restroom facility (located at the campground). During 1997, the site was open to the public between Memorial Day and Labor Day weekends. During 1998, the facility was temporarily closed, but is expected to reopen in 1999. Access across the dam itself is generally restricted. The day-use site is shared with campers at Saddle Dam Campground. Parking is generally segregated for these 2 visitor groups. The Saddle Dam area has been a popular parking area for boat-in campers using dispersed sites along the reservoir. These campers have parked their vehicles and trailers along the shoulder of the main access road (Frazier Road); no overnight parking has been permitted in the main day-use parking lot. In 1999, however, PacifiCorp will be discouraging all overnight parking in both areas. There is an unsigned dirt trail in the vicinity of the day-use site that is often used by equestrians riding to the Speelyai Canal area and back; the trailhead is approximately 0.4 mile from the dam and campground. Equestrians with horse trailers are requested to park at the "Y" along Frazier Road, approximately 0.5 mile from Saddle Dam. The Saddle Dam day-use area is particularly popular with jetski/PWC users and power boaters. It also receives some spillover use from nearby Cresap Bay Campground on Lake Merwin.

Based on an inventory and evaluation of facilities conducted during 1996, the majority of the developed facilities at the Saddle Dam day-use area are in good condition, including the picnic tables, swimming area and boom, beach, signs, and trash receptacles. The boat launch, however, is currently in need of modifications. The launch has a drop off at the end and is not long enough to accommodate boat and jetski/PWC trailers during the full range of the recreation pool (480 to 490 feet msl).

Cougar Camp Boat Launch and Day-Use Area - The Cougar boat launch area is located south of Cougar Camp and offers parking for approximately 100 vehicles and 1 boat launch with 2 lanes. The day-use site is accessed by a foot bridge over Cougar Creek and a separate road. In 1997 and 1998, the sites were open to the public between Memorial Day and Labor Day weekends. The 40-acre park includes a swimming beach with floating boom, a picnic area with 6 tables, a grassy area used for sun-bathing and relaxing, a short trail through a forested peninsula, a boat dock accessed via this trail, an 80-vehicle gravel parking lot, and a large relatively modern restroom facility with showers. The day-use areas are used both by campers and day-use visitors. Most sailboat launches into Yale Lake occur from the Cougar boat launch due to its location in a protected cove. Two or more annual regatta events (hosted by the Hobie and Willamette Sailing Clubs) launch from here, each with an annual attendance of approximately 200 people. Across from Lewis River Road, there is a short 0.4-mile trail along Cougar Creek that leads to several dispersed campsites, an old cabin or home foundation, and a fishing area.

Built in 1958, Cougar Park was last renovated in 1994, including the restroom facility. New signs were installed in 1997 which help visitors identify the location that they desire. In 1998, the septic drainfield was modified to improve its operation and capacity. Based on an inventory and evaluation of facilities conducted during 1996, the majority of the developed facilities at Cougar Park are in good condition, including the picnic tables, restroom, boat launch, and parking area. Facilities in need of maintenance or repair include the access road/pathway between Cougar Park and Camp.

Beaver Bay Day-Use Area - The Beaver Bay day-use area contains a parking area for approximately 40 vehicles, a boat launch with 1 lane, a designated swimming area with a beach and floating boom, a picnic area with 6 tables, and drinking water. In 1997 and 1998, the site was open to the public from approximately April 22 to September 30. A restroom is located nearby in the southwestern portion of the campground. Due to its location within the campground, away from Lewis River Road, and at the extreme northern end of the reservoir, this day-use site is mostly used by campers at Beaver Bay Campground. Both the day-use site and the campground provide wildlife observation opportunities at the adjacent wetland complex.

Based on an inventory and evaluation of facilities conducted during 1996, some of the developed facilities at the Beaver Bay day-use site are in good condition, including the picnic tables and swimming beach. Facilities in need of maintenance and/or repair include the access road, slope stabilization at the boat launch, and an informational sign. A small berm has recently been placed at the edge of the parking area to redirect runoff from the wetland complex away from the parking area.

Yale Park - Yale Park is PacifiCorp's only day-use facility at Yale Lake that is open year round. The park covers 10 acres and was originally built in 1958. The heavily used site offers a 4.5-acre grass and gravel parking area for approximately 280 cars and trailers, 2 lawn areas for picnicking and volleyball, swimming area with beach and floating boom, 1,500 feet of shoreline, 1 boat launch with 4 lanes, and a modern restroom facility that was built in 1994. The launches at Yale Park provide the primary boat access to the lake. The long paved ramps accommodate lower lake levels (470 feet msl), are open year round, are easy to access, have available parking, and are near Lewis River Road. Apart from a small forested parcel in the northern picnic area, the site is flat and contains little vegetative screening. In years past, overnight parking has been allowed for boat-in campers; however this practice will be discouraged by PacifiCorp in 1999. During the day when the parking area is full on summer weekends, users sometimes park along Lewis River Road. Such roadside parking is discouraged because it is potentially unsafe.

Based on an inventory and evaluation of facilities conducted during 1996, the majority of the developed facilities at Yale Park are in good condition, including the picnic tables, BBQs, swim area, beach, and restroom. Facilities in need of maintenance and/or repair include the main picnic grass area, boat launch and docks, and signs. In addition, the parking area could be redesigned or reconfigured for greater parking efficiency. The adjacent RV dump station was deactivated by PacifiCorp in 1997.

7.1.1.3 Dispersed Recreation Use Areas

In addition to the voluntarily developed recreation facilities provided by PacifiCorp at Yale Lake, the reservoir and adjacent shoreline provide numerous land-based and water-based dispersed recreation use opportunities. These are described below.

Land-Based Dispersed Use

Numerous people use the reservoir shoreline and adjoining areas for dispersed picnicking, boat-in camping, trail use (horseback riding and biking), fishing, and other activities. By their nature, dispersed use sites are not designated for use by signs or other means, with the exception of trailheads. Developed facilities, such as restrooms, are not available. Fires are not permitted except in developed campsites, and a no-fire policy is in effect. Dispersed sites are listed and discussed in Tables 7.1-1 and 7.1-2 and are shown in Figure 7.1-3.

Dispersed Picnicking and Camping - PacifiCorp has identified and mapped approximately 67 (the number, however, varies year to year) separate shoreline sites used for dispersed day-use picnicking and overnight camping; most sites are on the eastern shoreline, particularly in the vicinity of Siouxon Creek and Siouxon Flats. Dispersed use occurs on both sides of the reservoir. These sites typically have a primitive fire ring of rocks and an area to beach or anchor a small boat. No water or toilet facilities are available at these sites. In 1999, PacifiCorp will begin a program to discourage dispersed overnight shoreline camping by towing vehicles parked overnight at PacifiCorp day-use sites.

Most shoreline dispersed sites are primarily accessed by boat, although the privately owned IP Road provides some unauthorized access along the eastern shore of the reservoir. The IP Road is generally gated both near Yale Dam and at the reservoir's extreme northeast end; however, the gates are frequently vandalized or left open. The road can also be accessed via various DNR logging roads in the vicinity. A landslide that occurred in 1996 currently blocks continuous access along the IP Road, except for some 4WD vehicles or all-terrain vehicles (ATVs).

Concentrations of dispersed sites east of Yale Dam are found up Siouxon Creek, along the IP Road, at Siouxon Flats, and at the Siouxon County Park site. Dispersed use is concentrated at a few locations on the west side of the reservoir, primarily south of Speelyai Canal and at Cooney Point. Though fires are not permitted, most of the sites have a primitive user-constructed fire ring, room for 1 or 2 tents, and provide an area for short-term boat moorage; a few sites have swings, ladders, or other makeshift amenities. Other sites, particularly along the east side of the lake at Siouxon Flats (Siouxon County Park site and the shoreline to the north), offer stretches of beach that can accommodate larger parties (several dozen people), with room for several tents and boats.

In addition to the reservoir shoreline sites, there are a few dispersed campsites along Lewis River Road, just inland from the reservoir, and near the Swift No. 2 power canal. Southwest of the Swift No. 2 power canal off of Lewis River Road, dispersed camping

and use occur in the vicinity of a bridge along the IP Road that crosses the North Fork Lewis River. As many as 5 tents were observed in the vicinity at one time during the 1996 recreation surveys. Day-use fishing, swimming, and tubing also occur in this stretch of the river. The bridge is relatively high (approximately 100 feet above the river), with a partial guardrail on 1 side and no guardrail on the other. The condition of the guard rails is a potential safety hazard. Immediately southwest of the canal along Lewis River Road, there is another road pullout overlooking the project bypass reach, a mostly dewatered riparian area. Dispersed camping occurs at this site as there is room for several tent sites. Several dispersed sites are also located along Cougar Creek via a trail.

Trails - Although Yale Lake lacks a major designated lakeshore trail, there are some trails that originate in the primary study area. These trails are owned and maintained by a variety of entities, including PacifiCorp and other private owners, the DNR, and the USFS. Although not officially designated as hiking or biking trails, the Lewis River Road and the IP Road are often used by bikers and hikers. During the 1996 recreation surveys, large groups of bicyclists were observed cycling around the lake using these roads.

PacifiCorp maintains shoreline trail segments at some of its campgrounds and day-use areas, including Beaver Bay and Cougar Park. In many cases these trails provide access to the reservoir. In addition, there is a short trail (0.4 mile) along Cougar Creek, accessed from Cougar Park on the opposite (north) side of Lewis River Road.

The longest multi-use trail in the study area is located on the western shore, connecting an area on Frazier Road near Saddle Dam with Speelyai Canal. This multi-use trail, approximately 4 miles long, is popular with equestrians and, to a lesser extent, hikers. As the trail meanders through forested areas and is steep in some locations, it is seldom used by anglers. Several small spur trails, however, provide access to the water. Anglers do use informal trails on PacifiCorp land in the vicinity of the Swift No. 2 power canal to access fishing areas.

Additional multi-use non-motorized trails have been proposed in the primary study area. Clark County has proposed to develop 3 trails on County and other adjacent lands: (1) a non-motorized, multi-use trail along the existing IP Road that would ultimately connect to the Monument in the vicinity of Swift Reservoir, with day-use sites and restrooms at either end of Yale Lake; (2) a proposed hiking trail up Siouxon Creek extending into the Siouxon Landscape Area from the IP Road; and (3) a trail along the Yale transmission line ROW to the Merwin Dam area. In addition, the Lewis River Action Committee has expressed a desire for a trail along Lewis River Road that would connect the town of Cougar and Cougar Camp (Lewis River Action Committee 1995). None of these proposed trail routes have been funded, designed, or analyzed in detail.

In addition, the secondary study area beyond Yale Lake offers trail hiking opportunities on lands managed by both the USFS and DNR. Two popular, short trails - access to Ape Cave (USFS trail #239) and the Trail of the Two Forests (trail #233) - are located within the administrative boundaries of Mount St. Helens National Volcanic Monument (the

Monument), a short drive north from the Swift No. 2 power canal area. South of Swift Reservoir, both the DNR and USFS manage primitive trails to such scenic destinations as Mitchell and Huffman peaks (in the Siouxon Landscape Area and GPNF, respectively). The DNR has noted a significant increase in the use of its Mitchell Peak trail, which is becoming a popular day hike destination for recreationists from the Portland area (DNR 1996). East of Swift Reservoir the USFS maintains the Lewis River Trail (#31). Accessed by Curly Creek trailhead at the reservoir's eastern tip, this trail follows the Lewis River and connects to numerous other trails in the GPNF, such as trails #58 and #184.

Other Land-Based Dispersed Use - Other land-based dispersed use in the study area includes ATV and 4WD use, as well as hunting and fishing. People use the area at the northeast end of the primary study area, along the Swift No. 2 power canal, for fishing; parking in this area occurs at 2 roadside pullouts. In addition, an annual fishing derby for disabled recreationists is held here, and the power canal is stocked with fish for the event. The event is sponsored by the USFS during National Fishing Week. WDFW stocks the power canal with fish and PacifiCorp provides portable toilets for the event. Further discussion of fishing is found in the FTR for Aquatic Resources (PacifiCorp 1998a), including a discussion of the Yale Lake creel surveys.

Although not authorized for public use, the IP Road provides a main access for ATV and 4WD use in the study area, as well as access to dispersed fishing locations. In general, PacifiCorp and other land owners discourage 4WD and ATV use in the project vicinity due to the deteriorating road condition, occasional log truck traffic, concern for fire hazard, minimal available law enforcement, and the extremely steep topography of hillsides rising from the lake shore. PacifiCorp has an easement from the private party that owns the IP Road. This easement, however, does not include public recreational access. Access roads are generally gated and locked; however, some motorists do get into the shoreline area through unlocked or vandalized gates, or through ungated DNR timber roads. ATV and 4WD opportunities may be found on DNR, GPNF, and Monument lands in the surrounding area.

Portions of the primary study area and the secondary study area are also used for hunting big game, primarily deer and elk, as well as waterfowl. Hunting occurs in the DNR Siouxon lands, GPNF, and on private land in the study area, primarily in the fall months.

Water-Based Dispersed Use

The primary recreational opportunities offered by the Yale Project are water-based, including boating and shoreline access by boat. In 1996, PacifiCorp conducted boater surveys on the reservoir, documenting concentrations and locations of boater use. As expected, the greatest boater concentrations occur in the areas nearest the boat launches. Jetski/PWC use occurs primarily in the vicinity of Yale Park and Saddle Dam, with some use in the vicinity of Cougar Park. Power boating, including water skiing and fishing, occurs on the entire lake, with use also concentrated near the launches and near Siouxon Creek. Sailboat use occurs primarily near Cougar Park and extends south toward Yale

Park. Anglers using boats tend to motor to areas distant from the launches and away from fast-moving boats and jetskis/PWCs, particularly seeking the lake's eastern shoreline and northeast area. The least used boating areas of the lake are south of Speelyai Canal to a point northwest of Saddle Dam, and the far northern end of the lake. Boating use on Yale Lake is busiest during hot summer weekends and during sailboat regattas.

PacifiCorp's 4 boat launches have 9 lanes and may be accessed at or near the full pool level (490 feet msl) maintained during the recreation season. The minimum launch elevations of the 4 Yale Lake boat launches are:

- Saddle Dam 487 feet msl
- Yale Park 470 feet msl
- Cougar 484 feet msl
- Beaver Bay 476 feet msl

Use of the Saddle Dam and Cougar boat launches becomes problematic when the reservoir level approaches or drops below the current minimum ramp elevation. At minimum pool elevation (470 feet msl), the Beaver Bay boat launch is above pool level. The Yale Park facility is the only launch on Yale Lake that can accommodate all pool elevations (470 feet to 490 feet msl). Because of its longer length, this launch is open to the public year round.

7.1.1.4 Compliance with ADA Guidelines

The Americans with Disabilities Act (ADA), signed into law in 1990, protects individuals with disabilities by mandating that adequate access to facilities be provided to the physically disabled, including recreation facilities. In 1991, *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities* (ADAAG) was published. ADAAG specified guidelines, not standards, to consider when designing facilities. Since then, design guidelines specifically for recreation facilities have been documented in *Universal Access to Outdoor Recreation - A Design Guide* (PLAE 1993), which is considered state-of-the art in the field of universal design for outdoor recreation facilities.

These guidelines were developed in cooperation with the USFS, the agency which has taken the lead in addressing the needs of universal access in recreation settings. As noted in PLAE (1993), however, universal design is a discipline still in its infancy. These outdoor recreation facility guidelines have not been adopted as regulations by law, but are used as guidelines for compliance with the ADA. Building facilities such as restrooms, however, are specifically identified under ADAAG and must be in compliance. PacifiCorp has renovated at least 1 of its restrooms at each of its 5 project area developed recreation facilities and is therefore in compliance with the ADAAG.

Using the USFS's Recreation Opportunity Spectrum (ROS) perspective as noted in the PLAE (1993), a recreation site should be developed in a manner that achieves harmony between recreation expectations and the environment. ADA-accessible facilities should be tailored to complement the setting. The Yale Project study area would be categorized

as a "Roaded Natural" experience; therefore, accessibility expectations are "moderate." ADA-related elements to be assessed include restroom facilities, outdoor access routes to primary elements, recreation trails to non-primary elements, parking, picnic areas, campsites, water sources, trash receptacles, fishing facilities, and boating and swimming areas.

In 1992, PacifiCorp conducted a comprehensive review of all of its Lewis River recreation facilities for ADA compliance (prior to publication of PLAE [1993]). As a result of this review, all of the developed facilities at the Yale Project have been upgraded in the past 3 years, including a major overhaul and/or replacement of campground and day-use area restrooms and paths/parking areas near these restrooms. One of the 3 restrooms at Beaver Bay Campground was completely renovated.

Design guidelines relevant to the developed recreation facilities at the Yale Project are documented in PacifiCorp (1998d and 1992). In summary, recent restroom facility upgrades at PacifiCorp's campgrounds and day-use facilities have significantly improved universal access, particularly for parking, pathways to restrooms, toilets, showers, drinking fountains, telephones, and trash receptacles. For other elements, such as primary access routes, swimming areas, picnic tables, fishing access, and boat launch access, improvements are needed at 1 or more of the 5 developed facilities on Yale Lake to meet ADA guidelines. These issues are further discussed and addressed in the recreation needs section of this draft License Application (Section 7.1.4).

Revised accessibility guidelines will be presented to the U.S. Architectural and Transportation Barrier Compliance Board (U.S. Access Board) in 1999, addressing trails, picnic and camping areas, and beaches. When adopted, these guidelines will provide clarification of the mandate to provide ADA accessible recreation facilities and opportunities in the United States.

7.1.2 Recreation Use and Demand

Camping, boating, fishing, picnicking, and swimming are the most popular activities at the Yale Lake recreation sites. Use levels are highly dependent on weather, and during periods of inclement weather, use levels generally drop significantly. Peak recreation periods are during weekend and holiday periods. Much of the demand for these areas is a function of the proximity of a major population center (the greater Portland area). In addition, these recreation sites play a complementary role in the larger regional context. Natural resource and recreational attractions in the area, such as Mount St. Helens National Monument and GPNF, offer few limited camping opportunities in the vicinity of Yale Lake. Because of this, recreational facilities at Yale Lake play an important role in the provision of opportunities in this area.

7.1.2.1 Yale Lake - Recreation User Count Observations

This section presents the results of user count observations conducted at Yale Lake in 1996 and 1997 including:

- Developed fee campground counts
- RV versus tent camping counts
- Boat launch and day-use area vehicle counts
- Boat and bank angler counts
- Boat and watercraft counts and density
- Miscellaneous activity counts at developed facility sites
- Miscellaneous activity counts at undeveloped dispersed sites
- Estimate of annual and seasonal recreation visitation at Yale Lake
- Creel survey

Additional, user counts were conducted in 1998 as part of the watershed studies approach to relicensing the 4 hydroelectric projects in the basin. The information contained herein will be updated in 1999 to 2000 as part of the ongoing multi-project relicensing effort. Information for Yale Lake will be compared with the results from the broader study area.

Yale Lake Developed Fee Campground Counts

Occupancy rates for PacifiCorp campgrounds at the Merwin, Yale, and Swift projects for the last 4 years are generally high. The occupancy rates for specific timeframes include:

- annual (46 to 54 percent)
- weekday (34 to 43 percent)
- weekend (67 to 75 percent)
- holiday (85 to 97 percent)

In comparison, occupancy rates for the 3 Yale Lake campgrounds (Beaver Bay, Cougar Camp, and Saddle Dam) are presented in Table 7.1-3 below.

Table 7.1-3. Occupancy rates at Yale Lake campgrounds during the last 4 years (1994 to 1997).

Campground	Annual Seasonal Occupancy	Weekday Seasonal Occupancy*	Weekend Seasonal Occupancy*	Summer Holiday Occupancy
Beaver Bay	Range 41-59% (47% avg.)	Range 34-52% (39% avg.)	Range 67-83% (71% avg.)	Range 67-100% (98% avg.)
Cougar Camp	Range 71-78% (73% avg.)	Range 34-52% (39% avg.)	Range 67-83% (71% avg.)	Range 88-100% (98% avg.)
Saddle Dam	Range 34-69% (49% avg.)	Range 34-52% (39% avg.)	Range 67-83% (71% avg.)	Range 64-149% (100% avg.)
* Occupancy rates derived from total Lewis River projects.				

As shown in Table 7.1-3, Yale Lake campground occupancy rates vary by site and timeframe. Annually, Cougar Camp receives the highest amount of use at an average occupancy of 73 percent, or about three-quarters full. The other 2 campgrounds have similar annual occupancy rates at 47 to 49 percent, or about half full. Weekday occupancy rates for each campground averaged 39 percent and weekend occupancy rates averaged 71 percent, resulting in a 32 percent difference between weekend and weekday

rates (totals for all PacifiCorp campgrounds combined). Summer holiday weekends (Memorial Day, July 4, and Labor Day) showed the highest occupancy rates, as expected, with full or near full conditions (98 to 100 percent). Saddle Dam was the most full and occasionally over capacity during the 4-year period. This is likely due to the number of campsites available (15). Weather played a significant role in occupancy rates over the entire season.

During the 20 weekend or holiday days surveyed in 1996 for this study, campground occupancy at PacifiCorp's 3 campgrounds was high, as indicated in Figure 7.1-4, particularly between mid-June and Labor Day weekend.

RV Versus Tent Camping at Yale Lake

Yale Lake campgrounds were surveyed to determine the mix of RV campers versus tent campers at each site. Overall, about 3 out of 4 campers use tents; however, this high number includes Cougar Camp, which is tent-camping only. In addition, existing campgrounds do not provide RV hook-ups which are typically desired by some RV campers. RV use at Beaver Bay and Saddle Dam campgrounds accounts for a third to less than half of the use. The split of RV versus tent camping at Yale Lake campgrounds for holiday and non-holiday periods includes:

- Beaver Bay - Holiday periods: tents (52 percent), RVs (48 percent); Non-holiday periods: tents (62 percent), RVs (38 percent).
- Cougar Camp - Holiday and non-holiday periods: tents (100 percent, no RVs are allowed).
- Saddle Dam - Holiday periods: tents (54 percent), RVs (46 percent); Non-holiday periods: tents (64 percent), RVs (36 percent).
- All Campgrounds Combined - Holiday periods: tents (71 percent), RVs (29 percent); Non-holiday periods: tents (76 percent), RVs (24 percent).

Yale Lake Boat Launch and Day-Use Area Parking

Vehicles and vehicles with boat trailers were counted at Yale Lake boat launches 3 times a day (morning, mid-day, and afternoon) during the survey period. The results of these survey counts for holiday and non-holiday weekends are presented in detail in the FTR for Recreation Resources (PacifiCorp 1998d) and are summarized below.

Beaver Bay - During holiday weekends, the day-use area/boat launch parking lot typically had 3 to 15 vehicles parked, with an average of 11 vehicles. Slightly over half (55 percent) of the vehicles parked were vehicles with boat trailers. At peak times of the day during holiday weekends, parking lot occupancy averaged only 38 percent, assuming a capacity of 40 vehicles.

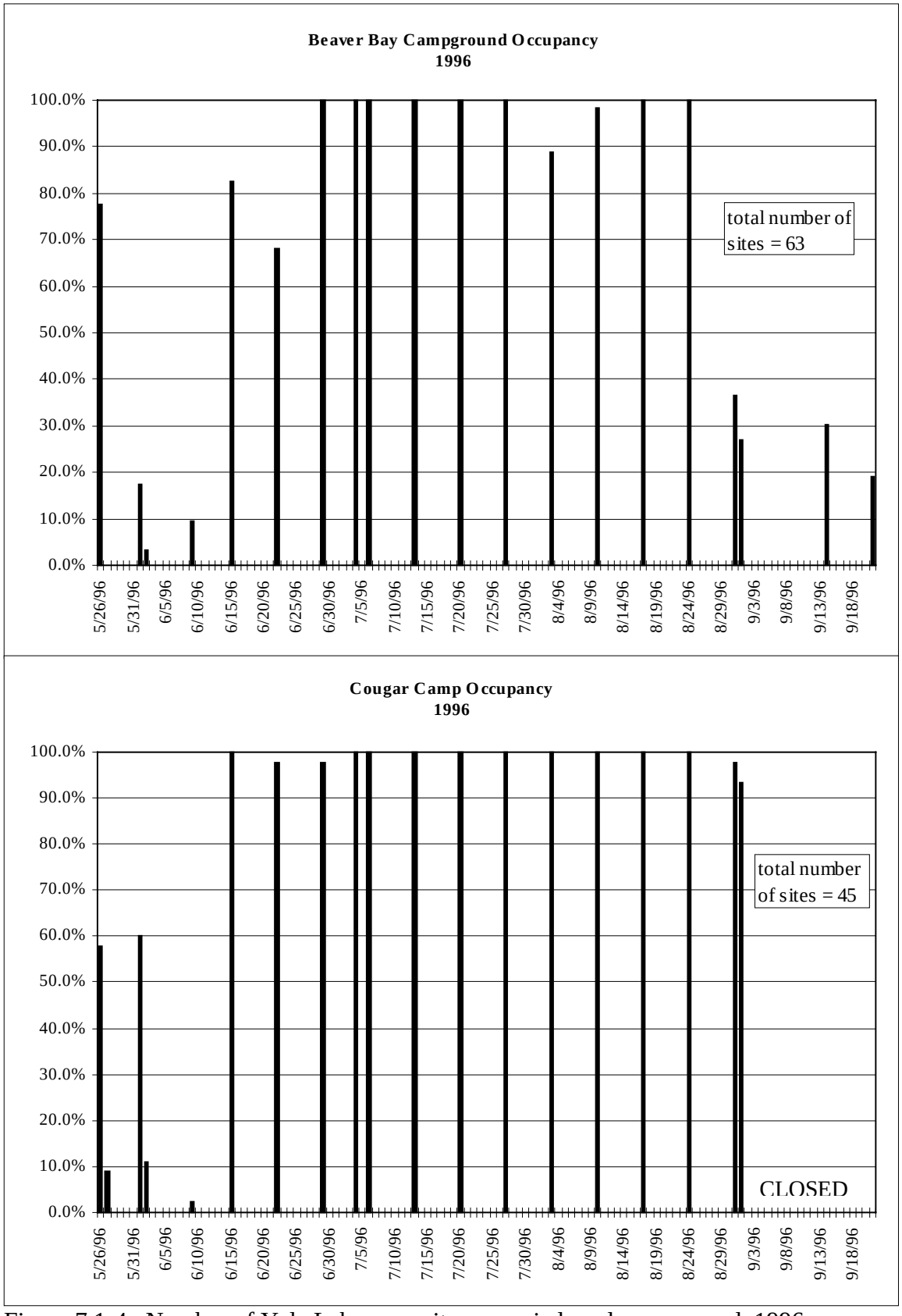


Figure 7.1-4. Number of Yale Lake campsites occupied on days surveyed, 1996.

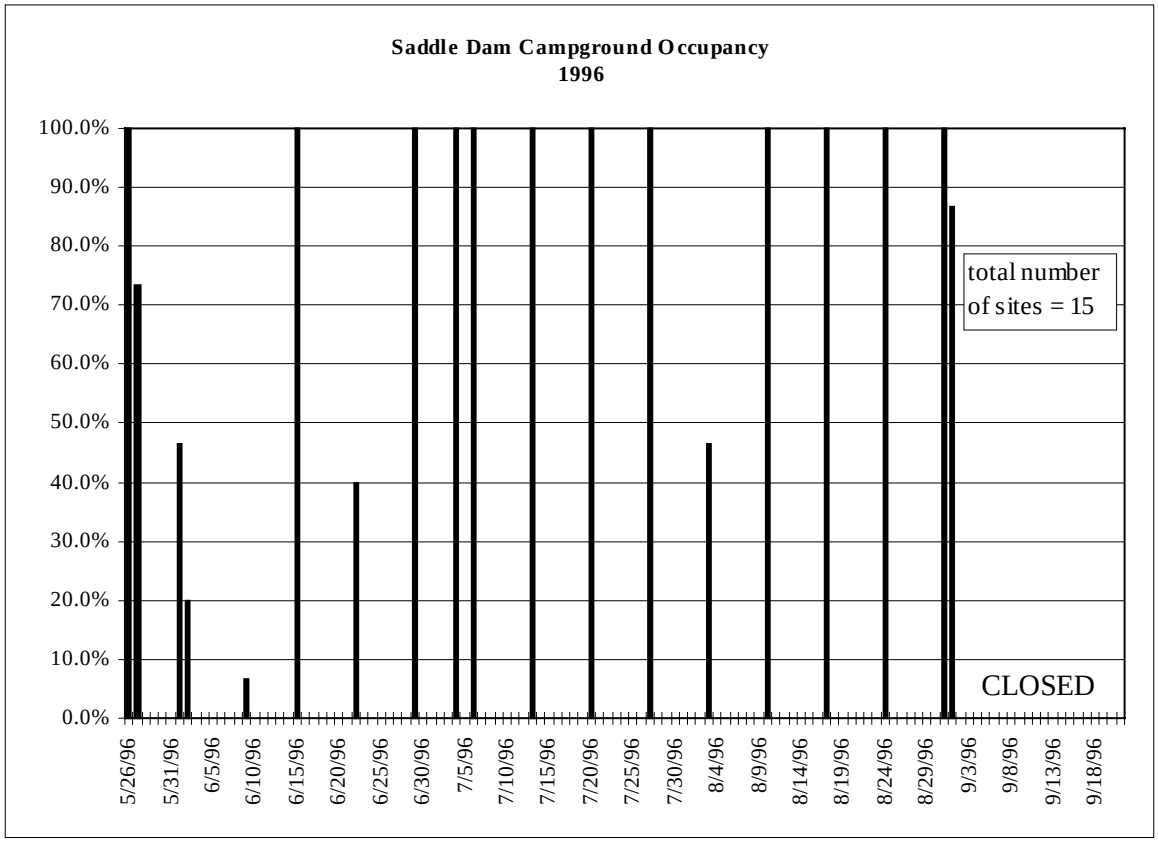


Figure 7.1-4. Number of Yale Lake campsites occupied on days surveyed, 1996 (continued).

During non-holiday weekends, use was similar to holiday weekends with 8 to 14 vehicles parked averaging 12 vehicles during the day. Over half (58 percent) of the vehicles parked were vehicles with boat trailers.

Cougar Camp - During holiday weekends, the boat launch parking lot typically had 24 to 29 vehicles parked, with an average of 25 vehicles. Three out of 5 (60 percent) vehicles parked were without trailers due to overflow campground parking. This lot was rarely full, despite the adjacent campground parking overflow.

During non-holiday weekends, use was higher than during holiday weekends because of sailing regattas, and unlike the holiday weekends, over half (54 percent) of the vehicles parked had boat trailers.

Cougar Park - During holiday weekends, the day-use area parking lot typically had 2 to 17 vehicles parked, with an average of 12 vehicles. Almost all (92 percent) of the vehicles parked were vehicles without boat trailers. At peak times of the day during holiday weekends, parking lot occupancy averaged only 22 percent.

During non-holiday weekends, use was similar to but slightly higher than holiday weekends, with 7 to 20 vehicles parked averaging 16 vehicles during the day. Most (88

percent) of the vehicles were without boat trailers. At peak times of the day during non-holiday weekends, parking lot occupancy averaged only 25 percent.

Yale Park - During holiday weekends, the day-use area/boat launch parking lot typically had 37 to 102 vehicles parked, with an average of 79 vehicles. Slightly over half (51 percent) of the vehicles were without boat trailers. At peak times of the day during holiday weekends, parking lot occupancy averaged 37 percent, assuming a capacity of 280 vehicles. This lot was generally not full, unless the weekend weather was very hot which sometimes resulted in overflow conditions with vehicles parked along the highway.

During non-holiday weekends, use was similar to holiday weekends, with 42 to 103 vehicles parked averaging 81 vehicles during the day. Over half (53 percent) of the vehicles were without boat trailers. At peak times of the day during non-holiday weekends, parking lot occupancy averaged 37 percent. Again, overflow conditions would sometimes arise during very hot late summer weekend days (up to about 305 vehicles or 109 percent of capacity).

Saddle Dam - During holiday weekends, the day-use area/boat launch parking lot and adjacent road shoulder (parking was allowed and encouraged on the road shoulder) typically had 33 to 75 vehicles parked, with an average of 60 vehicles. Most vehicles were parked during the warmer mid-day to afternoon timeframe. Half (50 percent) of the vehicles had boat trailers. At peak times of the day during holiday weekends, parking lot occupancy averaged only 38 percent, assuming a capacity of 200 vehicles. If the late summer weather is very hot, overflow conditions require closure of the entry gate. Such closures occurred up to 5 times per year.

During non-holiday weekends, use was lower than holiday weekends with 20 to 62 vehicles parked, averaging 48 vehicles during the day, over half (52 percent) of which had trailers. At peak times of the day during non-holiday weekends, parking lot occupancy averaged only 31 percent. However, very hot late summer weather could result in overflow conditions.

Yale Lake Angler Counts

During survey periods, boat and bank anglers were counted 3 times per day from the 5 developed recreation sites. These counts included all anglers visible from those sites during a single snapshot timeframe. The results are presented below in Table 7.1-4 for holiday and non-holiday weekends and peak and average counts by site.

As seen in Table 7.1-4, most anglers observed were boat fishing (3.7 boat anglers compared to 0.8 bank anglers on average). Most boat anglers were observed from Yale Park in the central portion of the reservoir. Cougar Camp was the next highest site for boat angler observations. An average of about 4 boat anglers were observed at any location during both holiday and non-holiday weekends.

Bank anglers were observed somewhat more during non-holiday weekends than holiday weekends; however, the difference was not great. Like boat anglers, most bank anglers were also observed at Yale Park, followed by Beaver Bay and Cougar Camp for the most bank anglers observed.

Table 7.1-4. Average boat and bank anglers observed during holiday and non-holiday weekends at Yale Lake recreation sites, 1996-1997.

	Maximum No. of Anglers Observed		Average No. of Anglers Observed	
Location	**Holiday**	**Non-Holiday**	**Holiday**	**Non-Holiday**
Beaver Bay				
Boat	5.5	3.2	3.9	3.0
Bank	1.0	2.0	0.5	1.8
Cougar Camp				
Boat	8.8	4.8	6.5	4.4
Bank	2.0	2.2	1.5	2.0
Cougar Park				
Boat	0.0	0.0	0.0	0.0
Bank	1.0	0.9	0.4	0.6
Yale Park				
Boat	15.8	13.0	10.2	11.7
Bank	2.9	2.9	2.1	2.1
Saddle Dam				
Boat	5.8	3.9	4.2	2.5
Bank	0.5	0.4	0.3	0.3
AVG TOTAL				
Boat	6.8	5.9	4.1	3.7
Bank	1.3	1.3	0.8	0.8

Yale Lake Boat Counts

As summarized in Table 7.1-5, results of lake boater counts during 5 summer days in 1996 indicate that on typical non-sailboat regatta days, Yale Lake is most heavily used by power boaters, followed by jetskis/PWC and, to a lesser extent, inflatables and other craft. As expected, summer weekends and holidays with hot weather have the highest watercraft use. Maximum observed watercraft use on the lake during the survey period was around 138 boats during the 3 peak use days (July 6, July 21, and August 31) which resulted in a density of 25 surface reservoir acres per watercraft. The minimum observed watercraft use on the lake was 48 boats on August 18, an overcast summer day, which resulted in a density of 73 surface reservoir acres per watercraft.

Watercraft use on Yale Lake varies according to location. Power boating occurs virtually everywhere on the reservoir, with use concentrated near the main boat launches (i.e., Yale Park and Saddle Dam Campground). Anglers in particular tend to motor to more remote areas of the lake, such as the northeastern tip, away from water skiers and jetskiers/PWC users. Jetski/PWC use is heavily concentrated near the boat launches, including Yale Park, Saddle Dam Campground, and Cougar Camp/Park. Less jetski/PWC use was observed in the vicinity of Beaver Bay Campground. Like jetski/PWC use, water skiing

occurred mostly in the vicinity of Saddle Dam Campground and Yale Park. Sailboats, when observed primarily during regattas, were in the vicinity of Cougar Camp/Park, with their range extending to the vicinity of Yale Park to the south. Most sailboats on the reservoir are typically launched from the Cougar Camp boat launch. Snapshot averages for other recreationists or activities observed during the 5 on-water boat survey days include: dispersed campers (38), swimmers/sunbathers (27), picnickers and those relaxing (16), and bicyclists (5).

Table 7.1-5. Watercraft and angler use of Yale Lake during 1996 lake boater counts.

Survey Date	Power boats	Sail boats (non-regatta)	Jet-skis/ PWC	Row-boat/ Canoe/ Kayaks	Inflat-ables	Total No. of Boats on Reservoir	Boat Anglers	Bank Anglers
June 2	58	2	15	2	0	77	40	10
July 6 (holiday weekend)	88	2	23	7	19	139	30	8
July 21	90	7	20	11	10	138	19	1
August 18	36	0	3	5	4	48	0	0
August 31 (holiday weekend)	77	0	52	4	3	136	32	4
Average of 5 days	70	2	23	5	7	107	23	5

Yale Lake Miscellaneous Activity Counts at Developed Sites

While surveying developed sites, counts were taken of various non-camping/boating or miscellaneous activities occurring in the area including picnicking, swimming/ sunbathing, relaxing, bicycling, equestrian activities, taking a rest stop, and hunting. The dominant observed activity was relaxing, followed by swimming and picnicking. Detailed information of these and other activities of developed and dispersed use sites is presented in the FTR for Recreation Resources (PacifiCorp 1998d).

Yale Lake Recreation Visitation Estimate

Table 7.1-6 presents an estimate of developed and dispersed recreation visitation at Yale Lake. Developed facility use estimates are based on PacifiCorp vehicle counts (4-year average) during peak and non-peak seasons and the application of a conversion factor. Other dispersed use is estimated based on vehicles accessing the IP Road area and East Lewis River bridge crossing area, also with the application of a conversion factor. In addition, other non-counted equestrian, hiking, biking, hunting, and fishing activity is assumed and estimated during the peak and non-peak seasons. Annual visitation (1997) is estimated at 372,665 recreation visits, of which 96 percent is accounted for at the existing 5 developed facilities, and 4 percent is an estimate of additional dispersed use (use not based on vehicle counts).

During the peak recreation season (Memorial Day to Labor Day weekend), the average number of visits per day is estimated at 2,853 people. During the non-peak season (number of days vary by site), the number of average visits per day drops to an estimated 631 people or 22 percent of the average peak season.

Table 7.1-6. Estimated current annual and seasonal recreation visitation at Yale Lake.

Facilities	Estimated Annual Visitation*(%)	Estimated Average Peak Season Visits/Day*	Estimated Avg. Non-Peak Season Visits/Day*
Dispersed Use	13,843 (04%)	78	23
Saddle Dam	55,381 (15%)	490	67
Cougar Camp	54,529 (15%)	527	22
Cougar Park	37,876 (10%)	366	17
Yale Park	133,709 (35%)	737	248
Beaver Bay	77,327 (21%)	655	254
Total	372,665 (100%)	2,853	631

* Developed facility use based on a 4-year average of actual vehicle counts and a conversion factor of 3.4 persons per vehicle. Dispersed use is based on estimated seasonal trail use, hunting, and bank fishing (no vehicle count data).

Dispersed use is estimated at 13,843 recreation visits annually (7,904 peak season and 5,939 non-peak season). These uncounted activities include estimated recreation use at the East Lewis River bridge crossing area; along the eastern IP Road corridor and Siouxon; bicycling, hiking, and equestrian trail activity; seasonal hunting; and roadside bank fishing. Activities at the Swift No. 2 power canal and the dewatered Swift bypass reach are not included as these areas are part of the Swift No. 1 and No. 2 projects. Other dispersed use, recorded at boat launches, would account for activities such as boat-in camping and other day-use activities.

Yale Lake Creel Survey Results

A year-long creel survey (75 days of sampling) was conducted as a part of the aquatic resource studies for Yale relicensing. Detailed results are presented in the FTR for Aquatic Resources (PacifiCorp 1998a). Contacted boat anglers (341) and bank anglers (326) fished for 1,935 hours and caught 604 gamefish. Gamefish caught include kokanee (73 percent), rainbow trout (23 percent), and cutthroat trout (4 percent). Boat anglers caught most (96 percent) of the creeled kokanee, less than half (44 percent) of the creeled cutthroat trout, and about a quarter (23 percent) of the creeled rainbow trout. The mean catch rate of all gamefish was 0.30 fish per angler hour. Boat and bank anglers had about the same catch rate (0.30 versus 0.31, respectively). The total harvest was estimated at 4,789 gamefish (3,656 kokanee, 221 cutthroat trout, and 912 rainbow trout). A reduction in angler success was observed during the time of the annual drawdown of Yale Lake (typically between the end of September through mid-April).

7.1.2.2 Existing Regional Recreation Demand

Projections of regional recreation demand were based primarily on data in the Washington State Comprehensive Outdoor Recreation Plan (SCORP) (IAC 1990). SCORP demand data for 57 recreation activities include 28 that occur in the Yale Project study area:

- Fishing (boat)
- Fishing (bank)
- Swimming (beach)
- Water skiing
- Sailing
- Windsurfing
- Power boating (lake)
- Non-motor boating (lake)
- Visiting Interpretive Displays
- Nature Study
- Outdoor photography
- Day hiking
- Backpacking (trail)
- Backpacking (off-trail)
- Climbing/mountaineering
- Group camping
- Tent camping
- RV camping
- ATV driving
- 4WD driving
- Bicycle riding (road)
- Bicycle riding (off-road)
- Horseback riding
- Sightseeing/exploring
- Picnicking
- Big game hunting
- Small game and waterfowl hunting
- Bow hunting

The Interagency Committee for Outdoor Recreation's (IAC's) baseline (i.e., 1987) and projected demand data for activities relevant to the Yale Project through the year 2000 are presented in Table 7.1-7. Demand is expected to increase for all recreation activities in Pacific Northwest Regional Recreation Committee (PNRRC) Region 2 (which includes the Yale Project study area). The highest percentage increases are for such activities as visiting interpretive displays (3.12 percent), on-road bicycle riding (2.98 percent), and day hiking (2.73 percent). Much lower increases are seen for activities such as upland bird/small game/waterfowl hunting (0.88 percent) and bow hunting (1.09 percent). The majority of recreation activities that occur in the study area are projected to increase at levels over 2 percent per year.

As evident from the SCORP data, even a modest (e.g., 2 percent) annual increase can represent a substantial increase over time. For example, day hiking is projected to increase 2.7 percent per year, which translates to a growth of over 40 percent from IAC baseline conditions (1987) to the year 2000. This and other results will be instrumental in planning for long-term recreation facility needs in the study area.

It is also notable that visiting interpretive centers represents the largest increase of any activity in the region. This information is particularly relevant to the broader study area, as Mount St. Helens is one of the state's and the nation's most significant tourist attractions. Although the majority of visitation to the Monument occurs to the north along SR 504, access to the volcano's southeast flank is provided by the Lewis River Road through the study area. Interpretive locations such as Ape Cave and Lava Canyon

Table 7.1-7. Projected increase in recreation demand in PNRRC Region 2 by activity - by household trips.

Activity (SCORP)	Baseline Conditions in Region 2 (1987) (in 1,000s)	Projected Increase in Demand (Year 2000) (in 1,000s)	Percentage Increase – Total (1987-2000)	Percentage Increase - Annually (%)
Fishing				
Fishing (boat)	713	912	28	1.91
Fishing (bank)	1,338	1,659	24	1.67
Water Activities				
Swimming (beach)	2,793	3,708	33	2.20
Water Skiing	484	635	31	2.11
Sailing	293	400	36	2.42
Windsurfing	55	72	29	2.09
Lake Power Boating	799	1,036	30	2.02
Lake Non-motorized Boating	568	769	36	2.36
Nature Study				
Visiting Interp. Displays	990	1,476	49	3.12
Nature Study and Wildlife Observation	1,595	2,247	41	2.67
Outdoor Photography	5,555	8,094	46	2.94
Hiking, Walking, Climbing				
Day Hiking	1,731	2,456	42	2.73
Backpacking (trail)	713	946	33	2.20
Backpacking (off-trail)	96	131	35	2.42
Climbing and Mountaineering	141	195	39	2.52
Camping				
Organized Group Camping	70	90	29	1.95
Tent Camping w/ Motorized Vehicle	315	432	37	2.46
RV Camping	493	680	38	2.50
Off-Road Vehicle Use				
ATV Driving	194	261	35	2.31
4WD Vehicles	337	470	40	2.59
Non-Motorized Riding				
Bicycle Riding (on road)	2,812	4,120	46	2.98
Bicycle Riding (off road)	741	1036	40	2.61
Horseback Riding	337	419	24	1.69
Sightseeing, Picnicking				
Sightseeing and Exploring	3,678	5,091	38	2.53
Picnicking	1,968	2,878	46	2.97
Hunting				
Big Game	261	318	22	1.53
Upland Birds, Small Game, and Waterfowl	190	213	12	0.88
Bow Hunting	33	38	16	1.09
Source: IAC (1990)				

are just outside the study area, and access to Windy Ridge is possible from the Lewis River Road. According to the USFS, projected increases in visitation to the Monument as a whole are estimated to be as high as 5 to 6 percent per year (pers. comm., D. Siegel, USFS, the Monument, November 19, 1996). Increases of this magnitude are relevant to the southeast portion of the Monument as well as the Yale Project.

The IAC conducted limited demand surveys in 1990 and 1994 to determine participation in and growth of different outdoor activities statewide. These surveys (IAC 1995) indicate 2 significant trends: (1) continued popularity of trail-based opportunities such as walking, bicycling, and hiking; and (2) ongoing demand for water-based access and opportunities. Both of these trends are particularly relevant to the Yale Project. The IAC noted that development of water access sites needs to emphasize pedestrian facilities such as footpaths or trails, picnic sites, hand launch facilities, and water's edge viewpoints with interpretive features. For motorized boating, launch ramps and lanes are a clear priority in the state. The IAC noted that state-supported trail projects should be evaluated based on criteria such as a demonstrated high need in a specific area; well-designed trails that offer barrier-free opportunities; trails that link with other trails and between and among communities; and trails that meet the demand for water access, provide wildlife corridors, and offer scenic values (IAC 1995). All of these are relevant to the Yale Lake study area.

While the SCORP data present a relevant picture of projected demand levels in the region, other sources of recreation demand data are also presented in the FTR for Recreation Resources (PacifiCorp 1998d).

7.1.2.3 Projected Future Increases in Demand

Based on the data from the SCORP, WDFW, and counties, PacifiCorp has developed projected demand increases for recreation activities occurring in the Yale Project study area (Table 7.1-8).

Demand projections (i.e., projected increased in demand, in percent) were calculated for the potential term of the new license - through 2030. Due to the dynamic nature of recreation demand, these projections should be revisited every 10 years to ensure correlation with actual conditions. These projections, however, do provide some relative indication of increasing demand in the study area. Activities particularly relevant for the Yale Project are all expected to increase more than 100 percent over the license period, including power boating, boat fishing, tent camping, sightseeing, and picnicking.

Additional recreation survey work was conducted by PacifiCorp in 1998 in the vicinity of the 4 hydroelectric projects. This survey work, plus additional analysis in 1999 to 2000, will be used during the relicensing of the 4 hydroelectric projects in the upcoming years. The results of this additional analysis will be presented in future reports by PacifiCorp and Cowlitz County PUD.

Table 7.1-8. Projected increase in demand for recreation activities in the Yale Project study area to 2030.

Yale Lake Recreation Activity	Projected Annual % Increase in Demand	Projected % Increase in Demand 1996-2000	Projected % Increase in Demand 1996-2010	Projected % Increase in Demand 1996-2020	Projected % Increase in Demand 1996-2030
Fishing					
Fishing (boat)	1.91	7.86	30.3	57.4	90.3
Fishing (bank)	1.67	6.8	26.1	48.8	75.6
Water Activities					
Swimming (beach)	2.20	9.1	35.6	68.6	109.6
Water Skiing	2.11	8.7	33.9	65.1	103.4
Sailing	2.42	10.0	39.8	77.5	125.5
Windsurfing	2.09	8.6	33.6	64.3	102.0
Lake Power Boating	2.02	8.3	32.3	61.6	97.4
Lake Non-motorized Boating	2.36	9.8	38.6	75.0	121.0
Nature Study					
Visiting Interp. Displays	3.12	13.1	53.7	109.0	184.2
Nature Study and Wildlife Observation	2.67	11.1	44.6	88.2	144.9
Outdoor Photography	2.94	12.3	50.0	100.4	167.8
Hiking, Walking, Climbing					
Day Hiking	2.73	11.4	45.8	90.9	149.9
Backpacking (trail)	2.2	9.1	35.6	68.6	109.6
Backpacking (off trail)	2.42	10.0	39.8	77.5	125.5
Climbing and Mountaineering	2.52	10.5	41.7	81.7	133.1
Camping					
Organized Group Camping	1.95	8.0	31.0	59.0	92.8
Tent Camping w/ Motorized Vehicle	2.46	10.2	40.5	79.2	128.5
RV Camping	2.50	10.4	41.3	80.9	131.5
Off-Road Vehicle Use					
ATV Driving	2.31	9.6	37.7	73.0	117.4
4WD Vehicles	2.59	10.8	43.0	84.7	138.5
Non-Motorized Riding					
Bicycle Riding (on road)	2.98	12.5	50.8	102.3	171.4
Bicycle Riding (off road)	2.61	10.8	43.4	85.6	140.1
Horseback Riding	1.69	6.9	26.4	49.5	76.8
Sightseeing, Picnicking					
Sightseeing and Exploring	2.53	10.5	41.9	82.1	133.8
Picnicking	2.97	12.4	50.6	101.9	170.5
Hunting					
Big Game	1.53	6.3	23.7	44.0	67.6
Upland Birds, Small Game, Waterfowl	0.88	3.6	13.0	23.4	34.7
Bow Hunting	1.09	4.4	16.4	29.7	44.6
Note: Demand projections should be revalidated every 10 years. Source: IAC (1990)					

7.1.3 Recreation Capacity and Suitability

Like most reservoir recreation areas, particularly near urban areas, there are limits to how much recreation use existing facilities and the water body can accommodate. At some point, recreation demand cannot be met without negatively affecting sensitive resources in the area and/or the recreation experience that people seek when they come to Yale Lake.

Recreation capacity and suitability were analyzed in the FTR for Recreation Resources (PacifiCorp 1998d). The objectives of this analysis were to: (1) investigate the existing capacity of recreation resources; and (2) investigate whether new recreation facilities and activities are suitable in the Yale Lake study area while maintaining the integrity of the resources and meeting the long-term needs of visitors. This type of analysis is sometimes called a carrying capacity analysis. Recreation "carrying capacity" has been defined in a number of ways, but a useful definition is "the level of use beyond which impacts exceed standards" (Shelby and Heberlein 1986).

7.1.3.1 Recreation Capacity Analysis

The results of this analysis focus on the capacity of recreation facilities and use areas at Yale Lake using 2 approaches: (1) identifying capacity of existing facilities; and (2) identifying capacity using management and impact parameters including broader social and environmental concerns. The results of these 2 approaches are presented below.

Approach 1: Capacity Based on Facility Use

The results of this analysis are based on the use of 3 categories of indicators of facility capacity: (1) campground occupancy rates, (2) survey results from questions regarding perceived crowding at facilities, and (3) recreation facility capacity utilization. The results are summarized by prioritizing facilities from highest to lowest capacity concern and potential need for actions.

Recreation Facility Capacity Priorities. To summarize this analysis of facility capacity indicators, existing recreation facilities are prioritized from highest to lowest (1 to 3) capacity concern and need for potential actions. Based on professional judgment and the occupancy and capacity data previously presented, the 3 levels of priority and associated facilities with those priority levels include:

- Priority 1 - Two Priority 1 facilities have been identified–Saddle Dam Campground/Boat Launch, and Cougar Camp (campground portion). The high use levels of these facilities suggest that some actions are warranted in the near future. Potential actions that may be considered include: facility expansion, reuse, and/or redesign; new facility construction elsewhere; and management actions such as an expanded reservation system, entry controls, and/or improved communications. The Saddle Dam recreation facility is a high priority due to recent temporary closure in 1998 because of capacity and site management issues.

- Priority 2 - Two Priority 2 facilities have been identified–Yale Park and Beaver Bay Campground. The moderately high use level of these facilities suggests that additional planning should be initiated to address capacity issues and the visitor experience. Potential actions that may be considered as a result of further planning include some development expansion or redesign of the existing campground and management actions such as an expanded partial reservation system.

- Priority 3 - Three Priority 3 facilities have been identified–Cougar Park, Cougar Camp boat launch, and Beaver Bay boat launch and picnic area. These comparatively low to moderate use facilities require only continued monitoring at this time.

Approach 2: Capacity Based on Management and Impact Parameters

The purpose of the capacity analysis is to augment capacity planning data from the previous analysis, focusing more on social and environmental capacity issues. This analysis uses a modified Limits of Acceptable Change (LAC) approach which considers a range of management and impact parameters and identifies limiting factors and priorities.

Management parameters include such elements as agency plans and policies, capacity standards, and regional demand projections and use levels. Impact parameters include 4 types: ecological, physical space (spatial), facility, and social. Facility capacity data from the previous analysis are used. The capacity analysis applies these parameters to recreational use areas and activities, such as boating, as well as developed facilities, such as campgrounds. Normally, only 1 or 2 of the parameter categories become the critical "limiting factor(s)." These factors are identified in the FTR for Recreation Resources (PacifiCorp 1998d).

Capacity Issues Priorities. Resources or activities were prioritized from highest to lowest capacity concern and possible need for actions using 3 priority levels: Priority 1 - represents a fairly intense level of human activity, a high level of regional demand, or a management objective that suggests consideration of some action in the near future to modify human behavior, to help satisfy demand, or to meet a management objective; Priority 2 - represents a moderately high level of human activity that suggests consideration of some future action or planning to modify increasing human activity, to help satisfy future demand, or to meet a management objective; and Priority 3 - represents a low to moderate level of human activity that appears to have little or no impact at this time such that human activity may continue with only periodic monitoring. Priority levels and actions considered by PacifiCorp include:

Priority 1 Resources/Activities - Priority 1 facilities, use areas, and activities and possible actions include:

- Saddle Dam - Campground - Use of this camping facility exceeds capacity and it was temporarily closed in 1998 due to site and management problems. Measures could include reuse, redesign, or new site development elsewhere and conversion of the

- existing campground to day-use parking only or group use; and possible expansion of the reservation system at this time. Boat Launch - This site becomes heavily congested, has long launch wait times, and affects the adjacent campground. Potential design alternatives include parking and ramp expansion, lengthening the ramp to provide lake access at a pool level of 480 feet msl, and/or redesign or reuse of the combined Saddle Dam facility to extend parking into the current campground area.

- Cougar Camp - Campground - The Cougar Camp campground is at capacity. Measures could include expansion and/or new site development to alleviate crowding in the near future; and possible expansion of the reservation system at this time. Boat Launch - Parking at this launch site is adequate; however, the launch ramp is not adequate during the complete range of full pool. Consider ramp and dock improvements and lengthening the ramp for use at pool of 480 feet msl if feasible.

- Yale Park - Boat Launch - As the main launch site, the parking area exceeds capacity several times a year. Measures could include more efficient parking and over-flow expansion for peak use days to minimize safety concerns on SR 503; lengthening the ramps to provide year-round launch access at pool level 460 feet msl (a large boulder at the end of the ramp prohibits extension of the ramp for some of the lanes; however, 1 of the 4 lanes could possibly be extended). Consider providing additional ramp maintenance with periodic removal of debris and large rocks that block the end of the ramp making it unusable at times.

- Shoreline Use - Dispersed Campsites - Camping along the shoreline at many of the existing 67 dispersed sites appears to have reached capacity. Increased shoreline management could minimize ongoing impacts. In 1999, PacifiCorp will be discouraging overnight dispersed shoreline camping by no longer permitting overnight parking at PacifiCorp day-use facilities. Dispersed Day-Use Sites - Like camping, dispersed day use of the shoreline is causing some ecological impacts. Measures could include increased management of the eastern shoreline and maintenance actions. Day-Use Swimming/Sunbathing - Dispersed use of the shoreline is causing observed ecological impacts. Consider increased management of the eastern shoreline and maintenance actions.

Priority 2 Resources/Activities - Priority 2 facilities, use areas, and activities and possible actions include:

- Beaver Bay - Campground - Beaver Bay Campground is approaching capacity. Measures could include planning for possible expansion, redesign, and/or new site development to relieve congestion, reduce perceived crowding, and add additional campground capacity. Consider expanding the reservation system at this time. Boat Launch - The launch site has adequate parking capacity; however, minor improvements could be made to this launch ramp and dock.

- Group Campsites - Group reservation campsites are approaching full capacity. Consider planning for expansion and/or new site development at Yale Lake.

- Interpretive/Environmental Education at Developed Sites - Few opportunities currently exist to meet high statewide demand and to satisfy agency management objectives. Measures could include planning for implementation of new opportunities, such as nature trails and interpretive displays.

- Trail Opportunities - Yale Lake does not have developed trail opportunities, capacity, or facilities to help meet the growing statewide demand for trail-related activities and to satisfy agency management objectives. Few opportunities exist to help meet demand, satisfy management objectives, and meet ADA trail guidelines. Consider planning and implementing possible new or formalized trail opportunities in the future.

- Fishing Opportunities - Good recreational fishing opportunities currently exist. Continued WDFW fishery management programs are assumed to maintain the fishing experience. As most anglers are boat anglers, consider possible boating actions listed elsewhere. Also, consider planning and implementing new angler access facilities per ADA recreation trail guidelines.

- Open Space Management - An adequate supply of land for various open space-related recreation activities appears to exist. Focus new development only in areas that are highly suitable for recreation development.

Priority 3 Resources/Activities - Priority 3 facilities, use areas, and activities and possible actions include:

- Yale Park - Picnic Area - Existing capacity is adequate for picnicking; however, parking is a concern when peak boat launching activities occur. Swim/Beach Area - Existing capacity is adequate for swimming/sunbathing; however, parking is a concern when peak boat launching activity occurs.

- Cougar Park - Picnic Area - Existing capacity remains for picnicking, with adequate parking. Swim/Beach Area - Existing capacity remains for swimming/sunbathing, with adequate parking.

- Saddle Dam - Picnic Area - Use of the small picnic area exceeds capacity during peak boating use periods and was temporarily closed in 1998 due to site management and capacity issues. Measures could include new parking/traffic controls and redesign or reuse of the Saddle Dam recreation area. Swim/Beach Area - Use of the small swim/beach area exceeds capacity during peak boating use periods only. Measures could include new parking/traffic controls, and redesign or reuse of the Saddle Dam recreation area.

- Beaver Bay - Picnic Area - The site functions within capacity. Swim/Beach Area - The site functions within capacity.

- Overall Reservoir Boating - Overall boating capacity is adequate and well below Bureau of Outdoor Recreation (BOR) capacity standards. Increased enforcement of boating regulations (boat and jetski/PWC use in the shoreline no wake zone) should be considered.

7.1.3.2 Recreation Suitability Analysis

Recreation development suitability at Yale Lake was assessed using GIS technology to overlay and prioritize (high to low) a number of important opportunity and constraint factors. GIS mapping products are presented in the FTR for Recreation Resources (PacifiCorp 1998d). The Composite Recreation Suitability map is presented in Figure 7.1-5. This GIS-based analysis was used to identify areas suitable for recreation development, should such areas be needed to satisfy existing or future needs.

Based on the Suitability Map (Figure 7.1-5), large areas of high suitability exist for potential future recreation development, if needed. The type of development that may be considered in this analysis includes larger public recreation facilities such as developed campgrounds, group campsites, boat-in campsites, picnic areas, swimming and sunbathing areas, and boat launches and parking.

High suitability areas make up a very small portion (309 acres or 3 percent) of the study area. Therefore, some adjacent moderately high-ranked areas could also be considered, if necessary. This GIS-based analysis (Figure 7.1-5) indicates that larger areas to consider for future recreation development may include:

- Beaver Bay Campground – May allow for some potential redesign of the existing campground in areas farther away from the existing wetlands complex.

- Cougar Camp and Cougar Park - Several large areas surrounding these existing facilities present possible expansion potential. At Cougar Camp, the best areas to expand are north of the campground. At Cougar Park, a large area west of the picnic area offers some potential for either day use or overnight facilities. However, the shoreline west of Cougar Park is shallow and has many stumps.

- Cooney Point - Two large areas surrounding an inlet on the west shore near Cooney Point are currently undeveloped. Locating a new recreation site near 2 existing ones (Yale Park and Cougar Park/Camp) may be problematic because of increased boater congestion; however, a smaller facility may be appropriate at this location.

- Siouxon Flats Boat-in Use Area - On the east shore, a 2,000-foot stretch of shoreline at the north end of the Siouxon Flats area offers potential for boat-in camping or day use. The undeveloped Clark County Siouxon Park site, located to the south, is rated at moderate suitability because of nearby sensitive habitat areas.

- South of Speelyai Canal - A 1.2-mile-long corridor south of Speelyai Canal on the west shore offers the greatest potential for a new recreation development(s) because of its size and location. This area of the lake receives the least amount of boater use;

therefore, congestion from new boats would be minimal. There are few environmental constraints during the peak recreation season in this area.

- IP Road Corridor - The IP Road has potential for formalized non-motorized trail use if a recreation access easement or other mechanism could be implemented. The GIS analysis indicates 1 or more potential rest areas at the end of the inlet east of Yale Dam, north of the Siouxon Creek bridge, at Siouxon Flats, directly across from Beaver Bay on the east shoreline, and near the East Lewis River bridge.

- Yale Park - The Yale Park site is already constrained by SR 503. Parking could be expanded to the west at the expense of an existing, little used picnic area.

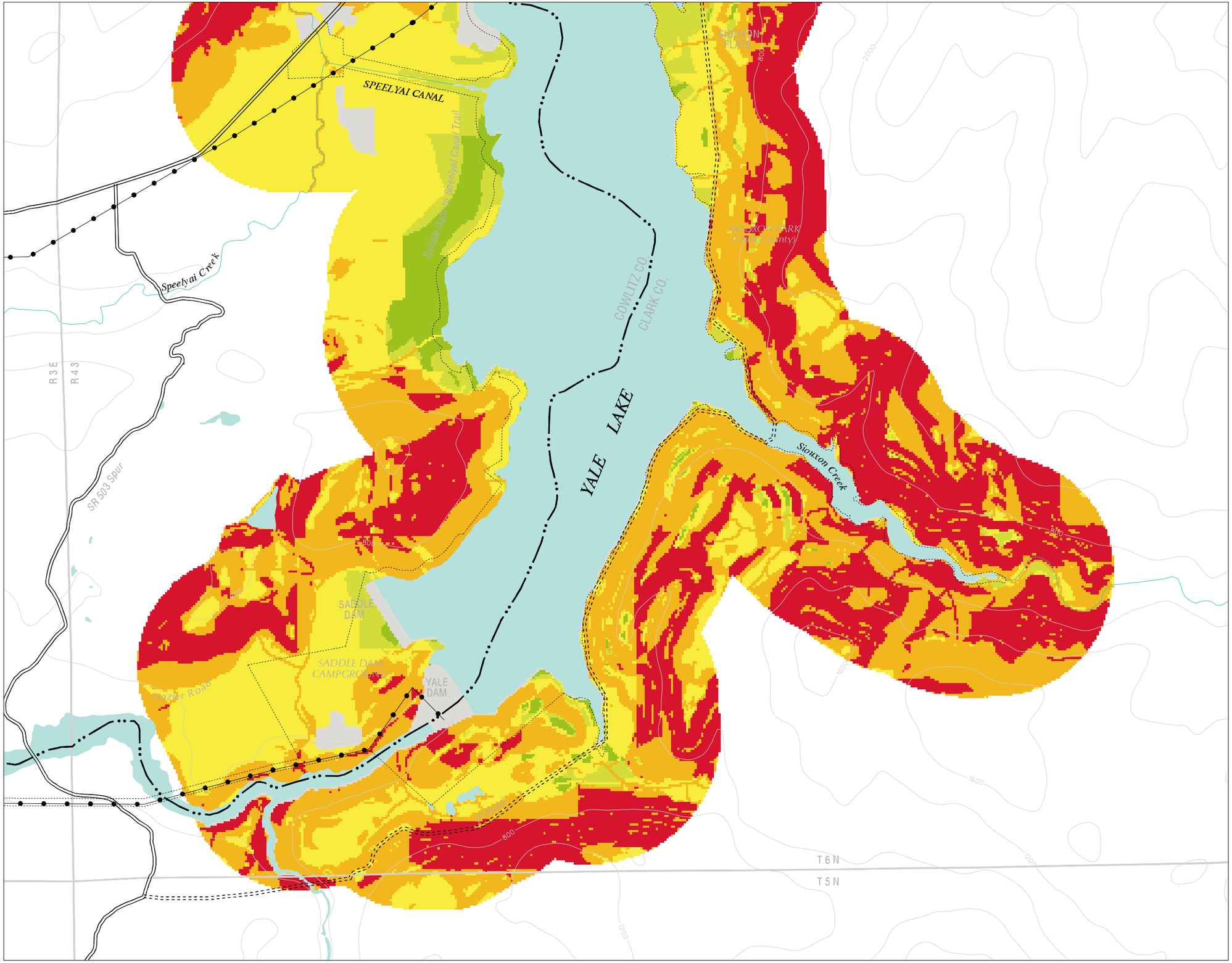
- Saddle Dam Campground/Day-Use Site - The Saddle Dam site is already constrained by the dam, slopes, and the adjoining Merwin Wildlife Habitat Management Area. Reuse or reconfiguration of the existing site, however, is possible.

7.1.4 Recreation Needs

The purpose of the recreation needs analysis is to identify and project existing and future recreation needs in the study area. Existing needs have been identified for the present to 2000, and future needs have been projected for future increments or phases of time (i.e., 10-year periods) from 2000 to 2030. Needs have been assessed for existing and potential future developed recreation facilities (i.e., Saddle Dam, Yale Park, Cougar Park, Cougar Camp, Beaver Bay, and undeveloped facilities), as well as dispersed use areas and activities within and surrounding Yale Lake.

This section provides an analysis of overall recreation needs within the study area by facility, activity, use area, or program type. Recreation resources analyzed include those identified in the FTR for Recreation Resources (PacifiCorp 1998d). Factors or indicators considered are organized into 3 categories: demand, supply, and capacity/suitability. Based on a comparison and review of these factors and professional judgment, conclusions are presented for overall existing and future recreation needs in the study area. Site-specific needs are further addressed in this section and in Section 7.2 (Proposed Enhancement Measures). Topics examined included overall needs for camping, picnicking, boating, swimming/sunbathing, interpretive/environmental education, trail use, fishing, and general open space activities.

Additional recreation survey work was conducted by PacifiCorp in 1998 in the vicinity of the 4 hydroelectric projects. This survey work, plus additional analyses in 1999 to 2000, will be used during the relicensing of the 4 hydroelectric projects in the upcoming years. The results of these additional analyses and survey work will be presented in future reports by PacifiCorp and Cowlitz County PUD.



Legend

- High Suitability
- Moderately High Suitability
- Moderate Suitability
- Moderately Low Suitability
- Low Suitability
- Not Considered

- Topography
- County Line
- Township/Range Line
- Transmission Line
- FERC Project Boundary

HYDROGRAPHY
- Waterbody
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 1

NORTH

0 1000 2000 3000 4000 Feet

Scale 1:26000

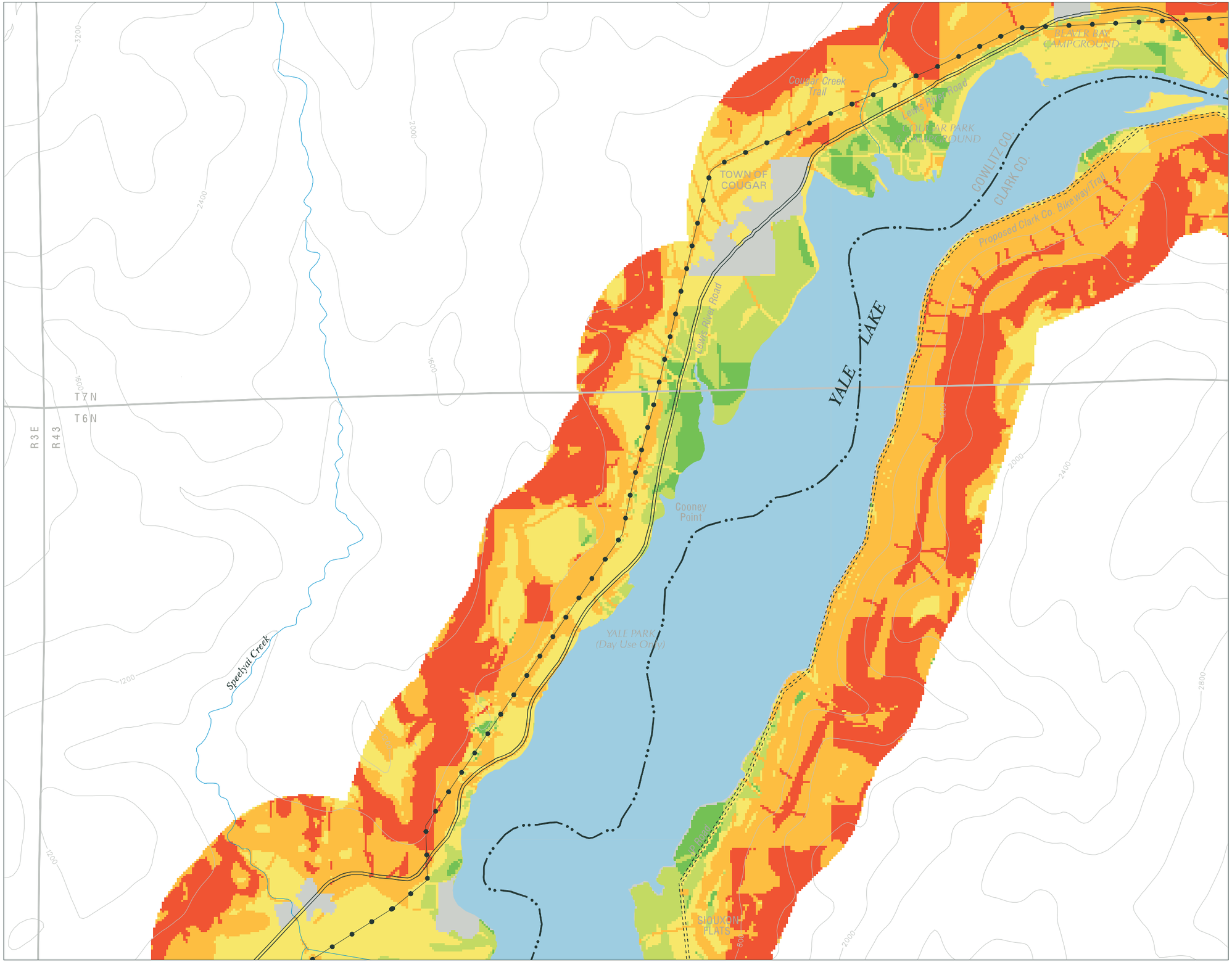
Yale Hydroelectric Project

Figure 7.1-5 (1 of 3) Recreation Suitability

Created by VESTRA Resources for PacifiCorp

/p1/proj_map/projects/yale/license/exe/recreatn/suit_model.batchmap

February 24, 1999



Legend

- High Suitability
- Moderately High Suitability
- Moderate Suitability
- Moderately Low Suitability
- Low Suitability
- Kick Out

- Topography
- County Line
- Township/Range Line
- Transmission Line

HYDROGRAPHY
- Waterbody
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 2

NORTH

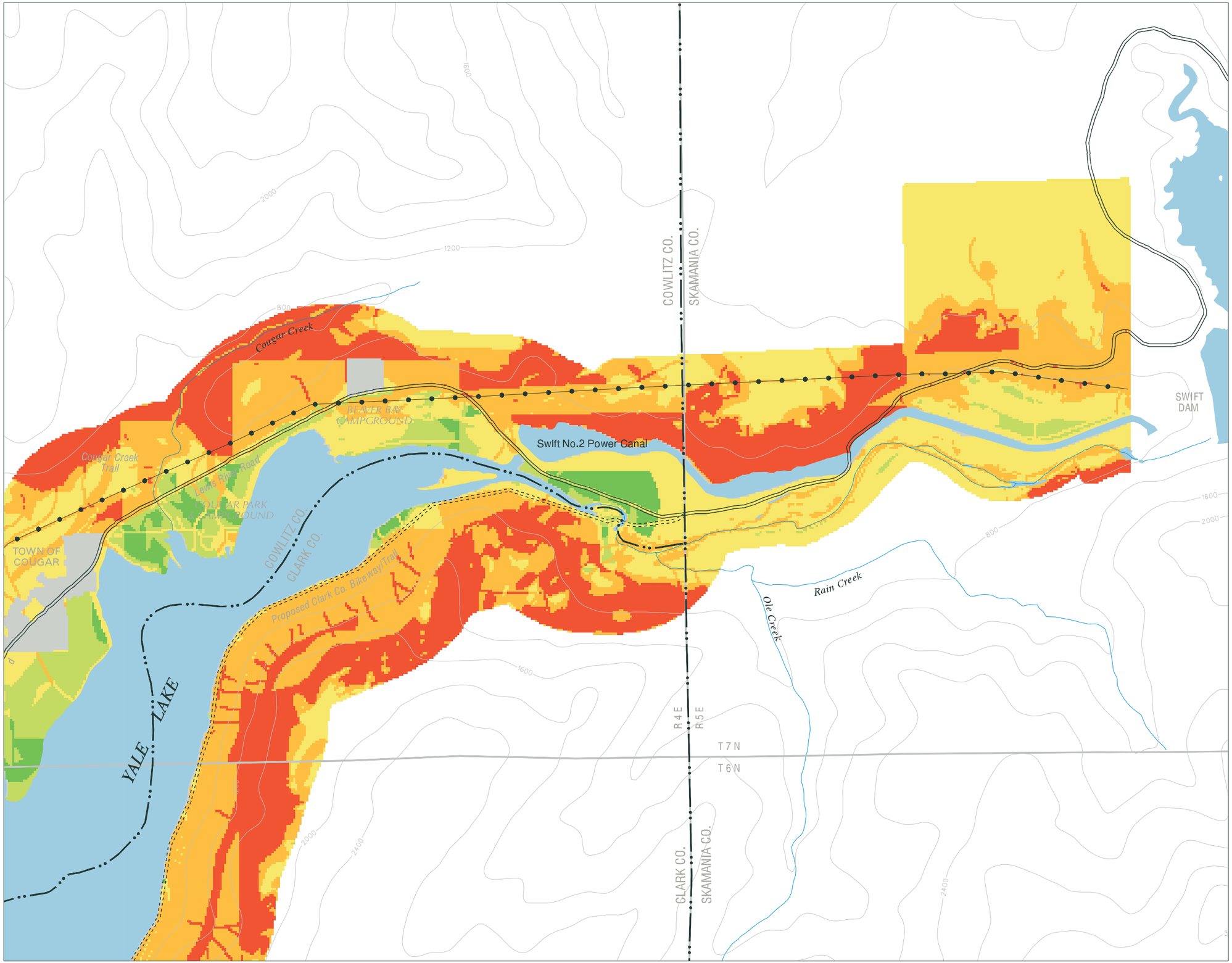
0 1000 2000 3000 4000 Feet

Scale 1:26000

Yale Hydroelectric Project

Figure 7.1-5 (2 of 3) Recreation Suitability

Created by VESTRA Resources for PacifiCorp
/p1/proj_map/projects/yale/license/ftr/recreatn/suit_model.batchmap
March 16, 1999



Legend

- High Suitability
- Moderately High Suitability
- Moderate Suitability
- Moderately Low Suitability
- Low Suitability
- Kick Out

- Topography
- County Line
- Township/Range Line
- Transmission Line

HYDROGRAPHY
- Waterbody
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

Sheet 3

NORTH

0 1000 2000 3000 4000 Feet

Scale 1:26000

Yale Hydroelectric Project

Figure 7.1-5 (3 of 3) Recreation Suitability

 PACIFICORP Created by VESTRA Resources for PacifiCorp /p1/proj_map/projects/yale/license/ftr/recreatn/suit_model.batchmap March 16, 1999

7.1.4.1 Overall Camping Needs

Overall camping demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. Camping needs analyzed in the study area include:

- RV and tent campgrounds
- Group campsites
- Undeveloped dispersed campsites

Camping Demand Factors

Camping demand factors are summarized below.

- Camping at Yale Lake was the primary activity of survey respondents and was enjoyed by 75 percent of visitors surveyed. Almost half (46 percent) identified camping as their main activity. Given these high percentages, camping is a very important activity when analyzing needs and drives other needs.

- Demand for camping is increasing with population growth. Annual increases in demand are depicted in Table 7.1-8.

- Over the next 30 years to 2030, demand for camping is projected to increase substantially (Table 7.1-8). Campsites on lakes will be particularly sought after as demand for water-based recreation is very high in the region.

- Recreation visitation in the Upper Lewis River Valley is dynamic with multiple destinations and attractions. The Monument, an international attraction to the north, is a significant recreation area with visitation increasing 5 to 6 percent annually on both sides (north and south) of the volcano. Numbers of visitors driving around the volcano are increasing as new interpretive centers are opened to the north and east and as new roads are constructed. Nearby Ape Cave and Lava Canyon are particularly noteworthy attractions. The GPNF is also a significant visitor destination. Visitors in the valley also travel between the 3 Lewis River reservoirs. Many (45 percent) visitors surveyed at Yale Lake facilities had plans to visit or already had visited other locations during their trip. Of these mobile visitors, primary destinations include: the Monument (34 percent), GPNF (15 percent), Lake Merwin (19 percent), Swift Reservoir (17 percent), and other (15 percent). About 1 out of 5 (22 percent) visitors surveyed (49 percent of 45 percent) indicated that their primary destination was the Monument or GPNF.

- Because of the study area's high annual rainfall, demand for camping occurs predominantly during a peak 14-week recreation season (Memorial Day to Labor Day weekends). Demand is greatest during July and August and on holiday weekends, and is highly weather-dependant.

- Some shoulder season demand occurs earlier (April and May) due to angler activity and later (September and October) due to hunting activity. PacifiCorp opens Beaver Bay Campground and Cresap Bay Campground (on Lake Merwin) during a longer period of time to accommodate these needs.

- Demand for camping facilities at all of PacifiCorp's 3 hydroelectric projects is partially evident by looking at occupancy rates from 1994 to 1997 for different timeframes. These include: total weekends (67 to 75 percent), total weekdays (34 to 43 percent), and holidays (85 to 97 percent). The year 1994 had the highest occupancy levels, apparently due to drier weather conditions. During 1995, occupancy levels were lowest, apparently due to wetter weather conditions. The years 1996 and 1997 saw increased visitation, but were lower than the 1994 peak year due to somewhat poorer weather conditions during these seasons.

- Group campsites are booked every weekend during July and August, and all holiday weekends. Demand is less during June when it is cooler and wetter.

- Most (82 to 88 percent) visitors come to Yale Lake between 1 and 5 times/year and half have 2 to 4 people in their party. About 2 out of 3 (68 percent) visitors are from Washington State and about a third (29 percent) are from Oregon. Most visitors are from the nearby Vancouver/Kelso/Longview area in Washington and the Portland area in Oregon. As a result, trips to Yale Lake typically take less time and effort compared to many other destinations. More day trips are also a likely result. Visitors can get here quicker and leave quicker if weather deteriorates.

- There are also many sites (approximately 67) surrounding Yale Lake that are used for dispersed camping. Others are located near the Swift No. 2 power canal and the North Lewis River bridge area. Approximately 16 percent of these sites (largest and best sites with good access) are used regularly, with more use during holidays and hot summer weekends when demand is highest.

- Latent demand is demand for facilities, activities, or experiences that are not currently available or being provided. Most (95 percent) visitors surveyed indicated that they had a good (or better) overall experience (responses dropped to 73 percent during more crowded holidays). Over half (53 percent) indicated they desired additional facilities including: restroom/shower improvements (15 percent), expanding or improving campsites (11 percent), adding new moorage and docking facilities (9 percent), providing new playground equipment (9 percent), expanding boat launches (8 percent), providing jetski/PWC rentals (7 percent), providing expanded sport field and horseshoe facilities (4 percent), providing more or better swim areas and sandy beaches (4 percent), and providing electricity (3 percent).

- PacifiCorp currently operates a partial campsite reservation system. Group campsites may be reserved beginning in January of each year. Interest has been expressed by visitors surveyed to expand the current partial reservation system; however, support for a full reservation system was much less.

- Finally, building new campgrounds both satisfies demand as well as generates new demand. Key considerations include maintaining or improving the visitor experience and building up to only sustainable levels. The old adage - "build it and they will come" - is a phenomenon that needs to be considered.

Camping Supply Factors

Camping supply factors are summarized below.

- Developed campsites are available for a fee only. PacifiCorp charges a $15 per day fee for campsites. Additional fees apply to numbers of vehicles and people. About 2 out of 3 (63 percent) visitors surveyed indicated that the fee schedule was okay. No fees have been charged for day-use sites; however, a $4 per vehicle fee will be charged beginning in 1999, plus additional fees for extra people and for watercraft.

- In the Upper Lewis River Valley, 469 developed campsites are operated by PacifiCorp and other private companies. At PacifiCorp's 3 Lewis River projects, 274 campsites (58 percent) serve RV and tent campers. The remaining 195 campsites (42 percent) are private fee campsites at 4 RV parks (Big Foot Trailer Park, Lewis River RV Park, Lone Fir Resort and Trailer Park, and Volcano View Campground [closed in 1998]). These facilities serve visitors who seek campsites with RV hook-ups or do not desire to be on the lake. PacifiCorp does not compete in this market.

- Within the Yale Lake study area are 123 developed fee campsites without hook-ups at Beaver Bay, Cougar Camp, and Saddle Dam. Of these campsites, 63 percent may be used for RV or tent camping, while Cougar Camp (45 sites) is a tent-camping only facility. Campsites include a picnic table, fire grill, and vehicle pad. Facilities and services located nearby include restrooms and showers, drinking water, gray water sumps, trash receptacles and dumpsters, boat launch and docks, picnic area, swim area with floating boom and a sunbathing beach, overflow parking, informational signs, firewood sales (Cougar Camp only), and camp host(s). At Yale Lake there are also 2 RV dump stations (Beaver Bay and Saddle Dam) and two 15-site group campsites (Beaver Bay and Cougar Park/Camp).

- There are approximately 67 dispersed shoreline sites, some of which are used for dispersed camping and almost all of which may be accessed by boat. Approximately 8 dispersed sites are located near the Swift No. 2 power canal and the North Lewis River bridge area and are accessible by vehicle. About 12 (16 percent) of these sites are prime locations and are used regularly. In 1999, PacifiCorp will be implementing a program to discourage dispersed shoreline camping by towing vehicles parked overnight at PacifiCorp day-use sites.

- Clark County owns Siouxon County Park, an undeveloped 40-acre site on the eastern shoreline of Yale Lake. During the 1960s, this site had 8 campsites, but it was abandoned in later years due to maintenance problems, a severe economic recession, and lack of a recreation access easement along the IP Road. The site is currently

used for boat-in day use activities and boat-in camping (2 to 3 sites), but is not maintained or actively managed.

- No ADA-accessible developed or dispersed campsites currently exist at Yale Lake.

Camping Capacity/Suitability Factors

Camping capacity/suitability factors are summarized below.

- Retention or expansion of wildlife and fish habitat is a high priority in the study area and is addressed in the ILM Plan (WDFW 1998a). The objectives of the ILM Plan are to develop an integrated plan for cooperatively managing fish and wildlife resources on a landscape basis for the next 20 years. The plan's goals are to establish acceptable biological limits for recreation opportunities consistent with aquatic and wildlife populations, provide fishing opportunities and access, minimize recreation fish/wildlife conflicts, and protect critical habitat areas.

- More than half of the visitors surveyed had difficulty finding campsites, indicating that developed campgrounds are approaching seasonal capacity.

- Visitors surveyed had preferences for shoreline camping, water views, quality scenery, quality nearby restrooms/showers, and drinking water.

- The campgrounds are aging and renovation should be considered at some locations in the future. In general, newer camping facilities, or renovated campgrounds with proper design, may accommodate more visitors with less impact than older facilities. PacifiCorp's Yale area campgrounds were built in 1958 to 1960 for fewer visitors and are beginning to show their age.

- Larger numbers of campers are beginning to feel crowded. Most (59 percent) campground visitors felt crowded to some extent, considered "High Normal." During the July-August peak period, up to 70 percent felt crowded which is considered "More Than Capacity," with Saddle Dam visitors feeling the most crowded.

- Crowding reduces the opportunity for solitude, and noise has become a common concern. Older facility site designs (lack of buffer) and occasional lack of "quiet hours" enforcement further impacts the visitor experience.

- If needed, adequate PacifiCorp-owned land appears to be available to expand existing campground facilities or to build a new campground, as described in Section 7.1.3.2. These potential areas would be closed during big game wintering periods; therefore, they could potentially be designed and planned for joint recreation-wildlife use, similar to the recent Cresap Bay Campground experience at Lake Merwin.

- If a new fee campground was considered in response to demand, it could include approximately 60 non-hook up sites with associated boat launch, group campsite, and day-use area, and would require a 100- to 120-acre area.

- The developed Yale Lake campgrounds as a whole are at or near capacity, as described in Section 7.1.3.1.

Identified Overall Camping Needs

Based on a review of all of these factors and indicators, potential actions to address overall camping needs have been identified in the study area. These include:

- Implement a Developed Campground Program Over the Term of the New License. Camping capacity is likely to be reached by the year 2000. During the term of the new license, camping demand is projected to increase approximately 130 percent (see Table 7.1-8). Because campground capacity is anticipated to be exceeded in the future, campground use should be monitored to determine when new facilities should be constructed or existing ones expanded. A monitoring program should be developed which identifies LAC threshold criteria or triggering mechanisms. Preliminary LAC threshold criteria may include the 2 used in this analysis: (1) a 60 percent seasonal capacity utilization, and (2) a 90 percent occupancy rate during the peak July-August timeframe. These threshold levels should be exceeded for at least 2 years before actions are taken to ensure that the need is actual. Existing campgrounds, such as Cougar Camp, should be modernized and expanded first, if feasible. It is anticipated that a new developed campground with no hookups should be considered at Yale Lake in future phases. The location and operation of this potential new campground will need to be coordinated with other resource needs, principally big game wintering area.

- Implement a Group Campsite Program Over the Term of the New License. Capacity for group camping is likely to be reached by the year 2000. During the term of the new license, group camping demand will likely double, and an additional 2 new group campsites to be phased in over a 30-year period. The 2 older group campsites will need to be modernized during this same period. As improvements are made to older group campsites, universal access improvements should be made if practicable and feasible. Potential new group sites are possible at or near existing campgrounds.

- Implement a Boat-in Campsite Program Over the Term of the New License. Many of the 67 dispersed shoreline sites are used by boat-in campers as well as for day use. Capacity for dispersed camping appears to have been reached due to ongoing impacts observed and discussed, such as sanitation, litter, erosion, fire hazard, and personal safety. In 1999, PacifiCorp will begin a program to discourage dispersed overnight shoreline camping by towing vehicles parked overnight at PacifiCorp day-use sites. During the term of the new license, boat-in camping demand will further increase as boating and camping demand doubles, thereby exacerbating existing shoreline use problems. Twenty formal boat-in campsites may be considered during the term of the new license. Three would be clustered in appropriate areas, such as the northern

Siouxon Flats, to minimize impacts, maintenance, and development costs. The location and operation of these developed boat-in campsites would need to be coordinated with other resource needs, principally big game wintering area and raptor habitat, and agencies including DNR and Clark County.

- Implement an Expanded Reservation System. Visitors have expressed a high degree of interest in a partial (not full) reservation system. The current partial reservation system should be expanded to allow campers the opportunity to reserve a portion of the campsites. An expanded reservation system is desirable to spread out visitation over a longer period of time, minimize traffic problems along SR 503, and give campers who make a reservation and drive longer distances assurance that there will be available campsites when they arrive.

- Implement an Expanded Universal Access Program. Since 1992, PacifiCorp has made significant improvements to restroom facilities and parking access at its 5 developed recreation facilities and is currently in compliance with the ADA regulations. During 1999 to 2000 and during the term of the new license, ADA guidelines will change and new requirements, not just guidelines, will need to be addressed. As a result, other future accessibility-related actions will likely be required.

7.1.4.2 Overall Picnicking Needs

Overall picnicking and rest-stop/relaxing demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs.

Picnicking Demand Factors

Picnicking demand factors are summarized below.

- Visitation at picnic facilities was fairly low during the season. The average number of picnickers at all developed sites was only 10 to 12 persons at one time. The average number of visitors just relaxing, however, was much higher at 36 to 42 persons at one time. The average number of rest-stop visitors was also low at only 4 persons at any one time. These average levels of use remained fairly constant all season, except for a drop in June due to poorer weather conditions.

- Demand for picnicking is increasing annually at almost 3 percent, a higher rate than many other recreation activities. Over the term of the new license or 30 years, demand for picnicking is projected to increase 171 percent. This level of increase is higher than for camping.

- Demand for rest-stop visits, such as at Yale Park and Cougar Park, can be estimated by looking at demand for sightseeing in general and visitation to the Monument. Sightseeing statewide is increasing in demand at 2.53 percent annually. This level, however, is about half of the 5 to 6 percent annual increase in visitation that is occurring at the nearby Monument.

- Picnicking, relaxing, and using rest areas was low (<10 percent) on the list of visitors' main activities. Although not a main activity, almost half (47 percent) of the visitors surveyed participated in this activity, making it an important planning consideration.

- All (100 percent) picnickers surveyed rated their satisfaction as good or better. Other activities were also rated good or better for satisfaction including sightseeing (95 percent), use of rest areas (100 percent), and relaxing (93 percent).

Picnicking Supply Factors

Picnicking supply factors are summarized below.

- One of the goals of the Cowlitz County Comprehensive Park Plan (Cowlitz County 1994) is to promote tourism by developing picnic areas and providing other related services.

- Developed and dispersed shoreline picnic and day-use area opportunities are provided, including boat-in and drive-in types. Approximately 66 picnic sites are provided at 4 locations (Beaver Bay, Saddle Dam, Yale Park, and Cougar Park). Most (44) picnic tables are located at Yale Park, which is open all year long. Eleven of these picnic sites at Saddle Dam and Yale Park also have fire rings or BBQs.

- Beaver Bay and Cougar Park have playground equipment.

- Four locations (all except Cougar Camp) have shoreline areas with shade trees and grassy areas.

- Picnic and rest-stop facilities are available all year long at Yale Park. Additional day-use areas are open at Beaver Bay, Cougar Park, and Saddle Dam during the peak season. Yale Park and Cougar Park are in proximity to and visible from SR 503, a route used by visitors to the Monument, GPNF, and the Lewis River reservoirs.

Picnicking Capacity/Suitability Factors

Picnicking capacity/suitability factors are summarized below.

- Sanitation, litter, and erosion problems were observed along the shoreline, principally the eastern side, due to dispersed shoreline use and low levels of management.

- Grassy areas occasionally become over-used and some signs of vandalism exist at Yale Park.

- Parking capacity at day-use sites was not exceeded as a whole. The average number of parked weekend vehicles at each site at a single time and its parking capacity includes: Cougar Park (20 out of 80 spaces or 25 percent), Saddle Dam (75 out of 200 spaces or 38 percent), Yale Park (106 out of 280 spaces or 38 percent), and

Beaver Bay (15 out of 40 spaces or 38 percent). In 1999, PacifiCorp will begin towing vehicles parked overnight in PacifiCorp day-use sites as a way to discourage dispersed shoreline camping.

- Visitors surveyed at day-use sites perceive some level of crowding including: Yale Park (39 percent) and Cougar Park (60 percent). Yale Park was perceived as the least crowded site, possibly because many visitors left the site by boat during peak periods and were out on the water.

- Some (9 percent) visitors want new or improved playground equipment. Equipment at Beaver Bay needs repair or replacement.

- Areas for potential new day-use sites exist in the study area.

Overall Picnicking Need Results

Potential actions to address picnicking needs include:

- Implement a Developed Day-Use Site Program Over the Term of the New License. Day-use areas, excluding boat launching (discussed below), are currently within capacity and should remain so for many years. During the term of the new license, however, demand for picnicking is projected to increase approximately 170 percent. The current average number of persons who are picnicking, relaxing, and using restrooms at one time is approximately 60. It is estimated that this average number will increase to approximately 160 people within 30 years. Peak use days will see much higher visitation levels with several hundred visitors. Based on this increase, a new shoreline developed day-use site will be needed with approximately 12 picnic tables and open space with shade for relaxing. Older day-use sites will need to be modernized over time. Older restrooms (Beaver Bay and Cougar Park) located nearby will need to be renovated. As improvements are made to older day-use sites, universal access should be considered if practicable and feasible. Existing day-use sites should be modernized and expanded first, if feasible. A new day-use site should be planned in conjunction with a new campground.

- Implement a Boat-in Day-Use Site Program Over the Term of the New License. Many of the existing 67 dispersed shoreline sites are used by boat-in campers and day users, and their capacity appears to have been reached. To help satisfy future boat-in day-use picnicking needs developed shoreline day-use sites will be considered during the term of the new license. Picnic sites should be clustered in appropriate areas, such as the Siouxon Flats and Siouxon Creek areas where existing use is greatest, to minimize impacts and maintenance costs. The clustered boat-in picnic sites would include a picnic table and fire ring and would be pack-it-in/pack-it-out type for litter control. To address sanitation concerns, up to 2 floating restrooms would be towed to the Siouxon Flats area and the Siouxon Creek Arm area during the peak season (July and August) and maintained regularly as needed. As improvements are made to dispersed day-use sites, universal access improvements would be made for a few of the sites, if practicable and feasible. The location and

operation of these boat-in day-use sites would need to be coordinated with other resource needs, principally big game wintering areas and raptor habitat, and agencies including DNR and Clark County.

7.1.4.3 Overall Boating Needs

Overall boating demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. Boating facility needs that were analyzed in the study area include:

- Restricted boating use areas
- Boat launches, ramps, and docks
- Parking

Boating Demand Factors

Boating demand factors are summarized below.

- Water-based recreation opportunities are in high demand. Annual increases in demand include: power boating (2.02 percent), sailing (2.42 percent), and non-motorized boating (2.36 percent).

- During the projected 30-year term of a new license, demand for boating and water-based recreation activities will increase substantially, as displayed in Table 7.1-8.

- The level of boater participation among visitors surveyed at Yale Lake includes: power boating (29 percent), non-motorized boating (18 percent), and jetskiing/PWC use (14 percent).

- The average summer weekend mix of boats includes: 65 percent power boats, 21 percent jetskis/PWC, 7 percent inflatables, 5 percent rowboat/canoe/kayak, and 2 percent sailboats.

- The number of boats on the lake during a typical sailboat regatta weekend are higher (worst case). During regattas (2 to 4 times per year), the high number of sailboats (up to 50) pushes the total number of boats on the reservoir up to 170 (overall reservoir surface area density of 20 to 22 acres/boat).

Boating Supply Factors

Boating supply factors are summarized below.

- PacifiCorp operates 4 boat launches at Beaver Bay, Saddle Dam, Cougar Camp, and Yale Park. There are a total of 9 ramp lanes at these locations in the southern, central, and northern portions of the reservoir. There are 6 boat docks (including Cougar Park) and floating booms are located at Saddle Dam and Cougar Camp.

Informational signs are located at all locations. All ramps are concrete or concrete planks/ties. None of the boat launches or docks provide universal access.

- PacifiCorp provides parking for approximately 700 vehicles and vehicles with trailers. Most spaces are provided at Yale Park (280), which is open year-round, and Saddle Dam (200). Approximately 550 to 600 of these parking spaces are used by boaters, the remaining spaces by other day-use visitors.

- The pool elevation is voluntarily held high when possible by PacifiCorp during the peak recreation season - Memorial Day to Labor Day weekend (480 feet to 490 feet msl). During the non-peak season, the pool elevation ranges from 470 feet to 490 feet msl, but may drop to 460 feet msl on occasion.

- The size of the reservoir is large and long: 3,800 surface acres, 27 miles of shoreline, and 10 miles long. Its width varies from 1,500 feet to 5,000 feet, averaging approximately 3,000 feet.

- The ability to launch a boat at a ramp is dependent upon the pool level, the ramp location, and debris accumulation. The Saddle Dam and Cougar Camp launches do not operate adequately at minimum recreation pool (480 feet msl). Minimum launch elevations of ramps include: Saddle Dam (487 feet), Yale Park (470 feet), Cougar Camp (484 feet), and Beaver Bay (476 feet). The Yale Park ramp operates to 470 feet msl (if debris is cleared). No ramps operate well at the lowest pool level (460 feet msl).

- Overall satisfaction with water-based activities during the peak season is high. Visitors surveyed were generally satisfied and provided ratings of good or better for the following activities: fishing (89 percent), power boating (98 percent), water skiing (86 percent), sailing (90 percent), and jetskiing/PWC use (75 percent).

- Complaints by visitors were relatively low. Only 5 percent of peak season survey respondents indicated that boat launches need to be improved. Most of these comments were directed at the Saddle Dam launch. It should be noted, however, that the pool level was high when most visitors were surveyed, which could bias the results. When the pool level is lower, more problems may be encountered by boaters. However, very few visitors are present when the pool level is low.

Boating Capacity/Suitability Factors

Important boating capacity/suitability factors are summarized below.

- Launch wait times were generally low at most sites, indicating adequate capacity. Boaters at Saddle Dam and Beaver Bay (which have fewer lanes) had to wait the longest.

- Seasonal parking capacity for boating appears adequate, except during extreme use days (up to 5 days per year) when boating and day-use site parking needs compete.

On average during the season, parking capacity utilization at launch sites was relatively low.

- Launch access to the reservoir is provided during the recreation season. Yale Park, with a large launch facility, is open year-round. When clear of debris, the launch is accessible down to approximately 470 feet msl. The pool elevation can drop to about 460 feet msl, making launching difficult or impossible, except for smaller car-top boats. During extreme peak use days (up to about 5 times per year), vehicle access to launch sites may be closed when parking lots are full.

- The siting of boat launches affects access and use of the reservoir. The type, design, and location of launch facilities controls the maximum number of boats on the lake at any one time and where boats tend to congregate. Boaters also tend to concentrate near the boat launches, particularly jetski/PWC users. The area near Speelyai Canal is the least used area and would be the best area to site a new launch facility that would not affect existing boating patterns and densities.

- Existing boat launch parking space is limited; expansion potential is physically limited; however, some additional space could be developed for parking if needed at some locations.

- During the peak recreation season when most of the survey was conducted, the pool level did not affect most boaters. Most (70 percent) survey respondents indicated that the pool level did not affect their boating experience. Of the 30 percent who indicated that they were affected, most (33 percent) problems related to ramp length or condition at Saddle Dam and Cougar Camp.

- Several boating capacity standards provide a range of densities for planning purposes. BOR standards were most applicable to the Yale area and were used in this analysis. The Yale Lake condition includes a mix of watercraft type with peak periods occurring during sunny weekends in July and August and during holidays. In addition, sailboat regattas occur with high numbers of sailboats on a few summer weekends. For the remainder of the season, Yale Lake boat counts are much lower (around 15 boats).

- During the non-peak season, the number of boats on the reservoir ranged from a low of 0 to a high of 15 (density of 253 acres/boat). During the peak season, the average number of boats were: holiday weekends (140, density of 27 acres/boat); and non-holiday weekends (120, density of 32 acres/boat). The surface area available for boaters was analyzed using BOR standards for boating capacity. The standards used in this analysis include: angler boats (minimum 3.4 acres/boat) and non-angler boats (minimum 7.1 acres/boat). Based on these standards, water surface capacity used during 2 selected peak (worst-case) timeframes includes: non-holiday regatta weekend with up to 170 boats (30 percent capacity or 1,133 minimum surface acres needed) and summer holiday weekend with up to 140 boats (24 percent capacity or 920 minimum surface acres needed). A non-peak day, however, during the season

will yield up to about 15 boats at one time and will utilize only about 2 percent of capacity.

- Parking and launch needs for boating use will increase over the term of the new license. Assuming use doubles by 2030, up to 340 boats could be using the lake during a sailboat regatta on a non-holiday summer weekend. This mix of boats is estimated to include: up to 100 sailboats; 58 jetskis/PWC; 138 power boats; 22 inflatable craft; and 22 canoes, kayaks, or row boats. Of these boats, about 300 would be trailered and 40 would be car-topped to the launch site. Assuming a turnover ratio of 3 (to account for a variety of uses), a total of about 820 parking spaces would be needed by 2030 on a regatta day. This represents a worst-case need of up to 270 additional parking spaces for boating (assumes 550 of the 700 existing spaces are for boating use and 150 are for other day use or campground overflow). Alternatively, based on an average 1996 summer weekend day with 120 boats on the water at one time, projections to 2030 would double to about 240 boats (200 trailered and 40 car-top). This scenario would require up to 720 parking spaces for boating using a turnover factor of 3. This would require about 170 new parking spaces for boating use (assumes 550 existing spaces), indicating the need for a new launch site with 2 or 3 ramp lanes. Some additional parking could potentially be developed at Yale Park and Saddle Dam. For regatta days in 2030, overflow capacity could be provided for an additional 100 vehicles with trailers.

- By the year 2030, boating is expected to double. The maximum use increase is projected from 24 to 42 percent during non-regatta summer weekends, and from 30 to 63 percent during regatta weekends. During a non-peak day, however, boating use levels should still remain very low, with an increase in capacity of only 3 percent up to a 5 percent level (up to 30 boats on the water at one time).

Overall Boating Needs Results

Potential actions to address overall boating needs in the study include:

- Implement a Boat-Launch Program Over the Term of the New License. Additional parking for boaters could be created at Yale Park in the near term by formalizing parking spaces and expanding the area to the west. A new boat launch could be made part of future campground planning, and universal access to docks should be provided if practicable and feasible.

- Implement a Boat-Ramp Extension and Improved Maintenance Program. Yale Park, Cougar Camp, and Saddle Dam boat ramps may be lengthened to function adequately at the lowest pool elevation typically observed during the recreation season (480 feet msl). The older boat launches will need to be modernized over time, with Saddle Dam given top priority. As improvements are made to older day-use sites, universal access improvements to docks should also be made, if practicable and feasible. Additional effort should be made to routinely clear debris from the end of the boat ramps, including large rocks, silt, and woody debris.

- Increase Reservoir Marine Patrol and Management Presence. The Marine Patrol should be increased over time, particularly during July and August. In the future, zoning (temporal or spatial) of various types of watercraft may be instituted if health and safety issues warrant.

7.1.4.4 Overall Swimming and Sunbathing Needs

Overall swimming and sunbathing demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs.

Swimming/Sunbathing Demand Factors

Swimming/sunbathing demand factors are summarized below.

- The average number of swimmers and sunbathers using swim areas and adjacent sandy beaches during holiday and non-holiday weekends includes: Beaver Bay (9 holiday, 14 non-holiday), Cougar Camp (2 holiday, 12 non-holiday), Cougar Park (11 holiday, 17 non-holiday), Yale Park (14 holiday, 29 non-holiday), and Saddle Dam (12 holiday, 19 non-holiday). The total average for all 5 sites is 48 visitors (holiday weekends) and 91 visitors (non-holiday weekends).

- The demand for swimming and sunbathing is increasing at 2.2 percent annually. Over a 30-year period, demand is projected to increase 110 percent.

- Like other activities, use levels are dependent upon good weather conditions; rain and wind are key factors. As a result, July and August are primary use months.

- Swimming/sunbathing is the second-most popular activity behind camping; however, it was listed by only 9 percent of visitors as their main activity, clearly making it a secondary activity.

- About 4 percent of survey respondents wanted improved beach access with more swimming areas and sandy beaches. The distance to a swimming area was important to 70 percent of the visitors.

Swimming/Sunbathing Supply Factors

Swimming/sunbathing supply factors are summarized below.

- All developed sites (except Cougar Camp) have swim areas with floating booms, sandy beaches, signs, and safety apparatus. The facilities are in good condition. No lifeguards are provided. Cougar Creek and an undeveloped cove at Cougar Camp, however, are also use areas.

- Most visitors were satisfied with their swimming/sunbathing experience; 91 percent rated it good or better.

- Swimming/sunbathing areas are open for use during the same periods of time as the larger campground or day-use facilities. No swimming/sunbathing facilities provide universal access at this time.

- Land and cove areas are constrained; however, water area within the floating boom may be varied as needed.

Swimming and Sunbathing Capacity/Suitability Factors

Swimming and sunbathing capacity/suitability factors are summarized below.

- No sites exceed capacity based on average existing use levels. The average number of swimmers and sunbathers at all sites during holiday and non-holiday weekends is 48 (holiday weekends) and 91 (non-holiday weekends). Existing average use levels during weekends only consume about 12 to 23 percent of capacity.

- At Saddle Dam, jetskis/PWC riders were observed on several occasions riding very near the floating boom that separates the swimming area while swimmers were present. This presents a potential safety hazard.

Overall Swimming/Sunbathing Needs Results

Potential actions to address overall swimming/sunbathing needs include:

- Provide a Swimming/Sunbathing Area at a New Campground, if Constructed, During the Term of the New License. Existing swimming and sunbathing area capacity is adequate for the near future; however, a swimming and sunbathing area could be incorporated into a new campground facility, if constructed.

7.1.4.5 Overall Interpretive/Environmental Education Needs

Overall interpretive/environmental education facility or program demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. Interpretive program and facility needs that were analyzed in the study area include:

- Signs and kiosks
- Viewpoints
- Nature trails
- Hydroelectric facility tours
- Staffed programs/campfire talks

Interpretive/Environmental Education Demand Factors

Interpretive/environmental education demand factors are summarized below.

- Visiting interpretive displays is very high in demand in the region (3.12 percent annual increase in demand). Other related activity demand increases are: nature

study/wildlife observation (2.67 percent), outdoor photography (2.94 percent), and sightseeing and exploring (2.53 percent).

- Approximately 4.2 million Recreation Visitor Days (RVDs) were estimated at the Monument in 1995. Monument visitation is increasing 5 to 6 percent annually.

- The Lewis River corridor offers multiple sightseeing and learning opportunities near Yale Lake. Almost half (45 percent) of all survey respondents indicated that they had plans to or have already visited other locations during their trip. Of the 45 percent, most (34 percent) of these respondents listed the Monument (including Ape Cave, Windy Ridge, Lava Canyon, etc.) as their primary destination. The GPNF was also mentioned by 15 percent of visitors as their primary destination.

- One of the goals of the Cowlitz County Comprehensive Park Plan (Cowlitz County 1994) is to promote tourism by development of viewpoints, interpretive information, and other related services.

- One of the priorities of the Skamania County Park and Recreation Comprehensive Plan (Skamania County 1991) is to enhance tourism as a replacement of lost timber industry jobs, including interpreting historic resources.

- Some of the goals of the Lewis River Valley Strategic Action Plan (Lewis River Action Committee 1995) are to increase the number of cultural events in Cougar, designate SR 503 as part of a state scenic byway loop, and create fish and elk viewing and interpretive areas near Cougar.

- Half of the visitors surveyed participated in sightseeing and 15 percent participated in nature study/photography. Participation remained fairly constant from May through August, then dropped in September.

Interpretive/Environmental Education Supply Factors

Interpretive/environmental education supply factors are summarized below.

- No interpretive facilities exist in this project area. No signs exist explaining how the hydroelectric project works and its benefits.

- To address visitor demand for nature-related education, PacifiCorp has contracted with the USFS to provide Ranger campfire talks during the summer months. These talks are currently conducted at a small open seating area located at Cougar Park, and elsewhere.

- The Monument and USFS are adept at providing interpretive/environmental education programs and services and may be best suited to meet the needs of many of the visitors in the region. WDFW and DNR are also capable of providing similar services and programs. An additional opportunity is described in Section 6.2,

suggesting that talks or slide shows could be given about cultural resources in the area.

Interpretive/Environmental Education Capacity/Suitability Factors

Space exists at all developed sites for interpretive signs or kiosks. Nature trails could be developed at some locations, such as Beaver Bay. Space for expanding the existing open seating area at Cougar Park is available.

Overall Interpretive/Environmental Education Needs Results

Potential actions to address interpretive/environmental education needs include:

- Develop Interpretive/Environmental Education Displays. Interpretive displays depicting how the hydroelectric project works and its benefits may be developed at suitable locations at the Lewis River projects.

- Provide Nature Trails. Where appropriate, self-guided nature trails at or near campgrounds should be developed. One opportunity area includes the Beaver Bay wetland.

7.1.4.6 Overall Recreational Trail-related Needs

Overall recreation trail demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. Recreational trail facility needs analyzed in the study area include:

- Non-motorized trails
- Motorized trails

Trail-related Demand Factors

Trail-related demand factors are summarized below.

- Existing undesignated trails are generally lightly used. The IP Road is lightly used by road bicyclists, mountain bikers, 4WD/ATV riders, anglers, and hikers. The Saddle Dam to Speelyai Canal trail is lightly used by smaller groups of equestrians and a few hikers and mountain bikers. At the Swift No. 2 power canal, anglers regularly use trails following the canal and foot bridges to access fishing areas. The Yale-Merwin transmission line ROW has been recommended by Clark County as a potential trail route; however, there is no known use at this time. Along Cougar Creek north of the highway is a regularly used informal angler access trail used for fishing and dispersed camping. Pedestrians walk from the town of Cougar to Cougar Park/Camp using the shoulder of the highway.

- Trail-related recreation opportunities are in high demand, with project annual increases that include: day hiking (2.73 percent), off-roading (4WD, ATV) (2.31 to

2.59 percent), bicycling (2.98 percent), mountain biking (2.61 percent), and horseback riding (1.69 percent). Over 30 years, demand for these activities is expected to increase substantially including: day hiking (150 percent), off-roading (4WD, ATV) (117 to 139 percent), bicycling (171 percent), mountain biking (140 percent), and horseback riding (77 percent). The IAC sees new trail development as a top priority.

- Surveyed visitors listed hiking/walking as their third highest (51 percent) activity, increasing in the later summer months to 68 percent. Mountain biking and road bicycling was 17 percent. Few (<4 percent) listed trail use as a main activity.

- Partial goals of the Siouxon Landscape Plan (DNR 1996) include expansion of trail opportunities (equestrian, hiking, and mountain biking); development of trail maintenance agreements and plans; meeting future recreation needs; maintaining vehicle access, but at a reduced cost; and providing hunting opportunities and access.

- Partial goals of the ILM Plan (WDFW 1995) include providing recreation opportunities (mainly hunting and fishing), providing public access, securing open space, and minimizing wildlife-recreation conflicts. According to the ILM Plan, damaging activities, such as ATV riding, snowmobiling, and horseback riding, should not be allowed in sensitive areas including caves, riparian zones, and big game wintering areas.

- The Clark County Park, Recreation, and Open Space Plan (Clark County 1994a) and the Clark County Trail and Bikeway System Plan (Clark County 1994b) indicate the need for new trail opportunities. Potential trail improvements in these plans include: (1) development of the IP Road into a non-motorized trail with 2 rest areas/toilets which would create a regional trail from La Center, Washington to the Monument, and (2) use of the existing Yale-Merwin transmission line ROW as a trail corridor.

- The Lewis River Valley Action Plan (Lewis River Action Committee 1995) identifies priorities including a new trail from the town of Cougar to Cougar Park/Camp, opportunities for day hikes from Cougar to Beaver Bay, creation of nature trails, and creation of fish and wildlife viewing areas in the Cougar area.

Trail-related Supply Factors

Trail-related supply factors are summarized below.

- No formal trails currently exist. No ADA-accessible recreation trails exist. Informal unmarked trails appear to function adequately for those who use them and know about them. Informal walking can occur at all sites and along the shoreline in most areas.

- No recreation access easement exists along the privately owned IP Road.

- PacifiCorp does not own the land along the Yale-Merwin transmission line ROW, but holds an easement for the lines only. No recreation access easement currently exists along this corridor.

- Most (96 percent) walkers/hikers surveyed were satisfied (rated good to perfect) with their walking experience. All (100 percent) mountain bikers/road bikers rated their experience as good to perfect. Many visitors went to the Monument and/or GPNF where many hiking opportunities exist. As a result, the high level of satisfaction may have resulted from experiences outside of the project area.

Trail-related Capacity/Suitability Factors

Trail-related capacity/suitability factors are summarized below.

- New trails could be developed in most areas; however, the existing ROW along SR 503 is limiting.

- Use of the IP Road for recreation is problematic. The paved surface is deteriorating and the bridge is narrow and old. A slide has partially blocked the road and no entity has removed or contained the slide. Heavy truck traffic is an occasional problem along the IP Road; however, traffic is very light except during logging activities. There is no existing recreation access easement along the IP Road. This is one of the reasons why Clark County discontinued active use of Siouxon County Park. If these obstacles could be overcome, the IP Road would be a viable trail opportunity. If not, a parallel trail upslope from the road may be considered.

- Dispersed recreation use in wildlife habitat areas is a concern; however, visitor use levels are very low when wildlife are present because of poor weather conditions. New trail development and management must be coordinated with wildlife managers.

Overall Trail-related Needs Results

Potential actions to address overall trail-related needs include:

- Investigate Potential Trail Use of the IP Road Corridor. Investigate opportunities and mechanisms to develop a non-motorized trail along the IP Road, or parallel to it upslope from the road, for use by hikers, walkers, road bicyclists, mountain bikers, anglers, and equestrians. Investigate implementation of a cooperative agreement between Clark County, PacifiCorp, DNR, and private land owners to construct, operate, and maintain the trail. Investigate ways to increase management presence along the trail route by the Clark County Sheriff's Department and/or private security contractors.

- Formalize Existing Trails and Routes and Develop a Lake Loop Trail. Consider preparing a trail plan with a goal to create a lake loop trail. This potential lake loop trail may include a segment from Cresap Bay Campground (at Lake Merwin) to

Saddle Dam, the Saddle Dam to Speelyai Canal trail, the SR 503/Lewis River Road route, and the IP Road. The plan could include a cooperative agreement between Clark County, Cowlitz County, PacifiCorp, DNR, and private land owners to construct, operate, and maintain a lake loop trail.

- Investigate Use of the Yale-Merwin Transmission Line ROW as a Trail Corridor. Investigate the potential for use of the 10.5-mile-long transmission line ROW as part of a regional recreation trail for hikers, mountain bikers, and equestrians. Investigate implementation of a cooperative agreement between Clark County, PacifiCorp, DNR, and private land owners to secure any necessary recreation access easements and to construct, operate, and maintain the trail.

7.1.4.7 Overall Fishing-related Needs

Overall fishing demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. Fishing activity and facility needs analyzed in the study area include:

- Fishery management
- Access piers and docks
- Fish cleaning facilities

Fishing Demand Factors

Fishing demand factors are summarized below.

- Fishing is increasing in demand annually at 1.91 percent for boat angling and 1.67 percent for bank angling. Over 30 years, demand will increase 90 percent for boat angling and 76 percent for bank angling. The number of fishing licenses issued in the Cowlitz and Clark County areas exceeds the state average and over half (57 percent) of visitors come from these 2 counties.

- The maximum number of boat anglers observed at one time was 40. The maximum number of bank anglers observed was 10. Average counts are less.

- Over a third (37 percent) of visitors surveyed during May to September went fishing. More visitors went fishing early in the season and late in the season as compared to the middle of the season. For 10 percent of visitors surveyed, fishing was their main activity. Most of these respondents were surveyed at Yale Park.

- Most (89 percent) anglers surveyed were satisfied with their fishing experience (rated good or better); most (84 percent) felt that landing a fish was important, and over half (53 percent) felt that proximity to another angler was important.

- Anglers used a variety of methods to catch fish: 40 percent of anglers surveyed were wading or bank fishing, 32 percent were boat and bank fishing, and 28 percent were boat fishing only (60 percent total used a boat).

Fishing Supply Factors

Fishing supply factors are summarized below.

- PacifiCorp, in cooperation with the USFS and WDFW, provides an annual fishing derby at the Swift No. 2 power canal.

- There are no designated angler access piers or docks, no ADA-accessible fishing opportunities, and no fish cleaning facilities. Fishing is prohibited from boat docks; however, 1 dock at Cougar Park is generally used for this purpose.

- Most of the reservoir shoreline and Swift No. 2 power canal is fairly accessible. Relatively few access trails have been developed by anglers since most fish are caught by boat.

- Launch wait times were generally low. Saddle Dam and Beaver Bay had longer wait times (fewer lanes).

- Yale Lake is considered a very good kokanee fishery. Three hatcheries are located in the Lewis River valley.

- Most fish caught are kokanee (73 percent), followed by rainbow trout (23 percent) and cutthroat trout (4 percent). The mean catch rate is 0.3 fish/hour. Most anglers are boat anglers. Boat anglers caught mostly (96 percent) kokanee, which are found in deeper water. Boat anglers also caught 44 percent of the cutthroat and 23 percent of the rainbow trout as well.

Fishing Capacity/Suitability Factors

Fishing capacity/suitability factors are summarized below.

- The ILM Plan (WDFW 1995) goals seek to: (1) develop an integrated plan for cooperatively managing fish on a landscape basis for the next 20 years, (2) establish acceptable biological limits for recreation opportunities consistent with aquatic populations, (3) provide fishing opportunities and access, (4) minimize recreation/ fish conflicts, and (5) protect critical habitat areas.

- Boat anglers use the entire reservoir area, but tend to concentrate in areas away from boat launches where fewer boats are located, particularly the eastern shoreline. Bank anglers have most of the 27-mile shoreline for fishing, but tend to concentrate near creeks entering the reservoir, developed recreation sites, and day-use dispersed sites.

- Most anglers (85 percent) indicated that the pool level did not affect their fishing experience. This is to be expected since the survey was conducted mostly when the pool level was high.

Overall Fishing Needs Results

Potential actions to address overall fishing needs include:

- Continue Fishery Management Programs. Good recreational fishing opportunities currently exist. To meet future demand, continued and/or expanded fishery management programs will be needed to maintain and enhance the sport fishery.

- Provide ADA-accessible Angler Access Piers. As older developed facilities are modernized or new sites are developed, construct new shoreline angler access pier facilities, if practicable and feasible, per ADA guidelines.

7.1.4.8 Overall General Open Space Activity Needs

Overall general open space activity demand, supply, and capacity/suitability factors are presented below, followed by a discussion of overall needs. General open space activities analyzed include:

- Hunting
- Wildlife/nature observation
- Photography
- Food gathering/berry picking

General Open Space Activity Demand Factors

General open space activity demand factors are summarized below.

- Open space lands surrounding Yale Lake receive relatively low levels of use because of steep topography, steep cut banks, and dense forest cover. These lands are owned and managed by PacifiCorp, DNR, and other private owners.

- According to the IAC, annual increases in demand for related activities include: nature study/wildlife observation (2.67 percent), outdoor photography (2.94 percent), sightseeing and exploring (2.53 percent), big game hunting (1.53 percent), bow hunting (1.09 percent), and bird hunting (0.88 percent). Over 30 years, demand is projected to increase the following amounts: nature study/wildlife observation (145 percent), outdoor photography (168 percent), sightseeing and exploring (134 percent), big game hunting (68 percent), bow hunting (45 percent), and bird hunting (35 percent).

General Open Space Activity Supply Factors

- Most of the land in the study area is open space used for wildlife habitat, timber production, and hydropower production. Additional details are provided in the Yale Land Use Report (Section 8.0). Hunting is allowed on some public lands and private lands, including PacifiCorp lands, with permission.

General Open Space Activity Capacity/Suitability Factors

General open space activity capacity/suitability factors are summarized below.

- One of the goals of the Siouxon Landscape Plan (DNR 1996) is to provide quality hunting opportunities and continued public access.

- Objectives of the ILM Plan (WDFW 1995) include: (1) development of an integrated plan to cooperatively manage wildlife on a landscape basis for the next 20 years, (2) establishment of acceptable biological limits for recreation opportunities consistent with wildlife populations, (3) provision for hunting and fishing opportunities and access, (4) minimizing recreation/wildlife conflicts, and (5) protecting critical habitat areas as open space.

Overall General Open Space Activity Needs Results

Overall open space activity needs include:

- Maintain Adequate Open Space Lands. An adequate supply of land for open space-related recreation activities appears to exist. As the area develops, the quantity and quality of open space likely will diminish. Plan for long-term retention of open space to meet future physical and visual recreation open space needs. Focus and/or cluster development in areas that are highly suitable for recreation development.

7.1.5 Agency Plans and Programs that Affect the Project

Recreation resource management in the Yale Lake area is provided by a mix of federal, state, and county jurisdiction. The level of formal recreation resource planning varies by agency and location. The following sections summarize recreation resource management plans and programs for lands in the study area.

7.1.5.1 Federal Recreation Plans and Programs

The region surrounding the Yale Project contains 3 highly significant recreation resources in the state that are managed by the federal government—the GPNF, the Monument, and the Columbia River Gorge National Scenic Area (CRGNSA). In addition, there are several wilderness areas farther east of the project area (e.g., Mount Adams and Indian Heaven), as well as Mount Rainier National Park to the north. The most significant of these recreation resources to the project area are discussed below.

Gifford Pinchot National Forest

The GPNF, managed by the USFS, stretches along the western slopes of the Cascade Mountains from the Columbia River on the south to Mount Rainier National Park on the north. Included among the 1.37 million-acre forest are Mount St. Helens and a portion of Mount Adams. PacifiCorp's 3 Lewis River projects occur just south and west of the national forest boundary, in the vicinity of the forest's southwest flank. The headwaters

of the Lewis River flow from within the national forest. Recreation opportunities in the GPNF are described in the FTR for Recreation Resources (PacifiCorp 1998d).

The USFS manages the national forest according to the Land and Resource Management Plan (LRMP) for the GPNF (USFS 1990, with updates). The LRMP establishes forest-wide goals and objectives; standards and guidelines applying to future activities; management direction; and monitoring and evaluation requirements for the multiple uses of the forest, including recreation. None of the management considerations relate directly to the Yale Project, as PacifiCorp's project lands are entirely outside of the national forest boundary. Management of the Monument, which is within the GPNF, is addressed under a separate management plan, as discussed below.

Mount St. Helens National Volcanic Monument

The 1980 eruption of Mount St. Helens created a recreation resource of international significance directly northeast of the Yale Project. The eruption devastated a 235 square mile area and produced one of the most spectacular landmarks in the nation. The volcano blew to the north, sparing the Yale Lake area. However, some mud flows entered the Lewis River basin. The project vicinity, however, provides access to the southern flank of the volcano via SR 503, Lewis River Road, and a series of USFS roads; this portion of the Monument is the main access for climbers, and includes a number of sightseeing opportunities such as Ape Cave and Lava Canyon; access to other areas of the Monument, including the Windy Ridge Viewpoint, are provided by more distant but linked routes from the Yale Project vicinity (the Mount St. Helens "loop").

In August 1982, Congress created the 110,330-acre Monument within lands previously designated part of the GPNF plus other lands. PacifiCorp owns approximately 300 acres within the Monument boundary which are located in 2 parcels north of Beaver Bay Campground and the Swift No. 2 power canal. The purpose of the Monument designation is to protect geologic, ecologic, and cultural resources for scientific study and research, while providing for compatible recreation and interpretation. Recreation opportunities in the Monument are described in the FTR for Recreation Resources (PacifiCorp 1998d). None of the management considerations relate directly to the Yale Project, as PacifiCorp's project lands are outside of the Monument, except for these 300 acres which are planned to be transferred to the Monument in the future (not yet transferred as of February 1999). However, the Management Plan for the Monument indirectly impacts the Yale Project by stating that the camping needs of Monument visitors will be addressed by private sector recreation providers, such as those in the Lewis River Valley including PacifiCorp. Based on survey responses at Yale Lake, the primary destinations of many campers at Yale Lake campgrounds were locations within the GPNF or Monument such as Ape Cave or Lava Canyon. This subject will be further investigated during the ongoing Lewis River watershed studies approach being conducted by PacifiCorp and Cowlitz County PUD. Project-related impacts to surrounding areas, such as the Monument and GPNF, as well as Monument/GPNF visitor impacts on the 4 hydroelectric projects, will be a continuing topic of these studies.

7.1.5.2 State Recreation Plans and Programs

At the state level, recreation resources in Washington are managed primarily by the Washington State Parks and Recreation Commission (State Parks). Assisting State Parks and others, the Washington Interagency Committee for Outdoor Recreation (IAC) is a state agency that services the public through 2 major areas of responsibility: (1) statewide planning and policy research and recommendations, including maintaining the Statewide Comprehensive Outdoor Recreation Planning (SCORP) program; and (2) providing grants and technical assistance to other public agencies for recreation development. Other state agencies that participate in recreation management include the DNR, and to a lesser degree the WDFW, WDOE, and Department of Transportation. State agencies provide 75 percent of the dedicated recreation acreage statewide (IAC 1990).

Washington Interagency Committee for Outdoor Recreation

In 1990, the IAC published data concerning public participation in and growth of different outdoor activities. The data were taken from a study conducted by IAC and the Pacific Northwest Regional Recreation Committee (PNRRC). The study, with results presented in *Washington Outdoors: Assessment and Policy Plan 1990-1995* (IAC 1990), examined outdoor recreation in 4 geographic regions around the state; recreation use, supply, demand, visitor preferences, and needs were identified. Demand data are presented primarily by region (of which there are 4), whereas supply data are presented by the smaller planning districts (of which there are 13).

The Yale Project is located in PNRRC Region 2 and SCORP Planning District 6. PNRRC Region 2 is a 12-county area that covers primarily non-coastal Western Washington and straddles the major portion of the Cascade Mountain range. The natural resources in PNRRC Region 2 on which outdoor recreation demand is based include adjacent mountainous forest lands, as well as both Mt. Rainier National Park and the Monument, both managed by the federal government, as well as the Columbia River Gorge National Scenic Area (CRGNSA), also managed by the federal government.

In 1995, the IAC published an update of its 1990 SCORP studies - the *Assessment and Policy Plan 1995-2001* (IAC 1995). In this update, the IAC stated that data presented in the 1990 SCORP documents remain up to date, and that projections to the year 2000 remain accurate. Therefore, the IAC did not conduct new surveys to develop supply and demand data.

Washington State Department of Natural Resources

Although the agency is the trustee of state timber and aquatic lands, which are managed to generate revenue from timber harvest for public education, the DNR also manages some state recreation resources. Secondarily, DNR manages public use of its lands and is a recreation provider. The DNR manages approximately 5 million acres of public trust lands—3 million acres of uplands and 2 million acres of aquatic lands. DNR-managed lands offering recreation resources in the vicinity of Yale Lake include both Merrill Lake and the Siouxon Landscape Area (Figure 7.1-2).

Merrill Lake - Merrill Lake, approximately 6 miles north of Cougar, is a 300-acre lake that supports a trout fishery (fly-fishing only). Recreation facilities include 11 camp and picnic sites (no fee), 2 picnic-only sites, a toilet, and a boat launch. The campground, which was recently repaired and reopened due to flood damage, is open April through October.

Siouxon Lands - The Siouxon Landscape Area is a 32,000-acre landscape bounded on the north by Swift Reservoir and on the west by Yale Lake. DNR's management goal is to enhance public recreational opportunities without impacting trust obligations, which include timber management and protection of aquatic systems, wildlife habitat (e.g., for elk and bald eagle), and historical resources. Major streams include the lower portion of the mainstem of Siouxon Creek, the North Fork Siouxon Creek, Ole Creek, and Rain Creek.

Historically, hunting and fishing have been the primary recreation activities in the Siouxon Landscape Area; however, other types of trail-related recreation use have increased dramatically in the last several years, including horseback riding and hiking (DNR 1996).

Access to the Siouxon Landscape Area is primarily by boat and logging roads. Boat access is possible from both Yale Lake and Swift Reservoir; vehicle access is possible from the south by private logging roads and SR 503. DNR holds an easement along the IP Road, which parallels the eastern shoreline of Yale Lake, for timber/fiber production access, but not for recreation use. Consequently, the IP Road may not be suitable for recreational use due to occasional truck traffic and bridge structural considerations at Siouxon Creek. Currently, the public uses the IP Road to gain unauthorized vehicle access to the eastern shoreline of Yale Lake. Locked gates generally block public access to the road; however, public use does occur when the gates are not operational or are left open. In addition, public access to the IP Road may be gained from ungated dirt roads on DNR timber property east of Yale Lake.

DNR has prepared a master plan for the Siouxon Landscape Area. Public meetings on the Siouxon Landscape Plan (DNR 1996) revealed greater recreation use of the lands than anticipated by DNR staff and an interest in increased opportunities for recreational use in the Siouxon. Equestrian groups in particular have been very active and are helping maintain trails. This is positive since DNR must rely upon volunteers to meet its goals. In response, DNR formed a Recreation Subgroup for the Siouxon. The group's goals are to work with the GPNF and others to expand trail opportunities, to develop trail maintenance agreements, and to meet future recreation needs. PacifiCorp is a member of this group.

As stated in the Siouxon Landscape Plan, DNR has the following plans for the Siouxon Landscape Area: (1) maintain vehicular access to the Siouxon, in cooperation with other public agencies; (2) reduce human pressures on wildlife populations; (3) provide quality hunting; (4) protect water quality; and (5) reduce road maintenance cost. Recreation

opportunities, such as hunting, fishing, horseback riding, and hiking, will continue. In addition, DNR plans to develop a long-term trail maintenance plan.

Washington Department of Fish and Wildlife

WDFW addressed environmental and habitat concerns within the watershed involving existing and future recreation uses in a pilot project called the Integrated Landscape Management (ILM) Plan for the Lewis and Kalama River Watersheds (WDFW 1995). The key objectives were to develop an integrated plan for managing fish and wildlife in the watershed on a landscape basis over the next 20 years. The plan is intended to be a cooperative management plan between landowners, the public, and fish and wildlife managers. As such, it was developed with the input of a Citizen's Advisory Group that included PacifiCorp.

Specific recreation goals in the ILM plan include:

- Provide for significant recreational opportunities (e.g., hunting and fishing) through artificial propagation programs.
- Secure, maintain, and enhance lands and sites for public wildlife and fishing recreational access and opportunity.
- Achieve public involvement from citizens interested in Washington's wildlife.

The ILM focuses its recreation considerations on biological resources, particularly fish and wildlife species important for recreation (e.g., elk, deer, kokanee, steelhead, and coho). A key ILM concept is to establish acceptable biological limits for recreational opportunities consistent with naturally sustainable aquatic and marine animal populations, and provide for significant recreational opportunities through artificial propagation programs. The plan notes the importance of steelhead, chinook, and coho salmon in the Lewis River in general, and kokanee for Yale Lake in particular. The plan also identifies the anticipated degradation of elk winter range due to human encroachment near the town of Cougar.

The Recreation Plan identified in the ILM focuses on the need to minimize and manage potential wildlife-recreation conflicts in the watershed, including Yale Lake. Critical habitat areas identified in the plan should be protected from all development, including recreation. Key habitats include caves, wintering areas for elk below 1,000 feet msl, and riparian areas. Other important habitats, such as cliffs and meadows, need to have recreational events carefully managed to avoid confrontations with wildlife during critical stages. Damaging activities such as riding ATVs, snowmobiles, and horses should not be allowed in these habitats (WDFW 1995).

7.1.5.3 County Recreation Plans and Programs

PacifiCorp's Lewis River hydroelectric projects (i.e., Merwin, Yale, and Swift) are located within 3 Washington counties—Clark, Cowlitz, and Skamania—all of which

have some form of designated plans that identify public recreation resources in the area and plans for future facilities. Existing recreation resource opportunities in each of these counties are summarized below, along with a description of each county's management plan(s) addressing parks, open space, and recreation.

Clark County

The south or eastern shorelines of Yale Lake are located in Clark County, a 630-square mile county bordered on the south by the Columbia River and on the north by the Lewis River. The Yale Project is in the northeast corner of the county. The 1990 county population was 238,058 (U.S. Bureau of the Census 1992), with the largest incorporated city (Vancouver, Washington) contributing a population of approximately 46,380.

Clark County owns and manages approximately 3,349 acres of park and open space land, including 10 regional parks (1,797 acres), 3 special facilities (162 acres), and 1,390 acres of conservation and greenway systems (Clark County 1994b). In the project area, Clark County owns an undeveloped park site on the eastern shoreline of Yale Lake adjacent to DNR and PacifiCorp property in an area called the "Siouxon Flats" (Figure 7.1-3). The site has approximately 0.5 mile of shoreline and is accessed by the privately owned IP Road or by boat. No utilities are currently available to the flats area. The County constructed 8 boat-in campsites at this location in the 1960s. However, because of difficulties maintaining the remote site, an economic recession, and uncertainty surrounding continued road access for park maintenance use, the County removed the facilities in the early 1980s. Clark County is considering re-establishing a boat-in campground and day-use picnic area at this location sometime in the future, possibly in conjunction with DNR and/or PacifiCorp.

The County also envisions a multi-use nonmotorized trail along the eastern shoreline of Yale Lake, with 2 day-use sites and toilet facilities. These improvements are not in the County's 6-year Capital Facilities Plan, but are included in the Clark County Trails & Bikeway System Plan (Clark County 1992). The County's concept is to convert the existing paved road to a trail from Yale Dam north to the Cowlitz County line. The long-range objective would be to connect La Center on the west to Yale Dam on the east and north to the Monument. The County also identifies the Yale transmission line ROW corridor as a possible trail route extending along the south side of Lake Merwin. The County's plan identifies coordination with PacifiCorp as instrumental to this process.

Cowlitz County

The entire north and western shoreline of Yale Lake is located in Cowlitz County. The 1,146 square mile county is bordered on its southeastern edge by the Lewis River, on its southwestern edge by the Columbia River, and on the east edge by the Cascade Mountain range (including a portion of the Monument and the GPNF). The 1990 county population was 81,806 (U.S. Bureau of the Census 1992).

As documented in the 1994 Cowlitz County Comprehensive Park Plan (Cowlitz County 1994), county recreation supply and management focus on 3 separate areas in the county:

(1) sites along the Columbia River; (2) along the SR 504 corridor, which extends to the northwestern flank of Mount St. Helens; and (3) along the I-5 corridor. All high and moderate priority recreation sites occur in these 3 areas, which do not include the Lewis River corridor. The County does not own or manage significant recreation resources (i.e., parkland or open space) along the Lewis River, nor does the plan list any proposed county sites or priorities in the Lewis River corridor. The plan does mention private industry (such as PacifiCorp and others in the Cougar area) as providers of recreation opportunities along the Lewis River corridor. All of PacifiCorp's developed recreation facilities associated with the Merwin and Yale projects are located in Cowlitz County. The plan identifies Saddle Dam Campground, Yale Park, Cougar Park, Beaver Bay Campground, Merwin Park, Speelyai Bay, and Cresap Bay Campground as "public" parks provided by private industry. According to the plan, "Merwin, Yale, and Swift reservoirs and parks operated by Pacific Power & Light Company (PP&L, a PacifiCorp division) are providing extensive and valuable recreation facilities to the Southwest Washington region. Cowlitz County should continue to work with PP&L to meet community needs" (Cowlitz County 1994).

In addition to providing an inventory of recreation resources in the county, the plan identifies the following long-range goals and objectives:

- Enhance and supplement Cowlitz County's quality of life by providing a variety of lands for open space, recreation facilities, shoreline access, and to ensure a land base for future public needs.

- Continue high quality maintenance and operation of existing facilities, pursuing cost effectiveness and durability in new facility construction to ensure maintenance costs are kept as low as possible.

- Promote tourism by development of viewpoints, picnic sites, interpretive information, and other services to enhance a visitor's experience.

- Create "land bank" sites for future generations to utilize for various programs to benefit the public health, safety, and welfare; and provide for open space, shoreline access, park, and recreation sites (Cowlitz County 1994).

Skamania County

Skamania County covers 1,672 square miles and is sparsely populated with a 1990 population of 7,975 (U.S. Bureau of the Census 1992). The Yale Project is just west of Skamania County; the only portion of the study area located within the county is the Swift No. 2 bypass reach. All of Swift Reservoir is within the county. Portions of 2 federally managed recreation resources occur within Skamania County—the CRGNSA and the Monument. In addition, portions of the GPNF are located in Skamania County.

Key recreation-related priorities identified in Skamania County's Parks and Recreation Comprehensive Plan (Skamania County 1991) include waterfront facilities, neighborhood and community parks, sports fields, off-road vehicle use, historical resources, scenic

areas, open space, specific programs, special use areas, and sailboarding. Skamania County is also diversifying its local economy by placing greater emphasis on the recreation industry as a means to replace jobs lost in the declining timber industry. As with Cowlitz County, Skamania County's plan focuses management attention in areas outside of the Lewis River corridor—in particular the CRGNSA and the Mount St. Helens area. Recreation sites identified as significant to local populations are all located along the gorge, and no capital improvement needs identified for the county are in areas near PacifiCorp facilities.

Existing recreation facilities in Skamania County in the vicinity of Swift Reservoir include Swift Campground (20 acres, owned by DNR and leased to and operated by PacifiCorp), North Woods Track (88 acres), Eagle Cliff Park (1 acre, owned and operated by PacifiCorp), and Pine Creek Center. In addition, the eastern portion of the Monument is located in Skamania County; recreation sites in the Skamania County portion of the Monument include Ape Cave, Lava Canyon, the Climbers' Bivouac, Windy Ridge, Spirit Lake, and Ryan Lake.

7.1.5.4 Other Recreation Plans and Programs

In 1995, interested residents and business leaders of the Lewis River Valley in Cowlitz County joined together to prepare a Strategic Action Plan specifically for the Lewis River corridor (Lewis River Action Committee 1995). The working vision statement for the Action Plan is stated as follows:

> "The Lewis River Valley is a community which offers its diverse residents a rural lifestyle, open space, wildlife habitat, forests, recreation, public services and increased revenues from tourism through creative land use planning and respect for private property."

The Action Plan includes an element specifically addressing recreation resources in the Lewis River corridor, with a goal statement to "improve recreational access for local residents with particular focus on youth activities and cultural events, and encourage recreation for visitors such as trails, tour routes and natural experiences that will have low impact on community and environmental resources." In its Action Plan, the committee identified the following priority recreation projects in the Yale Project study area:

- Designating SR 503 (Lewis River Road) as part of a 2- or 3-mountain scenic loop with Mount St. Helens, Mount Rainier, and (perhaps) Mount Adams. SR 503 was designated as a State Scenic and Recreation Route Highway in 1993.

- Creating hiking, nature, and fitness trails throughout the Lewis River corridor, including along lakes and within USFS lands - A potential trail linking the town of Cougar to Cougar Park was identified as a priority, as well as organized day hikes from Cougar Park to Beaver Bay.

- Creating fish and elk viewing/interpretive education areas in the Cougar area (note that Cougar Creek is a sensitive habitat area to be protected).

- Expand campground facilities - The Action Plan calls for an evaluation of opportunities and resources to expand local area campgrounds, including potential public/private partnerships. It identifies a need for group campgrounds to serve educational users.

- Expand youth activities - The Action Plan calls for expanding summer recreation programs for youth, including hiking opportunities.

These priority projects were examined as part of the recreation needs analysis (Section 7.1.4) and in proposed enhancement measures described in Section 7.2.

7.1.6 Existing Measures Implemented by PacifiCorp

PacifiCorp has been a leader in providing public recreation opportunities in the Upper Lewis River Valley since the 1950s and 1960s. Existing PacifiCorp recreation facilities and services have been provided voluntarily. No recreation license article has existed at the projects until the Merwin Project was relicensed in the 1980s. Its 3 reservoirs have provided countless hours of public water-based recreation, shoreline camping, swimming and sunbathing, picnicking, hiking, boating, and fishing. Below is a summary of PacifiCorp recreation facilities and services which have met the recreation needs of visitors for almost 40 years.

PacifiCorp owns and operates 5 developed recreation facilities on Yale Lake: Saddle Dam Campground, Yale Park, Cougar Park, Cougar Campground, and Beaver Bay Campground. These facilities are fully described in previous sections of this report.

As part of its recreation management program, PacifiCorp voluntarily provides a number of important public services at Yale Lake. These include:

- Reservation System - PacifiCorp offers the public a partial reservation system including all campsites at Cougar Camp during Memorial Day weekend and all group sites during the year.

- Security Patrols - PacifiCorp provides private security patrols at all of its developed facilities through a private security company.

- Camp Hosts - PacifiCorp provides on-site camp hosts at all of its campgrounds to answer visitor questions, help maintain quiet hours, and perform maintenance as needed.

- Marine Patrols - PacifiCorp provides Marine Patrols at Yale Lake during busy summer weekends through services provided by the Clark County Sheriff's Department

- PacifiCorp Patrols - PacifiCorp staff periodically patrol the reservoirs by boat to remove floating logs and other hazards and to remove trash and other debris.

- Campfire Talks - Through the service of USFS staff, PacifiCorp provides campfire talks at campgrounds.

- Fishing Derby - An annual fishing derby for disabled recreationists is held at the Swift No. 2 power canal. The power canal is stocked with fish for the event. The event is sponsored by the USFS during National Fishing Week. WDFW stocks the power canal with fish from PacifiCorp's hatchery and PacifiCorp provides portable toilets for the event. Further discussion of fishing and PacifiCorp measures is found in the FTR for Aquatic Resources (PacifiCorp 1998a), and Section 4.1.8 of this License Application.

- Hunting Use - In conjunction with PacifiCorp's wildlife management program, portions of PacifiCorp land are used for hunting big game, primarily deer and elk, as well as waterfowl.

- Recreation Pool Level - PacifiCorp strives to maintain a "recreation pool level" generally between Memorial Day and Labor Day weekend when the vast majority of visitors are present. The Yale Park boat launch at 470 feet msl is generally open to the public year round.

7.2 PROPOSED ENHANCEMENT MEASURES

This section describes measures proposed by PacifiCorp to protect and enhance existing recreation resources and to help meet the recreation needs of the public at the Yale Project. PacifiCorp currently provides a range of public recreation facilities and access opportunities along the Lewis River including 5 recreation areas on Yale Lake, 3 areas on Lake Merwin, and 2 on Swift Reservoir. Other recreation providers in the Lewis River basin, including the GPNF, Monument, DNR, Clark County, and other private entities, also provide recreation facilities and opportunities.

PacifiCorp and Cowlitz County PUD have initiated the Lewis River watershed studies approach to relicensing the 4 hydroelectric projects in the Lewis River basin. This process will result in a number of recreation resource protection and enhancement measures for all 4 of the projects. These cumulative measures, however, will not be defined and initiated until the watershed studies have been completed and a comprehensive settlement agreement for all 4 projects has been reached. In the interim timeframe, PacifiCorp proposes to implement a number of recreation measures to help meet existing needs at Yale Lake. PacifiCorp believes that many of the broader recreation needs identified for Yale Lake, such as where to expand recreation facilities, should not be addressed until the results of the watershed studies are complete and further agency consultation has occurred. These interim recreation resource measures proposed by PacifiCorp for the Yale Project are presented in Table 7.2-1.

Other recreation needs are identified in Section 7.1.4. PacifiCorp will consider these enhancement measures during future agency and tribal consultation. Measures would be initiated following completion of the watershed studies.

Table 7.2-1. Proposed recreation resource measures for the Yale Hydroelectric Project.

Resource Area	Recreation Needs	Proposed Measures	Timeframe
Camping	Meet existing needs for developed campgrounds in the project area	At Beaver Bay Campground, PacifiCorp will repair the existing playground equipment (swings) and repair campsite picnic tables and other facilities as needed.	2001
		At Saddle Dam Campground, PacifiCorp will repair campsite picnic tables if camping is continued here.	2001
	Meet future needs for developed campgrounds in the project area	At Beaver Bay Campground, PacifiCorp will renovate or replace older facilities and make them ADA accessible.	2001-2010
		At Saddle Dam Campground, PacifiCorp will prepare plans to renovate or reuse the facility (either converting it to a group camp or a day-use parking area).	2001-2010
	Meet existing needs for developed group camps in the project area	At the Beaver Bay Campground and Cougar Park group camps, PacifiCorp will re-gravel the group camp sites and roads and apply dust abatement to roads.	2001
	Meet future need for boat-in dispersed shoreline camping	In consultation with DNR and Clark County, PacifiCorp will develop 10 new developed boat-in campsites (renovate existing disturbed areas if feasible).	2005-2010
		PacifiCorp will increase the reservoir Marine Patrol as needed.	1999-2010
	Meet future overall camping program needs	PacifiCorp will implement a partial campsite reservation system (approximately 25% to 50% of the individual sites) and monitor its use and effectiveness as needed.	1999-2010
		PacifiCorp will provide universal access improvements as existing older camping facilities are renovated or replaced.	2001-2010
Day-Use and Boating	Meet existing developed day-use and boat launch needs	At Cougar Camp, PacifiCorp will evaluate the potential of lengthening the existing boat ramp, and will extend it if feasible; increase maintenance of the existing boat launch site; and regravel the existing launch parking area and road access.	2001-2005

Table 7.2-1. Proposed recreation resource measures for the Yale Hydroelectric Project (continued).

Resource Area	Recreation Needs	Proposed Measures	Timeframe
Day Use and Boating (continued)	Meet existing developed day-use and boat launch needs (continued)	At Yale Park, PacifiCorp will lengthen the existing boat ramp, if feasible, increase boat launch maintenance during low pool, formalize the parking area to improve parking efficiency, and expand the parking area to the west into the existing grass area (which receives little use). At Saddle Dam, PacifiCorp will renovate the existing boat launch by lengthening the existing boat ramp, removing the drop off at the end of the boat ramp, replacing the existing dock, and repairing the existing entry road.	2001-2005 2001
	Meet future developed day-use and boat launch needs	At Beaver Bay, PacifiCorp will replace the existing boat dock. At Yale Park, PacifiCorp will replace the existing boat docks.	2005-2010 2001-2005
	Meet overall future day-use area program needs	PacifiCorp will provide universal access improvements as older day-use facilities are renovated or replaced.	2005-2010
Interpretation, Trail, and General Open Space Use	Meet future interpretive, trail, and general open space activity needs	PacifiCorp will construct a self-guided nature trail at the Beaver Bay wetland area and will provide interpretive signs at this location; an informational and interpretive sign at Cougar Creek at the existing trail bridge; and an interpretive sign at Saddle Dam describing the wildlife/forestry management activities in the area.	2001-2005
Operations & Maintenance	Meet existing operations and maintenance needs	PacifiCorp will continue to operate and maintain the 5 existing developed recreation facilities at Yale Lake to meet existing needs as required.	1999-2010

7.3 AGENCY AND TRIBAL CONSULTATION

PacifiCorp has consulted with a number of resource agencies and tribes including: Yakama Indian Nation, Cowlitz Tribe, National Park Service (NPS), GPNF, Monument, USFWS, DNR, IAC, WDFW, State Parks, WDOE, Cowlitz County Fire District #7, Cowlitz County Park and Recreation Department, Clark County Parks and Recreation Division - Department of Public Works, Skamania County Parks and Recreation, Port District of Woodland, American Rivers, and City of Woodland - Department of Public Works. Issues raised by the resource agencies and tribes and PacifiCorp's responses are summarized below. Copies of letters are provided in Appendix 1.3-1.

7.3.1 Stage 1 and Stage 2 Consultation Prior to the Draft License Application

7.3.1.1 Trail and Interpretive Opportunities

Several agencies (NPS, GPNF, Monument, IAC, DNR, WDOE, and Clark County) indicated that trails are a priority to meet the recreation needs of the public. The NPS, in particular, indicated that a regional, multi-county trails study would be desirable, and that studies should include trail needs and demand, trail linkages (including those outside of the project boundary), type of trails needed, and regional trail issues. The IAC highly recommended that a Yale Lake shoreline trail and a corridor trail system be established in the Lewis River basin. In response to the FTR for Recreation Resources (PacifiCorp 1998d), the IAC suggested that potential use of the IP Road along the eastern shoreline of Yale Lake is not a limiting factor to an eastern shoreline trail and that an up-slope parallel trail corridor should also be considered. The IAC further suggested that PacifiCorp support the development of trail linkages near the project, including funding an extension to the Lewis River Trail and the Siouxon Creek Trail. Clark County also supports a trail system that is identified in the Clark County Comprehensive Growth Management Plan and its component plans (Clark County 1994a and 1994b). The County plans identify a regional trail corridor along the eastern shoreline of Yale Lake and 2 day-use rest stops, as well as potential trail use of the Yale-Merwin transmission line ROW.

PacifiCorp has assessed the needs for trails and trail linkages for the area surrounding Yale Lake (within the 1/2 mile study area, see Figure 7.1-1). In Section 7.1.4, a number of trail-related opportunities have been identified. At this time, PacifiCorp proposes to construct a self-guided nature trail at the Beaver Bay wetland and interpretive/ informational signs at the Cougar Creek foot bridge and Beaver Bay wetland. Other trail corridors or segments that have been identified will be addressed during the ongoing watershed studies. PacifiCorp anticipates participating in the development of a trail system, but further study is needed to more clearly define feasible and appropriate trail connections in the basin.

7.3.1.2 Enhancement of Recreation Through Land Acquisitions

The NPS suggested the establishment of a land conservancy/trust fund and the identification of potential land acquisition. At this time, PacifiCorp is interested in the management of lands that are currently owned or controlled by the company. In Section 7.1.3, adequate PacifiCorp land suitable for recreation development was identified to meet future needs through the term of the new license. As a result, no land acquisition is needed to meet future project-related recreation needs at the Yale Project. Furthermore, a significant amount of GPNF, Monument, and DNR lands surround the Yale Project which are currently available for public use.

7.3.1.3 Recreation Needs Assessment

The NPS identified the need for a thorough recreation needs assessment. During 1996-1997, PacifiCorp conducted a number of detailed studies, including a recreation visitor survey. These data were used to develop supply, demand, capacity and suitability, and

needs analyses for the study area. The results of these studies are reported in the FTR for Recreation Resources (PacifiCorp 1998d) and in this License Application (Sections 7.1.1 to 7.1.4).

7.3.1.4 Lewis River Watershed Studies Approach - Recreation Resources

The Monument, GPNF, WDOE, WDFW, and others support a watershed studies approach to address cumulative recreation issues in the basin. They indicated that the watershed studies approach should include study of the potential cumulative effects of project-related dispersed recreation on federal and state lands. The Monument and GPNF were also interested in identifying potential social and/or economic impacts of recreation development on the local communities near the hydroelectric projects. Recreation Resource Study Plans have been prepared for the watershed studies and have been reviewed by the agencies and tribes. Some of the recreation surveys were initiated by PacifiCorp in 1998. Others are continuing in 1999 and 2000. These issues will be addressed during the watershed studies approach, such as potential project-related impacts to off-site locations including Merrill Lake, the Kalama Horse Camp area, Blue Lake trailhead, upstream of Swift Reservoir, downstream of Lake Merwin, and the Canyon Creek area. At the same time, the impact of Monument and GPNF visitors on project facilities will also be assessed.

7.3.1.5 Additional Recreation User Fees

Written comments were received from Cowlitz County Fire District #7 indicating that the cost of providing emergency services for visitors to the project's recreation sites is significant. The District suggests that a small user fee be collected from each visitor to the project area to defray the cost of District equipment, supplies, and staffing. The existing level of services of this type could be enhanced if additional funding were provided. PacifiCorp believes that this issue is important to all 4 hydroelectric projects in the basin. Recreation Resource Study Plans have been prepared for the watershed studies approach and reviewed by the agencies and tribes. This scoping issue will be addressed during the watershed studies approach.

7.3.1.6 Future Campgrounds in the Monument/GPNF

In response to the FTR for Recreation Resources (PacifiCorp 1998d), the Monument commented that there would be no new USFS-managed campgrounds developed on the south side of the Monument. The Monument will rely upon the private sector to meet all future developed camping needs. The Monument has no plans to develop any new campgrounds in the watershed (Comprehensive Management Plan for Mount St. Helens National Volcanic Monument [USFS 1985]). The GPNF has not commented on the potential for new campgrounds within GPNF-managed lands.

PacifiCorp believes that a portion of the visitors camping at its facilities are there because of the attraction of the Monument or GPNF. About 1 out of 5 campers surveyed at Yale Lake in 1996-1997 listed the Monument or GPNF as their primary destination, not the reservoir. As a result, a portion of the identified camping needs should be addressed by

the Monument or GPNF in the future. At the same time, the GPNF and Monument have indicated that they believe that dispersed recreation use related to the project may be affecting federal lands surrounding the 4 hydroelectric projects (also see Section 7.3.1.4 above). As a result of these 2 issues, a more thorough examination of cumulative visitor use in the Lewis River watershed and a portion of the Kalama River watershed is underway. Recreation Resource Study Plans have been prepared for the watershed studies approach and were reviewed by the agencies and tribes. PacifiCorp is conducting recreation surveys to address these inter-related issues, to be followed by agency consultation. These scoping issues will be addressed in the watershed studies approach.

7.3.1.7 Compliance with the Americans with Disabilities Act (ADA)

The IAC pointed out that ADA is not an advisory, but a legal requirement. PacifiCorp clearly understands this, having recently conducted ADA-related studies and spent over $1 million replacing or upgrading restrooms and showers and making other accessibility improvements at its Yale Lake facilities. PacifiCorp believes that it is currently in compliance with ADA. However, in Section 7.2 of the License Application, additional ADA-related measures are proposed by PacifiCorp as older facilities are upgraded or replaced or as new designs are prepared for older recreation sites. As new federal Access Board and/or ADAAG requirements are adopted in 1999 and 2000 or beyond, PacifiCorp will continue to upgrade its recreation facilities to meet all legal requirements.

7.3.1.8 Recreation Demand Study

WDFW commented that the study area for the Yale Lake regional demand analysis is too large to account for subtle differences unique to the Yale project area. PacifiCorp consulted with the Monument, Clark County, and IAC and believes that the demand analysis included in the FTR for Recreation Resources (PacifiCorp 1998d) accurately reflects recreation regional demand. However, this subject will again be addressed in the ongoing watershed studies approach. Additional new information will be added as necessary.

7.3.1.9 Recreation Use in the Swift No. 2 Bypass Reach

WDOE and WDFW commented that recreation use in the Swift No. 2 bypass reach should be addressed. Specifically, how can whitewater boating, bank fishing, and dispersed use be accommodated or even expanded in the dewatered reach of the river, if at all. What is the recreational potential of the abandoned river channel? What are the cumulative effects?

PacifiCorp commented previously that the Swift No. 2 bypass reach is not part of the Yale Project. As a result, this issue is deferred until the Swift No. 1 and 2 projects are relicensed during the watershed studies approach. During the Yale studies, some recreation counts were done in this area and a few dispersed campsites were identified. Recreation Resource Study Plans have been prepared for the watershed studies approach and were reviewed by the agencies and tribes. A site visit was made to the bypass reach in 1998 by PacifiCorp, WDOE, and WDFW staff. During that site visit, the recreational

opportunities in the bypass reach appeared minimal and may be infeasible. PacifiCorp anticipates further addressing potential recreation use in the bypass reach during 1999-2000. As a result, this issue will be addressed in the watershed studies approach. It should be recognized, however, that PacifiCorp and Cowlitz County PUD have significant safety and liability concerns in this reach of the river. Further analysis and agency consultation are needed to determine if recreation instream flow studies are warranted.

7.3.1.10 Mitigating for Lost Riverine Recreation Opportunities

WDOE commented that PacifiCorp should conduct studies and mitigate for lost riverine recreation opportunities as a result of inundation of the Lewis River by the hydroelectric projects. Based on FERC requirements and past rulings on pre-project condition issues, PacifiCorp believes that it has no obligation to mitigate for past project impacts, and no measures will be proposed during relicensing.

Recreation Resource Study Plans have been prepared for the watershed studies approach and were reviewed by the agencies and tribes. PacifiCorp is conducting recreation surveys that will address flow-related issues below Merwin Dam at several boat launch/public access sites. In addition, river-related recreation information will be collected in the Swift No. 2 bypass reach (see previous Section 7.3.1.9), Canyon Creek, and the Upper Lewis River during 1999-2000. Aside from the issue of pre-project conditions, PacifiCorp believes that this issue will be adequately addressed in the watershed studies approach.

7.3.2 Stage 2 Consultation - Comments on the Draft License Application

Comments were received from the USFWS, WDFW, WDOE, and IAC on the draft License Application. These addressed two main issue areas and are summarized below.

7.3.2.1 Facility Maintenance and Expansion

The IAC, WDFW, and WDOE raised various issues about facility maintenance and expansion potential. The IAC expressed a concern that the proposed enhancement measures are limited to maintenance and renovation. PacifiCorp plans to meet project-related recreation needs for all of its Lewis River basin projects as part of the watershed planning and APEA process. A range of options related to the Yale Project were presented in the FTR for Recreation Resources. These enhancement options will be carried forward into the basin planning procedure for discussion and implementation planning with other recreation providers in the Lewis River Valley.

WDFW suggested that enhancements would be appropriate at the Merrill Lake Campground, which is operated by the DNR. This site is within the watershed study area and therefore is being assessed; however, it is premature to make off-site mitigation determinations at this time.

WDOE requested additional information about septic system problems at Beaver Bay Campground and Cougar Park. In recent years, high use at Beaver Bay Campground and Cougar Park has resulted in problems with the septic drainfields. The main problem was that the ground around the drainfields became saturated due to high effluent input and inadequate drainfield capacity. In the summer of 1998, PacifiCorp completely refurbished and expanded the drainfield systems at both facilities to accommodate current and projected use levels. All work was permitted through Cowlitz County. At Beaver Bay, the drainfield was relocated farther away from the wetland and expanded by 156 linear feet. A pump was added to replace the old gravity fed drainfield with a pressurized system, providing more system control and minimizing backups. All residual solids were pumped out of the septic and dosing tanks. Similarly, at Cougar Park, 375 linear feet of new drainfield capacity was constructed and a timer installed on the pump to better regulate effluent pumping. PacifiCorp will continue to monitor all septic systems to ensure proper operation.

WDFW recommended that the Beaver Bay day-use parking area and boat ramp be relocated away from the adjacent wetland complex. PacifiCorp recommends that the entire Beaver Bay Campground (not just the day-use area) be considered for redesign pending the outcome of the watershed studies; as such, it is premature to make this one change now. Recent measures taken by PacifiCorp have minimized the conflicts between the day-use area and the wetland. A small berm has been constructed to prevent the wetland from flooding the parking area.

7.3.2.2 Interpretive Opportunities

Concern was expressed by the USFWS and WDFW regarding a potential kokanee viewing area along Cougar Creek that could create a conflict with bull trout management goals. PacifiCorp shares this concern; to minimize disturbance to this important spawning area, a proposed visitor viewing area has been removed from the list of proposed enhancement measures. Instead, PacifiCorp has developed a bull trout identification and information sign in consultation with the agencies that will be installed at Cougar Park near the creek.

7.4 CONTINUING IMPACTS

Recreation resources at the Yale Project generally include developed facilities such as campgrounds, boat ramps, and day-use areas; dispersed use areas such as shoreline camping and picnicking; and open water recreation such as sailing and power boating. The operation of the project is important to these resources and general public shoreline access. Four areas of potential continuing impacts to recreation resources include:

- Reservoir pool level fluctuations and the timing of low and high pool levels;
- Adequacy of public access to the shoreline;
- Adequacy of recreation facilities and operations and maintenance; and
- Adequacy of dispersed use areas and operations and maintenance.

PacifiCorp strives to maintain a "recreation pool level" of 480 to 490 feet msl from Memorial Day weekend through Labor Day weekend. This pool level is near full pool to maximize the enjoyment and accessibility of boaters and other recreationists. PacifiCorp is not proposing to change this operational scenario; therefore, no continuing impacts will result.

PacifiCorp currently provides 5 developed recreation facilities at Yale Lake along the shoreline. In addition, there are approximately 67 dispersed use sites along the reservoir shoreline. The entire shoreline is accessible to the public for day use except where operational safety requirements prohibit access in the dam areas and at the Swift No. 2 powerhouse tailrace. One island also has biological constraints and public access is prohibited. In 1999, as a result of shoreline impacts, PacifiCorp will be discouraging overnight dispersed shoreline camping by no longer permitting overnight parking in PacifiCorp day-use sites. In the coming years, 20 hardened developed overnight campsites will be constructed and maintained by PacifiCorp along the shoreline, and other day-use shoreline sites will be improved. PacifiCorp feels that these are significant steps to better manage the resource and will enhance public use and access; therefore, no continuing impacts will result.

PacifiCorp has identified several boat launch improvements to enhance public access to the shoreline and the reservoir, particularly during lower pool levels. These improvements, such as lengthening boat ramps, are identified as proposed measures by PacifiCorp in Table 7.2-1. Following their implementation, no continuing impacts will result.

PacifiCorp provides and maintains a number of developed recreation facilities at Yale Lake. The company recently spent over 1 million dollars to replace older restroom and shower facilities at all of its 5 Yale Lake facilities. These new facilities are all universally accessible and are of the highest quality. Recreation surveys indicate that the 5 facilities are at or approaching capacity, particularly during July and August. PacifiCorp is committed to providing adequate public recreation facilities at its reservoirs; however, it is premature to expand capacity at Yale Lake until consultation and results from the watershed studies have been completed. Facility expansion may be more appropriate at one of the other reservoirs or along SR 503. In the interim, PacifiCorp has committed to a number of recreation enhancement measures, identified in Table 7.2-1.

Finally, PacifiCorp provides a number of dispersed use area opportunities at Yale Lake. For example, the entire eastern shoreline is available for a variety of dispersed activities. However, signs of overuse are occurring along the shoreline, and PacifiCorp proposes to address these use impacts through measures proposed in Table 7.2-1 and other measures to be considered as a result of the watershed studies. PacifiCorp believes that these measures will minimize dispersed use impacts at Yale Lake. In the interim, PacifiCorp will be discouraging overnight dispersed shoreline camping, as previously mentioned, to minimize resource impacts.

7.5 IMPLEMENTATION, SCHEDULE, AND COST

This section describes how the recreation resource measures proposed by PacifiCorp will be implemented, including their schedule and estimated cost. As previously discussed, PacifiCorp and Cowlitz County PUD have initiated a watershed studies approach to relicensing. This process will result in a number of recreation resource protection and enhancement measures for all 4 of the hydroelectric projects in the Lewis River basin. These measures, however, will not be initiated until 2005. In the interim, PacifiCorp proposes to implement a number of recreation resource measures to meet existing needs at Yale Lake. These are presented in Table 7.5-1. Additional detail is provided in a set of conceptual recreation area plans presented in Appendix 7.5-1.

Table 7.5-1. Implementation schedule and estimated cost of proposed recreation resource measures for the Yale Hydroelectric Project.

Responsible Party	Proposed Measure	Estimated Cost	Timeframe
PacifiCorp	At Beaver Bay Campground, PacifiCorp will replace or repair the existing playground equipment (swings), campsite picnic tables, and other facilities.	$8,000	2001
	At Beaver Bay Campground, PacifiCorp will renovate or replace older facilities, and make them ADA accessible.	$500,000	2001-2010
	At Beaver Bay boat launch, PacifiCorp will replace the existing boat dock.	$10,000	2001-2010
	At Beaver Bay Campground, PacifiCorp will re-gravel the group campsites and roads and apply dust abatement to roads.	$5,000	2001
	PacifiCorp will construct a self-guided nature trail at the Beaver Bay wetland and will provide an interpretive sign at this location.	$45,000	2001-2005
	At Saddle Dam, PacifiCorp will improve the existing boat launch by lengthening and realigning the existing boat ramp, removing the drop off at the end of the boat ramp, replacing the existing dock, and repairing the existing entry road.	$100,000	2000-2001
	At Saddle Dam Campground, PacifiCorp will construct an interpretive sign describing the wildlife/forestry management activities in the area.	$2,500	2001-2005
	At Saddle Dam Campground, PacifiCorp will prepare plans to reuse or renovate the facility.	$40,000	2001-2010
	At Saddle Dam Campground, PacifiCorp will replace or repair campsite picnic tables and other facilities.	$2,000	2001
	At Cougar Camp, PacifiCorp will evaluate the potential of lengthening the existing boat ramp and will do so if feasible, increase maintenance of the existing boat launch site, and re-gravel portions of the existing launch parking area and road access.	$70,000	2001-2005
	At Cougar Park, PacifiCorp will provide an interpretive/ informational sign on bull trout at Cougar Creek at the existing trail bridge.	$2,500	2001
	At Cougar Park group camp, PacifiCorp will re-gravel the group campsites and roads and apply dust abatement to roads.	$5,000	2001
	At Yale Park, PacifiCorp will maintain boat ramp during low pool periods (keep free of debris), formalize the parking area to improve parking efficiency, and lengthen the boat ramp if feasible.	$50,000	2001-2005
	At Yale Park, PacifiCorp will replace the existing boat docks.	$50,000	2001-2005
	In consultation with DNR and Clark County, PacifiCorp will provide 10 new developed boat-in campsites on the reservoir (renovate existing disturbed areas if possible).	$75,000	2005-2010

Table 7.5-1. Implementation schedule and estimated cost of proposed recreation resource measures for the Yale Hydroelectric Project (continued).

Responsible Party	Proposed Measure	Estimated Cost	Timeframe
PacifiCorp (continued)	PacifiCorp will provide universal access improvements as existing older camping facilities are renovated or replaced.	$50,000	2001-2010
	PacifiCorp will provide universal access improvements as older day-use facilities are renovated or replaced.	$50,000	2001-2010
	PacifiCorp will increase as necessary and maintain the presence of the reservoir Marine Patrol at Yale Lake.	$300,000 (total for 10 years)	1999-2010
	In addition to the proposed measures, PacifiCorp will continue to perform the daily operation and maintenance activities at the 5 existing developed recreation facilities at Yale Lake.	$2,000,000 (total for 10 years)	1999-2010
	PacifiCorp will implement a partial campsite reservation system (approximately 25% to 50% of the individual sites) and monitor its use and effectiveness as needed.	$50,000	1999-2010