

# **4<sup>th</sup> ANNUAL REPORT**

**submitted to  
The U.S. Fish and Wildlife Service**

**by  
Green Diamond Resource Company**

**in fulfillment of requirements specified in the Coastal Marten  
Conservation Memorandum of Understanding with the U.S. Fish  
& Wildlife Service.**

**1 March 2024**

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# I. Introduction

On April 4, 2020, Green Diamond Resource Company (Green Diamond) and the U.S. Fish and Wildlife Service (USFWS) signed a Coastal Marten Conservation Memorandum of Understanding (MOU). The purpose of this MOU is to support proactive conservation efforts for the Humboldt marten on Green Diamond's California Timberlands and increase research, habitat management, and take avoidance commitments. At the time of signing, the Humboldt marten was rare or absent from the majority of Green Diamond's timberlands; however, Green Diamond's timberlands account for approximately 12 percent of the area that is within 15 km (dispersal distance) of the known extant population based on contemporary surveys. Through implementation of habitat management and research commitments, the MOU is designed to increase the species' population and range, promote the creation of new habitat, enhance existing potential habitat within Green Diamond's timberlands, and increase research efforts.

The key elements of Green Diamond's Marten MOU include:

- retention and recruitment of marten denning habitat in the form of green wildlife trees and snags following the Terrestrial Retention of Ecosystem Elements (TREE) guidelines,
- creation of a 2,098-acre no-harvest Marten Reserve Area,
- additional habitat management and monitoring measures applied to the Marten Special Management Area (a 127,217-acre area identified as a high priority connectivity area between known occupied sites),
- incorporate riparian and geologic retention measures as defined in Green Diamond's Aquatic Habitat Conservation Plan,
- technical and financial support for assisted dispersal of martens and associated research,
- retention and protection of known den sites, and
- research and monitoring of the marten population across the property.

The following report documents the third year of management pursuant to the MOU and includes details specified to comply with the monitoring and reporting requirements of this agreement. Included are sections about marten occupancy surveys, marten habitat retention in timber harvest plans, water tank monitoring, and other information required for the annual reporting requirements.

The reporting period of this report was from September 1, 2022 to September 1, 2023.

## II. Marten Studies

### A. Methods

#### 1. Marten Occupancy Surveys

In order to estimate marten occupancy, Green Diamond established a randomly located sampling frame for remote camera stations across Green Diamond's timberlands. The sampling frame consisted of remote camera stations centered at a 2-km grid spacing within the Marten Special Management Area (MSMA), Moore Tract and lands currently being managed by the Yurok Tribe that could act as potential donor areas for assisted dispersal. Each camera station (sampling unit) consisted of one or two cameras located within 200 meters of the grid point resulting in a total of 163 sampling units. Of the 163 sampling units, 126 were located within the MSMA, 5 were located within the Moore Tract and 32 were located within the potential donor area currently being managed by the Yurok Tribe (Figure 1). Green Diamond established an additional 58 sample units centered at a 4-km grid spacing in the balance of the timberlands covered by this agreement resulting in 221 total sample units. These sample units utilized an identical survey protocol and were suitable for detecting marten.

In order to estimate marten occupancy, all sampling units were surveyed each year for the first two years. After the first two years, Green Diamond will continue to monitor marten occupancy by conducting non-invasive surveys on at least one-half of the MSMA every five years such that a complete survey would occur by year ten. The sampling period is October through March for each year the surveys occur. The survey grid was divided into five sampling blocks in order to sample all stations with a logistically feasible approach while accounting for spatial issues and comparisons among the various watersheds. Sampling blocks were randomly selected to determine sampling order. Sampling order in year one will remain the sampling order in subsequent survey years to allow for comparisons and account for seasonal variation in detection rates. All sample units within a sampling block were surveyed simultaneously.

Green Diamond deployed high-end Reconyx brand cameras (Reconyx Inc., Holmen WI, USA) at each sampling station. Models included first generation Hyperfire HC500, HC600, PC800, PC900, and second generation Hyperfire HP2X. Camera stations were baited with two raw chicken drumsticks and commercial trapping lure (Caven's Gusto Lure, Minnesota Trapline Products, Pennock MN) secured to a tree within 5 – 15 feet of the camera.

Cameras were deployed for a minimum of 21 days and were checked and rebaited weekly. During the 2018/2019 and 2019/2020 sampling periods, two cameras were used at 32 stations (20% of 2-km spaced stations) to further evaluate the influence of multiple cameras on estimates of detection probability.

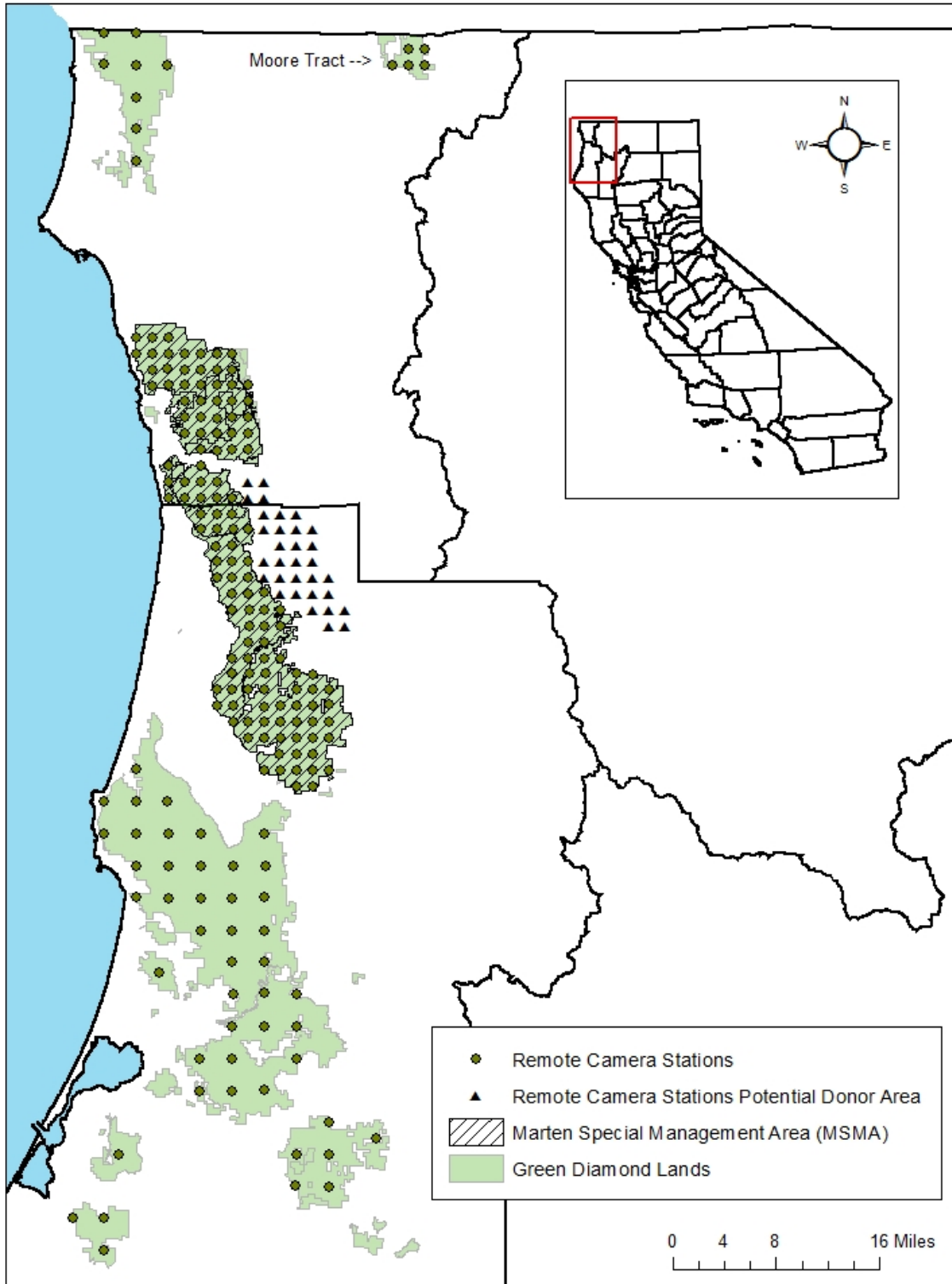


Figure 1. Monitoring stations within Green Diamond lands 2018-2020.

## **2. Water Tank Surveys**

Water tanks within Green Diamond's timberlands were inspected during the current reporting period and measures were taken to prevent marten from becoming entrapped. Inspections determined if openings greater than two inches existed, and if the openings were secure and effective in excluding wildlife.

Tanks were composed of either plastic (newer/modern tanks) or steel material (older tanks originating from the early 1900s to 1960s). Plastic tanks usually required little to no exclusion efforts while the majority of steel tanks required repairs in this or a previous year using a variety of exclusion techniques and specialized tools. A powder fastener was often utilized to drive nails into the steel surfaces of the tank to fasten mesh around openings. The primary issues with using steel mesh were oxidation which was mitigated by applying a coat of spray paint. However, this technique has been monitored and proven to be a long-lasting repair method.

## **3. Assisted Dispersal**

Green Diamond agreed to provide financial and technical support for a marten assisted dispersal feasibility analysis conducted by USFWS in cooperation with other agencies. Via the feasibility analysis, the USFWS will evaluate and assess habitat suitability of potential release sites for martens within their historical range that are within typical dispersal distance of the extant population. Green Diamond will provide financial and technical support for the capture and assisted dispersal of marten based on the recommendations of the feasibility analysis. Green Diamond will work with USFWS and other partners to capture, collar, and release martens from recommended source areas to recommended release areas. The recommended release areas may include portions of Green Diamond's timberlands. Green Diamond will also provide financial and in-kind technical support to monitor collared martens in the recommended release areas.

## **4. Marten Research**

Green Diamond committed to cooperation with state, federal, tribal, or non-governmental organizations engaged in original research on marten to advance the understanding of the ecology, conservation, and management of the species. Cooperation shall include a range of activities including but not limited to permitted access to its timberlands, contributions of biological staff time and expertise, or voluntary monetary contributions. Any additional commitments to marten research will be voluntary and established at the time of, and subject to, the terms of an agreed study design with measurable objectives and a demonstrated capacity to complete the research.

## **5. Prevention of Rodenticide Use**

Anticoagulant rodenticide poisoning has been identified as a potential threat to marten. Anticoagulant rodenticides are used to eradicate or suppress rodent pest populations in illegal marijuana cultivation sites to minimize economic losses. Exposure to

anticoagulant rodenticides can cause direct mortality and potentially increase the risk of predation or other diseases. Measures were taken to discourage unauthorized marijuana cultivation and associated rodenticide use within Green Diamond's timberlands. In addition to maintaining a system of controlled access for Green Diamond's timberlands, security patrols were conducted to detect cultivation sites, and if detected, eradication efforts were conducted in coordination with the Sheriff's Department.

## **B. Results**

### **1. Marten Occupancy Surveys**

Occupancy surveys were not conducted during the current reporting period. A comprehensive report on site occupancy from the initial surveys conducted from 2018-2020 was included with the 2022 report.

### **2. Water Tank Surveys**

Ninety water tanks were located across 73 sites within the lands covered by the MOU in 2023 (Figure 2, Appendix I). At sites with multiple tanks, each individual tank was assigned its own ID number. In previous years, these tanks were all given the same ID number. This change resulted in an increase in the number of tanks reported in 2022. All 90 tanks were inspected for damage or openings and past installations of barriers were assessed for continued reliability. Forty-eight of the 90 tanks had openings repaired in previous years, and 44 were still functional. Nine tanks were found to have new openings or damage to previous patches, and all were repaired. Forty of the 90 tanks did not require exclusion installations. One tank (4100) is known to be a historic Vaux's Swift nesting structure and has an opening on the side of the tank near the top that was not repaired. A board was placed in the opening that would allow any trapped animals to escape. No fisher, marten, or other remains were identified in or around the 90 tanks.

### **3. Assisted Dispersal**

During the current reporting period, Green Diamond continued to collaborate with the U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Yurok Tribe, and the National Council for Air and Stream Improvement (NCASI) to analyze existing data and collect new data on Humboldt marten within Green Diamond's California timberlands and on adjacent lands currently being managed by the Yurok Tribe (potential donor area for assisted dispersal) as part of the initial feasibility assessment for Assisted Dispersal. The USFS submitted a final report to the USFWS for these initial Assisted Dispersal feasibility assessments commitments. In total, three reports were submitted to the USFWS detailing demographic summaries, population estimates, and an overall assessment of Assisted Dispersal. Given the small sample size and broad confidence intervals, additional distribution and demographic data are needed to further inform the potential for Assisted



Dispersal. The final report outlines these knowledge gaps and prioritized future research needs.

While these projects and reports were not specifically identified within the MOU, they do represent in-kind effort for Green Diamond's Conservation Planning Department. A summary of in-kind contributions is provided in Table 1 under section 4.

#### **4. Marten Research**

In 2020, Green Diamond began facilitating a Traditional Section 6 Grant project entitled "Promoting recovery of Humboldt marten with a rapid assessment of population size of the north coastal California extant population." This grant was approved in November 2020, and pilot work was conducted in summer of 2021. Project collaborators include Institute for Natural Resources at Oregon State University, the Yurok Tribe, U.S. Forest Service Six Rivers National Forest, and Cal Poly Humboldt graduate student Erika Anderson. Project implementation began in August 2022 with deployment of 75 hair snare tubes and 35 paired camera stations in areas currently being managed by the Yurok Tribe. Additional sampling occurred throughout the Fall 2022 on Six Rivers National Forest and Green Diamond study areas. In total, 420 genetic samples were collected across the North Coast Extant Population Area. A total of 113 samples were identified as marten, but only 66 samples were successfully genotyped to individual identity. From these 66 samples, 39 unique martens were identified. A Master's thesis (Anderson 2023, Sympatric carnivores and vegetation structure influence) and final summary report (Anderson et al. 2023, Promoting the recovery of Humboldt marten with rapid assessment of population size of the North Coastal California Extant Population) were provided to CDFW and USFWS. Green Diamond will supply remote camera equipment to support this project and helped with hair snare sampling representing in-kind contributions (Table 1). Additional sampling was scheduled to occur within the extant population area along the California-Oregon border ("Border Population") in 2023 including lands managed by Green Diamond (Moore Tract). However, the Smith River Complex Fire prevented completion of this project. One-hundred three hair snares including 11 within the Moore Tract were deployed in 2023, but no sampling occurred. This project is scheduled for completion in 2024 pending funding.

In 2020 and 2021, Green Diamond collaborated with Dr. Katie Moriarty and Oregon State University graduate student Jordan Ellison on a study entitled "Investigating the Conservation Value of Slash Piles for Humboldt Marten and Fisher." Study objectives included:

- documenting martens and fishers visiting slash piles and the surrounding landscape through the use of remote cameras and scat detection dog teams
- identifying pile or stand characteristics associated with detections at piles
- estimating small mammal abundance, diversity, and energetic biomass at slash piles and the surrounding landscape
- Assessing the degree to which pile size, composition, and distribution influence the risk of increasing wildlife severity

The preliminary results of this project were presented at the 2021 Annual Conference of the Western Sections of The Wildlife Society. A total of 69 stands in California were surveyed, and results are pending further analysis including genetic work from the scat collected at 40 of the 69 stands.

In 2022 and 2023, Green Diamond continued to collaborate with Dr. Katie Moriarty to document marten movement and basic population demographics in areas on and adjacent to the Green Diamond ownership that differed in management intensity. Objectives included:

- Quantifying fine-scale habitat characteristics by comparing marten movements and resting and denning structures in areas differing in management history through the use of GPS collars and LiDAR-derived forest structure
- Tracking and documenting marten fitness (e.g., reproductive history, body condition, causes of morbidity)
- Collecting information on population size and extent, sex and age ratios, home ranges, diet, and density of potential predators

Initial trapping and GPS tracking occurred in January through early-March 2022. Martens were detected at 38 remote camera locations, and 82 traps were deployed. Nine martens were captured and six of the nine were fitted with GPS collars, including one male and one female in the Maple Creek watershed on Green Diamond managed lands near the town of Trinidad representing the southernmost contemporary detections for this species. Additional remote camera monitoring and trap pre-baiting occurred in summer and fall of 2022 in these same areas where GPS collars were previously deployed. Additional GPS monitoring occurred in fall 2022 through winter/early spring 2023 on and adjacent to the green diamond ownership. In summer 2022, Green Diamond conducted remote camera surveys to assist with this project, which represents a total of 356 hours of in-kind effort (Table 1). Additionally, Green Diamond purchased six additional GPS collars for this project, which represents an additional in-kind contribution of \$9,450. A detailed progress report for this telemetry work and the slash pile project were provided to CDFW and USFWS in May 2022. In 2023, Green Diamond continued to monitor one female marten in Maple Creek in hopes of documenting reproduction and survival. Based on frequency of movements and lack of stationary activity, no denning behavior was observed. Two remote cameras were deployed near a potential rest structure, but no martens were detected. This monitoring effort represents 100 hours of in-kind effort for the current reporting period. Mortality checks continued through the end of 2023, and additional tracking is scheduled for this female throughout 2024.

Finally, Green Diamond continued to collaborate with the USFS, NCASI, and the Yurok Tribe to characterize fine-scale vegetation conditions used by martens on the Green Diamond ownership and lands currently being managed by the Yurok Tribe. As part of the initial data collected to inform the feasibility of Assisted Dispersal, Green Diamond and collaborators identified resting and denning structures for radio-marked martens monitored between 2013 and 2016. Green Diamond biologists and USFS collaborators conducted

vegetation sampling at 94 marten rest/den structures (120 used plots) and 60 random plots between 2015 and 2021. The results of the vegetation sampling were compared with another study area in Lassen to understand fine-scale vegetation conditions used by martens at sites differing in forest composition and past timber harvest intensity. The results were published in March 2023 (Delheimer et al. 2023. Structural complexity characterizes fine-scale forest conditions used by Pacific martens). As these studies are completed, additional references to results will be provided in annual reports.

Table 1. Annual in-kind contributions.

Year	Project	In-kind Contributions		Description
		Type	Total	
2020	Assisted Dispersal Feasibility	Staff Hours	12	Meetings and review for tasks 1-3 reports
2021	Assisted Dispersal Feasibility	Staff Hours	2	Review for task 3 report and manuscript
2022	Marten Movements	Staff Hours	356	Remote camera deployment and monitoring
2022	Marten Movements	Equipment	\$15,000	Use of 30 remote cameras
2022	Marten Movements	Equipment	\$9,450	Purchase of 6 GPS collars
2022	Population Assessment	Equipment	\$12,500	Use of 25 remote cameras
2022	Population Assessment	Staff Hours	220	Hair snare deployment and monitoring
2023	Marten Movements	Staff Hours	100	Tracking collared female marten
2023	Marten Movements	Equipment	\$1,000	Use of 2 cameras for rest site monitoring

## 5. Prevention of rodenticide use

No trespass cultivation sites were identified within the areas covered by the MOU in 2023.

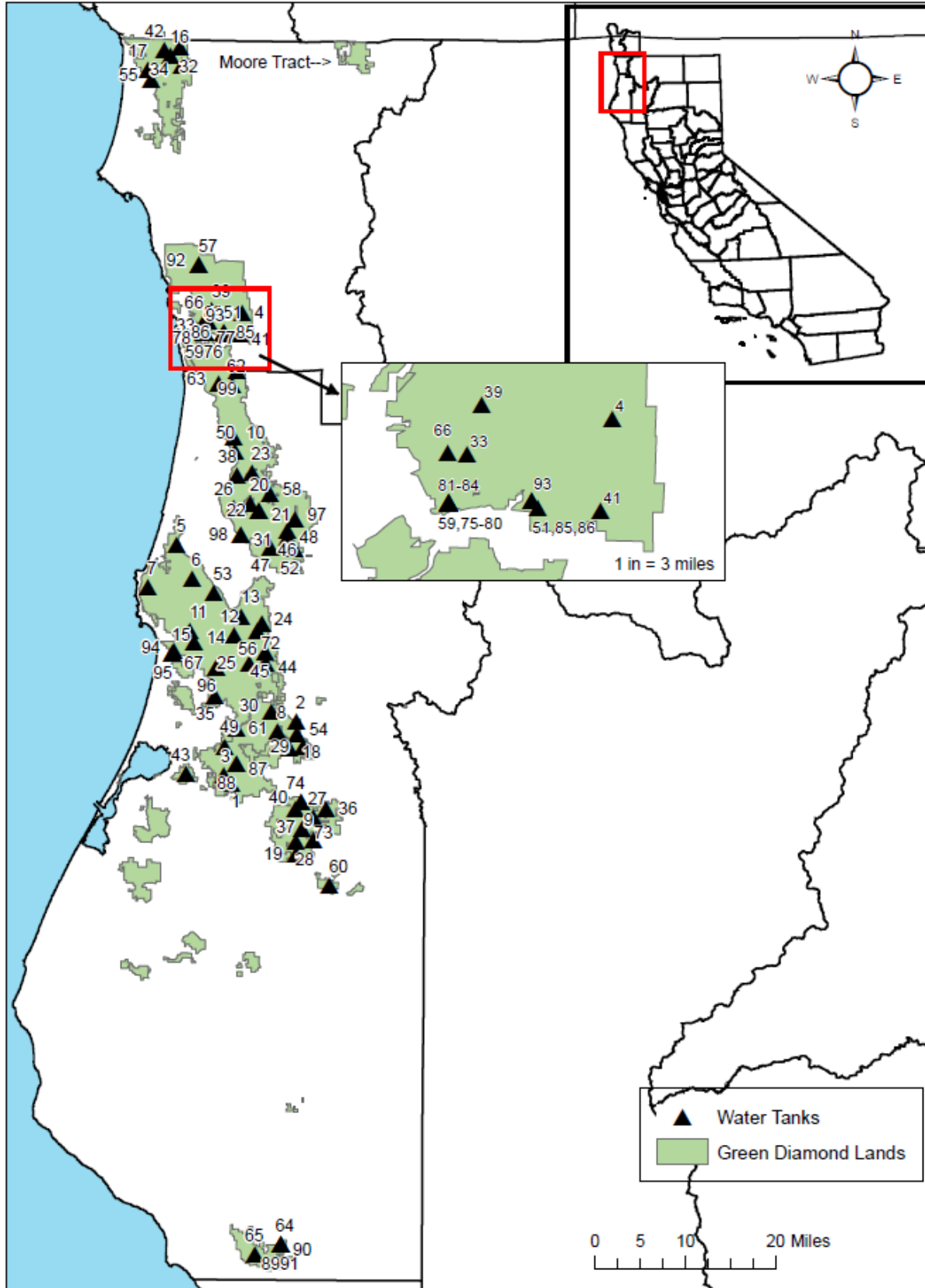


Figure 2. Water tank locations within Green Diamond's timberlands.

## **C. Discussion**

Green Diamond conducted an occupancy analysis using the results from 2018-2019 and 2019-2020 sampling periods, and the results of this analysis were provided as an attachment to the 2022 annual report. All active and historic water tanks were inspected during the current reporting period, and exclusion methods appear to be successful at preventing entrapment and drowning of marten and other species. Water tank inspections will continue in subsequent years to ensure exclusion methods continue to be effective.

## **III. Habitat Modeling**

### **A. Methods**

After two complete surveys to assess marten occupancy within Green Diamond's timberlands and a portion of lands currently being managed by the Yurok Tribe that could act as potential donor areas for assisted dispersal, provided that an adequate sample size exists for analysis, Green Diamond will attempt to develop a model estimating the probability of marten occupancy in association with various habitat and physiographic variables. This modelling effort shall attempt to include all available and complementary survey efforts conducted within the range of the marten on Green Diamond's timberlands.

### **B. Results**

Surveys for both sampling periods (2018/2019 and 2019/2020) were completed, and a comprehensive report on site occupancy was included with the 2022 report.

## IV. Land Transactions

### A. Methods

Since land transactions (acquisitions and disposals) alter the acres of lands covered by the MOU, this chapter summarizes the land transactions that occurred during the reporting period and any effect on Green Diamond's timberlands in the context of marten conservation.

### B. Results

There were four land acquisitions and one land disposal within Green Diamond's timberlands during the reporting period. Approximately 4,169.7 acres were added, and 17.5 acres were removed from Green Diamond's timberlands for a net increase of 4,152.2 acres (Table 2).

Table 2. Summary of land transactions during the current reporting period within Green Diamond's timberlands.

Transaction Name	Transaction Type	Transaction Date	Acres
Del Ponte	Acquisition	12/13/2022	66.2
California Timberlands/New Forests	Acquisition	01/10/2023	4,060
Cook	Acquisition	01/31/2023	37.0
Sullivan	Acquisition	03/29/2023	6.5
Sullivan	Disposal	03/29/2023	(17.5)
Total Change			4,152.2

### C. Discussion

The land disposal was a small parcel that did not have an effect on marten conservation within Green Diamond's timberlands. The disposal was located outside of the Marten Special Management Area (MSMA) and greater than 17 miles from contemporary marten detections. The land acquisitions shared similar characteristics to the surrounding and adjacent Green Diamond timberlands based on vegetative cover types and forest age from prior harvest history.

## V. THP Conservation Measures

### A. Methods

As outlined in the Marten MOU, habitat management measures for marten include timber harvest planning, marten habitat planning, and overall environmental resource planning. Site-specific measures were identified for each timber harvest plan (THP) initiated. The following summarizes habitat management features that were identified before and after timber harvest for THPs within the MSMA and the Moore Tract that were approved after April 27, 2018. Additionally, THPs located within Planning Watersheds located outside of the MSMA or Moore Tract with new marten detections also receive site-specific habitat measures for marten. On October 10, 2019, a marten was detected during remote camera surveys within the Maple Creek Planning Watershed. On October 14, 2021, a marten was detected during a remote camera survey within the Pitcher Creek Planning Watershed, and in February of 2022 a collared marten was detected in the McDonald Creek Planning Watershed.

#### 1. Pre-harvest Habitat Retention Planning

The six major habitat management measures quantified were:

- habitat retention areas (HRAs) planned on the guidelines stated below (number),
- habitat retained as a result of implementation of AHCP Riparian Management Zones (RMZ) and geologically unstable areas,
- retention of green wildlife trees outside of HRAs, RMZs, or geologically unstable areas specifically for marten (planned number of trees to be retained per acre individually or in clumps),
- snag retention (estimated number per acre present before and after harvest),
- large woody debris (LWD) retention specifically to benefit marten (number of structures present before and after harvest), and
- retention of den structures and HRAs around den structures (number of structures retained and acreage of surrounding HRAs).

In June 2007, Green Diamond began operating under an approved Aquatic Habitat Conservation Plan (AHCP)/Candidate Conservation Agreement with Assurances (CCAA). The riparian and slope protection measures under the AHCP also contribute to the development of future marten habitat across the landscape, and the riparian and geologic retention measures defined in the AHCP are incorporated into this MOU. For young growth THPs, the amount of acreage retained in Class I and II RMZs or other partial harvest areas guided habitat retention. For Green Diamond timberlands outside AHCP coverage (approximately 7,777 acres), riparian and geological retention measures were implemented in accordance with the California Forest Practice Rules, with the exception that RMZ's in the Moore Tract are limited to one harvest entry within the RMZ during the life of the MOU concurrent with the even-aged harvest of the adjacent stand. An exception is light thinning harvest conducted with the specific objective of enhancing wildlife structure.



Within the MSMA and Moore Tract, THP prescriptions included retention of downed large woody debris (LWD) to enhance structural complexity, foraging, denning, resting, and escape cover benefitting marten. Harvest units retained pre-existing non-merchantable large woody debris and merchantable large woody debris with existing hollows or evidence of internal rot and hollows. Harvest units also retained all “safe snags” including questionable merchantable snags. Pre-harvest amounts of snags per acre were assessed by ocular estimate.

Green Diamond developed the Terrestrial Retention of Ecosystem Elements (TREE) Guidelines for retaining green trees and snags in young growth stands (see Marten MOU attachment 3). Green Diamond implemented the TREE guidelines on all timberlands covered by the MOU. Specific TREE measures designed as a conservation benefit to marten were applied through a marten-specific scorecard on timberlands within the MSMA and Moore Tract. Scorecard guidelines and a comparison between the marten-specific scorecard and the scorecard for lands outside of the MSMA and Moore Tract are described below in Section 6. General guidelines for green wildlife tree retention are outlined below. Based on results of the 2018-2020 camera surveys and collaborative studies with NCASI, marten detections outside of the MSMA and Moore Tract resulted in implementation of the marten scorecard in three additional planning watersheds: Pitcher Creek, McDonald Creek, and Maple Creek. These measures will be implemented in planning watersheds where marten are detected in future non-invasive survey efforts and other research.

#### **General Candidate Tree Selection for all Units:**

- Prefer defective or poorly formed trees (i.e. animal damaged, forked top, broken top, etc.)
- Prefer a mix of conifers and hardwoods (approximately 50/50 mix where possible)
- Species preference: Douglas fir, hemlock, white fir, cedar, spruce, redwood, tanoak, madrone, California laurel, chinquapin
- Consider protection from wind throw and site preparation burning when designating HRA and tree clump locations
- Retain trees with the average diameter equal to or greater than average diameter of trees in the THP area
- Green wildlife tree retention is in addition to snag, geological and RMZ retention

#### **Tree Retention Guidelines within the MSMA and Moore Tract**

##### *Conifer Dominated Harvest Areas with RMZ or Geological Retention:*

- Retain all conifer scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain conifer scorecard trees at a rate of two trees per clearcut acre
- Retain all hardwood scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain hardwood scorecard trees at a rate of three trees per clearcut acre
- Retain other evergreen hardwoods in clearcut areas at a rate of two trees per clearcut acre where they exist

*Conifer Dominated Harvest Areas without RMZ or Geological retention:*

- Retain all conifer scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain conifer scorecard trees at a rate of two trees per clearcut acre
- Retain other conifer at a rate of two trees per clearcut acre
- Retain all hardwood scorecard trees  $\geq 7$  in non-clearcut areas and within clearcut areas retain hardwood scorecard trees at a rate of three trees per clearcut acre
- Retain other evergreen hardwoods within clearcut areas at a rate of two trees per clearcut acre where they exist (if a unit lacks hardwoods, retain conifer up to two trees per clearcut acre within clearcut areas)

*Hardwood Dominated Harvest Areas with RMZ or Geological Retention:*

- Retain two trees per clearcut acre
- Retain all conifer scorecard trees  $\geq 7$  within non-clearcut areas and in clearcut areas retain conifer scorecard trees at a rate of two trees per clearcut acre
- Retain all hardwood scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain hardwood scorecard trees at a rate of three trees per clearcut acre
- Retain other evergreen hardwoods in clearcut areas at a rate of two trees per clearcut acre where they exist

*Hardwood Dominated Harvest Areas without RMZ or Geological Retention:*

- Retain all conifer scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain conifer scorecard trees at a rate of two trees per clearcut acre
- Retain all hardwood scorecard trees  $\geq 7$  in non-clearcut areas and in clearcut areas retain hardwood scorecard trees at a rate of three trees per clearcut acre
- Retain a minimum 0.5 acre HRA or clumps totaling 0.5 acres and additional scattered or clumped evergreen hardwood trees at a rate of two trees per clearcut acre.

**2. Post-harvest Habitat Retention**

Post-harvest completion data were collected for units that received company harvest plan completions (where harvest and logging activities such as falling, yarding, hauling and loading had terminated) during the reporting period. For plan completions, the number of green wildlife trees retained was estimated as the number of remaining trees  $> 12$ " dbh per acre. Post-harvest LWD and snag retention for all units within the MSMA and Moore Tract were measured by ocular estimate following the completion of the harvest unit. Slash piles to benefit marten occupancy within the MSMA and Moore Tract were created post-harvest and retained at a rate of one structure per 5-10 clearcut acres within each ground-based unit. Slash pile numbers for clearcut harvest units were measured by ocular estimate following the completion of the harvest unit. If a THP was to be burned for site preparation, the completion data was not collected until after the plan was burned. It was noted for each completion whether site preparation, burning, windthrow or some other form of forest management damaged the retained habitat features.

### 3. Commercial Thinning

Commercial thinning involves removing selected trees that may contain commercial value in order to create additional growing space for crop trees. Commercial thinning on Green Diamond's forest lands is typically an intermediate treatment applied to younger stands that allows for the release of the selected crop trees by providing more light and in cases, more nutrients and soil moisture when they are limiting factors. The log size of these younger thinned stands is inherently smaller than those of an older stand ready for the final harvest stages of even-aged management (i.e., clearcut harvest). In addition to the release of crop trees, commercial thinning allows for the release of understory vegetation through increased light exposure. The release of understory vegetation may provide additional cover and an increase in mast production that may benefit martens. The protection measures and mitigations included in a final clearcut harvest also apply to these intermediate thinning harvests with exception of the creation of slash piles. Given the goal of thinning harvests and amount of post-harvest habitat retention associated with this type of silviculture, marten habitat is at a minimum maintained, but this type of harvest should advance the development of marten habitat. Therefore, these units meet or exceed post-harvest habitat retention standards of the MOU and are excluded from the pre- and post-harvest retention summaries in the annual report.

### 4. Herbicide Applications

Herbicide applications involve treating selected areas to eliminate vegetation in order to create growing space for crop trees (site preparation). Herbicide applications on Green Diamond's forest lands are applied via backpack spraying and hack and squirt applications. These herbicide applications allow for the release of selected crop trees by increasing light and in cases, more nutrients and soil moisture when they are limiting factors. Green Diamond utilizes backpack spraying to reduce competing vegetation and allow for the release of crop tree seedlings. These applications are typically applied during the end of the second growing season after the completion of a final clearcut harvest unit. The backpack application of herbicides does not affect the retention of green wildlife trees, tree clumps or HRAs within the original final harvest unit. Therefore, all prescribed retention including green wildlife trees retained as the result of the marten-specific TREE scorecard, are unaffected by these treatments. Hack and squirt herbicide applications on Green Diamond's forest lands are prescribed in units with sprouting hardwoods or young stands with a high volume of standing hardwoods. The log size of these younger stands is inherently smaller than those of an older stand ready for the final harvest stages of even-aged management (i.e., clearcut harvest). Given the smaller log size of treated stands and the amount of post-treatment habitat retention described above, marten habitat is maintained, but hack and squirt applications could also advance the development of marten habitat. Therefore, the units treated with these herbicide applications meet or exceed the habitat retention standards of the MOU and are excluded from the pre- and post-harvest retention summaries in the annual report. However, the number of units and total acreage treated with herbicides are provided in the results.

Hack and squirt treatments may also be utilized in older stands as a stand-replacing harvest (commercial treatment) with post-harvest results similar to clearcut silviculture. The protection measures and mitigations included in final clearcut harvest units also apply to

commercial hack and squirt units. The number of units and total acreage treated with hack and squirt applications that involve the elimination of commercial age trees are provided in the results.

## **5. Den Sites**

Natal or maternal den structures were retained on the landscape, and tree retention around the den structure was incorporated when appropriate. The standard for tree retention around a natal den structure included a no-less-than 0.5-acre no-harvest HRA. Any harvest conducted within the natal den HRA was only done in consultation with USFWS. Harvest conducted within the natal den HRA was designed to protect the biological integrity of the site and increase/accelerate development of large trees within the HRA.

Habitat retention around maternal den structures may have included the individual den structure element (live tree, snag, log, etc.), the individual structure with tree clump retention, or the individual structure and a 0.5-acre HRA with 70 percent over story tree canopy composed of a variety of tree sizes and tree species present in the existing pre-harvest stand. The tree retention around known den structures helped to retain existing biologically important habitat elements such as large trees, snags and large down wood.

## **6. TREE Scorecard Habitat Retention Comparison**

Green Diamond will use a stratified random sample to analyze 10 percent of the THP units (pre-harvest) to quantify tree retention using the marten-specific TREE scorecard applied to the MSMA and Moore Tract versus the scorecard applied to the balance of Green Diamond timberlands covered by this agreement (Table 3). Green Diamond will conduct and report the results of this analysis at 5-year intervals. Green Diamond and USFWS will evaluate the results at the 5-year reporting intervals and during the adaptive management review in year 25 to determine if this monitoring process should be modified.

Table 3. Comparison of live tree retention features and scores associated with the TREE retention scorecards.

<b>Marten-specific Tracts (MSMA and Moore Tract)<sup>1</sup></b>		<b>Balance of lands covered by the MOU</b>	
Tree Elements	Score	Tree Elements	Score
Conifer > 30", hardwood > 18"	3	Conifer > 30", hardwood > 18"	3
Large cavity, hollow, basal hollow	4	Large cavity, hollow, basal hollow	4
Small cavity, broken top, reiteration	3	Small cavity, internal rot or mistletoe broom*	2
Crevice cover (fissure, loose bark, furrowed bark)	1	Crevice cover (loose or deeply furrowed bark)	1
Complex crown (dead or forked top, lateral large limbs, epicormic branching, ledge/platform)	1	Complex crown (lateral large limbs, epicormic branching)	1
Internal decay, mistletoe broom	2		

\* In marten-specific tracts, small cavities, broken tops, and reiterations are assigned higher values as these features pose a conservation benefit to marten.

<sup>1</sup> Specific TREE measures designed as a conservation benefit to marten are applied through a marten-specific scorecard on Green Diamond timberlands within the Marten Special Management Area, the Moore Tract (tracts 51, 53, 56, 61, 66, 67, 70, 71, 72, 73, 85, 87, 88, 98), and within California Interagency Watershed Map (i.e., Calwater 2.2.1) watersheds when marten are detected.

## 7. Carbon Offset Forest Improvement Project

Green Diamond will implement a carbon offset forest improvement project on its California timberlands with a substantial portion located within the Marten Special Management Area (MSMA). Green Diamond will retain and grow maturing mixed species forest stands to maintain the carbon project baseline during project verification and approval. After approval, the average stand age of the forests within the carbon project will be maintained and increased over time to attain additionality requirements that are enforced for 100 years following the issuance and sale of any carbon offset credits from the carbon project. Management activities within the project area that will lead to increased carbon stocks compared to the baseline include but are not limited to longer rotations and improving species composition by harvesting stands with poor and marginal conifer stocking and regenerating with conifers.

## B. Results

Thirty-seven THPs comprised of 81 clearcut harvest units totaling 1,855.75 clearcut acres received an approved completion during the reporting period. Sixty-eight of these units were

in the MSMA, zero units were in the Moore Tract, and thirteen units were in the Maple Creek, Pitcher Creek, or McDonald Creek Planning Watersheds. Seven commercially thinned harvest units totaling 357.43 acres received approved completions during the reporting period and are excluded from the clearcut summary tables. For more details on the clearcut harvest unit retention see Appendix II.

### 1. Pre-harvest Habitat Retention Planning

Of the 81 clearcut harvest units, 74 were conifer dominated with RMZ or geological retention and prescribed an average of 2.26 green wildlife trees (GWT) per clearcut acre (Table 4). Six units were conifer dominated without RMZ or geological retention and prescribed an average of 2.47 GWT per clearcut acre (Table 4). The remaining unit was hardwood dominated with RMZ or geological retention and retained 2.6 GWT per clearcut acre. The average number of scorecard trees marked for retention was 0.53 per clearcut acre. Ten HRAs were prescribed across eight units. The average number of snags pre-harvest was estimated to be 0.46 snags per acre (Table 5).

Table 4. Summary of pre-harvest green wildlife tree retention measures for completed THP units (n=81 units).

	GWT/acre* with RMZ/GEO Conifer	GWT/acre without RMZ/GEO Conifer	GWT/acre with RMZ/GEO Hardwood
Minimum	1.00	2.00	2.60
Maximum	14.40	4.00	2.60
Average	2.26	2.47	2.60

\*All acres are clearcut acres  
 GWT = Green Wildlife Tree  
 HRA = Habitat Retention Area  
 THP = Timber Harvest Plan

Table 5. Summary of pre-harvest THP conservation measures for completed THP units (n=81 units).

	Snags/ acre*	HRAs (#)	Scorecard Trees (#)	Scorecard Trees /acre
Minimum	0.00	0.00	0.00	0.00
Maximum	2.00	3.00	120.0	3.53
Average	0.46	0.12	12.20	0.53

\*All acres are clearcut acres

HRA = Habitat Retention Area

THP = Timber Harvest Plan

## 2. Post-harvest Habitat Retention

The 74 conifer dominated units with RMZ or geological retention retained an average of 2.68 GWT per clearcut acre. The six conifer dominated units without RMZ or geological retention retained at least two GWT per clearcut acre with an average of 3.47 per clearcut acre. The single hardwood dominated unit with RMZ or geological retention retained 2.60 GWT per clearcut acre (Table 6). The average number of scorecard trees retained was 0.50 per clearcut acre, and all ten HRAs were retained post-harvest. The average number of snags and large woody debris pieces retained post-harvest was 0.44 and 1.94 per acre, respectively (Table 7). A total of 515.33 acres were retained within riparian and geological retention areas, which were a mix of selection and no harvest. Harvest within these riparian areas represent the single entry allowed under the Aquatic Habitat Conservation Plan permit term.

Fifty-nine of the 68 completed units within the MSMA used ground-based harvesting methods on 1,133.80 acres and retained at least one slash pile structure per ten acres (Appendix II). An average of 8.63 structures per ten acres were retained. Additional slash pile retention acres are included in the appendix when the data was available, but slash pile retention is not typically reported for units lacking ground-based clearcut acres. Therefore, the slash pile acres reported in the appendix underestimate the structures retained.

Table 6. Summary of post-harvest green wildlife tree retention measures for completed THP units (n=81 units).

	GWT/acre* with RMZ/GEO Conifer	GWT/acre without RMZ/GEO Conifer	GWT/acre With RMZ/GEO Hardwood	GWT/acre without RMZ/GEO Hardwood
Minimum	0.86	2.00	2.60	Not applicable
Maximum	19.6	8.00	2.60	Not applicable
Average	2.68	3.47	2.60	Not applicable

\*All acres are clearcut acres  
 GWT = Green Wildlife Tree  
 RMZ = Riparian Management Zone  
 GEO = Geologically Unstable Area  
 THP = Timber Harvest Plan

Table 7. Summary of post-harvest THP conservation measures for completed THP units (n=81 units).

	Snags/ acre*	HRAs (#)	Scorecard trees (#)	Scorecard trees/acre	LWD (#/acre)
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	2.00	3.00	109.0	3.37	8.00
Average	0.44	0.12	11.67	0.50	1.94

\*All acres are clearcut acres  
 HRA = Habitat Retention Area  
 LWD = Large Woody Debris  
 THP = Timber Harvest Plan

Post-harvest slash pile burning occurred in 47 ground-based units associated with 16 THPs that were either completed in 2023 or a previous reporting period. All units maintained more than the minimum number of slash piles required post-burning.

### 3. Comparison of Pre- and Post-harvest Wildlife Retention Measures

The prescribed pre-harvest and post-harvest data were compared for the 81 THP units with company approved completions during the reporting period (Table 8 and Table 9). At times, trees were left for unanticipated reasons, and as long as they satisfied the criteria for a green tree, they were counted as additional trees in the post-harvest evaluation. However, they



were not counted towards the green tree tallies unless previously marked during plan layout. In some cases, additional tree clumps were retained to comply with the Forest Stewardship Council (FSC) standards, but this additional retention was not counted towards the green tree or HRA tallies unless it satisfied green tree or HRA criteria.

Average post-harvest retention of green trees was greater than pre-harvest prescriptions, and all units retained equal to or greater than the required minimum (Table 8). Average post-harvest retention of wildlife scorecard trees was slightly less than pre-harvest prescriptions. In 2023, fourteen units reported a loss of wildlife scorecard trees due to a combination of operational and safety constraints, road construction, and windthrow. Post-harvest estimates of retained snags were less than pre-harvest estimates (Table 9). Pre-harvest estimates for large woody debris were not available during the reporting period; and therefore, no comparisons were included in this section. Likewise, slash pile creation and retention only occur post-harvest, and all ground-based clearcut units retained at least the minimum number of required structures.

Table 8. Comparison of pre- and post-harvest green tree retention for completed THP units (n=81 units).

	Pre GWT/ acre* with RMZ/GEO Conifer	Post GWT/ acre with RMZ/GEO Conifer	Pre GWT/ acre without RMZ/GEO Conifer	Post GWT/ acre without RMZ/GEO Conifer	Pre GWT/ acre with RMZ/GEO Hardwood	Post GWT/ acre with RMZ/GEO Hardwood
Average	2.26	2.68	2.47	3.47	2.60	2.60
Average change/ unit	0.42		1.00		0.00	

\*All acres are clearcut acres

THP = Timber Harvest Plan

GWT = Green Wildlife Tree

GEO = Geologically Unstable Area

RMZ = Riparian Management Zone

Table 9. Comparison of pre- and post-harvest THP conservation measures for completed THP units (n = 81 units).

	Pre Snag/ acre*	Post Snag/ acre	Pre HRA (#)	Post HRA (#)	Pre Scorecard Trees/acre	Post Scorecard Trees/acre	Pre Scorecard Trees (#)	Post Scorecard Trees (#)
Avg.	0.46	0.44	0.12	0.12	0.53	0.50	12.20	11.67
Avg. change /unit	-0.02		0.00		-0.03		-0.53	

\*All acres are clearcut acres  
HRA = Habitat Retention Area  
THP = Timber Harvest Plan

#### 4. Herbicide Applications

Fifty-five units (1,269 total acres) were treated with herbicide applications during the reporting period. Zero of the 55 units were treated with hack and squirt herbicide applications that involved the treatment of commercial age trees.

#### 5. Den Site Retention Measures

No marten den structures were discovered within Green Diamond's timberlands during the reporting period.

#### 6. TREE Scorecard Habitat Retention Comparison

From 2019 through 2023, approximately 287 timber harvest units were planned for operations within the MSMA, and zero units were planned for operations within the Moore Tract. Green Diamond assessed 59 of the 287 available units (20.6%) using the marten-specific scorecard developed for the MSMA and Moore Tract and the scorecard developed for the Forest Habitat Conservation Plan (FHCP) that is applied to the remainder of the lands covered by the MOU (Table 10). Although the distribution of sampled units did not include all of the tracts within the MSMA or Moore Tract, overall sampling included more than ten percent of available units.

Table 10. Percentage of units sampled using both scorecard retention guidelines.

<b>MSMA Tract ID</b>	<b>Number of Units Available</b>	<b>Number of Units Sampled</b>	<b>Percent of Units Sampled</b>
51	29	4	13.8
56	92	22	23.9
61	16	3	18.8
66	24	16	66.7
67	6	0	0.0
70	4	0	0.0
71	54	5	9.3
72	0	0	None Available
73	24	4	16.7
85	34	5	14.7
86	0	0	None Available
87	0	0	None Available
88	0	0	None Available
98	4	0	0.0
<b>Total</b>	<b>287</b>	<b>59</b>	<b>20.6</b>

Of the 59 units sampled, 38 units (64.4%) retained a greater number of trees when applying the marten-specific scorecard compared to the FHCP scorecard, and no difference in tree retention was observed for the remaining units (Appendix III). Applying the marten-specific scorecard resulted in an average increase of 3.1 trees being retained per unit compared to application of the FHCP scorecard. Of the 38 units that had greater tree retention when applying the marten-specific scorecard, information comparing conifer and hardwood scorecard tree retention was collected for 23 units. The increase in retention for 21 of the 23 units resulted from conifer tree retention.

## 7. Carbon Offset Forest Improvement Project

Green Diamond manages approximately 33,218 acres in Humboldt County in compliance with an approved California Air Resources Board Improved Forest Management Project named the "Humboldt Mixed Forest Improvement Project". Approximately 21,743 acres are located within the Marten Special Management Area (MSMA). This project commenced in May 2019 and is composed of multiple managed timber stands dispersed across the ownership between the Klamath River and the Mad River. Approximately 21,007 acres are in Northern California Coast/Redwood/Douglas-fir Mixed Conifer type, 11,637 acres in the Southern Cascades/Mixed Conifer type and 574 acres in the Northern California Coast/Mixed Oak Woodlands type. The forest vegetation within the project area is composed predominantly of tanoak (52%) and Douglas-fir (30%), with lesser amounts of redwood (7%), alder (7%) and other tree species (4%).

## C. Discussion

Retention measures were implemented in compliance with the Marten MOU, and all required habitat retention features were successfully retained. Areas of habitat retained compared to the planned level of retention were equal to or greater in acreage for all but wildlife scorecard trees and snags. Fourteen units experienced a loss in wildlife scorecard trees due to a combination of operational and safety constraints, road construction, and windthrow. Snag retention decreased from pre-harvest estimates for 14 of the 81 units; however, discrepancies between estimates of pre- and post-harvest snags are common. Since snags are not marked and tallied individually, inaccurate ocular estimates are often made on the number per acre, particularly during the pre-harvest phase when they are less obvious in the unharvested stand.

Overall green tree retention was greater than the planned retention. At times, trees were left for unanticipated reasons, and if they satisfied the criteria for green trees, they were counted as additional retention. Additional marking of trees prior to operations may also occur. These trees are counted post-harvest because they were marked, however, they were not reported on during pre-harvest because they had not been marked or recorded on the pre-harvest form. RPFs noted the additional incidental retention of scattered and clumped sub-merchantable trees as a result of Green Diamond's Forest Stewardship Council (FSC) certification, but these habitat features were not quantified in this report. In many instances, this incidental structure is likely to add another element of structural diversity to future forest stands.

The greatest amount of habitat retention occurred in riparian and geologic retention areas. Class I and II watercourses are usually given canopy retention that exceeds the standard Forest Practice Rules, therefore representing a significant amount of retention for future marten habitat. Application of the marten-specific scorecard resulted in an equal or greater amount of tree retention compared to the FHCP scorecard. The increased retention was primarily the result of more conifer trees being retained, which is likely due to the higher value (points) assigned to small cavities when applying the marten-specific scorecard. Additionally, Green Diamond did not locate any marten den sites within 0.25 miles of a timber harvesting unit. Therefore, no den site protection or habitat retention measures were implemented during the current reporting period.

Appendix I. Inspection dates for all water tanks located within Green Diamond lands in 2023.

<b>Tank ID</b>	<b>Tank Name</b>	<b>Inspection Date</b>
1	7010	10/11/2023
2	2000 Drafting	10/16/2023
3	5000/Dry Creek	10/11/2023
4	U10 Terwar Creek Drafting	10/03/2023
5	BL1100	10/10/2023
6	BL2000	10/10/2023
7	BL3910	10/10/2023
8	C900	10/16/2023
9	Chaparral	10/24/2023
10	CL South	11/21/2023
11	CR1300 Drafting	09/21/2023
12	CR2700 Drafting	10/10/2023
13	CR2900	10/02/2023
14	CR3000	09/21/2023
15	Crannell Well	09/21/2023
16	D1000/W1000	09/18/2023
17	D1110/Ritmer Creek	09/18/2023
18	Fernwood	11/28/2023
19	Graham Creek Lower	10/11/2023
20	HC120	10/16/2023
21	HC130	11/29/2023
22	HC132	11/14/2023
23	J1100	10/16/2023
24	K&K 900 A	10/02/2023
25	K&K LR	09/19/2023
26	K&K North	10/16/2023
27	Little Boulder Creek	09/26/2023
28	Miller's Road	10/24/2023
29	Noisy Creek	10/16/2023
30	Old 299	09/18/2023
31	R120 A	09/28/2023
32	R2000	09/18/2023
33	R4	10/03/2023
34	Ravine Creek	09/18/2023
35	Ribar	09/20/2023
36	Roddiscraft	09/26/2023

37	Snow Camp Powerline	11/15/2023
38	T100 Bridge	11/29/2023
39	Teepo Ridge	09/27/2023
40	Twin Tanks A	11/27/2023
41	U10 Dandy Creek	10/03/2023
42	W2300	09/18/2023
43	Washington Gulch Drafting	10/16/2023
44	Wiregrass South	10/24/2023
45	Wiregrass North	11/20/2023
46	WM10	09/28/2023
47	WM200	11/29/2023
48	WM710	09/28/2023
49	4100	09/28/2023
50	A400 Bridge Drafting	11/21/2023
51	Arrow Mills Historic Mill A	10/03/2023
52	BH1900	11/12/2023
53	BL2011	10/10/2023
54	CP2000	10/16/2023
55	D1000 Culvert Yard	09/18/2023
56	DV2400	10/10/2023
57	H400 A	09/27/2023
58	HC1000	11/14/2023
59	Klamath Mill A	11/01/2023
60	Morgan Creek	11/28/2023
61	NF1000	09/18/2023
62	SA800	10/12/2023
63	S-Line	12/05/2023
64	Sproul East A*	10/16/2023
65	Sproul West*	10/16/2023
66	T150	10/03/2023
**67	CR3100 A	10/10/2023
72	K&K 900B	10/02/2023
73	Boulder Creek	10/24/2023
74	Twin Tanks B	11/27/2023
75	Klamath Mill B	11/01/2023
76	Klamath Mill C	11/01/2023
77	Klamath Mill D	11/01/2023
78	Klamath Mill E	11/01/2023
79	Klamath Mill F	11/01/2023
80	Klamath Mill G	11/01/2023
81	Hoppaw Creek A	10/03/2023

82	Hoppaw Creek B	10/03/2023
83	Hoppaw Creek C	10/03/2023
84	Hoppaw Creek D	10/03/2023
85	Arrow Mills Historic Mill B	10/03/2023
86	Arrow Mills Historic Mill C	100/3/2023
87	Sweet Flat A	10/11/2023
88	Sweet Flat B	10/11/2023
89	Sproul East B*	10/16/2023
90	Sproul East C*	10/16/2023
91	Sproul East D*	10/16/2023
92	H400 B	09/27/2023
93	Arrow Mills Truck	10/03/2023
94	White house	11/27/2023
95	CR2000	10/16/2023
96	CR3100 B	10/10/2023
97	Turkey foot	11/29/2023
98	R120 B	09/28/2023
99	Klamath Bar	11/30/2023

\*Denotes tanks inspected but not located within the footprint of Green Diamond's FHCP, and therefore not included in the report summaries.

\*\*Gap in sequential numbering are the result of tanks that are no longer located on the Green Diamond ownership or that have been decommissioned and removed from Green Diamond's California Timberlands.

Appendix II. Raw data for habitat retention measures for individual clearcut harvest units summarized in Tables 4, 5, 6, 7, 8 and 9 (2023).

THP # <sup>1</sup>	Unit	Acres	Pre HRA #	Post HRA #	Pre green trees/acre	Post green trees/acre	Pre snags/acre	Post snags/acre	Pre scorecard trees/acre	Post scorecard trees/acre	LWD/acre	Dominance	RMZ and Geo acres	Slash piles retained # <sup>2</sup>
472003 <sup>1</sup>	B	8.05	1	1	2.00	8.00	0.00	0.00	0	0	0.10	Conifer	0.00	33 <sup>2</sup>
472004 <sup>1</sup>	A	38.54	0	0	3.30	3.80	0.10	0.20	12	8	2.00	Conifer	12.57	35 <sup>2</sup>
472004 <sup>1</sup>	B	27.53	0	0	0.86	0.86	0.10	1.14	3	3	1.08	Conifer	8.73	53 <sup>2</sup>
472004 <sup>1</sup>	F	26.38	0	0	1.30	1.86	0.10	0.93	8	8	1.00	Conifer	4.32	55 <sup>2</sup>
472101 <sup>1</sup>	C	28.04	0	0	1.50	1.50	0.00	0.24	5	5	0.68	Conifer	3.30	30 <sup>2</sup>
472101 <sup>1</sup>	D	38.82	0	0	2.00	2.60	0.00	0.20	11	9	0.36	Conifer	9.03	67 <sup>2</sup>
472104 <sup>1</sup>	B	26.7	0	0	1.00	1.00	0.00	0.00	1	1	0.10	Conifer	4.64	2 <sup>2</sup>
472104 <sup>1</sup>	D	38.75	0	0	1.00	1.00	0.00	0.00	4	4	0.10	Conifer	13.41	2 <sup>2</sup>
472104 <sup>1</sup>	E	22.85	0	0	1.00	1.00	0.00	0.00	0	0	0.10	Conifer	2.20	2 <sup>2</sup>
472105 <sup>1</sup>	A	18.35	0	0	2.80	2.80	0.50	0.10	2	2	1.00	Conifer	0.00	3 <sup>2</sup>
472106 <sup>1</sup>	A	25.25	0	0	3.62	4.10	1.85	2.00	51	47	2.00	Conifer	2.43	20 <sup>2</sup>
472106 <sup>1</sup>	C	44.84	0	0	3.25	3.25	1.78	1.30	120	109	2.80	Conifer	9.70	25 <sup>2</sup>
472106 <sup>1</sup>	D	32.51	0	0	1.35	3.90	1.42	1.20	30	30	3.00	Conifer	21.61	12 <sup>2</sup>
511707	H	44.95	0	0	2.00	7.56	1.00	0.33	51	67	7.00	Conifer	6.16	20
511801	D	38.61	0	0	2.00	2.00	1.00	1.00	6	6	1.00	Conifer	11.23	2
511801	E	50.47	0	0	1.00	2.00	0.00	1.00	10	10	1.00	Conifer	18.49	1
512002	B	35.13	1	1	14.40	19.60	0.00	0.40	88	76	1.20	Conifer	1.90	73
512102	A	33.83	0	0	2.95	3.00	0.50	0.50	43	43	1.30	Conifer	3.56	3
512102	B	24.69	0	0	3.68	4.00	0.50	0.50	2	2	0.50	Conifer	5.59	2
512102	C	43.45	0	0	2.43	2.50	0.50	0.50	13	13	0.50	Conifer	13.43	3
512102	D	26.38	0	0	3.40	3.50	0.50	0.50	27	27	0.50	Conifer	1.56	3
512102	E	25.17	0	0	3.30	3.30	0.50	0.50	16	16	0.50	Conifer	2.77	3
512102	F	17.8	0	0	2.88	2.90	0.50	0.50	7	7	0.50	Conifer	2.50	2



THP # <sup>1</sup>	Unit	Acres	Pre HRA #	Post HRA #	Pre green trees/acre	Post green trees/acre	Pre snags/acre	Post snags/acre	Pre scorecard trees/acre	Post scorecard trees/acre	LWD/acre	Dominance	RMZ and Geo acres	Slash piles retained # <sup>2</sup>
561704	A	31.21	3	3	3.20	3.20	0.00	0.00	34	34	1.00	Conifer	0.98	1
561704	B	33.58	0	0	2.60	2.60	0.00	0.00	32	32	1.00	Hardwood	6.86	0 <sup>2</sup>
561804	B	35.77	0	0	1.90	1.90	0.00	0.00	44	44	0.00	Conifer	2.86	3
561901	D	55.25	0	0	2.00	2.00	0.10	0.10	11	12	0.20	Conifer	12.60	0 <sup>2</sup>
561902	A	37.02	0	0	2.00	2.00	0.50	0.50	1	1	1.00	Conifer	6.41	1
561902	B	28.09	1	1	2.00	2.00	0.50	0.50	2	2	1.00	Conifer	0.00	3
561902	C	41.96	0	0	2.00	2.00	0.50	0.50	32	32	1.00	Conifer	14.87	2
561902	F	25.65	1	1	2.00	2.00	0.50	0.00	14	10	1.00	Conifer	0.00	3
561904	C	22.15	0	0	2.00	2.00	1.00	1.00	2	3	0.50	Conifer	2.14	20
562001	A	28.87	0	0	1.60	1.80	0.00	0.90	2	2	2.70	Conifer	11.71	21
562001	E	26.44	0	0	2.80	5.00	0.00	0.50	17	17	2.80	Conifer	3.10	48
562101	A	20.6	0	0	2.70	2.70	0.25	0.50	4	4	1.00	Conifer	3.05	20
562101	C	23.46	0	0	4.00	4.00	0.50	0.50	16	16	1.00	Conifer	0.00	40
562101	D	39.26	0	0	2.70	2.70	0.50	0.50	6	6	1.00	Conifer	11.47	28
562102	B	29.35	0	0	2.50	2.50	0.10	0.00	35	21	1.00	Conifer	5.03	22
562102	C	22.82	0	0	2.20	2.20	0.10	0.10	9	9	1.00	Conifer	10.57	6
661901	G	35.69	0	0	2.00	2.00	0.50	0.50	3	3	6.00	Conifer	6.95	3
661901	I	21.84	0	0	2.00	2.00	0.50	0.50	0	0	7.00	Conifer	1.53	2
662001	B	35.31	0	0	2.40	2.40	0.50	0.50	8	8	1.00	Conifer	10.28	30
662001	C	30.61	0	0	1.50	1.50	0.50	0.50	3	3	1.00	Conifer	10.26	32
711702	A	33.28	0	0	2.00	2.00	0.50	0.50	3	3	2.00	Conifer	3.08	33
711702	D	41.03	0	0	1.00	1.00	0.50	0.50	0	0	2.00	Conifer	7.99	30
711804	A	37.27	0	0	2.50	3.00	0.10	0.20	6	6	1.00	Conifer	5.64	35
711804	B	44.2	0	0	2.10	3.00	0.10	0.20	2	2	1.00	Conifer	15.48	40
711901	E	15.92	0	0	2.00	4.00	0.00	0.10	6	2	0.50	Conifer	1.50	35

THP # <sup>1</sup>	Unit	Acres	Pre HRA #	Post HRA #	Pre green trees/acre	Post green trees/acre	Pre snags/acre	Post snags/acre	Pre scorecard trees/acre	Post scorecard trees/acre	LWD/acre	Dominance	RMZ and Geo acres	Slash piles retained # <sup>2</sup>
711902	B	45.77	0	0	2.00	2.00	1.00	1.00	2	2	1.00	Conifer	12.86	15
711903	E	38.62	0	0	2.00	2.00	0.50	0.50	20	20	7.00	Conifer	7.20	3
712001	A	10.56	1	1	2.00	2.00	1.00	1.00	4	4	0.50	Conifer	0.00	25
712001	B	44.96	0	0	2.00	2.00	1.00	1.00	14	14	1.00	Conifer	4.78	25
712001	C	29.98	0	0	2.40	2.40	0.50	0.50	8	8	0.50	Conifer	3.37	22
712101	C	38.85	0	0	2.00	2.00	0.00	0.00	5	4	0.50	Conifer	4.05	35
712102	A	40.9	0	0	1.60	6.00	1.00	0.10	4	4	0.50	Conifer	8.00	10
712102	B	36.87	0	0	1.50	1.50	1.00	0.00	0	0	0.10	Conifer	9.66	7 <sup>2</sup>
712102	C	33.97	0	0	2.00	2.00	1.00	0.10	1	1	0.50	Conifer	13.81	8 <sup>2</sup>
712102	D	39.31	0	0	2.00	4.00	1.00	0.00	1	1	0.20	Conifer	11.01	8 <sup>2</sup>
712102	E	28.14	0	0	2.00	2.00	1.00	0.00	0	0	0.20	Conifer	10.22	7 <sup>2</sup>
712103	B	27.57	1	1	2.00	2.00	0.50	0.50	38	38	6.00	Conifer	2.36	3
712104	A	41.01	0	0	2.00	2.00	1.00	1.00	8	8	1.00	Conifer	7.92	25
712105	J	33.45	1	1	2.00	2.00	0.50	0.50	1	1	7.00	Conifer	1.23	4
732001	B	35.93	0	0	2.20	3.00	0.00	0.10	4	4	0.50	Conifer	3.98	40 <sup>2</sup>
732001	D	27.45	0	0	2.10	3.00	0.00	0.30	2	2	0.50	Conifer	11.29	8 <sup>2</sup>
732001	F	26.53	0	0	2.00	2.00	0.00	0.10	9	8	0.50	Conifer	1.43	35
732002	A	24.29	0	0	2.00	2.00	0.00	0.20	4	3	1.00	Conifer	3.43	35
732002	C	39.28	0	0	2.00	2.00	0.00	0.10	1	2	1.00	Conifer	6.90	30
732002	F	25.62	0	0	2.00	2.00	0.00	0.10	6	4	1.00	Conifer	0.12	25
732002	G	23.1	0	0	1.50	1.50	0.00	0.10	5	4	1.00	Conifer	1.31	35
732101	A	34.31	0	0	2.00	2.00	0.50	0.50	8	8	7.00	Conifer	8.41	4
732101	B	24.68	0	0	2.00	2.00	0.50	0.50	1	1	5.00	Conifer	2.66	2
732101	C	31.66	0	0	2.00	2.00	0.50	0.50	0	0	6.00	Conifer	9.22	2
732101	D	26.53	0	0	2.00	2.00	0.50	0.50	1	1	5.00	Conifer	2.65	0 <sup>2</sup>

THP # <sup>1</sup>	Unit	Acres	Pre HRA #	Post HRA #	Pre green trees/acre	Post green trees/acre	Pre snags/acre	Post snags/acre	Pre scorecard trees/acre	Post scorecard trees/acre	LWD/acre	Dominance	RMZ and Geo acres	Slash piles retained # <sup>2</sup>
732101	E	31.27	0	0	2.00	2.00	0.50	0.50	3	2	5.00	Conifer	11.36	3
732102	A	25.03	0	0	2.50	2.50	2.00	1.00	15	15	2.00	Conifer	1.53	4
732103	A	36.81	0	0	2.00	2.00	0.50	0.50	0	0	3.00	Conifer	10.81	2
732103	B	27.68	0	0	2.00	2.00	0.50	0.50	1	1	3.00	Conifer	5.72	2
732103	C	18.64	0	0	2.00	2.00	0.50	0.50	5	5	5.00	Conifer	1.36	3
732103	D	37.69	0	0	2.00	2.00	0.50	0.50	3	3	3.00	Conifer	14.22	3
981801	C	10.58	0	0	2.00	2.00	0.50	0.25	11	11	7.00	Conifer	3.61	2
981801	D	37.76	0	0	2.00	2.00	0.50	0.25	1	1	8.00	Conifer	5.36	2

<sup>1</sup>Units located within the Maple Creek, Pitcher Creek, or McDonald Creek Planning Watersheds.

<sup>2</sup>Units not requiring slash pile retention due to being located outside of the Marten Special Management Area and the Moore Tract or due to a lack of ground-based clearcut acres.

Appendix III. Tree retention data comparison for units sampled using the marten-specific scorecard that is typically applied to the MSMA and Moore Tract and the FHCP scorecard that is typically applied to the remainder of the California Timberlands covered by the MOU.

THP Number <sup>1,2</sup>	Unit Name	Unit ID	# Trees retained with FHCP scorecard	# Trees retained with marten scorecard	# Conifer trees retained with FHCP scorecard	# Conifer trees retained with marten scorecard	# Hardwood trees retained with FHCP scorecard	# Hardwood trees retained with the marten scorecard
511801 <sup>1</sup>	C	1023430	13	15	12	14	1	1
511801 <sup>1</sup>	D	1022613	6	6	0	0	6	6
511801 <sup>1</sup>	E	1022633	10	10	1	1	9	9
511801 <sup>1</sup>	F	1220511	70	73	17	20	53	53
561806	A	1223424	50	53	1	4	49	49
561901	B	1220930	10	12	6	8	4	4
561901	D	1211301	7	8	7	8	0	0
561902	A	1122810	1	1	0	0	1	1
561902	B	1122812	1	2	1	2	0	0
561902	C	1123324	76	76	3	3	73	73
561902	D	1123320	2	2	1	1	1	1
561902	E	1123330	12	12	0	0	12	12
561902	F	1123408	12	13	6	7	6	6
561902	G	1123405	15	15	1	1	14	14
561903	C	1122617	12	55	12	2	0	53
562001	A	1221924	2	2	2	2	0	0
562001	B	1221819	22	22	17	17	5	5
562001	C	1221708	8	10	7	9	1	1
562001	D	1221705	7	7	6	6	1	1
562001	E	1221723	15	17	4	6	11	11
562102	A	1223010	11	12	11	12	0	0
562102 <sup>2</sup>	B	1222807	33	35	11	13	22	22
562102	C	1223323	0	0	0	0	0	0
562102	D	1223319	8	9	1	2	7	7

THP Number <sup>1,2</sup>	Unit Name	Unit ID	# Trees retained with FHCP scorecard	# Trees retained with marten scorecard	# Conifer trees retained with FHCP scorecard	# Conifer trees retained with marten scorecard	# Hardwood trees retained with FHCP scorecard	# Hardwood trees retained with the marten scorecard
562102	E	1120514	24	24	1	1	23	23
562102 <sup>2</sup>	F	1223215	20	20	1	1	19	19
611901	B	1323213	3	5	1	3	2	2
611901	C	1220526	3	4	2	3	1	1
612201	C	1220617	5	6	2	2	3	4
661801	A	1313517	2	29	Not Collected	Not Collected	Not Collected	Not Collected
661801	B	1313417	3	4	Not Collected	Not Collected	Not Collected	Not Collected
661801	C	1313521	4	8	Not Collected	Not Collected	Not Collected	Not Collected
661801	E	1313424	5	7	Not Collected	Not Collected	Not Collected	Not Collected
661801	F	1313419	3	15	Not Collected	Not Collected	Not Collected	Not Collected
661801	G	1313532	25	32	Not Collected	Not Collected	Not Collected	Not Collected
661801	H	1313525	9	14	Not Collected	Not Collected	Not Collected	Not Collected
661801	I	1210221	27	43	Not Collected	Not Collected	Not Collected	Not Collected
661802	A	1322015	7	11	Not Collected	Not Collected	Not Collected	Not Collected
661802	B	1321918	6	9	Not Collected	Not Collected	Not Collected	Not Collected
661802	C	1321916	5	8	Not Collected	Not Collected	Not Collected	Not Collected
661802	D	1322429	1	6	Not Collected	Not Collected	Not Collected	Not Collected
661802	E	1312519	2	2	Not Collected	Not Collected	Not Collected	Not Collected
661802	F	1312523	24	28	Not Collected	Not Collected	Not Collected	Not Collected
661802	G	1313617	7	9	Not Collected	Not Collected	Not Collected	Not Collected
661802	H	1323209	2	5	Not Collected	Not Collected	Not Collected	Not Collected
712101	C	1420840	59	59	1	1	58	58
712101	D	1420838	60	63	9	12	51	51
712103	B	1411132	36	38	4	6	32	32
712105	C	1513240	1	5	1	5	0	0
712105	J	1410313	1	1	1	1	0	0
732001	C	1310221	9	9	3	3	6	6

THP Number <sup>1,2</sup>	Unit Name	Unit ID	# Trees retained with FHCP scorecard	# Trees retained with marten scorecard	# Conifer trees retained with FHCP scorecard	# Conifer trees retained with marten scorecard	# Hardwood trees retained with FHCP scorecard	# Hardwood trees retained with the marten scorecard
732001	F	1311127	7	9	7	9	0	0
732002	A	1423122	4	4	2	2	2	2
732002	G	1310314	3	5	3	5	0	0
851801	A	1423220	12	15	6	9	6	6
852001	A	1423401	8	8	1	1	7	7
852002	A	1320818	2	4	2	4	0	0
852201	B	1423326	0	0	0	0	0	0
852202	A	1422028	9	9	3	3	6	6

<sup>1</sup> Denotes a unit that is hardwood dominated. All other units are conifer dominated.

<sup>2</sup> Denotes a unit lacking RMZ or Geologic retention.