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McKay Tract Joint Timber Management Plan
Prepared for
County of Humboldt and Green Diamond Resource
Company

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Date

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Timber Management Guide

1. Current Property Owner

Green Diamond Resource Company
California Timberlands Division
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(707) 668-4400

2. Project Description

The Green Diamond Resource Company (GDRCo) is proposing to convey an approximately 1,002 acre tract of land to the County of Humboldt known as the “Phase 1 portion of the proposed McKay Tract Community Forest” or Phase 1 lands (Figure 1). This conveyance will result in the division of six Assessor parcels into Assessor parcels containing less than 160 acres of lands zoned as Timber Production Zone (TPZ). California Government Code Section 51119.5 specifies that parcels zoned as TPZ may not be divided into parcels containing less than 160 acres unless the original owner prepares a joint timber management plan prepared or approved as to content by a registered professional forester for the parcels to be created. Per California Government Code Section 511014(i) “Parcel” means that portion of an assessor’s parcel that is timberland, as defined. In accordance with the applicable California Government Code Sections, this Joint Timber Management Plan (JTMP) is being prepared for the six Assessor Parcels which will contain less than 160 acres of TPZ subsequent to the conveyance described above.

The purpose of this JTMP is to demonstrate that it will be possible to manage the resulting parcels for ongoing timber production. The core requirements that must be demonstrated are that the resulting parcels will be adequately stocked with commercial timber, have road access to the timber stands and that there is a feasible logging system that could be employed to harvest the timber. The components of the JTMP which document the viability of management include the “Timber Management Guide” and the “Timber Management Plan.” The Timber Management Guide provides a description of the land and its timber management potential. The Timber Management Plan identifies the joint access to the parcels, easements, rights-of-way and the minimum stocking requirements described in the Forest Practice Rules.

The Phase 1 lands are comprised of portions of existing legal parcels and Assessor parcels however the shape of the Phase 1 lands was developed with the intent of creating a viable management unit for timber production. The boundaries of the Phase 1 lands were developed primarily by following existing hydrologic features, major ridgelines and roads, and therefore do not coincide with existing legal parcels or Assessor parcels. The Phase 1 lands include portions of 28 Assessor parcels, however only 6 of the

McKay JTMP

Assessor parcels will: 1) be divided and 2) result in the creation of parcels with less than 160 acres of TPZ land. These 6 parcels will be subject to the requirements of the JTMP.

This JTMP assumes that there will be three Management Units to address the division of the 6 Assessor Parcels) and comply with the requirements of California Government Code Section 51119.5.

Unit 1 is a management unit created solely for the purpose of satisfying the JTMP requirements. Unit 1 will be managed as part of the larger Phase 1 property that will be owned by the County. The entire (1,002 acre) property will be an undividable unit (due to deed restrictions) that will provide public access, recreation and timber products. All matters of record (i.e. easements, right-of-ways, etc.) which are appurtenant to the entire Phase 1 property, and implicitly to Unit 1, will provide deeded access in conjunction with the proposed reciprocal access easement.

Unit 2 exists primarily in APN 17-032-009 with a small section in APN 17-031-007. APN 17-032-009 was formerly (prior to December of 2013) composed of two separate APNs that were merged: APN 17-32-006 which was a sub-standard TPZ parcel (<160 acres of TPZ) prior to the merge and APN 17-32-007 which did not have any land zoned TPZ. The total acreage of Unit 2 is 34.5 acres.

Unit 1, which is the largest management unit (134.2 acres), will be a subset of the County owned Phase 1 lands. Unit 2 (34.5 acres) and Unit 3 (88.0 acres) on the west side of the Phase 1 lands will be retained by GDRCo. Units 2 and 3 are not contiguous and fall within different Tax Rate Areas, and thus need to be separate management units and APNs.

Portions of APNs which are zoned TPZ and are split by the conveyance will be merged, where possible, to the nearest adjacent APN to form APNs with no less than 160 acres, which are not subject to the provisions of the JTMP. The lands retained by GDRCo on the east side of the Phase 1 lands will be merged with existing GDRCo lands to form APNs that exceed 160 acres of TPZ (shown as GDR_Merge_81005 and GDR_Merge_81058 in the legend of Figure 2).

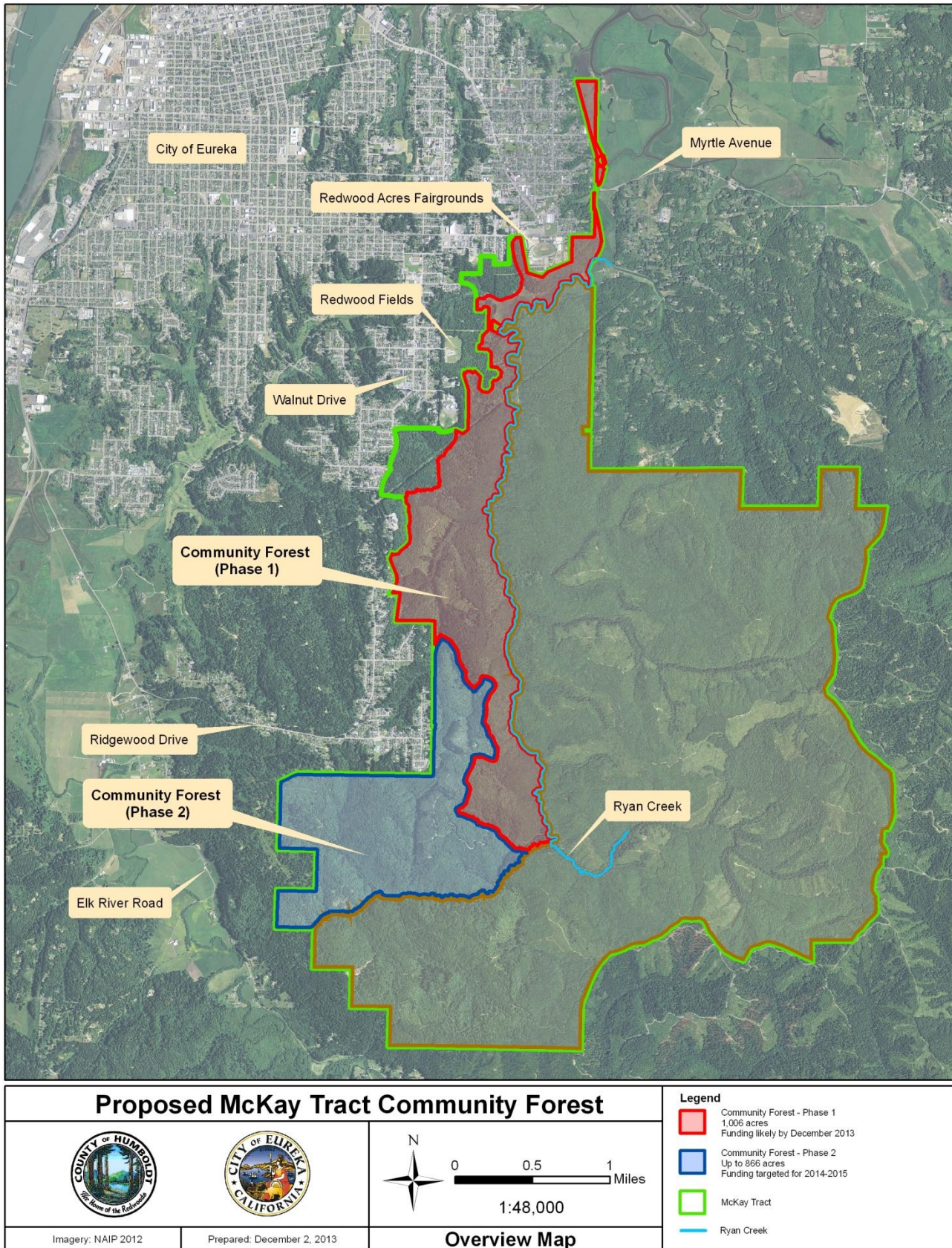


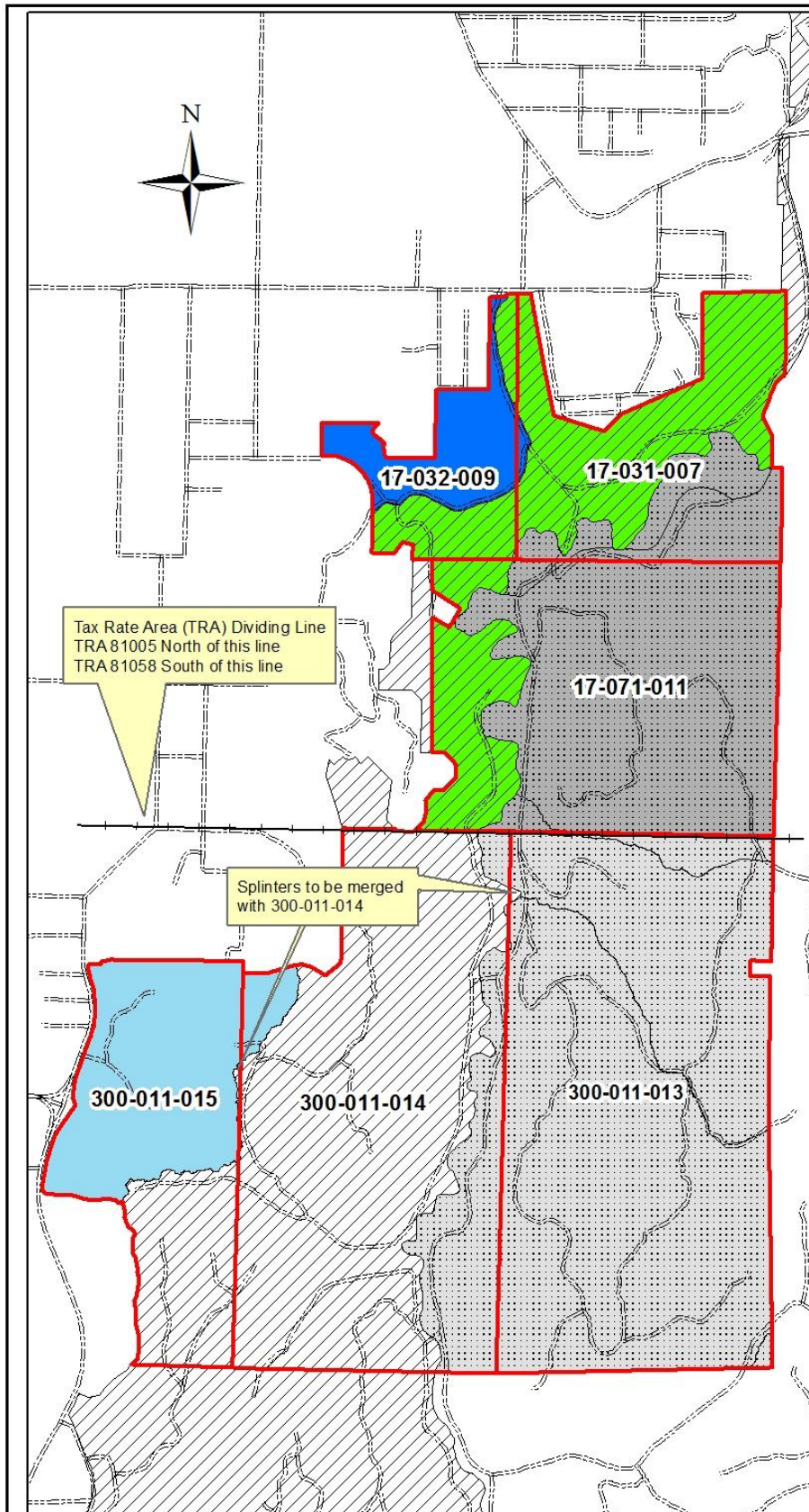
Figure 1. Overview of McKay Tract Phase 1 Lands

McKay Tract JTMP Assessor Parcels & Management Units

Depiction of Management Units on McKay Tract subject to JTMP requirements, i.e. APNs that were divided and resulted in <160 acres of TPZ.

Unit 1 was created for this JTMP but will be managed as part of the entire Phase 1 lands, not as a stand alone management unit.

Small splinter parcels in 013 and 015 will be merged into 014.



Legend

JTMP

- Assessor Parcels in JTMP Area
- McKay Phase 1
- McKay Access

JTMP Management Units

- Unit 1, HumCo
- Unit 2, GDRCo
- Unit 3, GDRCo

Merge Units

- GDR_Merge_81005
- GDR_Merge_81058

0 600 1,200 2,400 Feet

Date: 3/18/2014

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Figure 2. Portion of Phase 1 lands subject to JTMP requirements.

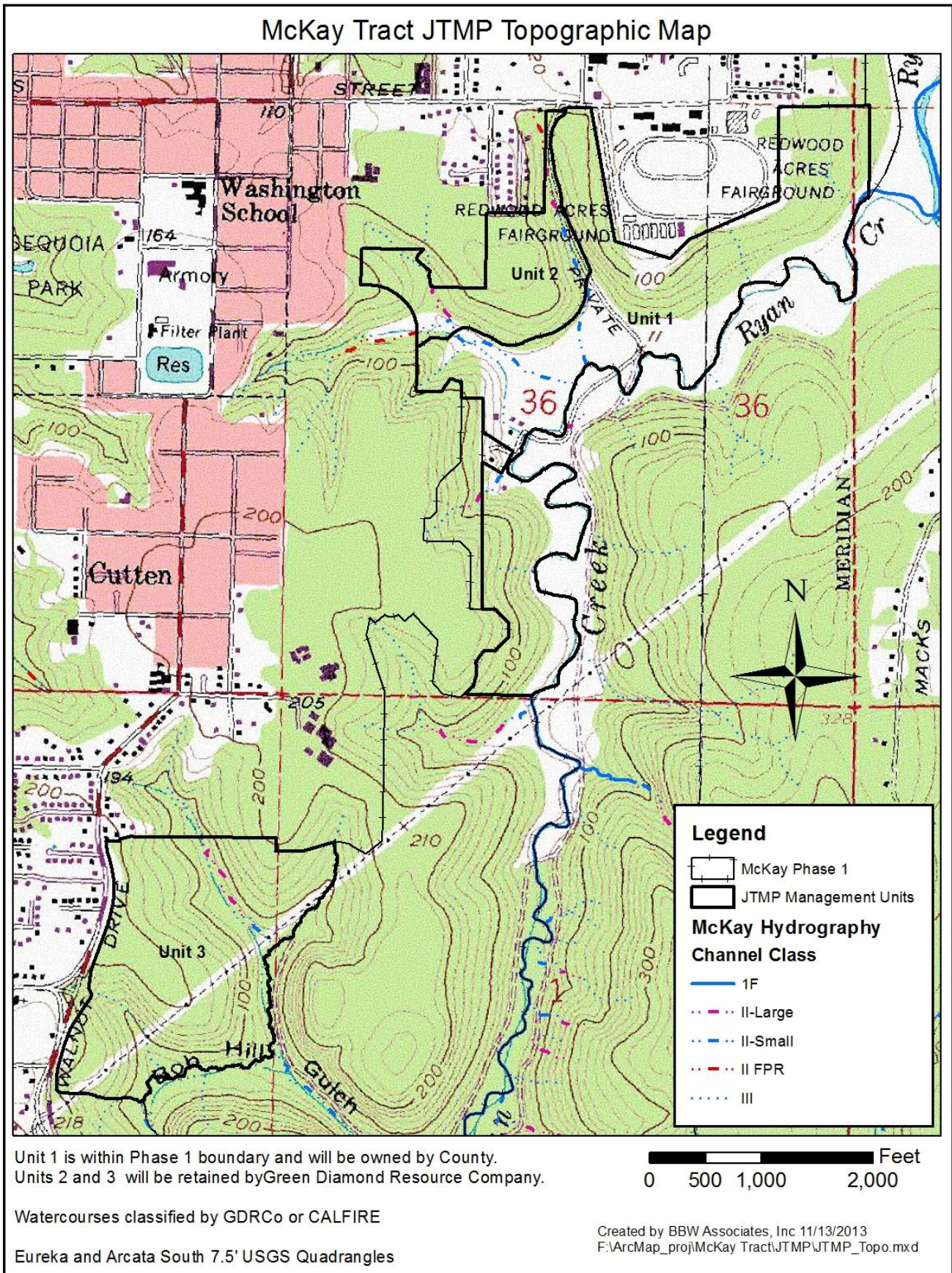


Figure 3. Topographic map of JTMP area.

3. Legal Description

Management Unit 1 is located in portions of APN 17-32-006, 17-71-011, 17-31-007. APN 17-32-006 is zoned TPZ; APN 17-71-011 is zoned TPZ; APN 17-31-007 is zoned TPZ, TPZ/R and AE-60/W,F,R, T. The management unit is located in Section 36 Township 05N, Range 01W, HB&M. The underlying Legal Parcel IDs are 0006-101 BP and 2013-11172. Management Unit 1 is located within the Eureka and Arcata South 7.5' USGS Quadrangles (Figure 4).

Management Unit 2 is located in APN 17-32-006 which is zoned TPZ and APN 17-32-007 which is zoned R-1 and R-4-Q. The management unit is located in Section 36 Township 05N, Range 01W, HB&M. The underlying Legal Parcel IDs are 0006-101 BP and 2013-11172. Management Unit 2 is located within the Eureka 7.5' USGS Quadrangle.

Management Unit 3 is located in APNs 30-011-015 and 30-011-014. APN 30-011-015 is zoned TPZ, R-1, R-4, and C-1; APN 30-011-014 is zoned R-1*-Q/GO and TPZ. The management unit is located in Sections 1 and 2 Township 04N, Range 01W, HB&M. The underlying Legal Parcel IDs are 0149-273BD and 2013-11172. Management Unit 3 is located within the Eureka 7.5' USGS Quadrangle.

Some of the Assessor Parcel Numbers may change for Units 1 and 2 as they are currently (December 2013) being assigned new numbers by the Assessor. This change in APN will be addressed through an amendment to the JTMP or other appropriate legal remedy.

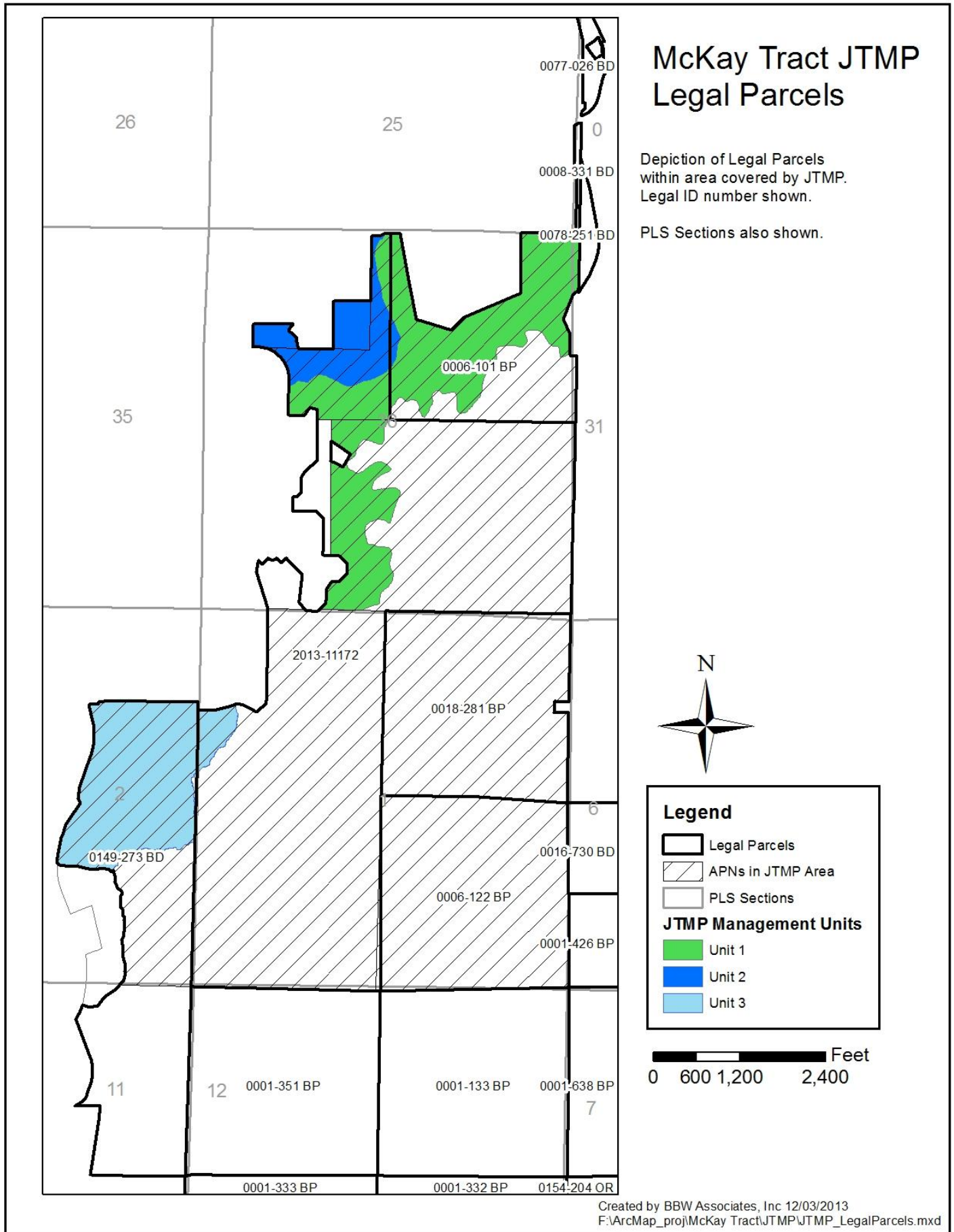


Figure 4. Legal Parcels within JTMP area.

4. Location and Access

The JTMP is located immediately east of Cutten, which is a neighborhood on the southeast side of Eureka, CA. Access to Units 1 and 2 is from Harris Street onto Green Diamond's permanent haul road known as the "R-Line." A reciprocal access easement has been developed which will provide the County and GDRCo with deeded access across each other's lands for timber harvest related activity along the portion of the R-Line and R-2 Road that are within or adjacent to the Phase 1 lands. Details of this agreement are contained in an easement description that will be recorded with the County at close of escrow. All roads within the Phase 1 area were assessed by Pacific Watershed Associates (PWA) in 2013 as to current condition and recommendations for treatment (Figure 5).

The R-1 and R-2 roads are rock surfaced spur roads that provide access to the northern portion of Unit 1 and all of Unit 2. Both roads are <5% gradient and are suitable for hauling logs. Both roads were found to be in need of minor upgrading to stream crossing culverts by the PWA review.

The R-4 line accesses the southern portion of Unit 1. The R-4 road is a nearly flat road along the west side of Ryan Creek on a terrace above the creek. This road needs minor upgrades to be used; the road will need to be brushed and have numerous small stream crossings upgraded to current forest practice rules standards. A bridge across Ryan Creek also needs to be re-installed on the existing footings.

Access to the northern portion of Unit 3 is via Cedar Street. Access to the western and southern portions of Unit 3 is from Walnut Drive (WD-1 and WD-1.5). All alignments are suitable for hauling logs.

Any major road upgrades or new road construction should be permitted under a THP/NTMP or will be subject to the Grading Ordinance of Humboldt County. A separate permit must be obtained from the California Department of Fish and Wildlife under their 1600 program for any project that disturbs the bed or banks of a watercourse such as installing/upgrading stream crossings.

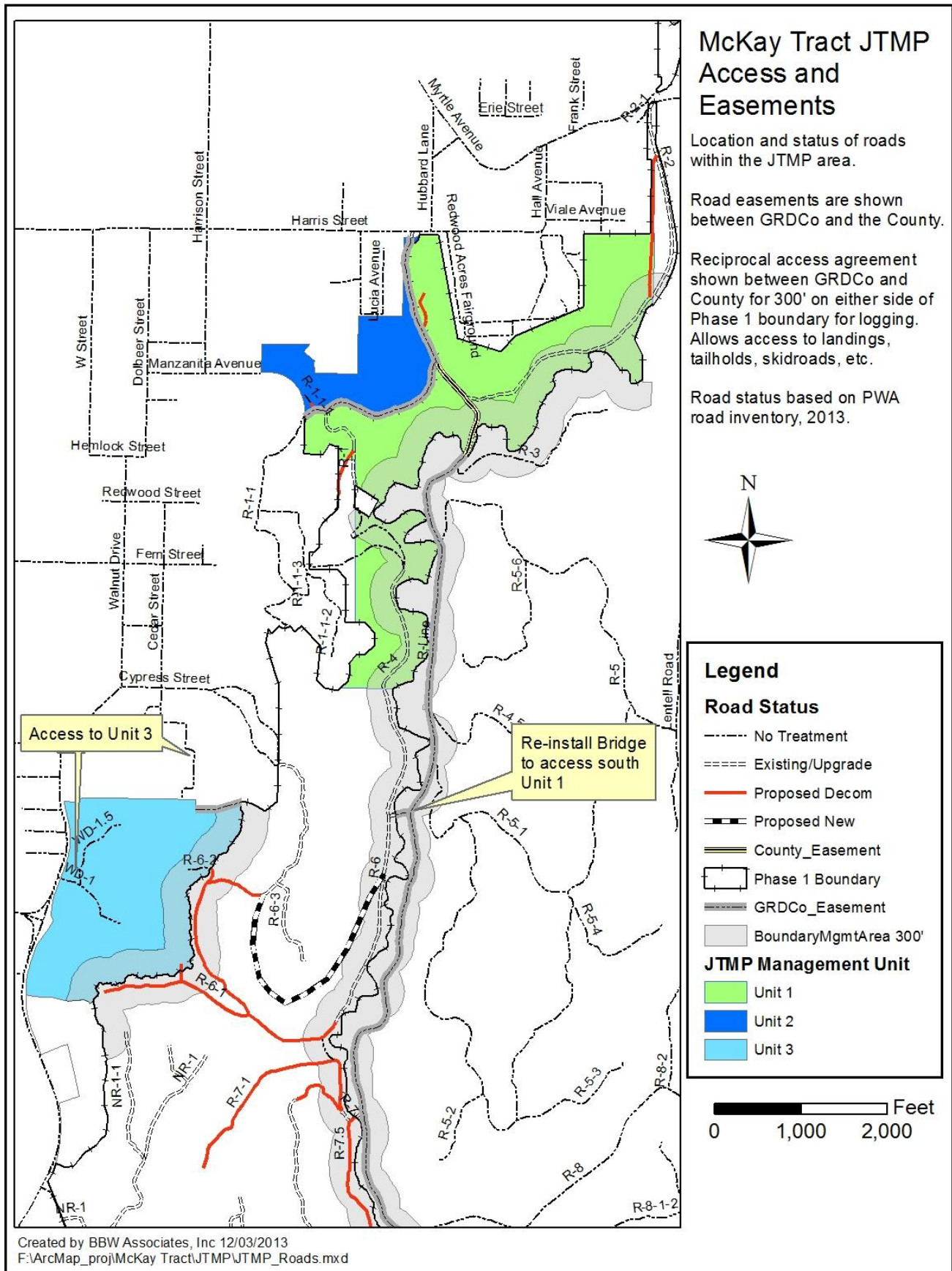


Figure 5. Roads and easements within JTMP area.

5. Physical Description

Geologic Units

There are three geologic units within the JTMP area, described as follows (Figure 6):

Undifferentiated Wildcat Group (QTW)– Consists predominantly of weakly to moderately well lithified marine sandstone, siltstone, mudstone, and minor conglomerate (McLaughlin et al. 2000).

Quaternary Terrace Deposits (Qt) – Terrace deposits consist of Holocene and Late Pleistocene undifferentiated non-marine terrace deposits. Specifically, Qt consists of dissected and uplifted gravel, sand, silt and clay deposited in fluvial settings. In addition, Qt consists of minor shallow intertongues and warped tilted beds of Late Pleistocene Hookton Formation (McLaughlin et al. 2000).

Quaternary Alluvial Deposits (Qal) -Alluvial deposits are found along the low elevation areas of the main stem reaches of Freshwater Creek and the Ryan Slough planning watershed. These deposits consist of Holocene clay, silt, sand, gravel and boulders deposited in stream beds, alluvial fans, terraces, floodplains and ponds (McLaughlin et al. 2000).

Soil types

There are four soil types within the JTMP area as described as follows (UC Davis, 1965) (Figure 7):

920 (Empire)- Brown/yellowish brown in color, Moderately acid/strongly acid, fine textured Loam/silt loam derived from soft sedimentary rock. Soil depths range from 40-70 inches. Timber site class II.

914 (Larabee)- Grayish brown/strong brown in color, Slightly acid/strongly acid, fine textured Loam/clay loam derived from soft sedimentary rock. Soil depths range from 40-70 inches. Timber site class II.

Ru7 (Russ series)- Russ fine sandy loam, 0-3 percent slopes.

Ru8 (Russ series)- Russ fine sandy loam, 3-8 percent slopes.

The Russ series consists of deep, moderately well drained coarse silty, alluvial soils developed on small flood plains of streams draining soft sandstone, siltstone, claystone and conglomerate. There is no timber site class for this soil type, but data from GDRCo indicates that these are site class II soils where conifers are present.

McKay JTMP Geologic Map

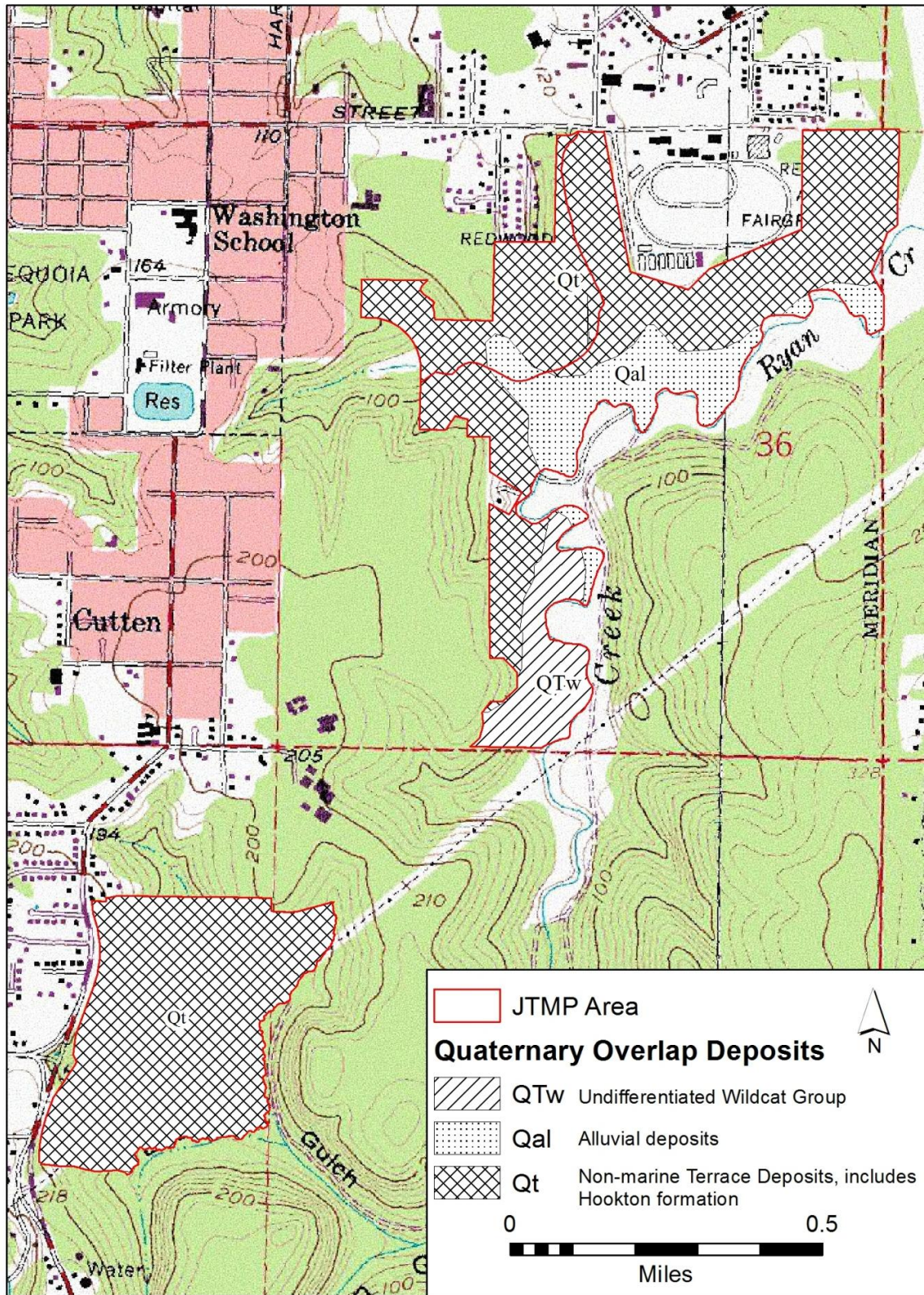


Figure 6. Geologic units in the JTMP area from McLaughlin et al. (2000).

McKay JTMP Soils Map

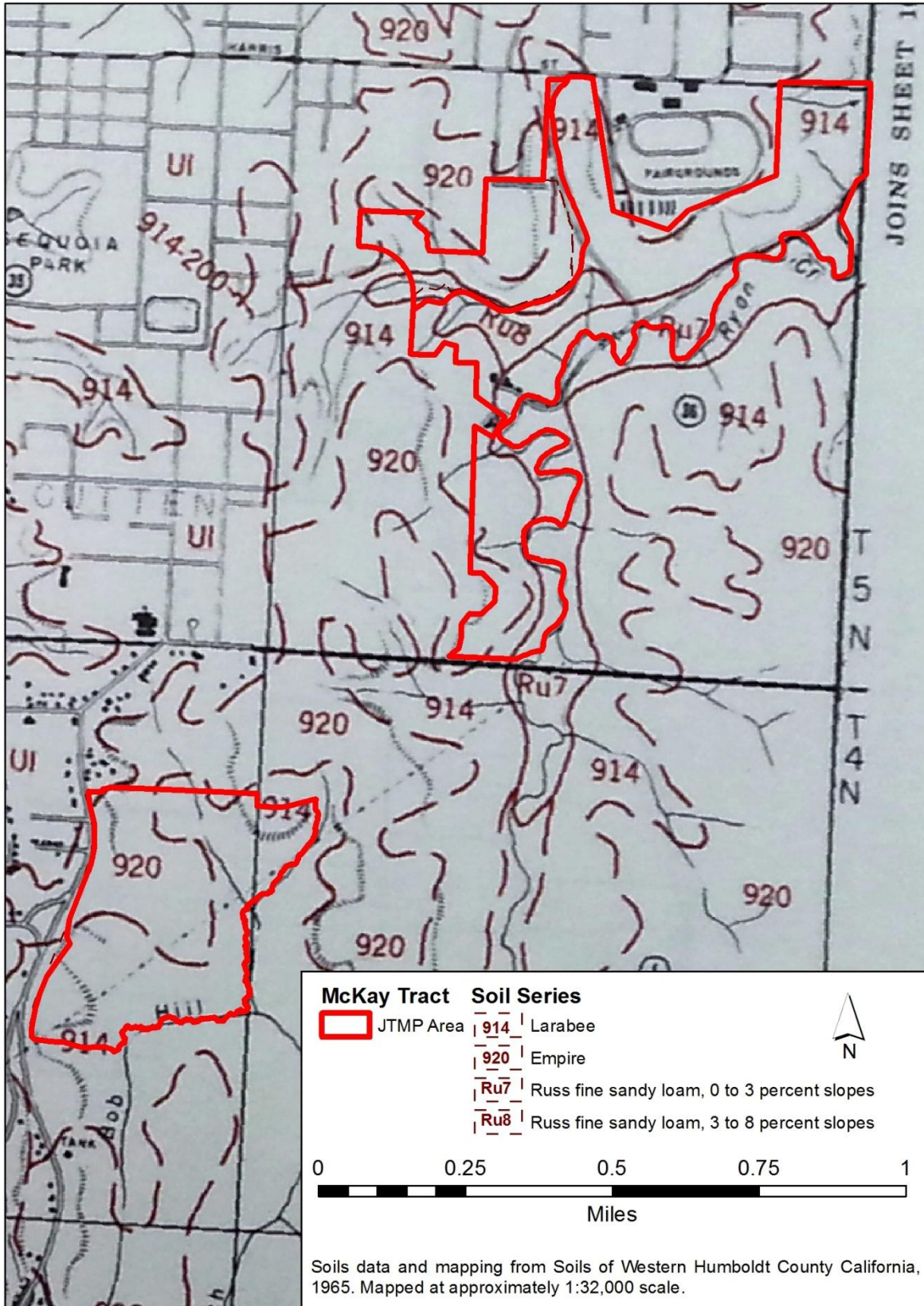


Figure 7. Soil types in the JTMP area (UC Davis 1965).

6. Timber Stand Description and Stocking

The JTMP area is 261.5 acres, split into 3 Units. Unit 1 is 140.3 acres, of which 111 acres is composed of conifer forest and 29 acres is non-forested marsh and powerline corridor. Unit 2 is 34.5 acres of which 33.7 is conifer forest and 0.8 acres is non-forested powerline corridor. Unit 3 is 88.0 acres, of which 82.0 acres is conifer forest and 6.0 acres is non-forested powerline corridor (Figure 8).

Description of Management Unit 1: Unit 1 is 79% Redwood, 14% Sitka Spruce and 7% Red Alder. The average basal area of conifer is 314 square feet and hardwoods average 21 square feet. Diameters range from 6-54" dbh with an average dbh of 14". The average stand age is 30 years old.

Management Unit 1	
Average Conifer Diameter	14 inches
Average Hardwood Diameter	8 inches
Average conifer basal area/acre	314 square feet
Average hardwood basal area/acre	21 square feet
Conifer volume/acre	39 MBF net
Hardwood volume/acre	1.4 MBF

Description of Management Unit 2: Unit 2 is 89% Redwood, 4% Sitka Spruce and 7% Red Alder. The average basal area of conifer is 215 square feet and hardwoods average 15 square feet. Diameters range from 6-63" dbh with an average dbh of 20". The average stand age is 38 years old.

Management Unit 2	
Average Conifer Diameter	24 inches
Average Hardwood Diameter	11 inches
Average conifer basal area/acre	215 square feet
Average hardwood basal area/acre	15 square feet
Conifer volume/acre	30 MBF net
Hardwood volume/acre	1.8 MBF

Description of Management Unit 3: Unit 3 is 75% Redwood, 8% Sitka Spruce, 7% Douglas-fir and 10% Red Alder. The average basal area of conifer is 220 square feet and hardwoods average 24 square feet. Diameters range from 4-45" dbh with an average dbh of 16". The average stand age is 36 years old.

Management Unit 3	
Average Conifer Diameter	17 inches
Average Hardwood Diameter	10 inches
Average conifer basal area/acre	220 square feet
Average hardwood basal area/acre	24 square feet
Conifer volume/acre	41 MBF net
Hardwood volume/acre	2.0 MBF

7. Cruise Methods and Volume Determination

This report relies exclusively on data provided by GDRCo as to the current condition of the property. GDRCo provided stand tables of initial timber inventory volumes (and site index values) by individual stand location as well as GIS shapefiles of stand boundaries and management units. The stand-based inventory was derived from variable radius plots installed between 2005 and 2010 and then grown forward to January 1, 2011 (personal communication, Craig Compton, Lands Manager GDRCo). However, not all stands had inventory plots, and in these cases stand summaries had been extrapolated from other unknown but presumably similar stands. BBW then used the FORSEE growth and yield program to grow the inventory data forward to January 1, 2013.

BBW qualitatively reviewed the inventory summaries and evaluated stand conditions during field reviews of the Phase 1 property, but did not perform an independent quantitative review of the inventory data due to limited time and budget for this JTMP. There are no statistics associated with the stand summaries presented here, so there is no way to assign error bars to the volume figures presented. The most reliable way to determine the actual yields which could be expected from the McKay tract is to install a new inventory with plots in every stand. This strong caveat notwithstanding, the estimates of volumes per acre by species by stand, the stand age class, site index, and species mix appear to be reasonable, based on our field review and work in the local area.

Due to the way in which the data was delivered to BBW by GDRCo it was not possible to produce standard stand summary tables for each management units by species and diameter class. However, it is clear from the data and the qualitative review of the field conditions that each management unit within the JTMP is well stocked with commercial timber and easily meets the minimum stocking standards described in the Coast District Forest Practices Rules.

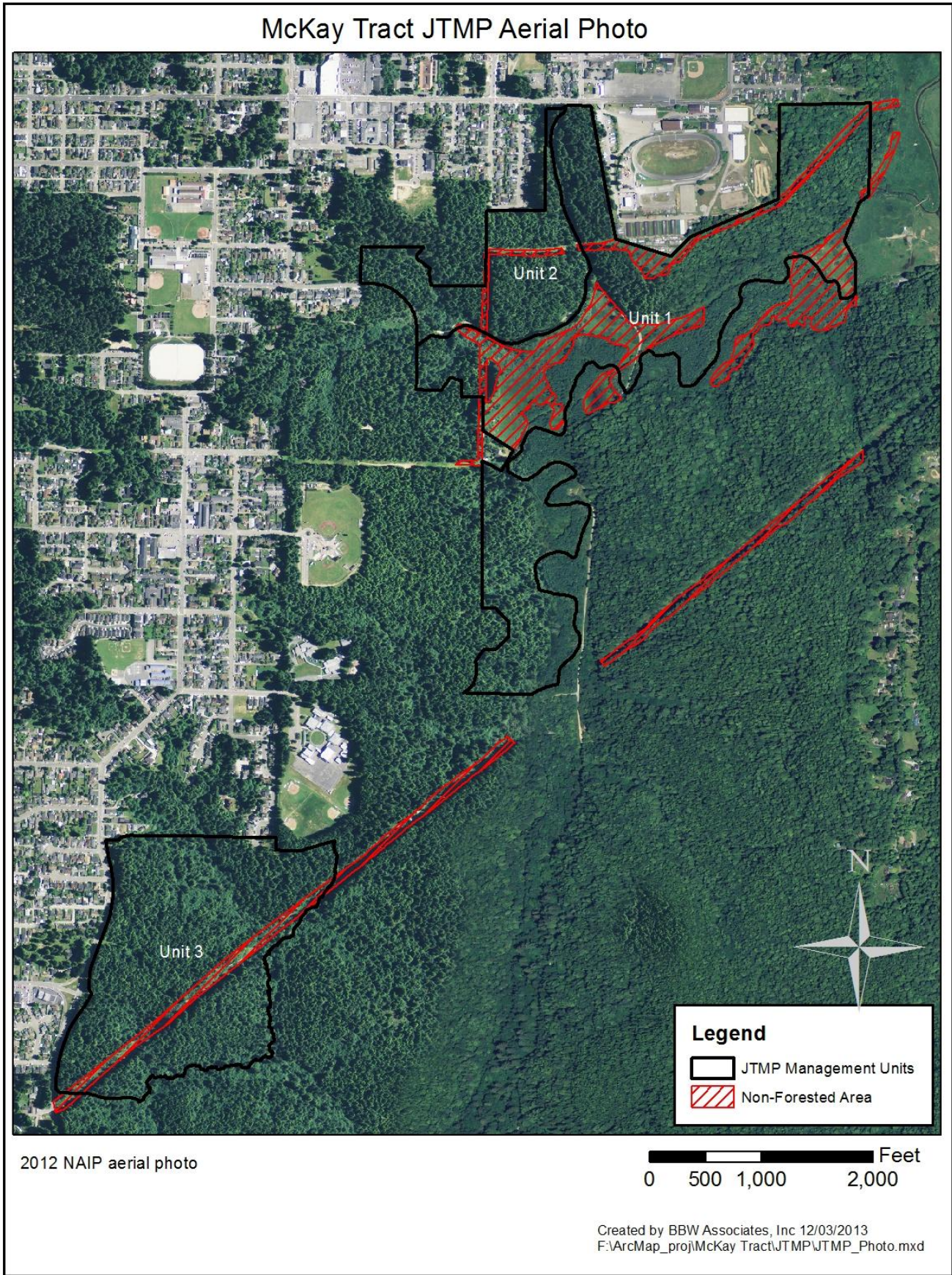


Figure 8. Aerial Photo of JTMP

8. Management Objectives

The goals of the landowners in long-term forest stewardship are:

- Protect, maintain and restore the many benefits of a healthy forest ecosystem including watershed protection, wildlife habitat, aesthetics and soil productivity.
- Implement ecologically sensitive and sustainable forest management that builds volume and value on the land and yields periodic income.
- Conduct silviculture and logging practices that are compatible with adjacent urban land-use and for Unit 1, public access.
- Improve functional wildlife habitat for late successional forest dependent species.
- Upgrade and maintain the road network to improve water quality and aquatic habitat.
- Reduce the potential for destructive wildfire to damage forest resources & nearby structures.

9. Harvest Methods

Management units 1 and 2 may be harvested using ground based tractors. The area was previously tractor logged and the existing network of skid trails may be re-used in most cases. In the small areas that may be too steep for tractor logging (>50% slope), timber may be yarded using “tractor long-lining” to the existing skid trails. The existing skid trail network leads back to an existing network of seasonal truck roads and landings which are also re-useable.

Management unit 3 may be logged using ground based tractors and/or cable yarders. There is access to the ridges on the west side of Unit 3, but no road access to the creek side areas on the lower portions of Unit 3. The slopes in Unit 3 are <50%, except in small areas adjacent to watercourses. Tractor logging could be conducted using adverse skidding to the ridgetop locations and long-lining of the near-stream areas. Alternately, Unit 3 could be cable yarded using the ridgetop locations for yarder sets. The 300’ reciprocal access agreement along the Phase 1 boundary could be used for establishing tail-holds if necessary.

All logging will be able to be accomplished within the designated unit boundaries, except for the south end of Unit 1. The seasonal truck road that accesses the south end of Unit 1 (R-4) passes through Phase 1 lands before joining the R-1 primary haul route. A bridge will also need to be installed across Ryan Creek on the existing footings in order to access the south end of Unit 1. Since all matters of record (i.e. easements, right-of-ways, etc.) and the proposed reciprocal access easement apply to the entire Phase 1 property, access to Unit 1 is implicit with management of the Phase 1 property.

10. Timber Harvest History

Old-Growth timber in McKay was logged between 1884 and 1950. Approximately two-thirds of the second growth timber was commercially thinned between 1968 and 1983. Second-growth timber was clearcut between 1970 and 2013.

11. Growth and Yield

The volume of timber, as measured in board feet per acre, may be estimated using yield tables from Lindquist and Palley (1963). According to the Green Diamond inventory data, management units 1-3 have an average site index of 120 feet at 50 years of age, which is equivalent to 160 feet at 100 years of age. It was necessary to convert the 50 year site index values to 100 year values in order to use the Lindquist and Palley Empirical Yield Tables. Another conversion is that Lindquist and Palley reports board-foot volumes using the International ¼” log rule, which can be approximately converted to the Scribner log rule using a multiplier of 0.8.

The table below shows the predicted volume per acre of timber at 10 year intervals that could be expected on Management Units 1-3 until the stands reach age 100 if no timber harvest occurred.

Table 1. Board Foot Volume per acre yields and 10 year growth rates (stands with 200 and 300 sq.ft./acre BA), for trees of all species over 10.5 inches DBH to 8 inch top inside bark above 1.5 foot stump (Lindquist and Palley, 1963). All volumes are Net Board Foot using the Scribner rule.

Age	Total Yield (site 160)	Net 10 Year Growth	
	Net Scribner volume (board feet per acre)	200 BA/acre	300 BA/acre
20	5,600	16,274	21,485
30	15,680	15,316	20,332
40	29,520	14,358	19,178
50	44,240	13,400	18,026
60	59,600	12,442	16,872
70	75,600	11,483	15,718
80	91,440	10,525	14,566
90	107,040	9,566	13,412
100	121,840	8,608	12,258

12. Silvicultural Recommendations

A system of silviculture will need to be developed by the future landowners which meets their management objectives, is compatible with adjacent land uses and is legal under the Forest Practice Rules. There are two basic types of silvicultural systems; even-aged and uneven-aged. Even-aged systems rely on a growing a single cohort of trees up to a final “regeneration” harvest at some point (usually 50-80 years of age) when most trees are removed and a new cohort of trees is planted. Uneven-aged systems rely on repeated entries where a portion of the trees are removed and new cohorts of trees are recruited at each entry such that the stands have trees of many different age classes.

13. Conservation and Protection Measures

Erosion Control

The JTMP area is within the Ryan Slough planning watershed, which is a sub-watershed of the Freshwater Creek planning watershed. Freshwater Creek is listed on the US Environmental Protection Agencies 303(d) list of impaired water bodies for water quality. Freshwater Creek is listed for excessive sediment loading. The Northcoast Regional Water Quality Control Board (NRWQCB) has completed a Phase I analysis of the sediment sources in Freshwater Creek, but has not yet developed the Total Maximum Daily Load (TMDL) allocation implementation plan. The TMDL implementation plan is the planning document that identifies sediments sources and places limits (or allocations) on the allowable sediment discharges from specific sources, such as timber harvest. In order to harvest timber in a TMDL listed watershed a “waste discharge requirement” (WDR) or a “waiver” of WDR must be submitted to the NRWQCB prior to timber harvest. This is essentially a permit identifying sediment sources, proposed treatments and a timeline for implementing the treatments.

The state Forest Practice Rules and the RWQCB regulations are largely intended to protect water quality. Resource protection is an integral part of any long-term management scenario because of the potential impacts that timber harvest and heavy equipment operation can have on site productivity and the downstream beneficial uses of water. The main beneficial uses of water in the area include: domestic and agricultural water supplies, fish migration, spawning and rearing, and other wildlife habitat. The crux of resource conservation is to keep soil in the forest for long-term site productivity and prevent it from being transported downhill into the aquatic system. Since the primary continuing source of sediment transport is known to be roads and skid trails, they need to be properly maintained if in use or abandoned if no longer in use. Proper road design and maintenance are keys to watershed protection. Through careful planning and management, it is possible to minimize environmental risks.

It does not appear that many new roads will need to be constructed due to the density of existing roads and skid trails. Most skid trails that will need to be used for management access in the upslope areas already exist from earlier logging. However, there are some sections of roads and trails closer to watercourses which have erosion control issues that will need to be addressed prior to use or proper abandonment.

CAL FIRE has strict authority to enforce the Forest Practice Rules in relation to management activities involving the removal of forest products including road use and reconstruction. The California Department of Fish & Wildlife has regulations and permitting requirements pertaining to any work on watercourse crossings – even if not part of a timber harvesting plan. The North Coast Regional Water Quality Control Board will regulate waste discharge (i.e. sediment) into the aquatic system.

The landowners should continue to improve upon and maintain existing erosion control features on all roads, trails, and landings, including waterbars, culverted crossings, cross drains, and inside ditches. Monitoring and maintenance during the winter period is essential. All erosion control structures should

be checked each year before the beginning of the rainy season and periodically throughout the winter, in particular before and after storm events.

General erosion control guidelines for the continued maintenance and improvement of the road system are as follows:

- Outslope roads wherever feasible in order to reduce longterm maintenance and improve the quality of runoff water.
- Grade and install rocked, rolling dips on low gradient sections of main haul roads.
- Place rocked, rolling dips downhill from all existing and newly installed culverts whenever feasible.
- Do not operate heavy equipment off of roads and trails or near springs or watercourses.
- Abandon skid trails and prohibit vehicular use after forestry operations are complete.

Fish & Wildlife

The species which have received the most attention recently due to their declining populations are the northern spotted owl, marbled murrelet, and anadromous fish in general. There are certainly other terrestrial and aquatic species as well which have suffered more quietly from a reduction in habitat. Some of the elements to consider when assessing the habitat value for these species include: the presence of snags, dens, and nest trees; levels of large woody debris in the forest and in creek zones; the amount of sediment input to streams; the size and depth of pools and riffles for fish spawning and rearing; and water temperature in fish bearing streams and tributaries.

Even though most of the species that utilize the land either now or in the future will never be seen or measured, that does not mean they are not there. It is not practical to carry out species specific surveys in most cases, but by implementing management which retains important habitat features and protects sensitive areas such as stream zones, it may be assumed that the needs of most wildlife species will be met.

To achieve these goals the following management practices should be used:

- Retain all snags unless marked as a hazard by the RPF or his supervised designee.
- Mark Legacy or Wildlife trees for snag recruitment and to eventually become downed woody debris; on average 2 – 4 dominant trees per acre.
- Existing downed logs and cull logs produced during timber operations should be left in the woods for coarse woody debris recruitment wherever possible, except when utilized for firewood or building. Some fuel modification will be necessary to reduce fire hazard.
- All logs in stream zones should be retained. Management will provide for a continuous supply of coniferous coarse woody material to improve, maintain and restore vital stream functions, including salmonid habitat structure and bank stability.
- Retain all nest trees.

- Near-stream vegetation in tributaries should be maintained at a high level as determined by the RPF.
- No operation of heavy equipment within any stream zones except at prepared truck or tractor road crossings, in order to further safeguard against sediment and mass wasting effects on aquatic habitat.
- Log and rock hauling and skidding operations should cease before turbid water may flow across the road surface or in a roadside ditch which has the ability to enter a watercourse.
- Rock watercourse crossings whenever possible.

Northwest coastal redwood forests can support a high abundance of wildlife species. Fish include coho salmon, Chinook salmon, coastal cutthroat trout and steelhead trout. Bird species typical of this habitat include northern spotted owl, marbled murrelet, great blue heron, great egret, osprey, cooper's hawk, sharp shinned hawk, yellow breasted chat, black capped chickadee, vaux's swift and yellow warbler. Amphibians and reptiles that show a strong association to the coastal redwood habitat include southern torrent salamander, Del Norte salamander, tailed frog, northern red legged frog and western pond turtles. Mammals include fisher, Townsend's western big eared bat, Sonoma tree vole and white footed vole (Mayer & Laudenslayer et. al. 1988).

When it comes to determining which wildlife species actually use the property, there is no substitute for landowner observation. Keeping records of any animal sightings along with when and where seen can prove to be invaluable in the future. Even if their identity is uncertain, a description can help with later analysis. A tremendous amount of information on wildlife in the JTMP area is available from THPs submitted by the GDRCo in the local area.

For more general wildlife information, there are a number of resources available to find out whether any species listed as Threatened or Endangered or as a Species of Special Concern might be found in the plan vicinity. Updated plant, animal, and communities lists can be obtained from the California Department of Fish and Wildlife (CDF&W) website. The CDF&W also maintains the Natural Diversity Database (NDDDB) to record location-specific sightings of listed species.

Further analysis of the potential impacts to significant wildlife species will be required when an NTMP/THP is developed. This will include surveying for northern spotted owls and possibly other species as well.

Fire Protection

Decades of fire suppression and logging have created a situation where the forests of the region are not able to withstand the effects of wildfires. Fire is an integral part of this forest ecosystem, but heavy concentrations of suppressed trees that would have been cleared by repeated light ground fires have now become dangerous accumulations of ladder fuels capable of carrying a ground fire into the crowns of healthy trees. Forest conditions are at a point where high fuel loads and ladder fuels make it impossible to allow natural fire to be returned to most of this forest for the foreseeable future.

Therefore, it is important to institute a thorough and workable program for reducing the threat of catastrophic wildfire. Since the long term reduction of the wildfire threat will require the prudent reintroduction of prescribed fire, a fuels management regime should initially focus on breaking up the fire ladder and properly treating excessive fuels buildup associated with any commercial harvests or stand improvement projects. This work should focus on the currently used roads first where traffic makes the likelihood of ignition high and the fire hazard is most severe.

Logging operations have the potential to increase the risk of fire due to slash accumulations and presence of heavy equipment. The JTMP area is near residential areas, therefore treatment of slash within 200 feet of residences and 100 feet of public roads is required by the Forest Practice Rules. All slash from harvesting and pruning should be lopped within 24" of the ground, and locally heavy accumulations of slash in logging areas should be piled and burned during wet fall or winter weather. Burning of piles will require a permit from the Regional Air Quality Management District as well as notification of nearby fire stations.

The main access roads to the JTMP areas (R-line, Cedar Street, and Walnut Drive) are compatible with access by firefighting equipment; no modifications to these mainline roads would be required.

General fire safety recommendations are:

- Do not operate machinery or chainsaws when conditions such as wind, humidity and air temperature combine to make for "extreme" hazard.
- Ensure that in any type of logging operation during the fire season all workers conform to regulations pertaining to smoking, fire tool requirements, lunch and warming fires, posting of fire rules, care in welding, prohibiting uncovered glass containers, caution in using chainsaws and other spark emitting equipment, and daily inspections prior to shutting down operations.
- Keep a water truck or other water source on site when burning large piles of slash.
- Maintain a cache of fire tools such as shovels, axes, McLeods, portable backpack water tank, etc. on site and accessible.
- Keep a list of emergency phone numbers that identifies local fire response agencies, both public and volunteer.
- Create defensible fuel breaks around structures by clearing all brush and small trees for a minimum of 30'.
- Develop extra water storage facilities from springs or other sources.
- Fit all storage containers with appropriate size valves for fire fighting.

Once management activities begin, the following should be provided to the Trinidad CAL FIRE Fire Station each year before April 1st:

- A copy of the property map with access routes delineated.

- The name, address, and emergency 24-hour phone number(s) of an individual and an alternate who has authority to respond to CAL FIRE requests for resources to suppress fires.
- The number of individuals available for fire fighting duty and their skills.
- A list of available fire fighting equipment.
- Keys or combinations to any locked gates along emergency access routes.

Insects & Diseases

Every forest ecosystem has biological agents (animals, insects, and diseases) and physical forces (fire, wind, snow, and ice) which are destructive to living vegetation but which are integral to the functioning of that ecosystem. These agents become a “problem” only when they adversely affect vegetation, which is of particular value to the landowner or society. While an endemic level of insects and disease in a forest is natural, if these levels become epidemic, loss of timber value and increased fire hazard may result. In a forest being managed to meet landowner’s goals, human intervention is often called for to improve productivity or protect the investment.

The subject property presently does not exhibit any serious pest problems, but there are a few local and regional concerns that should be noted. Conk rot (*Phellinus pini*) is a commonly found pathogen in many large residual Douglas-fir. It has been found on some fir on the property, and care should be taken when operating equipment around Douglas-fir trees as they can be sensitive to compaction, which may decrease tree vigor making them more susceptible to pests. Conk rot, or Red Ring Rot, can infect the heartwood of most conifers but is primarily found in Douglas-fir. It favors cooler, moister environments and is spread by airborne spores produced by sporophores (conks) on infected trees, which enter healthy trees through dead branch stubs or open wounds. It can seriously degrade the quality and/or merchantability of a tree over its lifetime, especially if the tree is infected when young. The only practical cure for this problem is to remove infected trees from the stand to reduce spore production.

If insects or disease do become a significant problem, specific measures will be taken. Infestation zones may be cut to remove epidemic levels of pathogens. Chemical insecticides and herbicides will never be used in conformance with the desires of the landowner and RPF, but broadly accepted biological controls may be utilized depending on the intensity and threat of any outbreak.

The best preventative treatment for the aforementioned insect and disease problems is to maintain a healthy, vigorous stand through timely thinning and harvesting. A healthy tree is less likely to be infested with insects or disease, or to succumb to these destructive agents if infested, than an unhealthy tree. It is expected that through the management actions prescribed in this plan, a healthier, more vigorous forest will develop, and hence be more resistant to pest outbreaks.

It is also beneficial to encourage species of birds which prey on insects that are destructive to conifers, especially bark beetles. For example, many of the birds desired for insect control require cavities in snags for nesting. This habitat need will be supplied by designating Legacy Trees for continued snag recruitment throughout the plan area and especially near riparian areas.

Sudden Oak Death

S.O.D., as it is commonly known, is known to occur in Humboldt County, and this epidemic is serious enough to warrant a special section of this plan. An extensive amount of information is available and updated regularly on the CALFIRE website and University of California sponsored website suddenoakdeath.org, which is the source of the bulk of the information presented here.

There is currently a dramatic and sudden dieback of tanoaks, coast live oak, and black oak trees in several areas of coastal California with tanoak being the most affected. Since 1995, trees from these species have been reported dying in large numbers in several coastal Counties. The extent of the problem is not fully known, and the problem is expected to become more extensive in upcoming years, affecting urban and wildland tanoak, coast live, black oak, as well as numerous shrub species. Such a massive dieback of tanoaks and other oaks has never been reported in California and, if it continues, there are going to be several environmental changes: (a) the loss of these highly valued trees from gardens and forests, (b) alterations to forest ecology, with unknown and possibly dramatic implications for wildlife habitat and food chain provision, and (c) serious fire hazard risk from the resulting buildup of dry fuel.

Tanoak is a very resilient tree, and yet trees of all ages are developing symptoms quickly, and dying rapidly. From a distance, the first prominent symptoms in tanoak are drooped (wilted) shoots. Shoot wilting is spontaneous and occurs throughout the crown. Older leaves become pale green. Approximately two to three weeks later the foliage turns brown but remains clinging to branches, visibly announcing the death of tanoak. Chisel cuts into the inner bark and sapwood at breast height of affected trees, reveal saturated tissue that drops burgundy-red sap. In the summer, the bark splits and breaks as a result of drying. Gum often exudes from these splits, which may develop prominent clusters of black fruiting bodies. Long striations of a different tan to pinkish discoloration become visible on the bark surface. Roots of tanoaks exhibiting above ground symptoms often have a pungent alcoholic odor, but appear sound. The following year after the tree dies, suckers sprout near the base. Soon their tips bend, become chlorotic and die. A very noticeable feature of the dead tanoaks is massive infestation of the whole stem with ambrosia beetles in mid-summer.

Pathologists have isolated an important causal agent - a new species of *Phytophthora* - and beetles, other fungi, and weather may be additional factors. *P. ramorum* is a fungus that appears to enter through the bark on tree trunks and limbs, possibly after they are splashed there by raindrops. Once the trees have gone through the progressive stages of the symptoms, their vigor rapidly declines and they become vulnerable to secondary insect pests such as bark and ambrosia beetles.

No evidence of SOD has been found on the property and there are few, if any, tanoaks within the JTMP area. The closest confirmed location of SOD to the McKay Tract is the Redwood Creek Valley, northeast of the property.

14. Management Plan Updates

It is highly advised that the Joint Timber Management Guide be updated on a periodic basis, to revise growth predictions and adjust to landowner goals. Updates could include recommendations to improve stand conditions such as pre-commercial thinning and brush control. The landowners are advised to retain professional guidance concerning forest management decisions to take advantage of the best information on current regulations and markets. Meeting the objectives of the landowners is a necessary function of these updates and their participation is encouraged.

15. Management Cost

Costs that will be incurred for management activities could include but are not necessarily limited to the following: harvest plan development & application fees, road maintenance, road construction, surveying, tree planting, timber stand improvement, logging costs, and wildlife surveys. These costs will easily run over \$20,000 initially and will be ongoing after that. Landowners should be prepared for these costs that are necessary to maintain a productive, healthy forest ecosystem, which is capable of producing some economic return for the landowner.

16. Legal Requirements

The landowners should be aware timber harvest activities are subject to permitting requirements from numerous state and federal agencies. The primary permit needed is a Timber Harvest Plan (THP), Non-Industrial Timber Management Plan (NTMP) or other plan/exemptions described in the regulations of the Forest Practice Act and the current Forest Practice Rules administered by the California Department of Forestry and Fire Protection (CALFIRE). Any projects affecting the bed or banks of a watercourse will require a Stream and Lakebed Alteration Agreement from the Department of Fish and Wildlife. All projects which include the potential for discharge of sediment into watercourses require a Waste Discharge Permit from the Regional Water Quality Control Board. Any project with the potential to harm federally listed endangered or threatened species (Northern Spotted Owls and Marbled Murrelets) will require a consultation with the US Fish and Wildlife Service.

17. References

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- Mayer, Kenneth E. and William F. Laudenslayer Jr. et. al., 1988. A Guide to Wildlife Habitats of California.

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Timber Management Plan

1. Current Property Owner

**Green Diamond Resource Company
California Timberlands Division**

P.O. Box 68
Korbel, CA 95550-0068
(707) 668-4400

2. Timber Management Plan Contents

The Timber Management Plan is the portion of the JTMP that identifies legal access, rights-of-way and minimum stocking standards as prescribed by the Forest Practice Rules.

3. Project Description

Green Diamond Resource Company (GDRCo) is proposing to convey an approximately 1,005 acre tract of land to the County of Humboldt known as the “Phase 1 portion of the proposed McKay Tract Community Forest” or Phase 1 lands . This conveyance will result in the division of six Assessor Parcels into parcels containing less than 160 acres of lands zoned as Timber Production Zone (TPZ). California Government Code Section 51119.5 specifies that parcels zoned as TPZ may not be divided into parcels containing less than 160 acres unless the original owner prepares a joint timber management plan prepared or approved as to content by a registered professional forester for the parcels to be created. Per California Government Code Section 511014(i) “Parcel” means that portion of an assessor’s parcel that is timberland. In accordance with the applicable California Government Code Sections, this Joint Timber Management Plan (JTMP) is being prepared for the six Assessor Parcels which will contain less than 160 acres of TPZ subsequent to the conveyance described above.

4. Access, Roads and Boundary Management Areas for JTMP Management Units

Access to Unit 1 and Unit 2 is from Harris Street onto Green Diamond’s permanent haul road known as the “R-Line.” A reciprocal access easement has been developed which will provide the County and GDRCo with deeded access across each other’s lands for timber harvest related activity along the portion of the R-Line and R-2 Road that is within or adjacent to the Phase 1 lands (Figure 5). Details of this agreement are contained in Appendix 1. Access to Unit 3 is via Cedar Street to Unit 3, and also from

Walnut Drive which abutts the western boundary. Green Diamond has a reserved easement (60' wide 779 OR 191) along the west side of Winship School. GDRCo, as part of the proposed reciprocal access easement, GDRCo will grant the County access over a portion of Unit 3 for the purpose of accessing Phase 1 lands via the reserved easement. The reserved easement is of record however the road has not been constructed to date.

GDRCo, as part of the proposed reciprocal access easement, has established a reciprocal right-of-way along the common boundaries of the Phase 1 lands which follow watercourses in order to facilitate logging along the shared boundary as well as stream restoration and monitoring efforts. The agreement is for an area 300' in width on each side of the Phase 1 property boundary where both landowners have access to lands as necessary to conduct timber harvest. Tail-holds for cable operations, existing log landings, skid trails, etc. are all identified as resources that will be accessible. Details of the final agreement will be included in Appendix 1.

5. Minimum Stocking Standards

912.7, 932.7, 952.7 Resource Conservation Standards for Minimum Stocking [All Districts, note (b)(1)(D)]

The following resource conservation standards constitute minimum acceptable stocking in the Coast [Northern, Southern] Forest District after timber operations have been completed.

(a) Rock outcroppings, meadows, wet areas, or other areas not normally bearing commercial species shall not be considered as requiring stocking and are exempt from such provisions.

(b) An area on which timber operations have taken place shall be classified as acceptably stocked if either of the standards set forth in (1) or (2) below are met within five (5) years after completion of timber operations unless otherwise specified in the rules.

(1) An area contains an average point count of 300 per acre on Site I, II and III lands or 150 on site IV and V lands to be computed as follows:

(A) Each countable tree [Ref. PRC § 4528(b)] which is not more than 4 inches d.b.h. counts 1 point.

(B) Each countable tree over 4 inches and not more than 12 inches d.b.h. counts 3 points.

(C) Each countable tree over 12 inches d.b.h. counts as 6 points.

(D) [Coast] Root crown sprouts will be counted using the average stump diameter 12 inches above average ground level of the original stump from which the sprouts originate, counting one sprout for each foot of stump diameter to a maximum of 6 per stump.

(D) [Northern] Sprouts over 1 foot in height will be counted, counting one sprout for each 6 inches or part thereof of stump diameter to a maximum of 4 per stump.

(D) [Southern] Root crown sprouts over 1 foot in height will be counted, using the average stump diameter at 1 foot above the average ground level of the original stump, counting 1 sprout for each foot of stump diameter to a maximum of 6 per stump.

(2) The average residual basal area measured in stems 1 inch or larger in diameter, is at least 85 square ft. per acre on Site I lands, and 50 square ft. per acre on lands of Site II classification or lower. Site classification shall be determined by the RPF who prepared the plan.

(3) To the extent basal area standards are specified in the rules in excess of 14 CCR § 912.7(b)(2) [932.7(b)(2), 952.7(b)(2)], up to 15 square feet of basal area of those standards higher than the minimum may be met by counting snags, and decadent or deformed trees of value to wildlife in the following sizes:

(A) 30 inches or greater dbh and 50 feet or greater in height on site I and II lands;

(B) 24 inches or greater dbh and 30 feet or greater in height on site III lands; and

(C) 20 inches or greater dbh and 20 feet or greater in height on site IV and V lands.

(c) The substitution provided for in 14 CCR § 912.7(b)(3) [932.7(b)(2), 952.7(b)(2)] may only be done when the potential spread of insects and diseases will not have a significantly adverse impact on long term productivity or forest health.

(d) The resource conservation standards of the rules may be met with Group A and/or B commercial species. The percentage of the stocking requirements met with Group A species shall be no less than the percentage of the stand basal area they comprised before harvesting. The site occupancy provided by Group A species shall not be reduced relative to Group B species. When considering site occupancy, the Director shall consider the potential long term effects of relative site occupancy of Group A species versus Group B species as a result of harvest. If Group A species will likely recapture the site after harvest, Group B species do not need to be reduced. The time frames for recapturing the site shall be consistent with achieving MSP. The Director may prohibit the use of Group A and/or B commercial species which are non-indigenous or are not physiologically suited to the area involved. Exceptions may be approved by the Director if the THP provides the following information and those exceptions are agreed to by the timberland owner:

(1) Explain and justify with clear and convincing evidence how using Group A nonindigenous, or Group B species to meet the resource conservation standards will meet the intent of the Forest Practice Act as described in PRC § 4513. The discussion shall include at least:

(A) The management objectives of the post-harvest stand;

(B) A description of the current stand, including species composition and current stocking levels within the area of Group B species. The percentage can be measured by using point-count, basal area, stocked plot, or other method agreed to by the Director.

(C) The percentage of the post-harvest stocking to be met with Group B species. Post harvest percentages will be determined on the basis of stocked plots. Only the methods provided by 14 CCR §§ 1070-1075 shall be used in determining if the standards of PRC § 4561 have been met.

(D) A description of what will constitute a countable tree, as defined by PRC § 4528 for a Group B species and how such a tree will meet the management objectives of the post-harvest stand.

The Director, after an initial inspection pursuant to PRC § 4604, shall approve use of Group B species, as exceptions to the pre-harvest basal area percentage standard, if in his judgment the intent of the Act will be met, and there will not be an immediate significant and long-term harm to the natural resources of the state.

912.8 Progeny, Clonal, or Provenance Testing Stocking Standard Exemption [Coast only]

Pursuant to PRC 4561.7, the following standards shall apply to the request for an exemption from the stocking standards of the Act for Progeny, clonal, or provenance testing.

(a) Any THP submitted pursuant to Sec. 4561.7 of the PRC shall include the following information, in addition to other requirements of the rules of the Board:

(1) A specific request for an exemption from stocking standards; and

(2) A description of the testing to be conducted on the site.

(b) The exemption from stocking shall become effective upon the Director's determination that the timber harvesting plan is in conformance with the rules and regulations of the Board.

Appendix I

This section will be inserted when agreements between GDRCo are finalized.