

# TUNNEL RESERVOIR PLANNING UNIT

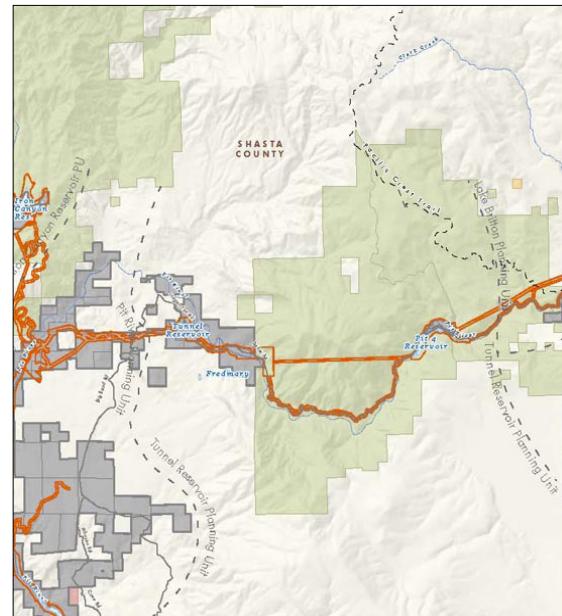
## Pit-McCloud River Watershed

### Existing Conditions & Uses

#### Overview

- Scenic river corridor and small reservoirs; 2,555 acres in Shasta County
- 2,086 acres outside the FERC boundary; 469 acres inside the FERC boundary
- Part of the Pit 3, 4, 5 Project (FERC #233), New License issued July 2007

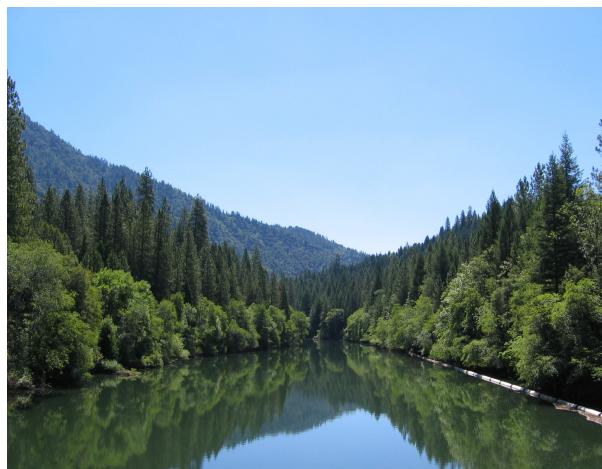
The Tunnel Reservoir Planning Unit is located in Shasta County adjacent to the community of Big Bend (see Figure PM-11). The unit contains the Pit River Canyon corridor and the Pit 4 and Pit 5 Reservoirs in addition to the Tunnel Reservoir. The planning unit contains lands that are part of the Pit 3, 4, 5 FERC Project (#233) as well as hydropower infrastructure consisting of the Pit 3 Powerhouse, Pit 4 Powerhouse, Pit 5 Dam, Pit 5 Tunnel, and Tunnel Reservoir, which functions as an open portion of the Pit 5 Tunnel. PG&E was issued a New License for the Pit 3, 4, 5 Project on July 2, 2007. The Pit 4 Reservoir area is completely surrounded by Lassen National Forest. Lands near the Pit 4 Powerhouse are bordered to the east by Lassen National Forest; private land surrounds the rest of the planning unit. The California Department of Forestry and Fire Protection (CDFA) and USFS jointly operate a



Tunnel Reservoir Planning Unit  
Shasta County

fire station on leased planning unit land near Big Bend.

The stretch of the Pit River in the planning unit, referred to as the Pit 5 bypass reach (so called because most of the flow is diverted to the downstream Pit 5 Powerhouse), is within the Pit River Canyon, a 26-mile stretch of the river from the Pit 3 Dam to the Pit 5 Powerhouse. The largest of the three reservoirs in the planning unit, Pit 4 Reservoir, has 105 surface acres, while the long and narrow Pit 5 Reservoir has 32 surface acres, and the Tunnel Reservoir has 48 surface acres. The water level in each reservoir can fluctuate several feet each day due to power peaking operations. However, the Pit 3, 4, 5 New License requires a reduction in the magnitude of surface elevation fluctuation at Pit 4 Reservoir.



Tunnel Reservoir

#### Fish, Plant, and Wildlife Habitat

The three reservoirs and the Pit River corridor provide important riparian and aquatic habitat for many species, including special status species such as northwestern pond turtle, rough sculpin, hardhead, bigeye marbled sculpin, and several mollusks. Bald eagles, ospreys, and peregrine falcons nest within the planning unit, and bald



# Tunnel Reservoir Planning Unit

## Existing Conditions

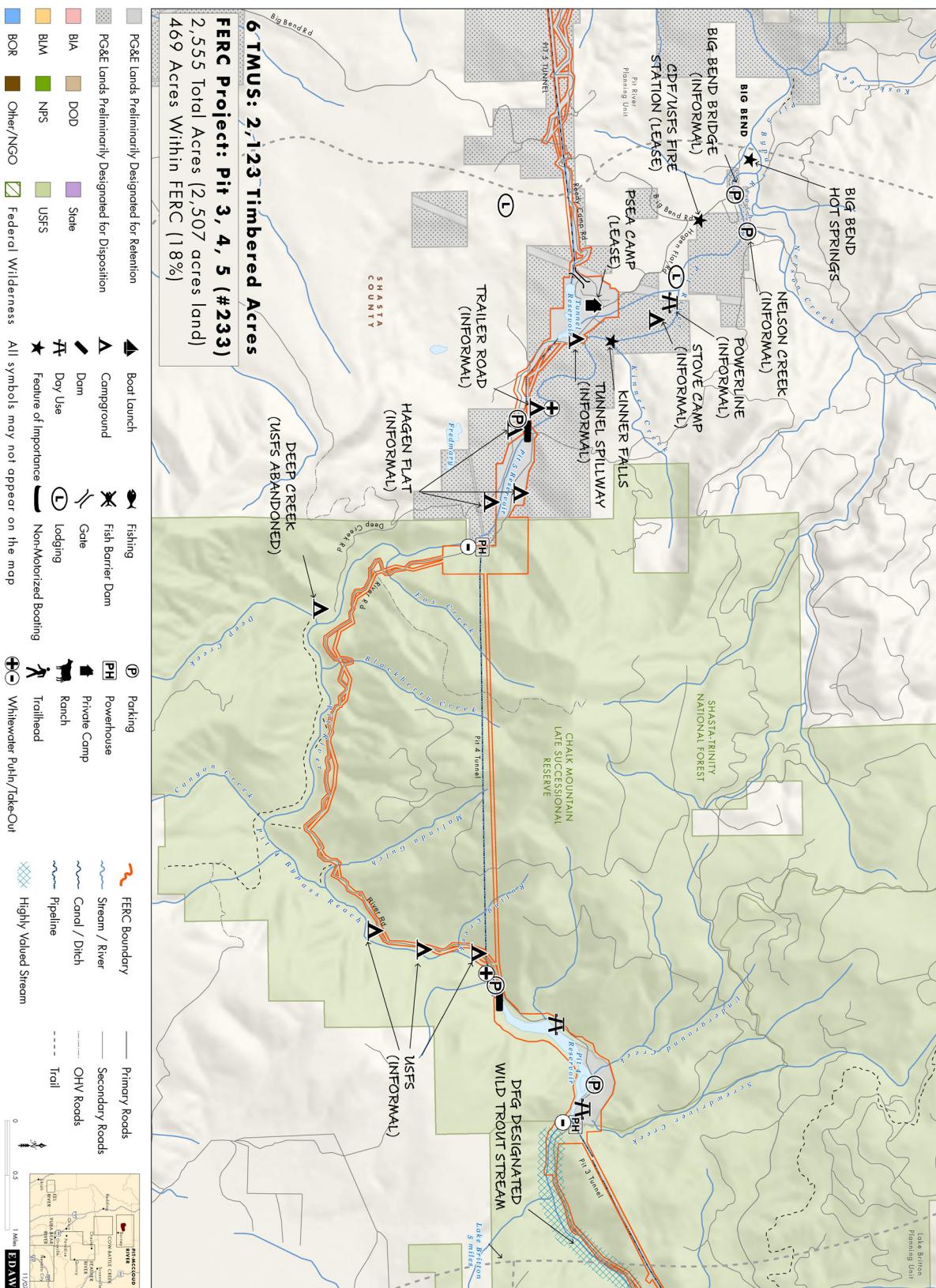


Figure PM-11

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eagles also winter in the area. The planning unit also supports critical deer winter range and a substantial native rainbow trout fishery.

During recent botanical surveys, one sensitive plant was mapped in the planning unit, and a new species of plant, the Ishi jewelflower, was discovered. The Tunnel Reservoir Planning Unit is located adjacent to the USFS-designated Chalk Mountain Late Successional Reserve (LSR), which contains late successional forest habitat and five spotted owl Protected Activity Centers (PACs). Several habitat and species-related measures and plans are required in the New License.<sup>1</sup>

### Open Space

The planning unit contains open space around the three reservoirs and along the Pit 5 bypass reach. Due to a lack of development, steepness of the Pit River Canyon, and limited recreation facilities, open space values are found throughout the planning unit. The Shasta County General Plan recognizes that rivers, creeks and associated riparian corridors, and floodplains within the county are major open space resources. Lands adjacent to the town of Big Bend provide open space and viewsheds for this community. Lands along Hagen Flat/River Road provide views for the main thoroughfare in the Pit River Canyon.

### Outdoor Recreation

The majority of recreational use within this remote planning unit consists of fishing and primitive camping. Relicensing studies indicated that the main activity for nearly all Pit River Canyon visitors is fly fishing. Anglers access the river from many sites and roads as well as user-created trails. Four dispersed camping areas exist along the Pit 5 bypass reach within the planning unit; however, there are currently no facilities at any of these areas. There is also one leased camp in the planning unit, called Camp Pit, which provides 17 cabins and a swimming pool for Pacific Service Employees Association (PSEA) member use only.

Day use activities in the planning unit include swimming, picnicking, berrypicking, sightseeing, hiking, and birdwatching. There are currently no formal day use sites, although the New License requires (under the recreation management plan) adding day use facilities at the Pit 3 Powerhouse and Pit 4 boat ramp areas, as well as enhancing the boat ramp.<sup>2</sup> There is an informal day use area called the Powerline area, and two informal parking areas for day use at the Big Bend Bridge and Nelson Creek, a popular swimming location. There are several hot springs around Big Bend, one of which is a formal site on private property. Various hiking trails, many of which provide river access on a steep grade, are found in the planning unit. Other recreation activities in the Pit River Canyon include hunting, tubing, and whitewater boating. Hunting in the area is mainly by local residents for deer and bear. Tubing is popular between the PSEA camp and Kinner Falls. Whitewater boating occurs in the Pit 5 bypass reach, which provides a Class IV to V whitewater run. There is currently no boating allowed on the Pit 4, 5 or Tunnel Reservoirs under Shasta County ordinances. However, under the FERC license required recreation management plan, changes to the ordinance for the Pit 4 Reservoir will be recommended to Shasta County to allow public non-motorized boating on the reservoir between August 1 and December 31. Many other recreation-related enhancements and plans are required in the New License.<sup>3</sup>



Pit 4 Reservoir

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Timber harvesting in the planning unit

### Forest Resources

The entire planning unit is contained within six PG&E Timber Management Units (TMUs), totaling 2,123 acres. Most of the planning unit is currently managed by PG&E for sustainable timber production, and most (except for the Pit 4 Reservoir) was harvested in 2005 or 2006. The majority of the forests are second-growth mixed conifer stands. There are no plantations or late seral stage stands, although the Pit 4 Reservoir lands contain scattered old-growth trees.

Management of timber in the Pit 4 Reservoir area is restricted to mitigating for watershed and forest health issues, including emergency salvage harvesting following insect attack or a catastrophic event. Between 1911 and 2001, there have been two fires that have affected more than 300 acres in the vicinity of the Pit 3, 4, 5 Project; one located north of the Pit 4 Reservoir and the other in the Pit 5 Tunnel area. Smaller fires have been more frequent, particularly around the Big Bend area and along highways, and less so in recreation areas and project facilities within the canyon. A fire management and response plan is required in the New License.

### Agricultural Uses

Grazing was eliminated in the Pit 3, 4, 5 Project area in the late 1980s to protect sensitive resources and water quality, and therefore grazing does not take place on lands within the FERC boundary in this planning unit. In the Final EIS

for the Pit 3, 4, 5 Project, FERC commented that grazing should not be reinstated on those lands; furthermore lands outside the Pit 3, 4, 5 Project boundary are steep and heavily wooded and therefore likely not suitable for grazing.

### Historic Resources

The Tunnel Reservoir Planning Unit is located within the ancestral territory of the Pit River Tribe. Relicensing studies within the Pit 3, 4, 5 Project cultural resource study area documented 19 cultural sites in the Pit 4 reach (which includes the Pit 4 Reservoir), and 47 sites in the Pit 5 reach.<sup>4</sup> Ethnographic studies documented 102 ethnographic locations within the cultural resource study area. Ethnobotanical resources have been identified in the Pit 3, 4, 5 Project area, such as hazel and redbud, which are of special importance to Native Americans for art, medicine, basketry, and cultural use. The Pit 3, 4, 5 Hydroelectric System was determined to be eligible for listing in the NRHP as an historic district. Some system components within the planning unit are also individually eligible for inclusion on the NRHP including the Pit 3 Powerhouse, Pit 5 Diversion Dam, and Pit 5 Open Conduit Dam. A final historic properties management plan (HPMP), including monitoring and protection measures for sites, is required in the New License.



Pit River Canyon

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### **Stewardship Council Recommendations**

The Stewardship Council recommends that the land and land uses at the Tunnel Reservoir Planning Unit be preserved and enhanced by focusing on the valuable habitat, unique primitive camping and angling recreation opportunities, substantial forest resources, and the cultural resources prevalent throughout the planning unit. In presenting the Recommended Concept provided here, our objective is to preserve and enhance habitat, cultural, and forest resources while also enhancing the primitive recreation setting and encouraging appropriate recreation behavior. We recommend this effort be conducted in close coordination with PG&E, the USFS, and license compliance efforts for the area.

**Objective: Preserve and enhance biological and cultural resources, and enhance recreation opportunities and sustainable forestry management.**

As shown on Table PM-6, the Stewardship Council has identified a number of preservation and/or enhancement measures that may contribute to the conservation management program for the Tunnel Reservoir Planning Unit. Additional detail and background regarding these potential measures can be found in the Supporting Analysis for Recommendations, provided under separate cover. These measures are intended to be illustrative in nature, not prescriptive, and will be amended, deleted, or augmented over time in coordination with future land owners and managers to best meet the objective for this planning unit.

#### **Fish, Plant, and Wildlife Habitat**

**Objective: Preserve and enhance habitat in order to protect and restore special biological resources.**



View from Pit 5 Dam

The Tunnel Reservoir Planning Unit contains aquatic and terrestrial habitat supporting a wide variety of wildlife, including several special status species. In order to preserve and enhance the habitat and resources found here, and the recreational experience that is interconnected with this natural environment, the Stewardship Council recommends that baseline studies and plans be developed to gain a clear understanding of the resources (particularly outside the FERC boundary where little information is currently available). These studies will likely be followed by management plans to ensure implementation of preservation and enhancement measures for specific resources. Management of the property to preserve and enhance habitat will also include addressing noxious weeds.

Additional measures are recommended to restore OHV-damaged areas, support river clean-ups, assess resource impacts of trails, and assess the potential for enhancing special status turtle habitat. The Stewardship Council also recommends assessing the potential for a native plant nursery, assessing the planning unit for road restoration, closure or conversion to non-motorized trails, and abiding by the USFWS Pit 3, 4, 5 Biological Opinion where appropriate. All of the recommended evaluations, restoration, and plans should be consistent with relevant FERC license required plans and should evaluate any potential impacts to other resources prior to implementation. We encourage close coordination with the USFS, USFWS, Native

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## Pit-McCloud River Watershed

American entities, and other resource-focused organizations working in the area, and all planning should be considered in conjunction with the fuels and forest management plans.

### Open Space

**Objective: Preserve open space in order to protect natural and cultural resources and the recreation setting.**

This concept would preserve open space through permanent conservation easements. This concept includes restoration with little recreation development and is therefore not expected to decrease the scenic quality of the viewsheds. Conservation easements would describe all prohibited uses to maintain open space values, including the level of uses allowed and the requirement to maintain scenic qualities.

### Outdoor Recreation

**Objective: Enhance recreational facilities in order to provide additional public access, educational opportunities and recreation management, and to enhance the recreation experience.**

The Tunnel Reservoir Planning Unit provides many opportunities for visitors to enjoy primitive



Harvested timber within the planning unit

camping, angling, hiking, and other activities in a remote and rugged setting. However, the area has sustained extensive degradation from inappropriate recreation use. As shown in Figure PM-12, the Stewardship Council looks to enhance these opportunities by recommending increased management and restoration in dispersed use areas. We recommend enhancements focused on monitoring recreation use at informal sites, developing a dispersed camping management and restoration plan, and installing signage regarding methods of low impact recreation at dispersed camping areas. The Stewardship Council also recommends enhancing public recreation access at the PSEA camp, improving a trail to the Pit River, and increasing opportunities for youth education and recreation. We encourage close coordination of these measures with relevant FERC license required plans.

### Sustainable Forestry

**Objective: Develop and implement forestry practices in order to contribute to a sustainable forest, preserve and enhance habitat, as well as to ensure appropriate fuel load and fire management.**

The entire Tunnel Reservoir Planning Unit is forested and primarily managed for sustainable timber production, but also contains late successional habitat in the Pit 4 Reservoir area. The Stewardship Council recommends that future care and management of the land include developing a long-term vision for forest management in the area, addressing silvicultural practices, holistic watershed management, fuels management, and fire management and response. Identifying and protecting late successional habitat in the Pit 4 Reservoir area for management and recovery of the northern spotted owl is also recommended. The fire management and response, fuels, and forest management plans should be developed in conjunction with the noxious weed and wildlife and habitat management plans as well as relevant FERC license required plans. We expect that all of these plans would be developed in coordination

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with adjacent landowners, CDF, and USFS management and practices as appropriate.

### **Preservation of Historic Values**

#### **Objective: Identify and manage cultural resources in order to ensure their protection.**

Though studies have identified many prehistoric, historic, and ethnographic sites within the FERC cultural resource study area, much of the planning unit has not been studied and has a high likelihood of also containing cultural resources. The Stewardship Council aims to support an increased understanding of these resources and ensure they are appropriately protected. To meet this objective, we recommend that cultural resource studies be conducted to understand the resources found in the Tunnel Reservoir Planning Unit (particularly outside the FERC cultural resource study area where less information is available), and that appropriate management plans be developed and implemented.

Throughout this effort, the Stewardship Council recommends close coordination with Native American entities. Development of the cultural resources management plan should be consistent with the FERC license required Pit 3, 4, 5 Project final HPMP.

an information, education, and interpretation plan; a recreation monitoring and reporting plan; provision of whitewater flow information to the public; measures to provide new and upgraded project-related recreational facilities and trails within the project area; providing a new day use area at Pit 5 or Tunnel Reservoirs; and addressing several recreation-related issues along the bypass reach. The New License also requires development of a visual management plan, sign plan, and an OHV and vehicle management plan as a component of the road and facilities management plan.

<sup>4</sup> Cultural sites are varied and include shell middens, house pits, lithic scatters, cairns, an historic railroad, road refuse scatters, and historic residential camps, construction camps, roads, and fences.

### **Endnotes**

<sup>1</sup> Some of the habitat-related FERC license required measures include: a gravel management plan, a large woody debris management plan, a Biological Resources Program Technical Review Group, fish population trend and conditions monitoring in project reservoirs and river reaches, a western pond turtle monitoring plan, updating the Interagency Bald Eagle Management Plan, a terrestrial wildlife mitigation and monitoring plan, a vegetation and invasive weed management plan, a northern spotted owl protection plan, and a spoil pile management plan.

<sup>2</sup> The Pit 5 bypass reach receives about 50% of the camping use within the Pit River Canyon, but only about 7% of the day use.

<sup>3</sup> Relevant recreation-related measures required in the New License under the recreation management plan include: enhancing whitewater boating access points;



Harvested timber area

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**Pit-McCloud River Watershed**

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**Table PM-6 Objectives to Preserve and/or Enhance – Recommended Concept**

Planning Unit Objective: Preserve and enhance biological and cultural resources, and enhance recreation opportunities and sustainable forestry management.		
Beneficial Public Value	Objective	Potential Measures to Preserve and/or Enhance BPVs – Not Requirements*
Protection of the Natural Habitat of Fish, Wildlife, and Plants	<b>Preserve and enhance habitat in order to protect and restore special biological resources.</b>	<ul style="list-style-type: none"> <li>• Conduct surveys of lands outside the FERC boundary to identify biological resources and enable their protection.</li> <li>• Restore areas damaged from unauthorized OHV use south of Tunnel Reservoir.**</li> <li>• Assess the potential for a native plant nursery site south of Tunnel Reservoir.**</li> <li>• Assess the planning unit for road restoration, closure, or conversion to non-motorized trails consistent with relevant FERC-required plans.</li> <li>• Evaluate trails in the Pit 5 bypass reach for erosion impacts and potential restoration consistent with the FERC-required recreation management plan.</li> <li>• Develop a noxious weed management plan for lands not included in the FERC-required vegetation and invasive weed management plan.</li> <li>• Review potential for provision of additional basking sites for northwestern pond turtle.</li> <li>• Abide by the USFWS Biological Opinion for the Pit 3, 4, 5 Project outside the FERC boundary where applicable.</li> <li>• Develop a wildlife and habitat management plan for the planning unit.</li> <li>• Support community clean-ups of the Pit 5 bypass reach as needed.</li> </ul>
Preservation of Open Space	<b>Preserve open space in order to protect natural and cultural resources and the recreation setting.</b>	<ul style="list-style-type: none"> <li>• Apply permanent conservation easements to ensure a higher level of open space protection.</li> </ul>
Outdoor Recreation by the General Public	<b>Enhance recreational facilities in order to provide additional public access, educational opportunities and recreation management, and to enhance the recreation experience.</b>	<ul style="list-style-type: none"> <li>• Monitor recreation use at informal recreation sites in the Pit 5 bypass reach if sites are not included in the FERC-required recreation monitoring and reporting plan.</li> <li>• Develop a dispersed camping management and restoration plan for Hagen Flat, Stove Camp, Trailer Road, and Tunnel Spillway dispersed camping areas to determine ways to provide a primitive dispersed recreation experience; discourage site creep, bare ground, large fire rings and wood cutting; and restore damaged areas.</li> <li>• Install signage regarding methods of low impact recreation at dispersed camping areas.</li> <li>• Enhance public recreation access at the PSEA camp.**</li> <li>• Improve the trail to the Pit River from the PSEA camp.**</li> <li>• Assess the potential for youth program opportunities.</li> </ul>
Sustainable Forestry	<b>Develop and implement forestry practices in order to contribute to a sustainable forest, preserve and enhance habitat, as well as to ensure appropriate fuel load and fire management.</b>	<ul style="list-style-type: none"> <li>• Evaluate existing timber inventory data and supplement as appropriate.</li> <li>• Develop a forest management plan for the planning unit to promote natural forest development and structural and physical diversity in forests for long-term ecological, economic, social, and cultural benefits.</li> <li>• Identify and protect late successional habitat in the Pit 4 Reservoir area for management and recovery of the northern spotted owl.**</li> <li>• Develop a fire management and response plan for lands not included in the FERC-required plan to ensure fire preparedness.</li> <li>• Develop a fuels management plan for lands not included in the FERC-required fire management and response plan to ensure long-term forest health and reduce fuel loading and fire hazard.</li> </ul>
Agricultural Uses		None proposed.
Preservation of Historic Values	<b>Identify and manage cultural resources in order to ensure their protection.</b>	<ul style="list-style-type: none"> <li>• Conduct surveys outside the FERC Project APE to identify cultural resources and enable their protection.</li> <li>• Conduct an ethnographic study of lands outside the FERC Project APE to identify traditional use areas.</li> <li>• Develop a cultural resources management plan for lands outside the FERC Project APE and include impacted sites not treated under the FERC-required Pit 3, 4, 5 Project final HPMP.</li> <li>• Coordinate with Native American entities when conducting cultural resource measures.</li> </ul>

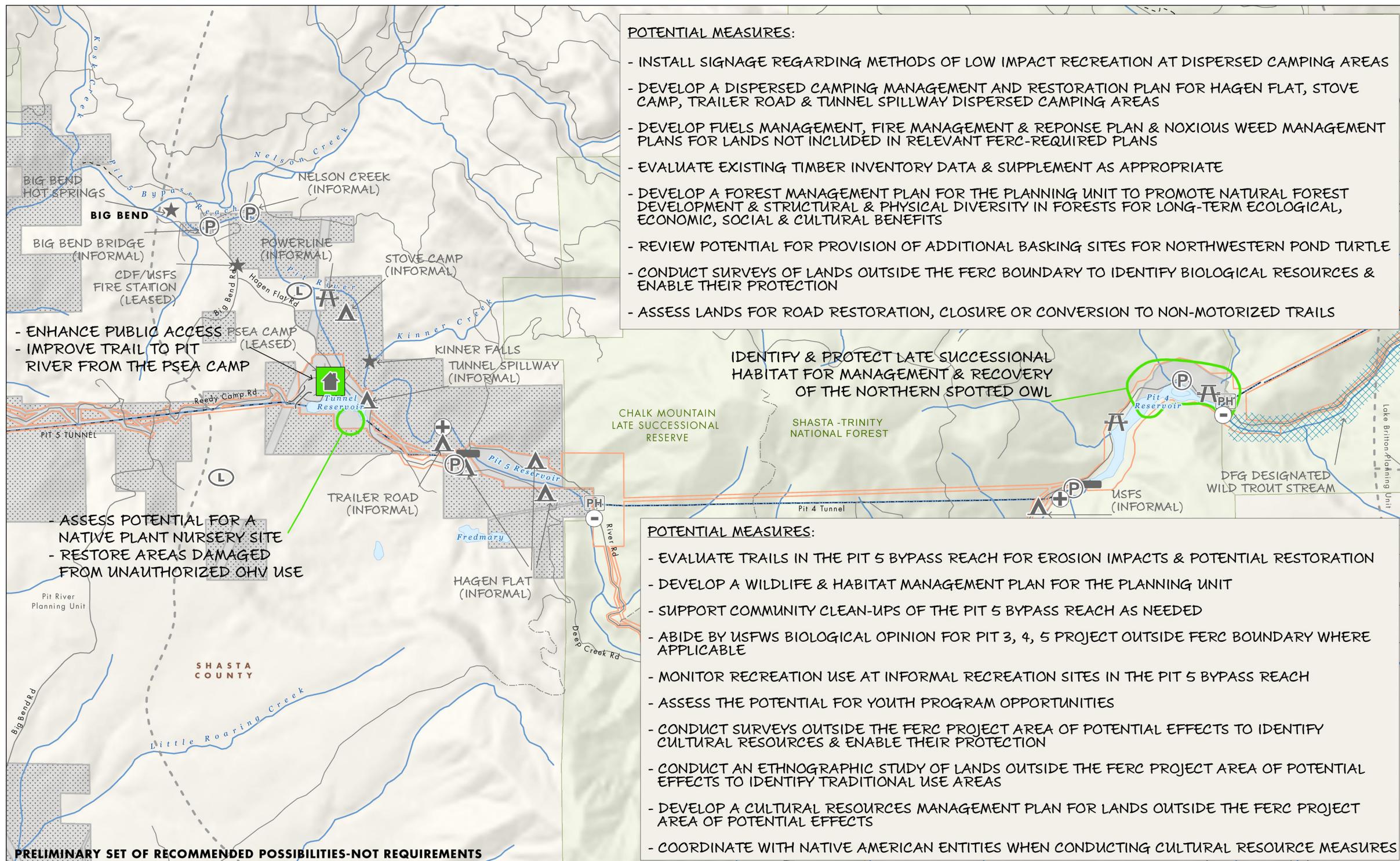
\* This is a set of recommended possibilities for the preservation and enhancement of BPV's, and is not intended to be a set of requirements for future land management.

\*\* Denotes site specific measure.

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# Tunnel Reservoir Planning Unit Recommended Concept



PG&E Lands Preliminarily Designated for Retention

PG&E Lands Preliminarily Designated for Disposition

BIA

DOD

BLM

BOR

Other/NGO

Federal Wilderness

Concept Features

Existing Features

Concept Features

## **Tunnel Reservoir Planning Unit**

### **Fish, Plant, and Wildlife Habitat**

#### **Potential Measure:**

- *Conduct surveys of lands outside the FERC boundary to identify biological resources and enable their protection.*

Many habitat and species studies were conducted for the Pit 3, 4, 5 Project relicensing within the FERC boundary. Outside the FERC boundary, some surveys for habitat and/or species may have been performed before recent timber harvesting occurred; however, comprehensive biological resource surveys were likely not completed. To develop a greater understanding of biological resources outside the FERC boundary, the Stewardship Council recommends conducting surveys of lands outside the FERC boundary to identify biological resources and enable their protection.

#### **Potential Measures:**

- *Restore areas damaged from unauthorized OHV use south of Tunnel Reservoir.*
- *Assess the potential for a native plant nursery site south of Tunnel Reservoir.*

The Pit 3, 4, 5 Project Recreation Use Impact Assessment, a relicensing study, found that most OHV use was on short sections of trail that appeared to access the Pit River or campsites, with the exception of Tunnel Reservoir, where wider networks of tracks and associated bare ground were found. There is a discrete portion of land south of Tunnel Reservoir that has become denuded from unauthorized OHV use. The Stewardship Council recommends restoring this area in an effort to enhance habitat and connectivity at the reservoir. In conjunction with this measure, the Stewardship Council recommends assessing the potential for a native plant nursery site in the area south of Tunnel Reservoir. The Pit River Tribe has requested such a site; placement of the nursery in this primarily unauthorized OHV use area would increase the visibility and traffic into this area, which might help decrease unauthorized OHV use in the area, as well as prevent restored areas from being redamaged. Restoration and native plant nursery efforts should be consistent with relevant FERC license required plans, including the final Historic Properties Management Plan (HPMP), and should evaluate any potential impacts to other resources.

#### **Potential Measure:**

- *Assess the planning unit for road restoration, closure, or conversion to non-motorized trails consistent with relevant FERC-required plans.*

The Tunnel Reservoir Planning Unit is riddled with access roads, many that are unnecessary or are inappropriately located and could be causing resource damage due to steep topography or location near sensitive resources. The Stewardship Council recommends assessing the planning unit for roads that could be restored, closed, or converted to non-motorized trails. The assessment would include reviewing feasibility, cost, priority, and likelihood of redisturbance to determine the best course of action to reduce habitat disturbance, resource damage, and improve habitat connectivity. An inventory of project roads and a road and facilities management plan are required in the New License for the Pit 3, 4, 5 Project and will map roads, identify provisions to restrict vehicular access to designated roadways and prohibit off-road activities within the project area (including potentially revegetating roads), and develop measures to protect soil and control erosion. A recreation management plan is also required and will identify measures to maintain

and upgrade trails within the Pit 3, 4, 5 Project area. Therefore, the recommended road assessment should be consistent with relevant FERC license required plans.

**Potential Measure:**

- *Evaluate trails in the Pit 5 bypass reach for erosion impacts and potential restoration consistent with the FERC-required recreation management plan.*

The Stewardship Council also recommends evaluating existing trails in the Pit 5 bypass reach for erosion impacts and potential restoration. Because the reach is located within a canyon, trails to the river can be very steep; as most trails in the reach are user-created, they may not be located or designed appropriately to minimize resource damage and erosion, which can lead to sedimentation in the river. The Stewardship Council recommends evaluating trails to determine which ones have erosion problems, as well as establishing priority, cost, and feasibility of restoring trails with erosion problems. This effort could be combined with the assessment of roads that could be converted to non-motorized trails for a comprehensive database of trails and trail condition. Additionally, the trail evaluation should be consistent with the FERC license required recreation management plan, which will identify measures to maintain and upgrade trails within the Pit 3, 4, 5 Project area.

**Potential Measure:**

- *Develop a noxious weed management plan for lands not included in the FERC-required vegetation and invasive weed management plan.*

The Pit 3, 4, 5 Project License Application documented noxious weeds at the Pit 5 Reservoir and in the Big Bend area, but surveys did not fully cover lands within the planning unit. Noxious weeds within the FERC boundary will be addressed in the vegetation and invasive weed management plan required in the New License. FERC also suggested in their Final EIS for the Pit 3, 4, 5 Project that PG&E implement weed control measures on its adjacent non-project lands to reduce the risk of the spread of weed infestations. Therefore, the Stewardship Council recommends developing a noxious weed management plan for lands not included in the FERC license required plan. Development of the noxious weed management plan should be coordinated with existing PG&E noxious weed efforts, and the wildlife and habitat, fuels, and forest management plans, and should be consistent with the FERC license required plan.

**Potential Measure:**

- *Review potential for provision of additional basking sites for northwestern pond turtle.*

Northwestern pond turtles, a special status species, were recorded in the Pit 5 bypass reach during relicensing surveys, but were more prevalent in the lower half of the reach (in the Pit River Planning Unit). To enhance habitat for this sensitive species, the Stewardship Council recommends reviewing the potential for provision of additional basking sites for the northwestern pond turtle to determine if habitat could be improved in the upper half of the Pit 5 bypass reach. Efforts to enhance habitat should be coordinated with the FERC license required western pond turtle monitoring plan.

**Potential Measure:**

- *Abide by the USFWS Biological Opinion for the Pit 3, 4, 5 Project outside the FERC boundary where applicable.*

The USFWS Biological Opinion contains a condition that specifically requires any easement holders or owners of land previously owned by PG&E to abide by the Biological Opinion for the Pit 3, 4, 5 Project. FERC identified this in the Final EIS for the Pit 3, 4, 5 Project and indicated that this condition appeared to apply to PG&E lands outside the FERC boundary, which are beyond FERC jurisdiction. To ensure species protection, the Stewardship Council recommends that easement holders or fee title owners of lands in the planning unit outside the FERC boundary abide by the USFWS Biological Opinion for the Pit 3, 4, 5 Project where applicable.

#### **Potential Measure:**

- *Develop a wildlife and habitat management plan for the planning unit.*

The Tunnel Reservoir Planning Unit provides habitat for a wide variety of species, including many special status species. Additionally, the planning unit may provide several opportunities for restoration. To provide a comprehensive vision for habitat protection and enhancement within the planning unit, the Stewardship Council recommends developing a wildlife and habitat management plan. Once recommended biological resource surveys are completed, potential habitat enhancements can be identified and developed into a comprehensive plan describing habitat and species goals and objectives, as well as measures needed to enhance and protect habitat for species, including both plants and wildlife. Monitoring of species and/or habitats would also be developed as a component of the plan. The wildlife and habitat management plan should be developed in conjunction with the noxious weed, forest, and fuels management plans as well as habitat enhancement and protection measures already described herein. The wildlife and habitat management plan should also be consistent with relevant FERC license required plans.

#### **Potential Measure:**

- *Support community clean-ups of the Pit 5 bypass reach as needed.*

Littering and dumping of large amounts of trash are problems within the Pit 5 bypass reach area. The Recreation Use Impact Assessment conducted for relicensing found litter to be a major problem at the Big Bend bridge informal use area, with the most heavily littered sites in the reach being Stove Camp, Trailer Road, and Tunnel Spillway informal camping areas. Additionally, campers at Trailer Road have been known to stay for extended periods of time and leave large amounts of trash. A significant portion of Pit 5 bypass reach recreation use is likely from residents of Big Bend. To foster local stewardship and awareness of trash problems in the reach, the Stewardship Council recommends supporting regular community clean-ups of the Pit 5 bypass reach as needed. Bringing people out to help clean up could not only enhance habitat, but heighten awareness of the magnitude of the trash problem and encourage stewardship of the lands that surround the Big Bend community.

## **Open Space**

#### **Potential Measure:**

- *Apply permanent conservation easements to ensure a higher level of open space protection.*

The Stewardship Council recommends preserving open space values through permanent conservation easements. Conservation easements would describe all prohibited uses to maintain open space values, including the level of uses allowed. Recommendations include restoration

with little development of recreation elements and are therefore not expected to decrease the scenic quality of the viewsheds.

## Outdoor Recreation

### Potential Measure:

- *Monitor recreation use at informal recreation sites in the Pit 5 bypass reach if sites are not included in the FERC-required recreation monitoring and reporting plan.*

As previously mentioned, litter and dumping are problems within the Pit 5 bypass reach area. In the future, additional facilities such as trashcans and restrooms may be needed if use increases, assuming that recreation facilities will be used by recreationists and not abused or vandalized. Therefore, the Stewardship Council recommends monitoring recreation use at informal sites within the Pit 5 bypass reach if these sites are not included the FERC license required recreation monitoring and reporting plan. By monitoring recreation use, the appropriate time and location of any needed facilities can be determined. If monitoring of informal sites within the Pit 5 bypass reach is not included in the FERC license required plan, then monitoring of these sites should be included in an appendix (non-jurisdictional) to the FERC license required plan to ensure consistent monitoring of use at recreation sites within and outside the Pit 3, 4, 5 Project boundary.

### Potential Measure:

- *Develop a dispersed camping management and restoration plan for Hagen Flat, Stove Camp, Trailer Road, and Tunnel Spillway dispersed camping areas to determine ways to: provide a primitive dispersed recreation experience; discourage site creep, bare ground, large fire rings and wood cutting; and restore damaged areas.*

About half of the camping use in the Pit River Canyon occurs in the Pit 5 bypass reach area, primarily at a handful of dispersed camping areas. Use of the dispersed camping areas has led to significant littering and dumping, as well as impacts to other resources from bare ground, tree cutting, compaction, and trampling. Users have created many campsites, several of which are not in appropriate locations, such as those too close to the water or other sensitive resources. To provide an enhanced recreation setting and experience as well as enhanced management of dispersed use, the Stewardship Council recommends developing a dispersed camping management and restoration plan for the Hagen Flat, Stove Camp, Trailer Road, and Tunnel Spillway dispersed camping areas. Developing such a plan would focus on determining ways to provide a primitive dispersed recreation experience while discouraging negative conditions associated with dispersed camping such as site creep, bare ground, large fire rings, and wood cutting, as well as to restore areas damaged from inappropriate camping activity. This plan would provide ways to enhance the primitive recreation setting and experience that Pit River Canyon users prefer, as well as reduce negative impacts to other resources from dispersed recreation use. Development of the dispersed camping management and restoration plan should be consistent with relevant FERC license required plans, including the Pit 3, 4, 5 Project final HPMP, and included as appendices (non-jurisdictional) to the appropriate FERC license require plans to ensure long-term management, maintenance, and monitoring of use at the Hagen Flat, Stove Camp, Trailer Road, and Tunnel Spillway dispersed camping areas.

### Potential Measure:

- *Install signage regarding methods of low impact recreation at dispersed camping areas.*

In conjunction with efforts to clean up the Pit 5 bypass reach and develop a dispersed camping management and restoration plan, the Stewardship Council recommends installing signage regarding low impact recreation behavior and techniques at dispersed camping areas. These signs would enhance user education and awareness and hopefully encourage more appropriate behavior than most campers are currently exhibiting. Recommended signage should be consistent with relevant FERC license required plans and should be included as an appendix (non-jurisdictional) to the FERC license required information, education, and interpretation plan to ensure consistent message, format, and maintenance of signage both within and outside the FERC boundary.

**Potential Measure:**

- *Enhance public recreation access at the PSEA camp.*

The Stewardship Council recommends enhancing public access by allowing public recreation access at the Pacific Service Employees Association (PSEA) Camp Pit. The camp is considered to be an exclusive use because it is only opened to a small portion of the general population (PSEA members only). To provide a benefit for the general public, it is recommended that use of Camp Pit be extended to the general public. The existing lease with the PSEA would likely need to be amended to allow for this change, and it would need to be determined how to balance existing uses of the facility with additional public access.

**Potential Measure:**

- *Improve the trail to the Pit River from the PSEA camp.*

The Stewardship Council also recommends improving the trail from Camp Pit down to the Pit River. This trail is popular and provides tubing access to the Pit River as well as views of Kinner Falls. Improving this trail would provide a safer experience for trail users.

**Potential Measure:**

- *Assess the potential for youth program opportunities.*

The Tunnel Reservoir Planning Unit is adjacent to and within the community of Big Bend; therefore, the planning unit is easily accessible to local residents. There are great opportunities for youth to learn about birds of prey, northwestern pond turtles, native fishes, water quality monitoring and water management, sustainable forestry practices, and low impact recreation techniques. Additionally, informal camping and day use sites within the planning unit could provide potential facilities for educational programs. Therefore, the Stewardship Council recommends assessing the potential for youth program opportunities within the planning unit.

## **Sustainable Forestry**

**Potential Measures:**

- *Evaluate existing timber inventory data and supplement as appropriate.*
- *Develop a forest management plan for the planning unit to promote natural forest development and structural and physical diversity in forests for long-term ecological, economic, social, and cultural benefits.*

The entire planning unit is forested and primarily managed for sustainable timber production; however, there is no overall documented vision for the Timber Management Units (TMUs) within the planning unit. Therefore, the Stewardship Council recommends developing a forest

management plan for the planning unit through the evaluation of existing forest inventory data and supplemental information, when appropriate. In addition to supporting natural forest development, the forest management plan would promote holistic watershed management, supporting the enhancement of other beneficial public values over the long term. The forest management plan would be compatible with adjacent USFS LSR management where appropriate to maintain habitat connectivity. Development of the forest management plan should be coordinated with the wildlife and habitat, noxious weed, and fuels management plans as well as relevant FERC license required plans.

In areas where timber extraction is consistent with the forest management plan, timber harvesting techniques would be promoted that maintain mosaics of forest stands of different age, size, and rotation period. In addition to utilizing PG&E's uneven-age selection harvest system, harvesting practices and a monitoring program would be included to protect watercourses and lakes and promote the restoration and conservation of natural forests. Post-harvest, a monitoring plan would be developed to ensure that forest management and the proposed harvesting schedule would be consistent with the forest management plan, promoting natural forest development in perpetuity.

**Potential Measure:**

- *Identify and protect late successional habitat in the Pit 4 Reservoir area for management and recovery of the northern spotted owl.*

Planning unit lands in the Pit 4 Reservoir area contain scattered old-growth trees and are surrounded by the USFS designated Chalk Mountain LSR, which contains five spotted owl Protected Activity Centers (PACs). To enhance development of late successional habitat within the planning unit, the Stewardship Council recommends identifying and protecting late successional habitat within the Pit 4 Reservoir area for management and recovery of the northern spotted owl. Management of planning unit lands containing late successional habitat should be consistent with adjacent management to provide greater habitat connectivity and would be included as a component of both the forest management plan and wildlife and habitat management plan, and should be coordinated with the FERC license required northern spotted owl protection plan.

**Potential Measure:**

- *Develop a fire management and response plan for lands not included in the FERC-required plan to ensure fire preparedness.*

Reducing fire risk is important in this planning unit due to adjacent important late successional habitat and spotted owl PACs, as well as the proximity to the community of Big Bend. The New License requires development of a fire management and response plan that will enable compiling of various agencies' information to facilitate procedures throughout the area and facilitate fire prevention. To increase fire preparedness and enhance fire prevention, the Stewardship Council recommends developing a fire management and response plan for lands not included in the FERC license required plan. This plan could also address the Big Bend Fire Station, which is located within the planning unit and leased to the California Department of Forestry and Fire Protection (CDFA) and USFS, as well as the need to potentially provide a buffer around the fire station for fire fighting activities and equipment. The fire management and response plan should be consistent with the FERC license required plan.

### **Potential Measure:**

- *Develop a fuels management plan for lands not included in the FERC-required fire management and response plan to ensure long-term forest health and reduce fuel loading and fire hazard.*

Another important component in minimizing fire risk is the reduction of fuel loads. The New License requires a fire management and response plan that will contain fire hazard reduction measures; however, this plan would only apply to lands within the FERC boundary. Therefore, the Stewardship Council recommends developing a fuels management plan for lands not included in the FERC license required fire management and response plan to ensure long-term forest health and reduce fuel loading and fire hazard. The fuels management plan may include a controlled fire component that could reduce wildfire danger and enhance deer winter range. FERC suggested that PG&E consider such actions for adjacent non-project lands, but these actions would need to be weighed against potential negative effects on other resources. The fuels management plan would identify when and where controlled fire would be an appropriate fuel reduction technique. Development of the fuels management plan should be coordinated with the noxious weed, forest, and wildlife and habitat management plans and should be consistent with the FERC license required plan.

### **Agricultural Uses**

None recommended.

### **Preservation of Historic Values**

#### **Potential Measures:**

- *Conduct surveys outside the FERC Project APE to identify cultural resources and enable their protection.*
- *Coordinate with Native American entities when conducting cultural resource measures.*

Many cultural resource investigations have been conducted within the Pit 3, 4, 5 Project area, and the Pit 4 and Pit 5 reaches were surveyed again in 1999 and 2000 for relicensing. Though the area within the Pit 3, 4, 5 Project Area of Potential Effects (APE) (generally the area within the FERC boundary, 25 feet on either side of project roads, most flat terraces within the Pit River reaches, and along the Pit River from Pit 5 Dam to the Pit 5 Powerhouse) has been thoroughly documented, it is unclear the extent to which the area outside the APE has been studied, possibly for timber harvests and other activities. With a high likelihood of cultural sites outside the APE, the Stewardship Council recommends conducting surveys outside the Pit 3, 4, 5 Project APE to identify cultural resources and enable their protection. Documentation efforts should be coordinated with Native American entities.

#### **Potential Measures:**

- *Conduct an ethnographic study of lands outside the FERC Project APE to identify traditional use areas.*
- *Coordinate with Native American entities when conducting cultural resource measures.*

Ethnographic studies were conducted in 1984 and identified 102 ethnographic locations within the Pit 3, 4, 5 Project APE. The Pit River Tribe requested that PG&E conduct additional

ethnographic studies, covering dance areas, fasting areas, and other traditional practices and land use. The new ethnographic study identified additional traditional cultural properties, including traditional plant gathering locations, within the Pit 3, 4, 5 Project APE. However, traditional use areas outside the APE are not being studied, and the planning unit contains significant acreage outside the APE. Thus, the Stewardship Council recommends conducting an ethnographic study of lands outside the Pit 3, 4, 5 Project APE to identify traditional use areas, including areas traditionally used for plant gathering. This information would provide important baseline data for future management activities; for instance, if restoration activities were recommended for traditional plant gathering areas, traditional plants could be used in trail or road restoration and thus ethnobotanical use of the planning unit could be enhanced. The ethnographic study should be coordinated with Native American entities.

**Potential Measures:**

- *Develop a cultural resources management plan for lands outside the FERC Project APE and include impacted sites not treated under the FERC-required Pit 3, 4, 5 Project final HPMP.*
- *Coordinate with Native American entities when conducting cultural resource measures.*

There are identified cultural sites in the Pit 3, 4, 5 Project APE within the Pit 4 and 5 reaches that are being impacted by a variety of uses; however, impacts are not related to the FERC Project and therefore PG&E did not propose treatment for these sites in the Cultural Resources Management Plan (part of the License Application). Uses such as logging, trails, vandalism, and roads are impacting cultural sites. Additionally, there are likely cultural resources on lands within the planning unit outside the FERC boundary. To preserve cultural resources, the Stewardship Council recommends developing a cultural resources management plan for lands outside the FERC Project APE as well as any impacted sites that are not proposed for treatment under the FERC license required Pit 3, 4, 5 Project final HPMP. The plan would include appropriate measures for the identification, evaluation, and treatment of cultural resources (archaeological and historical), as well as traditional use areas. Treatment measures could include avoidance, specific protective measures (e.g., fencing), site monitoring, and methods to preserve, restore, or enhance cultural resource values through conservation easements, management agreements, or through public interpretation and education programs. Development of the cultural resources management plan should be consistent with the FERC license required Pit 3, 4, 5 Project final HPMP and should be coordinated with Native American entities.