



Humboldt Redwood  
COMPANY, LLC

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March 12, 2009

Ms. Catherine Kuhlman  
California Regional Water Quality Control Board  
North Coast Region  
5550 Skylane Blvd, Suite A  
Santa Rosa, CA 95403

Subject: Enrollment of THP 1-08-048 HUM (Unit 2) in the Freshwater Creek WWDR, "Tier II"

Dear Ms. Kuhlman:

HRC is requesting Tier II enrollment under Watershed-Wide Waste Discharge Requirement (WWDR) Order No. R1-2006-0041 for unit 2 of THP 1-08-048 HUM. This unit is comprised of 25.4 acres of Selection (12.7 clear-cut equivalent acres). This unit is an additional unit that was not on the original Pre Harvest Planning Report, but a revised one is attached. Total acres currently enrolled or proposed for enrollment under Order No. R1-2006-0041 Tier II is shown in the Attached Pre-Harvest Planning Report provided by Forester, Mr. Wayne Rice. The Erosion Control Plan (ECP), Form 200 and an annual waste discharge enrollment fee have already been submitted for this THP.

Landslide risks associated with this plan were evaluated in compliance with the Freshwater Creek and Elk River WWDR Permit Acreage Enrollment and Compliance Monitoring Program Quality Assurance Project Plan (Version 2.0, September 1, 2006) approved by the Executive Officer of the North Coast Regional Water Quality Control Board. This approach uses commonly accepted standards for geologic practices in forest management (Sidle et al. 1985, Soeters and Van Western 1996, and Sidle and Ochiai 2006) to assess factors known to contribute to landslides, such as steepness of slope, slope convergence, hydrology, geologic features, and visibly unstable areas. Overlapping and complementary scientific techniques combining state-of-the-art digital elevation model (DEM) slope stability models, field investigation, and terrain analysis were used in this assessment.

In summary the Unit is underlain by the lower unit of the Wildcat Group. The rocks are comprised of moderate to well consolidated silts, sands, and clays. A mass wasting response to the initial harvest was not observed. The unit was assessed with respect to clearcut silviculture that has since been amended to group selection with a target retention of 90 ft<sup>2</sup> of basal area per acre. This amendment was in response to ownership and the stand management conversion from even aged to uneven aged. Standard HCP Riparian Management Zones (RMZ) have been implemented on the Class II watercourses. The Forester has adopted a Class III RMZ that prohibits the placement of groups within or adjacent the Class III watercourse. The initial harvest presented a more significant impact with respect to mass wasting due to forest clearing and ground disturbance from yarding. It is our opinion that the proposed partial harvest, the appropriately developed yarding system with respect to slope, and the implemented watercourse buffers will not have a significant impact on the current stability of the slopes underlying Unit 2. As proposed, this unit meets the requirements for Tier II enrollment.

The THP proposes an uneven-age silviculture retaining 90 sqft of basal area. Sub-merchantable trees and those with specific wildlife value characteristics (e.g., cavities, large limbs, broken tops, snags, etc.) will be retained within the harvest area to the extent feasible. Cable and ground based yarding is approved for the unit. Post-harvest no site preparation will occur.

Greater detail regarding this landslide hazard assessment is provided in the attached *THP Unit Review for Tier 2 Enrollment*. The licensed geologist involved with the Tier 2 landslide risk evaluation has concluded the proposed harvest operation, if implemented as planned and approved, will result in a negligible increase in potential for post-harvest landsliding; and thereby meets the applicable Zero Delivery of landslide related sediment performance standards of NCRWQCB Orders R1-2006-0041 and R1-2008-0071.

Please do not hesitate to contact me should you have any questions or comments regarding this application for enrollment into WWDR (Order No. R1-2006-0041).

Respectfully,



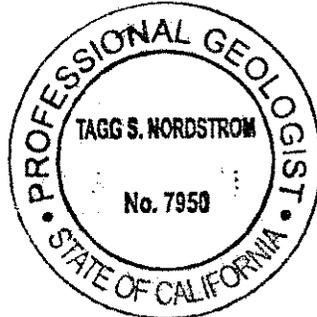
Wayne D. Rice,  
RPF  
Humboldt Redwood Company, LLC

Attachments:

Professional Certification of Design  
THP Unit Review for Tier II enrollment  
Pre-harvest Planning Report  
Unit Specific ECP  
Maps

## Professional Certification of Design

I, Tagg S. Nordstrom, P.G. 7950, 3/12/09,  
Signature license # Date



*Place licensed seal here*

hereby certify, in accordance with North Coast Regional Water Quality Control Board (NCRWQCB) Order Nos. R1-2006-0039 and R1-2006-0041, that the attached application and the description of THP modifications, and the materials submitted along with:

THP No. 1-08-048 HUM (Little 34) Unit # 2

- a. are in accordance with accepted practices, and recognized professional standards;
- b. comply with the requirements of the Monitoring and Reporting Program No. R1-2006-0103, approved by the Executive Officer of the North Coast Regional Water Quality Control Board; and
- c. provided that the THP is properly implemented, operated, and maintained, are adequate for the THP to meet the applicable Zero Net Delivery performance standards of NCRWQCB Orders R1-2006-0039, R1-2006-0041, and R1-2006-0103, insofar as such performance can reasonably be predicted by accepted engineering geologic practices.

The opinions presented in the subject THP have been developed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineering geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

**THP: Little 34    THP 08-048    Unit # 2                    3-12-09**

<b>Tools Used in This Assessment</b>	<b>Figure Number</b>
Elevation Map with 10 ft Contours (HRC LiDAR)	1
SHALSTAB ( Montgomery and Dietrich, 1994 and Palco, 2006) / Slope Class / Hillshade Maps	2
CGS Geology and Geomorphic Features (CGS, 1999)	3
Mass Wasting Potential Map (HRC, 1999)	4
Aerial Photo Map (HRC, 2007)	5
HRC Freshwater Creek WA deep-seated LS inventory (HRC, 2001)	6
Road Condition Map	7

Please see back of enrollment for references

**Summary of Changes to THP Prescriptions Based on Tier II Analysis in this Unit:**

<b>Geologic Review</b>	<b>Forestry Silviculture/Site Prep Plan</b>	<b>Operational Design Plan</b>
2-1	For reasons other than slope stability hazard, silviculture is now group selection with a retention minimum of 90 ft <sup>2</sup> .  No site preparation will occur due to partial harvesting.	No change to approved yarding methods.

**Geological Summary** (information presented from existing bodies of work):

The harvest unit occupies a predominantly northeast trending ridge that is bound by Class II watercourses. The ridge is wide and gently inclined in southwest and transitions to more prominently defined in the northeast. Four Class III watercourses extend into the unit. Figure 3 shows the unit underlain by the lower Wildcat Group sedimentary rocks. These rocks are comprised of moderate to well consolidated silts, sands, and clays, with infrequent gravels. CGS (1999) mapping of potential unstable areas is limited to debris slide slopes / source areas that are mapped within the flanking slopes of the western most Class II watercourse.

Watershed Analysis mapping of deep seated landslides (Figure 6) show a very low hazard landslide to the west and outside of the unit.

Review of Figure 2 (Hillslope Shade) shows a broad, slightly irregular southwestern ridge top transitioning to a uniformly weathered, well pronounced ridgetop to the northeast. The weathered expression of the ridgetop suggests that there may be slight variation in the lithologic composition of the soils to the south therefore resulting a slightly different weathered expression. No morphology consistent with deep seated mass wasting was observed within or adjacent the harvest unit. All of the mapped watercourses appear to be constrained within well developed, deeply incised channels.

A review of existing geologic information and disclosure of potentially unstable areas was conducted for the THP. The Forester did not observe any indicators within the proposed units to require inclusion of a Note 45 Report within the THP. No unstable areas were identified within Unit 2. CGS (1999) mapped debris slide slopes encompassing the Class II and Class III watercourses in the southern portion of the unit evidently mapped as potential source areas. The THP was reviewed by various agencies during PHI and was found to be compliant with the Forest Practice Rules with respect to disclosure of all known unstable areas.

The harvest unit was evaluated at the THP level with respect to clearcut silviculture. As mandated by new management, the silviculture has changed to group selection with 90 sq. feet of basal area retention per acre. This change is not in response to perceived high slope stability hazard, however, the retention of timber on the slopes further reduces the potential for harvest related mass wasting.

For this evaluation, the harvest unit has been reviewed as one polygon.

**THP Unit: # 2**

**Polygon: 2-1**

**A) General Observations**

The harvest unit is bound by watercourses (Class II and III) to the north, east, and portions of the south. The southwestern boundary is defined by a rocky ridgetop road. The southern portion of the western boundary is a Class III watercourse.

The polygon occupies convergent and divergent slopes with inclinations that vary from gently inclined to over 60%. The slopes exceeding 50% typically define the flanking slopes of watercourses and within the established Riparian Management Zones. The average slope inclination is estimated at 40 to 50%.

Areas of elevated SHALSTAB (Value 2) are located in the northeastern corner of the unit, upslope of the Class II watercourse confluence, and within or adjacent the Class II outerband RMZ termination. Additional Value 2 SHALSTAB is located with the eastern Class II watercourse RMZ in the southern portion of the unit. This assemblage of modeling is located within a Class III watercourse. One pixel of Value 2 is located adjacent to and downslope of a seasonal road switchback. The area is also within the outerband of the downslope Class II watercourse. Our review of the SHALSTAB areas revealed steeply inclined swales, evenly distributed, in situ old growth stumps and abundant 2<sup>nd</sup> growth timber.

Debris slide slopes mapped (Figure 3) within the unit correlates with the moderately inclined flanking slopes to the Class II/III watercourse located in the southwestern portion of the unit. It appears that these areas were mapped as potential source areas since no actual debris slides were identified during THP layout and approval.

Mass Wasting Potential (MWP) modeled for the unit (Figure 4) is regionally low.

The stand is predominantly redwood and fir. The original harvest was a ground based clearcut yarded either to the downslope watercourse or the ridge top. This harvest was ground based and resulted in the dragging of the large diameter felled timber across the slopes using large diameter cables (steam donkey). The unit was also partially harvest by ground based and cable yarding in the mid 1990s.

Typical RMZ for the Class II watercourses includes a 30-foot no harvest inner band and a selection buffer that extends the RMZ out to between 75 and 100 feet. For this unit, the entire RMZ has been established as a no harvest.

A) General Observations

The implemented THP mitigation for the Class III watercourses includes the retention of all trees growing within the active channel and all trees 8 inches and less within 15 feet of the channel. The new silviculture has bolstered Class III mitigations to include a 50' RMZ where side slopes greater than 50% exist and maintaining 75 sq. ft evenly distributed in the buffer. Where side slopes are less than 50% employ a 25' RMZ that maintains 75 sq. ft evenly distributed in the buffer and no group opening greater than ¼ acre immediately above the terminus of class III with slopes greater than 40% or immediately above a headwall swale. Additionally sub-merchantable trees and those with specific wildlife value characteristics (e.g., cavities, large limbs, broken tops, snags, etc.) will be retained within the harvest area to the extent feasible.

B) Harvest Related Impacts and Hillslope Sensitivity

The slopes within the unit have experienced clearcut, burning and donkey yarding (a legacy method that dragged the large diameter, felled timber to railroads).

The potential for the development of shallow debris slides increases significantly where roads are constructed across steeply inclined slopes and incorporate fills. These activities are not proposed in this plan.

Partially harvesting the slopes within the unit is likely to further reduce the potential for mass wasting.

The extensive RMZs were designed to provide sediment filtration bands adjacent the watercourses should extensive sediment be generated from the clearcut harvesting. The current level of harvest will retain both canopy closure and slash from the harvested trees potentially increasing the effectiveness of the sediment filtration band.

Overall hillslope sensitivity to harvest activities appears minimal with respect to mass wasting.

C) Forestry / Silviculture Plan

The Unit silviculture has been amended to group selection with a target retention of 90 square feet of basal area per acre. This change is a management decision to convert the stand management from even aged to uneven aged. This change does represent a change in response

**C) Forestry / Silviculture Plan**

to perceived slope instability.

Site preparation has been changed to none.

**D) Operational Design Plan**

THP approved yarding method is both ground based and cable. Given the steeply inclined slopes and interfluvial ridges, deflection is good and minimal ground disturbance is anticipated where cable yarded. The ground based yarding will be concentrated to the rounded ridge top.

**References:**

CGS, 1999, Geologic and Geomorphic Features Related to Landsliding, Freshwater Creek, Humboldt County, California. DMG Open-File Report 99-10. Available via the web at <http://www.conservation.ca.gov/cgs/fwgp/Pages/fresh.aspx>

Montgomery, D.R. and W.E. Dietrich, 1994. A physically based model for the topographic control on shallow landsliding. *Wat. Resour. Res.* 30: 1153-1171. For specific details regarding the model used in this evaluation, please see Palco, 2006. Additional information from the model authors is available at the following website: <http://socrates.berkeley.edu/~geomorph/shalstab>

HRC, 2007, Ortho-photo rectified aerial photographs flown by 3Di West, Eugene Oregon,

HRC, 2008. Freshwater Creek and Elk River WDR Permit Acreage Enrollment and Compliant Monitoring Program, NCRWQCB R1-2006—0039 and R1-2006-0041, Quality Assurance Project Plan, Version 3.0. Policy document submitted to NCRWQCB dated June 7, 2006.

HRC, 2001, Freshwater Creek Watershed Analysis, prepared for Pacific Lumber Company (PALCO) dated January 2001, and acquired by Humboldt Redwood Company, LLC in 2008.

HRC, 2002, (Policy Acquired from The Pacific Lumber Company (PALCO)) Prescriptions Based on Watershed Analysis for Freshwater Creek, California, August 15, 2002.

HRC, 1999, The Pacific Lumber Company's Habitat Conservation Plan, Vol. 2 Part D, Landscape Assessment of Geomorphic Sensitivity, Public Review Draft.

**Brief descriptions of the models used in this evaluation:**

**SHALSTAB** was first described in Dietrich and Montgomery (1994). SHALSTAB is a simple, physically-based model based on the Mohr-Coulomb failure law that can be used to map shallow landslide potential. The model calculates the potential for failure using gridded digital elevation data. The simplicity of the model lies in the formulation of slope stability parameters that allow the model to be run parameter-free using default values suggested by the authors or determined by local measurement. Because the model uses no field measurements of critical characteristics that determine slope stability, the evaluation of potential instability is only an approximation. In applying SHALSTAB for Tier 2 enrollment, HRC has run the model on a 10-m spatial grid using LiDAR elevation data and applied the parameters as suggested by the model authors. HRC's application of the method and parameters is described in HRC (2008).

**Mass Wasting Potential (MWP)** modeling is a cursory regional assessment that numerically values soil, slope inclination, geology type, and geomorphology with respect to past mass wasting (HRC, 1999). The sums of the values specific to an area are measured against a set ranking system that extends from very low to extreme. The model's intent is to highlight areas of high potential for instability at the planning level. The model's use at the site specific level is limited in that pedogenic soil types are used, not textures, the geologic formations utilized provide one value for all of the incorporated facies, and the model is heavily biased if past mass wasting has occurred or has been mapped as occurring in the area.

Table 1. Proposed 2009 Harvest in Freshwater Creek. Revised 3/13/09

THP Name	THP Number	Unit Number	Silviculture				CC Equivalent	Hazard	
			CC	ROW	CT	SEL		Low	High*
Little 34	08-048	1				22.4	11.2	22.4	0.0
Little 34	08-048	2				25.4	12.7	25.4	0.0
Little 34	08-048	3				30.3	15.2	27.4	10.8
McCready Ridge	07-132	1	0	0	0	15.6	7.8	15.6	0.0
McCready Ridge	07-132	2	0	0	0	15	7.5	13.1	7.3
Around gills	05-077	4		3.1		32	19.1	34.9	0.8
Mid Incline	05-123	1		0.4		24.7	12.8	3.3	83.7
Mid Incline	05-123	2				31.5	15.8	31.5	0.0
Mid Incline	05-123	3				28.3	14.2	23.4	18.8
Fresh 1	04-242	2				36.1	18.1	34.3	6.9
Fresh 1	04-242	3				27.4	13.7	27.1	1.2
Little Fresh	05-176	1				36.3	18.2	30.1	23.8
Little Fresh	05-176	2				20	10.0	12.4	29.2
Little Fresh	05-176	3				5.7	2.9	5.7	0
Little Fresh	05-176	5				39.6	19.8	39.6	0.0
Little Main	05-085	2				29.7	14.9	14.3	59.1
Little Main	05-085	3				25.3	12.7	16	35.7
Little Main	05-085	7				33.3	16.7	19.5	53.0
Whiskey	08-041	1				20.9	10.5	20.6	1.2
Whiskey	08-041	2				23.5	11.8	23.2	1.2
Whiskey	08-041	3				35.4	17.7	29.6	22.4
Whiskey	08-041	4				32	16.0	32	0.0
Whiskey	08-041	5				11.3	5.7	9.5	6.9
						Total	304.4		

\*The acres represented here have been converted to High Hazard Acres by multiplying by 3.8404.

Highlight indicates a THP and Specific Unit to be enrolled prior to establishing an enforceable Zero Discharge Monitoring Plan (Tier I). Weighted Acreage Totals are listed below to demonstrate compliance with the Staff Landslide Model limit of 144 Harvest Acres in Freshwater Creek. Other THP Units will be enrolled after approval of the aforementioned Monitoring Plan

No Highlight Indicates a THP and Specific Unit to be enrolled after establishment of an enforceable Zero Discharge Monitoring Plan (Tier II).



Indicates tier 1 for ROW and tier 2 for remainder of the unit

Total Clear Cut Equivilant Acres enrolled or submitted for enrollment	289.1
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Table 2. Summary of THPs to enrolled prior to establishment of Zero Discharge Monitoring Plan for Freshwater Creek

THP Number	Unit Number	Harvest Acres	Hazard	
			Low	High*
08-048	1	22.4	22.4	0.0
05-077	4	3.1	3.1	0.0
05-176	5	39.6	39.6	0.0
08-041	1	20.9	20.6	1.2
08-041	2	23.5	23.2	1.2
08-041	4	32.0	32	0.0
Totals		141.5	143.3	

Table 3. Summary of THPs by Yarding System and Site Preparation for Freshwater Creek

THP Name	THP Number	Unit Number	Yarding System			Site Preparation	
			Ground Based	Yarder	Helicopter	Mechanical	Broadcast
Little 34	08-048	1	3.9	18.5			
Little 34	08-048	2	8.2	17.2			
Little 34	08-048	3	6.9	23.4			
McCready Ridge	07-132	1	0	15.6			
McCready Ridge	07-132	2	10.1	4.9			
Around gills	05-077	4	19.7	15.4			
Mid Incline	05-123	1	0.4	24.7			
Mid Incline	05-123	2	11.5	23			
Mid Incline	05-123	3	14.1	14.2			
Fresh 1	04-242	2	10.9	25.2			
Fresh 1	04-242	3	0	27.4			
Little Fresh	05-176	1	0	36.3			
Little Fresh	05-176	2	7.3	12.7			
Little Fresh	05-176	3	0	5.7			
Little Fresh	05-176	5	0	39.6			
Little Main	05-085	2	0	29.7			
Little Main	05-085	3	0	25.3			
Little Main	05-085	7	0	33.3			
Whiskey	08-041	1	20.9	0			
Whiskey	08-041	2	11.7	11.8			
Whiskey	08-041	3	9.3	26.1			
Whiskey	08-041	4	19	13			
Whiskey	08-041	5	0	11.3			

# Humboldt Redwood Company LLC

## Erosion Control Plan (ECP) for the “Little 34” THP 1-08-048HUM

Updated ECP – for purpose of identifying **Tier 2** erosion control sites specific to units 2 and 3 (2009 enrollment requests); Unit 2 has site 970 (Road X10.93), and unit 3 has site 4575 (Road X10.95) erosion control sites located on the spur road system leading specifically to These units.

This plan is being included in the THP to partially meet the requirements of the North Coast Regional Water Quality Control Board Watershed-wide Discharge Requirements. (**WWDRs**)

All operational portions of this ECP that are to be enforced through the Forest Practice Rules have been included in Section II of the THP.

Version **20080819**

## Humboldt Redwood Company LLC Erosion Control Plan (ECP)

This document addresses the requirements of the California Regional Water Quality Control Board, North Coast Region Order No. R1-2006-0041 (Freshwater Creek) for an Erosion Control Plan (ECP) related to timber harvest activities on Non-Federal lands in the North Coast Region (Sec. III D2 and D3). The responsible party for this ECP is Humboldt Redwood Company LLC, P.O. Box 712 Scotia, CA 95565 (707) 764-2330.

This ECP is submitted for: THP Name: Little 34 1-08-048HUM  
Contact Person: Jon Woessner Phone: (707) 764-4376

The landowner is committed to a wide variety of measures to prevent and minimize the discharge or threatened discharge of sediment from controllable sediment discharge sources as part of this project into the waters of the state in violation of applicable water quality requirements. Prevention and Minimization of Controllable Sediment Discharge Sources associated with this project are identified in the *Controllable Sediment Sources* table. The specific conditions of sediment discharge sources and a summary of prevention and minimization measures (Section I) are identified in the table. General prevention and minimization measures for the project (Section II) are incorporated in the ECP by reference.

The RPF and/or the RPF Designee have conducted an inventory of potential "controllable sediment discharge sources" within the project area. As defined in California Regional Water Quality Control Board Order No. R1-2006-0041 (Freshwater Creek).

"Controllable sediment discharge source" means sites or locations, both existing and those created by proposed timber harvest activities, within the Project area that meet all the following conditions:

1. is discharging or has the potential to discharge sediment to waters of the state in violation of applicable water quality requirements or other provisions of these WWDRs,
2. was caused or affected by human activity, and
3. may feasibly and reasonably respond to prevention."

Upon guidance of the North Coast Regional Water Quality Control Board (NCRWQCB) staff, discharge from the source must be likely to occur during the life of the Timber Harvesting Plan (THP) and WWDR. (Holly Lundborg, personal communication)

The inventory method consisted of an appurtenant road survey, aerial photos and ground assessments of the harvest units, and a complete ground assessment of all watercourses and associated stream protection zones.

The schedule for implementing the prevention and minimization management measures for the controllable sediment sources will be consistent with the duration of the THP. These measures will be implemented in accordance with the priority level assigned to each site. High priority sites will be addressed first with low priority sites to follow. Work at all sites will be accomplished prior to THP expiration. The general prevention and minimization measures will be implemented concurrent with operations.

### **I. Inventory and Treatment of Controllable Sediment Sources**

All controllable sediment sources are listed in the attached "Erosion Control Plan" table. These sources have been assigned a treatment priority of low, medium or high based on: 1) potential for significant sediment delivery to a Class I, II or III channel; 2) treatment immediacy (a subjective combination of event probability and sediment delivery); and 3) treatment cost-effectiveness.

The Prioritization for implementing prevention and minimization measures for road-related and non road-related controllable sediment sources is based upon guidance provided in Order No. R1-2006-0041 (Freshwater Creek) Highest priority is assigned to the largest sediment discharge sources that discharge to waters that support domestic water supplies or fish. The landowner's prioritization method considers this guidance, and combines it with consideration for accessibility and level of imminent risk of significant sediment discharge. Sources that receive a high priority rating will be treated by a date certain as noted in the Controllable Sediment Sources table. Sources that receive a low or medium rating are determined to have a low to moderate risk of imminent discharge and will be treated prior to completion of the THP, or as otherwise indicated.

Non-road related controllable sediment sources can include skid road crossings, yarding furrow, skid road in watercourse, perched skid road fill, skid road rutting, landslide, layouts, railroad grade, incline, etc.

Information specific to Controllable Sediment Discharge Sources is listed in the Controllable Sediment Sources Table, below. An explanation of information provided in that table is provided below.

## II. General Prevention and Minimization Measures for Controllable Sediment Discharge

In addition to the site specific measures detailed above, the general measures proposed in this project, either as required by another State or Federal regulating agency, or as a matter of Humboldt Redwood Company policy, will prevent or minimize future sediment delivery. These measures include, but are not limited to measures incorporated in the THP Section Items as follows:

### THP Section II:

- Item 14 – Describes silvicultural prescriptions
  - (i) Site Preparation – Disclosure of selected site preparation treatments and mitigation measures
- Item 16 – Harvesting Practices – Describes yarding systems, equipment utilized, equipment limitations, and drainage facility installation timing
  - Inclusive through (m) – equipment use limitations and mitigation
- Item 18 – Soil Stabilization – waterbreak requirements, mitigation to minimize soil disturbance and sediment transport
- Item 20 – Ground Based Equipment Use Location
- Item 21 – Ground Based Equipment Use in Sensitive Areas – locations, descriptions of operations, limitations and mitigation measures
- Item 22 – Alternative Practices to Harvesting and Erosion Control
- Item 23 – Winter Operations – Provides descriptions of limitations and mitigation measures required during winter period operations and Winter Operating Plan
- Item 24 – Roads and Landings – Describes road and landing construction and re-construction operations, limitations, drainage relief structure installation, mitigation measures, road maintenance, inspections and wet weather road use restrictions
- Item 25 – Site Specific Measures to Reduce Adverse Impacts and Special Instructions to the LTO
- Item 26 – Watercourse and Lake Protection (WLPZ)
- Item 27 – “In Lieu” WLPZ Practice(s)
- Item 28 – Downstream Water Users Notification and Domestic Water Supply Protection Description of protection measures
- Item 29 – Sensitive Watershed – Identifies whether the plan is located in a designated sensitive watershed and mitigation measures
- Item 29 – 1 Hillslope Management (HCP 6.3.3.7) – Describes HCP hillslope management measures required as per watershed analysis

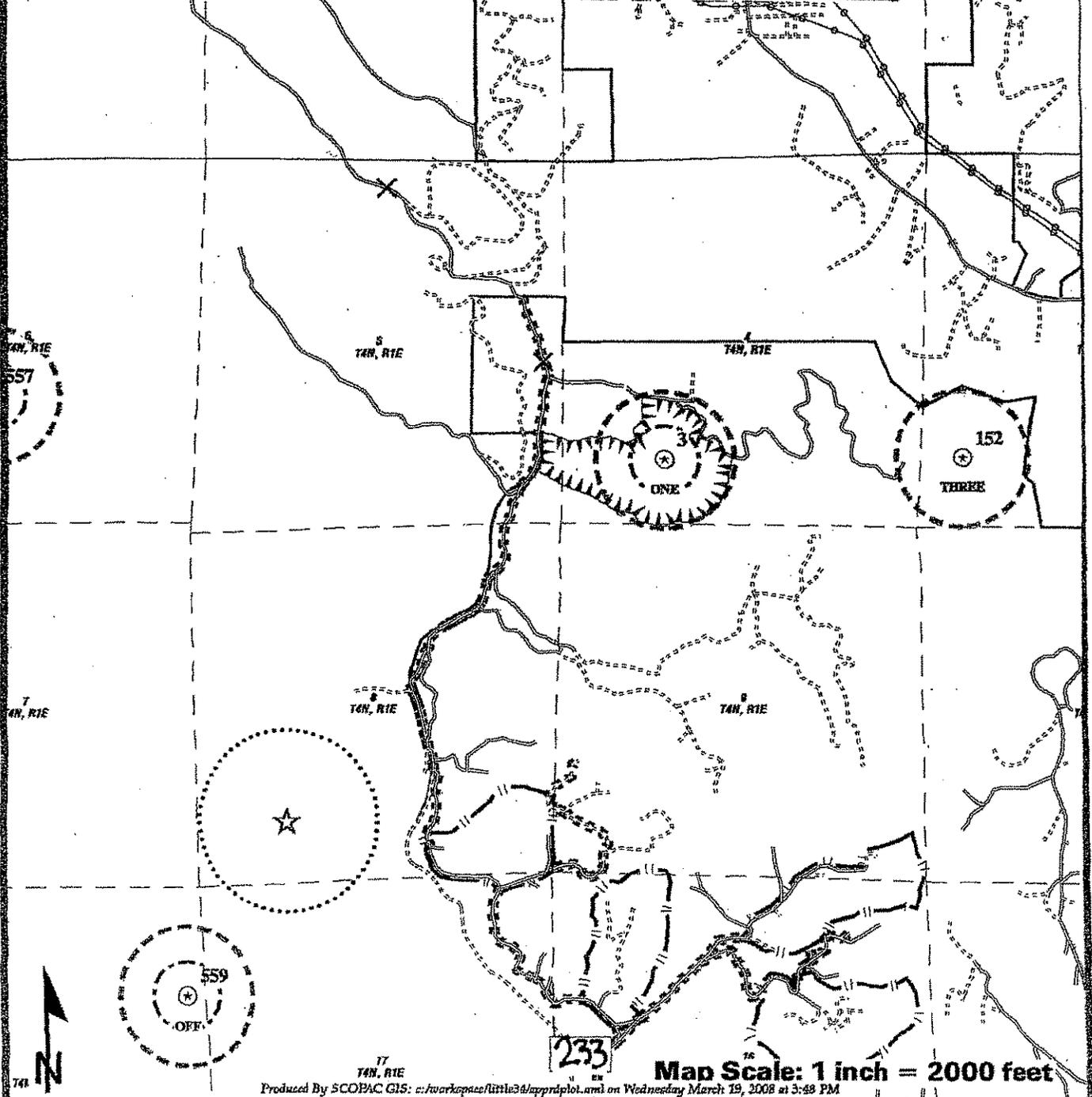
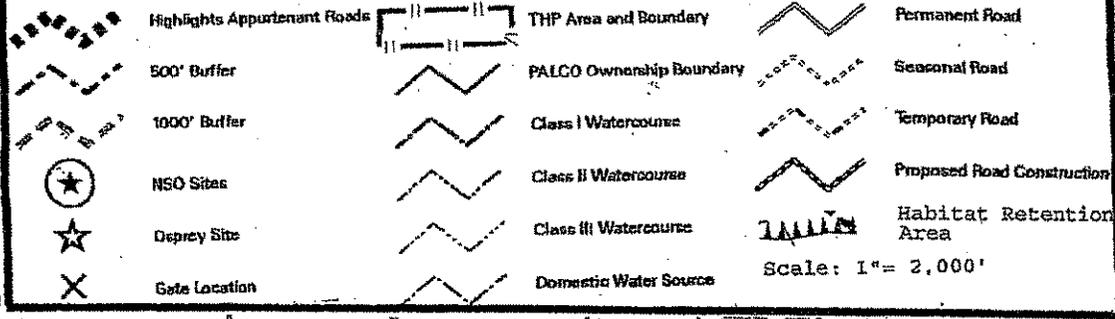
### THP Section V:

- Sediment Reduction from Roads and THP Sediment Production—Including Table 1 – “Sediment Delivery for Units and Roads for this THP,” references, letter regarding Road related sediment assessment for this THP with the calculations of deliverable net cubic yards of sediment, calculations and PWA information related to the THP project area when available

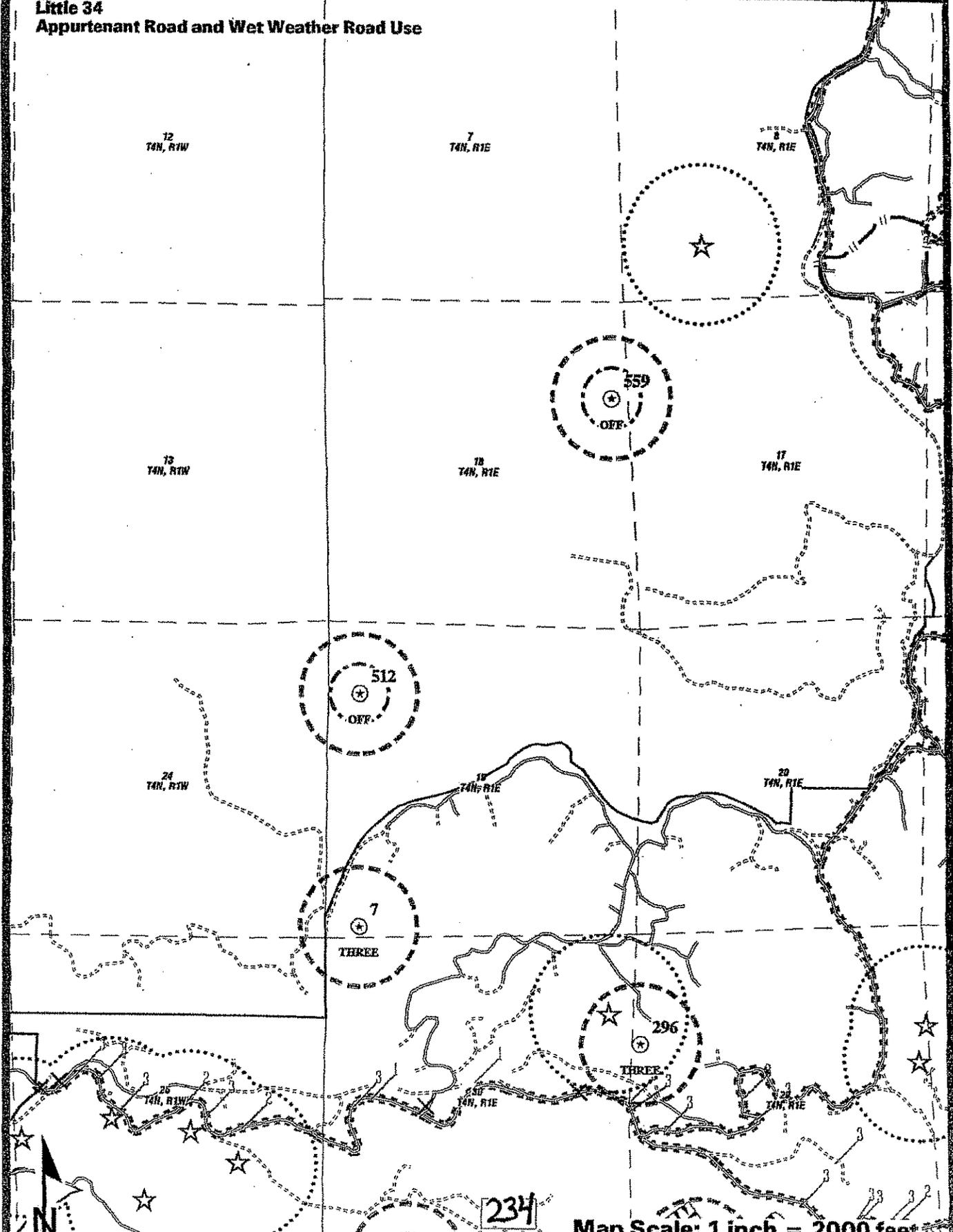
### Maps attached:

- Appurtenant Road and Wet Weather Road Use map
- Road Construction Locations/ECP Site Locator Map

**Little 34  
Appurtenant Road and Wet Weather Road Use**

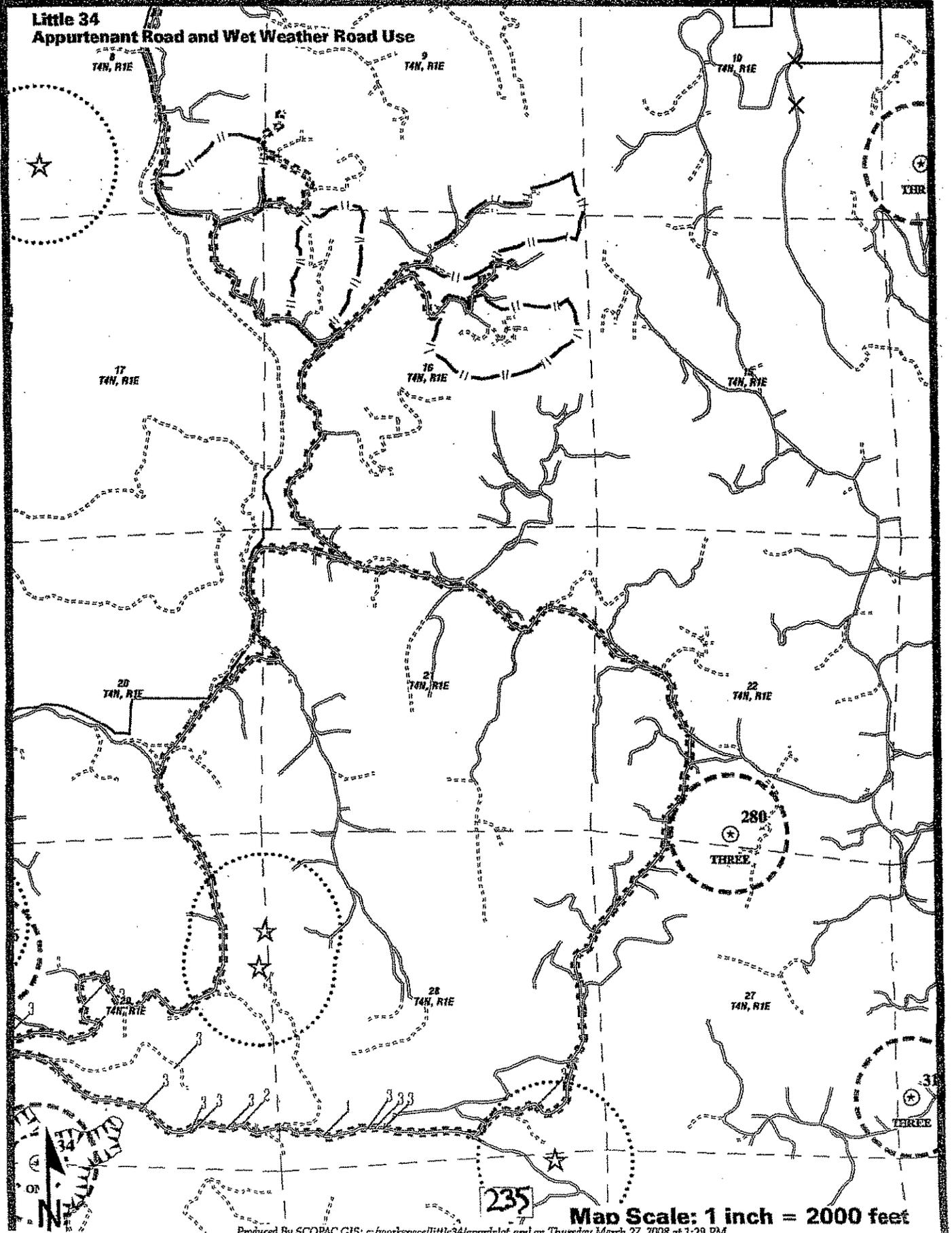


**Little 34  
Appurtenant Road and Wet Weather Road Use**



Map Scale: 1 inch = 2000 feet

**Little 34  
Appurtenant Road and Wet Weather Road Use**



**Map Scale: 1 inch = 2000 feet**

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**Little 34**  
**THP Unit Map**  
 T4N R2E Sec. 8, 9, 16, 17 HEAN

USGS QUAD(S): MCKENZIE CREEK

Map Scale: 1 inch = 1000 feet  
 Contour Interval: 40 feet

- Property Line
- Harvest Boundary
- Permanent Road
- Seasonal Road
- Class I Watercourse
- Class II Watercourse
- Class III Watercourse
- Class II Waters



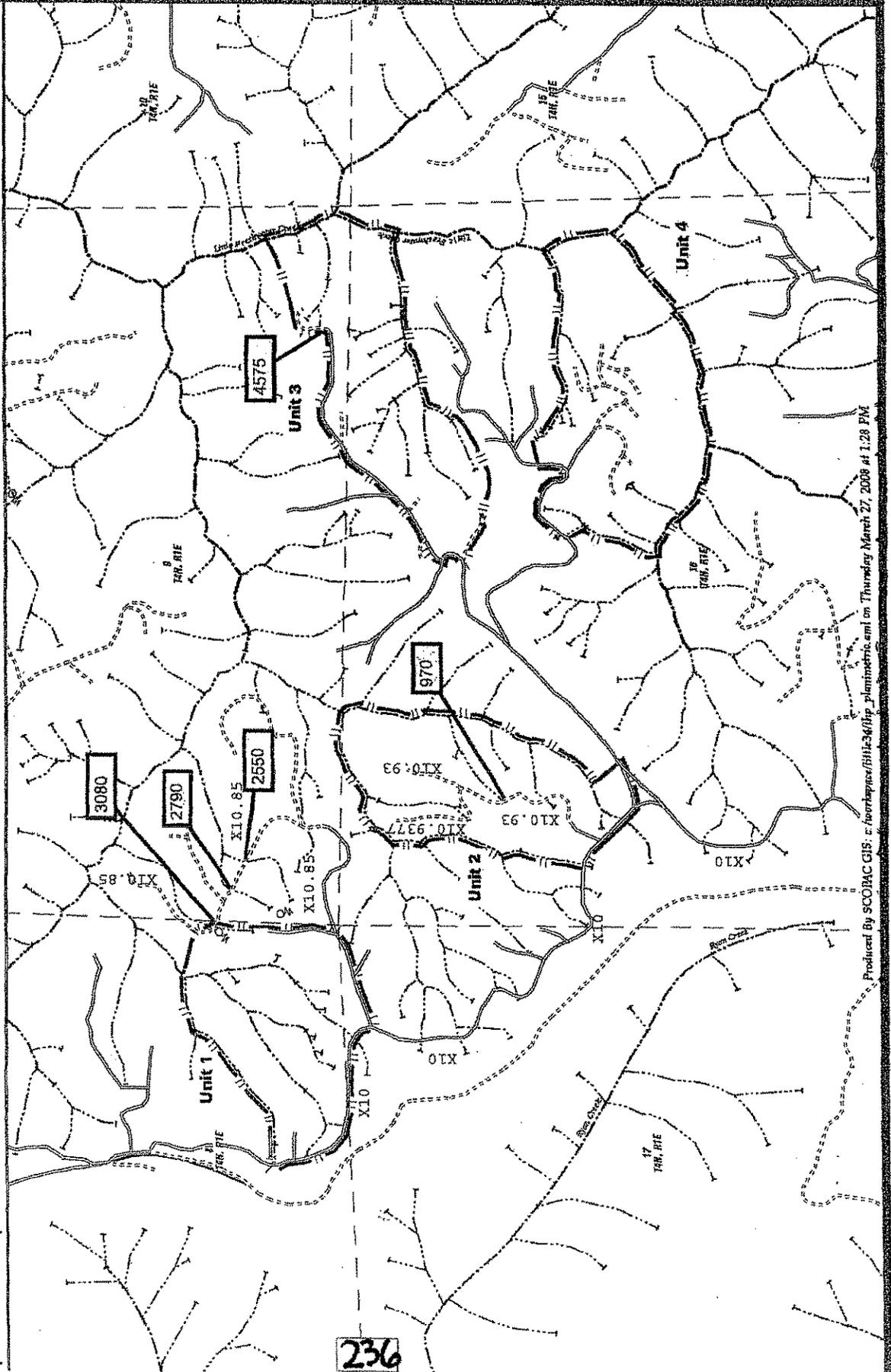
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**Little 34**  
**Road Construction Locations**  
 X10 218 Sec. 8, 9, 14, 17 1/4 NW  
 ECP Site Locator Map.

USGS Contour (ft) : MICROFILM SERIES

Map Scale: 1 inch = 1000 feet

- Property Line
- Harvest Boundary
- Permanent Road
- Seasonal Road
- Class I Watercourse
- Class II Watercourse
- Class III Watercourse
- Class IV Watercourse



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### III Inspection Plan and Reporting Requirements

#### A. Inspection Plan

The Inspection Plan is designed to ensure that all required management measures are installed and functioning prior to rainfall events; that the management measures are effective in controlling sediment discharge sources throughout the winter period; and that no new controllable sediment discharge sources developed.

- B. Qualified and trained professionals will conduct all specified inspections of the project site to identify areas causing or contributing to a violation of the applicable water quality requirements or other provisions of these WWDRs. The responsible party for inspection and reporting is **Jon Woessner (707) 764-4376**.
- C. No inspections are required in Project Areas where Timber Harvest Activities have not yet commenced.
- D. Project Areas where Timber Harvest Activities have commenced and no winter period Timber Harvest Activities have occurred inspections will be conducted each year and throughout the duration of the Project while Timber Harvest Activities occur.
  - a. The Project is covered under WWDRs and the following inspection requirements will begin at the startup of timber harvest activities within the Project area:
    - i. By November 15 to assure Project Areas are secure for the winter period;
    - ii. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and
    - iii. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new controllable sediment discharges sources have developed.
  - b. Project Areas with Winter Period Timber Harvest Activities will conduct inspections of such Project Areas while Timber Harvesting Activities occur and the Project is covered under the WWDRs as follows:
    - i. Immediately following cessation of winter period Timber Harvest Activities to assure areas with winter Timber Harvest Activities are secure for the winter;
    - ii. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and
    - iii. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new controllable sediment discharges sources have developed.
  - c. Inspection reports will identify where management measures have been ineffective and when repairs and design changes will be implemented to correct management measure failures.
  - d. After completing the required inspections, and when it has been determined new controllable sediment discharges sources have developed, the ECP, implementation schedule, and inspection plan will be updated, if required, consistent with the WWDRs and submit the updated documents to the Regional Water Board to maintain coverage under the WWDRs. If the approved amendment is found to be out of compliance with the WWDRs, the Project will be amended to be consistent with the provisions of the WWDR within 30 days, or coverage under the WWDRs will be terminated. The Project will then be required to seek Project coverage under an individual WDR.
  - e. Equipment, materials, and workers will be available for rapid response to failures and emergencies, implement, as feasible, emergency management measures depending upon field conditions and worker safety for access.
- D. If during the inspection or during the course of conducting timber harvest activities, a violation of an applicable water quality requirement or conditions of WWDRs is discovered, the following procedures will be followed:
  - a. When it has been determined that discharges are causing or contributing to a violation or an exceedence of an applicable water quality requirement or a violation of a WWDR prohibition:
    - i. Corrective measures will be implemented immediately following the discovery that applicable water quality requirements were exceeded or a prohibition violated, followed by notification to the Regional Board by telephone as soon as possible but no later than 48 hours after the discharge has been discovered. The notification will be followed by a report within 14 days to the Regional Board, unless otherwise directed by the Executive Officer, that includes:
      - 1. the date the violation was discovered;

2. the name and title of the person(s) discovering the violation;
3. a map showing the location of the violation site;
4. a description of recent weather conditions prior to discovering the violation;
5. the nature and cause of the water quality requirement violation or exceedence or WWDR prohibition violation;
6. photos of the site characterizing the violation;
7. the management measure(s) currently being implemented;
8. any maintenance or repair of management measures;
9. any additional management measures which will be implemented to prevent or reduce discharges that are causing or contributing to the violation or exceedence of applicable water quality requirements or WWDR prohibition violation; and,
10. The signature and title of the person preparing the report.
11. The report will include an implementation schedule for corrective actions and describe the actions taken to reduce the discharges causing or contributing to violation or exceedence of applicable water quality requirements or WWDR prohibition violation.

E. For other inspections conducted where violations are not discovered, a summary report will be submitted to Executive Officer by June 30<sup>th</sup> for each year of coverage under the WWDRs or upon termination of coverage. The summary report, at a minimum will include the date of inspections, the inspector's name, the location of each inspection, and the title and name of the person submitting the summary report.

If helicopter operations are proposed for this project, please find attached a Columbia Helicopters, Inc. (CHI) Fuel Spill Prevention and Cleanup Plan For Columbia Helicopters Field Operations.

Explanation of Information Included in the Controllable Sediment Sources Table	
Column Heading	Explanation
Site No.	Site identification unique to project area
Site Type	A description of the existing site. Example: Humboldt Crossing; Culvert Crossing; Unstable Fill; Unstable Cut Slope; Diversion Potential.
Estimate of Potential Erosion	A quantitative estimate of the volume, in cubic yards, of the total amount of potential erosion/displacement of soil that will occur should the site entirely fail. The landowner often uses a methodology developed by Pacific Watershed Associates to estimate erosion, which assumes 100% delivery of calculated volume—use of this method for individual sites is noted in Site Description.
Potential Sediment Delivery Percent	An estimate of the relative potential for sediment delivery expressed as a percent of the total amount of Potential Erosion that will be discharged to waters of the State should the site fail.
Sediment Prevention Volume	The volume, in cubic yards, of sediment discharge estimated to be prevented by implementation of the prescribed treatment. Volume represents the Estimate of Potential Erosion multiplied by the Potential Sediment Delivery Percent.
Priority for Treatment	Treatment priority reflects the immediacy of sediment discharge and the relative risk to the receptor, should the site fail. Low priority sites are ones that will not likely deliver significant amounts of sediment during the life of the WWDR permit, and will be treated prior to filing of THP work completion report, which does not exceed 5-years following THP approval date. Medium or high priority sites indicate potentially imminent discharge, and the timing of treatment is indicated in Implementation Schedule column.
Implementation Schedule	Indicates the timing of implementing the prevention and minimization measures listed in the Treatment column.
Site Description	Provides sufficient information that describes the existing condition of the site and factors that inform the chosen treatment methods and implementation schedule. This information will include a description of how the existing condition of the site (ie. stable or unstable) will be affected by different storm events, and whether sediment discharge is imminent. For example, an unstable site could easily discharge significant amounts of sediment in a small storm, thus the treatment priority should be higher. Conversely, a stable site that may take one or more very large storms to trigger discharge could be lower treatment priority. If PWA method is used to calculate erosion/delivery volumes, it will noted here.
Treatment	Sediment discharge prevention and minimization measures that will be implemented at the site, including treatment specifications if necessary.

**Attachments:**

- ECP Table

# Erosion Control Plan

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)	Priority for Treatment	Implementation Schedule	Site Description	Treatment
<b>Project Little 34</b>							
Rd X10.85 Station 2550 Site LF720 ID -474429741	Permanent Crossing	174	174 100%	Low	Prior to THP Final Completion.	Convert To high in fill.	Excavate crossing from TOP to BOT restoring natural channel gradient, leaving a 3' channel width. Lay back side slopes 2:1, or natural grade, and install permanent culvert. Armor TOP and BOT to prevent headcutting as needed.
Rd X10.85 Station 2790 Site LF721 ID -539196136	Permanent Crossing	240	240 100%	Low	Prior to THP Final Completion.	Convert too high in fill.	Excavate crossing from TOP to BOT restoring natural channel gradient, leaving a 3' channel width. Lay back side slopes 2:1, or natural grade, and install permanent culvert. Armor TOP and BOT to prevent headcutting as needed.
Rd X10.85 Station 3080 Site C3 ID 823035378	Permanent Crossing	53	53 100%		Prior to THP Final Completion.	Convert too high in fill.	Excavate crossing from TOP to BOT restoring natural channel gradient, leaving a 3' channel width. Lay back side slopes 2:1, or natural grade, and install permanent culvert. Armor TOP and BOT to prevent headcutting as needed.
Rd X10.93 Station 970 Site C2 ID 658417807	Surface Drainage	3	3 100%	Low	Prior to THP Final Completion.	Water piping onto road surface and delivering to Class III watercourse.	Construct temporary crossing minimum 6 inch pipe if water is present at time of use.
Rd X10.95 Station 4575 Site P1 ID -295372917	Rocked Dip	4	4 100%	Med	Prior to THP Final Completion.	Water from inboard ditch cutting into outboard fills and delivering to Class III watercourse.	Rock outfall or install outfall pipe.
<b>Total Estimated Yard</b>		474	474				

040

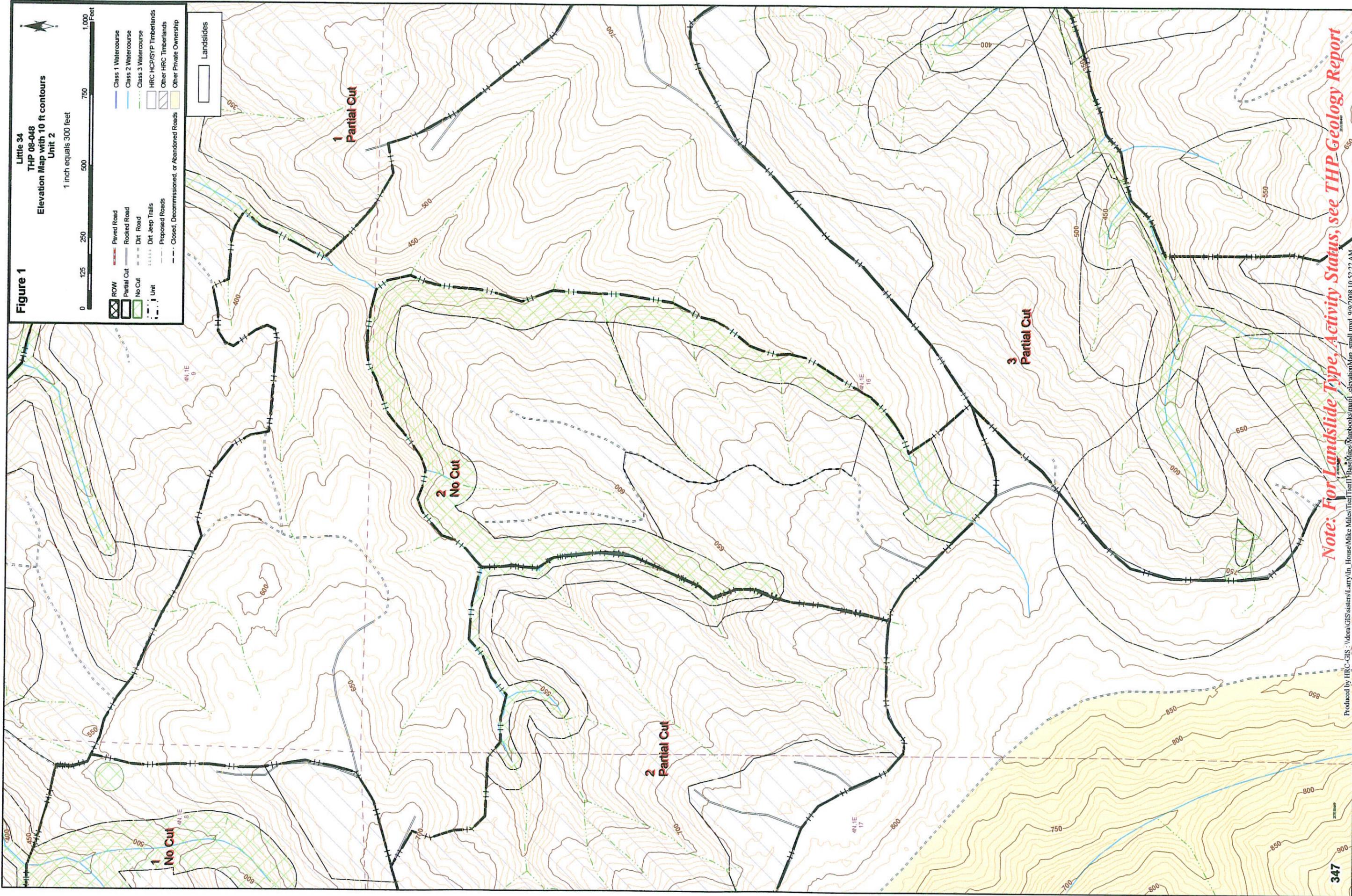
Figure 1

Little 34  
THP 08-048  
Elevation Map with 10 ft contours  
Unit 2

1 inch equals 300 feet



- |                |  |                        |
|----------------|--|------------------------|
| ROW            | Paved Road                                 | Class 1 Watercourse    |
| Partial Cut    | Rocked Road                                | Class 2 Watercourse    |
| No Cut         | Dirt Road                                  | Class 3 Watercourse    |
| Unit           | Dirt Jeep Trails                           | HRC HCP/SP Timberlands |
| Proposed Roads | Closed, Decommissioned, or Abandoned Roads | Other HRC Timberlands  |
| Landslides     |  |                        |



*Note: For Landslide Type, Activity Status, see THP-Geology Report*

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Figure 2

Little 34  
Trap 08-048  
Shalstab 10 mrs grid / Slope Class Map  
Unit 2

1 inch equals 500 feet

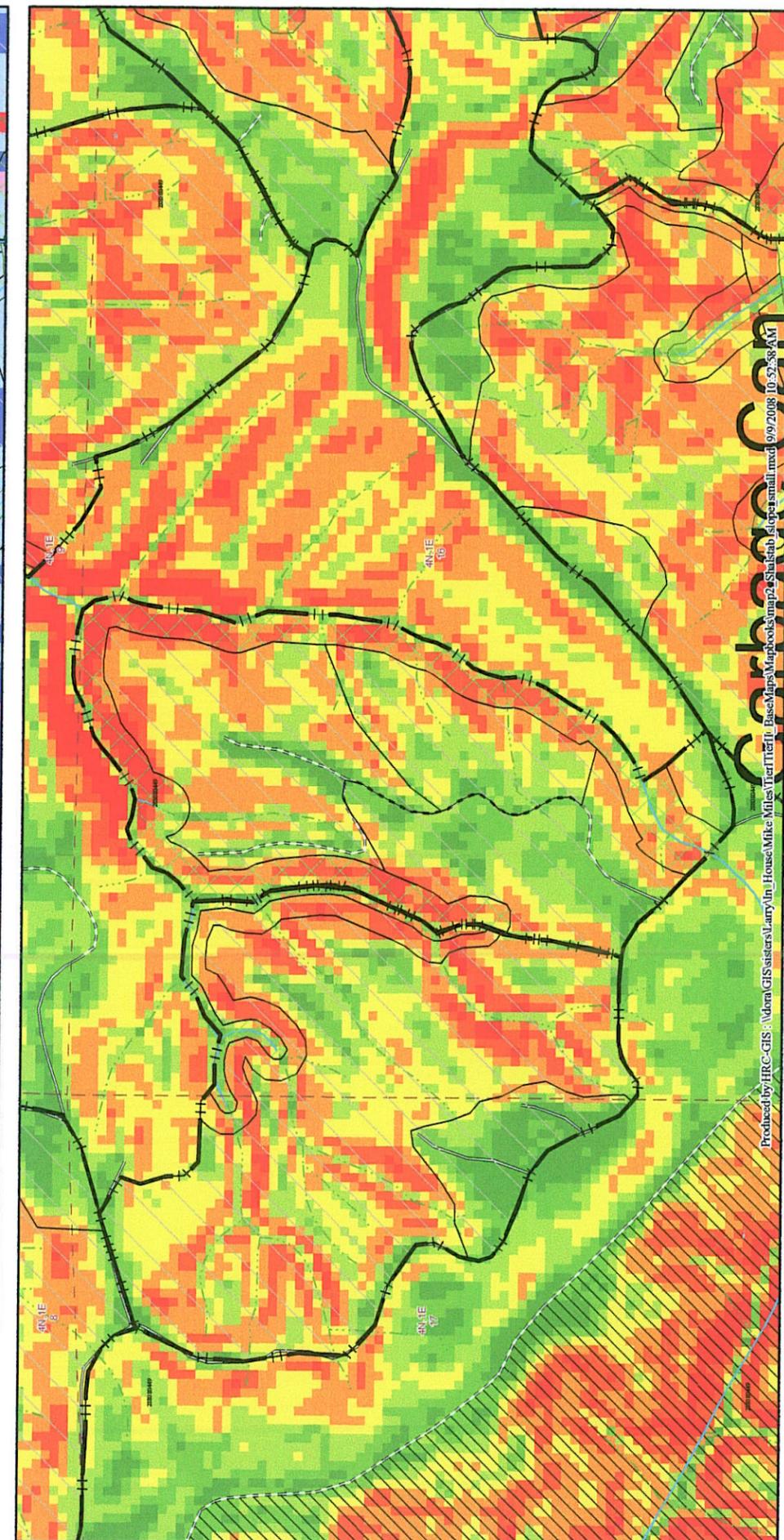
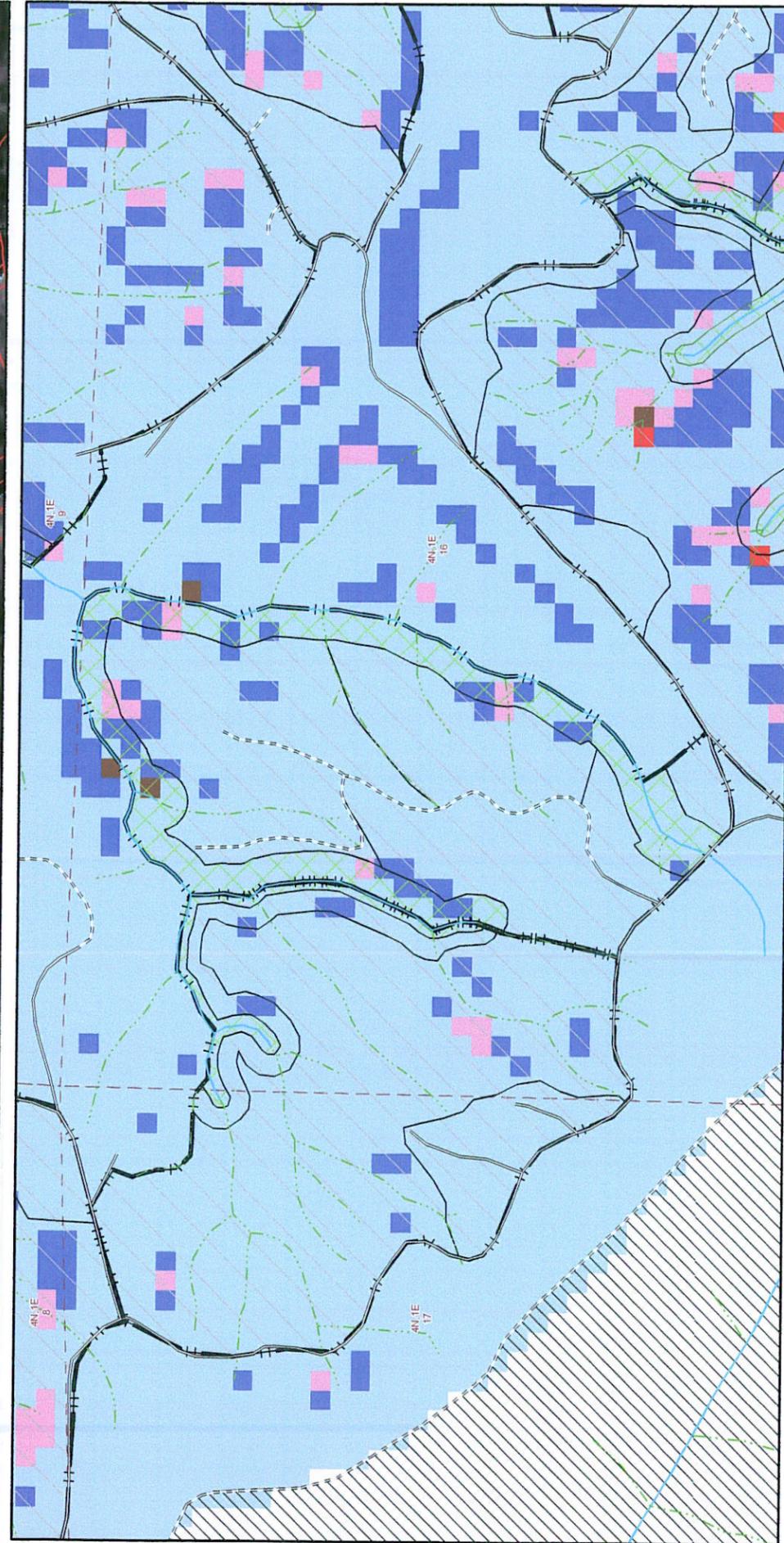
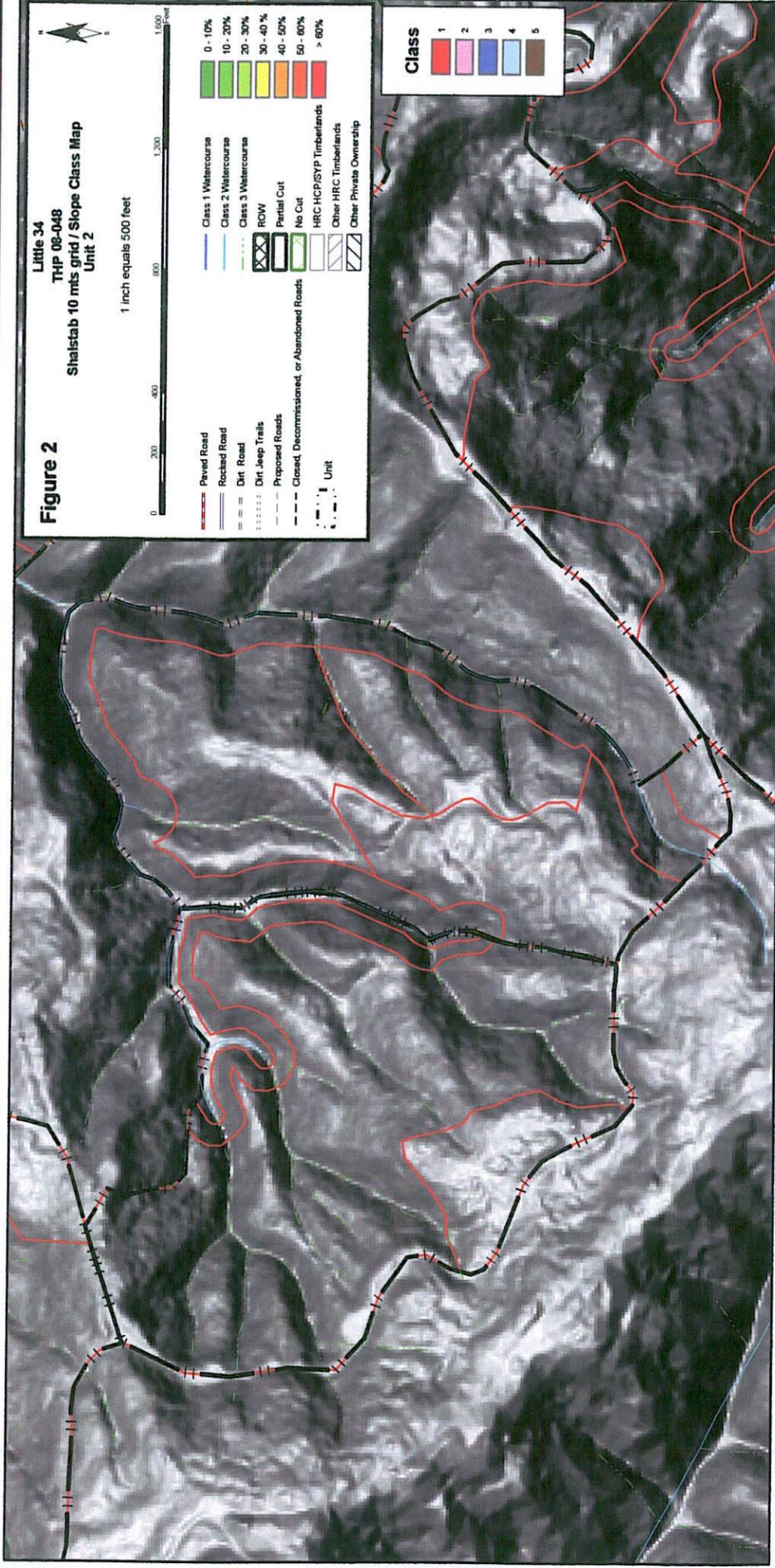
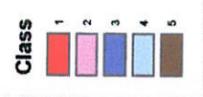
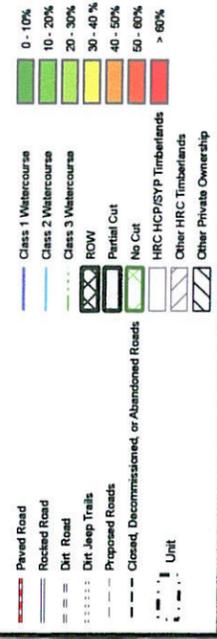
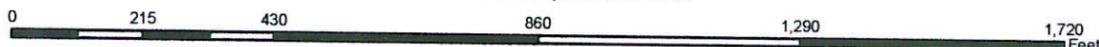


Figure 3

Little 34  
THP 08-048  
CGS Map Unit 2

1 inch equals 300 feet



- HRC HCP/SYP Timberlands
- Other HRC Timberlands
- Other Private Ownership
- ROW
- Partial Cut
- No Cut
- Unit
- Paved Road
- Rocked Road
- Dirt Road
- Dirt Jeep Trails
- Proposed Roads
- Closed, Decommissioned, or Abandoned Roads
- Class 1 Watercourse
- Class 2 Watercourse
- Class 3 Watercourse

- Legend**
- CGS Freshwater structure**
- FEATURE**
- anticline, approx. loc.
  - fault, approx. loc.
  - fault, concealed
  - thrust fault, approx. loc.
  - thrust fault, concealed
  - thrust fault, queried
  - lineament
- CGS Freshwater lines**
- TYPE**
- HHHH ig
  - ii
- CGS Freshwater LS**
- INIT\_TYPE, ACTIVITY**
- df, h
  - ds, d
  - ds, h
  - ef, d
  - ef, h
  - rs, d
  - rs, h
  - dss,
- CGS Freshwater symbols**
- <all other values>
- ACTIVITY**
- ah
  - d
- CGS Freshwater geology**
- UNIT**
- KJfm
  - KJfs
  - Q
  - Qfa?
  - Qt
  - Twl
  - Twl?
  - Twu
  - Ty
  - Ty?
  - u
- CGS Freshwater contacts**
- CONTACT**
- approximately located
  - certain location
  - queried location

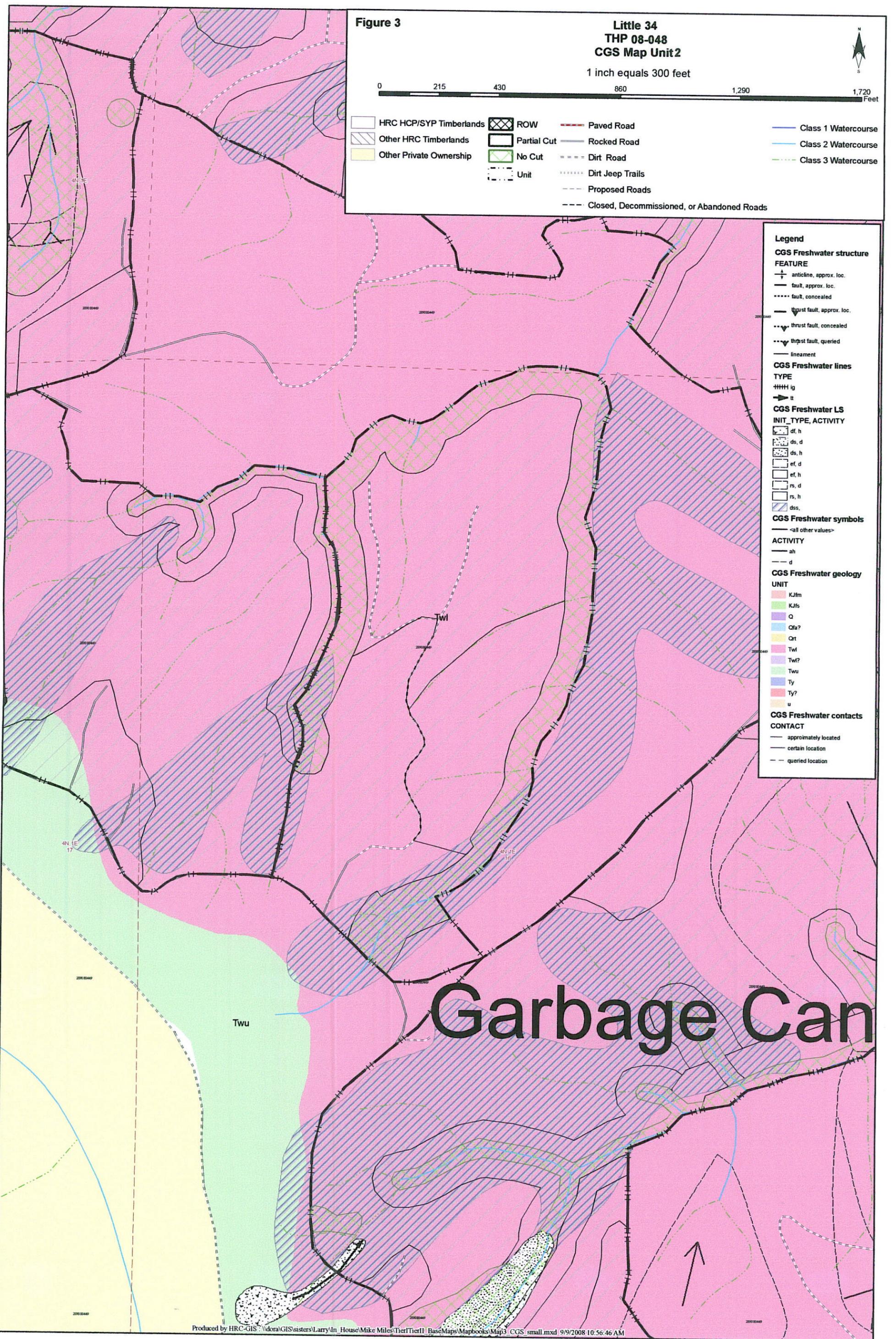


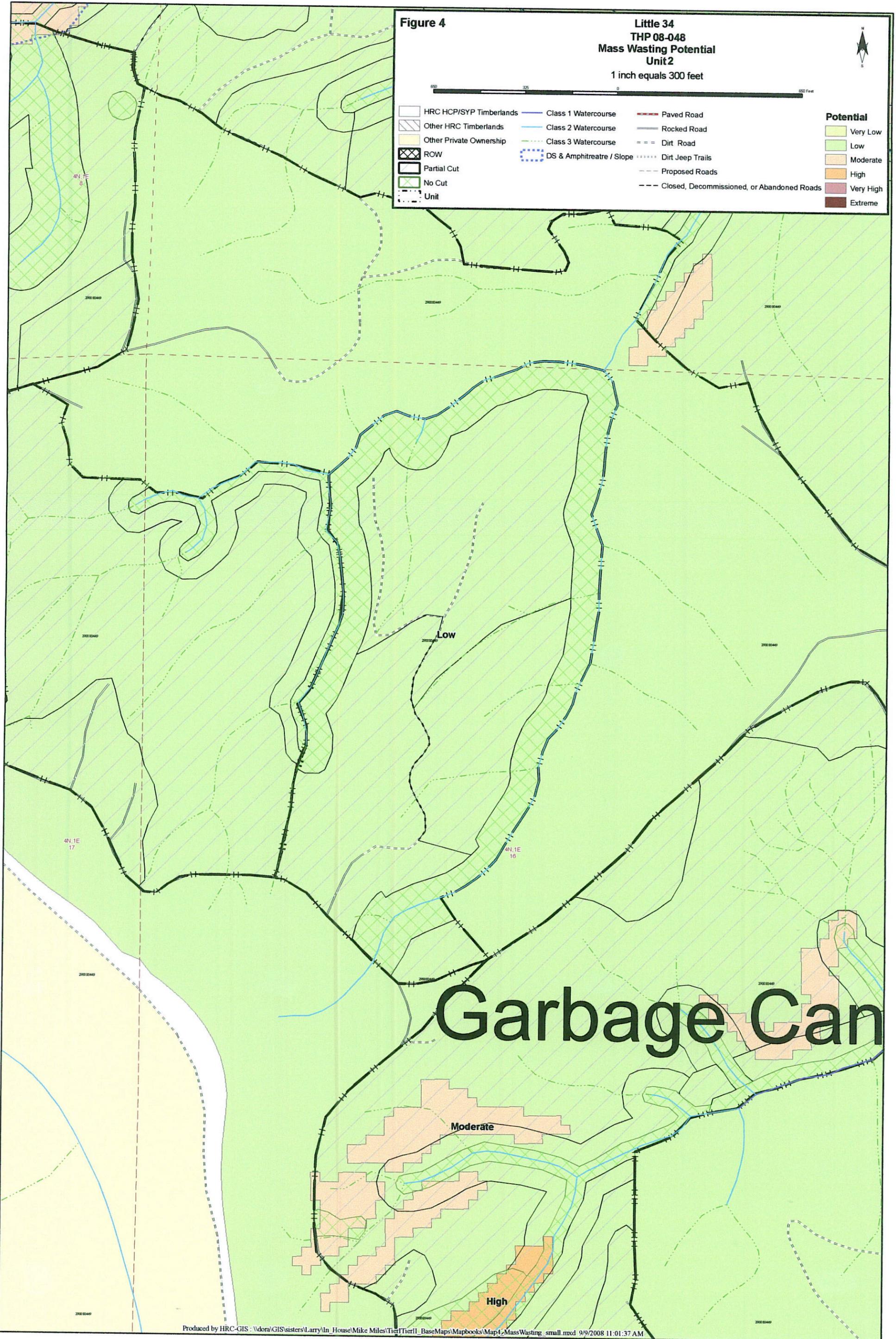
Figure 4

Little 34  
THP 08-048  
Mass Wasting Potential  
Unit 2

1 inch equals 300 feet



- |                         |                           |  |
|-------------------------|---------------------------|--|
| HRC HCP/SYP Timberlands | Class 1 Watercourse       | Paved Road                                 |
| Other HRC Timberlands   | Class 2 Watercourse       | Rocked Road                                |
| Other Private Ownership | Class 3 Watercourse       | Dirt Road                                  |
| ROW                     | DS & Amphitreatre / Slope | Dirt Jeep Trails                           |
| Partial Cut             | Proposed Roads            | Closed, Decommissioned, or Abandoned Roads |
| No Cut                  |                           |  |
| Unit                    |                           |  |
- Potential**
- Very Low
  - Low
  - Moderate
  - High
  - Very High
  - Extreme



Garbage Can

Figure 5

Little 34  
THP 08-048  
Aerial Photo Map - Unit 2

1 inch equals 300 feet



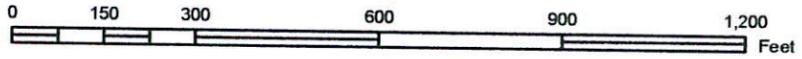
Garbage Can

Figure 6

THP 08-048  
Watershed Analysis Deep-Seated Landslide Inventory  
Unit 2



1 inch equals 300 feet



- |                         |                     |  |
|-------------------------|---------------------|--|
| HRC HCP/SYP Timberlands | Class 1 Watercourse | Paved Road                                 |
| Other HRC Timberlands   | Class 2 Watercourse | Rocked Road                                |
| Other Private Ownership | Class 3 Watercourse | Dirt Road                                  |
| ROW                     | Unit                | Dirt Jeep Trails                           |
| Partial Cut             |                     | Proposed Roads                             |
| No Cut                  |                     | Closed, Decommissioned, or Abandoned Roads |

- Crown of Deep-Seated Landslides
- Hazard for Reactivation or Acceleration of Movement**  
**REACT\_HAZARD**
- |  |                                     |
|--|-------------------------------------|
|  | N/A (landslides in grassland areas) |
|  | Very Low                            |
|  | Low                                 |
|  | Low to Moderate                     |
|  | Moderate                            |
|  | High                                |

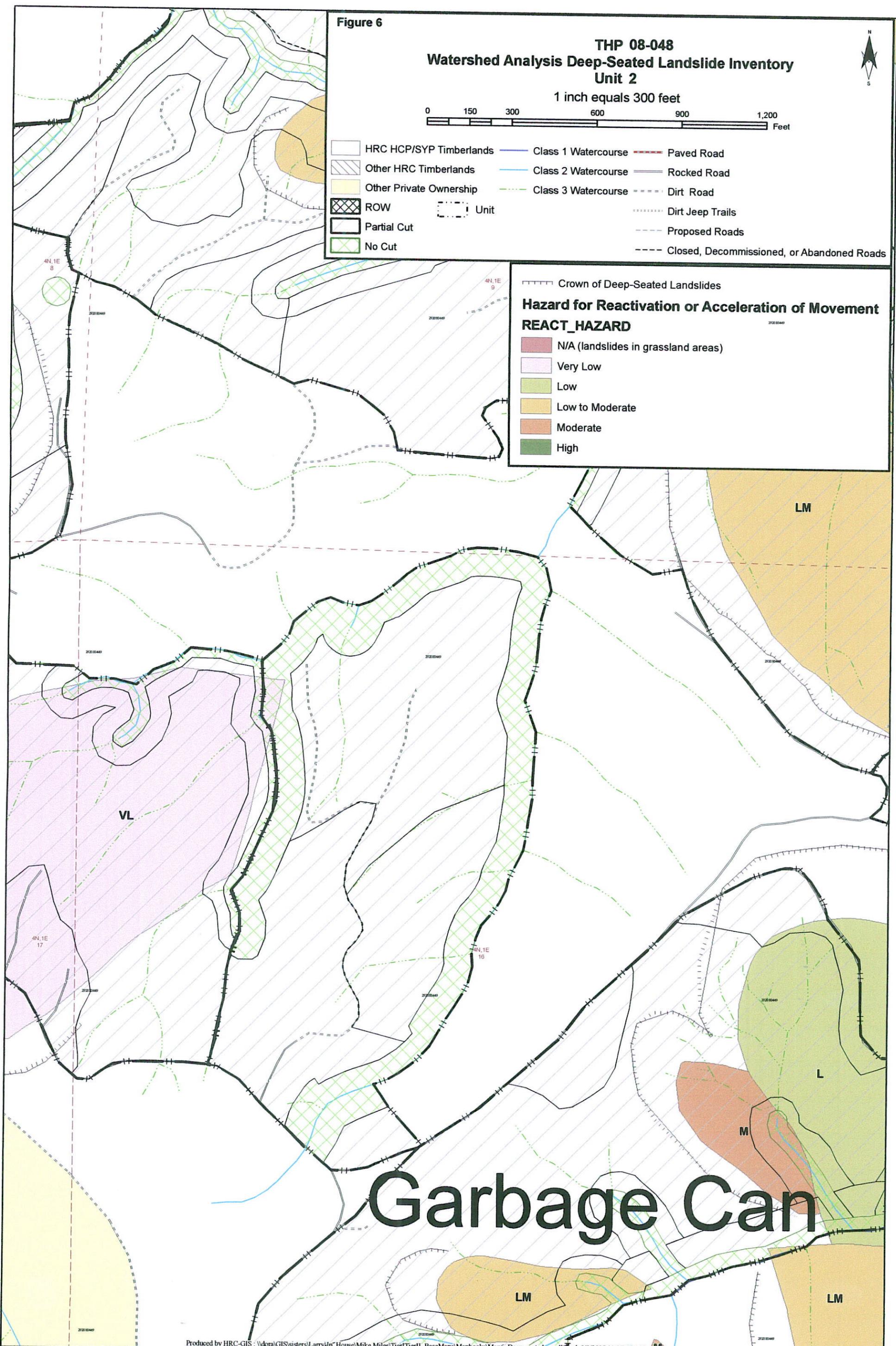


Figure 7

Little 34  
THP 08-048  
Road Map

1 inch equals 1,000 feet



- |                         |  |                |
|-------------------------|--|----------------|
| HRC HCP/SYP Timberlands | Class 1 Watercourse                        | Paved Road     |
| Other HRC Timberlands   | Class 2 Watercourse                        | Rocked Road    |
| Other Private Ownership | Class 3 Watercourse                        | Dirt Road      |
| ROW                     | Dirt Jeep Trails                           | Proposed Roads |
| Partial Cut             | Closed, Decommissioned, or Abandoned Roads |                |
| No Cut                  |  |                |
- 
- |                |
|----------------|
| Stormproofed   |
| Upgraded       |
| Decommissioned |

