

APPENDIX A

Cowlitz Thin Timber Sale Response to Public Comments

Gifford Pinchot Task Force - Ryan Hunter's comments, received May 24, 2007

Complexity, Mitigation and Dropped Units

GPTF-1: p. 1, paragraph 2. "We are supportive of the proposal to retain trees for future in-stream projects, though it is not clear as to how many trees will be retained for such purpose and we request that this be clarified.

There were discussions regarding the set aside of large wood for future instream work during the Pinchot Partners field review of the project, but there are no final projects directly associated with the Timber Sale. The retention of trees for future in-stream projects can be added as a potential restoration project to be funded by sources such as KV (if appropriate), appropriated, grants or partnership sources. Because there is such a demand to retain down wood and snag with the stand, and we do not want to reduce the canopy or density below what is recommended in the silvicultural prescription, there would be limited options within the context of this analysis. If excess trees are available (down wood, snags and canopy/relative density parameters are met), they may be harvested and utilized for other restoration projects. Additional NEPA would be required to place the wood. If the wood was extracted and the action had the effect of reducing the canopy, down wood or snags below prescribed treatment levels, a new analysis would have to be conducted.

Mature Naturally Regenerated Forest Stands and Spotted Owl CHU WA-36

GPTF-2: Pg. 2, paragraph 3. "The EA's conclusion that the proposed logging and other activities will temporarily degrade 146 to 176 acres of the northern spotted owl's designated critical habitat does not comply with the ESA's prohibition against destruction or adverse modification of critical habitat."

Also see paragraph 4: "The statutory language of the ESA provides no qualification to the general prohibition on destruction or adverse modification of critical habitat, and early case law interpreting the statute addressed the question as a blanket prohibition...The Forest Service clearly undercuts the plain meaning of the statute and the legislative intent that critical habitat be protected and even 'set aside.'"

Effects to northern spotted owl Critical Habitat Unit WA-36 were carefully evaluated in the Cowlitz Thin Environmental Assessment and in the wildlife Biological Assessment, and resulted in a determination of "may affect, but not likely to adversely affect". The U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, concurred with this determination (Cowlitz Thin Timber Sale, 13410-2007-I-0268, Letter of Concurrence to Forest Supervisor Claire Lavendel, May, 17, 2007). This concurrence was based on the

finding that effects to the CHU “are insignificant because the functional ability of these stands to provide for foraging and dispersal are not likely to change” (LOC, page 9).

Per the document “Critical Habitat for the Northern Spotted Owl” (USFWS, Portland, OR, January, 1992), the “destruction or adverse modification of critical habitat is defined at 50 CFR 402.02 as a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species”. Per the above Letter of Concurrence statement, the value of Critical Habitat Unit WA-36 is not expected to appreciably diminish as a result of the Cowlitz Thin timber sale.

GPTF-3: Ryan – GPTF: Last paragraph pg. 2-3. “The EA also failed to provide specific analysis on the effects of this project on recovery of the owl.”

No incidental take of any northern spotted owl pairs will occur as a result of the Cowlitz Thin timber sale, which will temporarily degrade foraging habitat within the home range of one historic owl pair, but will not remove suitable habitat. The recovery of the northern spotted owl is dependent on many factors and variables over a wide geographic area, and based on the limited and temporary effects to the Cowlitz Thin timber sale, as displayed in the Environmental Assessment and wildlife Biological Assessment, no measurable effects to the overall recovery of the northern spotted owl are expected.

GPTF-4: Pg. 3, paragraph 1 (first full paragraph). “The EA further fails to explain how the CHU will continue to function if the CHU’s function is to provide suitable and/or dispersal habitat and the management activities will degrade this habitat. Nor is there any objective evidence in the EA demonstrating that the remaining habitat in the CHU is sufficient for the recovery of the owl.”

See previous response. The recovery of the northern spotted owl is dependent on many factors, and not on suitable habitat supplied in any single CHU, or other habitat areas or designations. The Letter of Concurrence for the Cowlitz Thin timber sale agreed that it “may affect, but is not likely to adversely affect” spotted owl CHU WA-36 because the functional ability of the treated (thinned) stands is not likely to change, and habitat degradation effects are temporary in nature. Long-term habitat capability in managed stands is expected to be increased over the long-term as a result of thinning, while still maintaining dispersal habitat conditions over the short-term. Also, overall spotted owl habitat conditions in the CHU are gradually improving over time, as noted in the wildlife Biological Assessment, as managed stands within Late-Successional Reserves and elsewhere are succeeding towards a suitable habitat condition, and forest/habitat fragmentation decreases.

GPTF-5: Pg. 3, paragraph 2. “There is no credible ecological reason to thin units 6, 14, 16, and 17.”

Depending on what is meant by “ecological reason”, you are correct in that the harvest of units 6, 14, 16 and 17 have reached a level of development that limits the benefit of thinning, and in terms of growth and yield, these stands have achieved a culmination of mean annual increment. An objective of management in Matrix stands is to produce a predictable and

sustainable level of timber for sale where such activities do not degrade the environment (LRMP Amendment 11, pgs. 6-25, EA p 5). These stands have been thinned in the past; some have had two entries. A logical prescription from a growth and yield perspective would be to regeneration harvest all or portions of these stands to create openings and improve stand productivity. Furthermore, regeneration harvest may benefit some species, such as deer and elk. However, our current intention is to retain what late successional features are left in the stands through the establishment of skips, enhance the current condition by retaining and adding down wood and snags, add some structural variability through thinning, while at the same time capture potential competition-induced mortality through thinning. Through the management and harvest of these older stands, we believe we harvest in a sustainable way that is compatible with the various management objectives while, maintaining options for the future and not degrading the environment.

GPTF-6: Pg. 3, paragraph 6 (last). “There will be five stream crossings related to road reconstruction and one stream crossing related to temporary road construction under Alternatives 2 and 3 (EA, pg. 117). The reconstruction of the 4725 road, despite not involving any stream crossings is the only road reconstruction given a high aquatic risk rating in the EA, which contradicts the previously cited statement (EA, pg. 114).”

*We are aware and conclude that temporary roads can have long-term effects resulting from soil compaction and disruption of ecological processes in the forest soils. However, we also recognize that temporary road construction is required in some cases to access trees for harvest. A level of disturbance is allowed but limited to a certain amount in our Forest Plan standards and guidelines and applied through best management practices and mitigation measures. We mitigate this effect through sub-soiling and subsequent revegetation of the forest floor at these locations. We also believe that the impact of temporary roads can be minimized by utilizing previously used trails, still evident from earlier entries. We will clarify and add mitigation measures to ensure that openings caused by temporary roads do not exceed 12 feet in width, and that the placement of rock is limited by prohibiting yarding during wet periods. We were able to reduce the amount of temporary road construction through the use of existing roads and elimination of portions of units. **The reduction in temporary roads will result in a change from 3.3 to 2.1 miles.** A summary of the miles of temporary roads per unit is contained at the end of this appendix, in Table A-1.*

To clarify the question about stream crossings, there are five on existing roads and one on a proposed temporary road (into unit 3). A table displaying crossings and where they are located can be found in the EA, Table 4.7.10, page 114, which also includes the aquatic risk ratings for each road segment, which was obtained from the Gifford Pinchot National Forest Roads Analysis (USFS 2002).

This analysis considered several factors to determine a recommended future management of forest roads, including vegetation management, fire detection and suppression, administrative site access needs, and the aquatic risk. The aquatic risk rating was developed to identify roads for potential treatment, closure, or decommissioning based on factors such as mass wasting potential, number of stream crossings, distance of roads within interim riparian reserves, and fish passage barrier improvability. It is important to note that the

aquatic risk rating was not based on the current condition of the road. Existing condition of roads and need for treatment is established through ground truthing and site surveys.

Roads that were identified as having a high aquatic risk were not necessarily recommended for closure or decommissioning if the need for access to the area was high; thus many roads with a high aquatic risk will be maintained in the future. In such cases, treatment of these roads, if necessary, by stabilizing, improving drainage, creating effective water bars, and replacing undersized and aging culverts. As such, the aquatic risk rating is considered concurrently with the recommended road management in order to identify the proper road treatment.

Forest Road 4725 between mileposts (MP) 0.0 and 4.3 was identified as having a high aquatic risk due to its proximity to Willame Creek, and as highly important to Forest administration in the Roads Analysis. The access need and the high aquatic risk rating was subsequently used to recommend a future management level of “Seasonally Open”.

The implementation of Cowlitz Thin would require the reconstruction or repair of this road between MP 0.32 and 0.66, which is currently degraded due to poor drainage. This is the segment of road that crosses Willame Creek. This road segment is currently open and drivable by passenger vehicles. Large dips exist in the roadbed, and runoff has caused the formation of gullies along the road surface. Repair and stabilization of this road would improve the long and short-term effects of road-related sedimentation on Willame Creek. Road reconstruction and stabilization would meet ACS objectives related to sediment delivery.

GPTF-7: Pg. 4, paragraph 1. “The EA does not discuss the difference in ecological impacts between various temporary roads and roads reconstructed due to slope, extent of necessary construction work, number of stream crossings, or other factors...”

Construction of temporary roads will have some site-specific ecological impacts. These impacts will vary based on the existing condition of the area. These locations were specifically chosen because they do not have an elevated risk of mass wasting potential and are on slopes of less than 30 percent. The placement of rock on temporary roads may be needed in spots (spot rocking) to prevent surface erosion and rutting, but the use of rock will be minimized. After use, these areas will be treated by decompaction and seeding/mulching to restore native vegetation. Through these restoration activities, these areas will support native vegetation and will return to natural conditions over time, thus there will be no long term ecological or hydrological effects of these roads.

The Fisheries effects analysis and the Biological Assessment used a number of analytical tools to evaluate risk of sediment delivery (mass wasting potential, surface soil erosion, Pfankuch channel stability). These risk ratings are derived from a number of biological and physical factors including slope, vegetative cover, etc. The BA pg 73, Table 33 includes a summary of risk ratings for Water Quality, Water Quantity and Habitat Condition displaying the factors highlighted in your comment. The BA pg 81, Table A-1-1 displays a summary of

channel inventory results and associated riparian reserve conditions including Pfankuch channel ratings and Rosgen Channel Types.

The ecological consequences of the Transportation System Management project element is discussed in detail in the BA, Section VI pgs 44 – 63. Table 23 and 24 summarize the effects of Transportation System Management in context of 19 Watershed and Habitat Indicators and 3 Essential Feature of Critical Habitat as per the Analytical Process. Planned road activity is discussed and evaluated for each indicator, or combinations there of on BA pgs 49 – 63.

GPTF-8: Pg. 4, paragraph 2. “The EA also failed to adequately consider the impact of temporary roads on terrestrial wildlife species, including the spotted owl, as a result of altering the forest canopy, understory, and micro-climate.”

Due to the nature of the temporary roads planned for the sale, including narrow (12 foot) clearing widths, minimal use of surface rock, and post-project “sub-soiling” and rehabilitation, impacts to wildlife were considered to be small, temporary, and discountable. Temporary roads are expected to quickly be re-vegetated by forbs and rhizomatous shrubs like salal following the sale, as has been observed at other, similar timber sale sites (i.e. Smoke Salvage). Temporary roads, landings, noise disturbance, and other project-related facilities and impacts, as well as the commercial thinning itself, were all considered in the “may affect, but not likely to adversely affect” determinations for both the northern spotted owl and spotted owl CHU WA-36.

GPTF-9: Pg. 4, paragraph 3. “Approximately 0.1 mile of temporary roads is proposed to be located in Riparian Reserves... roads are located in units 3 and 15, though a review of a map indicates these temporary roads are located in units 3 and 14 (EA, pg. 116). We request confirmation as to the location of the temporary roads in Riparian Reserves.

New temporary road construction in Riparian Reserves is proposed in both units 3 and 15 (Biological Assessment, page 62, EA pg 116). All other new temporary road construction is outside of riparian reserves (BA p. 99, Map C-6, BA p. 73, Table 33). A map showing temporary road locations is attached.

GPTF-10: Pg. 4, paragraph 5. “Temporary road construction in Riparian Reserves and road reconstruction that has a high aquatic risk does not meet the ACS objectives. ACS objectives are intended to “maintain and restore the productivity and resiliency of riparian and aquatic ecosystems (ROD...).... Short term, low duration and magnitude sediment delivery is still a violation of the ACS objectives as it does not maintain or restore the sediment regime under which aquatic ecosystems evolved...”

We disagree that reconstruction of a road with a high aquatic risk raking (identified during roads analysis) is inconsistent with ACS. To the contrary, it is consistent (see GPTF 9).

Regarding temporary road construction in Riparian Reserves, the baseline condition of Unit 3 and the immediate surroundings is highly modified by a combination of natural and

management related factors. This results in streams that flow intermittently during low or moderate flow. Subterranean low flow adjacent to Unit 3 is a function of coarse channel substrate which is the predominant underlying material in the upper Cowlitz River valley. The crossing in Unit 3 is located over an intermittent channel, which has been interrupted by FR 5290 that has lost connectivity with its historic stream course (EA pg. 116, paragraph 3).

Because of a combination of natural and human induced channel dynamics, it is expected that the site specific baseline condition at Unit 3 crossing would maintain a status quo with or without the proposed stream crossing. The proposed action, with all mitigation measures fully implemented, would locally maintain the baseline condition of this impaired system. The stream crossing would be restored following harvest. There is an opportunity to improve drainage at this location and restore connectivity and natural pathways to the extent possible during the rehabilitation of the temporary road crossing. It is essential that this temporary road, crossing and riparian thinning be conducted in the dry season, as prescribed in the mitigation measures, project design criteria and best management practices.

While the analysis recognizes that there may be a short-term, low-intensity and low duration sediment delivery, the impact would be within the range of natural variability and indistinguishable from the baseline condition. Based on this, the proposed intermittent stream crossing would not prevent the attainment of the ACS objectives (EA, Table 4-8-10).

The construction of a temporary road in Unit 15 would intersect the outermost edge of a riparian reserve. In the case of unit 3 and unit 15, the temporary roads access riparian reserves that would be thinned. The intention is to thin stands to improve stand health and vigor, and to increase down and snags. Access to Unit 15 would also allow the restoration of an abandoned stream crossing on the 5289.083 road via KV. We believe that the treatment of riparian reserves and the restoration of the 5290.083 stream crossing would result in a net benefit and trend toward restoration of riparian reserves.

GPTF-11: Pg. 4, paragraph 5. “The Forest Service states that “local disturbance at 1 stream crossing and 0.1 miles of new temporary riparian road development may produce an insignificant level of sediment (EA pg. 136). This assessment contradicts two previous statements in the EA.”

We cannot find your reference: “except for those sites where temporary stream crossings will be constructed” in the EA, pg 118.

As stated above, the channel crossing in Unit 3 is not expected to be a source of substantial sediment delivery because it is an intermittent stream, and located in a highly modified system. The sediment delivery will be low duration, low magnitude and low intensity as the project is designed. It is important to recognize that stream crossings represent the type of location, whether the site is along a haul route, is a new stream crossing or an instream restoration activity, that have the highest potential of sediment delivery, relative to other project activities. The potential for input can be high relative to the potential input via other activities, such as timber harvest or the construction of landings or temporary roads that are

located away from streams. The proximity of an activity to stream can result in a high potential for sediment delivery. However, the amount of sediment delivered relative to background levels and amounts that would cause detrimental effects can be low. We believe this is why you see contradictions in the analysis regarding “moderate or high” vs. “insignificant”.

We believe the proposed action is compliant with the ACS objectives and meets the intent of the objectives because the small amount of sediment delivery expected from the single proposed temporary stream crossing is within the range of natural variability and within the sediment regime which aquatic ecosystems evolved, and the short duration of expected sediment impact maintains or does not prevent the attainment of the ACS in the long term (USFS 1994, ROD B10).

Pg. 5, paragraph 1. “There was also no discussion as to how road reconstruction which is given a high aquatic risk rating complies with the ACS objectives.”

See discussion under GPTF-11, above. Again, the road reconstruction activity is not and does not cause the high aquatic risk rating, which was identified in Roads Analysis. Repair and restoration of drainage along the road is compliant with ACS and moves the project toward attainment by reducing road-related sediment delivery to Willame Creek and its tributary.

GPTF-12: Page 5, paragraph 2. “The EA states that ‘temporary roads will not be constructed within Riparian Reserves, unless pre-approved’...any temporary road construction must be fully disclosed and assessed in the EA in compliance with NEPA.”

Temporary road construction is disclosed throughout the EA. This measure is a typical measure to highlight to administrators and specialists that any adjustments or changes in temporary road construction must not impact Riparian Reserves outside what has been disclosed in the EA. See response to GPTF 15.

GPTF-13: Page 5, paragraph 3. “Finally, the FS proposes to keep 0.8 mile of road, which is currently closing naturally, open following project activity...”

I agree with your point; however we cannot require a purchaser to close roads that are not planned for closure or are not currently closed. If a road is currently closed or listed for closure on our road maintenance plan, we can have the road closed through the timber sale contract.

Of the 2.0 miles of currently undriveable or “closed” roads to be reopened in this project, the Roads Analysis recommended that 1.2 miles of road to be “closed and stabilized” or “decommissioned,” while 0.8 miles of road were recommended to be left as “seasonally open”. The roads that were recommended as “seasonally open” include the 4710.020 road between MP 0.0 and 0.5, and the 5270.023 road between MP 0.0 and 0.27. Both of these roads have a low aquatic risk rating and were given an elevated access need to the area for

future vegetation management. Although these roads were closing naturally, they had not been administratively closed.

We can however propose the two roads for closure via KV or other funding sources, and will add them to the proposed list of road closures. Additional NEPA would be required to cover portions of these roads that do not lie within the sale area boundary or within units.

See list in Appendix A of this document.

Unstable Soils

GPTF-14: Page 5, paragraph 5. "...we are concerned about the presence of unstable soils in unit 7 if gaps are created to treat root rot infections."

I have selected Alternative 3, which includes thinning "through" the root rot areas within the stand. Openings would not be created through thinning. Unstable soils were removed from the unit. Additionally, the field verification and final mapping of soils on the west side of the unit were changed from the original corporate GIS layer. The soils report has the latest on-the-ground condition, which reduced the extent of unstable soils mapped in the unit (EA, p. 92.

Page 5, paragraph 6. "It is unclear as to whether the unstable soils in unit 6 will receive the recommended buffers mentioned in the EA. Please clarify this for us."

A portion of SRI 5357 was removed from the unit; also, the proposed temporary road that would access the skyline portion of that area was eliminated. Thinning through this area (retaining a 17 x 17 spacing and 70% canopy closure) is a relatively light thin; we do not feel this light treatment will be detrimental to the soil.

GPTF-15: Page 5, paragraph 7. "...the EA states that temporary roads and skid trails are not permitted on slopes greater than 30 percent, but adds that 'proposed exceptions to this restriction must be approved by the sale administrator in consultation with the Zone soil scientist or aquatic specialist'... We question why there would be any exceptions...such activity should be fully disclosed in the NEPA process.

We do our best to identify and disclose all possible conditions that may occur in the field. However, the forest environment can be variable, which makes it difficult to identify all possible exceptions. Occasionally small areas containing slopes greater than 30% exist on the ground that topographic mapping does not reveal. These localized pitches must be analyzed on a site by site basis. A requirement to communicate with specialists and documentation is essential to ensure that the project is implemented as designed and described in the EA, and that actual effects are similar to or less than predicted in the analysis.

Laminated Root Rot

GPTF-16: Page 5, last paragraph. “We are concerned that if the forest canopy is heavily impacted by root rot, or if the Forest Service regenerates the stand in the future there will be a significant negative impact on forest habitat through the dramatic reduction in canopy cover. We therefore recommend that low density underplanting of diverse tree species resistant to root rot, such as Western hemlock and western red cedar be included in the prescriptions for these units.”

I have decided to implement Alternative 3, which will thin through rather than regeneration harvest portions of units 7 and 8. See GPTF-14. I agree that replacement of the dominant Douglas-fir stand with another, more rot-resistant species is a desirable thing to do. Because we are thinning rather than creating large gaps, we do not believe that the canopy will be sufficiently open to add an understory. However, both stands have red alder present. It is anticipated that as openings occur naturally, red alder, which is a desirable species for recovery of infected with laminated root rot, will establish itself over time. If the canopy is open and red alder is present, it will regenerate naturally.

I will add a monitoring provision to review the condition of the stand and needs for reforestation after a period of three years following harvest.

Restoration Projects

GPTF-17: Page 6, first paragraph. Concern about the lack of pro-active restoration work proposed as part of the Cowlitz Thin project; “for example, there are no road decommissionings that are proposed as part of the project.” “The GP Task Force identified in our scoping comments seven roads for consideration for decommission, but to our disappointment none were included in this project.”

We did not find opportunities to decommission roads directly via the timber sale contract. Because this is not a stewardship sale, we have less flexibility in the implementation of restoration activities via timber sale contract or even KV. Table 4.7.14 identifies a list of roads proposed for decommissioning, as well as three fish passage projects. A portion of the road projects would be possible to implement via KV. Unfortunately, portions of roads that extend outside of unit boundaries and in particular, beyond units that are treated were not surveyed for analysis. Because projects were partially analyzed; these projects may be considered in a separate decision document.

GPTF-18: Pg. 6, paragraph 2. “...we recommended in our scoping comments the proactive treatment of invasive weeds in Priority 1 infestation areas in the project area, including at the nearby La Wis Wis campground. We were disappointed to see that no proactive invasive weed treatment projects were proposed...”

La Wis Wis is too far from the project area for KV treatment. The Gifford Pinchot National Forest, cooperating with the Lewis County Weed Board, began treating the high-priority

knotweed infestation at the La Wis Wis campground with RAC funds last year and is following up this year.

Proactive measures such as monitoring activities were inadvertently omitted from the final EA, they are attached in this Appendix.

GPTF-19: Pg. 6, paragraph 3. “...the EA states that “there is known illegal ATV use on FR 5290 and 5290082’...the last 300 feet of FR 5290 that will be reopened as part of the project will be obliterated and closed to reduce ATV access. Why is FR 5290082 not also closed to prevent illegal ATV access? We recommend closing...”

See answer to number GPTF 13 and list in Appendix A.

Table A-1. Summary of harvest activities for Alternative 3, Cowlitz Thin Timber Sale, Lewis County, WA. Highlighted numbers are changes from the EA.

Unit	Total Unit Area (ac)	Treatment Type ¹	Vol by Treatment (mbf)	Hrvst Syst Used ²	Hrvst area by Systm ³ (ac)	Temp Rd Length ⁴ (mi)	Lnding no.	Lnding area (ac)	Thin Space ⁵ (ft)	Stand Age ⁶ (yrs)	Avg Dia (in)	Tree density ⁷ (trees/ac)	Site Index ⁸
3	9	HTH	111	GB	9	0.2	2	0.5	19 x 19	42	14.5	235	170
4	38	HTH	314	Sky	27	0.0	11	0	19 x 19	48	13.9	249	150
5	19	HTH	158	GB	16	0.0	4	0	19 x 19	56	13.5	247	150
6	177	HTH	1608	GB	105	0.8 (1.2)	12 (23)	1.25 (3.0)	17 x 17	125	15.2	218	130
				Sky	18								
7	33	HTH	176	GB	28	0.3	3	0.25	20 x 20	43	12.7	248	150
8	60	HTH	274	GB	50	0.4	5	0.75	17 x 17	42	12.8	235	150
9	18	HTH	85	Sky	13	0.0	4	0.0	15 x 15	87	12.4	281	100
14	103	HTH	166	GB	47	0.4 (0.6)	10 (11)	0.75 (1.0)	19 x 19	117	13.1	210	150
15	9	HTH	33	GB	7	0.1	2	0.5	19 x 19	42	13.2	203	150
16	129	HTH	582	GB	84	0.3 (0.5)	10 (12)	0.75 (nc)	19 x 19	137	13.4	231	110
		HTH		5									
17	56	HTH	414	GB	39	0.0	7	0.0	19 x 19	121	13.5	254	140
19	7	HTH	69	Sky	7	0.0	5	0.0	19 x 19	48	13.7	241	160
20	54	HTH	314	GB	13	0.0	15	0.0	19 x 19	53	13.9	198	130
		HTH		32									
25	17	HTH	57	GB	14	0.0	2	0.0	18 x 18	52	11.7	245	130
26	31	HTH	126	GB	23	0.0	8	0.0	20 x 20	47	11.9	226	130
		HTH		3									
	760		4487	Alt 3	540.0	2.1 (3.3)	100 (114)	5.25 (7.0)					

APPENDIX B

Monitoring Measures and Additional Mitigation Measures Clarification and Addendum to Cowlitz EA, Chapter 2

The following mitigation measure is clarified and emphasized to respond to public comments and concerns related to the potential effects of temporary road construction.

Modification of MM 23: *To limit potential effects of Temporary road construction, rock will be used only when necessary to reduce erosion, puddling and compaction on landings and temporary roads, and applied only where needed (“spot rocking”). Limiting harvest of areas to the dry season will minimize the need for rock. Rock will be incorporated into the roadbed by ripping or scarification following harvest activities (see mitigation measure which requires subsoiling). The objective is to allow better substrate for vegetative growth and water infiltration following logging and harvest activities. Clearing limits (tree removal) for temporary roads will be limited to 12 feet except at turnout locations approved by the Sale Administrator. Actual ground disturbance will be minimized and less than 12 feet when possible. Existing trails from previous entries will be utilized to the extent possible to minimize new disturbance.*

Invasive Weed Prevention and Monitoring

The following guidelines are recommended as prevention and control of invasive weed populations, if present. The objectives are to avoid spreading invasive plant populations into thinned units or newly disturbed areas, and to control new populations while they are small. Some weeds have been identified in the Cowlitz Thin area (see EA, Botanical Resources). Implementation of these measures are dependent on the availability of appropriated or other funds before and during sale activities. Work following sale activities may be eligible for KV funding if they meet legal criteria.

1. Control specified invasive plants at landings, culvert replacement sites, and along access roads for 1/2 mile preceding areas of ground disturbance (i.e. staging areas, and harvest units adjacent to roads), to 1/2 mile following area of ground disturbance, and within timber harvest units, as specified below:

- a. **During the season before** the ground disturbing phase of project implementation begins, weeds shall be hand pulled, bagged and disposed of outside of Gifford Pinchot National Forest boundaries (unless Forest NEPA analysis allows for alternative treatment). Hand control efforts should occur before invasive species have set seed for the year (May or June). The Gifford Pinchot National Forest (contact: North Zone Botanist) shall provide a list of weeds to be controlled previous to project implementation. The project lead shall inform the Gifford Pinchot North Zone botanist when the weed control work will be performed, and when it is complete.
- b. **During** seasons of project implementation weed re-occurrences along access roads shall be controlled as specified above.

- c. **For two field seasons following** project completion, weed re-occurrences at landings, and along access roads, shall be controlled as specified above. In addition, harvest units shall be surveyed for invasive plant establishment and/or encroachment. If new invasive plant populations are located within harvested units, population data shall be collected for entry into the Natural Resource Inventory System (NRIS) database, and invasive plants shall be controlled, as specified above.
- d. **After two years**, the North Zone Botanist shall re-evaluate the weed control needs within the project area and determine whether further treatment is needed. It is likely that, at some sites, weed control beyond two years will be necessary.
- e. **Starting in 2006, all invasive plant control actions shall be entered into the FACTS database on an annual basis.**

2. Mitigation for Canada thistle at known sites in Cowlitz Thin units : During the season of the beginning of the ground disturbing phase of project implementation, and during seasons in which the project is being implemented, hand treat Canada thistle sites located in Cowlitz thin Unit 3 (between 3a and 3b in wetland), Unit 14 (located on Road 5290 where it crosses upper unit boundary [site also has bull thistle, which should also be treated]), Unit 25 (on edge of road 47) and Unit 26 (at intersection of 4725 and 4722, and between these roads within the unit) . The plants shall be hand pulled or weed whipped (unless NEPA analysis allows for alternative treatment) at the time when flower buds are forming and root reserves are at their lowest. If this timing is not achieved and seed heads have already formed, they shall be bagged and disposed of outside of Gifford Pinchot National Forest boundaries. Return to sites for two subsequent years following completion of project for follow up treatment, as necessary.

Purpose of the mitigation: to prevent seed set and dispersal to the newly disturbed soils within the units and on road shoulders, and thus to prevent spreading the infestations.

Monitoring Plan for Aquatic and Riparian Resources

The following plan is provided as a guide for the monitoring of implementation of riparian prescriptions, and the effectiveness of the treatments and mitigation measures.

Monitoring will be conducted prior to the close of the timber sale to evaluate the effectiveness of mitigation measures to protect water quality, water quantity and Riparian Reserves. This will serve as an opportunity to evaluate actual harvest operation and refine KV measures to reflect specific ground condition.

Objective 1. Evaluate whether Riparian Reserve conditions adjacent to and immediately downstream of timber sale units benefit from silvicultural treatment.

Monitoring criteria:

- A. Implementation and effectiveness of BMPs will be documented in Aquatics post sale review to assess conditions of treated riparian reserved conditions.

- a. Is ground cover at least 90%? If not, did the project reduce ground cover?
- b. Is bank stability at least 90%? If not, is the minimum no cut buffer in place?
- c. Is ground compaction present on less than 10% of the Riparian Reserve? If not, did the project increase compaction?
- d. Is sediment being delivered to streams from anthropogenic sources? If so, are management features the prescribed distance from the stream? Specifically, the Forest Service will monitor turbidity above and below the stream crossing. The monitoring will occur during storms after the crossing has been constructed and restored.
- e. Were there any sediment sources generated within the unit or from a road? If so, could they have been avoided?
- f. Were all isolated aquatic features protected?

Objective 2. Evaluate whether the development of Riparian Reserve late successional habitat conditions have been accelerated.

- A. Is there at least minimum prescribed (3-5 %) ground cover from down wood?
- B. Are LWD levels adequate to maintain or restore habitat elements? If not was the source area for recruitment maintained?
- C. Has riparian plant species diversity been achieved?

Cowlitz Thin Restoration Projects

The following list of additional restoration projects associated with the Cowlitz Thin Timber Sale clarifies what is included as part of the proposed action, and identifies other, partially surveyed projects that may be funded for implementation when funds for additional surveys and documentation, and/or implementation are available. Some projects may qualify as KV projects. Table B-1 is from the EA, p. 114 and lists partially analyzed project proposals. While these projects were not entirely within the scope of the EA (projects outside the sale area boundary, not related to sale activities, etc), they do represent potential restoration projects that would contribute to the trend of improved watershed condition in the project vicinity, and within the Upper Cowlitz River Watershed.

These projects are proposed as potential and additional restoration projects that would be implemented separately from the Cowlitz Thin Timber Sale contract. Funding may be from KV or other sources as they become available. Projects are not listed in order of priority. Projects are either fully analyzed or partially analyzed in the EA.

1. Precommercial thinning is a stand improvement treatment used to enhance the development of young, managed seedling/sapling stands that are overstocked. The thinning treatments will improve stocking conditions (reduce tree density) and enhance tree growth, vigor, and health. Precommercial thinning will contribute to meeting the future goals for the late-successional reserves, deer and elk winter range, visual emphasis, and general forest management allocations in the sale area. Approximately 243 acres

would be precommercially thinned across 12 stands adjacent to, or very near, proposed Units 3, 4, 6, 14, 16, 20, and 25.

2. Current user-defined dispersed roads would be obliterated and closed after sale activities have been completed. These roads would be made inaccessible placing a barrier at the junction with the existing road system adequate to prevent off road vehicle use, placing down wood and discourage illegal all terrain vehicle (ATV) traffic; constructing cross-ditching on steep-gradient sections other drainage locations. This measure will prevent chronic ground disturbance, compaction and help promote hydrological and biological processes. Units 3, 14 and 15 would be highest priority for KV funding, other units that may have ATV trails include 4, 5, 6, 8, 16, 19, 20, 25, and 26
3. Restore hydrologic function and process by treating abandoned and deteriorated log bunked stream crossings adversely impacting the aquatic system. Removing old log bunkers once used for crossings will reestablish the channel form along with flow characteristics, sediment transport process. Project areas include unnamed class IV stream crossings in units 3, 4 and 5 in and Class III crossing in unit 4 and 5.
4. Reduce or eliminate illegal motorized recreation within unit boundaries. User developed trails have been identified in and near Unit 14, and there is known illegal ATV use on FR 5290 and 5290082. The last 300 feet of 5290 will be reopened for access to the harvest unit. After harvest, the 300 feet of reopened road should be closed and blocked or obliterated to reduce ATV access. Aquatic resources have identified a mitigation measure that will meet the needs of eliminating unmanaged recreation in this area.

Table B-1. Proposed Forest Service road activities within the analysis area.

Road Number	Treated Miles	Proposed road treatment
4710.023	0.6	Restore drainages, sub-soil and install road closure berm.
4700	0.2	Fish passage restoration at stream crossing on North Fork Willame Creek (T. 13N, R 8, Sec. 9 and 12) and upgrade a culvert at stream crossing that flows into Willame Creek, (T.13N, R 8, Sec. 12 and 13).
4700.019	0.5	Restore drainages, sub-soil and install road closure berm.
5200.200	0.1	Restore drainages, sub-soil and install road closure berm.
5290.424	0.8	Restore drainages, sub-soil and install road closure berm.
4725.030	0.4	Restore drainages, sub-soil and install road closure berm.
4740	0.1	Fish passage restoration at stream crossing on Long Lake Creek on (T. 13N, R 8, Sec 11)
4720.404	0.7	Restore drainages, sub-soil and install road closure berm.
4720.405	0.2	Restore drainages, sub-soil and install road closure berm.

5. Treat riparian reserves adjacent to but outside of unit boundaries in Unit 3 (T 14N, R 9E, Sec. 36) and Unit 4 (T 13N, R 8E, Sec.12). Riparian vegetation is an important source of both stream shade and input of foliar debris providing favorable stream temperatures and source of food for aquatic organisms. After the sale is closed, the stands will be surveyed and evaluated for blow down or other natural sources of down wood recruitment. Treatment would include felling of down wood to establish 5% ground cover. No trees will be removed, and all trees felled will be left as down wood. See filed KV plan for prescription details. Treatment of riparian stands should be done with hand tools (e.g. with a chain saw) to minimize impact to the riparian reserve.
6. Decomcompact and prevent further gullyng and/or revegetate old existing skid roads in harvest units that are now proposed as cable yarding systems, or in units where skid trails may not be used by the purchase during ground based harvest. The highest priority units include skid roads within Unit 4 (T. 13N, R 8E, Sec. 12), and Unit 20 (T. 13N, R 8E, Sec. 3).
7. Stabilize a preexisting slide near the unit boundary in the northwest corner of Unit 3 (T 14N, R 9E, Sec. 36). The slide contributes sedimentation into the adjacent Class IV stream. Plant slide with rooted stock alder at 6' x 6' spacing. Plant areas along stream channel with appropriate species at a 6' x 6' spacing. Seed areas with approved native seed mix, which cannot be planted and mulch with weed free straw.
8. Upgrade a culvert at stream crossings that flow into Willame Creek, Forest Road (FR) 47 (T.13N, R 8, Sec. 12 and 13), install culvert on FR 4715 (T. 13N, R 9, Sec. 18), and install culvert or drainage dip on FR 5290 (T. 13N, R 9, Sec 36). This project will replace an undersized pipe with right sized pipe on FR 4700, and restore channel processes at FR 4715 and FR 5290 road crossings. This project would require additional site specific surveys, including heritage and wildlife and botany. Project design would involve additional aquatic habitat surveys.
9. Upgrade culverts at stream crossings on North Fork Willame Creek Forest Road (FR) 47 (T. 13N, R 8, Sec. 9 and 12), Willame Creek on FR 4725 (T. 13N, R 8, Sec. 11), and Long Lake Creek on FR 4740 (T. 13N, R 8, Sec 11). This project will replace undersized pipes with bottomless stream simulation structures. This project would require additional site specific surveys, including heritage and wildlife and botany. Project design would involve additional aquatic habitat surveys.
10. Analyze and consider the decommissioning of the 4710.020 road and the 5270.023 road.
11. Monitor the condition of units 7 and 8, and consider needs for reforestation after a period of three years following harvest. If the stand would benefit from underplanting, plant appropriate species as prescribed by the Zone Silviculturist.