



PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY

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June 14, 2013

Honorable Kimberly D. Bose, Secretary, and
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

Re: **Lake Chelan Hydroelectric Project No. 637-041**
Article 401 – Final USDA Forest Service Site-Specific Erosion Control Plan
USDA-FS Erosion Sites 1, 2, 14, 15, 16 and 17 dated June 14, 2013

Dear Secretary Bose and Deputy Secretary Davis:

The Federal Energy Regulatory Commission (Commission) issued the “Order on Offer of Settlement and Issuing New License”¹ (License) and “Order on Rehearing”² for the Lake Chelan Hydroelectric Project (Project) on November 6, 2006, and April 19, 2007, respectively. On December 14, 2007, the Commission approved the first site-specific plan for sites 11, 55, 58 and 59.³ On March 29, 2010, the Commission approved the second site-specific plan for sites 24, 25, 26 and 27.⁴

License Article 401 and Appendix A, Article 1(a)(2) requested the Public Utility District No. 1 of Chelan County, Washington (Chelan PUD or Licensee), to file the subsequent plan for Commission approval.

- Article 401(a): Requirement to File Plans for Commission Approval and Requirement to Consult (*paraphrased*)

Various conditions of this license required by Ordering Paragraph D and found in Appendix A, Article 1(a)(2), require the licensee to prepare the Site-Specific Erosion Control Plans at least one year before ground-disturbing activity occurs for approval by some or all of the signatories of the Lake Chelan Settlement Agreement.

¹ 117 FERC ¶ 62,129

² 119 FERC ¶ 61,055

³ 121 FERC ¶ 62,196

⁴ 130 FERC ¶ 62,268

*Ms. Kimberly D. Bose, Secretary
Mr. Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission*

In accordance with the above License requirements, Chelan PUD, in collaboration with the USDA Forest Service (see attached letter), hereby files the third Final USDA Forest Service Site-Specific Erosion Control Plan dated June 14, 2013, for habitat and ground-disturbing activities on National Forest Service Lands necessary to implement the erosion control implementation plan.

The plan describes the erosion control work anticipated to be conducted on sites 1, 2, 14, 15, 16 and 17. Chelan PUD and the USDA Forest Service plan to begin implementation of the erosion control work in the fall of 2013 and to complete the work by the end of 2015. To help meet this schedule, Chelan PUD respectfully requests review and approval of this plan by September 16, 2013.

Please do not hesitate to contact me or Gene Yow (509-661-4305) regarding any questions or comments regarding this plan.

Sincerely,



Michelle Smith
Licensing and Compliance Manager
michelle.smith@chelanpud.org
(509) 661-4180

Enclosures: USDA Forest Service letter dated June 6, 2013
 USDA Forest Service Site-Specific Erosion Control Plan, June 14, 2013

cc: Division of Hydropower Administration and Compliance
 Federal Energy Regulatory Commission
 Mail Code DHAC, PJ-12
 888 First Street NE
 Washington, DC 20426

Erich Gaedeke, FERC-PRO



United States
Department of
Agriculture

Forest
Service

Okanogan -Wenatchee
National Forest
Chelan Ranger District

428 West Woodin Avenue
Chelan, WA 98816
(509) 682-2576

File Code: 2770

Date: June 6, 2013

Public Utility District No 1 of Chelan County
Michelle Smith
P.O. Box 1231
Wenatchee, WA 98807

Dear Michelle:

Enclosed is the USDA Forest Service Site-Specific Erosion Control Plan for Sites 1, 2, 14, 15, 16, and 17, which we drafted at the PUD's request. It is ready for submission to FERC for approval.

Please submit the attached to satisfy License Article 401 (a). The work in these plans occurs entirely on National Forest System lands. We plan for construction to begin in the fall of 2013 and be completed by the end 2015.

Gene Yow of your staff has reviewed earlier versions and also concurs that it is ready for submission to FERC. Gene relayed to my staff that the PUD will format this plan to match previous submissions. We have sent Gene an electronic copy for formatting.

Sincerely,

KARI GROVER WIER
District Ranger



USDA FOREST SERVICE SITE SPECIFIC EROSION CONTROL PLAN

USDA-FS EROSION SITES 1, 2, 14, 15, 16 and 17

Final

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

June 14, 2013



**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) for the Lake Chelan Hydroelectric Project No. 637 (Project) was issued November 6, 2006 to the Public Utility District No. 1 of Chelan County (Chelan PUD). License Article 401(a) and Appendix A, Article 1(a)(2) of the new Project License requires Chelan PUD to submit to FERC site-specific erosion control plans for habitat and ground-disturbing activities on National Forest Service Lands necessary to implement the erosion control implementation plan. The first site-specific erosion control plan was approved December 14, 2007,¹ and the second was approved March 29, 2010.² This third plan describes the USDA Forest Service (Forest Service or USDA-FS) site-specific erosion control work anticipated to be conducted between 2013 and 2015, including sites 1, 2, and 14 through 17, as required by the new License, as specified in the License Articles and the Lake Chelan Comprehensive Settlement Agreement, October 8, 2003 (Settlement Agreement). Included in this plan is a map of proposed activities, a description of the land management area designation for the location of the proposed activity and the applicable standards and guidelines, a description of the designs by location, designs and mitigation measures considered, documentation of National Environmental Policy Act and permitting requirements.

¹ 121 FERC ¶ 62,196

² 130 FERC ¶ 62,268

SECTION 1: INTRODUCTION

The Federal Energy Regulatory Commission (FERC) Order on Offer of Settlement and Issuing New License (License) for the Lake Chelan Hydroelectric Project No. 637 (Project) was issued on November 6, 2006, to the Public Utility District No. 1 of Chelan County (Chelan PUD). The Project License requires the treatment and monitoring of non-easement erosion sites located on USDA Forest Service (Forest Service or USDA-FS) Lands on the shores of Lake Chelan, as described in the Lake Chelan Comprehensive Settlement Agreement (Settlement Agreement), October 8, 2003, and its attachments, which is Appendix A of the Project License.

Project License Article 401(a) and Appendix A, Article 1(a)(2) requires Chelan PUD, at least one year before ground-disturbing activity occurs, to file with FERC Site-Specific Erosion Control Plans for the USDA Forest Service sites (site-specific plans). The components of the site-specific plan relate to the planning of erosion control work that are specified in the Appendix A of the License, and in Section 2.2.1 of Chapter 1 of the Lake Chelan Comprehensive Plan, which is Attachment B of the Settlement Agreement, as stated below.

2.2.1 Site-Specific Implementation Plans

Site-specific plans will be prepared by Chelan PUD and approved by USDA Forest Service for habitat and ground disturbing activities on National Forest System Lands required by the New License, including activities contained within resource management plans required by the New License that will be prepared subsequent to issuance of the New License. Site-specific plans for activities will be prepared two years in advance of required implementation dates.

Site-specific plans shall include:

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.
5. Noxious weed control measures included as part of mitigation.
6. 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.

General concepts of large woody debris (LWD) are discussed in Chapter 3 of the Comprehensive Plan, which describes beneficial uses, LWD characteristics, and general standards and placement concepts.

This site-specific plan has been developed to provide the necessary information to conduct erosion control work at sites 1, 2, 14 (Graham Harbor Campground), 15, 16 (Graham Harbor Creek Campground) and 17. All of these sites are located in the middle portion of the lake (see Figure 1). It is anticipated that work on these sites will be conducted during drawdown in the following order:

1. Site 1
2. Site 2
3. Site 14 - Graham Harbor Campground
4. Site 15
5. Site 16 - Graham Harbor Creek Campground
6. Site 17

One erosion contract will be awarded to complete work at sites 1 and 2 during the drawdown period of October 2013 – March 2014. A second erosion contract will be awarded to complete work at Sites 14, 15, 16, and 17 during the drawdown period of October 2014 – March 2015. The contract(s) will include a contingency of two years for construction if needed due to weather or lake level issues.

The organization of the remainder of this plan is in sections that relate to specific clauses in Section 2.2.1 of Chapter 1 of the Comprehensive Plan. Each section begins with the relevant requirements of the License, followed by a description of the methods that will be used to monitor and report compliance with the License.

SECTION 2: SITE LAND MANAGEMENT AREA DESIGNATION

Erosion sites 14 and 16 proposed in this site-specific plan are classified as Developed Recreation (RE-1). Erosion sites 1, 2, 15, and 17 proposed in this site-specific plan are classified as Unroaded Non-Motorized (RE-3) in the Wenatchee National Forest Land and Resource Management Plan. Forest wide standards and guidelines for soil improvement apply to the RE-1 and RE-3 land allocations, which will allow the soil improvement actions proposed in this site-specific plan to occur. In addition to generic Forest Plan direction, all of the Lake Chelan watershed assessments including the Middle Chelan Watershed Assessment (USDA-FS, 1999); North Shore of Lake Chelan Watershed Assessment (USDA-FS, 1998); and Upper Chelan Watershed Assessment (USDA-FS, 2003) call for varying forms of treatment or remedial actions for shoreline erosion.

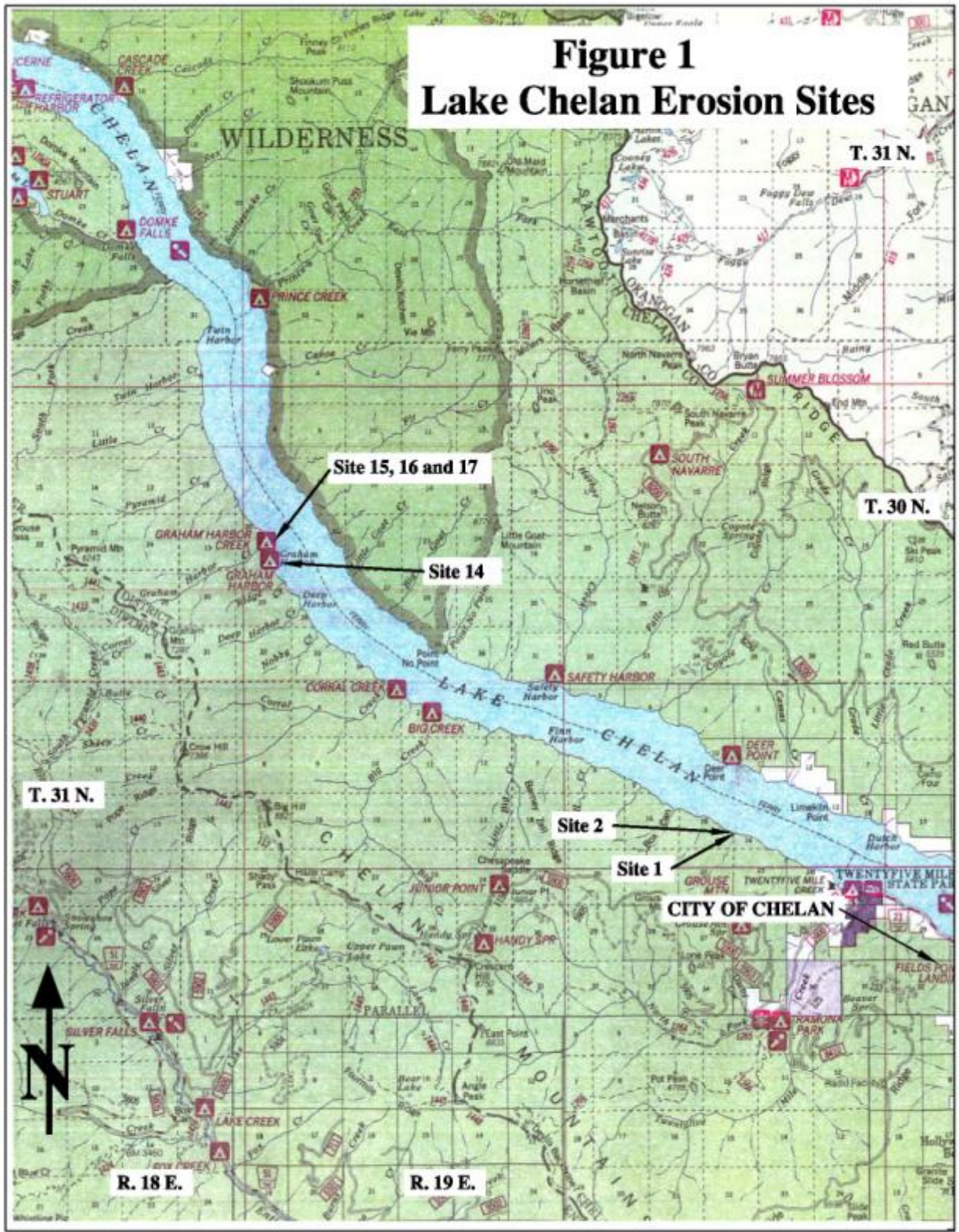


Figure 1: Location Map

SECTION 3: LOCATION, DESIGN, MONITORING

3.1 Location of Sites

All sites are located on the south shore of Lake Chelan. Sites 1 and 2 are located on the southeastern end of the middle portion of the lake. They are approximately 17 miles northwest from the City of Chelan. Sites 14, 15, 16 and 17 are all located in the Graham Harbor area and are approximately 23 miles northwest of the City of Chelan. Refer to Figure 1 for locations.

3.2 Design – Baseline Data and Treatments

The anticipated treatments for the sites covered in this site-specific plan (sites 1, 2, 14, 15, 16 and 17) are presented below. Each site will be repaired with a variety of treatments. Treatment designs were derived from the basic site sketches and original survey soil information, site observations and slope profiles contained in the Inventory of Shoreline Erosion Lake Chelan and Bypass Reach Study Report, Final (Chelan PUD, 2000). These original sketches were further modified as needed with proposed treatment areas identified on the sketches in the Erosion Control Treatments and Concepts for Lake Chelan, Okanogan and Wenatchee National Forests, Final (Chelan PUD, 2001). Final treatment designs were identified by Paul Willard and Lori McAllister (USDA-FS) and Gene Yow (Chelan PUD) on a field visit to the proposed sites on November 14, 2012.

3.2.1 Erosion Control Treatments for Site 1

At site 1 approximately 67 lineal feet will be treated with the T3 Double Row Rock Placement treatment and approximately 117 lineal feet will be treated with T1 Modified – Enhanced Placed Rock treatment. All treatment zones in site 1 will be treated with LWD.

Additional site data: General overall slope, P1 – 90% max, with a slightly over steepened lip.

Soils: Stony surface, steep and rocky colluvial slopes > 30%.

Maximum Bluff Height: 30 feet.

Table 1: Treatments for Site 1

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	42	T3	Double Row Rock Placement. Include 3 pieces LWD
B	117	T1	Enhanced Placed Rock. Include 7 pieces LWD
C	25	T3	Double Row Rock Placement. Include 2 pieces LWD

Site 1**Description****1982 Site 1, by MGY, 03/23/99****0'-40'**

Moderate U/S exposure, near vertical slope to bedrock (bdrk) with 1'-3' of soil at top of face.

Till: silty sand (SM) matrix with 30% -40% gravel & cobbles to > 12" angular

1100± bench of angular gravel mostly 1"-3", some larger

Downslope, angular gravel and cobbles, mostly 12"-18", some bedrock

Near 1085' grades to mostly gravel, mostly <3"

Soil layer to top, slow raveling likely, many roots (=)

Bedrock face, stable (=)

Bench & slope, little sign of deterioration or improvement (=)

Upslope area: Larger trees, grass, bushes

Little visual screening, but not outstanding part of site – probably not included in earlier inventory.

Bedrock restricts further erosion of this stretch.

40'-210'

U/S exposure decreases gradually with curve of shoreline from 40'-210'

U/S end moderately protected by rock point

Most of face at or near angle of repose, Top layer with roots overhangs slightly in places

Some spots undercut several inches at toe (1100±)

Till soil at top of slope, silty sand (SM) matrix with ± 40% gravel and cobbles to >1', angular to subrounded

Middle and lower slope obscured by colluvium derived from till, as above, but fewer large cobbles.

More large rocks at toe of slope

1100 ±, bench of coarse gravel and cobbles, mostly 3" to > 12", angular, logs

Downslope, angular to subrounded gravel and cobbles, up to 18", some large bedrock outcrops

Near 1085', grades finer, fewer pieces > 12"

Soil layer at top (till), slow raveling likely, many roots (=)

Mid-slope, bare surfaces, but includes duff, shrubs, trees, especially on lower half of slope and U/S half of site (+)

Toe, duff, shrubs, small trees (±), some spots slightly undercut (-)

Bench and slope below 1100', little sign of change (=)

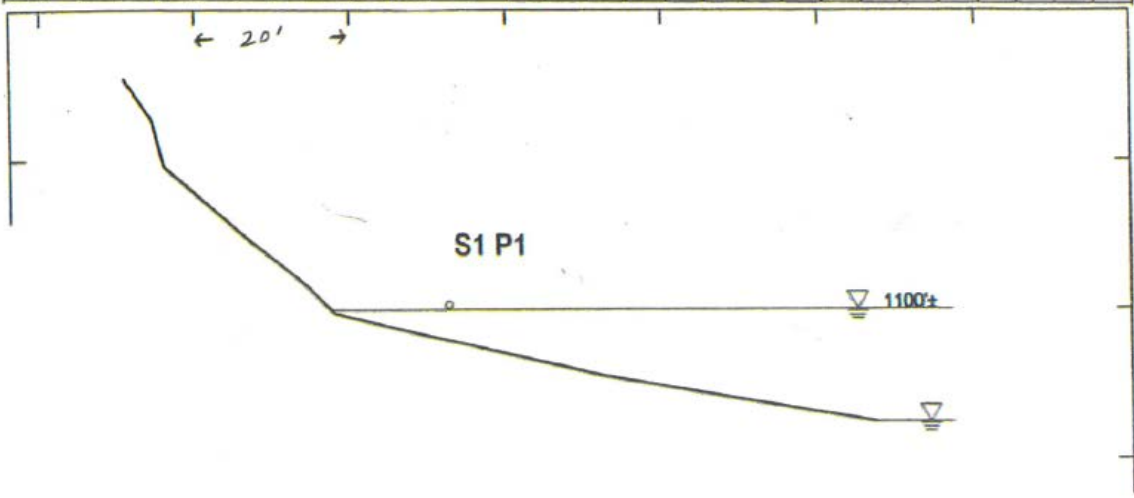
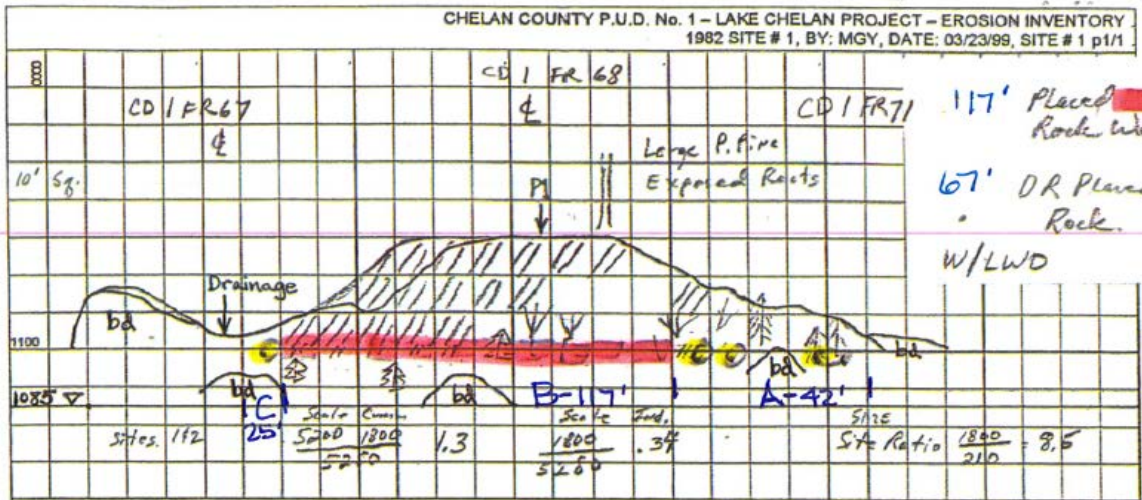
Upslope area: large trees, bushes, many smaller trees, grass

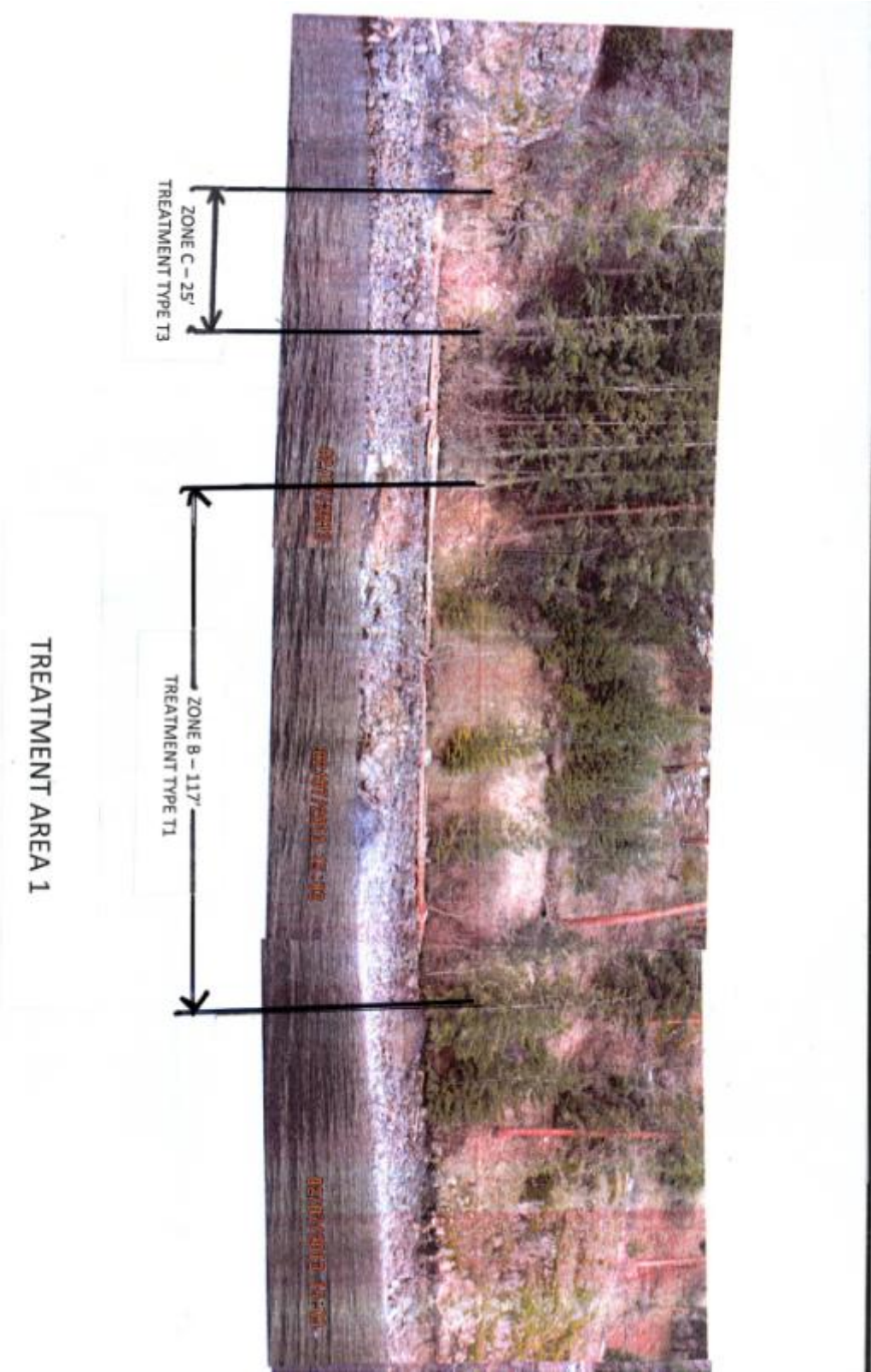
Visual screening, poor – 40' to about 120', good – 120' to end

Bedrock restricts extension of site U/S

Compare with 1992 photo: Erosion has progressed very little and vegetation has improved substantially (+)

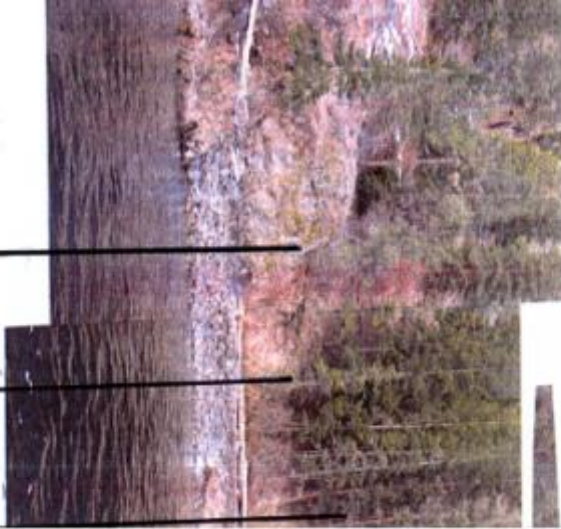
Site 1 Sketch





TREATMENT AREA 1

ZONE A - 42'
TREATMENT TYPE T3



3.2.2 Erosion Control Treatments for Site 2

At site 2 approximately 190 lineal feet will be treated with the T3 Double Row Rock Placement treatment and 236 lineal feet will be treated with T1 Modified – Enhanced Placed Rock treatment. All treatment zones in site 2 will be treated with LWD.

Additional Site data: General overall slope, P1 – 80% max, P2 – 90% with a slightly over steepened lip.

Soils: Stony surfaces, steep silty sands and rocky colluvial slopes > 30%.

Maximum Bluff height: 46 feet.

Table 2: Treatments for Site 2

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	70	T3	Double Row Rock Placement. Include 5 pieces LWD
B	236	T1	Enhanced Placed Rock. Include 13 pieces LWD
C	120	T3	Double Row Rock Placement. Include 7 pieces LWD

Site 2 Description 1982 Site 2, By MGY, 03/23/99

0’-8’

Moderate U/S exposure, near vertical face of bedrock with soil at top of face

Till: silty sand (SM) matrix with 30%-40% gravel and cobbles to > 8”, subrounded

1100±, cobbles & boulders, mostly 1’-5’

Downslope, grades to smaller cobbles and gravel, to 12” at water level

Till layer to top, slow raveling likely (=)

Bedrock face, stable (=)

Bench & downslope, no signs of change (=)

Upslope area: grass near edge, shrubs and trees several feet back from edge

Not outstanding, appearance mostly bedrock

Bedrock restricts extension of sites D/S (=)

8’-240’

U/S exposure decreases slightly along site

Most of face at or near angle of repose, Top layer with roots overhangs slightly in places,

Toe undercut slightly in spots at 1100±

Till at top of face: silty sand (SM) matrix with 30%-40% gravel and cobbles to > 18”, subrounded

Mid-slope: obscured by colluvium from till, as above, but with fewer large cobbles. Larger rocks at toe.

Toe: Colluvium with more large cobbles

At 1100±, bench, mostly cobbles and boulders to 5’, angular to subrounded, few logs

Downslope, mostly cobbles and boulders to 10', subangular to subrounded; grades generally smaller near water level (1085')

Soil at top of face (till) raveling very slowly (=)

Mid-slope (colluvium) some bare surfaces, but numerous trees of various sizes, grass, duff (+)

Toe, trees, shrubs, grass, duff (+), also some spots undercutting slightly (-)

Upslope: grass, trees, some areas recently burned

Visual screening: 50% ± by trees

Wave action during recent higher lake levels has begun undercutting at toe of slope that is otherwise improving

240' to 360': Similar to previous section except as noted

Till includes greater fraction of gravel & cobbles, 40% - 60%, to > 18"

Slopes include few trees, shrubs, or grasses

Mid-slope and toe include more bare soil surfaces (=)

Little or no vegetation cover or screening

The reason for the differences from the previous segment is not apparent.

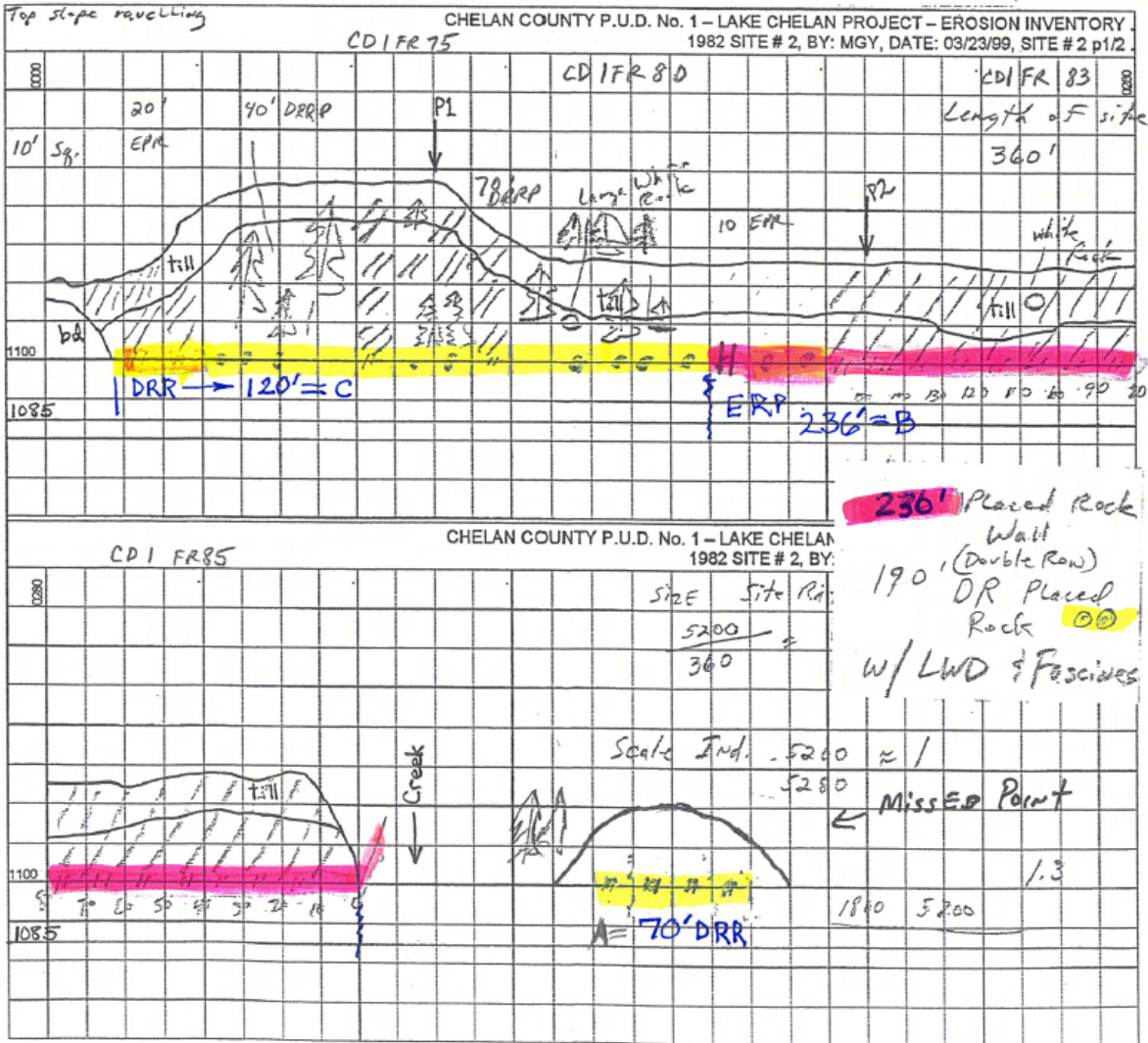
Comparison to 1982 photo:

0'-240': trees on face are larger and more numerous

Overhanging lip is less pronounced in places. (+)

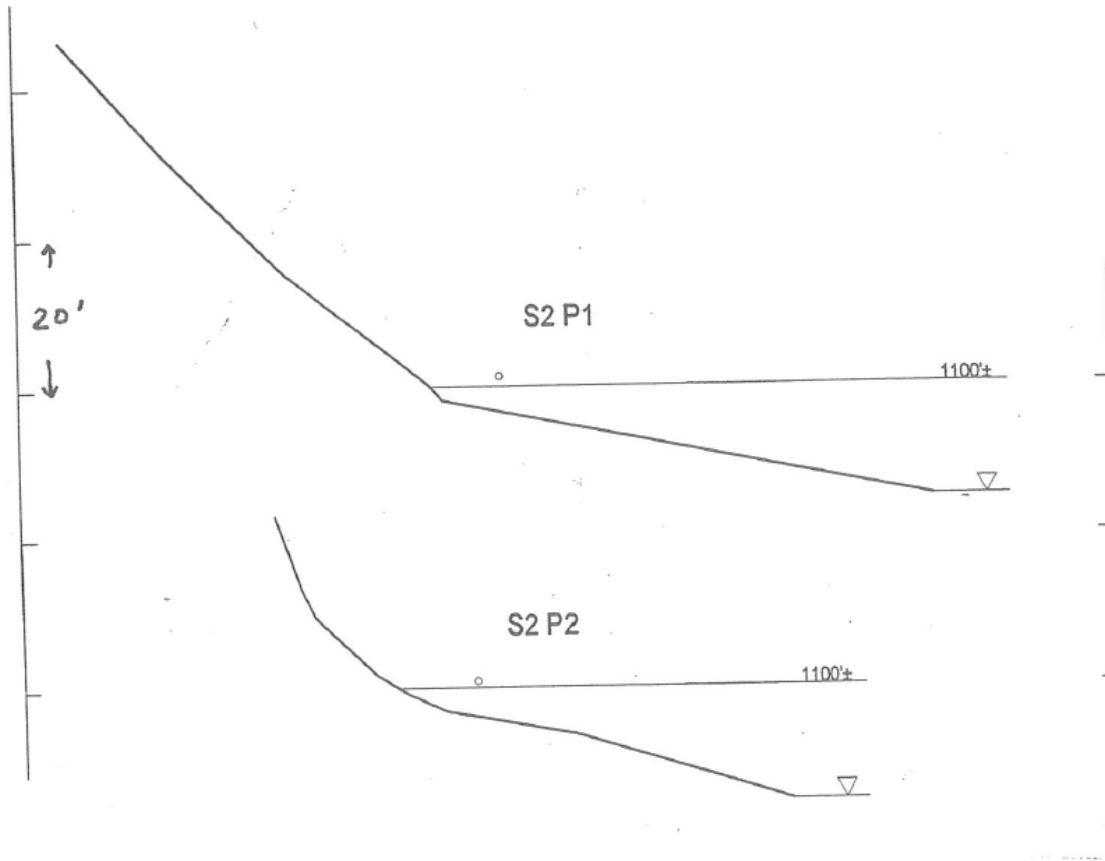
240' - 360': Little apparent change, one tree almost completely undermined in 1982 is missing (=)

Site 2 Sketch

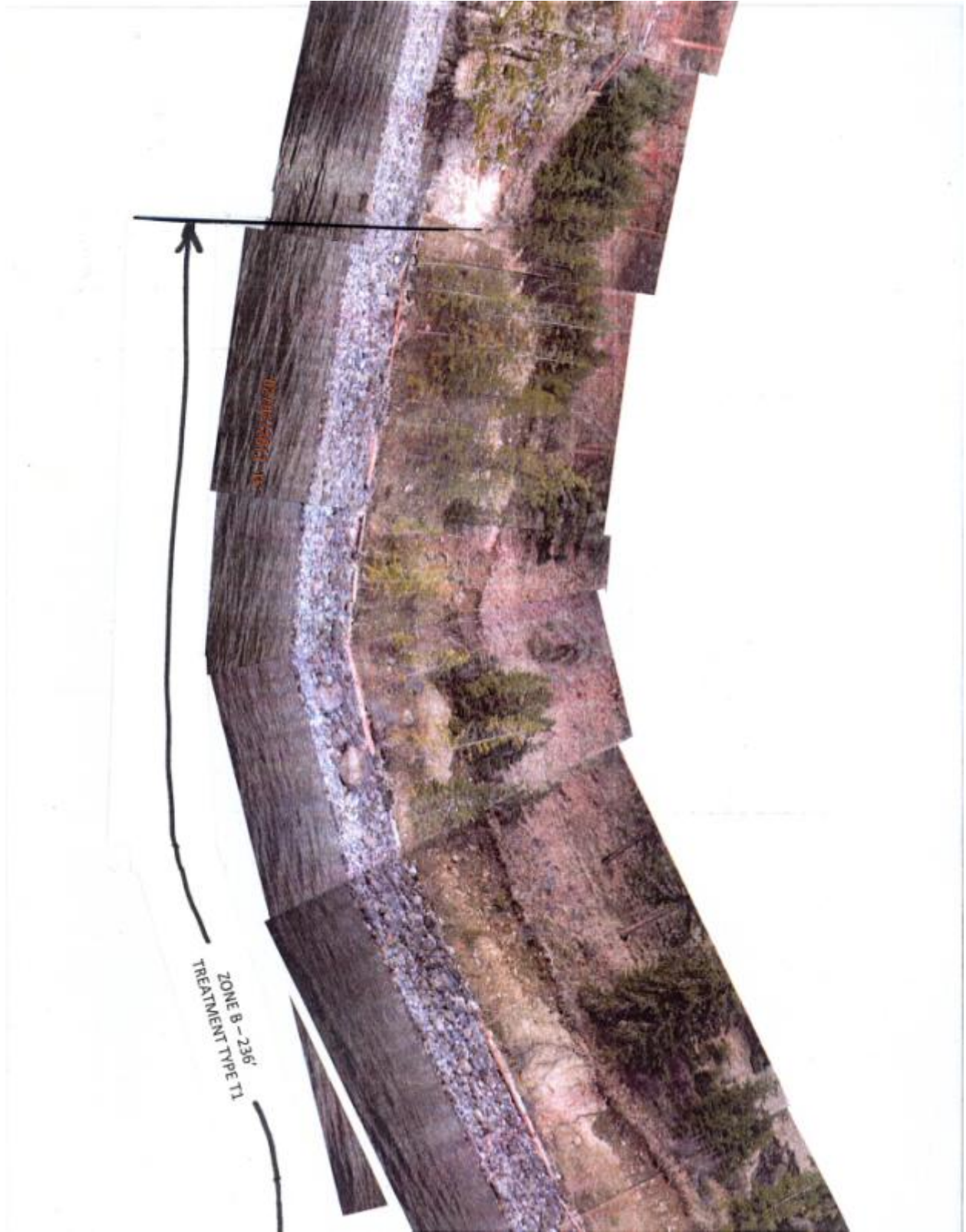


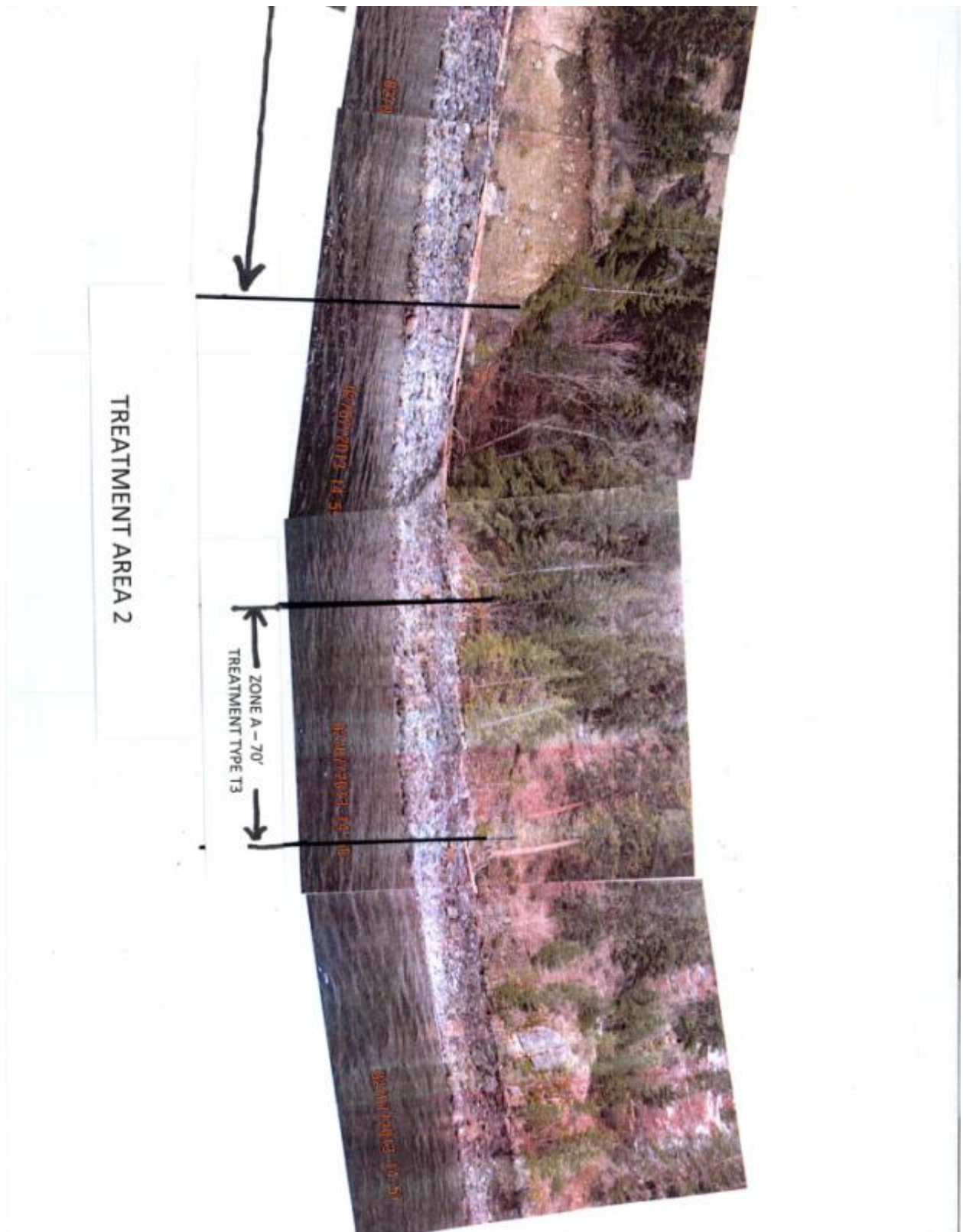
Site 2

This site has two site profiles located at P1 and P2.









3.2.3 Erosion Control Work for Site 14 – Graham Harbor Campground

This site is Graham Harbor Campground and dock. It is 100 feet long with a wood wall protecting the site. The wall consists of four log courses with the bottom course approximately 8-12 inches above the 1,100-foot high water line. The wall has a wood boardwalk along the top for pedestrian use.

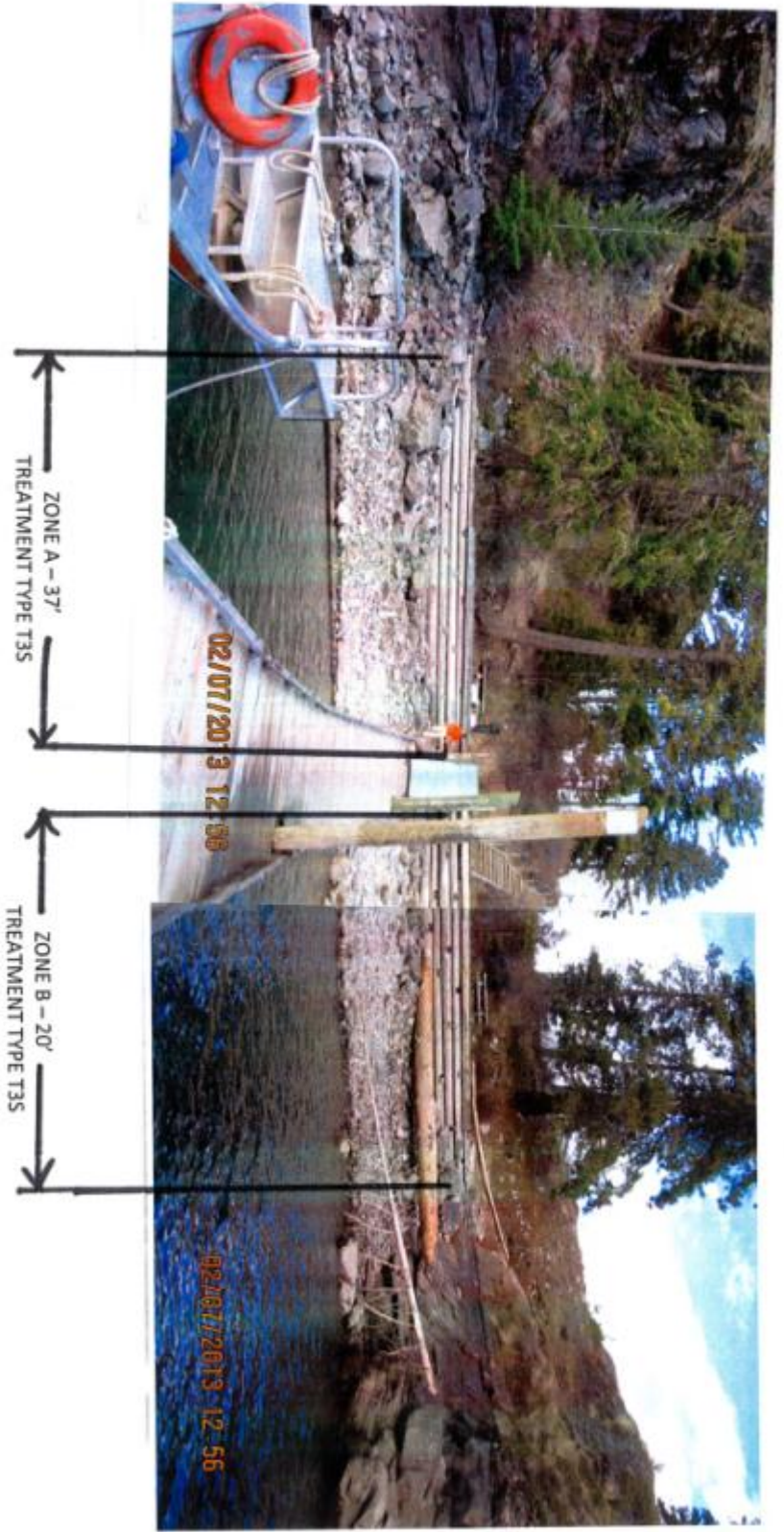
At site 14 approximately 57 lineal feet will be treated with T3S Modified – Single Row Rock Placement. There will be no LWD because rock can be placed directly on the flat shoreline without any ground disturbance. This treatment will inhibit materials being washed out underneath the bottom log course as the rock will block wave action especially when lake levels are nearly equal to the bottom elevation of this wall.

Due to the limited and simple nature of this site a shoreline profile or site sketch was unnecessary to determine treatments for this site. Treatment zones are identified in the photos for this site.

Table 3: Treatments for Site 14 – Graham Harbor Campground

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	37	T3S	Single Row Rock Placement. No LWD.
B	20	T3S	Single Row Rock Placement. No LWD.

TREATMENT AREA 14



3.2.4 Erosion Control Work for Site 15 – Between Graham Harbor Campground and Graham Harbor Creek Campground

This site is located between Graham Harbor Campground and Graham Harbor Creek Campground. The site consists of four steep chutes of relatively narrow width.

At site 15 approximately 59 lineal feet will be treated at four separate locations with T3 Modified – Double Row Rock Placement.

Due to the limited nature of this site a shoreline profile or site sketch was unnecessary. Treatment areas are illustrated on photos for this site.

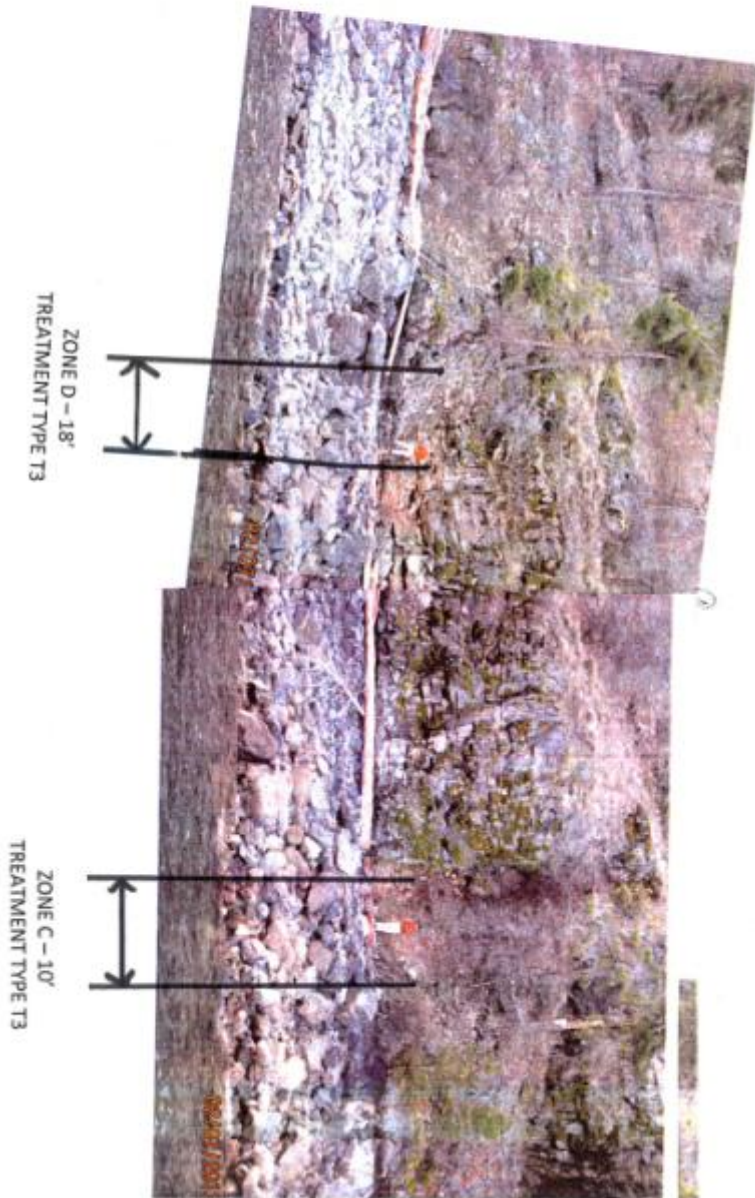
Table 4: Treatments for Site 15

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	15	T3	Double Row Rock Placement. Include 1 piece LWD
B	16	T3	Double Row Rock Placement. Include 1 piece LWD
C	10	T3	Double Row Rock Placement. Include 1 piece LWD
D	18	T3	Double Row Rock Placement. Include 1 piece LWD

Site 15 Description 1982 Site 15, By MGY, 4/13/99,

Relatively exposed U/S, long fetch
 Limited by bedrock each end
 0'-30'
 Erosion from foot traffic,
 0'-20' repaired, working well
 Moderate slope
 Till, 30%-40% cobbles to 2' boulders, angular
 More rocks at toe
 Moss, grass, face healing (+)
 30'-75' very little activity
 75'-160' bedrock, no erosion
 160' end at 220' As at 30'-75'

TREATMENT AREA 15

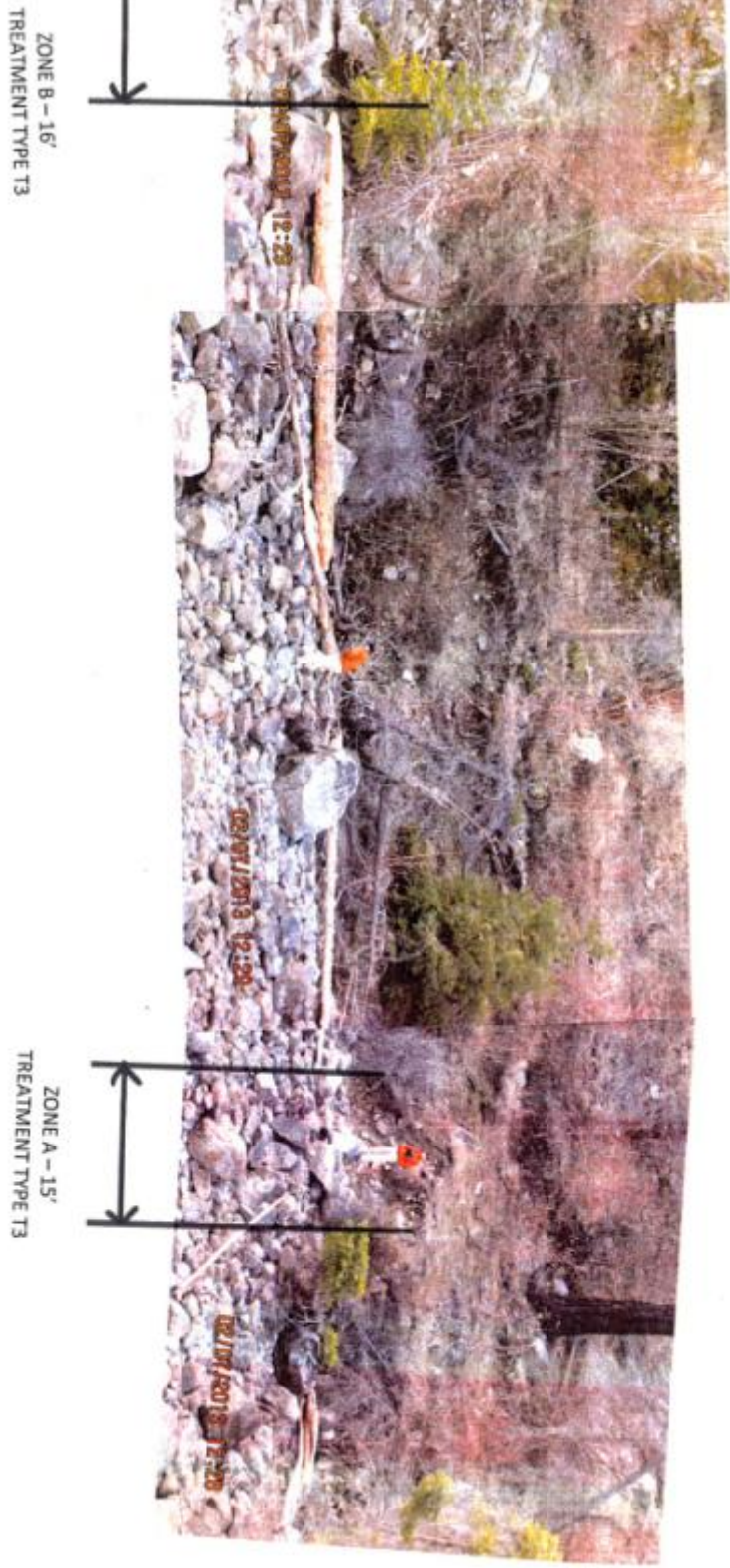




TREATMENT AREA 15

ZONE B - 16'
TREATMENT TYPE T3





TREATMENT AREA 15

3.2.5 Erosion Control Work for Site 16 – Graham Harbor Creek Campground

This site is located in front of Graham Harbor Creek Campground and directly downlake of the Graham Harbor Creek Fixed dock. It has a 185-foot-long crib wall protecting the site. The four-pole vertical wall needs toe protection to reduce wave energies from pulling materials out and initiating wall failures. Additionally, the entire wall needs to be faced with rock in order to provide long term protection of the shoreline in this location.

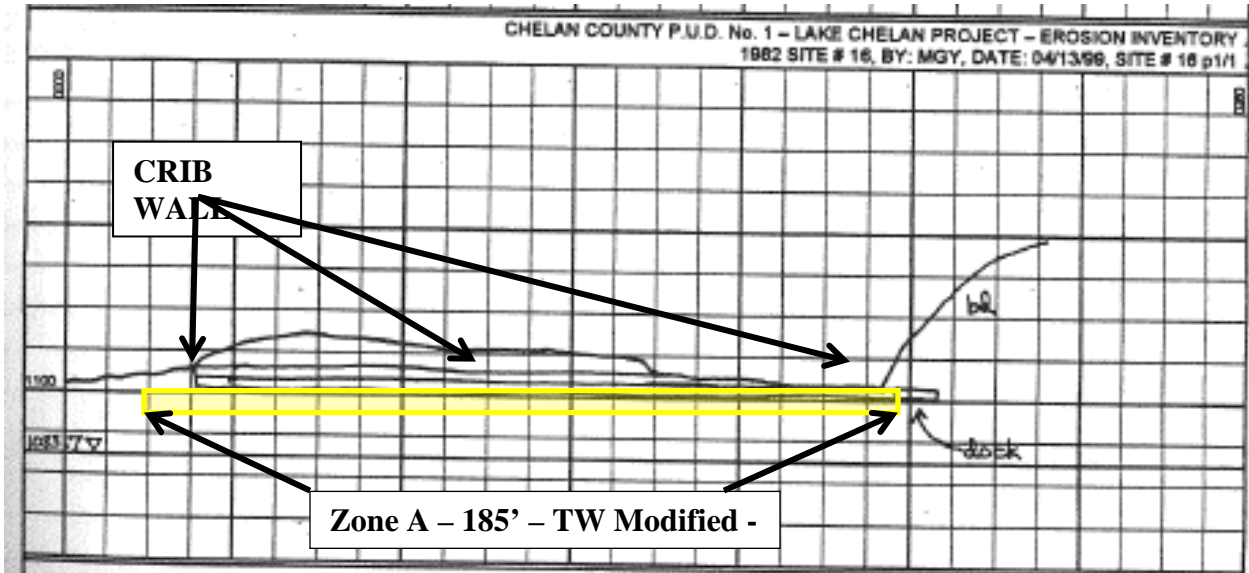
Approximately 185 feet will be treated with enhanced placed rock (TW Modified). This will be the only treatment for this homogenous site. No excavation work will be needed in the drawdown zone to key in the first course of rock due to the flat nature of the shoreline at the interface with the existing wall. Therefore, no large woody debris is required or will be incorporated into the treatment.

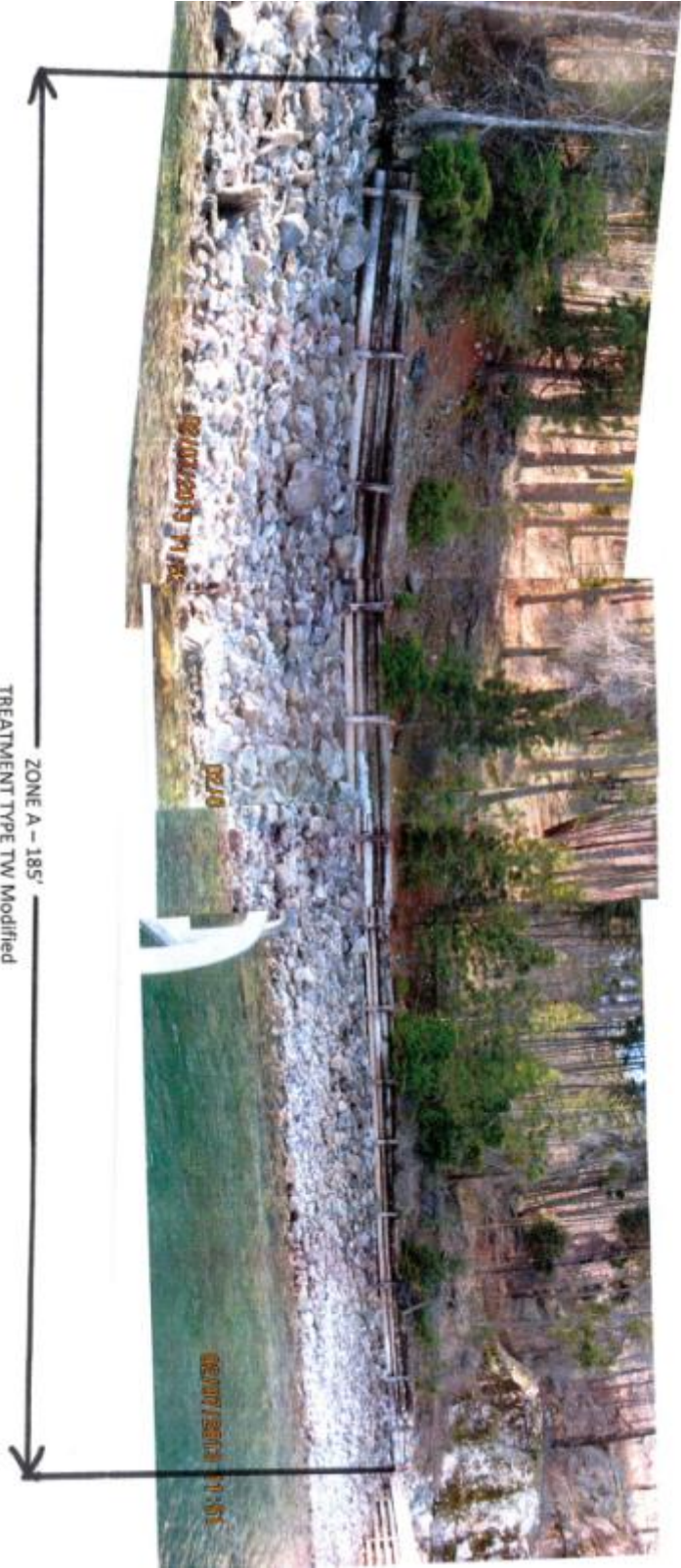
Table 5: Treatments for Site 16 – Graham Harbor Creek Campground

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	185	TW Modified	Enhanced Placed Rock with Wood Crib Wall. No LWD.

Site 16	Description	1982 Site 16, By MGY, 4/13/99,
	0’-30’ SL undercut toe Very little activity 30’+ Log bulkhead Old erosion face above logs (+) Grass, moss, shrubs, sm trees 192’+ Bedrock 204’ CL of dock	

Site 16 Sketch





TREATMENT AREA 16

3.2.6 Erosion Control Work for Site 17– Directly Uplake from Graham Harbor Creek Fixed Dock

This site is directly up lake from the Graham Harbor Creek Fixed Dock. Two areas totaling approximately 123 feet would be treated with T3 – Double Row Rock Placement.

Table 6: Treatments for Site 17

Treatment Zone	Length (Feet)	Treatment Type (See Drawings)	Treatment Description
A	40	T3	Double Row Rock Placement. Include 2 pieces LWD
B	83	T3	Double Row Rock Placement. Include 5 pieces LWD

Site 17

1982 Site 17, By MGY, 4/13/99

Moderately protected U/S

Bedrock limits both ends

0'-40' Little activity

40'-60'

Face, more bare soil, less vegetation

Till with cobbles to 1.5' subrounded

Downslope grades to fine-med gravel near water

60'-120' More rocks, less activity

120'+ Past point, more exposed

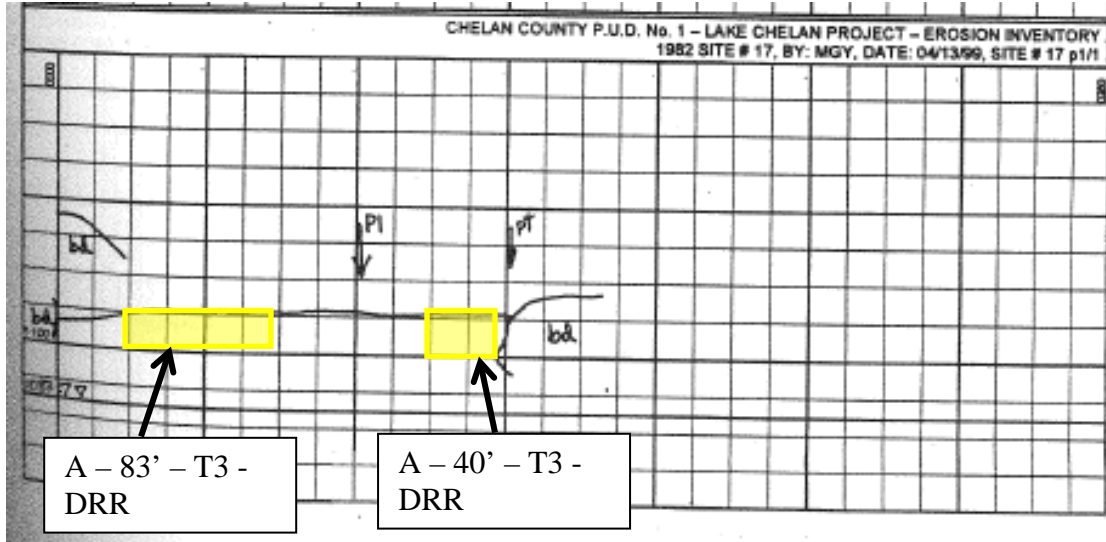
160' End at bedrock, fresh face area adjacent to bedrock

Compare to 1982 photos, Site 16 & 17, 1/1: 1982 photo shows D/S half of site.

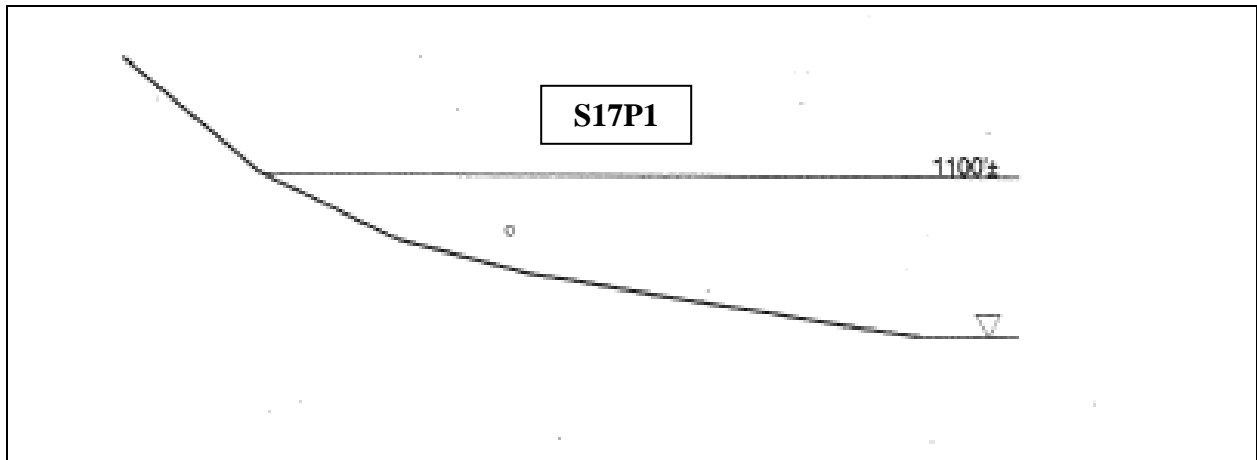
Other half in better condition. D/S half appears unchanged except shrubs and

Trees are larger.

Site 17 Sketch



Site 17 Profile





ZONE A - 40'
TREATMENT TYPE T3

ZONE B - 83'
TREATMENT TYPE T3

TREATMENT AREA 17

3.3 Mitigation Measures Included

Of the group of sites in this site-specific plan, sites 14 and 16 are defined as group 1 sites in the Settlement Agreement, indicating they are located in high-use recreation areas (e.g., campgrounds). Sites 15 and 17 are not defined as being group 1 sites, but are listed as being scheduled for treatment along with sites 14 and 16. Sites 1 and 2 are defined as being group 3 sites in the Settlement Agreement, selected for treatment based on visual impact of the erosion occurring at the sites.

Noxious weed control will be addressed by: 1) limiting foreign soils being brought into the sites; 2) limiting ground disturbance to areas below elevation 1,100 feet, the normal maximum lake level; and, 3) obtaining large rock from a weed-free certified pit. Every effort will be made to keep existing slopes and vegetation as stable as possible during treatment.

These sites all have fairly good natural vegetation that will fill in once toe erosion is stabilized. However, spot shoreline plantings may be completed by Forest Service personnel at select sites where plantings are needed.

Large Woody Debris (LWD) will be used to benefit fish and address wave action where possible at a ratio (1/1) of disturbed shoreline as agreed to with permitting agencies. This set of treatment allows for LWD placement to be incorporated into approximately 792 linear feet of shoreline treatments. It will not be a continuous treatment but a selected piece anchored occasionally until we reach the appropriate amount. It will be done so that it does not interfere with dock access or other recreational shoreline to water access at the campgrounds. T1 treatments include excavation that is used in the LWD calculation. We have calculated 792 lineal feet of these treatments with excavation disturbances of approximately 1.5 feet, so we have a square footage of required LWD of approximately 1,188 square feet. With “average” pieces of LWD being a 20-foot log and 14-16 inches in diameter, each log would represent about 25 square feet of mitigation. Thus we are planning to place approximately 48 “average” logs within the treatment areas that allow for LWD.

3.4 Implementation and Effectiveness Monitoring

The effectiveness monitoring schedule is based on when each site will be treated. The timelines for site treatment are outlined in Chapter 1 of the Lake Chelan Comprehensive Management Plan. The monitoring will be focused on the evaluation of four distinct focus areas:

1. Slope stabilization with an objective of reaching a 90-percent 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 on nearby on undisturbed slopes on 90 percent 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 to determine if the methodologies employed are sufficient to meet the project objectives.

4. Stability of LWD with an objective of minimizing movement. Large loose objects could become hazardous to the site users.

All sites will be monitored 1, 3 and 5 years following treatment at the sites. For efficiency, some sites monitoring may be conducted when additional vegetation is being planted following the initial stabilization. LWD inspections and slope stability inspections will be conducted during drawdown times to allow inspection of anchoring devices. Noxious weed and vegetation inspections will occur after leaf-out, typically in the May-to-June time period. These inspections will be coordinated with other erosion control implementation steps to provide travel and time efficiencies when possible.

SECTION 4: NATIONAL ENVIRONMENTAL POLICY ACT and PERMITTING

4.1 NEPA

The Forest Service accepted the Final Environmental Assessment (FEA) for Hydropower for Lake Chelan Hydroelectric Project, FERC Project No. 637, FERC, October 2003, for erosion control treatments. Materials included in the FEA detailed all previously conducted survey work, and proposed site-specific treatment areas that were measured and mapped at 10-foot increments. The proposed specific treatments have not materially changed since the date of issuance of the FEA and, as such, will be consistent with the intent of the original proposed treatments.

4.2 Permitting

To ensure that site-specific permitting requirements are met, Project Files, including biological evaluation data, cultural resources, and consultation, will be created or updated, to provide additional site-specific information in a timely manner over the life of the License. Project Files include the Biological Evaluation (BE) data and U.S. Fish and Wildlife Service (USFWS) concurrence letters, the Cultural Resources information, and the Joint Aquatic Resources Permit Application (JARPA).

The USFWS concurred with the Forest Service findings of “may affect not likely to adversely affect” the northern spotted owl (*Strix occidentalis caurina*), gray wolf (*Canis lupus*), and grizzly bear (*Ursus arctos*) in the Biological Evaluation for Lake Chelan Erosion Sites in letters dated August 15, 2007 and April 8, 2008. These letters were included as part of the Site-Specific Erosion Control Plan (Sites 24, 25, 26 and 27) submitted to the FERC on November 18, 2009. The proposed treatments at the sites covered in this site-specific plan are consistent with the BE and a programmatic consistency form will be completed to document meeting requirements in the BE. The USFWS will review annual site specific program consistency analysis forms (PCF), which are tied to a larger programmatic analysis of the entire project over the 25 years of erosion control treatment.

A JARPA is being submitted to the Washington Department of Fish and Wildlife (WDFW), Washington Department of Ecology (Ecology), USFWS, and the Army Corps of Engineers (Corps). The JARPA is the formal request for Nationwide Permit 13 Bank Stabilization from the Corps. It also addresses Ecology’s 401 Water Quality Certification permit and the WDFW’s Hydraulic Project Application (HPA) addressed under the 2005 HPA Memorandum of Understanding.

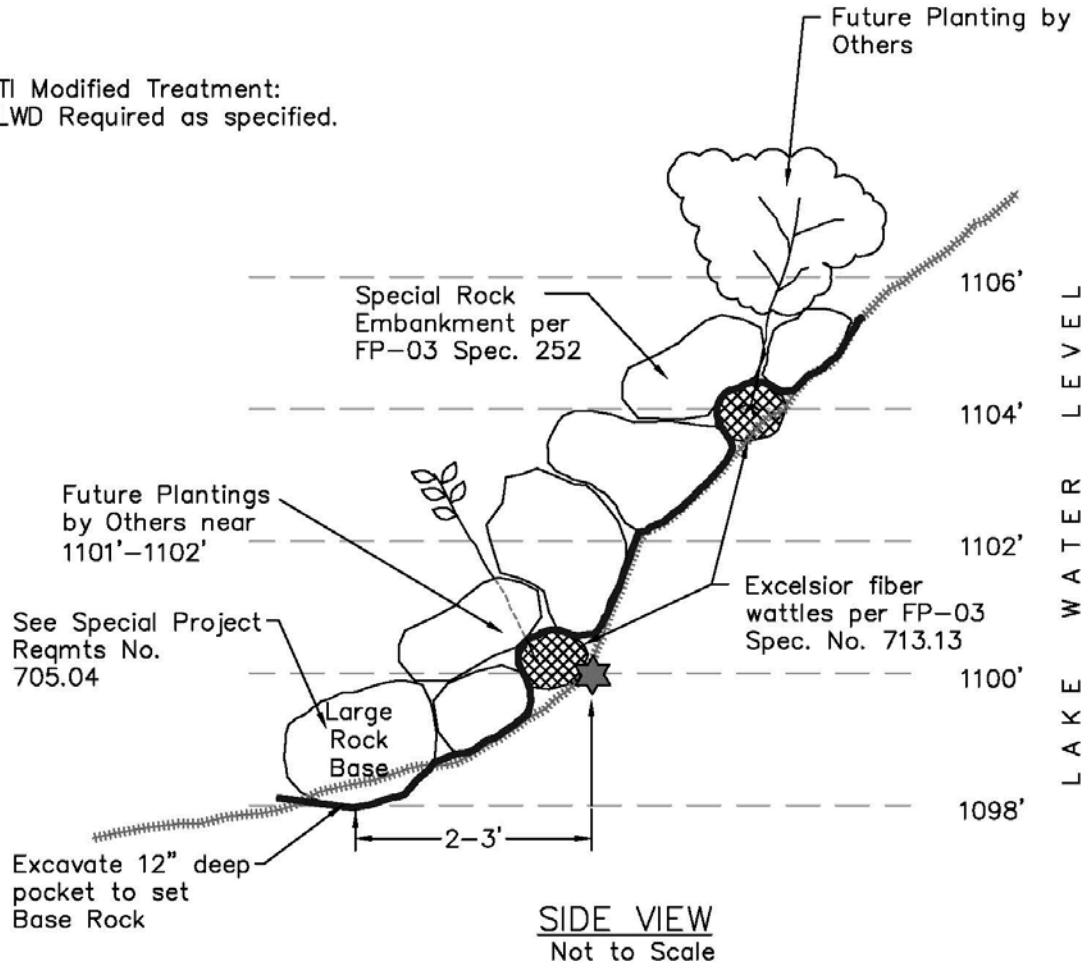
4.3 Cultural Resources

The project area was surveyed for cultural resources during the relicensing project. A project description has been submitted to Powys Gadd, Okanogan-Wenatchee National Forest Archaeologist, for review. A report will be submitted to the Washington State Historic Preservation Office and concurrence documented prior to commencing project activities. Nation-to-Nation letters will be sent to the Confederated Tribes of the Colville Reservation and the Confederated Tribes and Bands of the Yakama Indian Nation in June 2013.




***APPENDIX A: CONSTRUCTION DRAWINGS OF PROPOSED
TREATMENTS***

ENHANCED PLACED ROCK T1 Modified

T1 Modified Treatment:
LWD Required as specified.



LEGEND

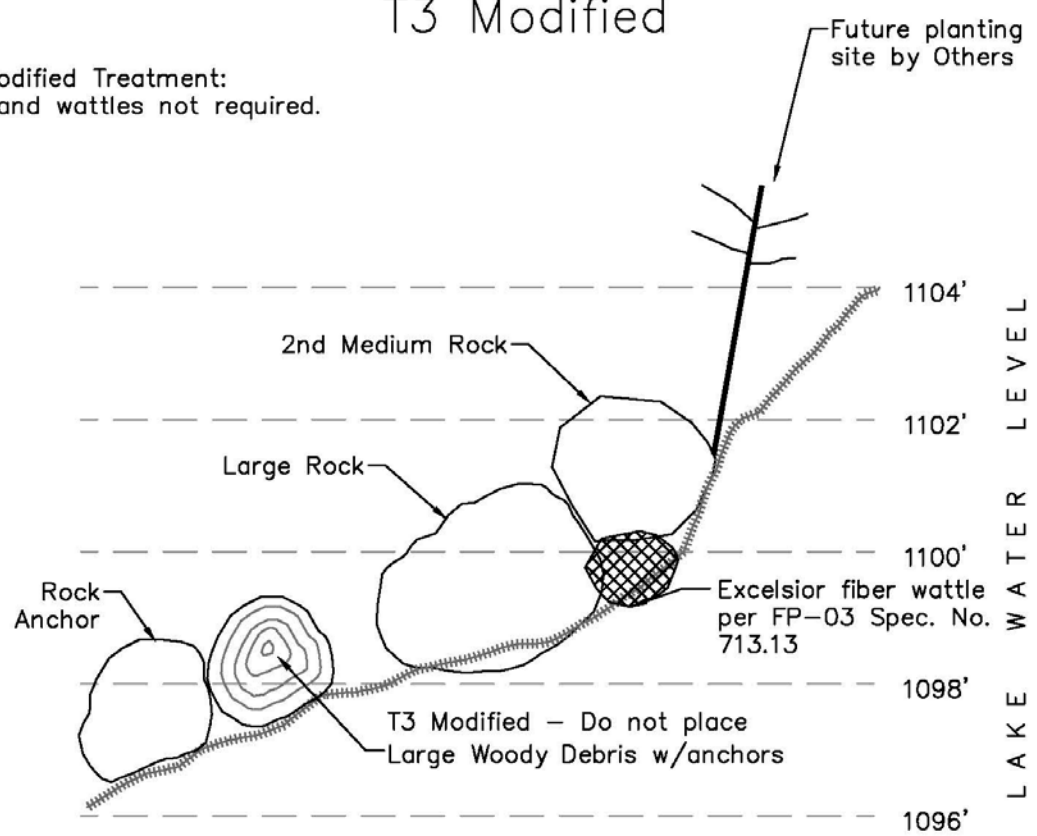
-  1100' Waterline/Soil - Excavate for base rock 2-3' waterward
-  Permanent Turf Reinforcement Mat, Type 5.C per FP-03 Spec. 713.18
-  Approximate Natural Profile

Sheet Title	Sheet
T1 ENHANCED PLACED ROCK	
Project LAKE CHELAN SHORELINE EROSION CONTROL	

DOUBLE ROW ROCK PLACEMENT WITH HORIZONTAL LARGE WOODY DEBRIS


T3 Modified

T3 Modified Treatment:
LWD and wattles not required.



LEGEND

SIDE VIEW Not to Scale

 Approximate Natural Profile

SHEET NOTES:

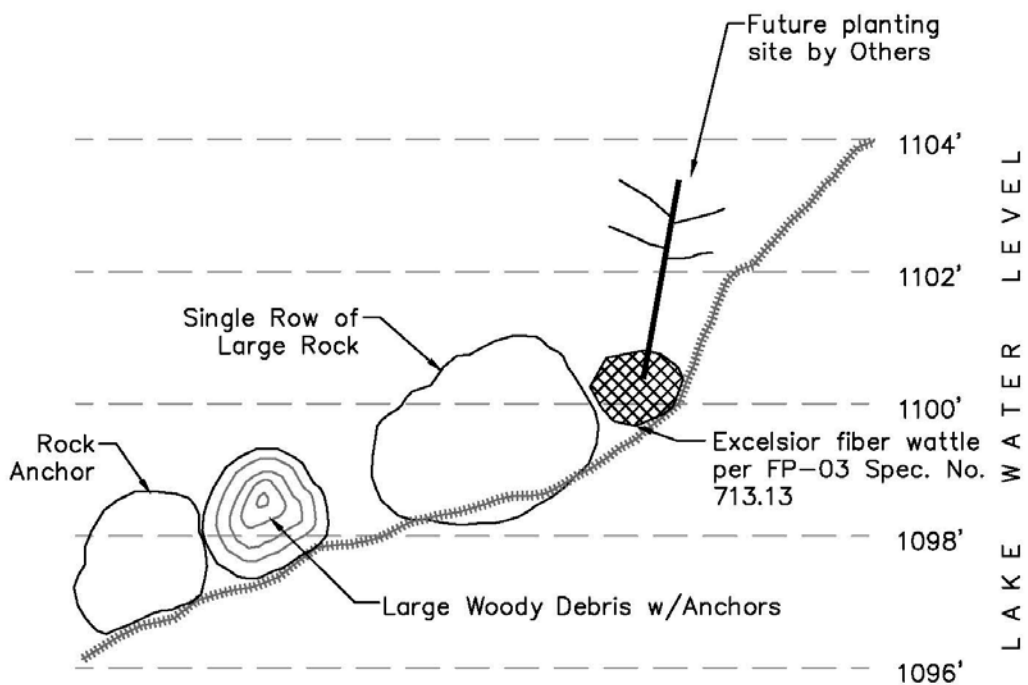
- Turf Reinforcement Mat Not Required
- LWD=Large Woody Debris - Sound Logs 14"-24" dia., 20'-30' long at Prince Creek (Government-Furnished Materials)
- Large Rock = 700-900 lb. rock
- Medium Rock = 300-500 lb. rock
- Rock Anchor = 700 - 1250 lb. rock

Sheet Title	T-3 DOUBLE ROW ROCK PLACEMENT	Sheet	
Project	LAKE CHELAN SHORELINE EROSION CONTROL		

SINGLE ROW ROCK PLACEMENT WITH HORIZONTAL LARGE WOODY DEBRIS

T3S Modified

T3S Modified Treatment:
LWD and wattles not required.



LEGEND

SIDE VIEW
Not to Scale

----- Approximate Natural Profile

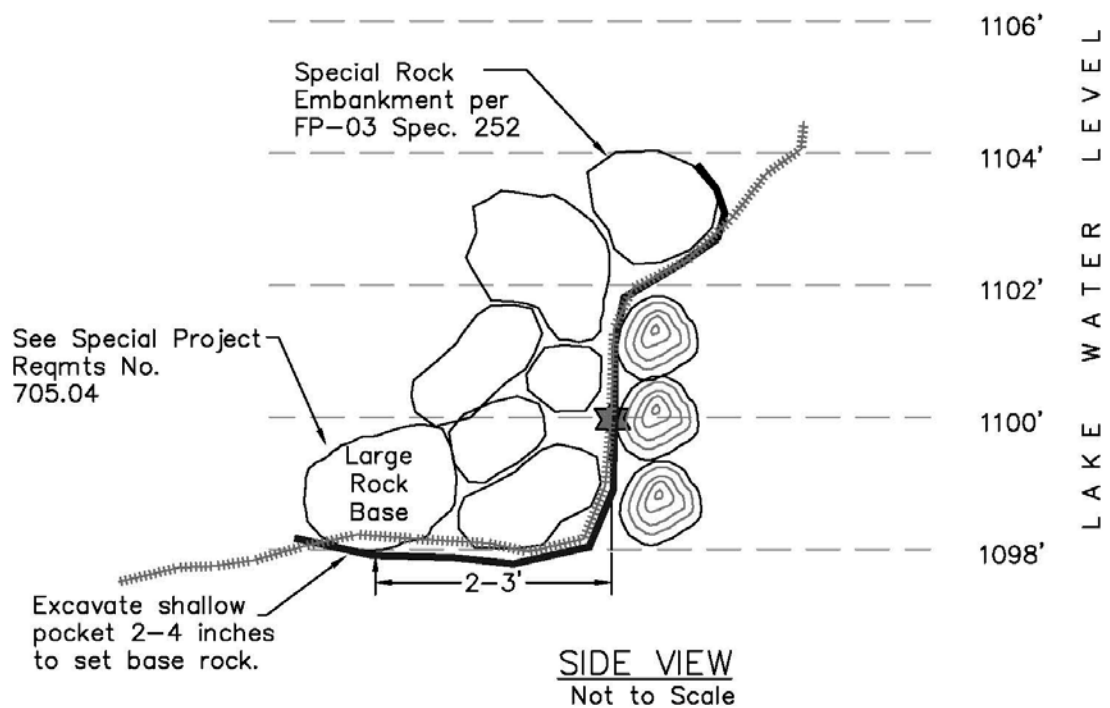
SHEET NOTES:

- Turf Reinforcement Mat Not Required
- LWD=Large Woody Debris - Sound Logs 14"-24" dia., 20'-30' long at Prince Creek (Government-Furnished Materials)
- Large Rock = 700-900 lb. rock
- Medium Rock = 300-500 lb. rock
- Rock Anchor = 700 - 1250 lb. rock

Sheet Title	T3S - SINGLE ROW ROCK PLACEMENT W/POCKET	Sheet
Project	LAKE CHELAN SHORELINE EROSION CONTROL	---

ENHANCED PLACED ROCK WITH WOOD CRIB WALL TW Modified

TW Modified Treatment
LWD Not Required.



LEGEND

- ★ 1100' Waterline/Soil - Excavate for base rock 2-3' waterward
- Permanent Erosion Control Geotextile, FP-03 Spec. TABLE 714.4 TYPE IV.A
- ≈≈≈≈≈ Approximate Natural Profile

Sheet Title	Sheet
TW ENHANCED PLACED ROCK	
Project LAKE CHELAN SHORELINE EROSION CONTROL	

Notes:

Drill 1 1/4" inch hole into anchor rock 8-9" deep. Blow hole clean before inserting Hiti HY 150 Max adhesive. Insert adhesive gun to the bottom of the hole and fill completely. Insert 1" GALVANIZED threaded rod into hole. Clean excess adhesive. Drill 1" hole through center of log. Thread other end of rod through log and secure with galvanized washer and nut.

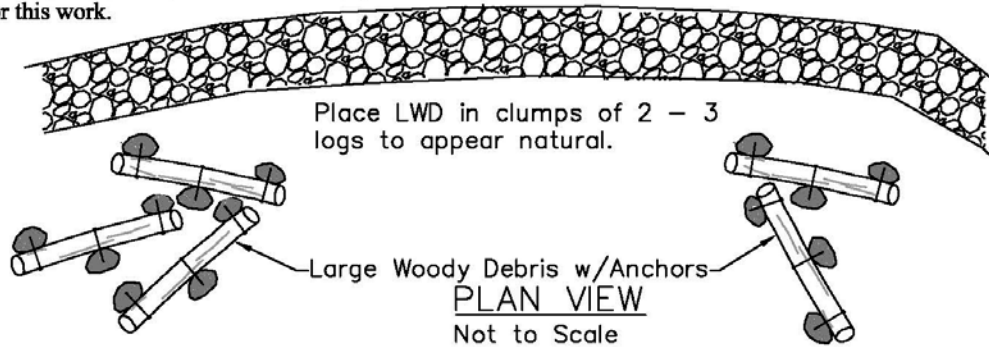
One complete log (14 - 20" diameter by 20 - 30' long) with 3 rock tiedowns is considered One LWD Treatment.

Anchor Rock will be 700-1250 lb. rock.

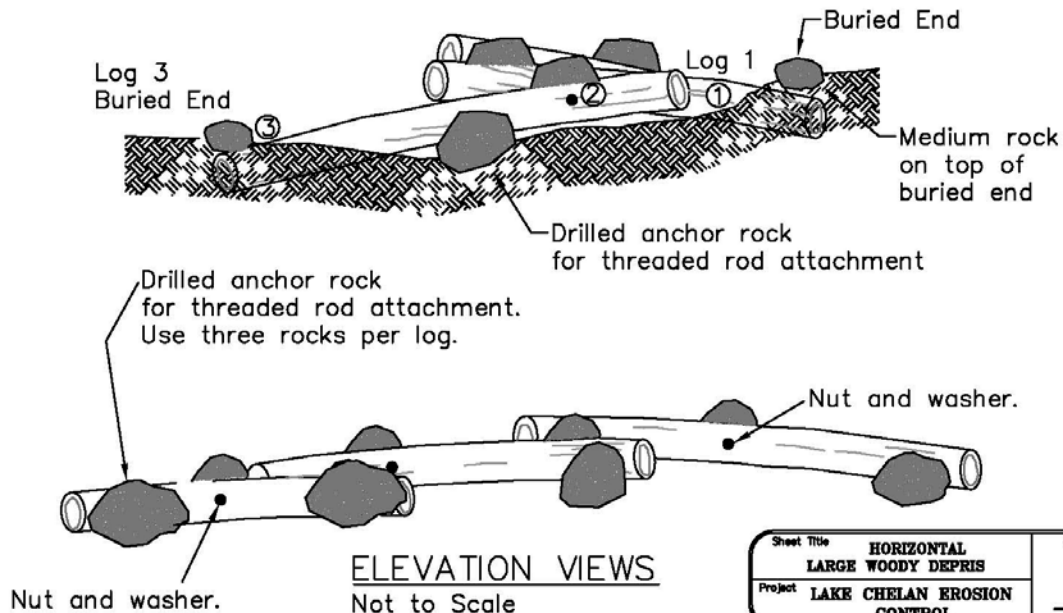
All material needed (Adhesive, threaded rods, washers and nuts, etc) are considered incidental to Pay Item 15756(d)

Erosion Control, Log (LWD). No additional payment will be made for this work.

HORIZONTAL LARGE WOODY DEBRIS



HORIZONTAL LARGE WOODY DEBRIS



Sheet Title	HORIZONTAL LARGE WOODY DEBRIS	Sheet	
Project	LAKE CHELAN EROSION CONTROL		