City of Tacoma
Department of Public Utilities, Light Division (dba Tacoma Power)
Cowlitz River Project
FERC No. 2016

Settlement Agreement, License Article 17

Recreation Facilities Plan

1. INTRODUCTION

1.1 Project Description

The Cowlitz Project (FERC No. 2016) is Tacoma Power's largest electricity generating facility and is located on the Cowlitz River, Lewis County, Washington. The Project consists of two dams, the Mayfield Dam at river mile (RM) 52 and Mossyrock Dam, upstream at RM 65. In addition to the project generating electricity and providing flood control, Tacoma operates 3 major parks, manages approximately 14,000 acres of wildlife lands, and owns and funds operation of the Cowlitz Salmon Hatchery (RM 50) and the Cowlitz Trout Hatchery (RM 42). The Barrier Dam, associated with the Cowlitz Salmon Hatchery is located at RM 49.5. The original 50-year license for the Cowlitz Project was issued on December 28, 1951. A new thirty-five year license was issued March 13, 2003, and became effective on July 18, 2003.

The Mayfield development completed in 1963 includes a 250'-high, 850'-long, concrete arch and gravity dam that impounds Mayfield Lake, which has a maximum surface area of 2,250 acres. In addition to the Cowlitz River, inflows from the Tilton River also contribute to Mayfield Lake, which supports public and private recreational facilities. An 854'-long power tunnel passes through the right abutment of the dam and terminates at a concrete forebay structure. Four penstocks continue from the forebay structure to the four generating units, which have an installed capacity of 162-megawatts (MW).

The Mossyrock development completed in 1968 includes a 606'-high double curvature concrete arch dam that creates Riffe Lake, a 23-mile long, 11,830-acre reservoir with 52 miles of shoreline. Riffe Lake supports several parks and other recreational facilities. Three penstocks, varying in length from 248 to 285 feet, extend down to the powerhouse, which is adjacent to the base of the dam. The powerhouse contains two generating units with room for a third, and has a total installed capacity of 300 MW. Transmission lines link the Mossyrock and Mayfield developments.

1.2 FERC License, Settlement Agreement Article 17, Recreation Facilities

Within one year of license issuance, the Licensee shall file with the Commission for approval, a recreation plan for the Cowlitz River Project. The plan shall include, but not be limited to, the following specific items:

(a) A trail system on Peterman Hill built to accepted standards, of not less than 20 miles. The trail will serve non-motorized users and include parking, sanitation facilities, interpretive and regulatory signage and brochures.

(b) A 2-mile non-motorized loop trail near Mossyrock Park, part of which will (to the extent feasible) be made ADA accessible.

(c) An extension of the Mossyrock Park boat launch with mooring dock, including provision for seasonal ADA accessibility.

(d) A low water boat launch at the east end of Riffe Lake.

(e) An ADA accessible fishing platform in the vicinity of Barrier Dam.

(f) 50 additional campsites at Taidnapam Park to be provided during years 7 to 12 of the license term.

(g) Improvements to the road from Highway 12 to Taidnapam Park.

(h) Add 50 additional campsites at Mossyrock Park during years 19 to 24 of the license term.

(i) Recreation improvements in the Project area undertaken by the State of Washington for capital improvements at Ike Kinswa State Park using $500,000 provided by the Licensee.

(j) Unidentified recreation improvements in the Project area undertaken by the State of Washington using $100,000 provided by the Licensee.

The plan shall be developed in collaboration with the Interagency Committee for Outdoor Recreation, the U.S. Fish and Wildlife Service, the U.S. Forest Service, Lewis County, Washington State Parks and Recreation Commission, and the Washington Department of Fish and Wildlife. With respect to item (a), the Peterman Hill trail, the Cowlitz Wildlife Coordinating Committee, established pursuant to the 1993 Wildlife Settlement Agreement (referred to in Article 24) will provide oversight and approval of trail planning, location, construction, management and allowable impacts. The plan shall include provisions for monitoring of recreational use impacts to wildlife along and in the vicinity of this trail and define benchmarks for unacceptable wildlife impacts. The Licensee shall allow a minimum of 30 days for affected agencies and Tribes to comment and to make recommendations prior to filing the plan with the Commission. The Licensee shall include with the plan documentation of consultation and copies of comments and recommendations, and specific descriptions of how the agencies' comments are addressed by the plan. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons. The Commission reserves the right to require changes to the plan. No land clearing or land-disturbing activities shall begin until the Licensee is notified by the Commission that the plan has been approved and has received all necessary permits and certifications. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission. Following Commission approval, the plan becomes a requirement of the license, enforceable by the Commission.

1.3 Objective

The objective of the Recreation Facilities Plan (Plan) is to develop individual plans to address the requirements of the various subarticles contained within Article 17 of the Settlement Agreement (SA) for the Cowlitz River Project FERC License. The individual plans will describe the proposal; identify evaluation, monitoring, consultation and reporting requirements; and include a schedule to complete the objectives of their respective plan. The objectives of the individual plans associated with Article 17 will be to:

1. Develop a 20 mile trail system on Peterman Hill.
2. Develop a 2-mile non-motorized loop trail near Mossyrock Park part of which will be ADA accessible (to the extent feasible).
3. Extend Mossyrock Park boat launch with mooring dock, including provisions for seasonal ADA accessibility.
4. Develop a low water boat launch at the east end of Riffe Lake.
5. Construct an ADA accessible fishing platform in the vicinity of Barrier Dam.
6. Construct 100 new campsites at Taidnapam Park. (See Section 2.2 for a discussion of this change to settlement Article 17(f) and 17(h).
7. Make improvements to the road from Highway 12 to Taidnapam Park.
8. Provide $500,000 for capital recreation improvements at Ike Kinswa State Park.
9. Provide $100,000 for unidentified recreation improvements in the Project area undertaken by the State of Washington.

1.4 Current Recreation Program

Tacoma Power's recreation facilities at the Cowlitz River Project include Mossyrock Park, a year-round recreational facility on the southwestern shore of Riffe Lake. The 275-acre developed park includes 153 individual campsites, some with water and electric hookups, a 60-unit group camping area and a 10-unit primitive group camping area, a 4-lane boat launch with parking and restrooms, an entry control structure, and undeveloped natural areas north of the primitive group camp. East of the main campground is a day-use area for picnics and active sports. This area includes a kitchen shelter, large playground areas, and a concession building with laundry facilities, modern restrooms, and bathhouse. Near the concession building is a swimming beach. Fish cleaning stations are located in the main campground and at the main boat launch. Barbecue grills, horseshoe pits, volleyball area, and a half-mile nature trail are also available at Mossyrock Park. The park is open annually from January 2 through December 19.

Taidnapam Park, which opened to the public in May of 1994, is a 50-acre campground and day use area that is located at the head of Riffe Lake. A 52-site RV campground (19 sites with water, electric, and sewer; 33 sites with water and electric hookups), restrooms, 16 tent campsites, a 22-site group camp with cooking shelter, a boat launch, fish cleaning stations, playgrounds, picnic sites, interpretive exhibits, an entry control structure, and a swimming beach are provided. A barrier-free, pedestrian fishing bridge spans the Cowlitz River. The park is open annually from January 2 through December 19.

Ownership and operation of 50-acre Mayfield Lake Park on the eastern shore of Mayfield Lake, was assumed from Lewis County in January 2002. This park has 54 individual campsites without hook-ups and a 15-unit group camping area. Camping is available April 15- October 15. The park has a popular day-use area with a swimming beach, restroom, and grassy lawn. There is a year-round boat launch and paved boat launch parking with a vault toilet.

Glenoma Community Park is a 30 acre day use park located near the east end of Riffe Lake. Tacoma Power assumed ownership and operation of this park from Lewis County. The park contains softball and baseball fields, parking, a playground, kitchen shelter and restrooms.

The 44-acre Swofford Pond is located within the boundary of the Cowlitz Wildlife Area near the southwest shore of Riffe Lake. The scenic 240-acre pond offers warm water fishing and bird watching. A portable toilet and gravel boat launch are provided. Boats with internal combustion engines are prohibited.

The Kosmos Boat Launch is located on the northeast shore of Riffe Lake. This 16-acre site includes a two-lane concrete launch, a large parking area, two ADA compliant vault toilets and an informational kiosk. This launch is not functional during periods of reservoir drawdown.

The Mossyrock Dam Overlook and Northshore Fishing Access Site are located on the north side of the dam, adjacent to Highway 12. A railed concrete stairway designed to accommodate fishermen provides access from the paved, 20-car parking lot to the water's edge. Interpretive signage and several portable toilets are provided.

Downstream of the dams, both the Cowlitz Salmon Hatchery and the Cowlitz Trout Hatchery provide boat launch access to the Cowlitz River with parking and sanitation facilities. Bank fishing is popular at the Salmon Hatchery.

The Mayfield Dam Overlook is a site on the north side of the dam that offers expansive views of Mayfield Lake.

Wildlife viewing opportunities as well as outdoor pursuits such as hunting, hiking and fishing are available in the approximately 14,000 acre Cowlitz Wildlife Area which is managed for Tacoma Power by the Washington Department of Fish and Wildlife.

2. PLAN DEVELOPMENT

2.1 Background

Discussions regarding recreational needs and possible enhancements at the Cowlitz Hydroelectric Project began in 1996 during initial consultation meetings. Tacoma Power and its consultants conducted studies on recreational facilities, current and projected use and on future trends and needs. Oversight was provided by the Recreation Technical Advisory Committee and the Resource Planning Group, both oversight groups consisting of agency, tribal, local government and non-governmental organizations. The Recreation Technical Advisory Committee met many times during 1998 and 1999 to craft a package of recreational enhancements that met needs identified in the studies and were sensitive to the desires of the local and regional recreational community. Ultimately, the package of recreational enhancements was incorporated into final license negotiations for the comprehensive Settlement Agreement.

Article 17 reflects the package of new facility enhancements negotiated for the License. Studies indicated that recreational growth in the Project Area would require additional campsite development during the term of the license and the addition of trails for the increasing population of trail-dependent users. The Wildlife Management Coordinating Committee established as part of the 1993 Settlement Agreement for Wildlife had concerns about trail locations on the Cowlitz Wildlife Area, which is reflected in their oversight role in the License article. Boating and fishing recreational studies suggested that better access to Riffe Lake during the low water level period was important as were improvements to existing boat launch ramps. Access to fishing opportunities for the disabled community was also found to be inadequate and was addressed in the License.

The Washington State Parks and Recreation Commission requested funding for improvements to Ike Kinswa State Park, which was supported by the oversight groups and the studies.

2.2 Alternative Proposal

An alternative proposal to the requirements of the Settlement Agreement, Article 17, subarticles (f) and (h) is recommended by Tacoma Power. The original Article requires: (f) *50 additional campsites at Taidnapam Park to be provided during years 7 to 12 of the license term*, and (h) *Add 50 additional campsites at Mossyrock Park during years 19 to 24 of the license term.* Rather than phasing the construction of new campsites at Taidnapam and Mossyrock Parks over a period of 24 years, Tacoma Power proposes that all 100 campsites be constructed at Taidnapam Park by the year 2008. This proposal and its benefits were discussed with all consulting agencies prior to the development of final design and construction drawings. Agency consultation is further discussed in Section 2.3. Written concurrence on the proposal has been received from all consulting agencies and is included as Appendix 5.1. The details of the alternative proposal are included in Section 3.1.6.

2.3 Consultation

This plan was developed in consultation with representatives from the United States Department of Agriculture Forest Service (USDAFS), the United States Fish and Wildlife Service (USFWS), the Washington Department of Fish and Wildlife (WDFW), the Washington State Parks and Recreation Commission (WSPRC), the Interagency Committee for Outdoor Recreation (IAC), and Lewis County. Portions of this plan were also developed pursuant to the 1993 Wildlife Settlement Agreement in consultation with the Cowlitz Wildlife Management Coordinating Committee (WMCC).

Numerous meetings and discussions were held prior to proceeding with the development of the Recreation Facilities Plan and the proposed alternative. On November 13, 2003 a meeting was held with the USDAFS, USFWS, WDFW, WSPRC, and the IAC. On October 28, 2003, a meeting was held with the Lewis County Commissioners. Records of meetings and attendees are outlined on Appendix 5.3. The agencies were also requested to confirm their acceptance of the alternative proposal for Article 17(f) and 17 (h) by signing an "*Acknowledgement and Concurrence of Proposal Modifications*". Written concurrence was received from all consulting agencies and is documented in Appendix 5.1.

On February 11, 2004, all consulting agencies were contacted and queried as to their interest in a follow-up meeting and/or receipt of the first draft of the Plan in early March. On March 11, 2004, all agencies were provided a copy of the preliminary draft plan for informal review. Comments received have been incorporated into the final draft plan.

On May 7, 2004, all consulting agencies and Tribes were provided a copy of the draft plan for a formal 30-day review. Comments were received from Jack Thorne of the USDAFS and are addressed in Appendix 5.5.

2.4 Reporting

As various components of the license article requirements are completed, a report and applicable drawings will be submitted to the FERC, or a summary report may also be included in the Hydropower Compliance Management Program (HCMP) Report per Article 501.

Recreational use monitoring and reporting may also be completed as identified per Settlement Agreement License Article 20, Recreation Use Reporting. This report will satisfy the FERC's requirement for filing the Form 80.

An Environmental and Public Use Inspection (EPUI) is conducted by FERC every three years and a report completed. The Cowlitz River Project Public Safety Plan is reviewed annually, and resubmitted to the FERC when updated.

3. PLAN

3.1 Proposal

This Plan addresses the various components required per Settlement Agreement License Articles 17(a) through 17(j) of the Cowlitz License. Article 17 (i) and (j) discuss the process for distributing Tacoma Power funds for the identified improvements including: schedules, consultation and reporting requirements associated with said subarticles. Each subarticle is discussed in detail.

Final conceptual design and proposed construction drawings and schedules have been completed for Article 17(a) through 17(g). However, all of the specific construction drawings and plans will require more detailing and minor modifications to prepare them for the bidding and permitting process. In addition, all plans are subject to approval and permitting by the appropriate governmental and regulatory agencies. The process to finalize all plans and construction drawings will commence after FERC's approval of the Plan.

Key components including siting, Americans with Disability Act (ADA) elements, and general utility information are shown on the construction drawings included herein and are not expected to have significant conceptual changes. Additional construction plans such as grading, and detailed structural or utilities plans will be finalized upon FERC approval of the Plan. These additional construction plans should not impact the required improvements, but may affect minor details such as routing of utilities and/ or placement of appurtenances. Minor detail revisions and modifications will not be rerouted for comment to the consulting agencies or FERC. However, if significant changes are required that affect any of the major components detailed in this submittal then the revised plans will be resubmitted to the consulting agencies for comment and to FERC for review and approval.

The Programmatic Agreement, Cultural Resource Management Plan (CRMP) and Articles 403 and 404 will guide compliance with Tacoma Power's cultural resource responsibilities. Any construction work associated with Settlement Agreement License Article 17, will require an archaeological evaluation prior to any earth disturbing activities. A certified professional archaeologist who meets the Secretary of the Interior's qualification standards for professionals will complete the evaluation. The archaeologist's recommendations will be documented and implemented. In addition, requirements of the CRMP have been incorporated during development of the license article plans. If substantial siting or design changes are necessary as a result of cultural resource assessments, the consulting agencies and FERC will be contacted. Applicable reports will be submitted to the State Historic Preservation Officer (SHPO).

Work associated with the Settlement Agreement License Article 17 will meet local, State and Federal regulatory requirements, and work will not proceed without the applicable permits. Plans will be submitted for approval and permit applications will be submitted in a timely manner.

The proposed project schedules are dependent upon the receipt of necessary permits and FERC approval of the plans. If permits are delayed for any reason, the schedules will be modified accordingly.

Tacoma Power will create a Construction Stormwater Pollution Prevention Plan (SWPPP) prior to commencement of construction activities pursuant to the revised Cowlitz Project license. The SWPPP will conform to all Washington Department of Ecology requirements and guidelines for control of erosion and pollution during construction activities. The SWPPP will include plans to monitor the construction activities, evaluate Best Management Practices (BMP) effectiveness, and implement all necessary changes to minimize erosion and pollutant releases. Tacoma Power is a signatory to the approved Tri-County Agreement between Pierce, King, and Snohomish Counties and the National Oceanic and Atmospheric Administration-Fisheries (NOAA – Fisheries) for protection of endangered Puget Sound salmon under the Endangered Species Act (ESA). A portion of that agreement includes the development of standards and BMP for working in rights-of-ways near salmon-bearing water courses. Tacoma Power will evaluate and include additional appropriate considerations and BMP in the SWPPP to ensure protection of the waterways and compliance with ESA requirements.

Other than the construction and maintenance items discussed in this plan, no additional major construction items are anticipated. However, if any new major construction items associated with Settlement Agreement License Article 17 are proposed, they will be submitted to the FERC for approval.

3.1.1 Article 17 (a) – Peterman Hill Trail

Settlement Agreement License Article 17a:

A trail system on Peterman Hill built to accepted standards, of not less than 20 miles. The trail will serve non-motorized users and include parking, sanitation facilities, interpretive and regulatory signage and brochures.

This plan identifies the proposed activities and schedule necessary to construct a trail system on Peterman Hill. Final design and construction drawings will meet the current ADA regulations. Key design elements of this proposal include:

1. Trailhead improvements including signage and sanitation.
2. Phase 1 trail siting and construction.
3. Stream or drainage crossings.
4. Phase 2 trail siting construction.
5. Trail maintenance.
6. Schedule for construction.
7. Trail evaluation and monitoring.

3.1.1.1 PROPOSAL

The Cowlitz Wildlife Management Coordinating Committee (WMCC) established pursuant to the 1993 Settlement Agreement Relating to Wildlife has worked with Tacoma Power to develop the trail plan required in Article 17(a). As stated in the license article: *With respect to item (a) the Peterman Hill trail, the Cowlitz Wildlife Coordinating Committee, established pursuant to the 1993 Wildlife Settlement Agreement* (referred to in Article 24) *will provide oversight and approval of trail planning, location, construction, management and allowable impacts. The plan shall include provisions for monitoring of recreational use impacts to wildlife along and in the vicinity of the trail and define benchmarks for unacceptable wildlife impacts.* Article 18(a) includes details regarding oversight to be provided by the WMCC and the Cowlitz Wildlife Area (CWA) staff as well as Tacoma Power.

The Plan has been prepared in close consultation with the WMCC. Tacoma Power met with the CWA staff in September 2003 and with the WMCC on October 31, 2003 to initiate trail planning. Additional input has been ongoing with close cooperation in defining underlying criteria, identifying trail segments, designing the trailhead and new trail segments and establishing management and monitoring protocols. Consultation is detailed in Appendix 5.3 and 5.5. In addition, Tacoma Power intends to work in partnership with WMCC and the CWA staff for all trail construction, monitoring and evaluation work identified in this Article.

A trail system of not less than 20 miles is defined in Article 17(a). Tacoma Power met with the CWA staff on September 16, 2003 and with the WMCC on October 31, 2003 to initiate trail planning. The agencies proposed building the trail in two phases of approximately equal length with 5 years between phases. This approach allows monitoring of impacts to wildlife as the trail becomes established as a recreational destination and allows changes to be made to the second phase design to adapt to any concerns noted in Phase 1. The phased approach will also time trail construction in Phase 2 to avoid most timber harvest, which will be substantially completed in the same area by the time the second phase is constructed.

Several underlying principles for trail design and construction were identified by the WMCC and are supported by relicensing discussions.

1. The primary goal of the trail is to provide a non-motorized trail system for multiple recreation users including bicyclers, hikers, and horseback riders.
2. The trail system will be located to avoid sensitive wildlife habitats.
3. The trail system shall be built primarily on gated logging roads to avoid soil and habitat disturbance. Where a trail route would require traversing a trafficked logging road, new alternate trail will be constructed, wherever possible, to promote safety.
4. Sharing of stream crossings with trafficked roads may be necessary in several cases to avoid multiple disturbances to stream corridors.
5. Several new trail segments are proposed to connect trail segments on roads to form loop routes.
6. Other existing non-trail logging roads would continue to be available to recreational users unless posted otherwise but would not be identified as trails.
7. Some trail segments may occasionally need to be closed for a short time to avoid conflict with on-going wildlife or timber management operations and in such cases alternate routes will be identified with signs.
8. If the Washington State Forest Practices Road Abandonment and Maintenance Plan for Peterman Hill or other environmental protection regulations mandate abandonment of specific road segments or water crossings to protect water quality and fish habitat then those segments that are being used for the trail may need to be closed during abandonment construction or possibly rerouted.
9. The Peterman Hill Unit of the Cowlitz Wildlife Area is popular hunting area and some gated roads are opened during hunting season to allow disabled hunters motor vehicle access to quality hunting areas. During hunting seasons, trail users will be cautioned regarding safety and monitoring will determine if conflicts are occurring.
10. Tacoma Power reserves the option of seasonal closures of specific trail segments if monitoring determines users are damaging trail surfaces during the wet seasons.
11. Tacoma Power measured trail mileage from the trailhead one way over a trail route. In returning to the trailhead or main trail over an already traversed trail segment, actual travel routes would be longer than noted.

3.1.1.1.1 Trailhead Improvements

A trailhead will be constructed at the end of Peterman Hill Road, a paved county road that enters Tacoma Power property about one-half mile before the end of the pavement. This trailhead will be located within Section 8, Township 12 North, Range 4 East and as shown on Attachment 4.1 (Dwg. 17A-1). Trailhead improvements will include widening the end of the road to provide a gravel parking area for up to 10 vehicles and will be constructed with a sufficient turning radius for emergency vehicles. The road shoulder will also be widened for approximately 200 feet to accommodate up to 5 vehicle-horse trailer combinations. Improvements at the trailhead will include a new ADA vault toilet and a kiosk. Attachment 4.1 (Dwg. 17A-2) indicates the planned improvements at the trailhead and general configuration of these improvements.

The ADA toilet will be a precast vault toilet or an engineer approved equal. Key design elements of this product are that it has precast reinforced concrete with walls, floor and roof. The unit is vandal resistant, and meets all ADA requirements.

The toilet will be installed in a manner consistent with similar installations at the Cowlitz Project, specifically units installed at both Cowlitz hatcheries and the Kosmos Boat Launch. Final vault toilet details and site plans will be routed through the Lewis County Health Department for review and approval prior to installation.

The trailhead will also include a kiosk which will be a wood-framed design as detailed in Attachment 4.1 (Dwg.17A-3). Information to be installed on the kiosk will include interpretive and regulatory signage and brochures to be developed in conjunction with the Cowlitz Wildlife Area. Signs and brochures will also describe the multiple-use nature of the trail and will describe trail etiquette that promotes a good recreational experience for all users.

Interpretive signage will include Cowlitz Wildlife Area maps and information, Cowlitz Project FERC recreation information, and a map of the Peterman Hill area similar to Attachment 4.1 (Dwg.17A-1) including Cowlitz Wildlife Area information on roads and gates. Information about the unique aspects of the wildlife area will be developed and posted.

Regulatory signage will include fire restrictions, notice of trail use by only non-motorized vehicles (hiking, biking and horse use only) and appropriate rule signs to limit activities which would be detrimental to wildlife. Final regulatory signage will be prepared in cooperation with the WMCC and will be subject to change should certain activities prove inconsistent with the primary use of the land as wildlife habitat. Brochures prepared by Tacoma Power and the Cowlitz Wildlife Area would be available at the kiosk. Key elements of these brochures would be a map of the area, regulatory information, and information about wildlife management objectives. Attachment 4.1 (Dwg. 17A-4) shows the planned kiosk with a schematic of the type of information to be provided.

3.1.1.1.2 Phase 1 Trail Construction

Phase 1 trail construction will start at the trailhead and be generally located as shown on Attachment 4.1 (Dwg.17A-1) to develop a trail system of not less than 10 miles. Trails in Phase 1 are shown in red. Key components of this Phase 1 trail include trail location, trail design using seldom used logging roads, new trail construction, stream crossings, and coordination with WDFW and the WMCC.

Trail sections in Phase 1 may be exchanged for sections in Phase 2 or for previously unidentified segments upon approval of the WMCC providing the distance for Phase 1 includes a minimum of 10 miles and provides a similar visitor experience.

General trail location has been based on minimizing impacts to wildlife. The location shown on Attachment 4.1 (Dwg. 17A-1) has been prepared in close cooperation with the WDFW and the WMCC. Certain areas of high wildlife sensitivity have been avoided, particularly blocks of older forest habitat in Sections 14 and 15.

Trail locations have been identified to maximize use of logging roads closed to motor-vehicle travel. The road segments were selected both to minimize intrusion into sensitive habitats and because they have the least amount of planned future timber hauling. In addition, many of these roads are now being maintained by the WDFW for non-motorized access and some may be scheduled for formal abandonment, precluding any future use by motor vehicles. This method of identifying trail segments helps reduce the possibility of conflict between trail users and motor vehicles and possible trail damage caused by heavy truck traffic. Only minimal improvement of these portions of the trail is needed.

Trail routes and safe crossing areas on roads will be identified in brochures, maps and with signs. Road surfaces in some areas may need to be modified to improve drainage. Trails in Phase 1 that utilize existing road segments are shown as dashed red lines on Attachment 4.1 (Dwg. 17A-1).

New trail will be constructed approximately as shown in bold red lines on Attachment 4.1 (Dwg. 17A-1). These trail segments were selected to provide some looped trails, provide an opportunity to travel to selected view sites and interpretive opportunities, minimize conflict with wildlife habitat and reduce impact on drainage courses or stream crossings. In addition, a new trail segment will be constructed where the trail parallels the existing main access logging road (1000 Road) from the trailhead to a point approximately 0.7 miles easterly as shown on the Attachment 4.1 (Dwg. 17A-1). This portion of the new trail will assist in minimizing conflicts between trail users and motor vehicles. New trail will be constructed to a minimum width of 2 feet and maximum width of 4 feet and all new trails will incorporate native material on site wherever feasible. Due to local soil conditions, imported rock will be used to provide a stable trail wherever necessary. To the extent feasible, the trail will be designed to maintain a slope of 12 percent or less. Trails will be sloped to minimize erosion and will include small culverts as required to reduce the likelihood of trail washout due to heavy rainfall events. Trail design is discussed in greater detail in Appendix 5.4 – Trail Construction and Maintenance Handbook.

Tacoma Power's design engineer will walk all new trail locations with representatives of the WMCC to verify new trail locations will not impact wildlife habitat, ensure that design criteria (slope, width and drainage) can be maintained and other environmental issues are addressed. During this walk-through, the proposed trail location will be marked in the field with flagging and paint to clearly delineate the route.

3.1.1.1.3 Seasonal Drainage Crossings

It is anticipated that this project will require crossing some seasonal drainage courses and streams. Topography, design criteria, and permitting may influence how and where streams are crossed. Tacoma Power will work with the WMCC to locate least impacting stream crossing locations. The least intrusive method of crossing streams in specific locations may in some areas require the trail to use existing road crossings. The key elements in designing any new crossings will be selecting whether to install culverts, construct bridges over these drainage courses or use ford-type crossing. All construction activities in the vicinity of these stream crossings will be done in accordance with environmental regulations. Decisions on how best to make these crossings will be done in cooperation with WMCC and will be designed to reduce ongoing and annual maintenance. Tacoma Power, in conjunction with Phase 1 trail construction activities, plans on visiting each crossing with a representative of WDFW. Tacoma Power feels that on-site review of the trail location, existing topography and specific details of each drainage crossing will provide the basis for a plan to minimize habitat disruption, erosion and environmental issues.

Actual crossings will be either aluminum prefabricated or heavy timber bridges with reinforced concrete abutments or galvanized steel or plastic culverts using a combination of native or imported backfill materials. Other work, which may be needed depending on site conditions, may include gravel riprap, reforestation or planting, broadcast seeding of local grasses or other erosion mitigation measures.

3.1.1.1.4 Phase 2 Trail Construction

The Phase 2 trail system will be located generally as shown on the drawings in Attachment 4.1 (Dwg. 17A-1). The dashed blue lines indicate trails in Phase 2 that will lie on existing logging roads. The bold blue lines indicate trails that will be newly constructed. The objectives, criteria and plans outlined for Phase 1 (Section 3.1.1.2) will be followed in Phase 2.

The results of monitoring and evaluations planned for Phase 1 as well as any management lessons learned during the 5 year interim between construction of the two phases will be used to adaptively modify the Phase 2 trail plan. Such modifications will only be made to mitigate the impact of the trail on wildlife and wildlife habitat and to correct any trail design deficiencies noted during the interim period. While we do not expect any major modifications will be necessary, any large changes to the trail plan would be sent to consulting agencies and to FERC for approval.

3.1.1.1.5 Trail Maintenance

Trail maintenance is described in the attached Trail Construction and Maintenance Handbook (Appendix 5.4). Trail construction and maintenance standards were developed following U. S. Forest Service standards. Tacoma Power's trail construction engineer has attended numerous trail construction training programs. Contractors experienced in trail construction, aided by Tacoma Power staff and volunteers will construct the trail. Trail maintenance will be conducted by Tacoma Power staff , CWA staff, volunteers and paid contractors. Trails will be patrolled regularly and major maintenance conducted prior to the main recreation season whenever feasible.

3.1.1.2 SCHEDULE

Construction of most of the proposed trail system identified as Phase 1 will begin in 2006. Snow levels and winter weather conditions will require that most earth work be limited to the spring to early fall season. An attempt will be made to avoid active construction during the fall deer and elk hunting seasons.

The construction schedule is predicated on obtaining FERC approval by early 2005, which will allow for final design and permitting to begin during 2005 with planned design completion and permit receipt by the end of 2005. Tacoma Power expects construction work to begin during the spring of 2006 to reduce the conflicts with active logging planned in 2005. This date is dependent on receipt of all approvals and/or permits by the end of 2005. Phase 1 trail construction should be complete by the fall of 2006. Unplanned permitting issues, weather conditions or forest closures due to fire danger could delay construction.

Phase 2 trail construction will not commence until the results of the evaluation and monitoring discussed in Section 3.1.1.3 have been reviewed and approved by the WMCC. Any modifications to trail routes or design will be discussed by the WMCC and forwarded to Tacoma Power for inclusion in the final design. The evaluation and review process is expected to be an ongoing process with discussion of trail impacts occurring at annual WMCC meetings but will culminate in the fall of 2011 with final design changes for Phase 2 forwarded to Tacoma Power. Construction is planned to begin on the trail segments in Phase 2 in the spring of 2012 and to be completed by the fall of 2012.

3.1.1.3 EVALUATION AND MONITORING

Article 17 states in part that, *The plans shall include provisions for monitoring of recreational use impacts to wildlife along and in the vicinity of the trail and define benchmarks for unacceptable wildlife impacts*.

Tacoma power proposes an adaptive process for monitoring, evaluation, responsive trail maintenance, and a process to make any substantial changes to the trail using a consultative process. In addition, Article 18(a) requires oversight by the WMCC for trail construction and management.

Monitoring requires that concerns regarding trail impacts be identified, impact thresholds described and that the process remain flexible to account for unidentified concerns, new monitoring techniques and unanticipated changes in recreational use patterns.
In addition, over time, some of the monitored variables may turn out to not be useful indices of wildlife impact and may be dropped, changed or substituted. Before any aspect of the monitoring is changed it would be discussed with the WMCC. Tacoma Power and the staff of the Cowlitz Wildlife Area will conduct the monitoring. Volunteers will be sought for some parts of the program. Results of the monitoring will be discussed each year at the required WMCC meeting and will be part of the annual report on the Cowlitz Wildlife Area sent to FERC each May 1. Any changes to the monitoring program will be discussed at the WMCC meetings. It is expected that at some time in the future when both trail phases are complete and the recreational program mature, less monitoring may be required. At such time, and with the approval of the WMCC, changes to the monitoring plan will be proposed in an annual report and FERC approval requested.

3.1.1.3.1 Indices to Trail Impacts

Indices to trail impacts to be monitored include:

1. Estimating the number of vehicles using trailhead during various seasons.
2. Estimating the number and type of users on trail during various seasons.
3. Seasonal assessment of trail conditions and documentation of problems with trail conditions.
4. Documenting any impacts to vegetation and streams from trail use.
5. Documenting any off-trail behavior from visitors.
6. Documenting any observations of wildlife disturbance or wildlife injury due to trail use.
7. Documenting any disturbance from trail users' dogs.
8. Documenting any introduction of noxious weeds attributable to the trail. Substantial horse use will introduce noxious weeds along the trail.
9. Quantifying unintended consequences of trail use such as garbage, camping, woodcutting, fires, poaching, human waste, social trail creation and increased trespass on neighboring private land.
10. Quantifying vandalism, particularly to signs, gates, and trailhead facilities.
11. Documenting any advantages of the trail due to increased management access, better hunter access, positive public relations, improved volunteer relationships, and more wildlife interpretive opportunities.

3.1.1.3.2 Unacceptable Wildlife Impact Thresholds

Unacceptable wildlife impact thresholds are difficult to define for every scenario. In some cases, the same activity could have different levels of impact on wildlife depending on habitat and species variables. The WMCC with WDFW in the lead, will look at the data each year from the monitoring and draw conclusions about wildlife impacts. Numerical benchmarks will not be set at this time, but monitoring indices will be established. Unacceptable impacts will be identified and methods suggested for mitigating the impact. Such issues and suggested solutions will be brought to the attention of Tacoma Power. Tacoma Power will attempt to implement the suggested measures within the next maintenance season. Such measures could include seasonal closures, rerouting of trail segments, replacement of trail surfaces, additional regulations etc. If suggested measures are complex, involve significant changes to the trail program, or would significantly impact users, the consultation agencies will be asked to review the problem and proposed solution. The decision will be documented in the annual report and FERC approval would be requested.

Benchmarks for unacceptable wildlife impact could include but not be limited to the following:

1. Substantial impact to wildlife and fish habitat including steams.
2. Unacceptable vandalism and damage to wildlife area resources.
3. Unacceptable disturbance of wildlife by trail users (or their companion animals).
4. Extensive trail damage caused by users that cannot be easily remedied with standard trail maintenance techniques.
5. Overcrowding on the trail causing user conflicts or substantial conflicts between traditional wildlife area users and trail users such that the wildlife management program is compromised.

3.1.1.4 CONSULTATION AND REPORTING

As various construction components of the Peterman Trail are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009.

3.1.2 Article 17 (b) – 2 Mile Non-Motorized Loop Trail, Mossyrock Park

Settlement Agreement License Article 17b:
A 2-mile non-motorized loop trail near Mossyrock Park, part of which will (to the extent feasible) be made ADA accessible.

This plan identifies the proposed activities and schedule necessary to construct a non-motorized trail near Mossyrock Park. Final design and construction drawings will meet the current ADA regulations. Key design elements of this proposal include:

1. ADA Trailhead near Mossyrock Park primitive group camp.
2. ADA trail.
3. Trailhead on Young Road
4. Upgrade trail in Cowlitz Wildlife Area.

3.1.2.1. PROPOSAL

The Washington Department of Fish and Wildlife, Cowlitz Wildlife Area worked with Tacoma Power to design a trail near Mossyrock Park that meets the criteria set forth in Article 17(b). Tacoma Power's wildlife lands (Mossyrock Unit of the Cowlitz Wildlife Area) are directly adjacent to the undeveloped Mossyrock Park lands where the trail is proposed. In addition, a trail loop on the wildlife lands had been marked and cleared by the wildlife area staff in the past few years but the trail required upgrades, was not receiving a great deal of use and was not easily accessible to park visitors. The Washington Department of Fish and Wildlife was interested in assistance with upgrades and maintenance of the trail and with the concurrence of the WMCC, suggested that Tacoma Power integrate the basic wildlife trail into the trail required by Article 17(b).

The linking of the new ADA accessible trail proposed as shown in Attachment 4.1 (Dwg. 17B-1) to the wildlife trail to be upgraded and maintained by Tacoma Power offers an opportunity for trail users and park visitors to explore the Cowlitz Wildlife Area. It offers an opportunity for the Washington Department of Fish and Wildlife to focus on their core functions while still providing for wildlife compatible outdoor recreation and provides opportunities for environmental education. Tacoma Power avoids disrupting additional habitat during trail construction and is able to offer a new visitor experience. The final trail configuration as proposed is longer than the 2 miles required in Article 17(b).

3.1.2.1.1 ADA Trailhead

A trailhead will be constructed at the end of the road to the primitive group camp near the entrance to Mossyrock Park as shown on Attachment 4.1 (Dwg. 17B-1). Trailhead improvements will include widening and clearing an area at the end of the road to provide for a gravel parking area for up to 4 vehicles and an informational kiosk. This trailhead is immediately adjacent to the primitive group camping area of Mossyrock Park. Also planned in the immediate vicinity of this trailhead will be an ADA vault toilet, which has been identified as part of Tacoma Power's ADA transition plan. The vault toilet will be constructed primarily for group camping patrons but will be available to trail users as well. The ADA vault toilet and the informational kiosk will generally be the same as that shown on Attachments 4.1 (Dwg. 17A-5 and 17A-3). Attachment 4.1 (Dwg. 17B-2) shows the overview of the planned regulatory and informational language to be included in the informational kiosk. Although the article specifically calls for non-motorized traffic, motorized wheelchairs will be allowed and that information will be included as part of the regulatory information provided.

3.1.2.1.2 ADA Trail

The ADA trail construction will start at the trailhead and be generally as shown on Attachment 4.1 (Dwg. 17B-1). The ADA accessible trail will include approximately .82 miles of hardened surface. The trail location has been selected to parallel the Cowlitz Wildlife Area boundary adjacent to a nice stand of trees. Trail construction will include clearing a 5 foot wide path of all grass and native material to a depth of approximately 6 inches and installing compacted gravel in the entire width of the trail. The path will be roller compacted to provide a firm surface meeting ADA criteria. Additional signage will be included along the ADA trail to request horse riders stay off of the gravel path.

3.1.2.1.3 Trailhead at Young Road

The existing trailhead on the Cowlitz Wildlife Area is located as shown on Attachment 4.1 (Dwg. 17B-1) and has only a small area to park and an older kiosk. Trailhead improvements will include widening and clearing an area immediately adjacent of this area to provide for a gravel parking area for up to 4 vehicles and a new informational kiosk. The kiosk and information will be developed in conjunction with the Cowlitz Wildlife Area but will have many of the same components as the kiosk at the other trailhead (Dwg. 17B-2).

3.1.2.1.4 Upgrade Trail in Wildlife Lands

The Cowlitz Wildlife Area had previously constructed a narrow 1.7 mile dirt trail through the Mossyrock Unit of the Cowlitz Wildlife Area. The WMCC agreed that trail improvements on this trail route and continuing maintenance by Tacoma Power would be beneficial to the wildlife area program. The existing trails shown on Attachment (Dwg. 17B-1) are narrow dirt trails, in some places easily overgrown by adjacent brush and berry bushes. The existing trail will be upgraded as required to be a minimum width of 2 feet and maximum width of 4 feet. Construction will incorporate native material on site to the extent feasible. It is expected, due to existing conditions, that imported rock will be used to provide a stable trail bed in some locations. Alignment and grade of the existing trail will not change other than minor clearing or raising of grade due to soil conditions. One section of trail has recently been moved to the top of a berm paralleling Young Road to provide better news of wildlife habitat improvements and better separate trail users from road traffic. The trail will be sloped to minimize erosion and will include small culverts as required to reduce the likelihood of trail washout due to heavy rainfall events. Trail design is discussed in greater detail in the Trail Construction and Maintenance Handbook (Appendix 5.4).

3.1.2.2 SCHEDULE

Proposed permitting and construction of the Mossyrock trail system will begin when FERC approval is received, and will hopefully be available for public use by 2006. This construction schedule is predicated on obtaining FERC approval in the first half of 2005, which will allow for design and permitting to begin during 2005 with planned design completion and permit application by the end of 2005. This date is dependent on receipt of all approvals and or permits by the end of 2005.

3.1.2.3 EVALUATION AND MONITORING

Trail use and satisfaction will be monitored periodically. Trail segments will be routinely patrolled and maintenance performed as needed prior to recreation seasons. Seasonal closures for horse use may be necessary on wetter soil in winter and horses will not be allowed on the ADA accessible trail segments within the park boundary.

3.1.2.4 CONSULTATION AND REPORTING

As various construction components of the Mossyrock Trail are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009.

3.1.3 Article 17 (c) – Mossyrock Park Boat Launch Extension

Settlement Agreement License Article 17c:
An extension of the Mossyrock Park boat launch with mooring dock, including provisions for seasonal ADA accessibility.

This plan identifies the proposed improvements and schedule to construct a boat launch extension at Mossyrock Park. Final design and construction drawings will meet the current ADA regulations. Key elements include:

1. Ramp extension.
2. Boat moorage.
3. Seasonal ADA accessibility.
4. Construction schedule.

3.1.3.1 PROPOSAL

3.1.3.1.1 Ramp Extension

The ramp that is to be is extended is the most northerly ramp and is referred to as Existing Ramp #1 in Attachment 4.1 (Dwg. 17C-1). The ramp will be extended from the present elevation of approximately 730 to an elevation of approximately 705. Work to extend the ramp may include excavation and grading of the area to ensure adequate ramp slope is maintained, placement of imported gravel base to prepare a sub grade, installation of prefabricated concrete planks and then placement of crushed rock between the concrete planks. Due to the length of Ramp No. 1, a gravel turn-around area will be constructed. Location will be on the north side of Ramp No. 1 as shown on Attachment 4.1 (Dwg. 17C-1). In addition, this ramp is adjacent to a steep side slope and this area will be inspected and may include additional riprap to protect this slope. Stumps within 100 yards of this boat ramp and above the seasonal water line will be removed if they pose a boating hazard.

3.1.3.1.2 Boat Moorage Facility

Included in this proposal will be a moorage dock specifically to facilitate easy offloading and loading of boats. It is not intended to allow for extended tie up times and the moorage facility will be posted with a notice to limit stay to 15 minutes when other boaters are present.

The moorage dock will be constructed to be 7.25 feet wide, which is the same width as the existing docks and will be constructed to match the existing structures. The dock will include multiple sections providing an overall length of 100 feet. These sections will be designed to easily assemble. Additional design details will also be prepared such that the new moorage dock can connect to either the dock located between existing ramp 3 and 4 or the dock located between existing ramp 1 and 2 (Refer to Attachment 4.1 Dwg. 17C-1). The intent would be to leave the moorage between ramp 3 and 4 during the high reservoir summer months when boating activity is high, which will enhance the overall efficiency of loading and unloading of boats. As the reservoir lowers after Labor Day, the moorage dock will be moved and added to the end of the dock between ramp 1 and 2. This will allow for improved loading at much lower reservoir levels than at present. The floatation devices and moorage dock deck will be designed using either concrete, galvanized steel or pressure treated wood to improve design life. Project scope will also include painting guide stripes on each launch ramp to assist boaters.

3.1.3.1.3 Seasonal ADA Accessibility

The existing ramps do not meet current ADA requirements and cannot realistically be modified for low level access. During lower reservoir elevations the dock sections rest on ground and lay at the same steep slope as the ramps. Therefore, at lower reservoir elevations the docks are not ADA compliant. To improve ADA accessibility during the recreation season, Tacoma Power is proposing to construct 4 ADA parking sites near the boat launch and a paved trail leading from the parking sites to the boat launch area. The paved trail will be designed to meet all ADA criteria. Users will be able to access the boat docks during normal summer pool elevations.

3.1.3.2 CONSTRUCTION SCHEDULE

Completion of the construction of the Mossyrock Boat Launch extension may be complete by the winter of 2006 but is dependent on reservoir elevations lowering to elevation 705. Historically the reservoir only gets to elevation 705 about 50 percent of the time. (17 times in a 34-year record from 1969 through 2002).

To expedite the construction Tacoma Power would plan on purchasing sufficient precast concrete planks in 2005. Permit documents would be prepared and submitted to both Lewis County for the shoreline permit and WDFW for a hydraulic permit in 2005. Construction would then be in the winter of 2005-2006 (low reservoir period) after all permits are received.

This schedule is predicated on obtaining FERC approval for this article by the end of 2004.

3.1.3.3 REPORTING

As various construction components of the recreation plan are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use will be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009.

3.1.4 Article 17 (d) – Low Water Boat Launch, East End of Riffe Lake

Settlement Agreement License Article 17d:
A low water boat launch at the east end of Riffe Lake.

This plan identifies the proposed activities and schedule necessary to construct a low level boat launch on the east end of Riffe Lake. Final design and construction drawings will meet the current ADA regulations. The key elements are:

1. Location and construction.
2. Access road to the boat launch.
3. Boat trailer parking.
4. Construction schedule.

3.1.4.1 PROPOSAL

3.1.4.1.1 Location and Construction

The low water boat launch will be constructed at the east end of Riffe Lake, just north of Taidnapam Park as shown on Attachment 4.1 (Dwg. 17D-1). The launch and boat trailer parking area is planned for construction on land that is currently included as part of the identified wildlife lands for the Cowlitz Project. Use of this land has been discussed with the Wildlife Management Coordinating Committee and two possible scenarios are proposed:

1. Construction could proceed by permit or an MOU or,
2. Modification of wildlife area boundaries could occur. If wildlife boundaries are modified, this would require new Exhibit G drawings be developed and submitted to FERC.

This proposed location would allow the launch area to be constructed where existing topography minimizes excavation and disruption to the environment. Tacoma Power will continue to pursue an agreement with the WMCC regarding this area. If an agreement is not possible, Tacoma Power will document the issue and resubmit new plans for review and approval.

The project will entail a boat launch totaling approximately 720 feet of ramp extending to elevation 715. The improvements will include approximately 550 lineal feet of excavation and cast in place concrete for the upper ramp, and approximately 170 lineal feet of precast concrete planks for the lower portion of the boat ramp.

The launch is located to minimize length and excavation and to maintain a minimum boat launch ramp grade of 12 percent. Approximately 10,000 cubic yards will be excavated and the materials will be used in uplands construction for the boat launch parking area or as required fill for Taidnapam Park. The excess removed materials may be bermed adjacent to the project area or adjacent to the nearby Haul Road. Excavated materials may be used for minor fill below full reservoir (elev. 778.5) but it is expected most material will be deposited above full reservoir levels.

The upper 550 feet is planned to be constructed with 12’ wide by 6” deep cast in place concrete which will reduce erosion, on-going maintenance and provide for a better ramp surface than precast planks. In addition, the upper 550 feet will be finished with a self-cleaning “V” groove finish.

Launch designs will be in accordance with current engineering guidelines including the BMP for Environmental and Habitat Protection in Design and Construction of Recreational Boating Facilities, as published by Oregon State Marine Board, revised September 2002.

Due to agency concerns with placing concrete near the water surface this portion of the project would only be done when the reservoir is at its low water elevation. To minimize crackage and differential settlement reinforcing steel or mesh would be used for this portion of the launch ramp. The lower portion of the ramp would be constructed of 12' wide prefabricated concrete planks as detailed in Attachment 4.1 (Dwg. 17C-1). Installation would include installing crushed ballast imported from local quarry below the planks and crushed rock between the planks. These prefabricated planks can be purchased and would be installed as reservoir elevations allow until the final elevation of 715 is met.

Due to the long length of this launch ramp and the difficult of backing a boat trailer down long grades Tacoma Power is planning to construct a turn around area at approximately lake elevation 750-755 to allow boaters to reduce the effective length of backing to launch their craft. This turn around area will be 20' wide by approximately 40' deep as shown on Attachment 4.1 (Dwg 17D-1). Erosion control material will be installed below full reservoir elevations to ensure the newly cut slopes do not excessively erode into the reservoir. Erosion control will be done via a gravel rip-rap or other approved erosion control materials. Erosion control above full pool elevations will be done with hydroseeding, hand seeding and plantings using native species.

3.1.4.1.2 Boat Launch Access

Access to the boat trailer parking area will be through the relocated Taidnapam Park entrance and newly created park expansion area as shown on Attachment 4.1 (Dwg. 17F-10). The access road will be 24' wide asphalt.

A secondary access off the Haul Road, as shown on Attachment 4.1 (Dwg. 17D-2), will be developed for use when Taidnapam Park is closed during the 2 weeks around Christmas/New Year. During this time, the main park access gates, as shown on Attachment 4.1 (Dwg. 17D-3), and the gates from the park to the boat launch access road will be closed. Although, the secondary access is locked during the park season, it will be open during this holiday period to ensure boaters have access to the lake year round.

3.1.4.1.3 Boat Trailer Parking Area

An asphalt paved boat trailer parking area will be constructed immediately east of the proposed low water boat launch as shown on Attachment 4.1 (Dwg. 17D-2). This parking area will include forty (40) striped trailer stalls that are 10' wide and approximately 40' long. These stalls are the same size as those that Tacoma Power has constructed at the Cowlitz Salmon Hatchery boat launch, Cowlitz Trout hatchery boat lunch, Kosmos boat launch and at Alder Park at our Nisqually Project. It has been determined this size gives ample room to allow for efficient parking while still limiting the area needed for parking.

3.1.4.2 CONSTRUCTION SCHEDULE

Proposed construction of the boat launch, boat launch access road and boat trailer parking lot will be done in 2006-2008 and may be available for public use by Memorial Day weekend of 2008 providing all approvals are received. The reason for this schedule is that Tacoma Power is proposing to link construction of this project with the construction planned for Taidnapam Park as outlined in section 3.1.6.

The low water boat launch will be done in multiple phases to accommodate actual reservoir elevations. Riffe Lake is required to be lowered below elevation 745 and every year the lake always lowers to at least elevation 740 but does not get lower than that during some years. That portion of the boat ramp that can be constructed in any one season will be done in reinforced concrete and the remainder will be done as reservoir elevations allow using concrete planks.

The section of ramp below elevations 740 may be done in 2 or 3 phases, therefore, the lower section of ramp will be constructed with prefabricated concrete planks. The reservoir has dropped below elevation 715 only 16 of the 33 years Tacoma Power has operated Riffe Lake, and below elevation 725 only 22 of the 33 years Tacoma Power has operated Riffe Lake. Tacoma Power intends to have the planks fabricated in time to install if reservoir elevations allow during the winter of 2006 and will finish installation in 2007 or later as reservoir elevations allow.

Final installation will be subject to obtaining all required permits and a review of the site to verify no cultural resources will be disturbed.

3.1.4.3 REPORTING

As various construction components of the recreation plan are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009.

3.1.5 Article 17 (e) – ADA Accessible Fishing Platform, Barrier Dam Vicinity

Settlement Agreement License Article 17e:
An ADA accessible fishing platform in the vicinity of Barrier Dam.

This plan describes the proposed ADA accessible fishing platform to be constructed near the Barrier Dam. Final design and construction drawings will meet the current ADA regulations. Key elements include:

1. ADA accessible fishing platform including multistage landings and on-grade ramps to allow access at varying river elevations.
2 Signage and markings to prioritize use by wheelchair-bound anglers when present.
3. Parking lot modifications.
4. Construction schedule.

3.1.5.1 PROPOSAL

3.1.5.1.1 ADA Accessible Fishing Platform

The ADA accessible fishing platform will be located near the Cowlitz Salmon Hatchery (Barrier Dam) boat launch as shown on Attachment 4.1 (Dwg. 17E.1). This location was chosen for the following reasons. The area has historically been a good fishing location, it is immediately adjacent to available ADA parking, it is near ADA accessible vault toilets constructed by Tacoma Power in 2003, and has topography which allows for on-grade construction. On-grade construction is preferable as it allows the anglers to be adjacent to the river and just above the river elevations, which makes landing a fish much easier. The fishing platform will be primarily constructed on-grade and will include a series of landings and ramps to allow access at different river elevations.

Landings would be constructed to be 8’ wide by 10’ long and have a marked area on each landing that is 5’ square as shown on Attachment 4.1 (Dwg. 17E-1). This would allow wheelchair anglers to use the lower most landing and still allow other anglers to either fish alongside or use the fishing platform as an easy method to walk down to the river’s edge. Ramps between landings would not exceed a 12:1 slope and would be constructed 4’ wide to minimize excavation and fill required. Due to the varying river elevations and the potential for river debris no guardrails are being proposed. However, as requested by the IAC we are proposing to embed guard post sleeves into the edge of the concrete landings and ramps to allow for future railing if desired as shown on Attachment 4.1 (Dwg 17E-1). In addition, the edge of the ramp and landing will be constructed with a standard parking curb to reduce the chance that a wheelchair could inadvertently roll over the edge of the landing or ramp.

The parking lot as shown on the attached drawings is at approximately elevation 234 which will be the elevation for the first landing. Landings will be located so as not to exceed 2-1/2 vertical feet for the upper portion of the fishing platform and will be constructed at approximately elevations 227, 229, 231.5 and 234. Landings below elevation 227 would be constructed not to exceed one and one-half foot of vertical differential elevation.

Various portions of the fishing platform may be underwater depending on the river elevations. To minimize excessive maintenance or erosion in higher flow events Tacoma Power will provide erosion control on all cut slopes and fills.

Landings and ramps will be constructed such that no major fill is required and downhill sides will include a thickened edge to reduce potential for erosion. In addition, the fill slopes will include gravel riprap, which will be embedded into the native materials. Cut slopes will be excavated to a maximum slope of 2:1 and lined with riprap. All cut and fill slopes will include locking the gravel riprap together by a concrete slurry.

3.1.5.1.2 Signage and Markings

The fishing platform will not be limited to disabled anglers but will be open to the public. Tacoma Power does propose to include signage and marking to encourage the public to accommodate wheelchair bound anglers when they are present. A sign will be constructed near the upper most landing of the ramp that states "THIS FISHING PLATFORM HAS BEEN CONSTRUCTED TO MEET AMERICAN WITH DISABILITIES ACT (ADA) REQUIREMENTS. PLEASE ALLOW WHEELCHAIR BOUND ANGLERS PRIORITY IN USING THE LANDING AREAS MARKED IN YELLOW. THANK YOU FOR YOUR COOPERATION".

Each landing will have areas for a wheelchair anglers marked in striped yellow paint.

3.1.5.1.3 Parking Lot Modifications

Parking lot modifications will be minor and will include striping to identify a minimum of 2 ADA parking stalls and 2 ADA trailer parking stalls, all with clear space, and an identified pathway to the ramp location as shown on Attachment 4.1 (Dwg. 17E-1)

Stalls will be striped and signed in accordance with the current recommendations for accessibility guidelines for Recreational Facilities and Outdoor Developed Areas.

3.1.5.2 SCHEDULE

Proposed construction of the ADA accessible fishing platform will be done in 2006 and may be available for public use by Memorial Day weekend of 2006. This schedule is predicated on obtaining FERC approval for this Article by the end of 2004 to allow permitting in 2005.

In addition the ADA accessible fishing platform will likely be done in multiple phases depending on actual river elevations. The Cowlitz River varies in elevation relative to the amount of flow in the river.

Tacoma Power would propose constructing landings as river conditions and permitting allow with the condition that no landing would be constructed that would require damming the river or placing concrete below the river elevation at the time of construction.

3.1.5.3 REPORTING

As various construction components of the recreation plan are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009 and every 6 years thereafter.

3.1.6 Article 17 (f) – 50 Additional Campsites At Taidnapam Park

Settlement Agreement License Article 17f:

50 additional campsites at Taidnapam Park to be provided during years 7 to12 of the license term.

As discussed in paragraph 2.2 Tacoma Power has provided an alternate proposal for this portion of the article. This proposal suggests revision of the article to read *100 additional campsites at Taidnapam Park to be constructed by 2008*.

This plan for 100 additional campsites at Taidnapam Park will identify the types and distribution of campsites, other proposed improvements and the construction schedule. Final design and construction drawings will meet the current ADA regulations. Key design elements of this proposal include:

1. 12 site group camp area.
2. 78 site main recreational vehicle (RV) loop.
3. 10 tent camping sites.
4. Restroom in new main loop.
5. Restroom for tent camping area.
6. Park entrance modifications.
7. Miscellaneous improvements.
8. Schedule.

3.1.6.1 PROPOSAL

3.1.6.1.1 Twelve Site Group Camp Area

A new 12 site group camp area will be constructed near the existing day use area as shown on Attachment 4.1 (Dwg. 17F-1). The day use area parking, restrooms and open areas have had limited use because the swim beach is only accessible between full pool (elevation 778.5) and approximately elevation 774. The new group camp takes advantage of some of the unused portion of the day use area.

The location of this new group camp area will give the users of this group camp area immediate access to the restroom and playground amenities (Big Toy play toy, picnic tables, outdoor shower, and swim area when accessible). The design of this area will include partial hook-up posts (electrical and water) for each of the twelve sites, improving the general area with gravel to provide for a level parking area and installing picnic tables and fire rings, including some ADA tables and rings, for use by the group camp patrons.

3.1.6.1.2 Seventy-eight Site Main RV Loop

The new 78-site main RV loop will be constructed just north of the existing campground as shown on Attachment 4.1 (Dwg. 17F-1). The general criteria for laying out the park is maintaining space between the new RV sites and the new boat launch access road, high water shoreline and other loop roads. Adequate spacing and set backs will be provided between campsites.

Other construction features include 12' wide paved roads throughout the RV loop for one-way traffic areas and 24' wide paved roads for the center road that allows traffic both ways. All sites will be constructed to have at a minimum a fire pit, picnic table, partial hook-up posts (electrical and water) and approximately 1/3 of the sites will be constructed with sanitary sewer hook-ups. In addition, fire hose cabinets will be installed throughout the park similar to those installed in Taidnapam Park Phase 1. Features of the RV loop camp area are shown on Attachments 4.1 (Dwgs. 17F-1 through 17F-16).

Construction of the loop will be performed in a manner to minimize logging of trees and also allow individual sites to be field-sited after construction of the main loop. The vegetation in the area consists of second growth forest with a strong deciduous component. It is the intent to design the main loop and launch access roads and advertise that contract separately to include clearing and grubbing to a width of 40' for one way roads and 52' for two way roads. After this road construction is completed the site will be field inspected by the design engineer and current Taidnapam Park manager and each RV site will be individually selected. Selection will be made to minimize cutting of larger diameter trees or interesting natural features. During the initial construction of Taidnapam Park this method of selection resulted in RV site spacing greater than the minimums in many locations.

A minimum of 7 sites will be constructed to meet ADA requirements including ADA accessible picnic tables, raised fire pits or accessible grills, hose bibbs, and paved areas around the improvements. In addition, paved pathways will lead from these sites to the new restroom, which includes ADA accessible facilities. The roads will be marked to indicate pedestrian crossing areas near the ADA campsites.

3.1.6.1.3 Ten Tent Camping Sites

The new 8 site tent walk-in camping area will be located north of the main entrance road and south of the new access road as shown on Attachment 4.1 (Dwg. 17F-1). Two of the sites will be ADA accessible. The tent sites will be dispersed in this area to provide buffers between the individual sites as best practical. Each site will include at a minimum a 20' by 20' cleared area that is leveled. Where possible tent layout areas will be improved. In addition, each site will include a picnic table and fire ring.

A paved parking area for up to 20 vehicles will be constructed near the trailhead for the walk-in tent camping sites. Additional gravel parking sites will be constructed for use by the tent campers and for RV campers who bring in additional vehicles. Near the main walk-in trailhead and at one other location central to the tent sites a water hose bib and drain will be located for use by campers. Two tent sites will also be added to the existing tent area.

3.1.6.1.4 Main Loop Restroom

The new main loop restroom will be constructed as shown on Attachment 17F-17 and will include both a men's and women's ADA accessible restroom, 2 unisex ADA restrooms, and 5 ADA shower rooms. The restroom design is a hybrid of the new restrooms currently being constructed by Washington Parks and Recreation Commission and Taidnapam Park's existing restrooms. This flexible design will aid in providing well maintained restrooms that are able to be kept partially open at all times even during routine maintenance.

The building exterior will be similar to other restrooms at Taidnapam Park including an exterior of split faced concrete masonry units, cedar screening walls and a steel panel roof system. Internal features will include a tile wainscoted rear wall, central air handling system and commercial grade bathroom fixtures and hardware. Restroom details are shown on Attachment 4.1 (Dwg 17F-17 through 17F-22).

3.1.6.1.5 Tent Site Restroom

The new tent site restroom will be constructed as shown on Attachment 17F-23 and will include 2 unisex ADA restrooms, and 4 ADA shower rooms. This design is very similar to the new restrooms currently being constructed by Washington Parks and Recreation Commission. This design will aid in providing well maintained restrooms that are able to be kept partially open even during routine maintenance.

The building exterior will be similar to other restrooms at Taidnapam Park including an exterior of split faced concrete masonry units, cedar screening walls and a steel panel roof system. Internal features will include a tile wainscoted rear wall, and commercial grade bathroom fixtures and hardware. Restroom details are shown on Attachment 4.1 (Dwg 17F-23 through 17F-28).

3.1.6.1.6 Park Entrance Modifications

Tacoma Power is proposing to modify the main entrance of Taidnapam Park including a new ADA accessible entrance booth, an overflow booth and revisions to the main park access road. The entrance booth will be constructed 200' east of the existing entrance booth and include a restroom for use by park employees as shown on Attachment 4.1 (Dwg 17F-30). During heavy volume periods this will allow both entrance booths to be staffed to accelerate park registration and entrance for park visitors. Details of the new entrance booth and overflow booth are shown on Attachment 4.1 (Dwg 17F-29 through 17F-38). The existing booth will be converted to a security booth or removed if not required for park operations.

The entrance to the park will be shifted approximately 400' to the north and the existing entrance will either be gated or bermed to limit or restrict access. Moving the entrance will create an additional cueing area for park visitors waiting to pay day use, parking or camping fees. This will also reduce the likelihood that park users will be required to back up onto the Haul Road causing further congestion with potential logging operations.

3.1.6.1.7 Other Improvements

The park may include other improvements that have not been discussed in other sections. These improvements may include but are not limited to:

1. Cleared, grassed and mowed playfield area constructed at the drain field location which will allow recreational uses by park visitors.
2. Informational kiosks or bulletin boards at both restroom locations to discuss park regulations, inform campers about other recreational activities at Cowlitz project and post other park information.
3. New playground equipment located adjacent to new playfield area. Area may also be improved to include horseshoe pits.
4. Road closure gates will be constructed to allow the new RV loop or portions of the loop to be closed during low use periods.
5. Water hose bibs

3.1.6.2 SCHEDULE

Proposed construction of the Taidnapam Park expansion including all amenities discussed in this proposal will be done in 2006-2008 and may be available for public use by Memorial Day weekend of 2008. This schedule is predicated on finishing detailed design drawings and plans, obtaining all required permits and FERC approval, and bidding the project as indicated within this proposal.

Due to the scope of work this project may be constructed utilizing up to three contracts including:

1. Clearing and grubbing all areas.
2. Excavation, site and utilities work.
3. All buildings and above-grade improvements.

This schedule allows a similar time frame as the construction of the original Taidnapam Park. Much of the permitting and design work will be similar but numerous issues still must be addressed including potential modifications to the water and electrical plant, detailed septic drawings requiring approval by the Lewis County Health Department, Washington State Department of Health and Department of Ecology permits, integration with the permitting required for the low-level boat launch discussed in section 3.1.4.1, and any possible cultural resource issues. In addition, as the boat launch requires much more excavation and land disturbance than the original Taidnapam Park, additional time for permitting or review of cultural resource issues may be required.

3.1.6.3 REPORTING

As various construction components of the recreation plan are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009 and every 6 years thereafter.

3.1.7 Article 17 (g) – Haul Road Improvements From Highway 12 To Taidnapam Park

Settlement Agreement License Article 17g:
Improvements to the road from Highway 12 to Taidnapam Park.

This plan will identify the improvements that will be made to the Haul Road from Highway 12 to Taidnapam Park. The key elements include:

1. Road improvements.
2. Inspecting and maintaining the 2 bridges along this span of roadway.
3. Construction schedule.

3.1.7.1 PROPOSAL

The private road between Highway 12 and Taidnapam Park (Haul Road) has had approximately 80 percent (4 miles) of its surface upgraded, between 1997 and 2003, by Tacoma Power. The upgrade included initial applications of chip seal by Lewis County Public Works Department which was funded by Tacoma Power. A third application was completed the following years.

Beginning in 2004, the remaining 20 percent of the Haul Road will receive the 2 initial applications of chip seal and the third application will be completed the following year. Attachment 4.1 (Dwg. 17G-1) shows road location, chip seal sections and application dates.

The bridges on the Haul Road over Rainey Creek and Frost Creek are both inspected by a licensed professional engineer from Tacoma Power every other year. Depending on the results of the inspection, improvements are made to the bridge superstructure, abutments or foundations.

3.1.7.2 SCHEDULE

As stated above, the road is currently 80 percent surfaced and is planned to be totally improved by the end of the summer 2004. It is expected that every year for the subsequent 5 years, an additional shot of the chip seal material will be applied on one predetermined section of the road (at a minimum) until an adequate base has been established. Based on road conditions, additional chip seal material may be applied in the future years.

3.1.7.3 REPORTING

As various construction components of the recreation plan are completed, a summary construction activities report and as-built drawings will be prepared and submitted to FERC no later than the end of 2008, or recreational related improvements may be included in the annual Hydropower Compliance Management Program (HCMP) report (Article 501).

Recreation use may also be analyzed in the Recreation Use Report required per Article 20 of the new license. The first report is due to be filed with FERC in 2009 and every 6 years thereafter.

3.1.8 Article 17 (h) – 50 Additional Campsites At Mossyrock Park

Settlement Agreement License Article 17h:

Add 50 additional campsites at Mossyrock Park during years 19 to 24 of the license term.

Although the Settlement Agreement License Article 17(h) requires 50 additional campsites at Mossyrock Park, Tacoma Power proposes to eliminate this license requirement as written and proposes the 50 new campsites to be constructed at Taidnapam Park including the 50 required per Article 17(f) for a total of 100 campsites by 2008.

The alternate proposal is discussed in Section 2.2, and is further defined in Section 3.1.6 (17(f) Improvements to Taidnapam Park).

Written concurrence has been received from all consulting agencies as is documented in Appendix 5.1.

3.1.9 Article 17 (i) – $500,000 for Ike Kinswa State Park Improvements

Settlement Agreement License Article 17i:

Recreation improvements to be undertaken by the State of Washington for capital improvements at Ike Kinswa State Park using $500,000 provided by the Licensee.

This plan will identify the method and the process for the expenditure of $500,000 by Tacoma Power for improvements at Ike Kinswa State Park.

The key elements include:

1. A permit issued by Tacoma Power to allow continued use of Tacoma Power real property within the FERC boundary
2. A process to approve plans for the expenditure of $500,000.
3. Details regarding payment of the $500,000.
4. Construction schedule.

3.1.9.1 PROPOSAL

3.1.9.1.1 Permit to Allow Continued Use of Tacoma Power Real Property

Ike Kinswa State Park was issued Permit Number 1732 from Tacoma Power on September 30, 2003, which runs for the term of the License. The Permit sets out conditions for the continued use of Tacoma Power property including the oversight to be provided by Tacoma Power for capital improvements within the permit boundary. Ike Kinswa State Park will provide engineering drawings of each planned new facility, structure or improvement. Tacoma Power must provide written approval of any capital improvements in advance of construction. The Permit describes protocols to be followed to insure that environmental and cultural resources are protected. Tacoma Power reserves the right to impose additional rules and regulations for any or all of the rights and privileges granted under the term of the Permit.

The Permit also reserves $200,000 of the $500,000 for the Washington State Parks and Recreation Commission to supplement revenue shortfalls in actual operating and maintenance costs at Ike Kinswa State Park between October 11, 2002 and September 30, 2005. The Cowlitz Settlement Parties unanimously agreed to this change of Settlement Agreement Article 17(i). Letters of concurrence with this change are reprinted in Appendix 5.2. A letter approving the Settlement Agreement addendum change was sent to the Washington State Parks and Recreation Commission on December 6, 2002.

3.1.9.1.2 Process to Approve Plans for Expenditure of $500,000

Tacoma Power will consider any capital improvements at Ike Kinswa State Park that enhance recreational opportunities available to the public. The capital projects may be proposed anywhere within the park boundary either on state-owned or on land owned by Tacoma Power within the FERC project boundary.

The Washington State Parks and Recreation Commission will consult with Tacoma Power during the conceptual phase of any proposed capital improvement project(s) at Ike Kinswa State Park. Prior to the anticipated expenditure of any money, the selected project(s) will be submitted to Tacoma Power for review and will include conceptual plans and drawings, a timeline, permitting requirements and estimated costs for each phase of the project(s).

Tacoma Power will review the project(s), may request meetings or field visits and may request additional information. Tacoma Power will support projects that can be complete and operational using the available funds and any matching money available to the Washington State Parks and Recreation Commission. For projects planned within the FERC project boundary, Tacoma Power will forward approved plans to FERC for review and approval.

A Memorandum of Understanding (MOU) between Tacoma Power and the Washington State Parks and Recreation Commission will be developed using the guidelines in this plan. It will include, but not be limited to, the following conditions:

1. Tacoma Power will provide a written reply to the Washington State Parks and Recreation Commission no later than 3 months after receipt of the request. Approval will not be unreasonably withheld. Projects that require FERC approval will not be able to proceed until that approval is received.

2. Any request prior to September 30, 2005, that involves more than $300,000, must be accompanied by a release of Sections 2.b., 2.c. and 2.d. of Permit 1732, relinquishing the $200,000 for operations and maintenance agreed to in the change in Settlement Agreement Article 17(i).

3. Tacoma Power will be allowed to review any applications for additional money that may be requested of granting agencies using Tacoma Power funds as matching amounts. Any additional obligations that could encumber Tacoma Power property as the result of grant funding must be approved by Tacoma Power in writing.

4. Provisions will be made to insure that the facilities constructed with Tacoma Power funding remain open to the public during the terms of the License.

5. The Washington State Parks and Recreation Commission will acknowledge Tacoma Power's assistance in public communications.

3.1.9.1.3 Payment of Expenses for $500,000

After Tacoma Power and FERC, if necessary, approves a project, the Washington State Parks and Recreation Commission can begin invoicing Tacoma Power for payment. The invoice to Tacoma Power will be accompanied by documentation of the expenditures. The Washington State Parks and Recreation Commission will maintain records of expenditures and provide a summary to Tacoma Power at the end of each fiscal year along with a progress report documenting the annual accomplishments using the funds.

3.1.9.2 SCHEDULE

The Washington State Parks and Recreation Commission anticipates the planned project(s) will encumber Tacoma Power funds in the 2005-2006 biennium. However, the date could be postponed due to planning, permitting and delays in obtaining any other additional funding. If construction using the funds is to be postponed beyond 2008, Tacoma Power will request the park provide a revised timeline for using the funds and will provide that information to FERC.

3.1.9.3 CONSULTATION AND REPORTING

Tacoma Power will work with the Washington State Parks and Recreation Commission and their staff at Ike Kinswa State Park as they develop plans for the expenditure of the $500,000. The State Park will be required to prepare permitting documents that may require a public and agency review element. In addition, if the State Park prepares grant-funding documents for funding by other agencies, Tacoma Power will be involved in a review capacity.

Reports that shall include annual operating statements are required to be sent to Tacoma Power each year under the provisions of Permit 1732. In addition, Tacoma Power will require annual progress reports during the years that development is occurring with Tacoma Power funds.

Progress towards compliance with Article 17(i) will be reported to FERC in the annual Hydropower Compliance Monitoring Plan report.

Recreational related improvements may be included in the Recreation Report required per Article 20 of the new license. This report is due to be filed with FERC in 2009 and every 6 years thereafter.

3.1.10 Article 17 (j) – $100,000 For Unidentified Recreation Improvements $100,000

Settlement Agreement License Article License Article 17j:
Unidentified recreation improvements in the Project area undertaken by the State of Washington using $100,000 provided by the Licensee.

This plan will identify the process for the expenditure of $100,000 for projects undertaken by the State Of Washington in the Project area.

The key elements include:

1. A process to determine agency interest and establish criteria and timeframes
2. A mechanism to solicit, review and fund projects
3. Construction schedule

3.1.10.1 PROPOSAL

3.1.10.1.1 Process to Determine Interest, Establish Criteria and Set Timetable

The funds will be available to any agency of the State of Washington for recreational improvements within the Project area. The funds will not be available for operations and maintenance. Tacoma Power proposes to define the Project area for this license article as all lands owned by Tacoma Power within the Cowlitz River Project FERC boundary as well as lands with public access in the portion of the Cowlitz watershed between the Cowlitz Trout Hatchery and the Taidnapam fishing bridge.

Several underlying criteria will be used to guide the development of a funding mechanism. Washington State agencies that can insure the funds will be used to construct or improve a project that can guarantee a public benefit for the life of the license (year 2038) will be given priority. Proposals for projects located on land owned and maintained by Tacoma Power within the FERC Project boundary may also be submitted by a state agency if approved by Tacoma Power. On-going maintenance costs associated with such a project would need to be considered by Tacoma Power before granting approval. A project will not be funded that conflicts with existing provisions of the Cowlitz River Project FERC License. The funding process will attempt to disburse all funds within 4 years after a funding decision is made but permitting delays and other conditions placed on state agencies could delay this timeline.

Tacoma Power proposes to merge some of the processes for Article 17(j) and License Article 19, both of which contain similar provisions requiring disbursement of funds for recreation projects. In Article 19, Tacoma Power proposes to convene a committee in early 2005 consisting of interested members from the consulting agencies willing to sit on a panel to make planning and funding decisions for the Water Access Fund. Tacoma Power proposes that the same Funding Committee outlined in Article 19 also draft a plan for $100,000 State of Washington Fund (Article 17j). It may be able to meet as early as late 2004 to begin this process, depending on FERC approval dates. Tacoma Power proposes to give the Funding Committee the additional responsibility to determine the process for Article 17(j). Their task will be to give Tacoma Power direction on 1) which state agencies will be eligible to submit requests 2) funding criteria 3) a process and timetable for soliciting proposals 4) a process for making funding decisions, including any concerns about conflicts of interest on the Funding Committee and 5) describe any follow-up needed to insure timely project completion.

3.1.10.1.2 Mechanism to Solicit, Review and Fund Projects

The Funding Committee will advise Tacoma Power regarding the review, oversight and reimbursement process and Tacoma Power will manage the process. State agencies eligible for funding may include but not be limited to the Washington State Parks and Recreation Commission, the Interagency Committee for Outdoor Recreation, the Washington Department of Fish and Wildlife, the Washington Department of Natural Resources, and the Washington State Department of Ecology. Tacoma Power will use the Funding Committee's guidelines when requesting and reviewing proposals. Tacoma Power will rank the project(s) based on the Committee's guidelines and bring the final list to the Funding Committee for concurrence.

A funded project(s) will be reimbursed for actual expenditures by invoicing Tacoma Power. A memorandum of Agreement between the agencies and Tacoma Power may need to be written to facilitate the transfer of funds. If a project is approved on Tacoma Power owned and operated property, discussions would need to be made regarding the most effective method of funding and project oversight. In all cases, fund accounting will be kept for the life of the fund.

3.1.10.2 SCHEDULE

The Funding Committee will be convened in the first quarter of 2005 or within the first 3 months after FERC approval is received. It is anticipated that a process can be designed and solicitation of projects begun during 2005 with funding decisions on or before Jan. 30, 2006. It is anticipated that the Funding Committee would request projects be competed within 4 years of authorization.

3.1.10.3 CONSULTATION AND REPORTING

Each successful project selected for funding will be required to submit plans to Tacoma Power for review and approval. If a project is slated for construction within the FERC Project boundary, the plans will be forwarded to FERC for review 90 days before construction is scheduled to begin. Funded projects shall have 4 years to expend the money after FERC approval is given. Progress towards the expenditure of the fund would be discussed in the annual Hydropower Compliance Report (Article 501). If required, a final report will be filed with FERC.

4. ATTACHMENTS

4.1 Construction Drawings (SEE SEPARATE PACKET OF 11" x 17" DRAWINGS)

COWLITZ PROJECT

17A-0 Cowlitz Project Recreation Plan, Drawing List

PETERMAN HILL TRAIL

17A-1 Peterman Hill, Cowlitz Wildlife Area, Trail System, Site Plan
17A-2 Peterman Hill, Cowlitz Wildlife Area, Trail System, Trailhead Plan
17A-3 Peterman Hill, Cowlitz Wildlife Area, Trail System, Kiosk Details
17A-4 Peterman Hill, Cowlitz Wildlife Area, Trail System, Informational Kiosk
17A-5 Peterman Hill, Cowlitz Wildlife Area, Trail System, ADA Vault Toilet

MOSSYROCK PARK TRAIL

17B-1 Mossyrock Trail, Bike/ Walking/ ADA Trail, Site Plan
17B-2 Mossyrock Trail, Bike/ Walking/ ADA Trail, Informational Kiosk

MOSSYROCK PARK BOAT LAUNCH RAMP EXTENSION

17C-1 Mossyrock Park, Boat Launch, Ramp Extension, Plan & Details

RIFFE LAKE EXTEND LOW WATER BOAT LAUNCH

17D-1 Taidnapam Park, Phase 2, Low Water Boat Launch, Site and Grading Plan
17D-2 Taidnapam Park, Phase 2, Low Water Boat Launch, Parking Plan
17D-3 Taidnapam Park, Phase 2, Standard Light Duty, Double Swing Gate

COWLITZ SALMON HATCHERY ADA FISHING

17E-1 Cowlitz Salmon Hatchery, ADA Fishing Platform, Plan, Profile & Details

TAIDNAPAM PARK PHASE 2 – PARK EXPANSION

17F-1 Taidnapam Park, Phase 2, Park Expansion, Site Plan
17F-2 Taidnapam Park, Phase 2, Park Expansion, Erosion Control Plan & Details
17F-3 Taidnapam Park, Phase 2, Park Expansion, RV Camp Loop, Site Plan
17F-4 Taidnapam Park, Phase 2, Park Expansion, New Entrance Road, Utility Plan & Layout
17F-5 Taidnapam Park, Phase 2, Park Expansion, Sewer Plan & Details
17F-6 Taidnapam Park, Phase 2, Park Expansion, Sewer System Details
17F-7 Taidnapam Park, Phase 2, Park Expansion, Water System, Plan & Details
17F-8 Taidnapam Park, Phase 2, Park Expansion, Water System Details
17F-9 Taidnapam Park, Phase 2, Park Expansion, Electrical Layout & Details
17F-10 Taidnapam Park, Phase 2, Park Expansion, Paving Plan & Details
17F-11 Taidnapam Park, Phase 2, Park Expansion, Utility & Fire Hydrant Details
17F-12 Taidnapam Park, Phase 2, Park Expansion, Campsite Layout & Misc. Details
17F-13 Taidnapam Park, Phase 2, Park Expansion, Misc. Sewer System Details

4.1 Construction Drawings (continued)

TAIDNAPAM PARK PHASE 2

17F-14 Taidnapam Park, Phase 2, Park Expansion, Misc. Camp Site Details
17F-15 Taidnapam Park, Phase 2, Park Expansion, Misc. Details
17F-16 Taidnapam Park, Phase 2, Park Expansion, Misc. Utility Details
17F-17 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Floor Plan & Ext. Eluviations
17F-18 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Interior Elevations & Schedules
17F-19 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Wall Sections & Details
17F-20 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Mechanical Plan
17F-21 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Power & Lighting Plan
17F-22 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type C, Septic System Details
17F-23 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Floor Plan & Ext. Elevations
17F-24 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Interior Elevations & Schedules
17F-25 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Wall Sections & Details
17F-26 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Mechanical Plan
17F-27 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Power & Lighting Plan
17F-28 Taidnapam Park, Phase 2, Park Expansion, Restroom, Type D, Septic System Details
17F-29 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Foundation Plan & Details
17F-30 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Floor Plan & Building Sections
17F-31 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Exterior Elevations
17F-32 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Mechanical Plan
17F-33 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Power & Lighting Plan
17F-34 Taidnapam Park, Phase 2, Park Expansion, Entrance Booth, Communications Plan
17F-35 Taidnapam Park, Phase 2, Park Expansion, Overflow Entrance Booth, Floor Plan & Wall Sections
17F-36 Taidnapam Park, Phase 2, Park Expansion, Overflow Entrance Booth, Foundation Plan

4.1 Construction Drawings (continued)

TAIDNAPAM PARK PHASE 2

17F-37 Taidnapam Park, Phase 2, Park Expansion, Overflow Entrance Booth, Exterior Elevations

17F-38 Taidnapam Park, Phase 2, Park Expansion, Overflow Entrance Booth, Power & Lighting Plan

17F-39 Taidnapam Park, Phase 2, Park Expansion, Masonry Building & Structural Notes

17F-40 Taidnapam Park, Phase 2, Park Expansion, Erosion Control – Standard Notes

17F-41 Taidnapam Park, Phase 2, Park Expansion, Erosion Control – Standard Details

17F-42 Taidnapam Park, Phase 2, Park Expansion, Standard Electrical Symbols Legend

17G-1 Taidnapam Park, Haul Road, Chip Seal Schedule

5. APPENDIX

APPENDIX 5.1

LETTERS OF CONCURRENCE FROM CONSULTING AGENCIES AS OF MAY 3, 2004

REQUESTED CHANGES TO SETTLEMENT ARTICLES 17(f) and 17(h)*

- Requesting that 100 campsites be built at Taidnapam Park rather than 50 at Taidnapam and 50 at Mossyrock Park
- Requesting that all campsites be built by 2008 at Taidnapam Park

Consulting Agency	Concurrence
Interagency Committee for Outdoor Recreation (IAC)	Concur
Lewis County Board of Commissioners	Concur
United States Department of Agriculture – Forest Service (USDAFS)	Concur
United States Fish and Wildlife Service (USFW)	Concur
Washington Department of Fish and Wildlife (WDFW)	Concur
Washington State Parks and Recreation Commission (WSPRC)	Concur

**NOTE: A typographical error was made on the heading of each concurrence letter identifying Article 17(f) and 17(g) rather than 17(f) and 17(h). The text explained the correct articles.*

APPENDIX 5.2

LETTERS OF CONCURRENCE FROM CONSULTING AGENCIES AS OF MARCH 9, 2004

REQUESTED CHANGES TO SETTLEMENT ARTICLE 17(i)

- Requesting that $200,000 of the $500,000 scheduled to be provided to the Washington State Parks and Recreation Commission for capital improvements at Ike Kinswa State Park, be allowed to be used to fund park operations and maintenance between October 11, 2002 and September 30, 2005.

Consulting Agency	Concurrence
American Rivers	Concur
Interagency Committee for Outdoor Recreation	Concur
Lewis County Board of Commissioners	Concur
National Marine Fisheries Service	Concur
NW Steelhead and Salmon Council of Trout Unlimited	Concur
Tacoma Public Utilities	Concur
United States Department of Agriculture – Forest Service	Concur
United States Fish and Wildlife Service	Concur
Washington Department of Ecology	Concur
Washington Department of Fish and Wildlife	Concur
Washington State Parks and Recreation Commission	Concur
Yakama Nation	Concur

APPENDIX 5.3

RECORD OF CONSULTATION

Consultation on Articles 17 and 18

Date	Agencies/ Committees	Participants	Type of Communication	Topics
08/05/03	WSPRC Tacoma Power	Paul Malmberg Cindy Swanberg	Phone	• Discussed new license impacts on Ike Kinswa • Plan future meeting
09/16/03	WDFW Tacoma Power	Mark Grabski Richard Vanderlip Cindy Swanberg Stan Smith	Meeting- Morton	• Discussed license Art 17,18 • Began trail planning • Discussed monitoring
09/30/03	WSPRC Tacoma Power	Paul Malmberg Pam Wilkens-Ripp Pat McCarty Debbie Young Tom Martin Cindy Swanberg Ted Lyons	Meeting - Tacoma	• Reviewed Art. 17(i)(j) • Discussed need for an MOU to facilitate funding • WSPRC outlined some of their project ideas and locations.
10/01/03	WDFW Tacoma Power	Fred Dobler Cindy Swanberg	Phone	• Discussed WDFW internal process for trail planning in CWA.
10/01/03	USFWS Tacoma Power	Gene Stagner Cindy Swanberg	E-mail	• Invite to a WMCC meeting • Outlined need to discuss trail plans • Presented east end boat launch location and invited discussion of wildlife area concerns.
10/15/03	WDFW USFWS Tacoma Power	Mark Grabski Fred Dobler (cc) David Mudd (cc) Gene Stagner (cc) Cindy Swanberg	Letter	• Outlined new license and highlighted wildlife issues • Attached summary table of new license requirements
10/28/03	Lewis County Tacoma Power	Dennis Hadaller Pat McCarty Debbie Young Tom Martin	Meeting - Chehalis	• Reviewed recreation articles • Discussed boat safety Art.18(b) • Discussed alternate plan for 100 sites at Taidnapam Park.
10/31/03	USFWS WDFW Tacoma Power	Gene Stagner Fred Dobler Mark Grabski Cindy Swanberg Debbie Young Observing: Kim Moore Dean McLeod	Meeting - Morton	• Reviewed articles that influence CWA, especially east end boat launch location. • Discussed draft trail locations • Reiterated support for phased approach for trail • Emphasized vital WMCC oversight and continuing concern about wildlife impacts from trail.

Date	Agencies/ Committees	Participants	Type of Communication	Topics
11/06/03	IAC Tacoma Power	Jim Eychaner Tom Martin Kim Moore Cindy Swanberg	Meeting - Tacoma	• Reviewed recreation draft plans • Special emphasis on multi-use trail plans • IAC describes trail needs from state perspective • IAC contributed info about grant funding non-license improvements
11/06/03	WDFW Tacoma Power	Richard Vanderlip Mark Grabski (cc) Kim Moore	E-mail	• Confirming changes to trail map, map file attached
11/07/03	IAC Tacoma Power	Jim Eychaner Cindy Swanberg	Phone	• IAC expressed concerns about phasing trail construction
11/07/03	WDFW Tacoma Power	Mark Grabski Cindy Swanberg	Phone	• WDFW reported that trail phasing very important and supported by WDFW administration. • Tentatively OK'd nature trail in CWA (Mossyrock) and explore way to allow boat launch on east end in CWA.
11/10/03	USFWS WDFW Tacoma Power	Gene Stagner Mark Grabski (cc) Cindy Swanberg	E-mail	• Reply regarding supporting documents Gene requested. • Outlined how comments will be treated.
11/13/03	IAC WSPRC WDFW USDAFS USFWS Tacoma Power	Jim Eychaner J. Paul Malmberg Pam Wilkens-Ripp Hal Beecher Jack Thorne Gene Stagner Debbie Young Kim Moore Tom Martin Dean McLeod Cindy Swanberg	Meeting-Tumwater	• Reviewed each part of recreation plan • Reviewed first draft of drawings • Discussed each agencies issues and interests
11/18/03	Lewis County	Commissioners	Letter	• Sent updates to recreation plan • Described outcomes of Nov. 13 meeting
12/10/03	Simpson Resource Co. Tacoma Power	Keith Simmons Bill Mehl Cindy Swanberg Ted Lyons Debbie Young	Meeting - Shelton	• Outlined trail plan • Took comments on trail coordination w/timber harvesting activities.
01/05/04	USFWS WDFW USDAFS IAC WSPRC Lewis County	Gene Stagner Hal Beecher Jack Thorne Jim Eychaner Paul Malmberg Commissioners	Letter	• Asking for concurrence on changes to 17(f) and 17(h)

Date	Agencies/ Committees	Participants	Type of Communication	Topics
01/26/04	DNR Tacoma Power	Roger Ramsdell Rick Peake Cindy Swanberg	Meeting - Chehalis	• Discussed trail planning and compliance with DNR Road Abandonment and Maintenance Plan rules.
02/05/04	Public WDFW Tacoma Power	Public Richard Vanderlip Casey Morris Cindy Swanberg Kim Moore Other Tacoma Power Staff	Meeting – Chehalis	• Took public comments on recreation plans • Conferred with WDFW on ideas regarding horse use of trail and horse trailer parking • Discussed proposed new trail routes.
02/06/04	Tacoma Power LCSO	Dean McLeod Steve Aust	Meeting-Mayfield office	• Draft of plan to work with LCSO. Provided copy of draft plan to Officer Aust for Department review.
02/11/04	USFWS WDFW USDAFS IAC WSPRC	Gene Stagner Hal Beecher Jack Thorne Jim Eychaner Sheila Unger	Letter	• Asking how consulting agencies want to provide input on early draft of plan.
02/12/04	Tacoma Power Tacoma Power IAC	Sarah Hahn Kim Moore Rory Calhoun	Meeting – Kim's office	• Discussed Article 18 and ADA Transition Plan.
02/23/04- 02/28/04	Tacoma Power LCSO	Dean McLeod Steve Aust	Meeting – Mayfield office	• Draft safety plan. Officer Aust indicated concurrence with plan with addition of wording for Tacoma to assist with river rescue if needed.
03/05/04	WDFW WDFW Tacoma Power Tacoma Power	Mark Grabski Richard Vanderlip Kim Moore Cindy Swanberg	Phone	• Discussed revisions to trail map, trailhead, and kiosk signs.
03/05/04	LCSO Tacoma Power	Steve Aust Dean McLeod	Meeting – Mayfield office	• Discussed reservoir buoys, funding, public safety education, boating safety trailer, boating safety weekend (Mossyrock Open House Display)
03/11/04	GCDE Tacoma Power	Toby Olson Sarah Hahn	Phone	• Preliminary draft of the Settlement Agreement Article 18c
03/11/04	IAC, LCBC, USFW, USDAFS, WSPRC, WDFW, The Cowlitz Tribe, The Yakama Nation	Agency Contacts & Tribes	Mailing From Tacoma	• Settlement Agreement Articles 17, 18 & 19 Draft Plans
03/15/04	IAC Tacoma Power Tacoma Power	Rory Calhoun Kim Moore Sarah Hahn	Phone	• Preliminary draft of the Settlement Agreement Recreation Article 17

Date	Agencies/ Committees	Participants	Type of Communication	Topics
03/15/04	USFWS Tacoma Power	Lou Ellyn Jones Cindy Swanberg	Meeting – USFWS office Lacey, WA	• Overview of recreation articles as they effect wildlife and fish
03/19/04	IAC Tacoma Power	Jim Eychaner Kim Moore	Email	• Correspondence of a variety of plan components
03/22/04	USFWS Tacoma Power	Lou Ellyn Jones Cindy Swanberg	Phone	• Several specific questions on possible recreation effects on Cowlitz Wildlife Area
04/14/04	WDFW Tacoma Power	Mark Grabski Cindy Swanberg	Phone	• Confirmed no additional changes to recreation articles
04/15/04	IAC Tacoma Power	Rory Calhoun Sarah Hahn	Phone	• Cowlitz License ADA Transition Plan
04/21/04	IAC Tacoma Power	Rory Calhoun Sarah Hahn	Phone	• Cowlitz License ADA Transition Plan
05/07/04	IAC, LCBC, USFW, USDAFS, WSPRC, WDFW, The Cowlitz Tribe, The Yakama Nation	Agency Contacts & Tribes	Mailing from Tacoma	• Settlement Agreement Articles 17, 18 and 19 Formal Plan Review
05/07/04	GCDE IAC	Toby Olson Rory Calhoun	Mailing from Tacoma	• Settlement Agreement Article 18 Plan
05/11/04	WDFW Tacoma Power	Fred Dobler Mark Grabski Charles Leidy Casey Morris Richard Vanderlip Cindy Swanberg Debbie Young	Meeting CWA Office, Morton	• In annual WMCC meeting discussed wildlife boundary adjustment for Article 17(d) and availability of 17(j) funds.
05/14/04	USDAFS Tacoma Power	Jack Thorne Kim Moore	E-mail	• Settlement Agreement Article 17
05/17/04	USDAFS Tacoma Power	Jack Thorne Kim Moore	E-mail	• Settlement Agreement Article 17
05/28/04	Port Blakely Tree Farms Tacoma Power	Jerry Bailey Duane Evans Dave Roberts Court Stanley Richard Berdan Toby Brewer Arne Lund	Meeting – Taidnapam Park Office	• Annual planning to complete surfacing of Haul Road Article 17(g)
06/08/04	WSPRC Tacoma Power	Pam Wilkens-Ripp Steve Brand Cindy Swanberg	Meeting at Lewis and Clark State Park	• Discussed state park requests for additional funding from 17(j), 17(i) project planning and availability of water access funds Article 19.

Abbreviations:

CWA	Cowlitz Wildlife Area
DNR	Department of Natural Resources
GCDE	Governor's Committee on Disability Issues and Employment
IAC	Interagency Committee for Outdoor Recreation
LCBC	Lewis County Board of Commissioners
LCSO	Lewis County Sheriff's Office
USDAFS	U.S. Department of Agriculture – Forest Service
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WMCC	Wildlife Management Coordinating Committee includes USFWS, WDFW, Tacoma Power
WSPRC	Washington State Parks and Recreation Commission

APPENDIX 5.4

TRAIL CONSTRUCTION AND MAINTENANCE HANDBOOK

1. GLOSSARY OF TRAIL TERMS

Back-cut - The vertical part of the bench cut that's blended into the back slope.

Back slope - Slope on the uphill side of the trail. This should be a gradual change from the tread, slowing runoff by preventing a waterfall effect.

Bench cut - A semi-flat trail tread created by digging down to mineral soil in the hillside. Care must be taken to preserve some out-slope while making a rideable and walkable path.

Berm - The ridge that develops along the downhill edge of a trail. It's caused by tread compaction and soil displacement during trail use. A berm traps water on the trail.

Bridges - Allows trail users to pass over ravines, bogs, creeks, rivers and similar obstacles.

Climbing turn - A turn that transitions from one leg to the next as the trail ascends (or descends) a hill.

Contour trail – Pathway that gently traverses a hill or side slope, following natural contour lines as illustrated by a topography map. Allows water to sheet across the trail, thus minimizing impact to the tread.

Control points – Control points mark places of interest that trail users will be attracted to (desirable) or should avoid (inappropriate) and are used to determine the placement of new trail

Crib wall - A retaining wall that raises the trail significantly. Often used to stabilize the trail tread and prevent it from collapsing down the fall line. Can be built with rock or wood.

De-berming - Removing the berm, or ridge of dirt that forms along a trail's downhill edge. Restores the tread's out-sloping, allowing water to sheet off. (See "out-slope" and "berm.")

Drainage – Removal of water from the trail.

Erosion – The natural process of wearing down and moving rock and soil by wind and water. Trail erosion can be accelerated by a combination of users, water and gravity.

Fall line - Direction that water flows down a hill. The path of least resistance.

Fill slope - The portion of a trail that is constructed from excavated material. Fill slope can be unstable so should not be used to build trail tread. Full bench construction is preferred.

Flow – The rhythm or "feel" of a trail. Two basic types include "open and flowing" and "tight and technical."

Full bench tread construction – Tread construction method of excavating down and into the hillside. Puts the entire tread width on mineral soil, maximizing sustainability. (See "bench cut.")

Grade – Trail steepness. (See "percent of grade.")

Grade reversal – Brief change in trail grade direction, such as routing a downhill section back up the hillside for a short distance. Used to divert water off the trail.

Grade dip – Undulation in the tread that traps water and diverts it off the trail. Makes trails more interesting and fun to use.

Half rule or 50 percent rule - If the trail grade exceeds 50 percent of the hillside slope, gravity will pull water down the trail instead of across it. This is known as "exceeding the fall of the hill."

Knick – Shaved-down section of trail, about 10 feet in diameter, with an exaggerated out slope. Like a rolling grade dip, a knick is used to shed water off a trail.

Land manager - Any person responsible for decisions regarding the use of public or private lands.

Mineral soil - Dirt that's below the top layer of leaves, roots and other organic material. When making a bench cut, always dig down to mineral soil if possible.

Multiple-use trails - Those used for more than one type of activity, such as for cycling, hiking and horseback riding.

Open and flowing - A trail design marked by sweeping turns, higher speeds and longer sight lines.

Out-slope – Trail tread that's canted very slightly in the same direction as the hill's slope. Allows water to sheet across rather than be trapped.

Percent of grade – Preferred method of measuring slope or a hill's steepness. For example, a grade of 10 percent means there is a rise or fall of 10 vertical feet per 100 linear feet.

Re-route – A new section of trail that replaces an existing section. Rerouting is often the best remedy for a poorly designed trail that requires frequent maintenance.

Rolling grade dip - A non-obtrusive feature that diverts water off the trail by altering the grade. It's essentially a man-made grade reversal.

Sheet flow - A dispersed flow of water. It minimizes erosion by preventing water from achieving high velocity and carrying away topsoil.

Single-track - A trail so narrow that users must generally travel in single file.

Slope - The natural (or man-made) pitch of the land, as shown on contour maps. Generally refers to the hill, not the trail. The trail "slope" is called "grade."

Social trails - Paths created by people who wander away from set trails.

Sustainable trails – What every designer and construction crew should strive for: low maintenance trails that have minimal impact on natural systems.

Switchback – A sustainable turn on a hillside. The trail is routed onto a level deck where it makes a transition to the opposite direction.

Texturing - Placing natural features (rocks, logs, etc.) back into the tread to increase its technical nature. Helps limit speed, and thereby reduces user conflict.

Tight and technical - A trail design that includes tight turns, natural technical features and mandates slower speed.

Trail bed – The trail bed consists of the sub grade material that supports the tread or surface of the trail.

Trail corridor - The area around and above the tread. Remove fast-growing impediments, but leave grasses and trees.

Tread - Ground on which trail users travel. It may include grass, bare dirt, roots or rocks. Tread width varies depending on the type of trail and its users.

Tread creep - Describes a contour trail sagging or sliding down the hill. Causes include bushes or trees protruding into the trail from above, exposure of roots from an uphill tree, an improper bench cut or poor trail flow.

Turnpike – Trail building technique that uses a combination of gravel, soil or other filler material to make the tread higher than the surrounding water table. Useful in low-lying areas with poor drainage.

2. INTRODUCTION

A. Background and Statement of Purpose

The Trail Construction, and Maintenance Handbook has been developed to support the requirements of Article 17 (a), A Non-Motorized Trail System on Peterman Hill, see drawings in Attachment 4.1 (Dwgs. 17A-1 through 17A-5) and Article 17(b), A 2 Mile Non-Motorized Loop Trail near Mossyrock Park see Attachment 4.1 (Dwg. 17B-1) and any other future trail construction or maintenance through the term of the new license. The purpose of this plan is to develop basic standards for the construction, and maintenance of the two trails, trailheads, and associated facilities. Trail design and maintenance for the 20-mile trail at Peterman Hill (Peterman Hill Trail) and the 2-mile trail near Mossyrock Park (Mossyrock Trail) will differ somewhat due to difference in goals, terrain, wildlife habitat concerns and accessibility in the different areas.

This trail specifications document is based on trail design and planning from the USDA Forest Service, the International Mountain Biking Association (IMBA) and construction and maintenance requirements from the State of Washington. It is conceptual, but with enough detail to show generalized details on trail construction and maintenance techniques that can be used in various scenarios. The trails are on land owned by Tacoma Power but managed, in some cases, by the Washington Department of Fish and Wildlife (WDFW) as part of the Cowlitz Wildlife Area, designated under the 1993 Settlement Agreement for Wildlife. Trail location has been coordinated with WDFW, where applicable, and they will monitor actual construction. It is possible that they will be involved with day-to-day inspection during construction.

Review of the *Trail Construction and Management Handbook* will be done every two years to determine if any changes need to made to procedures or whether any BMP's should be added to the manual. As contracts are generated for trail construction and maintenance work, it is expected that more detail could be placed in the manual.

B. Goals of Plan

- The primary goal of this plan is to build sustainable trails and trailheads at Peterman Hill and near Mossyrock Park.
- This management plan provides a trail design process that will seek continuity and consistent quality but avoids the strict application of rigid design specifications. It allows for changes in the location of trail corridor where creative adaptations of the design guidelines can achieve a superior outcome.
- The key considerations for a sustainable trail are proper corridor location and construction.
- The trail will support recommended and future use with minimal impact to the area's natural systems including vegetation, wildlife habitat and riparian functions.
- It should produce negligible soil loss or movement while allowing vegetation to inhabit the area.
- The trail maintenance plan recognizes that pruning or removal of certain plants may be necessary for proper maintenance.
- The trail does not adversely affect the area's animal life.
- The trail will accommodate the designed use while allowing only appropriate future use.
- The trail has little impact on the land and requires minimal long-term maintenance.

- Trail design and layout will provide for the maximum use of mechanical equipment for construction and maintenance when ever possible. Current studies are showing efficiency ratios of as much as 10 to 1 when using mechanical equipment instead of handwork.

C. Permits, SEPA's, and Other Requirements for Construction

Upon approval of the overall trail plan by all agencies, including the Federal Energy Regulatory Commission (FERC), Tacoma Power will proceed with obtaining permits as required, according to the approved schedule. No work will proceed without proper permits.

Tacoma Power will conduct all construction to conform to the Construction Stormwater Pollution Prevention Plan (SWPPP) that will be written prior to commencement of construction activities. The SWPPP will either be written by Tacoma Power or by the trail construction contractor with Tacoma Power oversight. The SWPPP will conform to all Washington Department of Ecology requirements and guidelines for control of erosion and pollution during construction activities. The SWPPP will include plans to monitor the construction activities, evaluate Best Management Practices (BMP) effectiveness, and implement all necessary changes to minimize erosion and pollutant releases. Tacoma Power is a signatory to the approved Tri-County Agreement between Pierce, King, and Snohomish Counties and the National Marine Fisheries Service for protection of endangered Puget Sound salmon under the Endangered Species Act (ESA). A portion of that agreement includes the development of standards and BMP for working in rights-of-ways near salmon-bearing water courses. Tacoma Power will evaluate and include additional appropriate considerations and BMP in the SWPPP to ensure protection of the waterways and compliance with ESA requirements.

The Programmatic Agreement, Cultural Resource Management Plan (CRMP) and Articles 403 and 404 will guide compliance with Tacoma Power's cultural resource responsibilities. Any construction work associated with Settlement Agreement License Article 17(a) or 17(b), will require an archaeological evaluation prior to any earth disturbing activities. A certified professional archaeologist who meets the Secretary of the Interior's qualification standards for professionals will complete the evaluation. The archaeologist's recommendations will be documented and implemented.

3. TRAIL CONSTRUCTION AND MAINTENANCE PLAN FOR PETERMAN HILL TRAIL COMPLEX

A. Trailhead Planning and Design

The trailhead design is described in detail in the Recreation Facilities Plan section 3.1.1.1.1 and Drawings 17A-1 through 17A-5. The trailhead is to be located in the Peterman Unit of the Cowlitz Wildlife Area at the end of the Peterman Hill county road located within Section 8, Township 12 N, Range 4 East. It will provide parking for 10 motor vehicles with an additional widened road shoulder capable of parking for up to 5 truck-horse trailer combinations, a kiosk with information signage and an ADA accessible vault toilet.

The trail design goal is to layout a trail that is blended to fit the existing terrain. Over time it should look like part of the landscape and take advantage of the natural drainage features. Most of the trail system will follow logging roads that are closed to public vehicle traffic.

New trail will only be built where a separate traffic-free route is required for public safety or where trail segments can be connected without damaging wildlife habitat. The trail will be designed for low maintenance requirements and to meet the demands of the user. Where possible any new trail that needs to be built, will curve around trees and big rocks following the

natural benches and otherwise take advantage of the natural land features. Much of this trail is through recent clear cuts. Brush will be removed, logs will be cut out of the way, and other woody debris will be scattered far enough from the trail as to not cause a drainage problem on the trail corridor. Only minor work will be done to existing roads identified as part of the trail system including the addition of safety and directional signage. The trail layout and design will be done in a manner to provide motorized maintenance access to as much of the trail as possible. This will provide for efficient trail construction and facilitate better trail maintenance. Layout, design, tread and clearance width will also be done in such a manner as to maximize the ability to use mechanical equipment for construction and maintenance. Trail barriers will be installed at the trailhead to deny access to motorized users like ATV's.

B. Land Ownership

Tacoma Power owns all of the land for the trail except a small section along the main 1000 Road in the northeast corner of Section 17. Tacoma Power is currently working with the underlying owner, Pope Resources LLC to obtain the required easement to allow legal access. The remainder of the land is owned by Tacoma Power and managed by WDFW. Lewis County has a 55-foot radius easement for a turn around at the end of the county road (Peterman Hill Road). All plans for facilities in this area will be submitted to Lewis County Building and Land Use and Health Department for final permits.

C. Trail Specifications

The design of the multi-user trail will consider hiker, horse, and mountain biking use. The goal of the layout of new trail will be to keep the grade within the 5-12 percent range. Grades may be greater for short distances as needed for trail layout, especially steep or technical areas. Sections of the trail that incorporate existing logging roads and other primitive roads will not have the grade modified. The grade of some existing roads to be incorporated into the plans are as steep as 30 percent for short distances.

The difficulty level for the Peterman Hill trail could be considered *easy* to *more difficult* based on US Forest Service standards. Trail tread width will average about 24 inches wide with a minimum clear area on the ground of 48 inches whenever possible. Clearing distance for removal of debris and downed trees will be a minimum of 60 inches except on steep slopes and through dense forested sections. See attached Standard Drawing No. 17-A6 for basic Standard Trail dimensions. These dimensions are guidelines and may be altered in some sections of trail as approved by the WDFW during construction.

Standard Specifications for Construction and Maintenance of Trails, USDA Forest Service Manual No. EM 7720-103 will be used as a guide for development of the detail specification to be used for contract work.

D. Trail Layout

While the basic route has been identified on Attachment 4.1 (Dwg. 17A-1), specific corridors for new trail construction have yet to be identified on the ground. The final location of the trail segments may vary as much as several hundred feet from the location shown on the map due to drainage concerns, contours of the land and the scale of the original map. Initially, control points will be identified which will form the basis of the actual trail route and will include, but not be limited to, the following:

- Land ownership
- Steep terrain
- Stream or runoff crossings

- Rock outcroppings
- Debris piles from logging left for wildlife habitat use
- Areas to avoid such as important habitat locations
- Poor soil conditions for trails
- Any archaeological findings or concerns
- Known features including existing roads, bridges, culverts and scenic overlooks

Once control points are identified, Tacoma Power, in cooperation with WDFW will connect the control points with flagging at eye level and determine the approximate grade. This will determine if the route is feasible or if adjustments need to be made. Control points will be adjusted when a more feasible route is identified. Additional control points will be identified if applicable. Flagging will be spaced often enough to identify grade and centerline of trail by location of flags. Once the route is identified as feasible and reasonable to construct and maintain it will be walked and approved by WDFW and the Wildlife Management Coordinating Committee (WMCC). The corridor from control point to control point will be reviewed for any archaeological concerns. Flagging of the final route will be done once the best route has been determined as identified above. Final flagging of the route will consist of flagging the centerline of the trail approximately every 4-6 feet or as needed to clearly delineate trail location. These flags may be adjusted immediately prior to actual construction upon approval of the Project Engineer in order to make the trail flow more smoothly and provide for better drainage and future maintenance. Guidelines for trail layout include, but are not limited to the following:

- It is better to locate the trail on the uphill side of larger trees.
- Look for natural platforms for switchbacks to better fit the land.
- Use grade dips to provide for drainage runoff and insure trail is flagged accurately to provide for proper drainage at grade dips.

E. Trail Corridor

1. Clearing and Brushing

Proper clearing and brushing is mandatory for a properly designed and maintained trail. Some sections of the trail are through newly replanted clear cuts or young stands of replanted timber. Clearing and brushing in these areas will still be necessary to provide for proper corridor width and to keep the future level of maintenance to a minimum, particularly as trees mature. In level terrain the corridor will be cleared an equal distance on each side of the tread centerline. Standard clearing limits are based on guidelines from the USDA Forest Service criteria based on a multi-user trail intended for horse, hiker, and bicycle use. Intruding brush will be cut back at the base of the plant rather than in the middle, which leaves a stub within the clearing boundary limit. All plant stems will be cut close to the ground. The resulting debris will be scattered as far as practical with the cut ends lying away from the trail. Debris will not be placed into wetlands.

2. Removing Trees

Smaller trees growing within the trail corridor will be removed. Trees larger than 6 inches in diameter should remain and the trail should be routed around them whenever possible. Removed trees should be pulled up by the roots whenever possible.

Whenever possible, the trail should be located on the uphill side of trees to anchor the trail and prevent it from creeping downhill. Limbs should be cut close to the tree trunk and cuts should be clean. If more than 50% of the limbs of a tree need pruning, then removing the tree is a better option.

Trees larger than 6 inches in diameter that are to be removed must either be tagged by the Engineer after approval from WDFW or the trail crew shall get special permission from Tacoma Power or the WDFW. During maintenance activities, trees that have fallen across the trail will need to be removed. Fallen tree removal, inspection for danger trees and trimming of branches will be scheduled for a minimum of once a year. Every effort will be made to remove fallen trees within a short period of time after notification. Tacoma Power may partner with volunteer groups or hire commercial firms to remove fallen trees and debris. Limited vehicle access may be granted to approved trail maintenance partners when conducting volunteer trail maintenance.

F. Trail Foundation

1. Trail Bed

The trail bed will be designed to limit the requirement for handwork as much as possible. The centerline of the trail will be marked to indicate whether the trail is full bench or balanced construction or some intermediate construction design. See Dwg. No. 17A-7. Forest Service guidelines indicate there is a tendency to make trails too narrow. Construction of an initial width of 24 inches will result in a good tread width for multiple uses. Because this trail is intended for multiple-use, the tread width may vary to some degree depending on soil conditions, steepness of terrain, and the method used for construction (mechanical or handwork). The trail bed will be constructed to make use of native material to the greatest extent possible with minimal use of imported material only if required for tread support and to lessen maintenance.

On hillside trails, the trail bed should be excavated into the hill to provide a slightly out-sloped travel path with a minimum slope of 2 percent and a maximum slope of 10 percent. Depending on the amount of excavation and the topography, the disposal site for the excavated material may vary. On steep slopes, full bench construction will be done whenever possible and soil excavated from the hillside will be cast aside as far as possible from the trail and not used for the tread surface. Habitat concerns may prevent sidecasting in some locations and no soil will be cast into wetland areas or into riparian buffers. On steep slopes, fill will not be used for any part of the trail bed.

2. Back Slope

Back slope requirements will depend on the type of soil encountered along the trail. Flatter back slopes provide for less future maintenance and are preferred. Trail centerline layout, done correctly provides a trail that needs less maintenance and has lower construction costs.

3. Fill Slope

The trail will be laid out to minimize fill slopes. In some cases the trail may be lengthened slightly to detour around low areas or areas that would need fill. Contours will be followed to minimize the need for fill and maximize removal of water from the surface of the trail.

G. Tread

1. Tread Surface

Tread is the actual surface of the trail. This is where the rubber, hoof, or footprint meets the trail. While most trail construction revolves around obstacle-free tread, buried rocks and roots will be left in place and incorporated into the surface when possible to make the trail appear more natural in the landscape.

Out-sloping of the tread is the first line of defense against tread erosion. The trail surface will be native undisturbed earth whenever possible. Fill material will be kept to a minimum and must be compacted whenever used.

2. Tread Creep

Tread creep is caused by the natural tendency for people and horses to walk or ride along the outside, downhill edge of the trail causing it to widen into non-engineered areas. Tread creep can create trail that is dangerous or difficult to travel. Trees, rocks, log ends, and stumps left close to the downhill edge of the trail helps keep people and animals walking closer to the middle of the trail. This must be done in such a manner as to not trap water on the tread surface.

3. Debris

Debris will be removed from the trail, put on the downhill side and placed far enough from the trail to not impact the trail width, drainage, wildlife habitat, or wetlands.

4. Roots and Stumps

Trail design and the location of the centerline should minimize the requirement for removal of roots and stumps. Not all roots and stumps are problems and not all large stumps will need to be removed from a trail. Stumps can help keep the trail from creeping downhill. Roots that are parallel with the tread may need to be removed. In some cases, a trail can be repaired to correct the reason the roots were exposed. Roots, if perpendicular to the tread, and fairly flush may be left if part of the existing native material. Addition of fill to cover existing roots will not be done.

5. Borrow Pits

When additional native material is required for surface tread it will be taken from the trail corridor whenever possible. Holes dug for borrow material will be as close to the work as possible and screened from view. Material borrowed from one area that will make holes in excess of 0.5 cubic yards must be pre-approved by the WDFW. When required surface material varies from local existing material, a borrow source will be pre-approved by WDFW. Local existing borrow pits are available in the area. Use of material other than existing native materials will be limited and only used as a last resort.

6. Rock Removal

Rockwork requirements will be minimized by proper location of the tread/centerline during design. Rocks will be removed when they cannot be incorporated into the trail as a natural part of the trail. In general, simply knocking off the top of the rock flush with the existing tread creates a future obstacle as erosion removes soil from around the rock. Rocks will be incorporated into the trail as natural features whenever possible. The trail will be routed around larger rocks or will use them as the lower edge of the trail to prevent the trail from creeping towards the area below the trail.

H. Surface Water Control

1. Surface Water Removal

Diverting surface water off the trail is a priority. Running water erodes tread and support structures and can lead to loss of the entire trail. Standing water often results in soft, boggy tread or tread and support structure failure. The most successful drainage structures are usually those incorporated during the design and construction stage so every effort will be taken to understand and engineer trail construction with surface water management in mind. Techniques to manage surface water can include out- sloping the tread and installing grade dips. It is the intent to make all drainage self maintaining, requiring minimal care.

2. Grade Dips and Reversals

The trail will be designed and constructed with grade/terrain dips, grade reversals and an out-sloped trail whenever possible. See Dwg. 17A-8. Grade reversals will be used whenever possible to force water off the trail without the need for any other structure. As the trail snakes across a hillside, a subtle left or right turn creates rolls or undulations that help divert water off the trail. A contour trail on some steeper slopes will need grade reversals every 20 to 50 feet, depending on soil type and rainfall. The steeper the grade, the more grade reversals will be installed. To reduce the need to build water-diversion structures later, the original design will encourage smooth water runoff using subtle grade changes.

Grade dips and grade reversals will be identified as the centerline is developed. Grade reversals direct water off trail surfaces and are self-cleaning. They are effective if installed before a trail reaches a water crossing because they divert water and sediment off the trail before it can reach the stream. Use of grade reversals, dips, and an out-sloping trail combined with proper trail location and correct contouring should eliminate the need for water bars except in extreme cases.

The primary maintenance for trail tread will be to re-establish the out-sloping characteristics to the trail whenever possible.

3. Water Bars

Water bars are one of the least desirable drainage structures. Water moving down the trail is turned by contact with the water bar and, in theory, is directed off the lower edge of the trail. However, the soil placed on the tread below the water bar can be rapidly lost to traffic and water erosion. Out-sloping and rolling grade dips will be the primary way of diverting water off the surface of the trail. Water bars will be installed as a last resort due to the cost of installation, maintenance requirements and the fact that they are not popular with trail users. When used, designs will be vary depending on topography, soils and use characteristics. See Dwg.17A-9.

4. Ponding and Wet Areas

Effective prevention of ponding of water on the trail surface requires proper construction and layout of the trail. Ponding that does occur will be drained by out-sloping of the trail whenever possible. When required, causeways will be installed to bridge wet areas (Dwg. 17A-10) and drains will be installed when necessary to prevent ponding.

5. Maintaining Drains

The requirement for drain maintenance will be minimized by the limited use of water bars. If drains are installed they will be inspected and cleaned as required.

I. Trails in Wet Areas

1. Improving Drainage

Every effort will be made during trail location and layout to locate the trail corridor to avoid wet areas even if it means adjustment of control points. The trail will be routed along existing contours to insure it does not go through low areas that lack drainage.

2. Boardwalks

Boardwalks will only be considered as a last resort. Adjustment of the trail location will be done whenever possible to avoid the need to place boardwalk. During initial trail location layout, soil and grass areas will be carefully inspected for indications of wetland characteristics to insure the layout does not go through a low area where a boardwalk might be needed.

3. Geosynthetics

Improving drainage can be done with the use of geosynthetics, causeways, or the installation of French drains and small culverts when required. These types of materials should be installed as recommended by the current edition of the USDA Forest Service Trail Construction and Maintenance Handbook.

J. Crossing Streams

1. Shallow Stream Fords

A shallow stream ford is a consciously constructed crossing that will last for decades with a minimum of maintenance (barring a major flood or debris torrent) and will provide a relatively low challenge to users. See Dwg. 17A-11. The primary use is at intermittent streams where there are no fish habitat concerns. A shallow stream ford can provide solid footing at a consistent water depth from one bank to the other. Fords will not be designed for use during high runoff but are intended for use when flows are low to no-flow as is common in the intermittent streams in this area during summer and early fall and during other times of the year when there has been no heavy rainfall. In general, intermittent streams have short duration high flows. Stepping-stones or another method of crossing would need to be installed for hikers. Stream flow observations both during dry and wet periods will be done prior to determining what type of crossing should be installed.

The approaches to a ford-type crossing should climb a short distance above the typical high water line so that water is not channeled down the tread. Well-constructed shallow stream fords are almost maintenance free. A concrete block surface may be the best surface for crossing intermittent streams.

2. Culverts

Culverts may be used in some trail sections to cross small streams where fords are not practical. See Dwg. 17A-12. Stream flow considerations and studies will be made to determine the proper size of culverts. State Hydraulic Project Approval permits would be needed to install culverts to insure that fish passage was considered in culvert design. Culverts, if installed, may be aluminum, PVC, or steel. Some types of culverts can be transported in sections and assembled on site. Culvert slope down stream should be a minimum of 10 percent. Culverts will be imbedded in existing material and an armor consisting of compacted material or grouted stones may be installed on the upstream side. More than one culvert may be installed at a location depending on the width of the stream as well as other factors. Any loose debris likely to clog the culvert should be removed from upstream as far as practicable. If beaver are active in the area, beaver dam exclusion devices might be built onto the upper end of the culvert to ease debris removal.

3. Bridges

Tacoma Power will attempt to avoid the construction of bridges using good trail siting to minimize intrusion into riparian corridors. Trail layout will attempt to avoid crossing large streams but it may be necessary, in several instances, to complete the trail system. Before a bridge is considered, alternate methods of crossing the stream will be investigated including crossing the stream on an existing fish-compliant bridge or culvert.

Under a separate process, several new bridges and large culvert replacements are planned for forest roads on Peterman Hill to meet the legal requirements of the Washington State Forest Practices Act. Tacoma Power will investigate whether any of these bridges or culvert crossings could be used by the trail system and whether, with some advance planning, these crossings could be designed to be safely used for a road-adjacent trail.

The construction of new trail bridge(s) will be a last resort. Only one location is known where a bridge might be the best option. Any bridges will be constructed to the WSDOT or USDA Forest Service standards. See Dwg 17A-12. Any bridge will have good traffic flow without sharp 90-degree turns. Any bridges will have handrails that meet the applicable criteria. Bridges will be made from rock, metal, plastic, or wood, based on the location and access for transportation of materials.

Bridges, if required, will be designed by a State of Washington licensed professional engineer.

K. Special Structures

1. Switchbacks and Climbing Turns

Climbing turns include a section of trail on the fall line, thus they are not as durable as well-constructed switchbacks. See Dwg. 17A-13. By carefully planning the layout of trail we will attempt to avoid impassable or very difficult terrain and minimize the need for climbing turns and switchbacks. Every effort will be made to minimize the use of climbing turns. Switchbacks will be considered as the best option when sharp turns with grades over 5-7 percent are needed. See Dwg. 17A-14 and 17A-15. The opportunity for users to cut past a switchback will be avoided by use of natural obstacles whenever possible. A simple log barrier is one of the best and will need to be as long as possible. During layout of trail, use of natural obstacles for the inside of switchbacks will be made whenever possible.

2. Crib Walls and Other Retaining Structures

Crib walls and retaining walls will only be considered in extreme cases. Any walls over 4 feet high will be designed by a professional engineer licensed within the State of Washington.

3. Steps

This trail is being developed to include mountain bikes as one of the prime user groups, thus steps will not be placed except as an alternate in unusual circumstances.

L. Trail Signs and Symbols

1. Trail Signs and Symbols

The standard international trail marking system will be used. See Dwg 17A-.16. Flexible signs and markers from the Federal Universal Symbols for Recreation such as those provided by Carsonite International, or an approved equal will be used. These are the type of signs used frequently by the USDA Forest Service. They are cost effective, easy to install and provide a more lasting sign. The trail map will annotate directional signs. Warning signs on the road at trail crossings will be in accordance the applicable portion of the current edition of the MUTCD. Some of the types of signs that may be used are listed in 3 below.

2. Trailhead Signs on Kiosk

The signs for the trailhead will be located on the kiosk. They will includes signs developed in conjunction with the WDFW, Cowlitz Wildlife Area and may contain signs such as those listed below. See Dwg. 17A-3 and 17A-4.

3. Possible Signing and Sign Types

- Trailhead (Kiosk) Signs and Regulatory Signs

  Signs indicating permitted uses

  Trail courtesy signs and user etiquette signs

  Directional signs, showing trails and roads

Trail brochure including map with map holder

Visitor registration box

Information like *Fire Danger* and *Trail Closures*

- Directional Signs

  Signs indicating direction, mileage of trail and mileage to junctions

  Signs indicating routes back to the trailhead

  Trail and *Road Crossing Trail* signs will be posted at all intersections and road crossings and the trail will likely be marked with stop signs on either side of traveled roads.

  Road crossing signs will be posted on the trail about 100 feet from the road crossing warning

  Trail crossing warning signs will be posted on the road at the actual trail crossing and 300 feet each sides of the trail crossing

M. General Maintenance

1. Maintenance Schedule

Maintenance on the Peterman Hill Trail system will be done annually; semiannually and quarterly as needed. Tacoma Power will develop a maintenance check sheet and schedule to make sure the trail is maintained to standards. See Attachment 6B-1. The major annual inspection and annual maintenance will be performed in the spring as snowmelt and access allow but individual tree blockages and preventative trail surface work will occur as problems are noted. We will establish feedback mechanisms for trail users, including e-mail, phone contact numbers and/or comment cards, to insure that trail users can report problems as they encounter them.

Actual maintenance will be accomplished using a variety of methods including in-house labor, contractors, and volunteer groups. The WDFW provides management oversight of the natural resource program and manages roads in this area under a funded agreement with Tacoma Power. They are in the area on a frequent basis. They will continue to keep roads maintained, including roads that are open to trail users. They will be supplied with notifications forms to forward to Tacoma when they note trail maintenance needs. Continuous coordination will be done with the WDFW for trail condition use.

2. Clearing Brush

During maintenance, brush intruding into the trail will be cut back at the base of the plant rather than in the middle, which leaves a stub within the clearing boundary limit. All plant stems will be cut close to the ground and the debris will be scattered as far as practical but not into wetlands or sensitive habitats. Some sections of the trail may require brushing multiple times per year. As brushing and fallen tree removal is an ongoing process, partners will be developed that can help in trail maintenance. Noxious weeds will be removed from any visible location in the trail corridor using applicable control techniques for the specific species in question.

3. Tread Maintenance

Tread will be maintained at the designed width of 24 inches or construction width, if that is wider. Most tread maintenance will be accomplished during the annual maintenance period. Ruts, holes, and low spots will be filled. New obstacles such as protruding roots and rocks not planned for the trail will be removed. It also includes repairing any sections that have been damaged by landslides, uprooted trees, washouts, or boggy conditions.

Tread maintenance aims for a solid, out-sloped surface. Debris will be removed that has fallen on the tread, including larger sticks, stones, and litter. The lower edge berm, if it has developed, will be pulled back onto the tread surface and used to restore the out-slope. Organic debris will be widely scattered well beyond the clearing limits, preferably out of sight. Organic debris will never be distributed to wetlands or sensitive habitats. Roots, if perpendicular to the tread, fairly flush and not a tripping hazard will be left. Roots that are parallel with the tread will be removed unless their removal is predicted to kill the tree. If the cause of the root exposure can be determined, it will be fixed.

4. Maintaining Special Structures

All special structures will be visually inspected once a year. Any deficiencies will be dealt with as required. Tread on switchbacks will be maintained as stated in the paragraph on tread maintenance.

5. Stream Crossing Maintenance

Bridges will be inspected in accordance with the applicable engineering inspection schedule depending on the length of the bridge. At culverts and other stream crossings floods or seasonal runoff can wash away the approaches or parts of the structure. Debris can catch in the culvert or stepping-stone line and alter flow characteristics. Approaches can erode into jump offs or turn into boggy traps. Maintenance consists of retaining or restoring the design criteria.

6. Recordkeeping

A log of trail maintenance will be kept including any trail user comments and records of volunteer hours. Tacoma will discuss trail maintenance with the WDFW and the WMCC each year at the annual WMCC meeting and will provide a summary of trail construction and maintenance that can be included in the Annual Wildlife Area Report.

4. TRAIL CONSTRUCTION AND MAINTENANCE PLAN FOR MOSSYROCK 2-MILE TRAIL WITH ADA SECTION

A. Trailhead Planning and Design

The two trailheads are described in detail in the Recreation Facilities Plan section 3.1.2.1.1 and 3.1.2.1.2 and Drawings 17B-1 and 17B-2. The main trailhead can be accessed from Mossyrock Park, a few hundred feet from the main gate entrance across the “Dike Road” that accesses the Primitive Group Campground. The ADA accessible trailhead is located near the entrance to the primitive group campground. The trailhead will provide gravel parking for 4 vehicles, a kiosk with information signage, and an ADA vault toilet at the primitive group campground, which is within 200 feet of the trailhead parking. . Signage on the Kiosk will explain the ADA accessibility standard.

A secondary trailhead is located on Young’s Road as shown on Dwg. 17B-1 within the Cowlitz Wildlife Area.

This trail design includes an approximately .82 mile section from the parking lot in Mossyrock Park to the parking lot on Young’s Road, which will be ADA accessible. The trail will be built with a hardened surface to provide a total one-way distance of .82 miles of ADA trail. At least three sections will be widened for passing as recommended by the USDA Forest Service Trail Access Plan. The terrain for this trail has a relatively gentle slope and grade. Drainage runoff will be dealt with on this trail by building up the trail surface and out-sloping a minimum of 2 percent as necessary.

The remainder of the trail, which begins at the Young's Road parking lot and loops back to the same parking lot, will rebuild a current, minimally constructed wildlife observation trail. This trail will be upgraded to the standards in this handbook. One short segment paralleling Young's Road will be on top of a small existing berm to increase views and provide better separation of users from the road.

B. Land Ownership

Tacoma Power owns all the land on the route planned for the trail. The trail begins within the boundary of Mossyrock Park, crosses undeveloped Park lands and crosses into the Cowlitz Wildlife Area portion of Tacoma Power's lands. The trail section to be rebuilt on the Cowlitz Wildlife Area will be done in consultation with the staff of the wildlife area. The trail crosses a rural county road in 2 locations. Tacoma Power will coordinate with the County for any use that crosses or is within the county road easement.

C. Trail Specifications

The design of the Mossyrock Trail will include approximately .82 miles of 5-foot wide aggregate trail hardened for ADA accessibility (See attached Drawing No. 17A-17). The section not hardened for ADA use will consist of a loop cleared a minimum of 24 inches wide. This portion of the trail will be open to horse use as well as to hikers and mountain bikes.

For the ADA portion of the trail, clearing distance for removal of debris and downed trees will be a minimum of 72 inches. The loop portion of the trail will be cleared to a minimum width of 24 inches but may be widened as needed to provide for maintenance or upgrade of the existing surface using mechanical equipment in place of hand tools.

D. Trailhead layout

While the basic route for new trail construction has been identified on Attachment 4.1 (Dwg. 17B-1), the specific alignment for the 2 segments of new trail has yet to be identified on the ground. The final location of the trail segments may vary to a small degree due to drainage concerns, contours of the land, the vegetation and an attempt to make the trail visually interesting. Initially, control points will be identified which will form the basis of the actual trail route and will include, but not be limited to, the following:

- Terrain/grade
- Stream or runoff crossings and wet areas
- Rock outcroppings and important trees
- Areas to avoid such as important habitat locations
- Poor soil conditions
- Any archaeological findings or concerns
- Known features including existing roads, bridges, culverts and scenic or interpretive opportunities

Because much of the Mossyrock Trail will follow an existing path, additional control points will be minimal for much of the distance. Where needed, control points will be identified. Tacoma Power, in cooperation with WDFW for the portion on the CWA, will connect the control points with flagging at eye level and determine the approximate grade. This will determine if the route is feasible or if adjustments need to be made. Control points will be adjusted if needed. Flagging will be spaced often enough to identify grade and centerline of trail by location of flags. Once the route is identified as feasible and reasonable to construct and maintain it will be walked and approved. The corridor from control point to control point will be reviewed for any archaeological concerns.

Flagging of the final route will be done once the best route has been determined as identified above. Final flagging of the route will consist of flagging the centerline of the trail approximately every 4-6 feet or as needed to clearly delineate trail location. These flags may be adjusted immediately prior to actual construction upon approval of the Project Engineer in order to make the trail flow more smoothly and provide for better drainage and future maintenance.

E. Trail Corridor

1. Clearing and Brushing

Proper clearing and brushing is mandatory for a properly designed and maintained trail. Many sections of the Mossyrock Trail traverse a wooded area with some light underbrush. Clearing and brushing in these areas will be the majority of the initial work necessary to provide for proper width and to keep the future level of maintenance to a minimum. Clearing and brushing for this trail should be done 3 to 4 times a year at a minimum. Contracts for developing partners are being made. Several user groups in the area have expressed interest in providing trail monitoring and maintenance.

2. Removing Trees

Smaller trees growing within the trail corridor will be removed. Trees larger than 6 inches in diameter should remain and the trail should be routed around them whenever possible while maintaining ADA accessibility. Removed trees should be pulled up by the roots whenever possible. Whenever possible, the trail should be located on the uphill side of trees to anchor the trail and prevent it from creeping downhill. Limbs should be cut close to the tree trunk and cuts should be clean. If more than 50% of the limbs of a tree need pruning, then Tacoma Power will consider removing the tree. Trees larger than 6 inches in diameter that are to be removed must either be tagged by the Engineer or the trail crew shall get special permission from Tacoma Power or the WDFW. For trees within the Cowlitz Wildlife Area, WDFW approval will also be received before trees are removed. During maintenance activities, trees that have fallen across the trail will need to be removed. Fallen tree removal, an inspection for danger trees and trimming of branches will be scheduled for a minimum of twice a year. Every effort will be made to remove fallen trees within a short period of time after notification. Tacoma Power may partner with volunteer groups or hire commercial firms to remove fallen trees and debris. Limited vehicle access may be granted to approved trail maintenance partners when conducting volunteer trail maintenance.

F. Trail Foundation

1. Trail Bed

The trail bed will consist of existing soil in the loop area when possible. Some sections of this loop will need some material added to the trail. It will be done with a combination of native material and material stockpiled near the location of the trail.
For the hardened portion of the ADA trail section, material will be stockpiled locally and imported material used as required for developing a useable tread surface. Some clearing and grubbing will need to be done as part of the upgrade in the section where the trail surface is hardened.

2. Back Slope

Back slope requirements will be minimal, if any, due to the gentleness of the terrain.

3. Fill Slope

Fill may be used on this trail in some areas where the trail corridor goes through an area with drainage concerns. Fill will be minimal, as the maximum slope along this trail does not exceed 5 percent as an average.

G. Tread

1. Tread Surface

Tread is the actual surface of the trail. The existing surface will be upgraded as required to meet the standards identified herein. The tread surface for the ADA portion will be a minimum of 5 feet wide with all obstacles removed. A minimum of three (3) sections will be widened to meet ADA requirements for passing areas. The remainder of the trail will consist of native material for the tread surface whenever possible. Material will be added to the tread surface when required due to type of soil or lack of proper drainage.

2 Roots and Stumps

All protruding roots and stumps will be removed from the ADA portion of the trail. In the remaining loop, trail design and the location of the centerline should minimize the requirement for removal of roots and stumps. Not all roots and stumps are problems and not all large stumps will need to be removed from a trail. Stumps can help keep the trail from creeping downhill. Roots that are parallel with the tread may need to be removed. In some cases, a trail can be repaired to correct the reason the roots were exposed. Roots, if perpendicular to the tread, and fairly flush may be left if part of the existing native material. Addition of fill to cover existing roots will not be left if part of the existing native material. Addition of fill to cover existing roots will not be done.

3. Rock Removal

Rock removal will not be required for this trail. Some rock maybe added for French drains or as a sub-base in some areas due to the type of soil and terrain. Trail tread and small drainage structures will be installed as necessary for the Mossyrock Park ADA portion. Relocation will be considered for portions of the existing trail at areas with major drainage problems.

H. Surface Water Control

1. Grade and Terrain Dips

Grade and terrain dips will only be applicable in one section of the wildlife area path where the path currently climbs a small hill. That portion of the trail may be relocated to lower on the slope and grade and terrain dips will likely not be needed. If they are necessary, standards for the Peterman Hill Trail in 4.H.2. will be followed

2. Water Bars

Water bars will not be a consideration on this trail as the terrain is very gentle.

3. Adding and Maintaining Drains

Small culverts and French drains are the best way to divert small volumes of water across a trail. They have a big advantage over open top cross ditches because the tread extends over the culvert or French drain without an interruption on the trail surface tread. Drains will be cleaned out periodically during scheduled maintenance. Small drains may be added as needed in this area.

4. Ponding

Effective prevention of ponding of water on the trail surface requires proper construction and layout of the trail. Ponding that does occur will be drained by out-sloping of the trail whenever possible. In rare cases, drains will be installed when necessary to prevent ponding.

I. Trails in Wet Areas

1. Boardwalks

Boardwalks will only be considered as a last resort. Adjustment of the trail location will be done whenever possible. During initial trail location layout, soil and vegetation species should be considered carefully to insure layout does not go through a wetland area where a boardwalk might be needed.

2. Improving Drainage

Trail tread and small drainage structures will be installed as necessary for the Mossyrock Trail loop portion in the Cowlitz Wildlife Area. Relocation will be considered for portions of the existing trail at areas with major drainage problems. Improving drainage can be done with the use of geosynthetics, causeways, or the installation of French drains and small culverts when required. These types of materials should be installed as recommended by the current edition of the USDA Forest Service Trail Construction and Maintenance Handbook.

J. Crossing Streams

1. Bridges

On the Mossyrock Trail there are no known streams. There may be some ditches and minor intermittent drainages that will be crossed using culverts.

2. Culverts

Culverts will be small PVC type in most cases 6 to 12-inches in diameter. The only place a larger than 12-inch culvert would be used is crossing ditch lines along roads. The diameter would depend on the size of the ditch and terrain.

K. Special Structures

1. Switchbacks and Climbing Turns

We do not anticipate switchbacks on this mostly level terrain. The exiting path on the loop trail within the Cowlitz Wildlife Area has several small switchbacks rising up a small hill. The trail in this area may be relocated.

L. Trail Symbols and Sign Types

The standard international trail marking system will be used. See Dwg. 17A-16. Flexible signs and markers from the Federal Universal Symbols for Recreation such as those provided by Carsonite International, or an approved equal will be used. These are the type of signs used frequently by the USDA Forest Service. They are cost effective, easy to install and provide a more lasting sign.
The trail map will annotate directional signs. Warning signs on the road at trail crossings will be in accordance the applicable portion of the current edition of the Manual of Uniform Traffic Control Devices (MUTCD).

1. Possible Signing and Sign types

- Trailhead (Kiosk) Signs and Regulatory Signs

  Signs indicating permitted uses
  Trail courtesy signs and user etiquette signs
  Directional signs, showing trails and roads
  Information for fire danger and trail closures

- Directional Signs

  Signs indicating direction, mileage of trail and mileage to junctions

  Signs indicating routes back to the trailhead

  Trail crossing signs will be posted at all intersections and road crossings and the trail will likely be marked with stop signs on either side of traveled roads.

  Road crossing signs will be posted on the trail about 100 feet from the road crossing warning

  Trail crossing warning signs will be posted on the road at the actual trail crossing and 300 feet each sides of the trail crossing

M. General Maintenance

1. Maintenance Schedule

Maintenance on the Mossyrock Trail system will be done annually; semiannually and quarterly as needed. Tacoma Power will develop a maintenance check sheet and schedule to make sure the trail is maintained to standards. The major annual inspection and annual maintenance will be performed in the spring before recreation season begins, but individual tree blockages and preventative trail surface work will occur as problems are noted. We will establish feedback mechanisms for trail users, including e-mail, phone contact numbers and/or comment cards, to insure that trail users can report problems as they encounter them.

Actual maintenance will be accomplished using a variety of methods including in-house labor, contractors, and volunteer groups. The WDFW provides management oversight of the natural resource program and on part of this area under a funded agreement with Tacoma Power are in the area on a frequent basis. They will be supplied with notifications forms to forward to Tacoma when they note trail maintenance needs

2. Clearing Brush

During maintenance, brush intruding into the trail will be cut back at the base of the plant rather than in the middle, which leaves a stub within the clearing boundary limit. All plant stems will be cut close to the ground and the debris will be scattered as far as practical but not into wetlands or sensitive habitats. Some sections of this trail may require brushing multiple times per year as it lies in a lower vegetation type. As brushing and fallen tree removal is an ongoing process, partners will be developed that can help in trail maintenance. Noxious weeds will be removed from any visible location in the trail corridor using applicable control techniques for the specific species in question.

3. Tread Maintenance

Tread will be maintained at the designed width. Most tread maintenance will be accomplished during the annual maintenance period. Ruts, holes, and low spots will be filled. New obstacles such as protruding roots and rocks not planned for the trail will be removed. It also includes repairing any sections that have been damaged by landslides, uprooted trees, washouts, or boggy conditions. Tread maintenance aims for a solid, out-sloped surface. Debris will be removed that has fallen on the tread, including larger sticks, stones, and litter. The lower edge berm, if it has developed, will be pulled back onto the tread surface and used to restore the out-slope. Organic debris will be widely scattered well beyond the clearing limits, preferably out of sight. Organic debris will never be distributed to wetlands or sensitive habitats.
Roots, if perpendicular to the tread, fairly flush and not a tripping hazard will be left. Roots that are parallel with the tread will be removed unless their removal is predicted to kill the tree. If the cause of the root exposure can be determined, it will be fixed.

4. Maintaining Special Structures

All special structures will be visually inspected once a year. Any deficiencies will be dealt with as required. Tread on switchbacks will be maintained as stated in the paragraph on tread maintenance.

5. Stream Crossing Maintenance

At culverts and other wet crossings, floods or seasonal runoff can wash away the approaches or parts of the structure. Debris can catch in the culvert and alter flow characteristics. Maintenance consists of retaining or restoring the design criteria.

6. Recordkeeping

A log of trail maintenance will be kept including any trail user comments and volunteer hours. Tacoma will discuss trail maintenance with the WDFW and the WMCC) each year at the annual WMCC meeting and will provide a summary of trail construction and maintenance that can be included in the Annual Wildlife Area Report.

5. ATTACHMENTS

A. Construction Drawings

17A-6 Trail Clearing Limits, Standard Drawing
17A-7 Trail Typical, Cross-Sections, Standard Drawing
17A-8 Trail Drainage Grade/Rolling Dip, Standard Drawing
17A-9 Trail Water Bar, Standard Drawing
17A-10 Trail Wet Area Crossings at No Water Flow Locations, Standard Dwg.
17A-11 Trail Shallow Stream Crossing Standard Drawing
17A-12 Trail Bridge/Culvert, Standard Drawing
17A-13 Trail Climbing Turn, Standard Drawing
17A-14 Trail Switchback, Type I, Standard Drawing
17A-15 Trail Switchback, Type II, Standard Drawing
17A-16 Trail Sign, Standard Drawing
17A-17 Trail Aggregate Surfacing, Standard Drawing

B. Miscellaneous Attachments

1. Annual Maintenance Checklist

APPENDIX 5.5

30-DAY FORMAL REVIEW CORRESPONDENCE

5.5.1 30-Day Formal Review Transmittal Letter

5.5.2 Review Comments from Jack Thorne (USDAFS)

5.5.3 Tacoma's E-mail Acknowledgement to Jack Thorne

5.5.4 Tacoma's Responses to Jack Thorne's Comments

APPENDIX 5.5.4

Tacoma Power's Response to Review Comments on the Recreation Facilities Plan

A draft of the Recreation Facilities Plan was sent to all affected agencies and Tribes for a 30-day review and comment period on May 7, 2004. Comments were received from Jack Thorne, of the United States Department of Agriculture - Forest Service (USDAFS). A description of how the plan accommodates or does not accommodate each comment is presented below.

1. The USDAFS requests language to include "Plans will be submitted for approval and permit applications will be submitted in a timely manner necessary to meet project schedules."

   Tacoma Power agrees, however, final approval of plans by other agencies/entities cannot be controlled. Approval could be delayed due to circumstances outside our control. Tacoma Power will submit all plans in accordance with recommended timeframes in order to meet project schedules.

   The sentence "Plans will be submitted for approval and permit applications will be submitted in a timely manner" will be added to page Section 3.1, paragraph 5 of the Plan.

2. The USDAFS proposes that a primary user group for the Peterman Trail should be identified and design criteria, location, and maintenance standards developed accordingly. They also suggest that users be made aware of the primary use.

   The FERC license states that the future trail will serve non-motorized users and include parking, sanitation facilities, interpretive and regulatory signage and brochures. Tacoma Power will develop a multiple-use trail that will accommodate the needs of multiple non-motorized users, including bicyclers, hikers, and horseman. Pre-licensing Recreation Technical Committee meetings, recreation studies and assessments and settlement party negotiations supported a trail that was available to multiple non-motorized user groups. Several outside user groups were represented in these meetings as well as state agencies charged with oversight of recreation programs statewide and each advocated their positions. No specific sponsorship or maintenance partnerships were made with any user group.

   Components of the trail will provide facilities beneficial to all user groups such as vehicle and horse trailer parking, and regulations and signage that stress the importance of considerate and tolerant behavior for other user groups. Signs, brochures and promotional materials will also emphasize the multiple-use purpose of the trail so as not to misinform or mislead users. Monitoring and trail use will be reviewed by the Wildlife Management Coordinating Committee (WMCC) and recommendations made accordingly. Use patterns will also be considered to determine if changes in trail management are necessary in the future.

   The following sentences will be added to the Plan to clarify expectations:

   Section 3.1.1.1, item 1: The primary goal of the trail is to provide a non-motorized trail system for multiple recreational users including bicycles, hiking and horseback riding.

   Section 3.1.1.1.1, paragraph 4: Signs and brochures will describe the multiple-use nature of the trail and will describe trail etiquette that promotes a good recreational experience for all users.

3. The USDAFS states, “If dogs are allowed to use the trail uncontrolled, especially by horsemen, conflicts are likely…between the dogs, other dogs, wildlife, hikers.”

   We agree that the possibility of conflicts between dogs, wildlife and other users exists. Section 3.1.1.3.1, item 7 states that “Documenting any disturbance from trail users’ dogs” will be monitored. If monitoring indicates impacts, additional regulations may be proposed. We have not included a list of standard and specific trail regulations in this plan but will include something similar to - “Trail users must be responsible for their dogs and other animals to avoid harassing of wildlife and other trail users.” when developing regulation signs and printed regulation materials: No changes were made in the wording of the Plan.

4. The USDAFS states “….substantial horse use will introduce noxious weeds along the trail.”

   This comment has been incorporated into the Plan Section 3.1.1.3.1, item 8.

5. The USDAFS states that ““substantial”, “unacceptable,” extensive”, and overcrowding” should be defined. Very subjective terms, especially to a biologist concerned about wildlife.”

   Tacoma Power has described an adaptive process for monitoring, evaluation, responsive trail maintenance and a process to make any substantial changes to the trail using a consultative process. Monitoring indices, (listed in section 3.1.1.3.1) rather than numerical benchmarks, are felt to be a more flexible way to manage a new trail being built within a managed wildlife area. The WMCC is charged with “oversight for trail construction and management” and Tacoma Power will work with other members of the WMCC to monitor wildlife impacts and identify and address those that are unacceptable. The members of the WMCC are professional wildlife biologists with experience evaluating and managing wildlife habitat. Monitoring and use patterns may determine that definitive and/or numerical benchmarks be developed in the future.

   To clarify the approach Tacoma Power is proposing for Monitoring and Evaluation the following sentences will be added to the Plan:

   Section 3.1.1.3, paragraph 2: “Tacoma Power proposes an adaptive process for monitoring, evaluation, responsive trail maintenance and a process to make any substantial changes to the trail using a consultative process.”

   Section 3.1.1.3.2, paragraph 1: Numerical benchmarks will not be set at this time but monitoring indices will be established.

ATTACHMENT 6B-1

ANNUAL MAINTENANCE CHECKLIST

Brushing and lopping:

- ❑ Know your clearing/brushing limits. Brush to the clearing limits as shown on drawings.
- ❑ All cuttings go on the downhill side as far off the trail as possible.
- ❑ Cut branches close to the trunk of the tree.
- ❑ Smear cut ends with dirt so they don't stand out.
- ❑ Don't leave stubs! Lop plants at their base.
- ❑ Saw out blow down 12" or smaller in diameter from the trail.

Restore tread:

- ❑ Remove slough from trail.
- ❑ Return trail to its proper width.
- ❑ Remove organic matter/duff.
- ❑ Remove protruding roots and rocks.
- ❑ Restore out slope of trail.
- ❑ Remove berms from outside edge of trail.

Drainage:

- ❑ Clear drainage ditches of silt and debris - make them bigger, deeper and wider.
- ❑ Clear plugged culverts.
- ❑ Clear grade and drain-dips.
- ❑ Clean/reset water-bars if any.
- ❑ Remove logs/debris from outside edge of trail if they're hindering run-off.
- ❑ Add drainage structures as needed.

Miscellaneous:

- ❑ Clear puncheon, turnpikes, curb logs and bridges of dirt and plants.
- ❑ Drive down nails sticking up on puncheon or bridges.
- ❑ Block off social trails - especially switchback cuts.
- ❑ Remove trash near trailheads.

Signage:

- ❑ Check placement of all signs with current sign plan.
- ❑ Replace missing or destroyed signs as available.
- ❑ Submit list of missing signs not repaired or during initial maintenance.
- ❑ Make recommendations to added, delete, or revise signs.

Trailhead:

- ❑ Check vault toilet structure and repair as necessary
- ❑ Submit list of needed repairs not made during maintenance visit.
- ❑ Review all signs and information on Kiosk per original plan
- ❑ Submit Trailhead and Trail Inspection Checklist to Engineering