



PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY

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May 8, 2014

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary, and
Nathanial J. Davis, Sr., Deputy Secretary
ATTN: OEP/DHAC
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

Re: **Lake Chelan Hydroelectric Project No. 637**
License Article 401 – Supplemental Information for the Revised USDA Forest
Service Erosion Control Implementation and Erosion Monitoring and Maintenance
Plan

Dear Secretary Bose and Deputy Secretary Davis:

The Public Utility District No. 1 of Chelan County, Washington (Chelan PUD) hereby files a “tracked-changes” version and a “clean” version of the revised USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan (Plan) filed February 25, 2014.

Please contact me or Gene Yow at (509) 661-4305 if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Michelle Smith'.

Michelle Smith
Licensing and Compliance Manager
michelle.smith@chelanpud.org
(888) 663-8121, Ext. 4180

Attachment: Tracked-changes and a clean version of revised plan

cc: Paul Willard, U.S. Forest Service
Gene Yow, Chelan PUD

USDA FOREST SERVICE EROSION CONTROL IMPLEMENTATION AND EROSION MONITORING AND MAINTENANCE PLAN

Final

**LAKE CHELAN HYDROELECTRIC PROJECT
FERC Project No. 637**

November 6, 2007

(Revised February 25, 2014)



**Public Utility District No. 1 of Chelan County
Wenatchee, Washington**

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EXECUTIVE SUMMARY

The Federal Energy Regulatory Commission (FERC) Order on Offer of Settlement and Issuing New License (License) and Order on Rehearing for the Lake Chelan Hydroelectric Project No. 637 (Project) were issued November 6, 2006, and April 19, 2007, respectively, to the Public Utility District No. 1 of Chelan County (Chelan PUD). The new License includes the Lake Chelan Comprehensive Settlement Agreement, dated October 8, 2003 (Settlement Agreement).

Article 401 and Appendix A, Article 1(a)(1) of the new License require Chelan PUD to submit to FERC an Erosion Control Implementation Plan by November 6, 2007. Additionally, Article 401 and Appendix A, Article 1(a)(3) require Chelan PUD to submit to an Erosion Monitoring and Maintenance Plan by November 6, 2008. For convenience, the two plans have been combined into this single plan.

This plan describes the implementation, monitoring, and maintenance of erosion sites (other than those subject to an easement) located on USDA Forest Service Lands on the shores of Lake Chelan. The implementation portion of this plan includes an implementation schedule, designs for treatment of sites proposed for the first five years, a method for addressing new or existing non-easement erosion sites requiring treatment, and a process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work. The monitoring and maintenance portion of this plan includes a schedule and process for monitoring and documenting erosion, and for performing maintenance treatment where needed.

SECTION 1: INTRODUCTION

Article 401 and Appendix A, Article 1(a)(1) of the new License require Chelan PUD to submit to FERC an Erosion Control Implementation Plan by November 6, 2007. Additionally, Article 401 and Appendix A, Article 1(a)(3) require Chelan PUD to submit to an Erosion Monitoring and Maintenance Plan by November 6, 2008. For convenience, the two plans have been combined into this single plan.

The Erosion Control Implementation Plan is Section 2 of this plan, and the Erosion Monitoring and Maintenance Plan is Section 3. As required in the License, Section 2 includes an implementation schedule, designs for treatment of sites proposed for the first five years, a method for addressing new or existing non-easement erosion sites requiring treatment, and a process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work. Section 3 includes a schedule and process for monitoring and documenting erosion, and for performing maintenance treatment where needed.

This plan was developed collaboratively by Chelan PUD and the USDA Forest Service. In addition to regular e-mail and telephone communications, fourteen working meetings were held between January ~~10th~~ 10, 2007 and the ~~final~~first submittal of this plan (see Appendix A for Consultation).

SECTION 2: EROSION CONTROL IMPLEMENTATION PLAN

Lake Chelan has approximately 118.8 miles of shoreline, of which approximately 50 miles is managed by the USDA Forest Service, and 10 miles is managed by National Park Service (NPS). A 1999 inventory conducted by Chelan PUD, USDA Forest Service, NPS and other members of the erosion working group identified 112 sites, comprising 40,780 linear feet of USDA Forest Service shoreline undergoing erosion. More detailed information on shoreline erosion around the lake may be found in the Inventory of Shoreline Erosion, Lake Chelan and Bypass Reach Study Report (Chelan PUD, 2000).

Section 2.1 of Chapter 1 of the Lake Chelan Comprehensive Plan, which is Attachment B of the Settlement Agreement, outlines the need to treat and monitor 40 of the 112 identified USDA Forest Service sites. Of the 40 high-priority USDA Forest Service sites, five are subject to easements (also known as damage waivers), whereby the landowner released Chelan PUD from liability for any damage to their property caused by Project operations. These five sites were in private ownership at the time that the easement was granted to Chelan PUD. The land was later acquired from the private landowner by the USDA Forest Service, subject to the easement. Consequently, Chelan PUD will be responsible for performing erosion control work, including erosion repairs, maintenance, and monitoring, only on the 35 sites for which no such easement exists (Figure 1).

As outlined in Section 2.2 of Chapter 1 of the Lake Chelan Comprehensive Plan, which is Attachment B to the Settlement Agreement, this Erosion Control Implementation Plan includes:

- An implementation schedule, including a breakdown of sites to be treated in three-to-five year intervals. This breakdown provides the flexibility necessary to work with unpredictable weather and lake conditions.
- General information about the treatment of the sites proposed for treatment in years one to five year, including the specific sites to be treated, a reference to the first site-specific plan, a description of which party will be responsible for what portion of the work, and the costs anticipated to treat the sites.
- A method to address identification of new or existing non-easement erosion sites requiring treatment.
- A process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work.

USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan

Figure 1: Erosion Sites



USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan



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and Erosion Monitoring and Maintenance Plan*

2.1 Implementation Schedule

Site Groupings and Anticipated Order of Treatment

As described in Section 1 of Chapter 1 of Comprehensive Plan, during relicensing USDA Forest Service staff analyzed all sites on USDA Forest Service lands and sorted the sites into groups based on the reason they were of interest and on the severity of erosion:

- Group 1 sites are those related to recreational sites.
- Group 2 sites are related to sites of interest for historical or cultural reasons.
- Group 3 sites are those of interest for aesthetic reasons that met USDA Forest Service criteria for severity.
- Group 4 sites are those of interest primarily based on aesthetics, which did not meet the criteria for Group 3.

Some sites are included in more than one group. Details of this sorting process are explained in Protection, Mitigation, and Enhancement Measures Submitted by the USDA Forest Service for Chelan County Public Utility District Relicensing Project No. 637, Shoreline Erosion, May 3, 2001.

Groups 1 through 3 include 39 sites, of which 34 sites will be treated by Chelan PUD. Group 4 consists of 21 sites in need of some form of treatment, but not immediately critical. Of these, one site was selected for treatment by Chelan PUD on the basis of an opportunity to enhance riparian habitat.

These groupings facilitated the prioritization of the sites, and we do not expect them to change over the life of the License. However, the treatment of some sites may be modified due to limited accessibility caused by the lake level. In those cases, it is hoped that the new Lake Level management regime will promote more natural stabilization over time. A list of the 35 sites to be monitored and/or treated, the general location of each site and the anticipated timeframe for treatment is presented in Table 1.

The USDA Forest Service plans to complete erosion control work on some sites with easements that are not in Group 2. These include site 41 (Moore Point), with 1,600 feet of shoreline erosion in Group 1, and sites 35, 35b, 36 and 42 in Group 3. These sites are not addressed in this plan, and are the responsibility of the USDA Forest Service.

Table 1: Site Treatment Schedule

| Site No. | Site Name (if any) | Timeframe for Treatment¹ | License Year |
|-----------------|------------------------------------|--|---------------------|
| 1 | | 2013 – 2016 | 6 to 9 |
| 2 | | 2013 – 2016 | 6 to 9 |
| 5 | | After 2016, TBD | After 9 |
| 5b | | After 2016, TBD | After 9 |
| 8a | | After 2016, TBD | After 9 |
| 8b | | After 2016, TBD | After 9 |
| 9 (87) | Big Creek Campground | Monitor | Ongoing |
| 10 | | After 2016, TBD | After 9 |
| 10b | | After 2016, TBD | After 9 |
| 11 | Corral Creek Campground | 2008 – 2010 | 2 to 4 |
| 12 | | After 2016, TBD | After 9 |
| 13b | | After 2016, TBD | After 9 |
| 14 | | Monitor | Ongoing |
| 16 (15, 17) | Graham Harbor Creek Campground | 2013 – 2016 | 6 to 9 |
| 19 | | After 2016, TBD | After 9 |
| 20 | | After 2016, TBD | After 9 |
| 23 | | After 2016, TBD | After 9 |
| 24 a,b,c | Domke Falls Campground | 2009 – 2013 | 4 to 6 |
| 25 | Refrigerator Harbor Campground | 2009 – 2013 | 4 to 6 |
| 26 | Lucerne Campground / Guard Station | 2009 – 2013 | 4 to 6 |
| 27 | Lucerne | 2009 -2013 | 4 to 6 |
| 29 | | After 2016, TBD | After 9 |
| 29b | | After 2016, TBD | After 9 |
| 30 | | After 2016, TBD | After 9 |
| 31 | Elephant Rock | Monitor | Ongoing |
| 32 | | After 2016, TBD | After 9 |
| 33 | | After 2016, TBD | After 9 |
| 37 | | After 2016, TBD | After 9 |
| 41 | Moore Point | 2010 - 2013 | 4 to 6 |
| 45 | | After 2016, TBD | After 9 |
| 47 | Cascade Creek Campground | After 2016, TBD | After 9 |
| 50 | | After 2016, TBD | After 9 |
| 55 (54) | Prince Creek Campground | 2008 - 2010 | 2 to 4 |
| 58 a,b | Deer Point Campground | 2008 - 2010 | 2 to 4 |
| 59 | Mitchell Creek Campground | 2008 - 2010 | 2 to 4 |

¹ The order of treatment after 2016 will be determined based on lessons learned during previous implementation, major weather events, or as more information provides for additional efficiency gains. Chelan PUD and the USDA Forest Service will request approval of changes in order, and clarification of future work in annual reports, as needed.

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2.2 Designs for Years One to Five

This plan was intended to provide a level of detail to allow for a timely implementation of site work. To facilitate this goal, during relicensing it was determined that it would be advantageous to use this plan to present enough information to begin the effort to secure permits prior to the finalization of a site-specific plan. Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two-year Nationwide Permit 13, Bank Stabilization for erosion control work at Site 59 - Mitchell Creek Campground and Site 58 - Deer Point Campground. These permits are from the Army Corps of Engineers.

The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). The U.S. Fish and Wildlife Service has reviewed the first PCF for sites 58 and 59 and find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to". Concurrence with the Programmatic was provided to the USDA Forest Service by the U.S. Fish and Wildlife Service in a letter dated August 14, 2007. This letter has been included in Appendix B of the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.

The USDA Forest Service anticipates obtaining necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period; as such, the intent of this subsection of the Erosion Control Implementation Plan has changed from its original intent. This subsection now includes a brief description of the initial sites to be treated, a detail of responsibilities, and preliminary cost estimates. More information on these sites can be found in the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.

Initial Sites

The sites designated for treatment in 2008 to 2010 include sites:

- 58 (Deer Point Campground) 2008 to 2009
- 59 (Mitchell Creek Campground) 2008 to 2009
- 11 (Corral Creek Campground) 2009 to 2010
- 55 (Prince Creek Campground) 2009 to 2010

A two-year permit package is intended to cover two separate, one-year implementation contracts. The first one-year contract will provide coverage under average conditions; the second year contract will be put in place to provide contingency coverage in the event that weather or other lake level issues preclude work being done in the first year.

The next group of sites ~~that will be~~ designated for treatment in 2009 to 2013 include sites:

- 24 (Domke Falls Campground) 2009 to 2013
- 25 (Refrigerator Harbor Campground) 2009 to 2013
- 26 (Lucerne Campground /GS) 2009 to 2013
- 27 (Lucerne day-use area) 2009 to -2013

Future contracting options have intentionally been left open to allow for the inclusion of lessons learned from the first two years of implementation. Chelan PUD and the USDA Forest Service will jointly determine whether Chelan PUD will hire the USDA Forest Service to administer erosion control treatment work, or if Chelan PUD will administer the work.

A site-specific plan for the first group of sites has been developed to be submitted concurrently to this plan. Future site-specific plans to describe the remaining 31 erosion sites will be developed, by group, as separate documents. In according with Section 2.2.1 of Chapter 1 of Attachment B of the Settlement Agreement, the site-specific plan includes the following:

1. A map depicting the location of the proposed activity.
2. A description of the USDA Forest Service land management area designation within the Forest Plan for the location of the proposed activity and the applicable standards and guidelines.
3. A description of locations, designs and mitigation measures considered, including implementation and effectiveness monitoring.
4. Data collected from surveys, biological evaluations or consultation as required by regulations applicable to ground or habitat disturbing activities on National Forest
5. System lands in existence at the time the plan is prepared.
6. Noxious weed control measures included as a part of mitigation.
7. An environmental analysis or other appropriate National Environmental Policy Act (NEPA) analysis of the proposed action that meets the USDA Forest Service requirements for implementing NEPA.

Responsibility

As provided in Article 1(a), Chelan PUD is responsible for carrying out erosion control and monitoring measures on USDA Forest Service lands. In exercising that responsibility, Chelan PUD has entered into an Interlocal Cooperative Agreement with the USDA Forest Service, pursuant to which the USDA Forest Service will take certain steps regarding treatment at the first four sites to be addressed. Specifically, under contract to the Chelan PUD, the USDA Forest Service will address NEPA review, permitting, and cultural resources for the first four Group 1 sites to be treated (11, 55, 58 and 59), and will administer the construction contract for sites 58 and 59.

The level of responsibility assumed by the USDA Forest Service will be determined collaboratively by Chelan PUD and the USDA Forest Service, based on resource availability, on an annual or biannual basis. Additional Interlocal Cooperative Agreements will be crafted to

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meet future needs, with Chelan PUD ensuring that work is conducted in accordance to the schedule presented in Table 1.

Where this plan includes erosion work on Group 2 sites, Chelan PUD will provide coordination with the Lake Chelan Cultural Forum (LCCF) so that the affected cultural resources are addressed as defined in Chapter 10, the Historic Properties Management Plan. Chelan PUD will also perform erosion control work on sites in Group 2, regardless of easements, if required to protect cultural or historical resources from damage caused by shoreline erosion resulting from Project operations. In particular, work on these sites will require prior review and approval of plans by the LCCF, and examination of the proposed work area.

As needed during the treatment of the 35 USDA Forest Service sites, Chelan PUD will collect and contain Large Woody Debris (LWD) for use on USDA Forest Service erosion sites. Section 4, Chapter 3 of the Comprehensive Plan includes the description of usable LWD on Lake Chelan, the length of time that LWD may be banked, and a list of potential storage sites for LWD. All LWD collection and storage will be conducted in accordance with the Comprehensive Plan. Chelan PUD will coordinate with the USDA Forest Service for temporary storage areas as needed for materials to be used in USDA Forest Service erosion treatments. Although LWD is used in the erosion treatment designs to provide additional armoring; it is not immediately critical to the erosion design. The use of LWD is known to reduce lifecycle costs of erosion treatment by increasing the stability of the treatment.

As provided in Section 4.4, Chapter 3 of the Comprehensive Plan, in instances when the full quantity of LWD required to complete the erosion design is not immediately available, LWD may be added to the site over time as follows: within the first 5 years of treatment, 25% of the LWD required by design must be in place; within the first 10 years of treatment, 50% of the LWD must be in place; and within 15 years of treatment, 100% of the LWD must be in place.

Preliminary Cost Estimates

The USDA Forest Service and Chelan PUD developed an original management plan estimate of \$282 per linear foot treated back in 2001-2002 for the license application. Many things have changed since then, including increased fuel prices and other economic factors that are difficult to estimate. However, based on preliminary estimates and “rock feet treated” (RFT) estimates used to standardize estimates for various types of treatment, enhanced placed rock (EPR) is anticipated to cost approximately \$316 per linear foot. Double or single placed rock is estimated to cost one-third that of EPR, or approximately \$105 per linear foot. ERP placed over a crib is estimated to cost two-thirds that of EPR, or approximately \$211 per linear foot.

For work conducted under the Interlocal Cooperative Agreement, as provided for in the Settlement Agreement, the USDA Forest Service intends to keep all costs of the treatment work reasonable. This information is provided as an Estimated Cost, as defined in section 4.4 of the Settlement Agreement.

2.3 Identification of New or Existing Sites

As previously described, substantial information exists for Lake Chelan erosion sites. The groupings outlined in Section 2.1 of this report will not likely change for the life of the license.

During the relicensing process the USDA Forest Service developed evaluation criteria to differentiate select sites from Groups 3 and 4 for possible treatment. Details of this evaluation are explained in Appendix F of the Inventory of Shoreline Erosion (Chelan PUD, 2000). The criteria used for selection were an aesthetic site erosion (AES) ratio of 4.0 or greater and a cumulative scale ratio of 0.6 or greater (Figure 1-3, Chapter 1 of the Comprehensive Plan).

The Erosion Monitoring and Maintenance Plan, presented below in Section 3, addresses a) whether new sites should be added to the Project-caused erosion site inventory, b) whether treated sites meet erosion control objectives and c), whether existing inventoried sites have moved into the high priority for treatment category. A re-inventory of all sites monitored is scheduled to be updated on the 25th anniversary of the effective date of the New License (November 1, 2031).

Proposed treatment areas for all 35 sites are shown in sketches in the 2001, Erosion Control Treatments and Concepts for Lake Chelan, Okanogan and Wenatchee National Forests, Final (December 7, 2001). Erosion treatment and monitoring efforts will be tracked and documented in such a way that it is possible to cross-reference work conducted to what was expected to be necessary in 2001.

During the first 20 years, the focus will be on the first 35 treatment sites, with no new sites added. Specifically, prioritization for future work shall be based on the prior groupings of the sites with further consideration as follows:

- 1st priority will be given, during the first 10 years of the license, to sites where additional active erosion is observed within existing sites that had previously been identified as needing treatment. This erosion may be the result of the uprooting of a tree or an existing wood crib wall becoming compromised. The site specific treatment plan will include these minor updates.
- 2nd priority will be given to sites where additional treatment is warranted based on the results of monitoring of repaired or treated sites. If 10 linear feet fail, or a total of 20 feet in separate 5-foot sections fails, and the reason for failure is known and can be addressed, the site will be repaired when practical and timely as a component of the next minor maintenance contract.

After treatment of the originally identified 35 sites has been accomplished, maintenance of these sites will be the key priority. The new lake level regime is anticipated to provide a positive benefit in the natural stabilization process, but to an unknown degree. It is anticipated that the new lake level regime will provide a significant reduction in the continued project-related shoreline erosion on Lake Chelan. Chelan PUD shall not be responsible for continued treatment needed as a result of non-project related effects, such as earthquakes, land slides, and avalanches. Erosion must be generated at the toe of the slope to be deemed project-related.

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If, during the course of the license, a previously unknown cultural resource is discovered at an erosion site, the site will be addressed with protective measures coordinated with the LCCF, as required by Section 2.1 of Chapter 1 of the Comprehensive Plan.

2.4 Process for Treating in a Timely Manner

Chelan PUD and the USDA Forest Service will attempt to treat approximately 500 lineal feet of active erosion per year. This value is based on the short work window of the drawdown period in late winter, and a moderate work crew size. Treating the 35 agreed upon sites (10,000 feet) may take up to 20 years. If, after a few years of treatment, the Chelan PUD and USDA Forest Service collectively wish to accelerate the treatment rate, a formal request to do so will be made to FERC.

A site may need to be treated out of sequence to protect public safety in the event that a washout or failure occurs that creates a public hazard, or if a cultural resource is discovered in a location that appears to be potentially compromised by impending erosion. In either event, the failure will be photo documented and then, if warranted, a temporary treatment to stabilize or minimize resource damage will be implemented. In this event, the USDA Forest Service and Chelan PUD will jointly analyze the cause of the failure, design a repair, and implement the repair as soon as possible. Any cultural resource events will be coordinated with the LCCF.

SECTION 3: EROSION MONITORING AND MAINTENANCE

As noted in the Introduction, this section constitutes the Erosion Monitoring and Maintenance Plan for the USDA Forest Service sites. This section is based on Section 2.3 of Chapter 1 of the Comprehensive Plan.

This section of the plan addresses monitoring of the USDA Forest Service shorelines to determine a) whether new sites should be added to the Project-caused erosion site inventory, b) whether treated sites meet erosion control objectives and c), whether existing inventoried sites have moved into the high priority for treatment category based on the criteria of a site having an AES ratio of 4.0 or greater and a cumulative scale ratio of 0.6 or greater (Figure 1-3, Chapter 1 of Attachment B of the Settlement Agreement).

Monitoring and maintenance activities described in this section will be grouped as follows:

- Treatment Effectiveness Monitoring
 1. Implementation Monitoring
 2. Maintenance and Safety Monitoring
- Long-term Trend Monitoring of Erosion

Implementation monitoring is the evaluation of the initial site treatment erosion control work and the continued success of that treatment for up to five years. Maintenance and safety monitoring will formally be conducted on an ongoing basis at five-year intervals to evaluate sites that were treated more than five years prior. Safety monitoring will informally be conducted on an ongoing basis concurrent with uplake recreation maintenance work. Long-term trend monitoring will focus on the erosion rate and other significant changes at non-treated sites (other than the 35 identified for treatment herein).

All monitoring herein will use the 1999 inventory (Chelan PUD, 2000) as a baseline, together with reference photographs from the 1982 inventory.

3.1 Treatment Effectiveness Monitoring

Implementation Monitoring

Implementation monitoring and reporting will be conducted to determine the success of re-vegetation, noxious weeds, LWD, and toe-slope stabilization on treated sites in years one, three, and five following treatment of each site. The timelines for site treatment are outlined in Table 1 of Section 2 of this plan.

The following language is largely taken from Section 2.3 of Chapter 1 of the Comprehensive Plan, with some minor refinements that resulted from discussion between Chelan PUD and the USDA Forest Service. Specifically, the monitoring will focus on the following:

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1. Slope stabilization with an objective of reaching a 90% success rate in the treated areas.
2. Presence of native vegetation with an objective of reaching ratio of native to non-native vegetation similar to that found nearby on undisturbed slopes on 90% of treated area. This will take into account the percentage of rock and bare spots, as this is a very dry hostile natural environment.
3. Presence of noxious weeds with an objective of not introducing any new noxious weeds through the course of treatment. Implementation methodologies are designed to exclude the introduction of noxious weeds. Treated areas will be monitored on an ongoing basis during the first five years to determine if the methodologies employed are sufficient to meet the project objectives. If noxious weeds are discovered, treatment shall be pursued before the plant can produce viable seed. Timing is dependant on seed viability or potential spread.
4. Ensuring that LWD is stable. Unstable LWD may pose a hazardous to the site users.

Toe-stabilization (rock repair) will be conducted if the reason for failure is known and can be addressed at 10 linear feet of inventory standard or 5-foot failures totaling a length 20 feet. The site will be repaired when practical and timely as a component of the next minor maintenance contract or next treatment contract, whichever is easiest.

As provided in with Section 2.3 of Chapter 1 of the Comprehensive Plan, replanting will be conducted if, during the first two monitoring actions (years one and three) greater than 50 percent of the plantings have failed. In such a case, replanting will occur during the next fall planting period. This assumes initial planting occurs at 140 percent of the desired density and the goal is to be achieved by the 5th year after the initial treatment. Replanting will be conducted after year five, only if monitoring indicates that less than 75 percent of the baseline density and cover found on similar, undisturbed shoreline remain. Trends in vegetation may be taken into account, based on consultation between Chelan PUD and the USDA Forest Service, so that replanting of a site meeting the above criteria may be delayed if a positive trend appears to exist in the vegetation at the site, and replanting may be accelerated if a negative trend exists.

Maintenance and Safety Monitoring

As provided in Section 2.3 of Chapter 1 of the Comprehensive Plan, once a site has been successfully treated, formal maintenance and safety monitoring will occur at five-year intervals over the remainder of the license term to determine that site treatment objects continue to be met. Additional, informal safety inspections will be conducted concurrent with other uplake activities, as possible. Based on the findings of this monitoring, Chelan PUD will conduct additional structural, vegetation treatments on previously treated sites as needed.

The formal on-site monitoring and maintenance will include the following:

- An inspection of LWD cable ends and rock fasteners during low water to ensure safety and stability concerns associated with anchoring;
- Repair of any LWD failures identified during inspection, to be conducted prior to the spring lake refill period, preferably simultaneously with the inspection.

- An inspection of toe rock stability. If, during treatment of the initial 35 erosion control sites, monitoring reveals 100 feet of maintenance treatment needed, then the maintenance will be added to the existing planned work, as determined by Chelan PUD and the USDA Forest Service. After the initial 35 erosion control treatments have been completed, the trigger for maintenance treatment will be 200 feet of repair work needed. Chelan PUD and the USDA Forest Service will determine the specific needs and will schedule the work as appropriate.
- An inspection of existing vegetation (both planted and naturally-occurring) to determine if additional actions are needed.

For all maintenance activities, the following are true:

- For rock, timing of maintenance depends on scale and workability in the drawdown zone.
- For vegetation plantings, timing is seasonal dependant with the fall planting season having the highest likelihood of success.

As per Section 2.3, Chapter 1 of the Comprehensive Plan, Chelan PUD will, following consultation with and approval by USDA Forest Service, implement additional measures to achieve erosion control objectives at previously treated sites that fail to meet treatment objectives five years after initial treatment, when retreatment costs are less than or equal to 25 percent of the original treatment costs. When retreatment cost will exceed 25 percent of the original treatment cost, Chelan PUD and USDA Forest Service will agree whether a) additional treatment of the existing site is warranted, or b) treatment of an equivalent linear footage of shoreline on another non-easement site will be performed in lieu of further treatment at the original site.

Long-term Trend Monitoring of Erosion

Erosion is a natural gradual geologic process that is influenced by many natural and human activities. Long-term trend monitoring will be used to determine project-related impacts. Monitoring will be focused on a narrow range of erosion activity occurring between approximately 1,115 and 1,090 feet elevation.

As per Section 2.3, Chapter 1 of the Comprehensive Plan, long-term trend monitoring will include:

- Updating the inventory of USDA Forest Service sites contained in the 1999 study on the 24th and 48th anniversary of the effective date of the License (years 2030 and 2054). Based on further consideration by the Chelan PUD and the USDA Forest Service, it was determined that a 24 year interval would be more appropriate than the 20 year interval suggested in the Section 2.3 of Chapter 1 of the Comprehensive Plan. This timing provides more up to date information for the next relicensing process, and should allow sufficient time complete initial erosion treatment on all 35 sites. We request FERC consider a change to these dates from that proposed in the Comprehensive Plan. These updates will include photo documentation and current site sketches using the same or otherwise agreed upon methodology with technology of that time. The USDA Forest Service may choose to add new or existing non-

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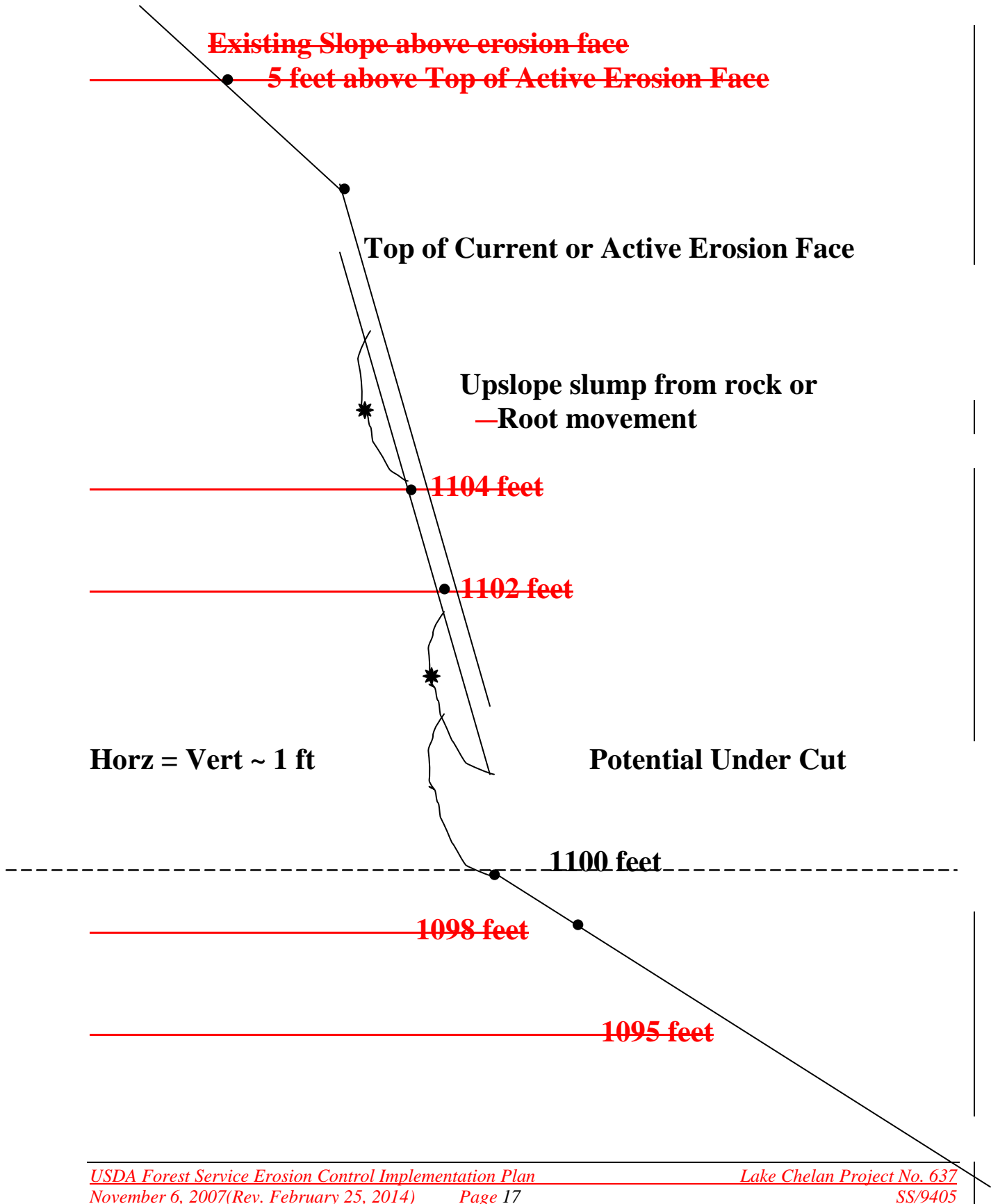
ease sites to the list of sites to be treated based on agreement between Chelan PUD and USDA Forest Service that they meet the evaluation criteria for group 1 and 3 sites, outlined in Appendix F of the *Inventory of Shoreline Erosion* (Chelan PUD, 2000)

- Trend monitoring (erosion rate and other significant changes) at selected sites at five and ten-year intervals. Every five years, photo documentation will be conducted. Every ten years, measurements will be conducted. Non-treated sites for trend monitoring include sites 4, 13, 34, 40, and 53.

During discussion between Chelan PUD and the USDA Forest Service, it became apparent that additional information was needed with regard to trend monitoring. As a result, two representative profile locations will be chosen at each trend monitoring site. At each profile site a photo point will be established, the ~~site will located~~ location of which will be marked by a monument and documented with Global Positioning System (GPS) coordinates. Profile points Each profile location will be established at by two monuments at readily accessible points on the profile to serve as fixed reference points each time the profile is measured. Each measurement of the profile will include other key locations that (e.g. breaks in slope) on the profile as necessary to define the shape of the profile and show site-specific profile changes with an objective of documenting erosion effects above 1,100 feet of from the current water elevation. All profiles will have profile points at 1,090, 1,098, 1,100, feet of elevation (the inundation zone or beach) and a minimum of six profile points above 1,100 feet. Required points above the inundation zone will include those at 1,102 and 1,104 feet of elevation and up to the top of the current eroding face to reveal the historically active toe erosion of the slope. Steel rods with unmarked small survey caps will be used to document profile points at the site. Points will be driven in until they match the horizontal profile for a representative 2-foot width. An example of a trend profile is presented as Figure 2.

Similarly, site profiles will be measured at profile points for changes at 10-year intervals and photo point pictures will be taken at 5-year intervals. Data will be analyzed at the 30th and 45th year anniversary of the license. Based on further consideration by the Chelan PUD and the USDA Forest Service, it was determined that data analysis would be more appropriately conducted in years 30 and 45 rather than the 20-year interval suggested in the Section 2.3 of Chapter 1 of the Comprehensive Plan. This timing provides more up to date information for the next relicensing process, and should allow sufficient time complete initial erosion treatment on all 35 sites. We request FERC consider a change to these dates from that proposed in the Comprehensive Plan.

Figure 2: Trend Profile Example



*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

Horz = Vert ~ 2 ft

Picture Point •

Point from which profile measurements taken•

—1090 feet •

Required Points • — Feature Points *

APPENDIX A: *CONSULTATION*

Record of Communications

Article 401 of the Project License requires that Chelan PUD “prepare plans for approval by some of all of the signatories of the Lake Chelan Settlement Agreement”. Additionally, “The licensee shall submit to the Commission documentation of its consultation, copies of the comments and recommendations made in connection with the plan, and a description of how the plan accommodates the comments and recommendations. The licensee shall allow a minimum of 30 days for the consulted entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee’s reasons, based on project-specific information. The Commission reserves the right to make changes to the plan submitted.”

This plan was developed collaboratively by Chelan PUD and the USDA Forest Service. Chelan PUD has completed the consultation requirements, beginning on 1/10/07 by meeting with the USDA Forest Service and determining the most efficient means of developing the required plans for the erosion control work. Meetings between the two entities were conducted on the following dates:

January 10, 2007
January 30, 2007
February 22, 2007
February 26, 2007
March 21, 2007
April 20, 2007
July 6, 2007
July 25, 2007
August 14, 2007
August 23, 2007
August 29, 2007
September 6, 2007
October 11, 2007
October 19, 2007

August 28, 2013 (To support revision of the plan)

30 Day Comments

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

As required by the License, the draft final plan was sent to the USDA Forest Service for a 30-day review on October 3, 2007. A copy of the transmittal e-mail is provided below.

-----Original Message-----

From: Bitterman, Deborah **On Behalf Of** Duffy, Janel
Sent: Wednesday, October 03, 2007 4:11 PM
To: 'Bob Sheehan (rsheehan@fs.fed.us)'; 'Joe Kastenholz (jkastenholz@fs.fed.us)'
Subject: Chelan PUD: Request for Comment re Final USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan Pursuant to Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3) for the Lake Chelan Project No. 637

PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

To: Robert J. Sheehan, USDA Forest Service
Joe Kastenholz, USDA Forest Service

From: Janel Duffy
Public Utility District No. 1 of Chelan County (Chelan PUD)
janel.duffy@chelanpud.org
509.661.4400

Re: Lake Chelan Hydroelectric Project No. 637 (Project)
Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3)
USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan

In accordance with Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3), Chelan PUD invites comment letters on the attached final draft USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan. To open the document, click on the following link:
[http://www.chelanpud.org/documents/9405_1\(1\).pdf](http://www.chelanpud.org/documents/9405_1(1).pdf)

Please submit your comment letters on or before 5:00 p.m., November 3, 2007 to me via email at janel.duffy@chelanpud.org.

Pursuant to Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3), Chelan PUD will file the USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan with FERC by November 6, 2007. All received comment letters will be appended to the plan with a description of how each comment or recommendation was incorporated in the plan, or, if the licensee does not adopt a recommendation, the filing with FERC will include the licensee's reasons, based on project-specific information for not adopting such recommendation.

If you have any questions, please do not hesitate to contact me.

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

Summary of Response to Comments

On October 19, 2007, the US Forest Service provided comments regarding both the USDA Forest Service Site-Specific Erosion Control Plan and the USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan. The letter is attached below.

Each comment has been addressed as follows:

| Comment | Licensee's response to comment |
|---|---|
| <p>Page 7 Modifications 1st paragraph: Delete the following portion: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and will submit an application for two year Nationwide Permits for this type of work. These permits will allow the USDA Forest Service to rapidly obtain necessary permits for the first sites to be worked on during the spring 2008 drawdown period. As such, it is possible, at this time, to immediately provide site-specific plans for the sites slated to be treated in 2008 and 2010.</p> | <p>This portion will be deleted.</p> |
| <p>Page 7 1st paragraph under "Initial Sites" after treatment locations: Include this modified paragraph: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two year Nationwide Permit 13, Bank Stabilization for erosion control work at Mitchell and Deer Point sites. These permits are from the Army Corps of Engineers. The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). They have reviewed the first PCF for sites 58 and 59 find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to (US F&W Service) our August 14, 2007 concurrence with the Programmatic. We hope to obtain necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period. We have provided site-specific plans for the sites slated to</p> | <p>This will be included but modified slightly to read:</p> <p>Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two-year Nationwide Permit 13, Bank Stabilization for erosion control work at Site 59 - Mitchell Creek Campground and Site 58 - Deer Point Campground. These permits are from the Army Corps of Engineers.</p> <p>The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). The U.S. Fish and Wildlife Service has reviewed the first PCF for sites 58 and 59 find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to". Concurrence with the Programmatic was provided to the USDA Forest Service by the U.S. Fish and Wildlife</p> |

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

| | |
|--|---|
| <p>be treated in 2008 to 2010 under the “USDA Forest Service Site-Specific Erosion Control Plan” for sites 11, 55, 58, and 59.</p> | <p>Service in a letter dated August 14, 2007. This letter has been included in Appendix B of the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.</p> <p>The USDA Forest Service anticipates obtaining necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period; More information on these sites can be found in the USDA Forest Service Site-Specific Erosion Control Plan, <u>USDA-FS Erosion Sites 11, 55, 58 and 59.</u></p> |
| <p>Page 7: 2nd paragraph under “Initial Sites” Deleted the work “aforementioned” out of the first sentence.</p> | <p>As requested, the text “The aforementioned two-year...” will be modified to read “A two-year...”.</p> |
| <p>Page 8: 1st and 2nd paragraph under Responsibility: Insert <u>final agreed upon wording</u> “Interlocal Cooperative/Collection Agreement”.</p> | <p>The final wording will be Interlocal Cooperative Agreement. The document will be changed to reflect this.</p> |
| <p>Page 13: Long-term trend Monitoring of Erosion, 1st paragraph 2nd sentence: Delete “if any” from the end of the sentence, it shows bias.</p> | <p>This has been deleted, however, it is unclear this provides any more bias than assuming there is project impact that may not be present.</p> |
| <p>Page 14: Last paragraph, 2nd sentence and 3rd sentence: Change “50th” to “45th” Rationale: The analysis would not be timely enough to be useful in the next relicensing process if it occurred in the last year of the license.</p> | <p>This was changed in both pertinent locations.</p> |

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*



United States
Department of
Agriculture

Forest
Service

Wenatchee
National
Forest

215 Melody Lane
Wenatchee, WA 98801
TTY (509) 662-4396
Voice (509) 662-4335

File Code: 2560
Date: October 19, 2007

Reference: Lake Chelan Hydroelectric Project No. 637

Ms. Janel Duffy
Public Utility District No 1 of Chelan County
P.O. Box 1231
Wenatchee, WA 98807

Dear Ms Duffy:

In accordance with Article 401 and Appendix A, Articles 1(a)(1), 1(a)(2) and 1(a)(3), we would like to provide the following comments to the "USDA Forest Service Site-Specific Erosion Control Plan" and the "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan"

Comments to the September 20, 2007 USDA Forest Service Site-Specific Erosion Control Plan", CPUD:

On pages 11, 23, 37, and 51:

Insert below the table the sentence: "Construction drawings showing the treatments described above are attached in Figures 2-9, pages 62-69".

Modify page i, Table of Contents to include Figures 2-9: Construction drawings of proposed treatments..... 62-69, and insert Construction Drawing on pages 62-69.

Comments to the Final November 3, 2007 "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan", CPUD:

Page 7 Modifications 1st paragraph:

Delete the following portion: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and will submit an application for two year Nationwide Permits for this type of work. These permits will allow the USDA Forest Service to rapidly obtain necessary permits for the first sites to be work on during the spring 2008 drawdown period. As such, it is possible, at this time, to immediately provide site-specific plans for the sites slated to be treated in 2008 to 2010.

Page 7 1st paragraph under "Initial Sites" after treatment locations:

Include this modified paragraph:

Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two year Nationwide Permit 13, Bank Stabilization for erosion control work at Mitchell and Deer Point sites. These permits are from the Army Corps of



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Engineers. The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service thru a project consistency analysis form (PCF). They have reviewed the first PCF for sites 58 and 59 finding that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to (US F&W Service) our August 14, 2007 concurrence with the Programmatic. We hope to obtain necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period. We have provided site-specific plans for the sites slated to be treated in 2008 to 2010 under the "USDA Forest Service Site-Specific Erosion Control Plan" for sites 11, 55, 58, and 59.

Page 7: 2nd paragraph under "Initial Sites"
Deleted the word "aforementioned" out of the first sentence..

Page 8: 1st and 2nd paragraph under Responsibility:
Insert final agreed upon wording "Interlocal Cooperative/Collection Agreement".

Page 13: Long-term trend Monitoring of Erosion, 1st paragraph 2nd sentence:
Delete "if any" from the end of the sentence, it shows bias.

Page 14: Last paragraph, 2nd sentence and 3rd sentence:
Change "50th" to "45th" Rationale: The analysis would not be timely enough to be useful in the next relicensing process if it occurred in the last year of the license.

If you have any questions or needed any additional information please contact Joe Kastenholtz (509-682-2576) for details on the project.

Thank you for your help and cooperation in preparing these plans.


ROBERT J. SHEEHAN
District Ranger



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Record of Comments re Feb. 25, 2014, Revisions

Sokolowski, Rosana

Subject: FW: getContent (2).doc

From: Willard, Paul -FS [<mailto:pwillard@fs.fed.us>]
Sent: Friday, February 21, 2014 9:21 AM
To: Yow, Gene
Subject: RE: getContent (2).doc

Gene,

That looks good.

Paul Willard
Recreation Program Manager
Chelan Ranger District
509-682-4960 (o)
509-699-9690 (c)
pwillard@fs.fed.us

From: Yow, Gene [<mailto:Gene.Yow@chelanpud.org>]
Sent: Tuesday, February 18, 2014 1:49 PM
To: Willard, Paul -FS
Subject: getContent (2).doc

Please look at pages 15 and 16 to see the tracked changes. I thought it would be best to ask you to look and tell me that this is what you expected, before sending it to the FERC.

Thank you,
Gene Yow

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*USDA Forest Service Erosion Control Implementation
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Sokolowski, Rosana

From: Willard, Paul -FS [pwillard@fs.fed.us]
Sent: Tuesday, February 11, 2014 1:12 PM
To: Yow, Gene
Subject: RE: erosion monitoring & maintenance proposal

Gene,

I discussed your proposal, outlined below, with our Ranger. We concur that the proposal will meet the intent of the monitoring required in the Erosion Control Implementation and Maintenance and Monitoring Plan. It seems that the result of any monitoring will be a mix of quantitative and qualitative information based on our observations.

So, do we need to submit this to FERC for approval?

Paul Willard

From: Yow, Gene [<mailto:Gene.Yow@chelanpud.org>]
Sent: Tuesday, September 03, 2013 8:47 AM
To: Willard, Paul -FS
Subject: erosion monitoring & maintenance proposal

Thank you for meeting with me last Wednesday.

I'd like to propose a change in the plan for long-term monitoring of five sites.

Please refer to page 15 of the final version of the "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan," dated November 6, 2007. The last two paragraphs on that page include the details I'd like to change.

These paragraphs include some details added after the settlement agreement was developed. That's appropriate, but I think some of the details could be problematic. The paragraphs call for choosing two profile locations at each of five sites to better monitor erosion trends (rates). At each profile, we are to place monuments at five pre-determined elevations, plus at least four other elevations above 1,100 ft. We're also supposed to pick and document a point from which to take photos to record the appearance of the slope.

I'm concerned about the difficulty of access to place monuments in the middle of the eroding slope, and the possible damage we may cause by climbing up and down that slope. My proposal is that we set two monuments for each profile at readily accessible points on the profile. The monuments will serve as fixed reference points each time the profile is measured, allowing us to readily compare the rest of the profile and notice any changes. Beyond those reference points, rather than measuring monuments, we would measure the location of breaks in slope and any other key features of the slope so we can plot the shape and see how it's changing. [I think I mentioned the device I have for measuring distance and slope without a target. I'll try to remember to show it to you, next time you're here.]

Picking and documenting a point from which to take a photo each time also seems worthwhile. GPS is great, but a monument would be more likely to get us back to the same location each time, so I would suggest we set a third monument for that purpose, and use GPS to document its location.

I think the proposed changes that I've described above will provide the information we need without the hazard and increased erosion that could come from climbing up and down the bank to set and revisit monuments. Please let me know what you think.

Gene Yow

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

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USDA FOREST SERVICE EROSION CONTROL IMPLEMENTATION AND EROSION MONITORING AND MAINTENANCE PLAN

Final

**LAKE CHELAN HYDROELECTRIC PROJECT
FERC Project No. 637**

**November 6, 2007
(Revised February 25, 2014)**



**Public Utility District No. 1 of Chelan County
Wenatchee, Washington**

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EXECUTIVE SUMMARY

The Federal Energy Regulatory Commission (FERC) Order on Offer of Settlement and Issuing New License (License) and Order on Rehearing for the Lake Chelan Hydroelectric Project No. 637 (Project) were issued November 6, 2006, and April 19, 2007, respectively, to the Public Utility District No. 1 of Chelan County (Chelan PUD). The new License includes the Lake Chelan Comprehensive Settlement Agreement, dated October 8, 2003 (Settlement Agreement).

Article 401 and Appendix A, Article 1(a)(1) of the new License require Chelan PUD to submit to FERC an Erosion Control Implementation Plan by November 6, 2007. Additionally, Article 401 and Appendix A, Article 1(a)(3) require Chelan PUD to submit to an Erosion Monitoring and Maintenance Plan by November 6, 2008. For convenience, the two plans have been combined into this single plan.

This plan describes the implementation, monitoring, and maintenance of erosion sites (other than those subject to an easement) located on USDA Forest Service Lands on the shores of Lake Chelan. The implementation portion of this plan includes an implementation schedule, designs for treatment of sites proposed for the first five years, a method for addressing new or existing non-easement erosion sites requiring treatment, and a process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work. The monitoring and maintenance portion of this plan includes a schedule and process for monitoring and documenting erosion, and for performing maintenance treatment where needed.

SECTION 1: INTRODUCTION

Article 401 and Appendix A, Article 1(a)(1) of the new License require Chelan PUD to submit to FERC an Erosion Control Implementation Plan by November 6, 2007. Additionally, Article 401 and Appendix A, Article 1(a)(3) require Chelan PUD to submit to an Erosion Monitoring and Maintenance Plan by November 6, 2008. For convenience, the two plans have been combined into this single plan.

The Erosion Control Implementation Plan is Section 2 of this plan, and the Erosion Monitoring and Maintenance Plan is Section 3. As required in the License, Section 2 includes an implementation schedule, designs for treatment of sites proposed for the first five years, a method for addressing new or existing non-easement erosion sites requiring treatment, and a process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work. Section 3 includes a schedule and process for monitoring and documenting erosion, and for performing maintenance treatment where needed.

This plan was developed collaboratively by Chelan PUD and the USDA Forest Service. In addition to regular e-mail and telephone communications, fourteen working meetings were held between January 10, 2007 and the first submittal of this plan (see Appendix A for Consultation).

SECTION 2: EROSION CONTROL IMPLEMENTATION PLAN

Lake Chelan has approximately 118.8 miles of shoreline, of which approximately 50 miles is managed by the USDA Forest Service, and 10 miles is managed by National Park Service (NPS). A 1999 inventory conducted by Chelan PUD, USDA Forest Service, NPS and other members of the erosion working group identified 112 sites, comprising 40,780 linear feet of USDA Forest Service shoreline undergoing erosion. More detailed information on shoreline erosion around the lake may be found in the Inventory of Shoreline Erosion, Lake Chelan and Bypass Reach Study Report (Chelan PUD, 2000).

Section 2.1 of Chapter 1 of the Lake Chelan Comprehensive Plan, which is Attachment B of the Settlement Agreement, outlines the need to treat and monitor 40 of the 112 identified USDA Forest Service sites. Of the 40 high-priority USDA Forest Service sites, five are subject to easements (also known as damage waivers), whereby the landowner released Chelan PUD from liability for any damage to their property caused by Project operations. These five sites were in private ownership at the time that the easement was granted to Chelan PUD. The land was later acquired from the private landowner by the USDA Forest Service, subject to the easement. Consequently, Chelan PUD will be responsible for performing erosion control work, including erosion repairs, maintenance, and monitoring, only on the 35 sites for which no such easement exists (Figure 1).

As outlined in Section 2.2 of Chapter 1 of the Lake Chelan Comprehensive Plan, which is Attachment B to the Settlement Agreement, this Erosion Control Implementation Plan includes:

- An implementation schedule, including a breakdown of sites to be treated in three-to-five year intervals. This breakdown provides the flexibility necessary to work with unpredictable weather and lake conditions.
- General information about the treatment of the sites proposed for treatment in years one to five year, including the specific sites to be treated, a reference to the first site-specific plan, a description of which party will be responsible for what portion of the work, and the costs anticipated to treat the sites.
- A method to address identification of new or existing non-easement erosion sites requiring treatment.
- A process for treating in a timely manner non-easement sites identified as needing additional treatment or maintenance work.

USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan

Figure 1: Erosion Sites



2.1 Implementation Schedule

Site Groupings and Anticipated Order of Treatment

As described in Section 1 of Chapter 1 of Comprehensive Plan, during relicensing USDA Forest Service staff analyzed all sites on USDA Forest Service lands and sorted the sites into groups based on the reason they were of interest and on the severity of erosion:

- Group 1 sites are those related to recreational sites.
- Group 2 sites are related to sites of interest for historical or cultural reasons.
- Group 3 sites are those of interest for aesthetic reasons that met USDA Forest Service criteria for severity.
- Group 4 sites are those of interest primarily based on aesthetics, which did not meet the criteria for Group 3.

Some sites are included in more than one group. Details of this sorting process are explained in Protection, Mitigation, and Enhancement Measures Submitted by the USDA Forest Service for Chelan County Public Utility District Relicensing Project No. 637, Shoreline Erosion, May 3, 2001.

Groups 1 through 3 include 39 sites, of which 34 sites will be treated by Chelan PUD. Group 4 consists of 21 sites in need of some form of treatment, but not immediately critical. Of these, one site was selected for treatment by Chelan PUD on the basis of an opportunity to enhance riparian habitat.

These groupings facilitated the prioritization of the sites, and we do not expect them to change over the life of the License. However, the treatment of some sites may be modified due to limited accessibility caused by the lake level. In those cases, it is hoped that the new Lake Level management regime will promote more natural stabilization over time. A list of the 35 sites to be monitored and/or treated, the general location of each site and the anticipated timeframe for treatment is presented in Table 1.

The USDA Forest Service plans to complete erosion control work on some sites with easements that are not in Group 2. These include site 41 (Moore Point), with 1,600 feet of shoreline erosion in Group 1, and sites 35, 35b, 36 and 42 in Group 3. These sites are not addressed in this plan, and are the responsibility of the USDA Forest Service.

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

Table 1: Site Treatment Schedule

| <u>Site No.</u> | <u>Site Name (if any)</u> | <u>Timeframe for Treatment¹</u> | <u>License Year</u> |
|-----------------|------------------------------------|--|---------------------|
| 1 | | 2013 – 2016 | 6 to 9 |
| 2 | | 2013 – 2016 | 6 to 9 |
| 5 | | After 2016, TBD | After 9 |
| 5b | | After 2016, TBD | After 9 |
| 8a | | After 2016, TBD | After 9 |
| 8b | | After 2016, TBD | After 9 |
| 9 (87) | Big Creek Campground | Monitor | Ongoing |
| 10 | | After 2016, TBD | After 9 |
| 10b | | After 2016, TBD | After 9 |
| 11 | Corral Creek Campground | 2008 – 2010 | 2 to 4 |
| 12 | | After 2016, TBD | After 9 |
| 13b | | After 2016, TBD | After 9 |
| 14 | | Monitor | Ongoing |
| 16 (15, 17) | Graham Harbor Creek Campground | 2013 – 2016 | 6 to 9 |
| 19 | | After 2016, TBD | After 9 |
| 20 | | After 2016, TBD | After 9 |
| 23 | | After 2016, TBD | After 9 |
| 24 a,b,c | Domke Falls Campground | 2009 – 2013 | 4 to 6 |
| 25 | Refrigerator Harbor Campground | 2009 – 2013 | 4 to 6 |
| 26 | Lucerne Campground / Guard Station | 2009 – 2013 | 4 to 6 |
| 27 | Lucerne | 2009 -2013 | 4 to 6 |
| 29 | | After 2016, TBD | After 9 |
| 29b | | After 2016, TBD | After 9 |
| 30 | | After 2016, TBD | After 9 |
| 31 | Elephant Rock | Monitor | Ongoing |
| 32 | | After 2016, TBD | After 9 |
| 33 | | After 2016, TBD | After 9 |
| 37 | | After 2016, TBD | After 9 |
| 41 | Moore Point | 2010 - 2013 | 4 to 6 |
| 45 | | After 2016, TBD | After 9 |
| 47 | Cascade Creek Campground | After 2016, TBD | After 9 |
| 50 | | After 2016, TBD | After 9 |
| 55 (54) | Prince Creek Campground | 2008 - 2010 | 2 to 4 |
| 58 a,b | Deer Point Campground | 2008 - 2010 | 2 to 4 |
| 59 | Mitchell Creek Campground | 2008 - 2010 | 2 to 4 |

¹ The order of treatment after 2016 will be determined based on lessons learned during previous implementation, major weather events, or as more information provides for additional efficiency gains. Chelan PUD and the USDA Forest Service will request approval of changes in order, and clarification of future work in annual reports, as needed.

2.2 Designs for Years One to Five

This plan was intended to provide a level of detail to allow for a timely implementation of site work. To facilitate this goal, during relicensing it was determined that it would be advantageous to use this plan to present enough information to begin the effort to secure permits prior to the finalization of a site-specific plan. Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two-year Nationwide Permit 13, Bank Stabilization for erosion control work at Site 59 - Mitchell Creek Campground and Site 58 - Deer Point Campground. These permits are from the Army Corps of Engineers.

The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). The U.S. Fish and Wildlife Service has reviewed the first PCF for sites 58 and 59 and find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to". Concurrence with the Programmatic was provided to the USDA Forest Service by the U.S. Fish and Wildlife Service in a letter dated August 14, 2007. This letter has been included in Appendix B of the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.

The USDA Forest Service anticipates obtaining necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period; as such, the intent of this subsection of the Erosion Control Implementation Plan has changed from its original intent. This subsection now includes a brief description of the initial sites to be treated, a detail of responsibilities, and preliminary cost estimates. More information on these sites can be found in the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.

Initial Sites

The sites designated for treatment in 2008 to 2010 include sites:

- 58 (Deer Point Campground) 2008 to 2009
- 59 (Mitchell Creek Campground) 2008 to 2009
- 11 (Corral Creek Campground) 2009 to 2010
- 55 (Prince Creek Campground) 2009 to 2010

A two-year permit package is intended to cover two separate, one-year implementation contracts. The first one-year contract will provide coverage under average conditions; the second year contract will be put in place to provide contingency coverage in the event that weather or other lake level issues preclude work being done in the first year.

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The next group of sites designated for treatment in 2009 to 2013 include sites:

- 24 (Domke Falls Campground) 2009 to 2013
- 25 (Refrigerator Harbor Campground) 2009 to 2013
- 26 (Lucerne Campground /GS) 2009 to 2013
- 27 (Lucerne day-use area) 2009 to -2013

Future contracting options have intentionally been left open to allow for the inclusion of lessons learned from the first two years of implementation. Chelan PUD and the USDA Forest Service will jointly determine whether Chelan PUD will hire the USDA Forest Service to administer erosion control treatment work, or if Chelan PUD will administer the work.

A site-specific plan for the first group of sites has been developed to be submitted concurrently to this plan. Future site-specific plans to describe the remaining 31 erosion sites will be developed, by group, as separate documents. In accordance with Section 2.2.1 of Chapter 1 of Attachment B of the Settlement Agreement, the site-specific plan includes the following:

1. A map depicting the location of the proposed activity.
2. A description of the USDA Forest Service land management area designation within the Forest Plan for the location of the proposed activity and the applicable standards and guidelines.
3. A description of locations, designs and mitigation measures considered, including implementation and effectiveness monitoring.
4. Data collected from surveys, biological evaluations or consultation as required by regulations applicable to ground or habitat disturbing activities on National Forest System lands in existence at the time the plan is prepared.
6. Noxious weed control measures included as a part of mitigation.
7. An environmental analysis or other appropriate National Environmental Policy Act (NEPA) analysis of the proposed action that meets the USDA Forest Service requirements for implementing NEPA.

Responsibility

As provided in Article 1(a), Chelan PUD is responsible for carrying out erosion control and monitoring measures on USDA Forest Service lands. In exercising that responsibility, Chelan PUD has entered into an Interlocal Cooperative Agreement with the USDA Forest Service, pursuant to which the USDA Forest Service will take certain steps regarding treatment at the first four sites to be addressed. Specifically, under contract to the Chelan PUD, the USDA Forest Service will address NEPA review, permitting, and cultural resources for the first four Group 1 sites to be treated (11, 55, 58 and 59), and will administer the construction contract for sites 58 and 59.

The level of responsibility assumed by the USDA Forest Service will be determined collaboratively by Chelan PUD and the USDA Forest Service, based on resource availability, on an annual or biannual basis. Additional Interlocal Cooperative Agreements will be crafted to

meet future needs, with Chelan PUD ensuring that work is conducted in accordance to the schedule presented in Table 1.

Where this plan includes erosion work on Group 2 sites, Chelan PUD will provide coordination with the Lake Chelan Cultural Forum (LCCF) so that the affected cultural resources are addressed as defined in Chapter 10, the Historic Properties Management Plan. Chelan PUD will also perform erosion control work on sites in Group 2, regardless of easements, if required to protect cultural or historical resources from damage caused by shoreline erosion resulting from Project operations. In particular, work on these sites will require prior review and approval of plans by the LCCF, and examination of the proposed work area.

As needed during the treatment of the 35 USDA Forest Service sites, Chelan PUD will collect and contain Large Woody Debris (LWD) for use on USDA Forest Service erosion sites. Section 4, Chapter 3 of the Comprehensive Plan includes the description of usable LWD on Lake Chelan, the length of time that LWD may be banked, and a list of potential storage sites for LWD. All LWD collection and storage will be conducted in accordance with the Comprehensive Plan. Chelan PUD will coordinate with the USDA Forest Service for temporary storage areas as needed for materials to be used in USDA Forest Service erosion treatments. Although LWD is used in the erosion treatment designs to provide additional armoring; it is not immediately critical to the erosion design. The use of LWD is known to reduce lifecycle costs of erosion treatment by increasing the stability of the treatment.

As provided in Section 4.4, Chapter 3 of the Comprehensive Plan, in instances when the full quantity of LWD required to complete the erosion design is not immediately available, LWD may be added to the site over time as follows: within the first 5 years of treatment, 25% of the LWD required by design must be in place; within the first 10 years of treatment, 50% of the LWD must be in place; and within 15 years of treatment, 100% of the LWD must be in place.

Preliminary Cost Estimates

The USDA Forest Service and Chelan PUD developed an original management plan estimate of \$282 per linear foot treated back in 2001-2002 for the license application. Many things have changed since then, including increased fuel prices and other economic factors that are difficult to estimate. However, based on preliminary estimates and “rock feet treated” (RFT) estimates used to standardize estimates for various types of treatment, enhanced placed rock (EPR) is anticipated to cost approximately \$316 per linear foot. Double or single placed rock is estimated to cost one-third that of EPR, or approximately \$105 per linear foot. ERP placed over a crib is estimated to cost two-thirds that of EPR, or approximately \$211 per linear foot.

For work conducted under the Interlocal Cooperative Agreement, as provided for in the Settlement Agreement, the USDA Forest Service intends to keep all costs of the treatment work reasonable. This information is provided as an Estimated Cost, as defined in section 4.4 of the Settlement Agreement.

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2.3 Identification of New or Existing Sites

As previously described, substantial information exists for Lake Chelan erosion sites. The groupings outlined in Section 2.1 of this report will not likely change for the life of the license.

During the relicensing process the USDA Forest Service developed evaluation criteria to differentiate select sites from Groups 3 and 4 for possible treatment. Details of this evaluation are explained in Appendix F of the Inventory of Shoreline Erosion (Chelan PUD, 2000). The criteria used for selection were an aesthetic site erosion (AES) ratio of 4.0 or greater and a cumulative scale ratio of 0.6 or greater (Figure 1-3, Chapter 1 of the Comprehensive Plan).

The Erosion Monitoring and Maintenance Plan, presented below in Section 3, addresses a) whether new sites should be added to the Project-caused erosion site inventory, b) whether treated sites meet erosion control objectives and c), whether existing inventoried sites have moved into the high priority for treatment category. A re-inventory of all sites monitored is scheduled to be updated on the 25th anniversary of the effective date of the New License (November 1, 2031).

Proposed treatment areas for all 35 sites are shown in sketches in the 2001, Erosion Control Treatments and Concepts for Lake Chelan, Okanogan and Wenatchee National Forests, Final (December 7, 2001). Erosion treatment and monitoring efforts will be tracked and documented in such a way that it is possible to cross-reference work conducted to what was expected to be necessary in 2001.

During the first 20 years, the focus will be on the first 35 treatment sites, with no new sites added. Specifically, prioritization for future work shall be based on the prior groupings of the sites with further consideration as follows:

- 1st priority will be given, during the first 10 years of the license, to sites where additional active erosion is observed within existing sites that had previously been identified as needing treatment. This erosion may be the result of the uprooting of a tree or an existing wood crib wall becoming compromised. The site specific treatment plan will include these minor updates.
- 2nd priority will be given to sites where additional treatment is warranted based on the results of monitoring of repaired or treated sites. If 10 linear feet fail, or a total of 20 feet in separate 5-foot sections fails, and the reason for failure is known and can be addressed, the site will be repaired when practical and timely as a component of the next minor maintenance contract.

After treatment of the originally identified 35 sites has been accomplished, maintenance of these sites will be the key priority. The new lake level regime is anticipated to provide a positive benefit in the natural stabilization process, but to an unknown degree. It is anticipated that the new lake level regime will provide a significant reduction in the continued project-related shoreline erosion on Lake Chelan. Chelan PUD shall not be responsible for continued treatment needed as a result of non-project related effects, such as earthquakes, land slides, and avalanches. Erosion must be generated at the toe of the slope to be deemed project-related.

If, during the course of the license, a previously unknown cultural resource is discovered at an erosion site, the site will be addressed with protective measures coordinated with the LCCF, as required by Section 2.1 of Chapter 1 of the Comprehensive Plan.

2.4 Process for Treating in a Timely Manner

Chelan PUD and the USDA Forest Service will attempt to treat approximately 500 lineal feet of active erosion per year. This value is based on the short work window of the drawdown period in late winter, and a moderate work crew size. Treating the 35 agreed upon sites (10,000 feet) may take up to 20 years. If, after a few years of treatment, the Chelan PUD and USDA Forest Service collectively wish to accelerate the treatment rate, a formal request to do so will be made to FERC.

A site may need to be treated out of sequence to protect public safety in the event that a washout or failure occurs that creates a public hazard, or if a cultural resource is discovered in a location that appears to be potentially compromised by impending erosion. In either event, the failure will be photo documented and then, if warranted, a temporary treatment to stabilize or minimize resource damage will be implemented. In this event, the USDA Forest Service and Chelan PUD will jointly analyze the cause of the failure, design a repair, and implement the repair as soon as possible. Any cultural resource events will be coordinated with the LCCF.

SECTION 3: EROSION MONITORING AND MAINTENANCE

As noted in the Introduction, this section constitutes the Erosion Monitoring and Maintenance Plan for the USDA Forest Service sites. This section is based on Section 2.3 of Chapter 1 of the Comprehensive Plan.

This section of the plan addresses monitoring of the USDA Forest Service shorelines to determine a) whether new sites should be added to the Project-caused erosion site inventory, b) whether treated sites meet erosion control objectives and c), whether existing inventoried sites have moved into the high priority for treatment category based on the criteria of a site having an AES ratio of 4.0 or greater and a cumulative scale ratio of 0.6 or greater (Figure 1-3, Chapter 1 of Attachment B of the Settlement Agreement).

Monitoring and maintenance activities described in this section will be grouped as follows:

- Treatment Effectiveness Monitoring
 1. Implementation Monitoring
 2. Maintenance and Safety Monitoring
- Long-term Trend Monitoring of Erosion

Implementation monitoring is the evaluation of the initial site treatment erosion control work and the continued success of that treatment for up to five years. Maintenance and safety monitoring will formally be conducted on an ongoing basis at five-year intervals to evaluate sites that were treated more than five years prior. Safety monitoring will informally be conducted on an ongoing basis concurrent with uplake recreation maintenance work. Long-term trend monitoring will focus on the erosion rate and other significant changes at non-treated sites (other than the 35 identified for treatment herein).

All monitoring herein will use the 1999 inventory (Chelan PUD, 2000) as a baseline, together with reference photographs from the 1982 inventory.

3.1 Treatment Effectiveness Monitoring

Implementation Monitoring

Implementation monitoring and reporting will be conducted to determine the success of re-vegetation, noxious weeds, LWD, and toe-slope stabilization on treated sites in years one, three, and five following treatment of each site. The timelines for site treatment are outlined in Table 1 of Section 2 of this plan.

The following language is largely taken from Section 2.3 of Chapter 1 of the Comprehensive Plan, with some minor refinements that resulted from discussion between Chelan PUD and the USDA Forest Service. Specifically, the monitoring will focus on the following:

1. Slope stabilization with an objective of reaching a 90% success rate in the treated areas.
2. Presence of native vegetation with an objective of reaching ratio of native to non-native vegetation similar to that found nearby on undisturbed slopes on 90% of treated area. This will take into account the percentage of rock and bare spots, as this is a very dry hostile natural environment.
3. Presence of noxious weeds with an objective of not introducing any new noxious weeds through the course of treatment. Implementation methodologies are designed to exclude the introduction of noxious weeds. Treated areas will be monitored on an ongoing basis during the first five years to determine if the methodologies employed are sufficient to meet the project objectives. If noxious weeds are discovered, treatment shall be pursued before the plant can produce viable seed. Timing is dependant on seed viability or potential spread.
4. Ensuring that LWD is stable. Unstable LWD may pose a hazardous to the site users.

Toe-stabilization (rock repair) will be conducted if the reason for failure is known and can be addressed at 10 linear feet of inventory standard or 5-foot failures totaling a length 20 feet. The site will be repaired when practical and timely as a component of the next minor maintenance contract or next treatment contract, whichever is easiest.

As provided in with Section 2.3 of Chapter 1 of the Comprehensive Plan, replanting will be conducted if, during the first two monitoring actions (years one and three) greater than 50 percent of the plantings have failed. In such a case, replanting will occur during the next fall planting period. This assumes initial planting occurs at 140 percent of the desired density and the goal is to be achieved by the 5th year after the initial treatment. Replanting will be conducted after year five, only if monitoring indicates that less than 75 percent of the baseline density and cover found on similar, undisturbed shoreline remain. Trends in vegetation may be taken into account, based on consultation between Chelan PUD and the USDA Forest Service, so that replanting of a site meeting the above criteria may be delayed if a positive trend appears to exist in the vegetation at the site, and replanting may be accelerated if a negative trend exists.

Maintenance and Safety Monitoring

As provided in Section 2.3 of Chapter 1 of the Comprehensive Plan, once a site has been successfully treated, formal maintenance and safety monitoring will occur at five-year intervals over the remainder of the license term to determine that site treatment objects continue to be met. Additional, informal safety inspections will be conducted concurrent with other uplake activities, as possible. Based on the findings of this monitoring, Chelan PUD will conduct additional structural, vegetation treatments on previously treated sites as needed.

The formal on-site monitoring and maintenance will include the following:

- An inspection of LWD cable ends and rock fasteners during low water to ensure safety and stability concerns associated with anchoring;
- Repair of any LWD failures identified during inspection, to be conducted prior to the spring lake refill period, preferably simultaneously with the inspection.

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- An inspection of toe rock stability. If, during treatment of the initial 35 erosion control sites, monitoring reveals 100 feet of maintenance treatment needed, then the maintenance will be added to the existing planned work, as determined by Chelan PUD and the USDA Forest Service. After the initial 35 erosion control treatments have been completed, the trigger for maintenance treatment will be 200 feet of repair work needed. Chelan PUD and the USDA Forest Service will determine the specific needs and will schedule the work as appropriate.
- An inspection of existing vegetation (both planted and naturally-occurring) to determine if additional actions are needed.

For all maintenance activities, the following are true:

- For rock, timing of maintenance depends on scale and workability in the drawdown zone.
- For vegetation plantings, timing is seasonal dependant with the fall planting season having the highest likelihood of success.

As per Section 2.3, Chapter 1 of the Comprehensive Plan, Chelan PUD will, following consultation with and approval by USDA Forest Service, implement additional measures to achieve erosion control objectives at previously treated sites that fail to meet treatment objectives five years after initial treatment, when retreatment costs are less than or equal to 25 percent of the original treatment costs. When retreatment cost will exceed 25 percent of the original treatment cost, Chelan PUD and USDA Forest Service will agree whether a) additional treatment of the existing site is warranted, or b) treatment of an equivalent linear footage of shoreline on another non-easement site will be performed in lieu of further treatment at the original site.

Long-term Trend Monitoring of Erosion

Erosion is a natural gradual geologic process that is influenced by many natural and human activities. Long-term trend monitoring will be used to determine project-related impacts. Monitoring will be focused on a narrow range of erosion activity occurring between approximately 1,115 and 1,090 feet elevation.

As per Section 2.3, Chapter 1 of the Comprehensive Plan, long-term trend monitoring will include:

- Updating the inventory of USDA Forest Service sites contained in the 1999 study on the 24th and 48th anniversary of the effective date of the License (years 2030 and 2054). Based on further consideration by the Chelan PUD and the USDA Forest Service, it was determined that a 24 year interval would be more appropriate than the 20 year interval suggested in the Section 2.3 of Chapter 1 of the Comprehensive Plan. This timing provides more up to date information for the next relicensing process, and should allow sufficient time complete initial erosion treatment on all 35 sites. We request FERC consider a change to these dates from that proposed in the Comprehensive Plan. These updates will include photo documentation and current site sketches using the same or otherwise agreed upon methodology with technology of that time. The USDA Forest Service may choose to add new or existing non-

ement sites to the list of sites to be treated based on agreement between Chelan PUD and USDA Forest Service that they meet the evaluation criteria for group 1 and 3 sites, outlined in Appendix F of the *Inventory of Shoreline Erosion* (Chelan PUD, 2000)

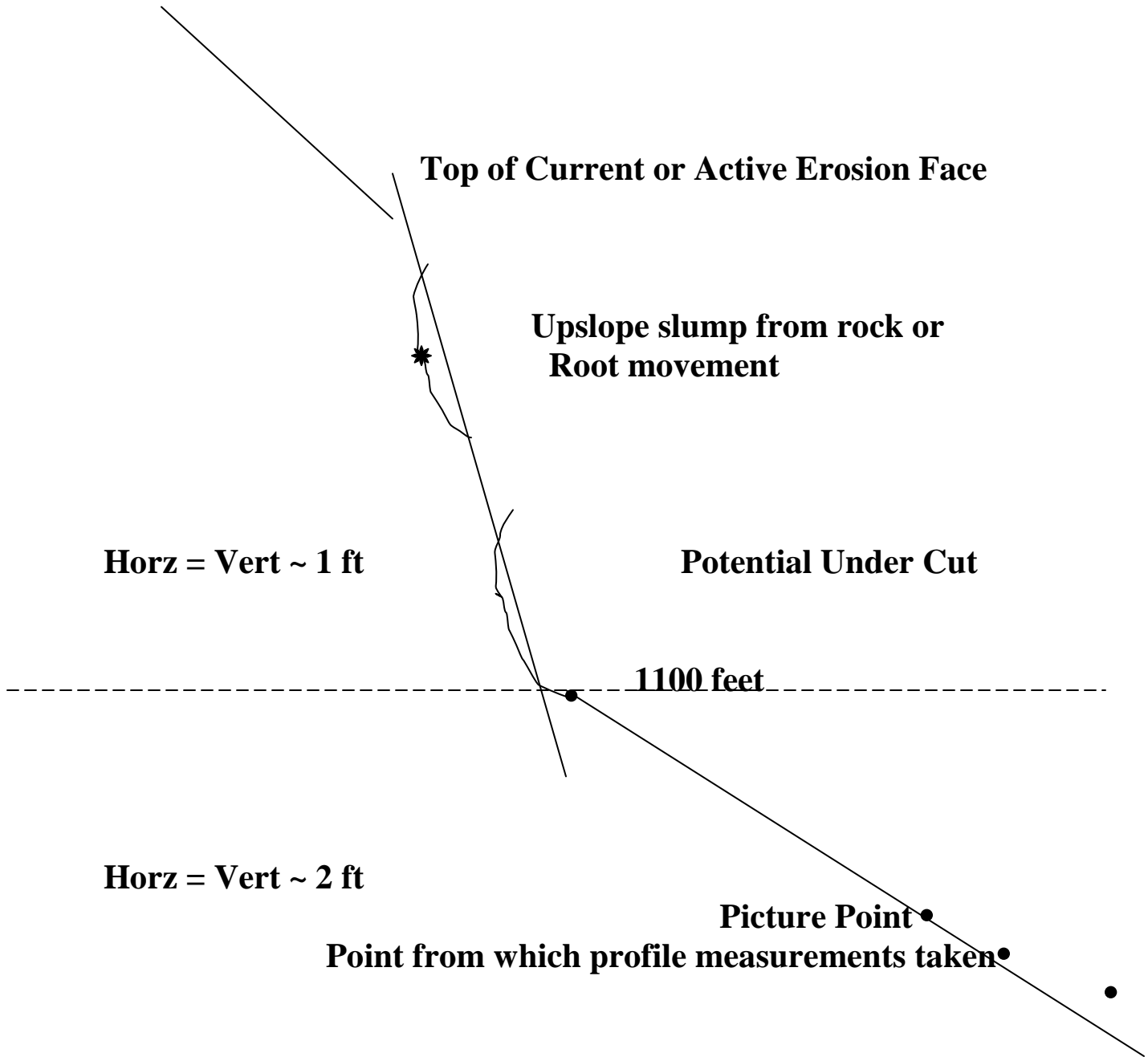
- Trend monitoring (erosion rate and other significant changes) at selected sites at five and ten-year intervals. Every five years, photo documentation will be conducted. Every ten years, measurements will be conducted. Non-treated sites for trend monitoring include sites 4, 13, 34, 40, and 53.

During discussion between Chelan PUD and the USDA Forest Service, it became apparent that additional information was needed with regard to trend monitoring. As a result, two representative profile locations will be chosen at each trend monitoring site. At each profile site a photo point will be established, the location of which will be marked by a monument and documented with Global Positioning System (GPS) coordinates. Each profile location will be established by two monuments at readily accessible points on the profile to serve as fixed reference points each time the profile is measured. Each measurement of the profile will include other key locations (e.g. breaks in slope) on the profile as necessary to define the shape of the profile and show site-specific changes with an objective of documenting erosion effects from the current water elevation to the top of the current eroding face to reveal the historically active toe erosion of the slope. Steel rods with unmarked small survey caps will be used to document profile points at the site. Points will be driven in until they match the horizontal profile for a representative 2-foot width. An example of a trend profile is presented as Figure 2.

Similarly, site profiles will be measured at profile points for changes at 10-year intervals and photo point pictures will be taken at 5-year intervals. Data will be analyzed at the 30th and 45th year anniversary of the license. Based on further consideration by the Chelan PUD and the USDA Forest Service, it was determined that data analysis would be more appropriately conducted in years 30 and 45 rather than the 20-year interval suggested in the Section 2.3 of Chapter 1 of the Comprehensive Plan. This timing provides more up to date information for the next relicensing process, and should allow sufficient time complete initial erosion treatment on all 35 sites.

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Figure 2: Trend Profile Example



APPENDIX A: *CONSULTATION*

Record of Communications

Article 401 of the Project License requires that Chelan PUD “prepare plans for approval by some of all of the signatories of the Lake Chelan Settlement Agreement”. Additionally, “The licensee shall submit to the Commission documentation of its consultation, copies of the comments and recommendations made in connection with the plan, and a description of how the plan accommodates the comments and recommendations. The licensee shall allow a minimum of 30 days for the consulted entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee’s reasons, based on project-specific information. The Commission reserves the right to make changes to the plan submitted.”

This plan was developed collaboratively by Chelan PUD and the USDA Forest Service. Chelan PUD has completed the consultation requirements, beginning on 1/10/07 by meeting with the USDA Forest Service and determining the most efficient means of developing the required plans for the erosion control work. Meetings between the two entities were conducted on the following dates:

January 10, 2007
January 30, 2007
February 22, 2007
February 26, 2007
March 21, 2007
April 20, 2007
July 6, 2007
July 25, 2007
August 14, 2007
August 23, 2007
August 29, 2007
September 6, 2007
October 11, 2007
October 19, 2007
August 28, 2013 (To support revision of the plan)

30 Day Comments

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

As required by the License, the draft final plan was sent to the USDA Forest Service for a 30-day review on October 3, 2007. A copy of the transmittal e-mail is provided below.

-----Original Message-----

From: Bitterman, Deborah **On Behalf Of** Duffy, Janel
Sent: Wednesday, October 03, 2007 4:11 PM
To: 'Bob Sheehan (rsheehan@fs.fed.us)'; 'Joe Kastenholz (jkastenholz@fs.fed.us)'
Subject: Chelan PUD: Request for Comment re Final USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan Pursuant to Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3) for the Lake Chelan Project No. 637

PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

To: Robert J. Sheehan, USDA Forest Service
Joe Kastenholz, USDA Forest Service

From: Janel Duffy
Public Utility District No. 1 of Chelan County (Chelan PUD)
janel.duffy@chelanpud.org
509.661.4400

Re: Lake Chelan Hydroelectric Project No. 637 (Project)
Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3)
USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan

In accordance with Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3), Chelan PUD invites comment letters on the attached final draft USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan. To open the document, click on the following link:
[http://www.chelanpud.org/documents/9405_1\(1\).pdf](http://www.chelanpud.org/documents/9405_1(1).pdf)

Please submit your comment letters on or before 5:00 p.m., November 3, 2007 to me via email at janel.duffy@chelanpud.org.

Pursuant to Article 401 and Appendix A, Articles 1(a)(1) and 1(a)(3), Chelan PUD will file the USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan with FERC by November 6, 2007. All received comment letters will be appended to the plan with a description of how each comment or recommendation was incorporated in the plan, or, if the licensee does not adopt a recommendation, the filing with FERC will include the licensee's reasons, based on project-specific information for not adopting such recommendation.

If you have any questions, please do not hesitate to contact me.

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Summary of Response to Comments

On October 19, 2007, the US Forest Service provided comments regarding both the USDA Forest Service Site-Specific Erosion Control Plan and the USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan. The letter is attached below.

Each comment has been addressed as follows:

| Comment | Licensee's response to comment |
|---|---|
| <p>Page 7 Modifications 1st paragraph: Delete the following portion: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and will submit an application for two year Nationwide Permits for this type of work. These permits will allow the USDA Forest Service to rapidly obtain necessary permits for the first sites to be worked on during the spring 2008 drawdown period. As such, it is possible, at this time, to immediately provide site-specific plans for the sites slated to be treated in 2008 and 2010.</p> | <p>This portion will be deleted.</p> |
| <p>Page 7 1st paragraph under "Initial Sites" after treatment locations: Include this modified paragraph: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two year Nationwide Permit 13, Bank Stabilization for erosion control work at Mitchell and Deer Point sites. These permits are from the Army Corps of Engineers. The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). They have reviewed the first PCF for sites 58 and 59 find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to (US F&W Service) our August 14, 2007 concurrence with the Programmatic. We hope to obtain necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period. We have provided site-specific plans for the sites slated to</p> | <p>This will be included but modified slightly to read:</p> <p>Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two-year Nationwide Permit 13, Bank Stabilization for erosion control work at Site 59 - Mitchell Creek Campground and Site 58 - Deer Point Campground. These permits are from the Army Corps of Engineers.</p> <p>The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service through a project consistency analysis form (PCF). The U.S. Fish and Wildlife Service has reviewed the first PCF for sites 58 and 59 find that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to". Concurrence with the Programmatic was provided to the USDA Forest Service by the U.S. Fish and Wildlife</p> |

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

| | |
|--|---|
| <p>be treated in 2008 to 2010 under the “USDA Forest Service Site-Specific Erosion Control Plan” for sites 11, 55, 58, and 59.</p> | <p>Service in a letter dated August 14, 2007. This letter has been included in Appendix B of the USDA Forest Service Site-Specific Erosion Control Plan, USDA-FS Erosion Sites 11, 55, 58 and 59.</p> <p>The USDA Forest Service anticipates obtaining necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period; More information on these sites can be found in the USDA Forest Service Site-Specific Erosion Control Plan, <u>USDA-FS Erosion Sites 11, 55, 58 and 59.</u></p> |
| <p>Page 7: 2nd paragraph under “Initial Sites” Deleted the work “aforementioned” out of the first sentence.</p> | <p>As requested, the text “The aforementioned two-year...” will be modified to read “A two-year...”.</p> |
| <p>Page 8: 1st and 2nd paragraph under Responsibility: Insert <u>final agreed upon wording</u> “Interlocal Cooperative/Collection Agreement”.</p> | <p>The final wording will be Interlocal Cooperative Agreement. The document will be changed to reflect this.</p> |
| <p>Page 13: Long-term trend Monitoring of Erosion, 1st paragraph 2nd sentence: Delete “if any” from the end of the sentence, it shows bias.</p> | <p>This has been deleted, however, it is unclear this provides any more bias than assuming there is project impact that may not be present.</p> |
| <p>Page 14: Last paragraph, 2nd sentence and 3rd sentence: Change “50th” to “45th” Rationale: The analysis would not be timely enough to be useful in the next relicensing process if it occurred in the last year of the license.</p> | <p>This was changed in both pertinent locations.</p> |

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and Erosion Monitoring and Maintenance Plan*



United States
Department of
Agriculture

Forest
Service

Wenatchee
National
Forest

215 Melody Lane
Wenatchee, WA 98801
TTY (509) 662-4396
Voice (509) 662-4335

File Code: 2560
Date: October 19, 2007

Reference: Lake Chelan Hydroelectric Project No. 637

Ms. Janel Duffy
Public Utility District No 1 of Chelan County
P.O. Box 1231
Wenatchee, WA 98807

Dear Ms Duffy:

In accordance with Article 401 and Appendix A, Articles 1(a)(1), 1(a)(2) and 1(a)(3), we would like to provide the following comments to the "USDA Forest Service Site-Specific Erosion Control Plan" and the "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan"

Comments to the September 20, 2007 USDA Forest Service Site-Specific Erosion Control Plan", CPUD:

On pages 11, 23, 37, and 51:

Insert below the table the sentence: "Construction drawings showing the treatments described above are attached in Figures 2-9, pages 62-69".

Modify page i, Table of Contents to include Figures 2-9: Construction drawings of proposed treatments..... 62-69, and insert Construction Drawing on pages 62-69.

Comments to the Final November 3, 2007 "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan", CPUD:

Page 7 Modifications 1st paragraph:

Delete the following portion: Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and will submit an application for two year Nationwide Permits for this type of work. These permits will allow the USDA Forest Service to rapidly obtain necessary permits for the first sites to be work on during the spring 2008 drawdown period. As such, it is possible, at this time, to immediately provide site-specific plans for the sites slated to be treated in 2008 to 2010.

Page 7 1st paragraph under "Initial Sites" after treatment locations:

Include this modified paragraph:

Since the signing of the Settlement Agreement, the USDA Forest Service has started the permitting process and has submitted an application for a two year Nationwide Permit 13, Bank Stabilization for erosion control work at Mitchell and Deer Point sites. These permits are from the Army Corps of



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Engineers. The USDA Forest Service has also prepared a framework for informal programmatic consultation with the U.S. Fish and Wildlife Service thru a project consistency analysis form (PCF). They have reviewed the first PCF for sites 58 and 59 finding that this "Project is consistent with the design criteria and conservation measures described in the Programmatic and therefore may be tiered to (US F&W Service) our August 14, 2007 concurrence with the Programmatic. We hope to obtain necessary permits and FERC approval for the first sites to be worked on during the winter/spring 2008 drawdown period. We have provided site-specific plans for the sites slated to be treated in 2008 to 2010 under the "USDA Forest Service Site-Specific Erosion Control Plan" for sites 11, 55, 58, and 59.

Page 7: 2nd paragraph under "Initial Sites"
Deleted the word "aforementioned" out of the first sentence..

Page 8: 1st and 2nd paragraph under Responsibility:
Insert final agreed upon wording "Interlocal Cooperative/Collection Agreement".

Page 13: Long-term trend Monitoring of Erosion, 1st paragraph 2nd sentence:
Delete "if any" from the end of the sentence, it shows bias.

Page 14: Last paragraph, 2nd sentence and 3rd sentence:
Change "50th" to "45th" Rationale: The analysis would not be timely enough to be useful in the next relicensing process if it occurred in the last year of the license.

If you have any questions or needed any additional information please contact Joe Kastenholtz (509-682-2576) for details on the project.

Thank you for your help and cooperation in preparing these plans.


ROBERT J. SHEEHAN
District Ranger



Caring for the Land and Serving People

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Record of Comments re Feb. 25, 2014, Revisions

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

Sokolowski, Rosana

Subject: FW: getContent (2).doc

From: Willard, Paul -FS [<mailto:pwillard@fs.fed.us>]
Sent: Friday, February 21, 2014 9:21 AM
To: Yow, Gene
Subject: RE: getContent (2).doc

Gene,

That looks good.

Paul Willard
Recreation Program Manager
Chelan Ranger District
509-682-4960 (o)
509-699-9690 (c)
pwillard@fs.fed.us

From: Yow, Gene [<mailto:Gene.Yow@chelanpud.org>]
Sent: Tuesday, February 18, 2014 1:49 PM
To: Willard, Paul -FS
Subject: getContent (2).doc

Please look at pages 15 and 16 to see the tracked changes. I thought it would be best to ask you to look and tell me that this is what you expected, before sending it to the FERC.

Thank you,
Gene Yow

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*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

Sokolowski, Rosana

From: Willard, Paul -FS [pwillard@fs.fed.us]
Sent: Tuesday, February 11, 2014 1:12 PM
To: Yow, Gene
Subject: RE: erosion monitoring & maintenance proposal

Gene,

I discussed your proposal, outlined below, with our Ranger. We concur that the proposal will meet the intent of the monitoring required in the Erosion Control Implementation and Maintenance and Monitoring Plan. It seems that the result of any monitoring will be a mix of quantitative and qualitative information based on our observations.

So, do we need to submit this to FERC for approval?

Paul Willard

From: Yow, Gene [<mailto:Gene.Yow@chelanpud.org>]
Sent: Tuesday, September 03, 2013 8:47 AM
To: Willard, Paul -FS
Subject: erosion monitoring & maintenance proposal

Thank you for meeting with me last Wednesday.

I'd like to propose a change in the plan for long-term monitoring of five sites.

Please refer to page 15 of the final version of the "USDA Forest Service Erosion Control Implementation and Erosion Monitoring and Maintenance Plan," dated November 6, 2007. The last two paragraphs on that page include the details I'd like to change.

These paragraphs include some details added after the settlement agreement was developed. That's appropriate, but I think some of the details could be problematic. The paragraphs call for choosing two profile locations at each of five sites to better monitor erosion trends (rates). At each profile, we are to place monuments at five pre-determined elevations, plus at least four other elevations above 1,100 ft. We're also supposed to pick and document a point from which to take photos to record the appearance of the slope.

I'm concerned about the difficulty of access to place monuments in the middle of the eroding slope, and the possible damage we may cause by climbing up and down that slope. My proposal is that we set two monuments for each profile at readily accessible points on the profile. The monuments will serve as fixed reference points each time the profile is measured, allowing us to readily compare the rest of the profile and notice any changes. Beyond those reference points, rather than measuring monuments, we would measure the location of breaks in slope and any other key features of the slope so we can plot the shape and see how it's changing. [I think I mentioned the device I have for measuring distance and slope without a target. I'll try to remember to show it to you, next time you're here.]

Picking and documenting a point from which to take a photo each time also seems worthwhile. GPS is great, but a monument would be more likely to get us back to the same location each time, so I would suggest we set a third monument for that purpose, and use GPS to document its location.

I think the proposed changes that I've described above will provide the information we need without the hazard and increased erosion that could come from climbing up and down the bank to set and revisit monuments. Please let me know what you think.

Gene Yow

*USDA Forest Service Erosion Control Implementation
and Erosion Monitoring and Maintenance Plan*

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Document Content(s)

| | |
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| 2. 050814 LC Erosion MM Plan tracked.PDF..... | 2-42 |
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