Executive Summary: Chalk Fire BAER Initial Assessment
(October 29, 2008)

The Chalk Fire started on September 28, 2008, and was 98% contained as of October 29, 2008. The fire burned approximately 16,318 acres within Monterey County, of which 14,220 acres (87%) are National Forest System (NFS) lands, 572 acres (4%) are on Fort Hunter-Liggett lands, 680 (4%) are on California State Park lands, and the remainder 846 acres (5%) are on private land. The initial Burned Area Emergency Response Assessment has been completed and addresses all National Forest System lands within the burned area.

A high percent (67%) of the burn area was rated as unburned/low burn severity, with 33% rated as moderate/high burn severity. Generalized observations about the burn pattern can be described as: valley bottoms and drainages were commonly unburned, under-burned, or low soil burn severity; most forested areas were under-burned with minimal heat transfer to the soil and high leaf cast potential; most burned shrub communities were moderately burned with large areas of bare soil existing on steep slopes. High rates of soil erosion, dry ravel, and sediment delivery to stream channels are likely to occur on steep moderately or severely burned slopes within the burned area. Several areas with high potential for landslides and/or rock-fall were also identified. At a sub-watershed scale, the potential for increased flows and sediment delivery leading to flooding and debris flows was identified where large proportions of moderate and high burn severity exist within the burned area sub-watersheds. Runoff and sediment yield is expected to increase substantially in the first three years. Vegetation is expected to re-sprout in the majority of the burned area, with effective cover and watershed hydrologic stability re-established within 3-5 years depending on vegetation types.

Within and adjacent to the fire perimeter there are multiple resources including, but not limited to, the Nacimiento-Ferguson Road (identified by Office of Emergency Services as an evacuation route in the event Highway 1 is closed), Pacific Coast Highway 1, private residences, developed campgrounds and trails, cultural sites, and special status botanical and wildlife species. Given the predicted effects of the fire, all of the resources listed above are at serious risk for severe consequences should a storm, or series of storms, occur over the burned area within the next three years. Impacts would occur from a combination of increases in flood flows, sediment yield, rock fall, and nonnative weed invasion.

The BAER assessment team worked with district staff and cooperating agencies to identify initial concerns and information needs, discuss potential treatment recommendations, and discuss the draft BAER report. Interagency coordination and collaboration with district staff helped the BAER team to identify downstream values at risk, and consider treatment options for NFS lands.

Treatments to detect (followed with treatment) the spread of nonnative plants, reduce the potential for loss of infrastructure along system roads within the burn area, and reduce threats to life have been recommended by the BAER assessment team. The Value at Risk Calculation Tool Version 8.0 (April 2007) was used to determine the justification for proposed treatments (Appendix A).

Watersheds within the burned area were assessed to determine site suitability for hill-slope treatments such as hydromulch and/or wood-straw. A map of land areas suitable for hill-slope treatments is available in the project file. The map was developed from GIS analysis based on 30-60% slopes and high or moderate burn severity. Limited acreage suitable for hill-slope treatment within the burned watersheds exists. Based on limited suitable acreage, limited treatment effectiveness, rapid recovery of native vegetation, and concerns that treatment could impede recovery of native vegetation, it was decided that hill-slope treatments would not effectively mitigate emergency conditions downstream. Hill-slope treatments that were considered but not recommended included seeding, hydromulching, and woodstraw.

While treatments on NFS lands will help to reduce the impacts of the fire following precipitation events, treatments will not completely mitigate the effects of the fire. Continued interagency coordination and treatment effectiveness monitoring is recommended to increase overall effectiveness of recommended treatments and reduce threats to life and property.

Date of Report: October 29, 2008

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[ ] 2. Interim Report #____
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Chalk Fire

B. Fire Number: CA-LPF-002754

C. State: CA

D. County: Monterey

E. Region: Pacific Southwest R-5

F. Forest: Los Padres

G. District: Monterey

H. Fire Incident Job Code: P5EL5K

I. Date Fire Started: September 28, 2008

J. Date Fire Contained: 98% (Ocober 29, 2008)

K. Suppression Cost: Approximately $23,688,882 million (October 29, 2008)

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): approximately 18 miles of hand line and 31 miles of dozer line.
2. Fireline seeded (miles): Not applicable
3. Other (identify): 1 fire camp and 11 helispots

M. Watershed Numbers: Big Creek Frontal (180600060202), Willow Creek Frontal (180600060203), Upper Nacimiento River (180600050501), Upper San Antonio River (180600050601).

N. Total Acres Burned: **16,318**
NFS Acres (**14,220**) Other Federal (**572**) State (**680**) Private (**846**)

O. Vegetation Types: Coyotebush-California sagebrush scrub, chamise chaparral, mixed chaparral, mixed evergreen forest, California bay woodland, knobcone forest, and redwood riparian forest.

P. Dominant Soils: Cienaba, Rock Outcrop, Xerorthents, Sur, Junipero, Pfeifer, Gamboa, Millsholm, Gaza, Plaskett

Q. Geologic Types: Salinian Block composed of intrusive igneous rock (e.g. granitic plutonic rocks) associated metamorphic rock, sedimentart rocks and geologically recent deposits that include debris fans and aprons, terraces and landslides. Additional components include the Sur and Franciscan complex.

R. Miles of Stream Channels by Class: 90 Intermittent, 10 Perennial

S. Transportation System: Trails: 19 miles Roads: 18 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 10,901 unburned/low, 4,754 moderate, 663 high
Percentage 67% unburned/low, 29% moderate, and 4% high.

B. Water-Repellent Soil (acres): estimated 1,347 acres (based on 25% of moderate and high burn severity areas) discontinuous throughout the burned area.

C. Soil Erosion Hazard Rating (acres):
350 (low)/(moderate) 16,668 (very high) (Monterey County Soil Survey)

D. Erosion Potential: 18 tons/acre or 201,805 tons (weighted average)

E. Sediment Potential: 9500 cubic yards / square mile [5-15 times normal background]

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5

B. Design Chance of Success, (percent): 90

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 5

E. Design Storm Magnitude, (inches): 2.42

F. Design Flow, (cubic feet / second/ square mile): See table 1 below

G. Estimated Reduction in Infiltration, (percent): 50%
(Based on the reduction of soil cover in moderate and high burn severity areas. Water repellency was considered to be moderate to low and discontinuous througout the burn.)

H. Adjusted Design Flow, (cfs per square mile): See table 1 below

Table 1. Pre-fire and post-fire (1-year following fire) discharge (cfs/sq.mi.) per HUC7 and HUC8 subwatersheds.

Watershed	Pre-fire discharge	Post-fire discharge	Percentage increase	Adjusted recurrence interval from Q5	Total watershed area (sq.mi.)	% of High & Mod Burn
Kirk Creek	10	30	270%	Q19	1.58	21%
Coast North 1	2	7	280%	Q19	0.52	15%
Coast North 2	2	6	360%	Q32	0.40	23%
Coast North 3	1	2	200%	Q12	0.25	1.9%
Mill Creek	70	220	210%	Q13	6.0	12%
Hare Creek	30	120	400%	Q50	3.4	43%
Limekiln Creek	15	60	400%	Q50	2.0	17%
West Fork Limekiln Creek	25	100	400%	Q50	3.0	23%
Nacimiento River	150	320	210%	Q13	10.9	30%
Negro Creek	90	130	140%	Q7	7.4	5.7%
Slick Rock trail subwatershed	10	30	300%	Q20	1.6	48%

This watershed modeling indicates that there will be increased peak flows for the design storm (Q5 = 5-year return interval) from all the watersheds that were burned in the Chalk Fire.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats: In order to determine the values at risk, the Forest Service Chalk BAER Assessment Team began by soliciting advice from the Monterey District Ranger and staff, local residents, NRCS, and other agencies. The Chalk BAER team conducted helicopter and field level reconnaissance over the entire Chalk Fire. The following table is a geographic breakdown by watershed areas to describe the critical values/resources and threats which are at risk from post-fire effects. The threats to life, safety, and property constitute an emergency determination in these watersheds.

Table 2: Threat to life, safety and property by hydrologic unit.

Watershed	Hazards and Values at Risk
Big Creek Frontal/Hare Creek and Limekiln Creek Subwatersheds	Hazard: Hazard trees, dry ravel, debris sliding, increased peak flows, rockfall, and dilapidated fence. Value at Risk: Life, safety, property – trail users and trail infrastructure.
Willow Creek Frontal/Kirk and Mill Subwatersheds	Hazard: Hazard trees, dry ravel, increased peak flows, increased sediment delivery, deterioration of water quality, and hazardous materials. Values at Risk: Life, safety, property – Nacimiento – Ferguson Road, Kirk Campground water system, road and trail users, trail infrastructure, and private residences.
Upper Nacimiento River	Hazard: Hazard trees, rock fall, dry ravel, increased peak flows, increased sediment delivery, and deterioration of water quality. Values at Risk: Life, safety, property – Nacimiento-Ferguson Road, Cone Peak Road, South Coast Ridge Road, developed campgrounds, trails, road and trail users, and trail infrastructure.

The threat to life and safety throughout the burn area is from the following:

- Increased flooding potential of streams from sediment laden runoff generated from moderate and high burn severity areas above roads, stream crossings, hiking trails, and private or state property downstream of National Forest System lands.
- Recreationists and tourists may be unaware of the burned watersheds and the increased hazards that may result during and after rain storms.
- Flooding, debris flows, and damage to the transportation infrastructure may result in loss of ingress or egress from Highway 1 along Nacimiento-Ferguson Road which has been identified by OES as a critical evacuation route in event of a Highway 1 closure.
- Forest system roads and trails will experience increased rockfall and debris hazards onto the roads due to loss of vegetation and increased hydrologic response from moderate and high soil burn severity hillslopes.
- User safety is in jeopardy from hazard trees and other dangerous conditions along trail corridors including rock fall, debris sliding, and dry ravel. Trail users may become disoriented due to the loss of trail prism in a remote and potentially dangerous environment.
- Deterioration of water quality from increased ash and altered soil chemistry could make water quality unfit for recreational use along Nacimiento and Ponderosa Campground, and unsuitable for domestic use at Kirk Campground.
- Increased potential for flooding, debris flows, rockfall, and hazard trees may result in loss of life and increased threat to public/employee safety at Limekiln State Park Campground.

Threat to Property:

- There is a large risk of damage to property (roads and trails) caused by the loss of water control, diversion potential, rockfall, and landslides.
- Risk to infrastructure exists on 22S01 (Nacimiento-Ferguson Road), 22S05 (Central Coast/Cone Peak Road), due to expected increased runoff and sediment bulking in drainages with culverts. The risk to infrastructure comes from a high probability for plugging of drainages and overtopping of flows during the design storm which could cause significant damage if not controlled.
- Increased potential for flooding, debris flows, rockfall, and hazard trees may result in damage to Limekiln State Park Campground infrastructure.

Loss of Access:

An emergency determination for threat to access was made on 22S01 (Nacimiento-Ferguson Road) for public evacuation in the event of a Highway 1 closure.

Threat to Natural Resources:

- Native Vegetation Recovery - An emergency exists with respect to vegetative recovery as a result of the threat of post-fire weed introduction and spread. The unknowing introduction and dispersal of invasive weeds into areas disturbed by fire suppression and rehabilitation has the potential to establish large and persistent weed populations. In addition, it is highly likely that existent weed infestations will increase in the burn area, due to their accelerated growth and reproduction and a release from competition with natives. These weed populations could affect the structure and habitat function of native plant communities within the burn area. It is expected that most native vegetation would recover if weed invasions are minimized.

- Smith's blue butterfly (*Euphilotes enoptes smithi)* and their habitat - occupied and suitable habitat for Smith's blue butterfly occurs within the affected area. If larvae were lost during the fire, the species is not expected to re-colonize the area until the habitat begins to recover. The primary post-fire threat is vegetative type conversion due to the strong possibility that established noxious weeds in the area will out-compete the native coastal scrub communities that are critical for this butterfly. Type conversion could contribute to the long-term loss of suitable habitat for Smith's blue butterfly within the Chalk Fire area. Emergency conditions exist because of the potential for long-term loss of this endangered insect's occupied and suitable habitat.

Threat to Cultural Resources:

- Of the thirty-one Cultural Resources assessed by the BAER Archaeologists and Cultural Specialists there were no identified emergencies resulting from the Chalk Fire on Forest Service Lands. There is an emergency in Limekiln State Park at site CA-MNT-986H. The southeastern kiln and rock retaining wall are at risk due to the potential for high velocity increased runoff including sediment bulking from the slope above, which burned with high severity. There is a no emergency determination for Heritage Resources from implementation of the proposed BAER treatments. Treatments will be conducted in compliance with the provisions of the *Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Identification, Evaluation and Treatment of Historic Properties Managed by the Pacific Southwest Region, California (Regional PA)* and will satisfy the requirements of 36 CFR 800.

B. Emergency Treatment Objectives:

As noted above, the greatest threats are to life and property from increased erosion and sedimentation, flooding potential, and increased debris flow potential. However, given the slope steepness, vegetative recovery, and amount of potentially treatable acreage within a subwatershed there are no land treatments which could be effectively implemented to minimize or reduce the threat. The team did thoroughly scrutinize and identify treatments for roads and trails where the potential threat to life and property exists.

1) To help prevent injury, loss of life, and minimize damage of property by alerting the public of hazards that result from the post-fire emergency including the potential for flooding, debris flows, and loss of access.
2) To reduce threats to life and public safety by restricting public and employee access within or adjacent to the burn area.
3) To reduce threats to public safety from deteriorated water quality by closure of developed sites and protection of water collection systems.
4) Reduce the likelihood of loss of infrastructure along 18 miles of forest roads and 19 miles of trails. When undertaken solely to protect the road or trail investment, the cost for emergency stabilization should be less than the cost to repair damages after they occur. BAER Guidance Paper September 2004.
5) Create public awareness by posting signs at key point of ingress into the burn areas.
6) Maintain the ecological integrity, soil productivity and vegetative diversity of the burned area by reducing the weed risk.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land **95** % Channel **N/A** % Roads/Trails **75** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	90	90
Channel	N/A	N/A	N/A
Roads/Trails	80	90	90
Protection/Safety	90	95	100

E. Cost of No-Action (Including Loss): The team used the Value at Risk Calculation Tool Version 8.0 (April 2007) to assess the cost benefit of all the proposed treatments. Results of that analysis showed a positive cost-benefit ratio for all treatments. See Appendix A: Summary of cost-risk analysis.

F. Cost of Selected Alternative (Including Loss): See Appendix A

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology	[x] Soils	[x] Geology	[x] Range	[ ] Economist
[ ] Forestry	[x] Wildlife	[ ] Fire Mgmt.	[x] Engineering	[ ] Documentation specialist
[ ] Contracting	[ ] Ecology	[x] Botany	[x] Archaeology	[ ]
[x] Fisheries	[ ] Research	[ ] Landscape Arch	[x] GIS	

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H. **Treatment Narrative:**

Land Treatments:

Weed Detection Survey Design and Methodology:

Surveys will begin in 2009 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of surveys in roads, dozerlines, staging areas, safety zones, known invasive and sensitive plant populations, and habitat for Smith's blue butterfly (seacliff buckwheat) will be the first priority. The second survey priorities will be along riparian areas, handlines, drop points, and prohibited plant plantations. Surveys of the general habitats in the burned area will be the lowest priority. All locations of weed species will be mapped, using the Los Padres NF, Monterey District "Invasive Weeds" list (Appendix B).

Documentation of new infestations will include:

- Mapping perimeter of new infestations
- Filling out Weed Element Occurrence Form
- Proposed Treatment method
- Incorporating data into local GIS spatial database
- Entering data into National Resource Information System (NRIS) database
- Entering data into FACTS database

Reporting

A Weed Detection Survey Report will be submitted to the regional and Los Padres NF BAER coordinators and Monterey District Ranger. If weed introduction and spread has occurred, an interim BAER report will be completed to request eradication funding. Survey and reporting costs are included in figures below.

Costs: Weed Detection Surveys for One Year

Weed detection surveys to determine whether ground disturbing activities related to the Chalk Fire have resulted in the expansion of noxious weeds is requested for the first year. Estimated costs are based on the assumption that two visits would be necessary because of the differences in flowering times. If timing is such that all the target species are detectable in one visit, the actual costs would be lower than displayed below.

Treatment Cost:

Archaeological Consultant – 2 days	=$ 2,851
GS-11 contracting official ($390/day x 2)	=$ 780
GS-11 botanist ($390/day x 4 days)	=$ 1,560
2 Contract Field Botanists ($650/day x 15 days)	=$ 9,750
Per diem/lodging for 2 people	=$ 5,520
Vehicle mileage (2000 miles @0.37/mile)	=$ 925
Total for weed detection surveys for FY09	*=$21,386*

Hazardous Material Stabilization: Treatments are prescribed to prevent or control contamination of the area from hazardous material. Three sites were identified by Forest law enforcement as having potential for

hazardous material remnants as a result of illegal plantations. Also, at Alm's Spring part of the pvc pipe had been damaged as a result of the fire. Initial funding request is to survey sites identified by law enforcement and determine if hazardous material is still present. If present, an interim treatment request will be submitted to stabilize or remove hazardous based on feasibility.

Treatment Cost:

- 1 GS-7 for 3 days @ $203/day = $ 609
- Per Diem = $ 582

Total = *$1,191*

Other land treatments considered: Other land treatment opportunities were thoroughly reviewed by the team to determine if there were any opportunities to reduce erosion and runoff by providing additional soil cover to high and moderate burn severity areas where the hydrologic response is greatest. These treatments and justifications for ineffectiveness are described in the Soil, Geology, and Hydrology Specialist Reports.

Total Landscape Treatments: $22,577

Channel Treatments: Channel treatments considered: Channel treatment opportunities were thoroughly reviewed by the team to determine if there were any opportunities to reduce effects to water quality, loss of water control, slow water velocity, trap sediment and maintain channel characteristics. Treatments that were not suitable for the area, and a discussion about their ineffectiveness, are described in the Soil, Geology, and Hydrology Specialist Reports.

Roads and Trail Treatments:

Forest and County Roads

Road Storm Patrol Treatment Objective: To maintain and restore road treatments.

Criteria: Use road storm patrol when access between storms to the site requiring maintenance is feasible. This treatment is appropriate for sites with lower overall risk. Road patrol used in lieu of structural treatments that are more expensive or present significant risk. (FSM 2509.13 chapter 20).

Spillway and Slope Treatment Objective: To armor fill slopes and prevent erosion.

Criteria: Excavate and place riprap or install overside drains when concentrated water from the outflow of drainage from the road surface may cause severe erosion to the embankment. Metal overside drains are used when embankment slopes are steep and long and riprap is either not feasible or cost prohibitive. Riprap spillways need to have a foundation at the bottom that can support the weight of the structure and be solid enough to resist erosion and will not scour below. Temporary spillway slope protection can be achieved with Degradable Rolled Erosion Control Blanket, staked to the slope.

Armoring is used to protect water quality by providing mechanical strength and protection to sites within a channel system. Typically, armoring is installed as some form of riprap at locations where bridges or culverts require protection from flood flows. (FSM 2509.13 chapter 20).

Riser and Drop Inlet w/steel Grate Cover Treatment Objective: To prevent culvert from plugging with debris.

Criteria: Attach riser or drop inlet to existing culvert when channel bedload and debris are expected to continue to move down the channel and toward the culvert. Typically used when limited access to the culvert site during the rainy season precludes culvert patrol. Risers require enough head (road fill height above the drainage) to impound water and debris to function properly. Use drop inlet cover that prevents plugging with debris.

Install Warning Signs Treatment Objective: To warn people traveling the road of potential flooding at stream crossings, rockfall from steep unstable slopes, and washouts that may create a hazard.

Criteria: This treatment can accompany a road or area closure sign and can also be used in instances when access is still allowed and road user discretion and understanding of the risk is sufficient to protect them. The costs include sign repair and maintenance until the watershed emergency has ended.

Temporary Water Diverter Treatment Objective: To prevent a cascading failure of drainage structures from stream diversion and culvert plugging.

Criteria: An insloped road with continuous road grades through two or more natural stream crossings, undersized culverts, moderate to high burn severity, steep slopes, steep grades and a paved surface are factors that together severely limit options to prevent a cascade road failure.
Design: Diverting water off the road can be done several ways. On closed roads "K" rails can be used. On open roads the design must take into account driver behavior, cost, time to install, and effectiveness. Consider driveable humps, paved or nail-down speed bumps, flexible water diverters, and open top drains. On a narrow steep road with a severe drop off the road edge, driver concentration and behavior is crucial for safety. In some cases filling the ditch can be sufficient to redirect water across the road.

Road Treatments Costs: (Costs include mobilization and personnel costs – 10% mob. 15% admin.)

• 4 x Risers @ $3,750ea	$ 15,000
• 12 Days Storm Patrol @ $3,750ea	$ 45,000
• 6 Temporary Water Diversions @ $5,000ea	$ 30,000
• 6 Slope Protection @ $3,000 ea	$ 18,000
• 1 Concrete Drop inlet with Steel Grate Cover	$ 10,000
• 1 Spillway – Overside Drain @ $6,875	$ 6,875
• 4 x Warning Signs @ $1,250ea	$ 5,000
• Archaeological Monitor	$ 2,851
• Archaeological Consultation	$ 15,806
Total Road Treatments	*$148,532*

Trail Treatments
Trail Closure: The trail system should be closed for the first winter following the fire. Conditions following the first winter should be evaluated to judge if additional time is required to provide for user safety or for protection of the trails at risk. This can be completed through the issuance of a forest order or area closure and trailhead signage.

Storm Proofing: Storm proofing is only the minimum necessary trail work activity which will protect the trail investment in its current state and protect it from the expected seasonal weather. This is not an attempt to perform deferred maintenance objectives or improve the trail in any way.

Storm Inspection and Response: Due to intense dry raveling and immediate concern of rock fall damaging or closing the trail, inspectors will be needed to perform treatment effectiveness monitoring. The inspections should be conducted after significant weather events. These inspectors will correct minor expected problems and report significant changes on and along the trail. Based on information gathered on treatment effectiveness monitoring, an interim request may be submitted to the Region for consideration for additional funding to correct problems in response to unforeseen storm damage. Trails should be inspected before opening to public use. These inspectors could also check for public usage of the trail in an effort to provide enforcement of the forest closure of the trails for visitor safety.

Treatment Objective: Provide for public safety, implementation crew safety, and protect the trail as a capital investment.

Treatment Description: Close trails affected by fire and install trail drainage structures to maintain natural drainage patterns and to maintain trail stability for the increased flows during the first winter. Coordinating with State Parks and other neighboring land managers to ensure other trails connecting with, or feeding into FS system trails are closed as well.

Armoring key ephemeral drainages and trail water diversion structures to prevent undercutting and loss of trail tread. This will require the placement of rock in a riprap fashion below drainages to dissipate the energy of off-trail water flows and decrease the possibility of down bank erosion. An average total of 15-20 rolling dips per mile will need to be constructed. This treatment frequency will help mitigate damage to trail caused by increased flow rates. These rolling dips need to be installed on sections of trails with long sustained grades with no grade breaks. When rolling dips are installed on steep side slopes, frequency of structure placement should be increased to lessen the volume and velocity of down trail water flow. Rolling dips will also be needed

to compliment existing trail water diversion structures which could be compromised by increased water flows. Existing waterbars will need immediate maintenance. Trail stabilization will also reduce detrimental effects to downstream values at risk.

To provide for implementation crew safety, hazard trees should be removed at designated dispersed campgrounds where crews need to camp and along portions of trails that are used as a travel route to work projects. Consideration should also be given to any individual work locations that require lengthy stays by crews. Removal of identified hazard trees could be completed with saws or the use of explosives. Selected trails not identified as key trails for treatment to allow for access by implementation crews and pack-stock will need to be opened. These non-key trails will be opened to a lesser standard than normal trail standards as there only purpose is to allow for a safe movement of crews and pack-stock to implement trail prescriptions to affected trails.

A botanist and an archeologist will need to flag areas needing protection of sea-cliff buckwheat plants, the host plant for the endangered Smith's blue butterfly, and archeological sites within the project area prior to the crew's storm proofing treatments.

Trail Treatment Cost:
Trail Storm Proofing: Storm proof 19 miles of trails prior to damaging rainfall events.

Crew Travel
- $64/day x 7 person crew = $ 448/day
- $448/day x 14 day tour = $6,272 travel/tour

Vehicles
- 600 miles/tour x $.70/mi = $ 420/tour (1 truck)
- $420/truck x 3 trucks = $1,260/ tour

Travel & Vehicle Total
- Travel @ $6,272/tour + Vehicles @ $1,260/tour = $7,532/tour

Implementation Crew Labor Cost
- Approx. $1925/crew/day x 14 days = $26,950

Forest Project Oversight (Forest Service Rec. Specialist, Hydrologist, or Soil Scientist
- 1 GS-9 @ $233/day x 2 days/pay period = $ 466

Contract Botanist
- $325/day x 5 days/pay period = $1,625

Contract Archeologist
- $1,674/day x 2 days = $3,348

Total Implementation Cost for Trail Storm Proofing = $39,921

Trail Storm Inspection and Response: Storm inspection and response would be implemented as needed following rainfall events. This request would fund a two person team to go out for 20 trips to implement storm inspection and response as needed on trails throughout the burned area.

Contract Trail Specialists
- $650/day x 2 days/trip x 20 trips = $26,000

Contract Botanist
- $325/day x 5 days = $1,625

Total Implementation Cost for Trail Storm Inspection and Response = $27,625

Trail Closure Treatment:
Closure treatments would be implemented at the following locations:
Kirk Creek trail @ Hwy 1 (1);
Mill Creek trail @ Nacimiento Fergusson Road and South Coast Ridge Road (2);
Gamboa trail @ the junction of North Coast Ridge Trail and Cone Peak Road (2);
Cone Peak trail @ Cone Peak road (1);
Stone Ridge trail @ Cone Peak road (1)
Twitchell Flat trail @ Hwy 1 (1)

Slick Rock trail @ Ponderosa Campground (1)
Total number of signs to be installed = 9

Installation of signs
- 2 contract employees @ $325/day x 5 days = $3,250

Regulatory Signage to Close Trail
- Signs @ $100 ea. x 9 = $ 900

Total Implementation Cost for Closure Treatment = $4,150

Grand Total for Trail Treatments = $ 71,696

Total Road and Trail Treatments: $220,228

Protection/Safety Treatments:

Extended Emergency Coordination/Implementation – This involves communication and coordination with other federal, state, and local agencies with jurisdiction over lands where life and property are at risk from post-fire conditions. Components of this position includes the following:

- Protection and safety of human life and property is proposed through interagency coordination as needed throughout the first winter after the fire. Interagency coordination with OES, NRCS, and Monterey County Flood and Transportation is designed to reduce the threat to life and safety by creating an awareness of the post-fire conditions.
- Emergency coordination work to assist in developing posters, brochures, and information for other media by participating in interagency meetings and other media regarding increased safety hazards associated with the Chalk Fire.
- Coordination with hydrologist/soil scientist for implementation of treatments.
- Implementation Leader to oversee implementation of proposed treatments.

Treatment Cost:

• 1 Implementation Leader GS-11 salary/per diem - 21 days	$15,000
• 1 Hydro/Soil Scientist salary/per diem - 7 days	$ 4,000
• Forest BAER Coordinator salary/per diem/supplies @ 736/day -10 days	$ 7,360
Total Cost	*$26,360*

Warning Signs: Costs for warning signs are described above in Road and Trail Treatments.

Hazard Tree Removal: Removal of hazard trees to protect life along Nacimiento-Ferguson Road, Cone Peak Road, South Coast Ridge Road, Kirk Creek/Vincente Trail, Gamboa Trail, Cone Peak Trail, Stone Ridge Trail, and a trail from Hwy 1 to Twitchell Flat continuing and connecting to the Stone Ridge Trail. Implementation Leader identified above would help with identification of Class "C" hazard trees that would be felled by qualified contractors. Class "B" or smaller hazard trees could be felled by trail storm proofing crew described above. An urgent significant hazard is identified when the collapse or breakdown of the burned or unstable object is "likely to occur within the year and could result in property damage, personal injury or death." (BAER Guidance Paper-Hazardous Tree Removal)

- Treatment Cost:
  - 2 Class "C" Fallers @ $1600/day for 5 days = *$8,000*

Each of the treatments requires storm patrol monitoring. There is an economy of scale in that the same pair of recreation technicians (GS-7s) could be utilized to patrol multiple areas of the fire following the storms. Long term records indicate that the number of storms varies from 6 to 18 storms a year, with an average of 12 storms per year.

Kirk Creek campground water system clean-out and storm patrol/system cleanout maintenance:
- 5-person crew for 2 days/3 nights with per diem costs: @$450/day = $5000

- 3 signs at $300/sign = $900
- 1 GS-11 biologist/botanist for avoiding vegetative impacts to endangered butterfly habitat: 2 days =$ 1,000
- 2 Recreation Technicians for post storm cleanout @$200/day for 24 days = $ 9,600
- Archaeological Consultant = $ 5,028

Total *= $21,528*

Nacimiento campground closure:
- Write Forest Order: One Forestry Technician @300/day for 2 days = $ 600
- 3 signs at $300/sign - (avoid vegetative impacts to endangered butterfly habitat) = $ 900
- 2 Recreation Technicians for storm patrol @$200/day for 12 days = $ 4,800

Total *= $ 6,300*

Ponderosa campground partial closure of campsites #7 and #8 and access road:
- Write Forest Order: One Forestry Technician @300/day for 2 days = $ 600
- 3 signs at $300/sign - (avoid vegetative impacts to endangered butterfly habitat) = $ 900
- 2 Recreation Technicians for storm patrol @$200/day for 12 days = $ 4,800

Total *= $ 6,300*

Total Protection and Safety Treatments = $67,878

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Road Treatment Effectiveness Monitoring: Storm inspection/response monitoring for Forest Roads will be conducted through the first year after the fire to ensure road stabilization treatments are functioning properly. This response will focus on identifying and treating potential hazards such as clogged culverts, plugged drains, and dips that may have filled in with sediment. The Forest Road Treatment Stabilization Monitoring Plan is attached as Appendix C.

Road Monitoring (site visit, number of days per person) = 6 @ $1,000 ea = $6,000

Trail Treatment Effectiveness Monitoring: Trail treatment monitoring funds are requested to ensure effectiveness of trail stabilization measures on a weekly basis by district personnel. The Trail Treatment Stabilization Monitoring Plan is attached as Appendix D.

Treatment Effectiveness Monitoring

2 Inspectors @ $325/day - $650 x 10 monitoring days =$ 6,500
Vehicle Mileage @ $.50/mi. x 100 mi. - $50/trip x 10 trips =$ 500

Treatment Effectiveness Monitoring Total *= $ 7,000*

Total Monitoring Cost *= $13,000*

			NFS Lands					Other Lands			All
Line Items	Units	Unit Cost	# of Units	BAER $	Other $		# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments											
Noxious weed detection surveys	Total			$21,386	$0			$0		$0	
Hazardous Material Detection	Total			$1,191	$0			$0		$0	
Insert new items above this line!				$0	$0			$0		$0	
Subtotal Land Treatments				$22,577	$0			$0		$0	
B. Channel Treatments											
N/A					$0			$0		$0	
Insert new items above this line!				$0	$0			$0		$0	
Subtotal Channel Treat.				$0	$0			$0		$0	
C. Road and Trails											
Trail stabilization, storm proofing	mi	2101	19	$39,921	$0			$0		$0	
Trail Storm Inspection/Response	mi	1454	19	$27,625							
Trail Closure	Total	4150	1	$4,150							
Subtotal Trails				$71,696	$0			$0		$0	
Road Storm Patrol	day	3750	12	$45,000							
Risers	ea	3750	4	$15,000							
Temp Water Diversion	ea	5000	6	$30,000							
Slope Protection	ea	3000	6	$18,000							
Concrete drop inlet with Steel Grate Cover	ea	10000	1	$10,000							
Spillway overside	ea	6875	1	$6,875							
Warning Signs - Roads	ea	1250	4	$5,000							
Arch Monitor - Roads	ea	2851	1	$2,851							
Arch Consultation	ea	15806	1	$15,806							
Subtotal Roads				$148,532	$0			$0		$0	
Insert new items above this line!				$0	$0			$0		$0	
Subtotal Road & Trails				$220,228	$0			$0		$0	
D. Protection/Safety											
Extended Emergency Coordinator (EEC)	day	668	17	$11,359	$0			$0		$0	
Implementation Team Leader	day	714	21	$15,000							
Hazard Tree Removal	day	1600	5	$8,000							
Kirk Ck Campground Water	day	897	24	$21,528							
Campgrd Closures (2)	day	1050	12	$12,600							
Subtotal Structures				$68,487	$0			$0		$0	

			NFS Lands					Other Lands			All
Line Items	Units	Unit Cost	# of Units	BAER $	Other $		# of units	Fed $	# of Units	Non Fed $	Total $
E. BAER Evaluation											
Salary, vehicles, per diem (16 team members/ 3 trainees)				$105,894							
Supplies				$450				$0		$0	$0
Helicopter flight				$2,700							
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				$109,044				$0		$0	$0
F. Monitoring											
Trail Effectiveness Monitoring	day	700	10	$7,000							
Road Treatment Monitoring		600	10	$6,000	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$13,000	$0			$0		$0	$0
G. Totals – Treatments Including Monitoring				$324,292	$0			**$0**		**$0**	**$0**
Previously approved											
Total - Including Assessment Costs				**$433,334**							

PART VII - APPROVALS

1. *Peggy Hernandez* — **10/31/2008**
   Forest Supervisor (signature) — Date

2. /s/ Beth G. Pendleton (for) — 06 Nov 08
   Regional Forester (signature) — Date

Appendix A – Cost Risk Assessment

Fire Name	Chalk Wildfire
Location	Monterey RD, Los Padres NF
Date	October 15 2008

SUMMARY	**Total Treatment Cost**	**$ 214,976**
	Expected Benefit of Treatment	**$ 9,208,105**
	Implied Minimum Value (IMV)	**NA**

	Value Type	Value at Risk	Implied Value and/or Benefit Cost
Kirk Creek	Life and Safety	**Yes**	
	Non-Market: Cultural Values	**Yes**	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 2,120,000
	Market Values: Loss of Use	**Yes**	$ 4,020,000
	Total Market Resource Value		$ 6,140,000
	Proposed Treatment		$ 45,500
	Reduction in Probability of Loss		0.15
	Expected Benefit of Treatment		$ 921,000
	Exp B/C Ratio of Treatment for Market Resources Only		20.2
	Implied Minimum Value (IMV) of Protecting Non-Market Resource Values		**Justified**

	Value Type	Value at Risk	Implied Value and/or Benefit Cost
Mill Creek	Life and Safety	**Yes**	
	Non-Market: Cultural Values	No	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 2,600,000

	Market Values: Loss of Use	**Yes**	$ 5,000,000
		Total Market Resource Value	$ 7,600,000
		Proposed Treatment	$ 56,750
		Reduction in Probability of Loss	0.15
		Expected Benefit of Treatment	$ 1,140,000
		Exp B/C Ratio of Treatment for Market Resources Only	20.1
		Implied Minimum Value (IMV) of Protecting Non-Market Resource Values	**Justified**

	Value Type	Value at Risk	Implied Value and/or Benefit Cost
Negro Creek	Life and Safety	No	
	Non-Market: Cultural Values	No	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 75,000
	Market Values: Loss of Use	**Yes**	$ 8,000
		Total Market Resource Value	$ 83,000
		Proposed Treatment	$ 14,300
		Reduction in Probability of Loss	0.31
		Expected Benefit of Treatment	$ 25,730
		Exp B/C Ratio of Treatment for Market Resources Only	1.8
		Implied Minimum Value (IMV) of Protecting Non-Market Resource Values	**Justified**

	Value Type	Value at Risk	Implied Value and/or Benefit Cost
Nacimiento River	Life and Safety	**Yes**	
	Non-Market: Cultural Values	No	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 82,000
	Market Values: Loss of Use	**Yes**	$ 1,016,500
		Total Market Resource Value	$

			1,098,500
		Proposed Treatment	$ 57,425
		Reduction in Probability of Loss	0.75
		Expected Benefit of Treatment	$ 823,875
		Exp B/C Ratio of Treatment for Market Resources Only	14.3
		Implied Minimum Value (IMV) of Protecting Non-Market Resource Values	**Justified**
Hare Creek	**Value Type**	**Value at Risk**	**Implied Value and/or Benefit Cost**
	Life and Safety	**Yes**	
	Non-Market: Cultural Values	No	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 2,410,000
	Market Values: Loss of Use	**Yes**	$ 4,060,000
		Total Market Resource Value	$ 6,470,000
		Proposed Treatment	$ 23,000
		Reduction in Probability of Loss	0.50
		Expected Benefit of Treatment	$ 3,235,000
		Exp B/C Ratio of Treatment for Market Resources Only	140.7
		Implied Minimum Value (IMV) of Protecting Non-Market Resource Values	**Justified**
Limekiln	**Value Type**	**Value at Risk**	**Implied Value and/or Benefit Cost**
	Life and Safety	**Yes**	
	Non-Market: Cultural Values	**Yes**	
	Non-Market: Ecological Values	**Yes**	
	Market Values: Direct	**Yes**	$ 2,115,000
	Market Values: Loss of Use	**Yes**	$ 4,010,000

Total Market Resource Value	$ (6,125,000)
Proposed Treatment	$ 18,000
Reduction in Probability of Loss	0.50
Expected Benefit of Treatment	$ 3,062,500
Exp B/C Ratio of Treatment for Market Resources Only	170.1
Implied Minimum Value (IMV) of Protecting Non-Market Resource Values	**Justified**

Appendix B – Noxious Weed Detection Survey Plan

NOXIOUS WEED DETECTION SURVEY PLAN

Fire Name: Chalk Fire Month/Year: October 2008
Authors: Katie VinZant, Krissy Walker (trainee)
Authors Duty Station: Angeles/San Bernardino National Forests

A. Background

Forest Service policy mandates the Forest to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. It is necessary to conduct noxious weed detection surveys to evaluate the potential for spread from both existing populations and from the activities associated with fire suppression. Therefore, noxious and invasive weed detection surveys are proposed for the first year following the fires to verify the suspected infestations and determine the fires' potential impact on weed populations within the burned area. Eupatory (*Ageratina adenophora*), wild oats (*Avena* spp.), black mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), pampas grass (*Cortaderia selloana*), fennel (*Foeniculum vulgare*), French broom (*Genista monospessulana*), shortpod mustard (*Hirschfeldia incana*), smilo grass (*Piptatherum miliaceum*), Himalayan blackberry (*Rubus discolor*), and milk thistle (*Silybum marianum*) are known to occur within the burn area and along adjacent access routes to the burn. In addition, Italian thistle (*Carduus pycnocephalus*), sweet clover (*Melilotus alba*/*officinalis*), and wild radish (*Raphanus sativus*) are known from locations less than five miles away. Several plant vectors such as Forest roads, trails, high winds, and waterways occur within the fire area. Even though a weed washing station was utilized, seed could have been transported into the burn on suppression vehicles and equipment that arrived on the fire before the washing station was established. Fire is known to enhance the establishment of all weed species present. See the Botany Technical Specialist Report and Part A of this report for more information about specific weed population attributes and locations in the Chalk Fire.

B. Management Concerns

Noxious weed invasions interfere with habitat recovery and ecosystem health within burned areas and fire suppression sites. In particular, noxious weeds hinder the recovery of habitat, especially in arid and riparian ecosystems, by aggressive colonization and reduction of water quality and quantity.

C. Objectives

To determine if the fire and associated ground disturbing activities have promoted the establishment and spread of noxious weeds to the extent that eradication efforts are necessary. Early detection dramatically increases the likelihood of successful treatment. If weeds are detected, a supplemental request for BAER funds will be made for eradication.

D. Parameters

Noxious weed presence, location, density, population size, and persistence.

E. Locations

In and along roads, trails, dozerlines, handlines, drop points, safety zones, riparian areas, adjacent to known sensitive and invasive plant populations, in habitat for the Federally Endangered Smith's blue butterfly (coastal sage scrub with seacliff buckwheat), and in prohibited plant plantations.

F. Weed Detection Survey Design and Methodology

Surveys will begin in 2009 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of surveys in roads, dozerlines, staging areas, safety zones, known invasive and sensitive plant populations, and habitat for Smith's blue butterfly (seacliff buckwheat) will be the first priority. The second survey priorities will be along riparian areas, handlines, drop points, and prohibited plant plantations. Surveys of the general habitats in the burned area will be the lowest priority. All locations of weed species will be mapped, using the Los Padres NF, Monterey District "Invasive Weeds" list (Part B).

Surveying will include documentation and hand pulling new weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed.

Documentation of new infestations will include:

- Mapping perimeter of new infestations
- Filling out Weed Element Occurrence Form (Part C)
- Treatment method
- Dates of treatment
- Incorporating data into local GIS spatial database
- Entering data into National Resource Information System (NRIS) database
- Entering data into FACTS database
- Evaluating success of treatment in subsequent inspections

G. Reporting

A Weed Detection Survey Report will be submitted to the regional and Los Padres NF BAER coordinators and Monterey District Ranger. If weed introduction and spread has occurred, an interim BAER report will be completed to request eradication funding. Reporting costs are included in figures below.

H. Costs: Weed Detection Surveys for One Year =$16,262.00-21,386.00

Weed detection surveys to determine whether ground disturbing activities related to the Chalk Fire have resulted in the expansion of noxious weeds is requested for the first year. Estimated costs are based on the assumption that two visits would be necessary because of the differences in flowering times. If timing is such that all the target species are detectable in one visit, the actual costs would be lower than displayed below.

For FS Detailers for FY 2009	
GS-11 botanist ($390/day x 5 days)	=$ 1,950.00
GS-9 archaeologist ($208 x 2 days)	=$ 416.00
Archaeology per diem/lodging	=$ 531.00
Vehicle mileage (800 miles @ 0.40/mile)	=$ 320.00
2-GS-07 botanists ($220/day x 15 days)	=$ 6,600.00
Per diem/lodging for 2 people	=$ 5,220.00
Vehicle mileage (2500 miles @0.37/mile)	=$ 925.00
TOTAL for weed detection surveys for FY09	=$16,262.00

For Contractors for FY 2009	
GS-11 contracting official ($390/day x 2)	=$ 780.00
GS-11 botanist ($390/day x 4 days)	=$ 1,560.00
Archaeology Consultant ($1,000/day x 2 days)	=$ 2,000.00
Archaeology per diem/lodging	=$ 531.00
Vehicle mileage (800 miles @ 0.40/mile)	=$ 320.00
2 Contract Field Botanists ($325/day x 15 days)	=$ 9,750.00
Per diem/lodging for 2 people	=$ 5,520.00
Vehicle mileage (2500 miles @0.37/mile)	=$ 925.00
TOTAL for weed detection surveys for FY09	=$21,386.00

I. Follow-up Actions

Design and implement follow-up treatments as needed. Plan for integrated weed management and NEPA analysis using non-BAER funding.

PART A

Invasive Weed Profiles

Ageratina adenophora **(Eupatory)** is a perennial herb or small shrub that is native to Mexico. It grows rapidly and produces many shoots and branches. The seeds are dispersed through wind, water, soil movement, and by clinging to animals and people. Eupatory mainly occurs in creek beds and forest clearings, in areas with steep slopes, and disturbed areas. It is fatally toxic to horses and most livestock. It may reduce growth of nearby vegetation by releasing inhibitors into the soil. Eupatory crowds out native plants after fire disturbance or flooding. It resprouts from roots and stems that are in contact with the soil, as well as having prolific seed production and rapid growth, which aid in out-competing

natives. Where possible, eupatory can be controlled by slashing followed by ripping or plowing and then sowing other plant species to out-compete seedlings in the spring.

Locations:

- On the north side of Nacimiento Ferguson Road, approx. two miles up from Highway 1

***Brassica nigra* (Black mustard), *Hirschfeldia incaca* (Shortpod mustard), and *Raphanus sativus* (Wild radish)** are annual, perennial, and biennial herbs that are native to Europe. They are common in coastal communities, especially in fog-belt grasslands and disturbed areas. These species do well post-fire because they usually have dormant seed banks that are fire stimulated; thus after fire many shrublands are invaded from within. Plants can be manually removed before they set seed to prevent spreading.

Locations:

- Black mustard and shortpod mustard are scattered along roadsides and historical grazing areas
- Wild radish is scattered along the coast, outside the burn area

***Bromus diandrus* (Ripgut brome) and *Avena* spp. (Wild oats)** are winter or spring annual grasses. The species grows quickly in the spring and often matures and sets seeds before most other species. In undisturbed sites, they will most commonly spread along soil cracks and work its way outward into the natural community. Ripgut brome can persist in unpredictable environments because seed germination is staggered from August until May. The presence of smoke increases the germination rate of the wild oats. The change induced by ripgut brome and wild oats in the fire cycle frequency is probably the species' greatest competitive advantage. Areas infested with these species burn at a much greater frequency, every 3-5 years. At this frequency, native shrubs and perennial grasses cannot recover and after a few wildfire cycles a ripgut brome monoculture develops. This monoculture further increases the frequency of fires and increases the dominance of ripgut brome and wild oats in the area.

Locations:

- Scattered along roadsides and historical grazing areas

***Carduus pycnocephalus* (Italian thistle)** is a winter annual herb that originated in western and southern Europe. It has wind dispersed, mucilaginous seeds, which allows for their wide distribution. Italian thistle displaces desirable native plants, but more commonly colonizes disturbed habitats where interspecific competition is less intense. Fire creates conditions that are favorable to the establishment of Italian thistle (i.e. open canopy, reduced competition, areas of bare soil). Therefore, if Italian thistle seeds are present and competition minimal, it may be favored in the post-fire community. Cultivation before seed production will eventually eliminate thistles, but only if repeated for several years since seeds can persist in the soil for at least 8 years.

Locations:

- Along Nacimiento Ferguson Road, approx.1 mile from the coast, outside of the burn area

***Centaurea melitensis* (Tocalote) *and Centaurea solstitialis* (Yellow star thistle)** are southern European annuals; yellow star thistle has longer spines than tocalote and is rated as a "C" Pest on
the State Noxious Weed List. Both are spread almost exclusively by seed, which may lie dormant for as long as 10 years and are known to cause "chewing disease" and death in horses. Studies have shown that repeated prescribed burns (at least 3 consecutive years) may reduce the seed bank, but burning during the appropriate phenological stage is critical for the elimination of seed production. Although yellow star thistle and tocalote are not known to out-compete chaparral, it is critical to minimize potential spread while native vegetation recovers within the burned area. They will persist along roads and continuously disturbed areas.

Locations:

- Yellow Star Thistle: Widespread throughout Fort Hunter Liggett, most especially along Nacimiento Ferguson Road
- Tocalote: Scattered along roadsides and historic grazing areas

***Cortaderia selloana* (Pampas grass)** is a perennial herb that is native to Argentina, Brazil, and Uruguay. Its seeds are mostly spread by wind. Once it is established, pampas grass is a strong competitor. Many of the sites infested with pampas grass are environmentally sensitive, which limits the available control options. In conservation areas, it competes with native vegetation and increases the fire hazard. A grass weed invasion changes the fire frequency and intensity such that these changes tend to be self perpetuating. Post-fire increases in nutrients, light and space availability are then effectively exploited by invasive grasses leading to the exclusion of native flora. Pampas grass can also resprout from the

crown following fire. Hand pulling or removing with tools are the safest and most effective ways to remove established clumps. Well established plants should be removed first because they have the most reproductive potential.

Locations:

- On the north side of Nacimiento Ferguson Road, approx. 2 miles up from Highway 1
- Where the burn perimeter reaches Highway 1
- In the lower ¼ of Alm's Ridge Road
- Along Hermitage Road, off of Highway 1

***Foeniculum vulgare* (Fennel)** is a perennial herb that is native to southern Europe and the Mediterranean region. Its seeds are dispersed by water, machinery, and vehicles, but fennel can also spread through crown or root pieces that are moved by equipment to uninfested areas. Once firmly established it excludes almost all other vegetation. Where established, fennel is persistent and difficult to eradicate. Fennel can resprout from its taproot, so it will have an advantage over the natives in recolonizing the area following fire. Deep cultivation or mattocking are effective in manual control of fennel. Since highly disturbed ground is conducive to reinfestation, immediate revegetation is needed to prevent reestablishment of fennel

Locations:

- Where the burn perimeter reaches Highway 1
- Along Hermitage Road, off of Highway 1

***Genista monspessulana* (French broom)** is large evergreen shrub native to the Mediterranean region and the Azores. French broom is rated as a "C" Pest on the State Noxious Weed List. It is spread almost exclusively by seed which are produced and large amounts once it reaches 2 feet in height. Pods open explosively, flinging seeds up to 4 m, and seeds are further dispersed by ants, birds, and animals, and in river water and rain wash, in mud, and on road grading or maintenance machinery. It also sprouts vigorously after cutting, freezing, or sometimes fire. Foliage and seed are toxic to livestock. It burns readily and acts as a ladder fuel carrying fire into the canopy. It establishes a dense long-lived seedbank making it hard to eradicate. Early detection and removal followed by rigorous monitoring can prevent establishment of new populations. Existing populations require a rigorous and long-term use of chemicals for successful eradication.

Locations:

- Along both sides of Nacimiento Ferguson Road from Nacimiento Summit to Nacimiento Station
- From junction of Central Coast Road and Nacimiento Ferguson Road
- In the lower ¼ of Alm's Ridge Road
- South of Nacimiento Ferguson Road, 2.5 miles west of summit on flat area
- Along Hermitage Road, off of Highway 1
- Along the lower ¼ of Cone Peak Trail
- Along the lower ¼ of Vicente Flat Trail (near the coast)

***Melilotus alba*/*officinalis* (Sweet clover)** is native to the Mediterranean area, through central Europe, and Tibet. Seeds have hard, impermeable seed coats, and may remain dormant in soil seed banks for years. Where soil-stored seed is present, burning is stimulatory, resulting in abundant seed germination and seedling establishment.

Locations:

- Along Nacimiento Ferguson Road on Fort Hunter Liggett

***Piptatherum miliaceum* (Smilo grass)** is a tufted perennial grass that is native to Eurasia. It thrives in disturbed areas, along roadsides and ditches, and appears to be increasing in riparian areas and canyons. A grass weed invasion changes the fire frequency and intensity such that these changes tend to be self perpetuating. Post-fire increases in nutrients, light and space availability are then effectively exploited by invasive grasses leading to the exclusion of native flora.

Locations:

- On the north side of Nacimiento Ferguson Road, approx. 2 miles up from Highway 1

***Rubus discolor* (Himalayan blackberry)** is an evergreen shrub that is native to Europe. It is spread by rhizomatous roots and by many species of birds and mammals. It grows on a variety of barren, infertile soil types, but is also common in riparian woodlands. Himalayan blackberry is typically observed in greatest abundance following fire or other types of

disturbance, is well adapted to invade recently burned sites, and most re-sprout vigorously after fire. Mechanical removal or burning may be the most effective at removing mature plants. Himalayan blackberry reestablishment may be prevented by planting fast-growing shrubs or trees, since the species is usually intolerant of shade.

Locations:

- On the south side of Nacimiento Ferguson Road, approx. 2 miles up from Highway 1

***Silybum marianum* (Milk thistle)** is a biennial herb native to southern Europe, the Mediterranean, and northern Africa. It grows a deep root and a basal rosette the first year of its life. It bolts, flowers, sets seed, and dies in its second year. It is adapted to seasonally moist, well-drained, deep soils. It thrives on light and moderate mechanical soil disturbance. Over-grazing and fire are two factors which encourage milk thistle to spread. It is spread by wind, water, vehicles, machinery, and animals. The foliage is toxic to livestock. To achieve control and potential eradication, physical removal, cultivation, and mowing can prove effective if complemented by sowing a perennial, or otherwise competitive grass.

Locations:

- South of Nacimiento Ferguson Road, 2.5 miles west of summit on flat area
- Along Nacimiento Ferguson Road, 1 to 2 miles from the coast, outside of the burn area
- Along Hermitage Road, within the first mile, off of Highway 1

PART B

Los Padres NF, Monterey Ranger District Invasive Weeds to Map

***Acroptilon repens*	Russian knapweed
***Ageratina adenophora*	Eupatory
***Ailanthus altissima*	Tree of heaven
**Arundo donax*	Giant reed grass
A***Asphodelus fistulosus*	Asphodel
***Carduus pycnocephalus*	Italian thistle
**Carpobrotus chilensis*	Ice plant
**Centaurea solstitialis*	Yellow star thistle
**Centaurea maculosa*	Spotted Knapweed
***Centaurea melitensis*	Tocalote
***Cirsium vulgare*	Bull thistle
***Conium maculatum*	Poison hemlock
**Cortaderia selloana*	Pamapas grass
* *Delairea odorata*	German Ivy
* *Dipsacus sativus*	Teasel
****Dimorphotheca sinuata*	African daisy
**Genista monspessulana*	French broom
AEichornia crassipes*	Water hyacinth
***Eucalyptus globulus*	Blue gum
***Ficus carica*	Fig
**Foeniculum vulgare*	Fennel
****Fumaria officinalis*	Fumitory
***Hedera helix*	English ivy
AHydrilla verticillata*	Hydrilla
**Lathyrus latifolius*	Perrenial sweetpea
**Linaria genistifolia* ssp. *dalmatica*	Dalmatian toadflax
ALudwigia* sp.	Water primrose
AMyriophyllum aquaticum*	Parrotfeather
***Nicotania glauca*	Tree tobacco
***Pennisetum clandestinum*	Kikuyu grass
***Pennisetum setaceum*	Fountain grass
****Picris echioides*	Bristly ox-tongue
****Piptatherum miliaceum*	Smilo grass
***Potamogeton crispus*	Curlleaf pondweed
A***Retama monosperma*	Bridal broom
***Ricinus communis*	Castorbean
***Robinia pseudoacacia*	Black locust
**Rubus discolor*	Himalayan blackberry
****Salsola* spp.	Russian thistle
****Saponaria officinalis*	Bouncing bet
****Silybum marianum	Milk thistle
**Tamarix ramosissima*	Saltcedar
****Tribulus terrestris*	Puncture vine

CAL-IPC List Categories

*Severe: Most Invasive Wildland Pest Plants; documented as aggressive invaders that displace natives and disrupt natural habitats.

**Moderate: Wildland Plants of Lesser Invasiveness; plants that spread less rapidly and cause a lesser degree of habitat disruption

***Limited: Wildland Plants of Limited Invasiveness; plants that have a limited distribution and impact on natural habitats or species for which there is not adequate information to describe its threat to wildlands

A Red Alert: Plants with potential to spread explosively, infestations currently localized or small

Table constructed from CAL-IPC invasive plant species listing of 2006: www.cal-ipc.org

PART C

USDA Forest Service

Weed Occurrence Form

Region_5_ Forest: Los Padres District: _____

Species:_____ **Date**: _____ID confidence___% ID Auth:_Hickman et al., 1993

Project	Current land use:
Surveyor	Current/potential threats:
Directions to site:	
	Other biota: None
	Existing EO? Yes No #_____.
	Entire extent of pop mapped? Y N
	Photographer
Site descrip:	Repository
	Vouch spec # Repository
	Look-alike species: None
	Research needs
(circle) **Point Polygon Line**	
GPS Unit: XT GeoEx3 Ipaq1 Ipaq2 Mag # __ Thales Other	Conserv/Mngt concerns
GPS Staff ID:	# _____ **individuals, genets** est, precise
Unique ID #: #____pts/poly4EO	Vigor? vfeeble feeble normal vigor exvirg N/A Method:
Northing: Easting:	(circle) Disease Predation Herbivory None Explain
Elevation (feet):	
Quad name:	Distribution/Density: prominent common scattered patchy rare
T-R-S: T R S ¼ of ¼ of	**Gross (Total) area:** est, precise **Infested** (Weed cover only) **area** :
Slope Min. _____% Max _____%	**Cover: Sp**._____% Grd_____%
Aspect (°):	
Substrate:	**Phenology** method: est, count
Soil text: sand, loam, silt, clay, other	% seedlings % leaf % bud
Moisture regime: mesic xeric hydric	% flwr %immat frt % mature frt
Soil moisture: dry moist saturated inundated seasonal seepage other	% dispersing seed % senescent
	Treated before: Y N
Horz dist. to H2O vert.	**Method of treatment:**
Light expos: full sun part shade full shade	Fr suc: Exlt Gd Marg Pr Unkn Fair None
Veg series:	Germ suc: Exlt Gd Marg Pr Unkn Fair None
Ass. tree/shrubs:	Repro: Exlt Gd Marg Pr Unkn Fair None
Canopy: _____% Shrub: _____% Forb: _____%	Dispersal: Exlt Gd Marg Pr Unkn Fair None
Assoc plants (include other non-natives):	Estab: Exlt Gd Marg Pr Unkn Fair None
	Veg suc: Exlt Gd Marg Pr Unkn Fair None
	Fl suc: Exlt Gd Marg Pr Unkn Fair None
	General observations
Disturbance:	Condition: Exlt Gd Marg Pr Unkn Fair None
	Quality: Exlt Gd Marg Pr Unkn Fair None
	Defense: Exlt Gd Marg Pr Unkn Fair None
	Rank: Exlt Gd Marg Pr Unkn Fair None
	Viability: Exlt Gd Marg Pr Unkn Fair None

Appendix C – Road Treatment Monitoring Plan

Chalk Fire
Forest Road Treatment Effectiveness Monitoring

All Burned Area Emergency Response (BAER) reports that include an effectiveness monitoring component must include a monitoring plan that identifies:

1. **Monitoring questions,**

    - Were the treatments implemented according to the 2500-8? i.e. at specified locations and treatment type?
    - If there were changes is there documentation as to why the changes were justified?
    - Were the treatments designed and implemented according to current standards and state of the art methods? i.e. Engineering Design Handbook FSH 7709.56 and BAER Catalog.
    - Were the treatments effective in mitigating the emergency?

2. **Measurable indicators,**

    - Rill or gully erosion to slopes below the road that indicate loss of control of water.
    - Damage to structures, (i.e. collapsing, undermining) due to higher than expected runoff, sediment, debris.
    - Agency reports of accidents, injury of fatality related to the watershed response and treatment effectiveness.

3. **Data collection techniques (consistent with appropriate protocols),**

    - Photographs with GPS locations, and written descriptions of observations.
    - Physical measurements of damage sites, or undamaged sites.

4. **Analysis, evaluation, and reporting techniques, and**

    - Runoff calculations using recorded precipitation during winter season. E.g. compared with predicted runoff events.

5. **Monitoring report timeframes.**

    - Spring of 2009.

Chalk Fire
Road Inspection Checklist

Date:_____ Inspector_____
Time:_____ Forest Road_____

Describe locations reviewed during inspection:_____

Was there road damage? _____. If so at what location and what structure (GPS)_____

Describe damage and cost to repair? (GPS)_____

_____

Were the warning signs in place?_____
_____

Photo taken of road damage_____
Photo taken of sign damage_____

Recommended actions to repair:_____

Appendix D – Trail Treatment Monitoring Plan

Chalk Fire
Trail Stabilization Effectiveness Monitoring

The 2500-8 report requests funds to monitor the effectiveness of stabilization treatments along trails within and adjacent to the burn area. The treatments are designed to upgrade and supplement existing erosion control structures on the trails to facilitate proper water drainage off the trail, preserve the trail tread, and decrease watershed efficiency.

1. Monitoring Questions
    a. Are the treatments effectively decreasing watershed efficiency within the burned area?
    b. Have the treatments effectively preserved trail tread within the fire area?
    c. Are there specific locations where treatments have failed?

2. Measurable Indicators
    d. Number of times structures are plugged, filled, or broken down.
    e. Area of loss of trail tread

3. Data Collection Techniques
    f. Photo documentation of site
    g. Inspection Checklist (attached)

4. Analysis, evaluation, and reporting techniques

    Due to the high resource values at risk the monitoring findings will be evaluated weekly. If the monitoring shows the treatment to be ineffective at stabilizing trail and there is extensive loss of trail tread an interim report will be submitted.

5. Monitoring report timeframes

    The report will be evaluated weekly and if the treatment is effective, checklist findings will be compiled monthly and summarized by the following:
    h. Number of compromised water bars
    i. Length of trail tread lost
    j. Number of compromised rock retaining walls

Chalk Fire
Trail Inspection Checklist

Date:_____ Inspector_____
Time:_____

Describe locations reviewed during inspection:_____

Was there trail damage? _____. If so at what location and what structure (GPS)_____

Describe damage and cost to repair? (GPS)_____

_____

Were there warning signs in place?_____
_____

Photo taken of trail damage_____
Photo taken of sign damage_____

Recommended repairs needed_____