Dogwood Springs Forestry

3461 Burnette Way – Ukiah, California 95482 – jnickerson@dogwoodspringsforestry.com – 707-489-2443

Review of timber valuation reports for the Lost Coast Redwoods Appraisal Report that was prepared by North Coast Resource Management for John C. Hanna

Prepared for:
Joel Gerwein
California State Coastal Conservancy
1515 Clay St. 10th Floor
Oakland, CA 94612-1401

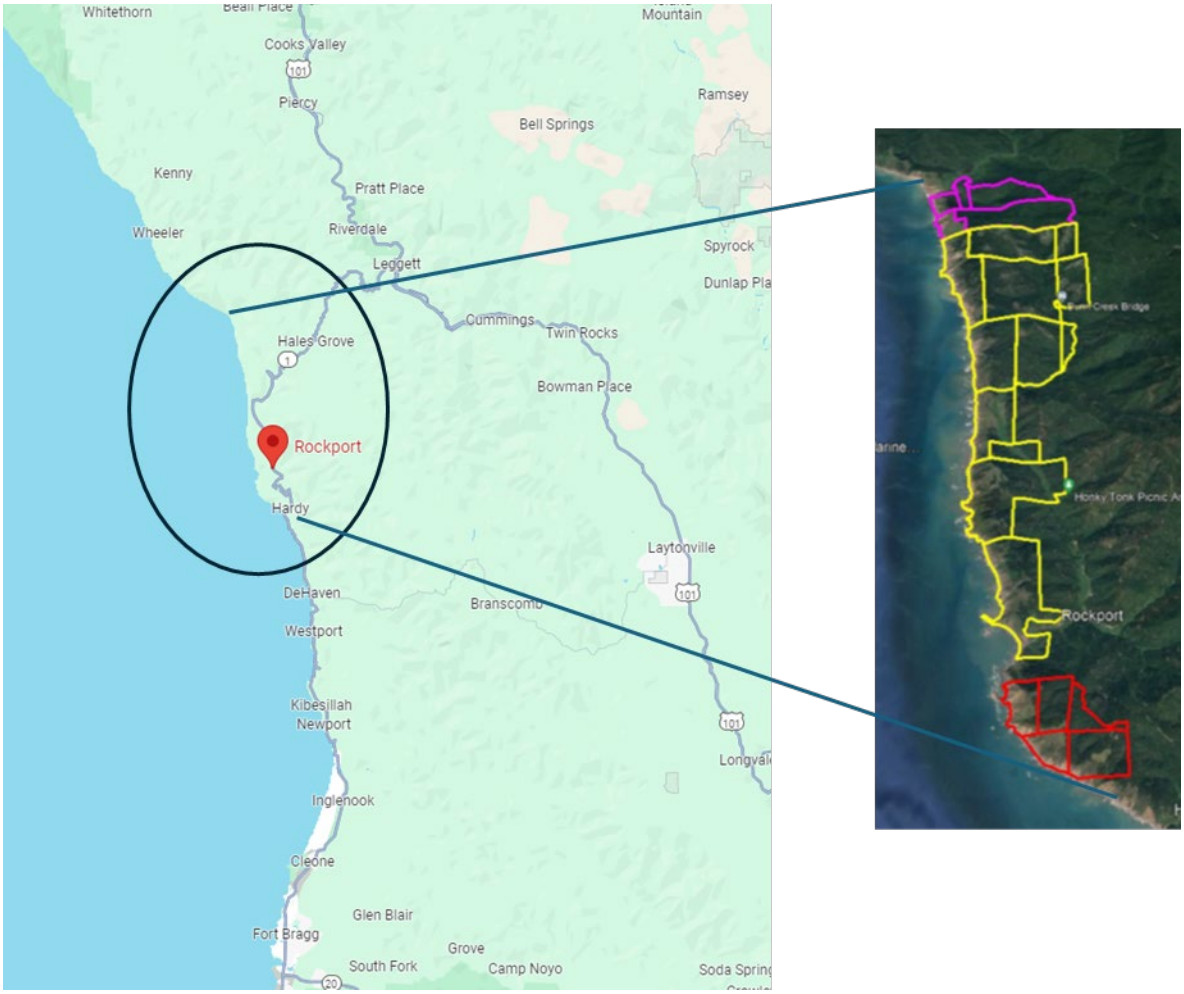
Review prepared by:
John Nickerson
Dogwood Springs Forestry
April 12, 2024

Contents

Summary of Findings

North Coast Resource Management, Inc. (NCRM Inc.) calculated a present net value of timber stumpage for three separate tracts of forestland; Shady Dell, Lost Coast Redwoods (aka Devilbiss), and Cape Vizcaino. I was contracted by the State Coastal Conservancy to determine if the timber valuation was reasonable and met the quality of work commensurate with professional standards.

The timber valuation was an accessory to a land appraisal conducted by John Hanna, MAI, dated February 5, 2024. NCRM Inc. calculated a net present value stumpage of $44,225,000 for the combined tracts. The maps below indicate the general location of the three tracts, with Shady Dell in the North (pink), Devilbiss in the middle (yellow), and Cape Vizcaino in the south (red).



Upon an initial review, I submitted a tentative finding of reasonableness to the State Coastal Commission that was conditional upon successful review of additional information that consisted of:

1. A need for more detailed information regarding the area dedicated to harvest constraints and the silviculture methods applied to the forest areas constrained for timber harvest due to habitat or stream protection. The NCRM Inc. valuation reports do not specify how many acres were associated with varying endangered species, watercourse, and other constraints and how the

harvest retention that would apply to ensure compatibility with state and federal regulations. I was unable to arrive at a determination that this aspect of harvest simulations was reasonable.
2. While a narrative of harvest outcome goals are stated for the Shady Dell tract, the harvest retention standards for the non-constrained stands are not provided. I was unable to arrive at a determination of reasonableness for this item.

Additional information was provided by NCRM Inc. in the form of:

1. Maps displaying vegetation strata boundaries for each of the tracts.
2. A description of the modeling restrictions applied to each harvest constraint, including a description of the selection silviculture used for non-constrained stands in the Shady Dell tract.

The additional information provided by NCRM Inc. is attached as appendices to this document.

With the additional information provided by NCRM Inc., I assert that the timber valuation was conducted with high professional standards and that the processes for developing the cost and revenue values were rigorous and that the timber valuation is reasonable to support the appraisal of the three tracts.

Introduction

I am providing a review of the timber valuation portion of the Lost Coast Redwoods appraisal prepared by John Hanna (Hanna), as requested by the State Coastal Conservancy. The timber valuation in the appraisal consists of three separate properties, which include the Devilbiss Tract, the Shady Dale Tract, and the Cape Vizcaino Tract.

The purpose of my review is to provide an opinion regarding the timber valuations presented in the appraisal. My opinion in this review is based on the completeness, adequacy, relevance, appropriateness, and reasonableness associated with the data, analysis, and conclusions described within the appraisal, along with the additional information requested, pertaining to the timber valuation.

The analyses, opinions, and conclusions in this review report are limited only by the assumptions and limiting conditions stated within and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions. My engagement in this review is not contingent on an action or event resulting from the analyses, opinions, or conclusions in this review.

This review is limited to the timber valuation portions of the appraisal prepared by NCRM Inc. The timber valuation reports are included as an addendum to the Hanna appraisal. The authors of the individual tract timber valuations are shown below:

Timber Valuation Tract Report	Authors	Date Completed
Shady Dell	Todd McMahon, Jim Clark, Kate Cahill, Jamie Pusich, and Madeleine Green	December 31, 2023
Devilbiss	Todd McMahon, Jim Clark, and Kate Cahill	December 31, 2023
Cape Vizcaino	Todd McMahon, Jim Clark, and Kate Cahill	December 31, 2023

For each of the three tracts, NCRM Inc. provided general descriptive information about the property boundaries, the ownership history, climate, geology, and more. The information provides a useful background for the timber valuation but does not directly influence the valuation.

The Overall Approach to the Forest Resource Valuation

For each of the three tracts, NCRM Inc. provided an introduction, which states that the timber valuation report provides an estimate of the fair market value of the current timber resources for the tract. The introduction indicates that the fair market value determination is based on an approach to timber harvesting which achieves the goals identified in the Irrevocable Offer to Dedicate (for Shady Dell) and is aligned with the general limitations to harvest that are imposed by state and federal regulatory requirements. Other items not mentioned in the introduction but included in detail in subsequent sections of the tract valuations include a description of the timber inventory, the production costs, the harvest schedule, and the approach to discounting future revenues.

The Shady Dell and Cape Vizcaino tracts are currently part of an active carbon project registered with the California Air Resources Board (ARB) compliance offsets program. The anticipated future owner of these properties is the federal government, which cannot be encumbered by a California compliance offset project. Therefore, NCRM Inc. outlined a hypothetical condition that assumed the ARB carbon project is terminated, as it likely will be prior to the land transfer, along with the encumbrances associated with a carbon project commitment. Therefore, the NCRM Inc. valuation, under the analysis of the hypothetical condition, is unaffected by the carbon project.

The steps involved in determining the value of the timber resource for each tracts included:

1. Developing forest inventory, which includes species (groups) determinations and level of defect.
2. Describing the regulatory framework, reviewing appropriate encumbrances, including state and federal laws and other agreements that could impact timber management.
3. Identifying the geographic location of areas with special management constraints.
4. Identifying appropriate silviculture methods aligned with the level of harvest constraint.
5. Modeling a harvest scenario that is legally permissible and meets the identified highest and best use.
6. Determining temporal revenues based on delivered log prices.
7. Determining temporal costs of production, including forestry, logging, hauling, road, reforestation, and tax costs.
8. Discounting the sum of revenues and costs using a justified discount rate.

My report is focused on the review of the contextual assumptions for valuations and the analytical steps involved in developing a timber valuation, as shown above. In addition to evaluating the items shown above, my review included:

1. A one-day field trip to the property (all three tracts) with Todd McMahon of NCRM Inc. that took place on April 10, 2024. The field trip consisted of cross-checking the strata maps against field observations and evaluating the inventory assertions in the report against field observations.
2. Interviewing Todd McMahon and Jim Clark about the data development used in modeling.

The Inventory Basis for Valuation

NCRM Inc. developed inventory sampling designs and performed field sampling on each of the tracts as part of the timber valuations. The description of the inventory sampling design is consistent with typical inventory approaches in the region.

Tract	Number of Plots	Type of Plots	Notes	Inventory Effort
Shady Dell	149	Fixed, on grid	2 Strata: Hardwood and Redwood. Inventory completed in 2021 by NCRM Inc.	No confidence statistics provided. 1 plot per approximately 4 timbered acres.
Devilbiss	274	Variable on systematic grid	Stands post-stratified into 9 strata, based on species and density composition. Inventory completed in 2021/2022 by NCRM Inc.	No confidence statistics. 1 plot per approximately 8.6 timbered acres.
Cape Vizcaino	39	Fixed, on grid	2 Strata: Redwood high density and redwood low density.	No confidence statistics provided. 1 plot per approximately 6.9/timbered acres.

No confidence statistics were provided in the timber valuations. However, based on field observations and my experience with the effects of variation of forest composition, in terms of species, size, and density on sampling quality, I concluded that the number of plots is reasonable. The Cape Vizcaino tract has the least amount of plots, but the forest composition is relatively homogenous.

There is no explanation why the approach to sampling, in terms of the fixed or variable approach, or the layout (grid or systematic grid) is different in each of the tracts. However, based on my knowledge of the forest type and, more specifically, passed working knowledge of the Devilbiss tract[1], I believe the inventory estimates as presented in the individual tract valuations, reasonably represent the species, size, and density diversity present within the tracts. I also visually inspected the forest present on the property using Google Earth and found that the forest inventories portrayed in the NCRM Inc. individual tract reports appear to be reasonable.

The Description of the Regulatory Framework

NCRM Inc. describes the regulatory framework that governs timber management on the Property, including the California Forest Practice Rules and limitations to harvest that are imposed by other State and Federal regulations due to site specific conditions. The regulations governing forest management assert a wide range of harvest limitations, depending on the resource value being protected. NCRM Inc. identified the presence of Northern Spotted Owl activity centers, varying watercourse types, including the presence of anadromous fish, and the potential for other protected wildlife species. Harvest limitations are typically increased, resulting in increased retention of standing trees during harvest, to meet the varied habitat requirements associated with meeting the habitat requirements.

[1] I consulted with the Soper-Wheeler Company in approximately 2001 to develop their harvesting scenarios in their Option A (a long-term management plan) required to demonstrate sustained yield.

Additionally, the timber valuation identifies that the Shady Dell Tract was encumbered with an Irrevocable Offer to Dedicate (OTD). The OTD was established when Save the Redwoods League received a grant from the State Coastal Conservancy (SCC) for the purchase of the Shady Dell tract in 2011. The SCC required that Save the Redwoods League record an OTD in Fee and Declaration of Restrictive Covenants, which are included in the State of California Grant Agreement (No. 10-073). The appraisal included a signed copy of the OTD, which specifies that the acquisition purposes include public access, open space preservation, and habitat protection. I believe the characterization of the regulatory framework for timber management is thorough and reasonable.

Identifying the Geographic Location of Areas with Special Management Constraints and Application of Appropriate Silviculture for the Constrained Areas

Beyond the 'normal' harvest constraints on 'non-protected' forest areas, the California Forest Practice Rules assign additional harvest limits to harvest activities within defined Watercourse and Lake Protection Zones (which are further impacted due to the property's location within the Coastal Anadromy Zone), within Northern Spotted Owl activity areas, on unstable soil features, and in visual corridors. NCRM Inc. identifies these areas as being constrained with single-tree selection harvest and that the level of retained trees increases based on the resource sensitivity.

The NCRM Inc. timber valuations (all tracts) do not describe the number of acres associated with each of the aforementioned constraints nor does it specify what basal area retention standards were used in the modeling approach associated with each constraint to meet post-harvest objectives, which is an important aspect to determining the volume harvested within the constrained areas. Therefore, I am unable to determine whether the areas identified for special harvest retention levels is reasonable.

Application of Appropriate Silviculture for the Non-Constrained Stands

In order to address the stated constraints in the OTD, NCRM Inc. outlined an approach to timber harvesting on the Shady Dell Tract that is designed to hasten the development of late seral conditions by reducing the tree density through a 'thin from below' approach to harvesting, which is stated to be aligned with the purpose of the OTD. Furthermore, this form of silviculture would improve the resiliency of the forest against wildfire. A similar approach to silviculture is applied in the Devilbiss and Cape Vizcaino tracts as well. I believe the harvesting approach outlined by NCRM Inc. is reasonable and is aligned with the stated purpose of the OTD. The silviculture approach is also appropriate for the other two tracts which are not constrained by the OTD.

Harvest assumptions are provided for the Devilbiss and the Cape Vizcaino tracts. It is not clear if the harvest assumptions are presented as an average retention level across both the special constrained areas and the 'normal' areas (subject to Forest Practice Rule minimums). No harvest retention assumptions are provided for Shady Dell. A summary of the harvest constraint data provided in the NCRM Inc. timber valuations is shown below.

Tract	Single Tree Selection Retention (Square Feet Basal Area per Acre)	Group Selection Retention (Square Feet Basal Area per Acre)
Shady Dell	Not specified in the timber valuation attached to the appraisal but is included as an addendum to this report as additional information.	Not specified in the timber valuation attached to the appraisal but is included as an addendum to this report as additional information.
Devilbiss	95	105

Cape Vizcaino	125	125

It was not stated why the retention levels vary by tract. Todd McMahon explained to me during the field trip that the terms for Shady Dell are specific to ensure compliance with the Irrevocable Offer to Dedicate, which is explained in the valuation. Other rationale for variation included developing a reasonable level of harvest activity, given limitations of logging and trucking contractors, etc. The level of retention specified for Devilbiss and for Cape Vizcaino are reasonable to meet the California Forest Practice Rules silviculture guidelines in areas that do not have special harvest constraints. I requested additional information from NCRM Inc. to determine if the harvest constraints were appropriate for the sensitive habitat objectives. With the additional information received, and attached to this document as an appendix, I was able to determine that the approach to modeling these constrained areas was reasonable and did not likely overestimate the volume that could be harvested there while meeting state and federal regulations.

Modeling a Harvest Scenario that is Legally Permissible and Meets the Identified Highest and Best Use

The harvest scenario modeled by NCRM Inc. is aligned with managing the three tracts under a timber management scenario where timber is recognized as the highest and best use. The timber harvest is aligned with the various limits to harvest imposed by state and federal rules and any additional encumbrances associated with agreements, such as the OTD, at least for the non-constrained forest stands. As previously stated, I am unable to determine reasonableness with the modeling of the constrained stands.

Inventory Modeling Tools

The NCRM Inc. report identified the modeling tool used for growth and harvest projections as FORSEE (the Forest and Stand Evaluation Environment). FORSEE is a recognized modeling tool in California for inventory analysis and growth and yield modeling. Forest projections in all growth and yield models are affected heavily by the site quality of the particular forest area. NCRM Inc. does not state how site index values were used to calibrate model projections within FORSEE. I did, however, evaluate the projected average annual growth, which is affected by site index inputs, and found projected growth rates to be reasonable for a forest with the current stocking levels and the varied diameter and species present on the three tracts. The timber volume reports specify that the timber volume is based on Scribner short log scale for trees 8" DBH and larger. I believe the modeling tools for growth and harvest projections and the projections themselves are reasonable.

Determining Temporal Revenues based on Delivered Log Prices

NCRM Inc. outlined, on a per-tract basis, delivered log values on a per-MBF basis for redwood, Douglas-fir, and grand fir by soliciting a quote from each of the mills operating within a reasonable distance of the tracts. The delivered log values appear to be reasonable and NCRM Inc explains the basis of the assumptions in a thorough manner.

Delivered Log Prices used in the Valuation			
Tract	Redwood	Douglas-fir	Grand fir
Shady Dell	$1,345	$625	$475
Devilbiss	$1,435	$625	$475
Cape Vizcaino	$1,435	$625	$475

The FORSEE-based modeling produced periodic (10-year) volume outputs based on applying the silviculture methods (previously discussed) to the existing timber inventory in stands that are allocated for harvesting during each of the three 10-year periods modeled. These volume outputs were adjusted to represent volume net of defect and multiplied by the delivered log prices shown above.

Todd McMahon explained to me during the field trip that the approach to harvested could have been modeled more aggressively and remained within the bounds of state and federal regulations. The timing of harvested was moderated to align with the realities of securing logging contractors and equipment and harvest operations within close proximity of each other. This process is reasonable.

The Assessment of Production Costs

NCRM Inc identified the key factors that are included as part of timber harvest, which include:

Logging and road costs.

For each of the tracts, NCRM Inc. developed logging costs which include the road costs (as a function of board feet harvested) and the costs of falling, log production, and preparing it for loading on a truck at a landing. The reports specify the estimated areas that will be harvested with tractors and cable systems. Logging rates vary by tract as a result of the determined tractor (less expensive) or cable systems (more expensive). Although not specified, the size of the logs harvested, and the volume harvested on a per-acre basis appear to have influenced the logging assumptions used. The blended road costs into these values are justified. I believe the logging and road costs are reasonable.

Haul Costs

The NCRM Inc. reports develop costs of log delivery based on the estimated load average (mbf) by species and by tract. The load estimates were developed with the varying log sizes considered and the distance, in terms of the hours (at $140/hour) needed to complete a round trip to the mill and back. Hence, the haul costs are highest on a per mbf basis for the Shady Dell tract, which has smaller timber on average and is slightly further from the mills. I believe that the haul costs are reasonable as stated in the NCRM Inc. reports.

Forestry, Administration, Reforestation, and Vegetation Management.

The forestry costs are presented as a multiplier of the volume harvest. They vary between the tracts due to efficiencies associated with higher levels of volume production. These costs are reasonable for the level of activity anticipated.

Yield Tax

The NCRM Inc. reports state that the yield tax is based on current State Board of Equalization information. The application of the yield tax formula is shown in the worksheets where net present values are calculated. These values appear reasonable.

The Assessment of Stumpage Values

Stumpage is the value to the landowner based on the delivered log price assumed net of costs. NCRM Inc. displays the projected stumpage values and the projected increases in revenues as stumpage value

increases due to economies of scale (harvest volumes increasing amidst fixed costs). This is an appropriate approach.

Developing a Discounted Cash Flow Model

NCRM Inc. developed a cash flow model by summarizing the costs and revenues over a 30-year time horizon and discounting the net revenues using a 5.5% discount rate. NCRM Inc.'s assessment of discount rates used in the industry, including rationale to increase the discount rate used due to increased regulatory risks in California is credible and reasonable. Furthermore I believe the fact that the cash flow model was limited to a 30-year time frame displays an element of conservatism, in that, discounted cash flow models can be extended for longer periods of time to increase the net present value of the timber resource.

Appendix 1. Experience

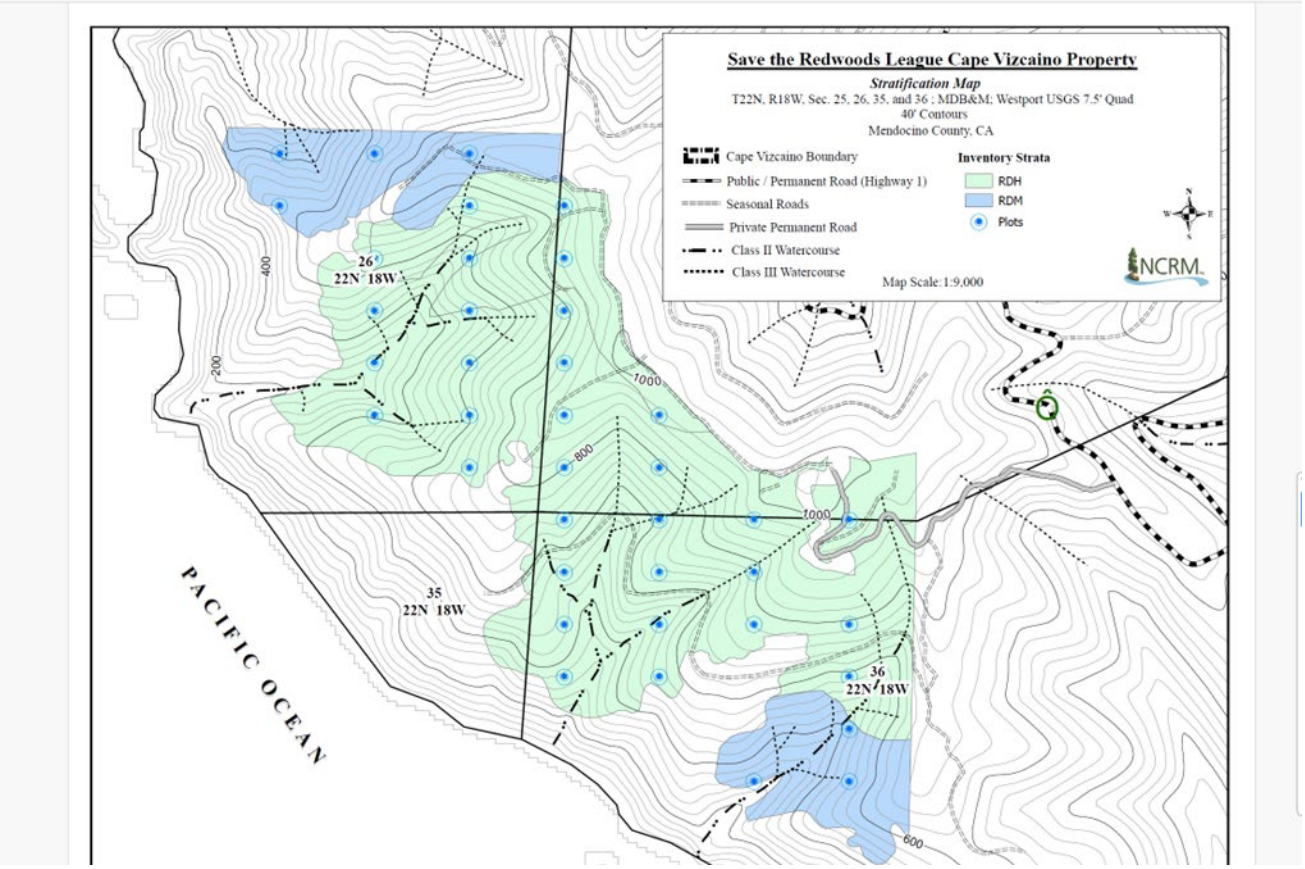
John Nickerson is a California Registered Professional Forester in the State of California on the principal of Dogwood Springs Forestry consulting firm. He has over 35 years of experience in various aspects of forestry-related land management. As the principle author of the Climate Action Reserve's Forest Offset Protocol, which was adopted by the State of California for use in California's Cap and Trade system, Mr. Nickerson has considerable expertise in Greenhouse Gas (GHG) accounting, particularly as it relates to forestry systems. He continues to provide technical expertise to support the development and revision of forestry related protocols. This work keeps him close to carbon markets and pricing.

Mr. Nickerson has expertise in forest inventory, growth and yield analysis, and timber and carbon valuation. He has developed multiple long-term sustained yield plans for large and small private landowners, developed timber and carbon valuations as part of acquisition and project planning.

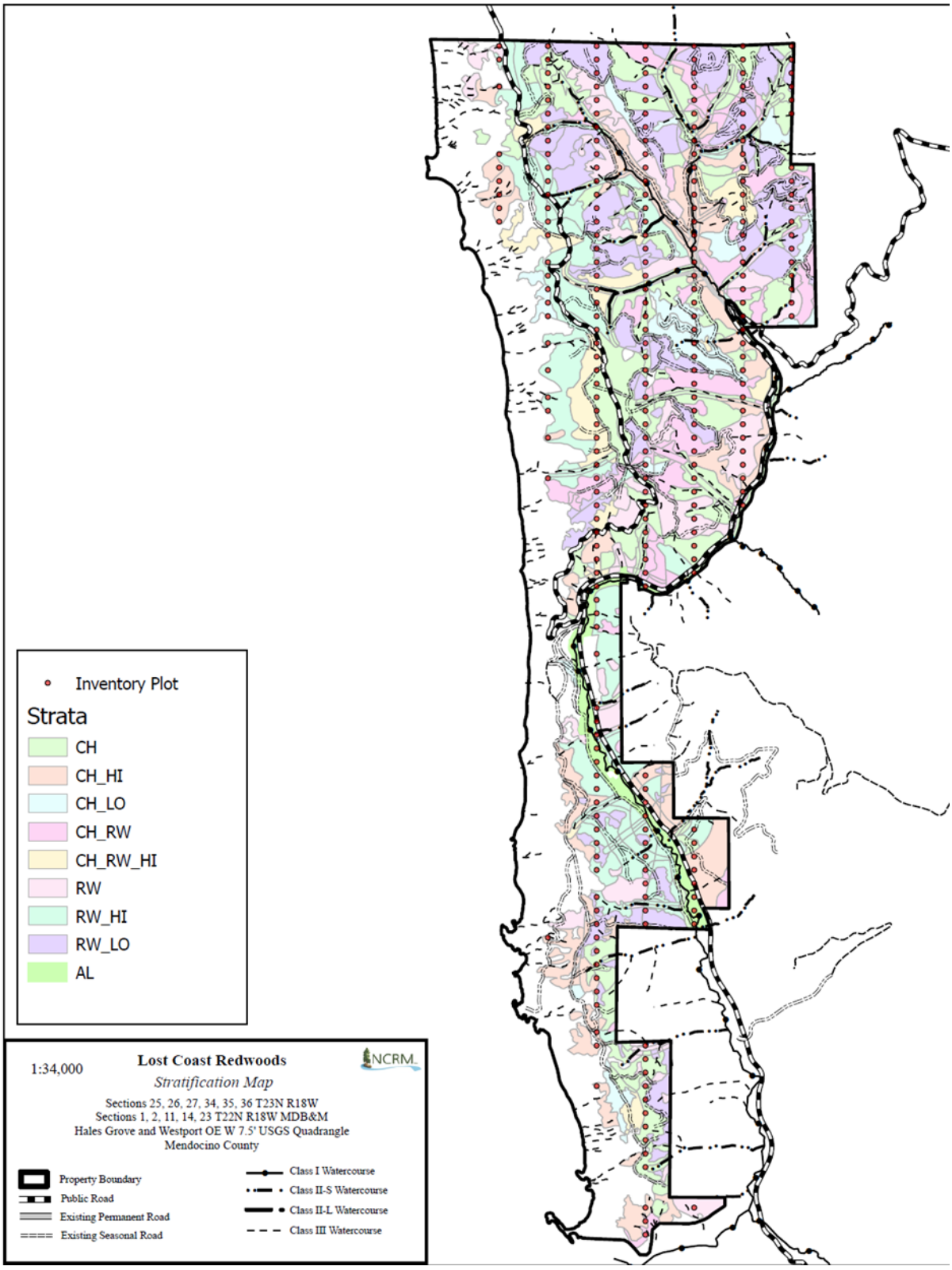
Mr. Nickerson is currently working with the Climate Action Reserve on the development and improvements to the biochar, fuel reduction, reforestation, and Mexico Forest protocols. He is working with the Environmental Defense Fund and the Mendocino Resource Conservation District on a GHG accounting framework at the watershed scale in Mendocino County.

Mr. Nickerson received his Bachelor of Science Degree in Biology from Principia College in Illinois in 1981. He served as a Peace Corps Volunteer in Zaire (currently Democratic Republic of Congo) from 1981 – 1984, and received his Master's Degree in Forestry from Humboldt State University in 1990.

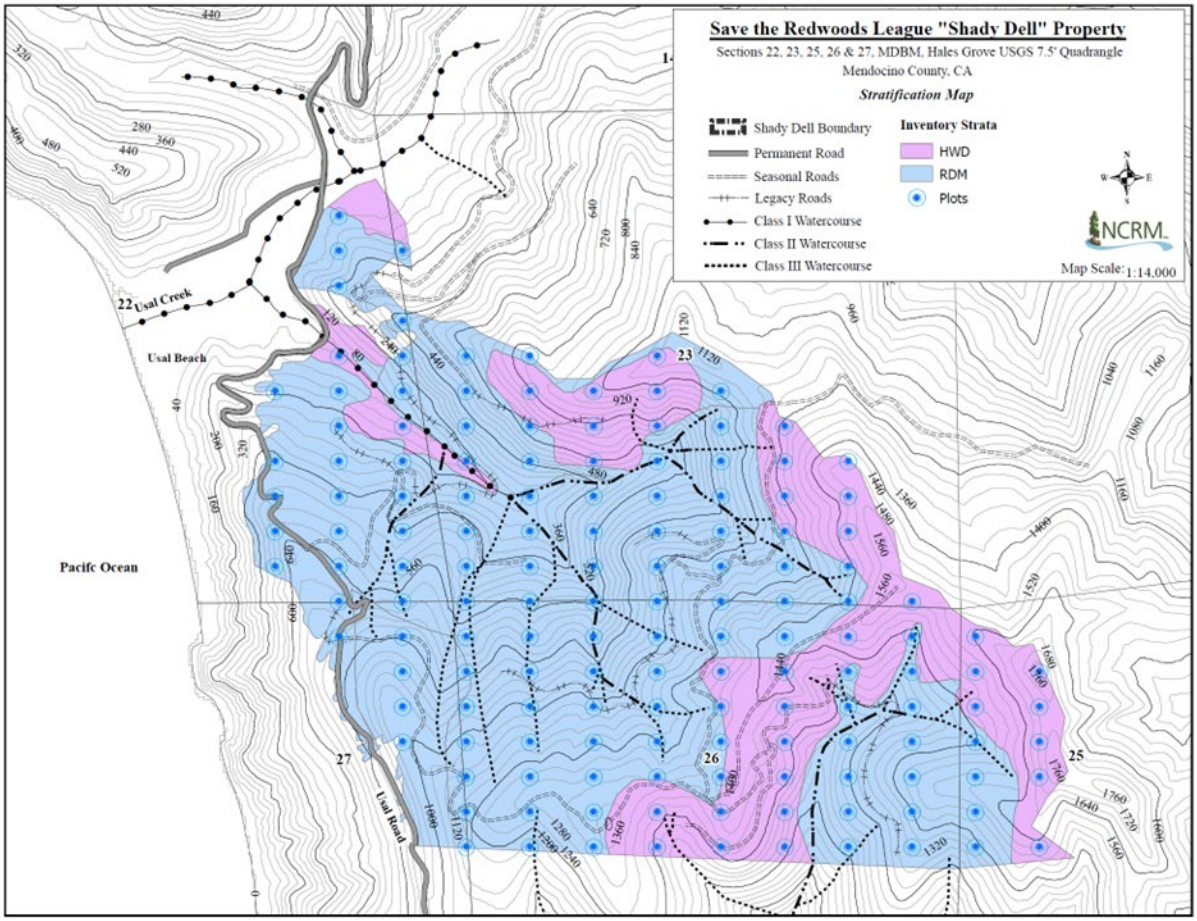
Appendix 2. Cape Vizcaino Vegetation Strata Map



Appendix 3. Lost Coast Vegetation Strata Map



Appendix 4. Shady Dell Vegetation Strata Map



Appendix 5. Shady Dell Selection Prescriptions

Shady Dell Selection Prescriptions

Shady Dell Selection Harvests by Stand

HWD 94.7% of Stand

Period	ConBa Retention	HwdBa Retention
1	135	50
2	115	50
3	115	45
4	125	45
5	130	40
6+	135	35

RDM_SD 66.9% of Stand

Period	ConBa Retention	HwdBa Retention
1	240	50
2	205	50
3	200	45
4	175	45
5	185	40
6+	175	35

Appendix 6. Lost Coast Redwoods Modeled Constraints

Lost Coast Redwoods Modeled Constraints

4/8/2024

Cape Vizcaino and Shady Dell – Constraints associated with WLPZ and NSO habitat retention are based on the constraints analysis conducted for the carbon offset project.

Constrained Prescriptions:

Let Grow – No harvest associated with watercourse core zones.

WLPZ harvest prescription - Performs selection harvest every decade while retaining a minimum of 185 square feet of conifer and hardwood basal area per acre. The largest 13 conifer trees per acre are retained, as is 80% canopy retention.

NSO Nesting/Roosting prescription - Performs selection harvest every decade while retaining a minimum of 160 square feet of conifer and hardwood basal area per acre on Cape Vizcaino and 200 square feet of conifer and hardwood basal area per acre on Shady Dell, and 60% canopy in trees 11" and larger.

NSO Foraging Habitat prescription - Performs selection harvest every decade while retaining a minimum of 135 square feet of conifer and hardwood basal area per acre on Cape Vizcaino and 200 square feet of conifer and hardwood basal area per acre on Shady Dell and 40%-100% canopy in trees 11" and larger.

Application of Silviculture by Tract and Stand:

Tract	Stand	Selection	Group Selection	Let Grow	WLPZ	NSO Nest/Roost	NSO Foraging	Total
Shady Dell	HWD	212.7	0	2.1	5.0	0.0	4.9	224.7
Shady Dell	RDM_SD	260.2	0	10.8	38.5	39.2	40.5	389.2
Cape Vizcaino	RDH	62.8	94.3	4.8	19.6	13.6	24.0	219.1
Cape Vizcaino	RDM_CV	16.7	25.1	0.6	2.8	0.0	4.7	49.9

Devilbiss - Constraints associated with WLPZ and NSO habitat retention are based on a buffer analysis of the watercourse layer, and an analysis adjacent NSO activity centers.

Constrained Prescriptions:

Let Grow – No-harvest prescription applied to within 1,000 feet of each NSO activity centers and to WLPZ core zones.

WLPZ harvest prescription - Performs selection harvest every decade while retaining a minimum of 185 square feet of conifer and hardwood basal area per acre. The largest 13 conifer trees per acre are retained, as is 80% canopy retention.

NSO Nesting/Roosting prescription - Performs selection harvest every decade while retaining a minimum of 160 square feet of conifer and hardwood basal area per acre, and 60% canopy in trees 11" and larger.

NSO Foraging Habitat prescription - Performs selection harvest every decade while retaining a minimum of 135 square feet of conifer and hardwood basal area per acre and 40%-100% canopy in trees 11" and larger.

Stand	Selection	Group Selection	Let Grow	WLPZ	NSO Nest/Roost	NSO Foraging	Total
CH	156.4	119.6	56.2	25.5	54.9	96.7	509.3
CH_HI	118.7	61.2	24.8	13.3	74.0	39.8	331.7
CH_LO	57.9	24.8	0.0	5.8	6.6	20.3	115.4
CH_RW	92.3	50.4	4.6	13.1	16.6	41.7	218.7
CH_RW_HI	21.8	31.3	3.3	8.5	30.3	26.5	121.7
RW	99.7	45.7	8.8	13.5	22.0	35.8	225.5
RW_HI	134.7	88.4	20.0	25.5	22.5	73.8	364.9
RW_LO	79.8	86.4	0.3	71.1	131.8	25.6	395.1
Total	761.2	507.7	118.0	176.3	358.7	360.2	2282.3