TRUCKEE TAHOE AIRPORT DISTRICT
BOARD OF DIRECTORS AGENDA ITEM SUMMARY

Topic	**Waddle Ranch Annotated Long Term Forest Management Plan**
Purpose	Information: **X** Guidance: Decision:
Objective	Board review of the Waddle Ranch Annotated Long Term Forest Management Plan. Comment compilation for final draft. Community and Board input will be integrated into the plan and returned to the Board for final approval at the March 28, 2013 regular meeting.
Last Action	At the March 22, 2012 regular meeting the Board authorized the General Manager to enter into an agreement with North Valley Resource Management for the purpose of updating the Forest Management Plan for the Waddle property. Previous to this, at the budget workshop of September 2011, the Board of Directors discussed the long term conservation goals applicable to District owned property. The Board directed staff to develop an updated forest management plan supporting these goals; $100,000 was budgeted for FY 2012 for land management, to be spent only with Board approval. A forest management plan for the Waddle Ranch property was developed by East-West Forestry Associates in January, 2009 and was the guiding document for the subsequent work. In 2009 an accelerated program was undertaken. Five years of the suggested plan was accomplished in two years. The Waddle Ranch property expenditures were as follows: FY 2009: $579,033 FY 2010: $288,222 FY 2011: $22,725 (carry over from fall of 2010) for a total of $889,980. FY 2012: $25,410
Discussion	Staff feels that the recommendations set forth in Waddle Ranch Annotated Long Term Forest Management Plan by Danielle Banchio dated September 1, 2012 support the District's conservation goals and easement directives. Cost of management methods and alternatives vary from year to year as product utilization and resulting revenue are affected by commodities markets. Staff would caution the Board to view the treatment costs as educated estimations. The cost of treatment per acre has changed little over the past ten years but can vary widely from year to year. An adoption of this plan does not obligate the Board to future funding of the task orders within the plan. Many local agencies have a vested interest in the study and long term care of the property to the east of the airport. Several, separate conservation efforts are currently underway.

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Fiscal Impact	No current fiscal impact. Future treatment units range from $60,000 to $240,000 annually.
Communication Strategy	The completed Forest Management plan will be available on our District website. Neighbors will be notified of the plan and outreach efforts will take place with parcel owners adjacent to treatment areas. Certain work, under the direction of the California Forest Practice Rule, will require additional notification, outreach, and posting.
Attachments	Waddle Ranch Annotated Long Term Forest Management Plan

WADDLE RANCH ANNOTATED LONG TERM FOREST MANAGEMENT PLAN

September 1, 2012

BY:
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Preface

For current purposes, pertinent excerpts from the 2012 update to the Waddle Ranch Long Term Forest Management Plan have been included in this annotated version. Upon completion, this document will serve as an update to the Waddle Ranch Long Term Forest Management Plan version 2.4, last revised in 2009. In accordance with the existing conservation easement, the subject Management Plan update will provide long-term management protocol for resource preservation and conservation as outlined in the recorded easement.

This annotated version is intended to provide information to the Truckee-Tahoe Airport Board of Directors regarding the estimated costs of future forest management projects at Waddle Ranch. This annotated version does not contain all information which will be within the 2012 revision of the Waddle Ranch Long Term Forest Management Plan. Specific information regarding existing forest health, proposed future forest management treatments, costs, timelines, and permits have been included below.

Introduction/Forest Restoration Goals

The goals for the Waddle Ranch forests are to 1) Maintain the Preserve in a native condition, including conserving wildlife habitat, aesthetics, flora, fauna, soils, water quality, and historic/prehistoric cultural values, 2) Restore the forest preserve to a viable and sustainable old growth condition, 3) Provide open space and recreational opportunities for local residents and tourists, and 4) Sequester carbon from the atmosphere and prevent undue release of carbon through wildfire, undue harvest, insects, and disease. The proposed future forest management projects contained within this report have been developed to attain the aforementioned goals and desired future condition for Waddle Ranch.

Existing Forest Health

Analysis of current increment core samples from previously thinned stands indicate that tree growth increased immediately in response to the previous thinning projects. Year 2012 preliminary increment core samples taken from codominant trees within the thinned areas indicated ¼" to ½" increased diameter growth in the last 3 years over similar trees of the same species in the untreated areas. It can be inferred that dominant and codominant residual trees would continue to respond to the future thinning in a similar manner. Such growth is an indicator of increased tree vigor, and is in sync with the overall forest restoration goals for Waddle Ranch, which include the attainment of old growth conditions.

Bark beetle activity remains present in the Waddle Ranch forests at endemic levels. Previous insect attack occurred beyond the endemic level, possibly in response to the drought of 1993-1994 coupled with ongoing Fomes annosus infestation. In the future, similar outbreaks can be anticipated in association with drought episodes, with overstocked stands being the most susceptible. The most effective method for protecting a stand from an insect outbreak is to reduce the overall stand density to a level where tree growth and vigor are optimal. In such instance, the weakest suppressed or intermediate trees are selected for removal, making increased water, nutrients, and sunlight available to the residual dominant and codominant trees. This selective thinning will increase the vigor of the remaining trees, making them more resilient to insect attack.

For over a century, fire has been excluded from the Waddle Ranch ownership. Fire is a natural thinning agent which, in a normal fire regime, would burn frequently at low intensities, removing shrubs, small trees, fallen branches, and other down woody

debris. Fuels reduction projects are a current forest management tool for mimicking the effects of low intensity wildfire. Five fuels reduction projects have previously occurred on the ownership, however, over 700 acres of ownership remain untreated, and contain fuel loading that could support catastrophic wildfire. Prevailing winds come out of the southwest, and could carry fire northeast through the ownership if a crown fire were to occur. Continued fuels reduction projects will provide for reduced fire intensity, rate of spread, and duration, ultimately reducing the risk of catastrophic wildfire.

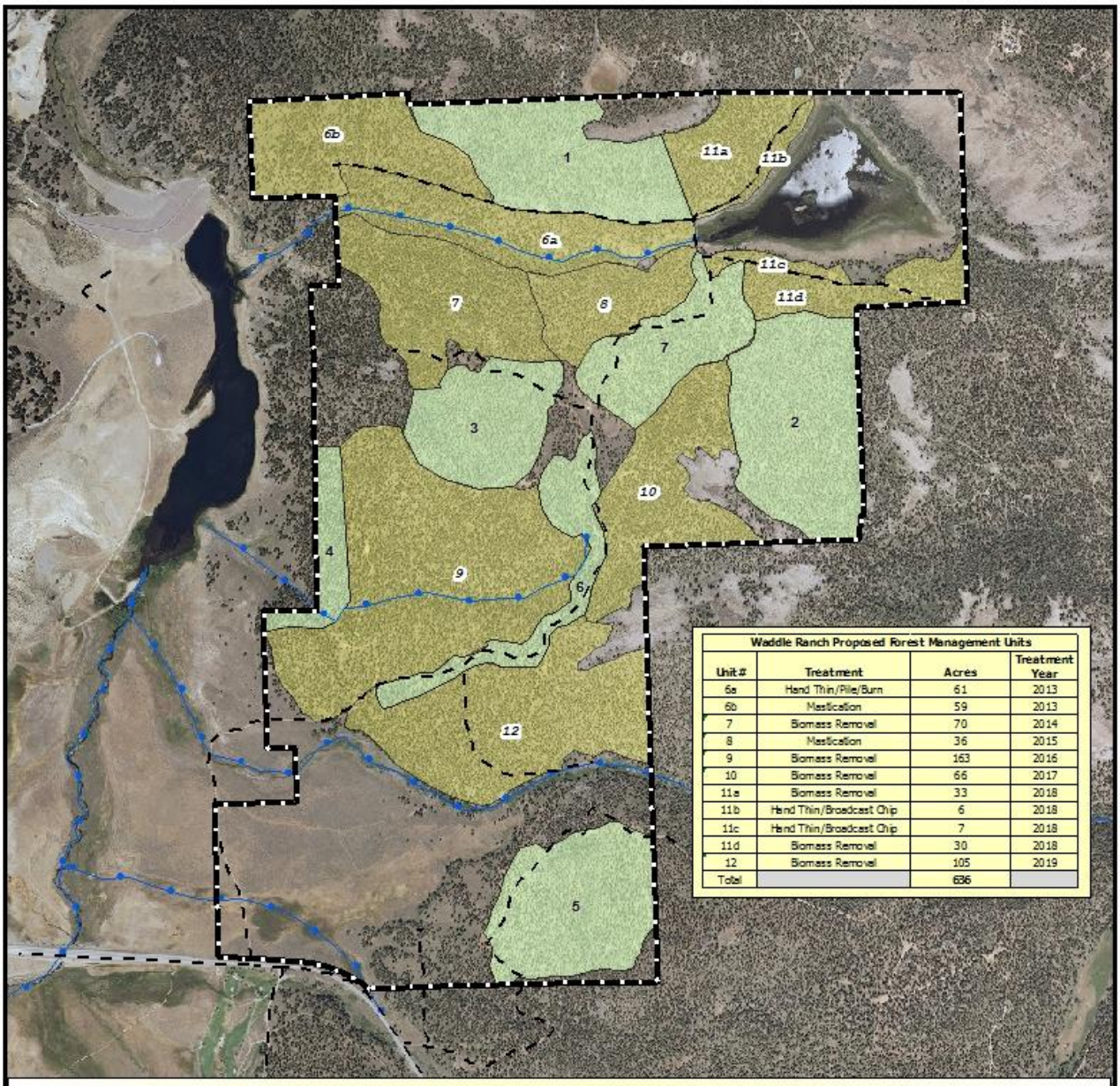
Schedule of Proposed Forest Treatments

Five fuels reduction projects have previously occurred on Waddle Ranch. One of the objectives of the updated Forest Management Plan is to reevaluate the current stand conditions on the Ranch, and provide direction for future forest management projects. Though the previously implemented fuels reduction projects have provided for increased protection from wildfire in strategic locations, additional fuels reduction treatments will be required in the portions of the ownership that remain untreated. Hence, a primary goal of future forest management projects on the Ranch is to increase the efficacy of what has already been treated, or essentially "connect the dots" from one treated area to another.

Connecting fuels treatment projects will provide for increased protection from wildfires driven to the northeast portion of the ownership by the prevailing southwest wind. Treatments will focus on reducing the vertical and horizontal continuity of fuels such that forest conditions would support a ground fire of four-foot flame lengths or less. Such low intensity fires are less likely to cause detriment to forest resources, and can more effectively be suppressed and controlled by traditional fire fighting techniques.

Reduction of forest fuels will include thinning suppressed, intermediate, and select codominant conifers, as well as conifer regeneration that provides a fuel ladder. Removal and/or rearrangement of down woody debris will also be necessary to reduce the continuity and concentration of surface fuels currently present in many of the untreated stands. The benefits of this "thinning from below" are numerous, and include increased vigor of residual trees, increased stand resilience to wildfire, insect attack, and pathogen, promotion of increased growth rates, and ultimately hastening the development of old growth stand conditions.

As previously mentioned, fuels reduction projects #1 through 5 and 7 have already been implemented. Thus, future fuels projects have been numbered in order of priority from #6 to #12. Each project is summarized in a table below including acreage, costs, treatment method, and permitting information.



Waddle Ranch Proposed Forest Management Units			
Unit #	Treatment	Acres	Treatment Year
6a	Hand Thin/Pile/Burn	61	2013
6b	Mastication	59	2013
7	Biomass Removal	70	2014
8	Mastication	36	2015
9	Biomass Removal	163	2016
10	Biomass Removal	66	2017
11a	Biomass Removal	33	2018
11b	Hand Thin/Broadcast Chip	6	2018
11c	Hand Thin/Broadcast Chip	7	2018
11d	Biomass Removal	30	2018
12	Biomass Removal	105	2019
Total		636	

Waddle Ranch Long Term Forest Management Plan
Proposed Future Forest Management Treatment Areas

Ownership Boundary
Existing Road
Proposed Treatment Area
Watercourse
Previously Treated Area

1:20,000

0 1,000 2,000 4,000 Feet

N W E S

North Valley Resource Management
P.O. Box 1411
Quincy, CA 95971
(530) 927-7095

Project #6: Dry Creek Drainage	
Acres:	6a = 61 acres Hand Thin/Pile Burn 6b = 59 acres Mastication Total Acres = 120
Treatment Method:	Hand Thin/Pile/Burn between drainage and road above due to presence of archaeological resources and heavy rock component; Mastication west of drainage.
Estimated Treatment Cost:	Mechanical Mastication = $1800 x 59 = $106,200 Hand Thin/Pile Burn = $1500 x 61 = $91,500 Total Estimated Treatment Cost = $197,700.00
Permit Required:	None – non commercial
Permit/Forester Cost:	$75/hour Not To Exceed $9200
Current Condition:	South aspect, disperse young growth conifer stands in clump arrangement with moderate brush component.
Photo:	
Timeline:	Summer 2013

Project #7a: Southwest of Dry Creek Drainage	
Acres:	70
Treatment Method:	Biomass Removal (mechanical thinning with whole tree chipping and removal of chips)
Estimated Treatment Cost:	$1800/ac x 70ac = $126,000
Permit Required:	Cal Fire Exemption or Timber Harvest Plan
Permit/Forester Cost:	Exemption: $75/hour Not To Exceed $10,775
Current Condition:	Dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; sporadic concentrations of dead and down woody debris exist due to previous Fomes annosus infestation. Average tree size to be removed is <14” Diameter at Breast Height (DBH).
Photo:	
Timeline:	Summer 2014

Project #8: Southeast of Dry Creek Drainage	
Acres:	36
Treatment Method:	Biomass Removal (mechanical thinning with whole tree chipping and removal of chips). If chip market is unavailable, Mechanical Mastication would be a feasible alternative to Biomass Removal.
Estimated Treatment Cost:	Biomass Removal = $1800/ac x 36 = $64,800 or Mechanical Mastication = $1800/ac x 36 = $64,800 Total Estimated Treatment Cost = $64,800.00
Permit Required:	Biomass Removal: Cal Fire Exemption or Timber Harvest Plan; Mechanical Mastication: None
Permit/Forester Cost:	Biomass Removal = $75/hour, Not To Exceed $7000 (Exemption) Mechanical Mastication = $75/hour, Not To Exceed $4200
Current Condition:	Moderately dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; sporadic concentrations of dead and down woody debris exist due to previous Fomes annosus infestation.Average tree size to be removed is <12” DBH.
Photo:	
Timeline:	Summer 2015

Project #9: Central Portion Bound By Projects 4, 3, and 6.	
Acres:	163
Treatment Method:	Biomass Removal (mechanical thinning with whole tree chipping and removal of chips).
Estimated Treatment Cost:	$1800/ac x 163 ac = $293,400
Permit Required:	Biomass Removal: Cal Fire Exemption or Timber Harvest Plan
Permit/Forester Cost:	Biomass Removal = $18,560 (Exemption)
Current Condition:	Moderately dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; sporadic concentrations of dead and down woody debris exist due to previous Fomes annosus infestation. Average tree size to be removed is <16" DBH.
Photo:	
Timeline:	Summer 2016

Project #10: Central Portion Bound By Projects 6, 7, and 2.	
Acres:	66
Treatment Method:	Biomass Removal (mechanical thinning with whole tree chipping and removal of chips).
Estimated Treatment Cost:	$1800/ac x 66 = $118,800.00
Permit Required:	Biomass Removal: Cal Fire Exemption or Timber Harvest Plan
Permit/Forester Cost:	Biomass Removal = $75/hour Not To Exceed $9200 (Exemption)
Current Condition:	Moderately dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; sporadic concentrations of dead and down woody debris exist due to previous Fomes annosus infestation. Average tree size to be removed is <16" DBH.
Photo:	
Timeline:	Summer 2017

Project #11: North and South of Dry Lake	
Acres:	11a = 33 ac Biomass Removal 11b = 6 ac Hand Thin/Broadcast Chip 11c = 7 ac Hand Thin/Broadcast Chip 11d = 30 ac Biomass Removal Total = 97 Acres
Treatment Method:	North of Dry Lake: Biomass Removal above road; Mechanical Mastication would be a feasible option should Biomass Removal become unfeasible due to market conditions etc; Hand thinning/broadcast chip between road and lake margin. South of Dry Lake: Hand Thin/Broadcast Chip within Lake Protection Zone. Biomass Removal above protection zone due to heavier fuel loading.
Estimated Treatment Cost:	Hand Thinning/Broadcast Chip = $3000/ac x 13 = $39,000 Biomass Removal = $1800/ac x 63 ac = $113,400 Total Estimated Treatment Cost = $152,400.00
Permit Required:	Hand Thinning = None Biomass Removal = Cal Fire Exemption or Timber Harvest Plan
Permit/Forester Cost:	$75/hour Not To Exceed $13,725.00 (Exemption)
Current Condition:	Moderately dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; Average tree size to be removed is <12” DBH.
Photo:	
Timeline:	Summer 2018

Project #12: Southern Portion Between Units 5 and 6	
Acres:	105
Treatment Method:	Biomass Removal (mechanical thinning with whole tree chipping and removal of chips).
Estimated Treatment Cost:	$1800/ac x 105 ac = $189,000
Permit Required:	Biomass Removal: Cal Fire Exemption or Timber Harvest Plan
Permit/Forester Cost:	Biomass Removal = $14,500 (Exemption)
Current Condition:	Moderately dense conifer stands dominated by even aged eastside pine overstory with nominal white fir component; conifer regeneration is dominated by white fir; sporadic concentrations of dead and down woody debris exist due to previous Fomes annosus infestation.Average tree size to be removed is <16” DBH.
Photo:	
Timeline:	Summer 2019

SUMMARY OF COSTS – PROPOSED FUTURE FOREST MANAGEMENT PROJECTS					
PROJECT #	**YEAR**	**ACRES TREATED**	**TREATMENT COST**	**PERMITTING/ FORESTER *NOT-TO-EXCEED* COST**	**TOTAL COST**
6	2013	120	$197,700	$9,200	$206,900
7	2014	70	$126,000	$10,775	$135775
8	2015	36	$64,800	$7000	$71,800
9	2016-2017	163	$293,400	$18,560	$309,200
10	2018	66	$118,800	$9200	$128,000
11	2019	76	$152,400	$13,725	$166,125
12	2020	105	$189,000	$14,500	$203,500
TOTALS		**636**	**$1,142,100**	**$82,960**	**$1,225,060**

Prescribed Fire

Fire is the most common, natural form of disturbance for Sierra Nevada forests. The characteristics of all forested stands are determined by the type, frequency, and magnitude of disturbances that have affected the site in the past. Fire was once a very common force in the Sierra Nevada's that shaped the structure and composition of the area's forests. In fact, climax communities, or "old growth forests" are the result of a long series of small, light disturbances over time. Alternately, pioneer communities, such as brush fields, are the result of catastrophic and stand-replacing disturbance.

Historically, under natural conditions, fire would burn often and gently, with low flames that would consume small forest litter around the base of larger overstory trees. Where brush had grown dense or patches of trees were unusually thick, flames would flare up, leaving small openings where young trees could grow. Such low-intensity fires were the norm for thousands of years, and maintained open forests with fewer but larger trees. Large, catastrophic fires were rare, and mosaics of patches of different sizes and ages of trees provided a diverse forested landscape for wildlife.

At Waddle Ranch, mechanical fuels reduction has effectively mimicked fire by modifying stand structure through removal of ladder fuels. These previous fuels treatments have also influenced the subsequent fire severity and extent by reducing the number of trees per acre and hence reducing the continuity of hazardous forest fuels. Such treatment was required to first reduce excessive forest fuels. However, vegetation is dynamic and forest management must continue beyond the initial mechanical treatment. As stated in Malcolm North's GTR-220, *An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests*, "Management strategies need to recognize that, in many situations, fire is both a viable fuel-treatment tool and an important jumpstart for many ecosystem processes stalled by accumulating surface fuels and the absence of frequent burning." North's report continues "Fire is an indispensible management tool capable of doing much of the work to restore ecological processes."

The goals and objectives of the Waddle Ranch forests include maintaining the Preserve in a native condition, restoring the forest preserve to a viable and sustainable old growth condition, providing open space and recreational opportunities for local residents and tourists, and sequestering carbon from the atmosphere and preventing undue release of carbon through wildfire, undue harvest, insects, and disease. To help attain these goals, prescribed fire is the next logical step in forest management for the portions of the Preserve previously treated for fuels reduction.

Prescribed fire has many purposes: 1) To reduce forest fuels that have accumulated on the forest floor, 2) To prepare the seedbed for the regeneration of Jeffrey Pine, which needs a seedbed of bare mineral soil, 3) To control vegetation that may compete with

seedling establishment, 4) To provide a flush of nutrients for conifer regeneration, 5) To provide improved growing conditions for wildlife forage, such as bitterbrush and grasses, and 6) To help maintain a park-like appearance for aesthetic purposes.

Most all of the tree species present within these forests have developed unique adaptations to fire since it was and continues to be the most natural form of disturbance for the Sierra Nevada's. Jeffery Pine, the most dominant tree species within Waddle Ranch, has fire adaptations that are indicative of the frequent, natural fire interval of the area. Jeffery Pine, in maturity, has thick fire resistant bark. To regenerate naturally, Jeffrey Pine seeds need a mineral soil seedbed generally free of accumulated woody material. These features - thick bark and mineral seedbed requirement - indicate that Jeffery Pine is meant to survive low-intensity fires and produce seed that germinates best on a mineral seedbed prepared by fire. Hence, the application of prescribed fire is the most appropriate and natural forest management tool that could be applied next within the treated stands at Waddle Ranch.

Prescribed fire would be applied in the form of broadcast burning, where fire is allowed to burn across the forest floor, within a well established perimeter. Such burning would be done in accordance with all local and State regulations, and conducted by a qualified burning contractor.

The benefits that can be expected through application of prescribed fire as applied to Waddle Ranch include maintenance of the reduced fuels condition and investment in the initial treatment, preparation of the seedbed for Pine regeneration, enhancement of browse for foraging wildlife, and attainment of the park-like appearance for aesthetic values at the Preserve. This valuable management tool should be considered as a viable option for maintenance of treated forests at Waddle Ranch.

Permits

In California, any land management project wherein wood product is traded, bartered, or sold, the California Forest Practices Act is triggered. Forest Management Projects # 7-12, as described above, propose the sale of wood chips, which means compliance with the California Forest Practices Act must occur through the submittal and approval of a Cal Fire harvest document. A variety of Cal Fire harvest documents are available, depending on the wood product realized, and the scope, size, and objective of the timber harvest.

A variety of Cal Fire "Exemptions" exist that provide for a streamlined method to obtain a harvest document in a shortened timeframe, usually 15 days or less. These

Exemptions are restrictive in scope, size, and applicability, and typically are specific to the purpose of the harvest. For example, the “Forest Fire Prevention Exemption” is used where fuel reduction activities will be implemented, and the “Dead, Diseased, Dying Exemption” may be utilized when only such trees will be harvested at very light intensities. All exemptions require adherence to a very specific set of restrictions, and practices outside of the specific restrictions are not allowed. Exemptions are not applicable to each and every stand, as some stands may present site conditions not feasibly managed within the required restrictions. Adaptive management is a challenge with Exemptions as the stand treatment must meet an established set of restrictions, instead of treatment prescriptions being created based on site conditions. However, if the stand presents site conditions that can effectively be managed within the restrictions of the Exemption, then the Exemption offers a streamlined way to obtain a Cal Fire harvest document in a relatively short time frame. Exemptions are valid for a period of one year.

Alternatively, the “Timber Harvest Plan” or “THP” is a comprehensive document that is the functional equivalent of an Environmental Impact Report (EIR) and allows for adaptive management based on site specific conditions. A THP must be written by a Registered Professional Forester (RPF), and allows the RPF to “explain and justify” their proposed treatments of the subject forests, so long as such proposed prescriptions comply with the California Forest Practice Rules. Hence, the THP allows for greater flexibility in how various stands on the ownership are treated. THPs are reviewed by Cal Fire, the lead agency, with interagency review occurring from other responsible agencies including but not limited to the California Department of Fish and Game, and the California Regional Water Quality Control Board. A THP typically takes 45 to 60 days to be approved, and upon approval, is valid for maximum of 5 years.

A THP covers all aspects of forest management required for a given harvest, including road construction and maintenance, watercourse crossings, biological resources, and archaeological resources. The THP requires analysis of all aspects of land management required for the harvest of wood product(s) from the site. All site conditions that need to be mitigated prior to harvest – such as road improvements – are done under the umbrella of the THP, typically concurrent with forest management operations, and under the jurisdiction of Cal Fire. In comparison, the restrictions of the Exemption do not allow for such a comprehensive approach to forest management, as mitigation(s) of problematic site conditions is not allowed.

A THP contains a Cumulative Impacts Assessment, required at the watershed scale, similar to other guiding land management documents such as the Martis Creek Watershed Assessment. This required Assessment ensures that the THP, when considered with the past, present, and anticipated future impacts elsewhere in the

watershed, does not cause significant adverse environmental impacts. This Assessment is not required of Exemptions, and thereby further illustrates how the full THP is the preferred document for forest management as it analyzes any impacts of the proposed project, and requires mitigation to reduce any such impacts. Further, due to the 5 year valid term, the THP is a document that provides greater flexibility in regards to project implementation since it allows landowners to have an approved Cal Fire document ready as project funding becomes available, or as market conditions become favorable, within the 5 year period.

The “Non-Industrial Timber Management Plan” or “NTMP” is another permit option available for forest management at Waddle Ranch. The NTMP has very similar baseline requirements to the THP, still requires the watershed level analysis, and requires interdisciplinary review. However, the NTMP differs from a THP in a few key aspects. First, the NTMP must address growth and yield of the forests for which it covers. The growth and yield information forms the basis of sustainable harvest levels that are stated in the NTMP and must be adhered to during the life of the NTMP. NTMPs restrict a landowner to conducting only sustainable and unevenage harvests, meaning a landowner cannot harvest more than is growing in any one harvest and must maintain an unevenage stand structure. However, the NTMP remains valid in perpetuity – given stand conditions remain the same and harvests remain sustainable - unlike a THP which is valid for only 5 years. This allows increased flexibility for landowners to take advantage of market conditions over time, and to plan future harvests over a much longer timeframe than any other harvest document. Last, the NTMP follows the ownership, so should title to the ownership change, the document remains in place and functional provided the new owner notifies the Cal Fire of his/her assumption of the NTMP.

Permit costs are a valid concern for any land manager. Exemptions such as those which would be applied to Waddle Ranch would cost $7000 - $18,000 each depending on the amount of tree marking required, stand density, results of biological and archaeological surveys, and other variables. Since up to six of the proposed future forest management projects for Waddle Ranch may require a Cal Fire document, the combined cost for the six Exemptions would be comparable to the cost of a full THP or NTMP. A THP or NTMP would ultimately be a more comprehensive forest management document that would provide mitigations for all aspects of forest management, would allow for adaptive forest management based on site specific conditions, and would provide the landowner with a minimum of four additional years of being covered under an approved Cal Fire document.

Future Forest Management Projects at Waddle Ranch can be permitted two ways: 1) With an Exemption for each project requiring a permit (a project-by-project basis), or 2)

with a full THP or NTMP, where all projects would be covered under one permit. Recall that Exemptions are advantageous in terms of the expedited approval period, typically less than 15 business days. However, considering the road improvements that need to occur to allow for improved access, reduced sediment transport, and watercourse crossing upgrades, it is appropriate to consider a full THP or NTMP for Waddle Ranch. The full THP or NTMP would allow for all road improvements and mitigation of all other resource concerns to be addressed as part of Cal Fire review, under that agency's jurisdiction, and approved as part of one document, all at the same time. Treatment of the entire ownership would be considered along with any resource concerns, and all valid concerns would be mitigated as part of treatment activities. This is a far more comprehensive option, versus the "piece mealing" that often occurs when projects are only considered on a project-by-project basis.

Roads, Trails, Soils, and Erosion Control

Access into the Waddle Ranch ownership from Highway 267 has been problematic in the past due to the lack of adequate watercourse crossing facilities/structures, and unmitigated archaeological concerns. The Martis Watershed Assessment aptly describes the various problems present on the main access road: undersized and failing culverts clogged with sediment, an ephemeral drainage that erodes road materials due to no crossing facility present at the crossing site, and lack of road surface drainage resulting in gullies that transport sediment to the lower reach of East Martis Creek. The lack of adequate watercourse crossings and surface drainage, coupled with the unresolved archaeological concern on the road, allow for continued road and resource damage, and impede effective use of the road by vehicles.

These issues cannot be addressed or mitigated under a Cal Fire Exemption. Even in the absence of a Cal Fire harvest document, alteration of any watercourse bed, bank, or channel requires a "1600 Permit" through the California Department of Fish and Game. Under a THP or NTMP, the 1600 Permit is part of the Plan, and DFG reviews the permit as part of the interdisciplinary review of the THP or NTMP, with Cal Fire as lead agency. Similarly, mitigation of archaeological concerns could be addressed and properly mitigated under the jurisdiction of Cal Fire as part of THP/NTMP review and approval.

To facilitate the implementation of forest management projects, or in the event of fire suppression activities, it is of utmost importance to secure effective access into Waddle Ranch from Highway 267. During the 2009 fuel reduction activities, over $48,000 had to be spent to temporarily utilize the alternate access route through lands owned by other private parties due to archaeological concerns on the main access road. To appropriately and responsibly manage the Waddle Ranch forests, the watercourse crossings on the main access road need to be upgraded to the permanent standards of the California Forest Practice Rules. These rules provide for the passage of 100-year flood flows including debris, thereby reducing the risk of surface erosion, sediment transport to East Martis Creek, and ultimately crossing failure. Also, the archaeological concern needs to be mitigated to allow for vehicular use of the road.

Picture 1: Surface erosion on Waddle Ranch main access road following an August 2012 summer rain storm. Surface soils eroded in such circumstance are transported to East Martis Creek.