EXHIBIT F-2
12 Pages

OLYMPIC VALLEY
PUBLIC SERVICE DISTRICT

FUELS MANAGEMENT PROGRAM

DATE: March 30, 2021

TO: District Board Members

FROM: Allen Riley, Fire Chief and Mike Geary, General Manager

SUBJECT: Develop Framework for a Fuels Management Program

BACKGROUND: Trends and climate data science show that more frequent and more destructive wildfires are expected. Outdated forest management practices and climate change, which creates a hotter and drier environment, have prompted national and regional concern about forest fuels management. Five of the six largest wildfires in California's history occurred in 2020 (August Complex, SCU Lightening Complex, Creek, LNU Lightning Complex, North Complex).[1] The deadliest and most destructive wildfire in California, the Camp Fire in Paradise, occurred in 2018.[2] Other fires such as the 2014 King Fire in El Dorado County, the 2017 Tubbs Fire in Santa Rosa, and the 2018 Carr Fire in Trinity and Shasta Counties have created conditions with heavy smoke in the Tahoe area, heightening the local concern about wildfire risk.

In response, the Community came together, and Olympic Valley is now a certified *Firewise Community*. Earlier this year, the District executed a consulting contract with Deer Creek Resources and Wildland Rx to prepare a ***Community Wildfire Protection Plan (CWPP)*** with support from the Olympic Valley Firewise Community members including Friends of Squaw Valley, Squaw Valley Resort, and the Resort at Squaw Creek. The cost to prepare the CWPP is $28,800 and is expected to be complete by April 2022. The CWPP will identify and prioritize the fuels reduction and wildfire prevention strategy for Olympic Valley Fire Department's jurisdiction. A CWPP will address issues such as wildfire response, hazard mitigation, community preparedness, home hardening, and/or structure protection. A CWPP will allow our community to take advantage of the opportunities associated with being a *Firewise Community* and be eligible for potential grant funding for forest management activities. The plan will include all interest groups and stakeholders within the Valley, address a broad range of wildfire protection issues, establish a well-defined fuels management program, and define public safety priorities.

DISCUSSION: The purpose of this report is to generate a discussion with the Directors, representatives from the Firewise Council, and the community about the creation of a ***Fuels Management Program*** within the Olympic Valley Fire Department.

Staff firmly believes that a *Fuels Management Program* is needed to achieve the goals of reducing the risk of catastrophic wildfire, improve forest health, and reduce the risk of property damage or loss. The District's Mission Statement supports wildfire mitigation work; however, funding is nonexistent to support the scope necessary to make a difference in the management of forest fuels within our service territory, which includes the entire Olympic Valley watershed as well as the Truckee River corridor from the bridge halfway between Olympic Valley and Alpine Meadows to Brush Creek, near the County line on Hwy. 89.

The vision is to establish the framework necessary to start a Fuels Management Program which staff expects can be modeled from the work performed by hundreds of fire departments in the state. Staff's initial work will be to research, identify, and/or establish:

- Program scope and budget
- Staffing requirements
- Typical matching requirements
- Local and regional partnership opportunities
- Grant opportunities
- Revenue measures
- Public outreach efforts
- OV Firewise Council's role
- Typical forest fuels reduction project elements / life cycle:
    - project prioritization based on condition assessment, risk, and consequences
    - implications of land ownership
    - planning
    - permitting to include compliance with CEQA and NEPA
    - mapping
    - grant application and administration
    - contractor solicitation
    - public bidding
    - implementation of typical fuel treatments
    - project close-out activities
    - monitoring
    - maintenance activities

As part of a well-prepared CWPP, a licensed forester will gain a high level of familiarity with the fuels hazards in our fire protection service area. Staff expects to benefit from this work in shaping our Fuels Management Program.

ALTERNATIVES: 1. Direct staff to develop the framework to establish a Fuels Management Program.

2. Direct staff to cease work on a Fuels Management Program.

3. Direct staff to take an alternative approach to reduce the threat of catastrophic wildfire in the District's fire protection service area.

FISCAL/RESOURCE IMPACTS: At this time, the only fiscal and resource impact incurred to date is associated with staff labor. Additional research will show if consultant expenses should be expected. The District has already committed $10,000 to the total project cost of $28,800 to prepare the CWPP.

RECOMMENDATION: Direct staff to develop the framework to establish a Fuels Management Program.

ATTACHMENTS: *Five Creeks Drainage Project Proposed Action Plan* (9-Pages)

DATE PREPARED: March 24, 2021

SOURCES:

1. https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf
2. https://www.fire.ca.gov/media/lbfd0m2f/top20_deadliest.pdf
   https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf

Five Creeks Proposed Action

Current Conditions

The Five Creeks project area lies within the busy highway 89 corridor south of the Town of Truckee to the northern boundary of Olympic Valley. This corridor experiences significant visitation and includes critical infrastructure including developed campgrounds, private residences, recreation residences, the Eastern Regional Landfill, mountain biking, hiking, and fishing trails, rock climbing destinations, and vehicles travelling from I-80 to Lake Tahoe. To enhance public safety, reduce potential wildfire severity, and restore forest health in this area, the Truckee Ranger District is proposing to complete forest restoration, fuels reduction, and habitat enhancement treatments within this corridor.

Forests within the Five Creeks project area are variable with dense un-thinned stands, more open previously treated areas, and Jeffrey pine plantations. Generally, forests within Five Creeks are unnaturally dense due to fire suppression and previous logging practices resulting in white fir encroachment. Forests are showing signs of inter-tree competition and significant widespread pathogen outbreaks including heterobasidion tree fungal infection in fir species, and heavy mistletoe infections in lodgepole pine and Jeffrey pine. Historically, this forest was open and 'park-like' with significantly fewer trees and dominated by large diameter pine species due to a frequent, low-to-mixed-severity fire regime.

Within Five Creeks, conditions are conducive for high severity fire to propagate and spread due to abundant ladder fuels and interlocking canopies. These conditions would allow a wildfire to move rapidly from the forest floor to the crowns of trees and spread between canopies making it hard or impossible to control. Crown fires can lead to human fatalities, destruction of property, tree mortality, and habitat loss among many other undesirable outcomes.

Due to the potential for high severity fire, the high use nature of the area, its proximity to urban areas, and forest health issues, treatment is necessary to promote safe conditions and maintain and enhance the ecosystem services provided by the area.

Objective/ Desired Conditions:

There are four types of land classifications within the project area: WUI Defense Zone, WUI Threat Zone, Protected Activity Centers (PACs), and General Forest, which have different objectives

WUI Defense Zone

- Stands are fairly open and dominated primarily by larger fire tolerant trees
- Surface and ladder fuel conditions are such that crown fire is highly unlikely
- The openness and discontinuity of crown fuels, both horizontally and vertically result in very low probability of sustained crown fire

WUI Threat Zone

- Flame lengths are less than 4 feet at the head of the fire
- Rate of spread is reduced by 50%
- Snags and other hazards are managed
- Production rates for fire line construction are doubled from pre-treatment levels

- Tree density has been reduced to a level consistent with the site's ability to sustain forest health during drought conditions

General Forest

- Forest structure and function generally resemble pre-settlement conditions[1].
- High levels of horizontal and vertical diversity exist within 10,000 acre landscapes.
- Stands are composed of roughly even-aged vegetation groups, varying in size, species composition, and structure. Individual vegetation groups range from less than 0.5 to more than 5 acres in size.
- Tree sizes range from seedlings to very large diameter trees.
- Species composition varies by elevation, site productivity, and related environmental factors.
- Multi-tiered canopies, particularly in older forests, provide vertical heterogeneity.
- Dead trees, both standing and fallen, meet habitat needs of old-forest-associated species.
- Where possible, areas treated for fuels also provide for the successful establishment of early seral stage vegetation.
- Control or eradicate existing invasive plant infestations

Protected Activity Centers (PAC)

- Enhance successful PACS to increase viability into the future
- Improve PAC resistance and resilience to: wildfire, pest and pathogens, drought, and climate change

Forest Plan Amendments

In order to achieve our desired conditions a number of forest plan amendments will be made as part of this planning effort including:

- Allowing mechanized treatments in California Spotted Owl and Goshawk Protected Activity Centers
- Allowing for gap creation up to three acres in size
- Thinning of conifers greater than 30 inches DBH
- Allow for mechanized fuels reduction treatments using low pressure ground-based equipment on slopes greater than 30%

Proposed Action

Forest Restoration

- Use a variable density thin with gap creation strategy to move forest density, structure, and composition, toward the natural range of variation (NRV[1]) and reduce the likelihood of high severity active crown fires. Trees of any diameter may be thinned to meet desired forest structure, composition, and conditions. Thinning will focus on the removal of smaller diameter trees and the vast majority of removed individuals will be less than 20 inches DBH.

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[1] Natural Range of Variation are derived from Safford & Stephens 2017 GTR-256 and Meyers & North 2019 GTR-263

Gaps:

- Gaps should occupy approximately 10 – 20% (horizontal area) of any given unit depending on aspect, topographic position and unit conditions. Gaps should range in size from 1/10 – 3 acres in size. All conifers within gaps will be removed. Focus gaps on expanding current openings or removing forest health issues such as disease pockets, mistletoe infection and/ or undesirable species.

Matrix:

- The area outside of the gaps is the matrix. Use a stand density index (SDI) controlled variable density strategy to promote heterogeneity outside of gaps by thinning trees to an SDI that is 25 – 45% of max SDI (also called relative density index (RDI)). Variability should be implemented on the micro-site with denser sections and clumps mixed in with more heavily thinned areas but should average 35% RDI across the stand. Density of trees will vary based on the microsite including: topographic position, aspect, elevation, species composition, etc.
- Generally retain Jeffrey pine, sugar pine and other fire adapted species over fire intolerant species such as white fir
- Promote vertical heterogeneity and age class diversity by retaining areas of smaller vigorously growing trees where they do not function as ladder fuels
- Target trees infested with pests and pathogens for removal

Clumps

- Dense pockets of trees from 1/10 – ¼ acre in size with interlocking crowns may be retained on up to 5% of the area to function as thermal and/or hiding cover for wildlife or screening for aesthetic purposes
- Within these clumps some thinning may occur but a multi-tiered canopy with interlocking crowns are desired

- Treatments will be accomplished by using aerial or ground-based mechanized equipment including but not limited to: cable yarding systems, tethered systems, helicopters, processors, feller-bunchers, rubber tired skidders, forwarders, and any other typical logging equipment
- Biomass, mastication, chipping and/or hand thinning, lop and scatter or piling of non-merchantable material and shrubs may be used where conditions are anticipated continue to support high severity fire and unhealthy forest conditions following overstory tree removal
  - Understory trees should generally have a residual spacing of 25 feet on average or result in conditions which are not conducive to perpetuating torching and crown fire
- Prescribed fire including pile burning, jackpot burning, and broadcast burning may be used to reduce fuel loads and maintain effectiveness of treatments
- Gaps greater than ½ acre in size will be planted with a species composition of Jeffrey pine, sugar pine, and incense cedar. Site prep and seedling release including manually grubbing a 5' radius, herbicide treatment using glyphosate or triclopyr, or mechanized methods will be employed to promote seedling survival and growth.

    - Herbicide will be used where the presence of sprouting shrub species threatens the viability of planting
    - If Glyphosate is used, the aquatic version (such as Aquamaster) will be used to reduce the impacts to aquatic species
    - Herbicide will not be applied to surface water or within a proximity to open water deemed unsafe by the Environmental Analysis
    - Herbicide will be applied using a "cut stump", or back-pack sprayer technique in accordance with all Local, State, and Federal regulations
- Temp road construction will be allowed in order to facilitate forest restoration treatments
- System road construction, reconstruction, and maintenance will be allowed in order to facilitate forest restoration treatments and to allow for treatment access in the future
- Changes to the transportation system to update, add or remove system roads or make corrections to the MVUM as current field conditions are verified will be allowed
- Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired fuel loading and forest conditions
- Stumps greater than 14 inches in diameter and more than 200 feet from water will be treated with sodium tetraborate dechahydrate (commonly known as borax) at a rate of one pound per 50 square feet treated within four hours of the tree being cut

Meadow Enhancement

- Activities to restore and enhance hydrologic connectivity and reduce detrimental impacts to meadow may be pursued as deemed appropriate by a Forest Service Interdisciplinary Team
- Remove all conifers when operationally feasible and ecologically appropriate from the delineated boundary of meadows within the project area where operations allow and do not result in long term detrimental effects as determined by a Forest Service hydrologist or botanist. Diameter cap may be altered on a site by site basis to achieve desired conditions.
    - Removal may be conducted using aerial or ground-based operations including but not limited to: hand tools, mechanized equipment, end-lining or winching, or prescribed fire.
    - Some number of conifers may be cut and left on site where it does not impede the function or health of the meadow
    - Some large diameter conifers may be girdled and left in place for wildlife habitat and meadow restoration
- Timber sales may be allowed where this mechanism is deemed feasible and impacts to the meadow are deemed to be acceptable or negligible
- Non-merchantable material may be chipped, masticated, piled and burned, or lopped and scattered as deemed appropriate by the interdisciplinary team
- Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired conditions
- Follow-up treatments using prescribed fire to perpetuate meadow health may be pursued if deemed necessary

Aspen Enhancement

- Remove conifers less than 30 inches in diameter up to 100 feet from healthy, vigorously growing aspen stands. Conifers uphill or to the South of aspen may be removed up to a distance of 125 feet. This zone may be feathered when appropriate, and the buffer may be reduced depending on local site conditions. Any diameter conifer within the dripline of aspens may be removed
- When a large or intermediate conifer contributes to the habitat setting it may be retained as long as the goal of aspen enhancement can be met
    - Removal may be conducted using aerial or ground-based operations including but not limited to: hand tools, mechanized equipment, end-lining or winching, or prescribed fire.
    - Some number of conifers may be cut and left on site where it does not result in a hazardous surface fuel build-up
    - Large diameter conifers may be girdled and left in place for wildlife habitat
- Timber sales may be allowed
- Non-merchantable material may be chipped, masticated, piled and burned, or lopped and scattered as deemed appropriate by the interdisciplinary team
- When possible, prescribed fire should be used following conifer removal to stimulate new growth within the aspen stand and reduce surface fuels. Prescribed fire may include broadcast, jackpot, or pile burning methods
- Within the greater project area, aspen should be promoted within forest restoration units when 3 or more healthy, vigorous aspen clones are encountered which are greater than 10 feet in height. In these circumstances, all conifers less than 30 inches DBH may be thinned within 100 feet of aspen
- Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired conditions

Habitat Enhancement

Habitat enhancement units coincide with Goshawk, California Spotted Owl (CSO) protected activity centers (PACs), and/ or willow flycatcher. Each PAC will have a PAC specific treatment created by the Truckee Wildlife Biologist and Silviculturist, however generally the following treatments would be applied

<u>California Spotted Owl PAC 1</u>

This PAC has been vacant since the early 1990s with some isolated individuals seen but no nesting pairs ever recorded. This unit is very noisy, sits directly above a busy railroad, and shares a boundary with the Town of Truckee.

- Retire this PAC and amend forest plan
- Thin all white fir less than 25 inches DBH
- Retain all other trees, plant resulting gaps greater than ½ acre in size with species composition and site preparation and release techniques listed in "Forest Restoration" section

Other PACs

- Use mechanized equipment to commercially log up to 50% of PAC acreage. No logging operations would be allowed within a buffer from nesting location – Buffers will be determined based on habitat and conditions in the field. Operations would not proceed during a limited operating period to allow for successful breeding, and rearing of young.
    - Focus tree removal on intermediate and suppressed trees as well as some co-dominants to retain high canopy cover while reducing tree density
    - Thin fir trees within the dripline of large diameter pines or which have interlocking crowns with a large diameter pine
    - Retain areas with vigorously growing younger trees below the overstory where they will not function as ladder fuels
    - Create gaps up to 1.5 acres in size on up to 10% of the PAC to increase heterogeneity and break up crown continuity
    - Retain leave areas which have advantageous habitat and fuels conditions
- When possible use prescribed fire to treat PACs where it will reduce fuel loads and result in desirable effects
    - Prescribed fire may include broadcast, jackpot, or pile burning methods
- Hand and mechanized treatment of understory trees (<10 inches) may be used to reduce surface and ladder fuels to reduce potential wildfire severity across the treatment area
    - Trees less than 10 niches DBH will be thinned to a residual spacing of 25 feet
    - Small diameter trees may be thinned using: biomass, mastication, chipping hand thinning, lop and scatter or piling
- Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired conditions

Fuels Reduction

- Use hand or ground-based mechanized equipment to reduce surface and ladder fuels to create defensible space and reduce the likelihood of crown fire
- Thin trees to an average residual spacing of 25 feet
- Generally retain pine species and remove fir
- Residual trees within 100 feet of infrastructure and property boundaries may be pruned up to 8 feet in height or 50% of total tree height, whichever is less
- Areas where shrubs pose a fire risk will be masticated. Within 150 feet of private residences and property boundaries along the highway 89 corridor, sprouting shrubs may be treated with Triclopyr using a backpack sprayer or cut stump methodology to increase the longevity of fuels treatments
- Material may be treated using mastication, chipping, biomass, lop and scatter, grapple pile and hand thin/ hand pile to meet desired conditions as determined by a fuels professional during implementation.
- Prescribed fire including: broadcast burning, pile burning and jackpot burning may be used to achieve desired conditions or maintain desired conditions
- Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired conditions

Prescribed Fire – this applies to the entire project area

- Generally, control lines will utilize existing features such as roads and trails present within the project area when possible.
- Where needed, control line will be created using hand or mechanized equipment in order to safely conduct prescribed fire activities
    - Control lines consist of clearing all combustible material down to bare mineral soil from the forest floor. This may range from 2 – 4 feet wide
    - Removal of small diameter trees less than 8 inches DBH, tree pruning up to 8 feet in height or less than ½ the height of the tree (whichever is less), and removal of shrubs may be completed within 15 feet of the control line to facilitate safe prescribed fire activities
    - Snag and hazard removal within 1.5 tree lengths of the control line may occur
    - Control line will not be created where it damages sensitive resources unless the corresponding forest service specialist determines it is okay to do so or protection measures mitigate detrimental impacts
- Broadcast, jackpot, or pile burning operations may be used as determined appropriate by a forest service fuels specialist to create desirable fuels dynamics

Invasive plant Treatments

Treat approximately 5.4 acres of five priority invasive plant species using a combination of chemical and mechanical (i.e. hand pull, string trimmer, shovel) methods (Table 1). Herbicide will spot sprayed using a backpack spray. Maximum of one initial and one follow-up herbicide treatment will be allowed annually. Herbicides application will be conducted by a licensed applicator and will be in accordance with all label instructions, state and federal regulations and FS direction. Herbicide is limited to the maximum annual application rate as indicated on the label. Adjuvants may be added, but only non-NPE surfactants would be used. Herbicides will not be applied directly to any surface water.

Table 1: Current inventory of priority invasive plant infestations in the project area and preferred treatment methods

Species	Number of infestations	Acres	Preferred Treatment		
			Mechanical	Aminopyralid (0.11 lbs ae/ac)	Glyphosate (3 lbs ae/ac)
Tall white top	1	1.7	Prior to Chemical		After re-sprouting post mechanical txt
Spotted knapweed	2	1.1	If infestation is small	x	
Reed canary grass	1	1.7			x
Russian knapweed	1	0.7	If infestation is small	x	
Musk thistle	2	0.2	If infestation is small	x	
Total	7	5.4			

Note: *All numbers are approximate. Additional infestations may be discovered and prioritized for treatment; therefore, treatment locations may change as infestations emerge or expand. All changes to treatment locations would be reviewed by an interdisciplinary team.*

Five Creeks: Land Classification

N

Five Creeks Land Classification

- WUI Defense Zone
- WUI Threat Zone
- General Forest
- WUI Defense Zone/ Habitat Enhancement
- WUI Threat Zone/ Habitat Enhancement

Trails

- Motorized Trail
- Non-Motorized Trail

Roads

- Road Closed to Vehicular Traffic (ML1)
- Dirt Road (ML2)
- Improved Road (ML3-5)

Stream

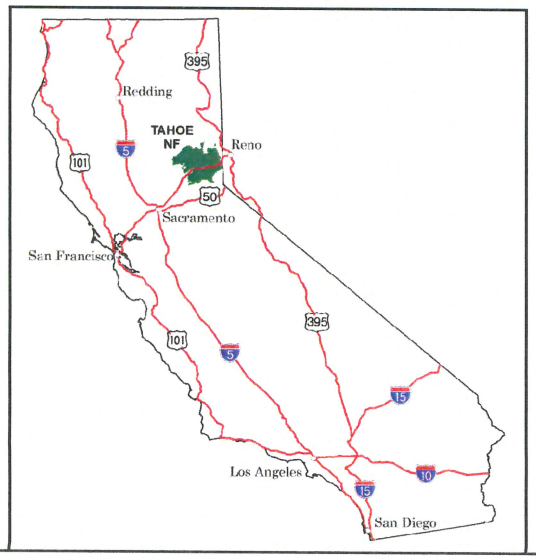
- Intermittent
- Perennial

Land Ownership

- Tahoe NF
- Other/Private

0 1.25 2.5

Miles



Town of Truckee

Eastern Regional Landfill

HWY 89

Olympic Valley

Five Creeks: Forest Restoration and Fuels Reduction 6,212 Acres

N

Five Creeks Proposed Treatment Types

- Aspen Enhancement - 44 Acres
- Forest Restoration - 4,202 Acres
- Fuels Reduction - 270 Acres
- Habitat Enhancement - 1,664 Acres
- Meadow Enhancement - 32 Acres

Trails

- Motorized Trail
- Non-Motorized Trail

Roads

- Road Closed to Vehicular Traffic (ML1)
- Dirt Road (ML2)
- Improved Road (ML3-5)

Stream

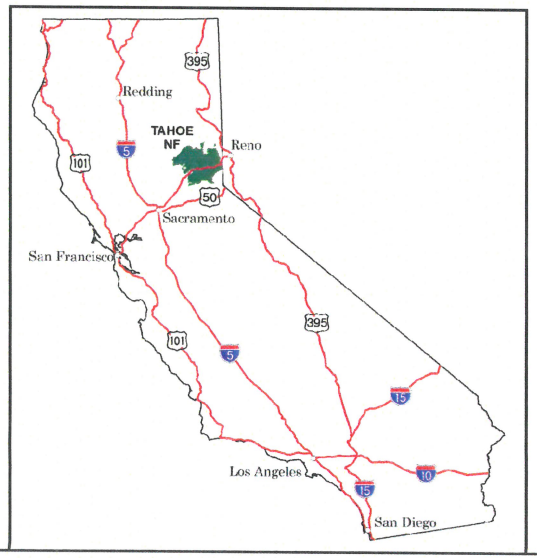
- Intermittent
- Perennial

Land Ownership

- Tahoe NF
- Other/Private

0 1.25 2.5

Miles



Town of Truckee

Eastern Regional Landfill

HWY 89

Olympic Valley