



United States Department of the Interior

NATIONAL PARK SERVICE

Yosemite National Park
P. O. Box 577
Yosemite, California 95389

IN REPLY REFER TO:
L7615(YOSE-PM)

Memorandum

To: Jim Roche, Project Manager, Yosemite National Park

From: Superintendent, Yosemite National Park

Subject: NEPA and NHPA Clearance: 2017-034 South Fork Fire BAER Plan (75169)

The Superintendent and park interdisciplinary team have reviewed the proposed project and completed an impact analysis and documentation, and we have determined the following:

- There will not be any effect on threatened, endangered, or rare species and/or their critical habitat.
- There will be no adverse effect on historical, cultural, or archeological resources.
- There will not be serious or long-term undesirable environmental or visual effects.

The subject proposed project, therefore, is now cleared for all NEPA and NHPA compliance requirements as presented above. Project plans and specifications are approved and construction and/or project implementation can commence.

For the proposed project actions to be within compliance requirements during construction and/or project implementation, the following mitigations must be adhered to:

- Exploratory/assessment and remediation work under BAER Plan will be done with active involvement of NPS Cultural Resources staff and historian to assure adequate treatment and preservation of historic properties.
- Exploratory/assessment and remediation work under BAER Plan will be done with active consultation with traditionally associated tribes and groups.

Recommendations for Conditions or Stipulations: None

For complete compliance information see PEPC Project 75169.

//Sula Jacobs// Acting for
Palmer L. Jenkins (Acting Superintendent)

Enclosure (with attachments)

cc: Statutory Compliance File

*The signed original of this document is on file at the
Environmental Planning and Compliance Office in
Yosemite National Park.*

Letter of Compliance Completion – 2017-034 South Fork Fire BAER Plan - PEPC ID: 75169



Categorical Exclusion Form

Project: 2017-034 South Fork Fire BAER Plan

PEPC Project Number: 75169

Project Description:

The South Fork Fire burned in the Wawona area beginning on August 13, 2017. A Burned Area Emergency Response Team investigated the fire impacts to watershed processes such as runoff, sediment transport, and debris flows then assessed potential impacts to identified resources at risk due to these processes.

The purpose of this project is to implement post-fire treatments to protect resources at risk. These projects are:

- 1) Sandbags around one NPS-owned house located at the base of a burned slope,
- 2) Monitoring water quality to assess whether fire retardant has entered the water ways and the public water supply,
- 3) Install warning signs on Chilnualna Road as it enters the area below burned slopes and on trailheads leading into the burned area,
- 4) Modify the water supply intake on the South Fork of the Merced River to be less vulnerable to floating debris and allow for emergency withdrawal of water at higher water levels should the intake reservoir fill with sediment during winter storms
- 5) Remove debris and sediment from the water intake impoundment should the intake be compromised,
- 6) Monitor and control for invasive plants, and
- 7) Monitor and assess potential post-fire impacts to cultural resources.

Specific to the public water supply, this project proposes one-time modifications to several components of the water inlet system so that the system can more likely survive and recover from floods/floods carrying debris and debris flows associated with the post-fire watershed. The intake is located adjacent to a small diversion dam in the South Fork of the Merced River. The inlet is at risk because of the potential for high flood flows, flood flows carrying debris, or debris flows. This project will make the screened inlet more protected, protect the pipe from the screened inlet where it is exposed in the river, and provide for drawing the reservoir at a higher elevation if debris clogs the reservoir.

This action will achieve better protection of the screened inlet by extending it about 18-inches toward the north and lowering the inlet about 4 inches. This will put the inlet more behind two large boulders that were previously installed for inlet protection. The work involves removal of cobbles under the pipe, extension of the 2 inch compressed air line, and loosening the coupling. Chipping of the concrete anchors may be required.

A rock/concrete boring tool will be utilized to construct five holes in the east side of the sediment settling basin. The specific locations of the holes will be identified by NPS Wawona water utility staff. Hole locations should consider minimum and maximum water withdrawal elevations required and adequate distance between holes to minimize cracking during drilling. Five plugs shall be installed from inside the settlement basin. The outside east end of the holes shall be covered with a 1/8th inch stainless steel screen. The screen shall be mounted to the masonry wall with steel strap.

A new screen will be built and installed in the sediment settlement basin. The screen shall be removable. The screen will consist of a steel frame with additional vertical and horizontal members to support a stainless steel screen. The screen shall be constructed of stainless steel with small openings (e.g. 1/16th inch).

Five to 7 one cubic-yard boulders will be placed to protect the inlet pipe. The large boulders shall be lowered by cables or other means and not allowed to tumble down the rock slope.

Project Locations:

Mariposa County, CA

Mitigations:

- No mitigations identified.

CE Citation: G.1 (2015) Post-fire rehabilitation activities not to exceed 4,200 acres (such as tree planting, fence replacement, habitat restoration, heritage site restoration, repair of roads and trails, and repair of damage to minor facilities such as campgrounds) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire. Such activities must comply with the following (Refer to the ESM Series for additional, required guidance.) (1) Shall be conducted consistent with bureau and Departmental procedures and applicable land and resource management plans; (2) Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and (3) Shall be completed within three years following a wildland fire.

Decision: I find that the action fits within the categorical exclusion above. Therefore, I am categorically excluding the described project from further NEPA analysis. No extraordinary circumstances apply.

Acting

Superintendent: //Sula Jacobs// Acting for _____ **Date:** 11/28/17
Palmer L. Jenkins

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Extraordinary Circumstances:

If implemented, would the proposal...	Yes/No	Notes
A. Have significant impacts on public health or safety?	No	
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?	No	
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?	No	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?	No	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?	No	
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?	No	
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?	No	
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?	No	
I. Violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?	No	
J. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898)?	No	
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?	No	
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?	No	



ENVIRONMENTAL SCREENING FORM (ESF)

Updated Sept 2015 per NPS NEPA Handbook

A. PROJECT INFORMATION

Project Title: 2017-034 South Fork Fire BAER Plan
PEPC Project Number: 75169
Project Type: Fire - BAER/BAR (BAER)
Project Location:
County, State: Mariposa, California
Project Leader: Jim Roche

B. RESOURCE IMPACTS TO CONSIDER:

Resource	Potential for Impact	Potential Issues & Impacts
Air Air Quality	None	
Biological Nonnative or Exotic Species	None	
Biological Species of Special Concern or Their Habitat	None	
Biological Vegetation	None	Invasive plants will be detected early and controlled using integrated invasive management techniques (mechanical and/or herbicides) as appropriate to prevent the establishment and spread of invasive plant populations.
Biological Wildlife and/or Wildlife Habitat including terrestrial and aquatic species	None	
Cultural Archeological Resources	None	
Cultural Cultural Landscapes	None	

Cultural Ethnographic Resources	Potential	Exploratory/assessment and remediation work under BAER Plan will be done with active consultation with traditionally associated tribes and groups. Initial emergency action to install/repair water intake pipe at South Fork Merced water diversion will not affect archeological, ethnographic, or traditional properties of cultural significance as work will only occur to existing dam and water and intake structure. No tribal consultation needed for repair and modification to dam.
Cultural Museum Collections	None	
Cultural Prehistoric/historic structures	Potential	Exploratory/assessment and remediation work under BAER Plan will be done with active involvement of NPS Cultural Resources staff and historian to assure adequate treatment and preservation of historic properties. Initial emergency action to install/repair water intake pipe at South Fork Merced water diversion will not alter dam structure in any irreversible way. Project does not result in changes to historic structures or fabric, no architectural review needed for emergency dam repairs.
Geological Geologic Features	None	
Geological Geologic Processes	None	
Lightscares Lightscares	None	
Other Human Health and Safety	None	
Other Operational	None	
Other Other	None	
Socioeconomic Land Use	None	
Socioeconomic Minority and low- income populations, size, migration patterns, etc.	None	
Socioeconomic Socioeconomic	None	
Soundscapes Soundscapes	None	

Viewsheds Viewsheds	None	
Visitor Use and Experience Recreation Resources	None	
Visitor Use and Experience Visitor Use and Experience	None	
Water Floodplains	None	
Water Marine or Estuarine Resources	None	
Water Water Quality or Quantity	None	
Water Wetlands	None	
Water Wild and Scenic River	Potential	The Merced Wild and Scenic River will not be negatively impacted by the Plan actions.
Wilderness Wilderness	None	



ASSESSMENT OF ACTIONS HAVING AN EFFECT ON HISTORIC PROPERTIES

A. DESCRIPTION OF UNDERTAKING

1. **Park:** Yosemite National Park

2. Project Description:

Project Name: 2017-034 South Fork Fire BAER Plan

Prepared by: Madelyn Ruffner **Date Prepared:** 09/28/2017 **Telephone:** 209-379-1226

PEPC Project Number: 75169

Locations:

County, State: Mariposa, CA

Area of potential effects (as defined in 36 CFR 800.16[d])

South Fork Fire burned area

3. Has the area of potential effects been surveyed to identify historic properties?

No

Yes

Source or reference:

4. Potentially Affected Resources:

Archeological Resources Notes: Before any actions are taken, an assessment of archeological sites will be completed and subject to further compliance review should any archeological sites be affected.

Historical Structures/Resources Notes: The sediment basin and dam were assessed separately because of the immediate need to ensure that the Wawona Community water system was not affected by fall storm events. No other historic structures or resources are affected by the BAER plan.

Ethnographic Resources Affected Notes: The park has notified the tribes of the plan and will work with them to address any concerns. Treatment plans will be addressed in consultation with the tribes to ensure that no historic properties of religious and cultural significance are affected.

5. The proposed action will: (check as many as apply)

Destroy, remove, or alter features/elements from a historic structure

Replace historic features/elements in kind

Add non-historic features/elements to a historic structure

Alter or remove features/elements of a historic setting or environment (inc.

terrain)

Add non-historic features/elements (inc. visual, audible, or atmospheric) to
 a historic setting or cultural landscape
 Disturb, destroy, or make archeological resources inaccessible
 Disturb, destroy, or make ethnographic resources inaccessible
 Potentially affect presently unidentified cultural resources
 Begin or contribute to deterioration of historic features, terrain, setting,
 landscape elements, or archeological or ethnographic resources
 Involve a real property transaction (exchange, sale, or lease of land or
 structures)
 Other (please
 specify): _____

6. Supporting Study Data:

(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

[X] 106 Advisor

Name: Kimball Koch

Date: 11/21/2017

Comments: Through consultation with the tribes, the park would ensure that treatment actions in the BAER plan would not affect historic properties with religious and cultural significance.

The proposed modification to the sediment settling basin was assessed separately from the other actions because of the immediate need to take action. The SHPO concurred that there would be no adverse effect associated with that action.

None of the other actions in the BAER plan would affect known historic properties. Consultation with the tribes in advance of the implementation of any of the remediation measures will ensure that no historic properties with religious and cultural significance are affected.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations: Consultation with the tribes is required to ensure that no historic properties with religious and cultural significance are affected by the project.

Doc Method: Standard 4-Step Process

[X] Anthropologist

Name: Scott Carpenter

Date: 11/09/2017

Comments: Exploratory/assessment and remediation work under BAER Plan will be done with active consultation with traditionally associated tribes and groups. Initial emergency action to install/repair water intake pipe at South Fork Merced water diversion will not affect archeological, ethnographic, or traditional properties of

cultural significance as work will only occur to existing dam and water and intake structure. No tribal consultation needed for repair and modification to dam.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations:

[] Archeologist

Name: Sara Dolan

Date: 11/07/2017

Comments: Exploratory/assessment and remediation work under BAER Plan will be done by cultural resources specialists. Initial emergency action to install/repair water intake pipe at South Fork Merced water diversion are within the river and outside the boundaries of known archeological sites. Repair actions will be restricted to the structural components. There are no archeological concerns and no monitoring is required.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations:

[] Historian

Name: Scott Carpenter

Date: 11/09/2017

Comments: Exploratory/assessment and remediation work under BAER Plan will be done with active involvement of NPS Cultural Resources staff and historian to assure adequate treatment and preservation of historic properties. Initial emergency action to install/repair water intake pipe at South Fork Merced water diversion will not alter dam structure in any irreversible way. Project does not result in changes to historic structures or fabric, no architectural review needed for emergency dam repairs.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations:

[] Historical Landscape Architect

Name: Kimball Koch

Date: 10/24/2017

Comments: One action within the BAER plan (the modification of the sediment settling basin) has the potential to affect properties assumed eligible for the purposes of 106. Because of the emergency nature to repair that structure prior to winter rains, that action was addressed separately from the rest of the BAER plan. HPO reviewed the proposed action to the settling basin and dam and concurred that there would be no adverse effect to historic properties.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties Affected No

Adverse Effect ___ Adverse Effect ___ Streamlined Review
Recommendations for conditions or stipulations:

Doc Method: Standard 4-Step Process

No Reviews From: Curator, Historical Architect, 106 Advisor, Other Advisor

C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS

1. Assessment of Effect:

- No Potential to Cause Effects
- No Historic Properties Affected
- No Adverse Effect
- Adverse Effect

2. Documentation Method:

A. STANDARD 36 CFR PART 800 CONSULTATION
Further consultation under 36 CFR Part 800 is needed.

B. STREAMLINED REVIEW UNDER THE 2008 SERVICEWIDE PROGRAMMATIC AGREEMENT (PA)

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

APPLICABLE STREAMLINED REVIEW Criteria
(Specify 1-16 of the list of streamlined review criteria.)

C. PLAN-RELATED UNDERTAKING

Consultation and review of the proposed undertaking were completed in the context of a plan review process, in accordance with the 2008 Servicewide PA and 36 CFR Part 800.
Specify plan/EA/EIS:

D. UNDERTAKING RELATED TO ANOTHER AGREEMENT

The proposed undertaking is covered for Section 106 purposes under another document such as a statewide agreement established in accord with 36 CFR 800.7 or counterpart regulations.

E. Combined NEPA/NHPA Process

Documentation is required for the preparation of an EA/FONSI or an EIS/ROD has been developed and used so as also to meet the requirements of 36 CFR 800.3 through 800.6

G. Memo to SHPO/THPO

[] H. Memo to ACHP

SHPO/THPO Notes: SHPO consultation was for unevaluated historic resources (water intake action).

3. Additional Consulting Parties Information:

Additional Consulting Parties: No

4. Stipulations and Conditions:

Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects.

5. Mitigations/Treatment Measures:

Measures to prevent or minimize loss or impairment of historic/prehistoric properties:
(Remember that setting, location, and use may be relevant.)

No Assessment of Effect mitigations identified.

D. RECOMMENDED BY PARK SECTION 106 COORDINATOR:

Section 106 Coordinator:

Kimball

Koch

//Kimball Koch//

Date: November 21, 2017

E. SUPERINTENDENT'S APPROVAL

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

Acting

Superintendent: //Sula Jacobs// Acting for

Date: 11/28/17

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SOUTH FORK FIRE BAER PLAN



ABSTRACT

This is the Burned Area Emergency Response (BAER) plan for the South Fork Fire at Yosemite National Park. The purposes of BAER plans are to determine the need and prescribe treatments to minimize post-fire threats to life or property and to stabilize and prevent further unacceptable degradation to natural and cultural resources

EXECUTIVE SUMMARY

PURPOSE & NEED

This document is the post-fire Burned Area Emergency Response (BAER) plan for the South Fork wildland fire at Yosemite National Park. The purpose of BAER plans are to determine the need and prescribe treatments to minimize threats to life or property or to stabilize and prevent further unacceptable degradation to natural and cultural resources resulting from the effects of a fire. Natural recovery is preferable.

The South Fork Fire Burned Area Emergency Response (BAER) Team assessed the incident to determine post-fire impacts to life, property, and critical cultural and natural resources. The team consulted with park resource specialists, conducted field visits to review resource conditions after the fire, and modeled the fire for flood, debris flow and erosion events. The main objectives of the field visits were as follows:

- Identify and inventory values at risk
- Develop soil burn severity and watershed response maps to identify potential flood, debris flow, and erosion source areas
- Determine needs for emergency stabilization

Values at risk are properties, capital improvements, and cultural and natural resources located within or downstream of the fire. They may be subject to damage from flooding, ash, mud and debris deposition, debris flows, hill slope erosion, hazard trees, and invasive species. However, observed burn severity, hydro morphology, and resource locations ruled out the threats of damaging flooding and debris flows except in the gulches behind the houses in the unlikely occurrence of extreme weather events. Due to wilderness values, prescribed landscape treatments are limited.

The following chief values at risk were identified and assessed for the South Fork Fire:

South Fork Fire Values at Risk and Issues				
Value At Risk	Issues	How is it Addressed	Assessment Name	Specification Number
Staff And Public Safety	Public unawareness of hazards; blocked trails	Place warning signs upon entry of burn area; clear trails	Trails and Roads; Warning Signs	S1
Downstream Infrastructure Impact	Potential debris flow and impacts to bridges	Models and professional judgement indicate no impact	Watershed	Low Risk No Spec
Water Collection Pond And Intake	Sedimentation and flood impact	Provide for post-event cleanup and point protection	Watershed	W3 W4

South Fork Fire Values at Risk and Issues				
Water Quality	Fire retardant; Silt/ash/debris	Water quality testing	Watershed	W5
Wilderness Values	Potential impacts to Wilderness	Wilderness values to be considered for all actions	Vegetation; Trails	S2
Invasive Plant Establishment and Spread	Impacts to native plant biodiversity	Early detection & rapid response of invasive plants	Vegetation	V1 V2
Federally Owned Houses	Potential flooding and debris flows	Sandbags around NPS house; CCC House contact	Watershed	W1
Trails	Trees fall over trails; eroding tread	Clear trails of debris and assess for trail maintenance	Trails; Trails and Warning Signs	S2
Hazard Trees	Snags and fire weakened trees	Hazard trees removed during suppression	Hazard Trees	Suppression
Cultural Resources	Trees falling over sites and erosion	Post-fire surveys and prescriptions if needed	Cultural Resources	CR1

Detailed assessments and prescriptive mitigation measures for the National Park Service values at risk are found in the body of the plan.

Additionally, there are several private property values at risk that are outside of the jurisdictional authority of the National Park Service. We are requesting that the Federal Natural Resources Conservation Service work with stakeholders to prescribe measures. The identified threats on private property are as follows:

- Private residences in East Wawona at risk from nuisance flooding and debris
- Two propane tanks at the mouth of an incised drainage
- Floatable debris above a house in the same drainage
- Fire hydrant in the same drainage
- Working with PG&E to remove woody debris that is creating fuel and floatable debris

FIRE BACKGROUND

The South Fork Fire was reported at approximately 1430 on August 13, 2017. The fire burned the north side of the South Fork of the Merced River and east of the community of Wawona entirely within Yosemite National Park. No structures were lost during the fire and it burned almost entirely in Wilderness. The progression map shows large fire growth in the initial stages of the incident. These areas have the majority of high soil burn severity acres. Fire effects beyond the initial burning periods are mostly favorable.

South Fork Fire	
Agency Units	Yosemite National Park
Region	Pacific West Region
State	California
Ignition Date	August 13, 2017
Date Contained	Not contained at this time
Acres	6,773
Fire Number	CA-YNP-108
Fire Code	K9MU

The fire was managed as a Type III (Pirog) incident during initial attack and transitioned to a Type II (Mills) after three days. Management of the fire was transitioned to a Type III (Crowe) incident management team on August 25th.

The primary containment objectives of the fire were to keep the fire east of Chilnualna Creek and north of the South Fork of the Merced River. At the time of writing this plan, the fire was approximately 6,673 acres and still actively burning in Wilderness. The origin of the fire was above the South Fork of the Merced River in mixed conifer forest. In the first few days, the fire made rapid upslope runs in steep terrain and slowed as it moved into higher elevations at the ridge tops. Outflow winds from daily thunderstorms pushed spots over the containment lines where it established below Wawona Dome. The spot fire below Wawona merged with the main fire and was held on a handline East of Chilnualna Creek. The fire was also held north of the Merced River.

This fire will likely be managed as a long-term event. Therefore, acreage may increase after plan delivery and approval. Based on projections, the impact of increased fire growth is not expected to present extensive post-fire issues. However, the plan can be amended if additional issues and values at risk need prescribed mitigation measures.

THE BURNED AREA EMERGENCY RESPONSE

READ Garrett Dickman and interim BAER team lead Jim Roche surveyed the incident on August 23 to conduct a preliminary assessment and identify staffing requirements for the BAER team in consultation with Joe Meyer, Acting Division Chief Resources Management and Science, Nelson Seifkin, PNW Regional BAER coordinator, and Richard Schwab National BAER coordinator. The decision was made to provide training opportunities to increase post-fire response capacity. Dickman and Roche will work into BAER Team Leadership roles. Additional BAER team members arrived on August 28th. An in-brief with subject matter experts was held

on August 28th and an in-brief with the superintendent's office was held on September 1st. Field assessments were conducted by team members through August 29th - 31st. BAER team leader Richard Schwab arrived August 31st.

South Fork Fire BAER Team		
BAER Team Leader	Richard Schwab	NPS, WASO
BAER Hydrologist	Jim Roche	NPS, Yosemite National Park
BAER Hydrologist trainee	Allison Reddington	USFS, Cherokee National Forest
GIS Specialist / BAER Modeling	Kenneth Elsner	FWS, WASO
Engineer	Mark Baker	NPS, WASO
BAER Botanist	Garrett Dickman	NPS, Yosemite National Park
BAER Botanist trainee	Kristen Shive	NPS, Yosemite National Park

Resource Advisors

South Fork Fire READS/REAFS/ARCHS		
READ	Garrett Dickman	NPS, Yosemite National Park
REAF	Stephanie Eyes	NPS, Yosemite National Park
ARCH	David Neiss	NPS, Sequoia/Kinds National Park
ARCH	Molly Bapista	NPS, Yosemite National Park

SUMMARY OF COSTS

Specification Number	Fund Source	Title	Costs
W1	ES	Point Protection	6,198
W2	Supp.	Remove Floatable Debris	NA
W3	ES	Water Inlet Protection	27,950
W4	ES	Post-Flood Impoundment Cleanout	24,160
W5	ES	Water Quality	14,609
S1	ES	Install Warning Signs	7,680
S2	BAR	Trail Clearance	12,662
V1	BAR	Invasive Species Monitoring	8,140
V2	BAR	Invasive Species Control	8,510
CR1	ES	Cultural Resource Assessments	4,340
P1	ES	ES Plan	55,043
P2	ES	Implementation Leader	<u>\$10,200</u>
		TOTAL	179,492

BURNED AREA ASSESSMENTS



POST-FIRE WATERSHED ASSESSMENT AND RISK ANALYSIS

Objectives

- Identify risks to human life/safety, property, and critical natural and cultural resources due to post-fire watershed response
- Evaluate risk due to post-fire watershed conditions that may include impacts due to flooding, sediment, and debris flows
- Provide management recommendations for reducing impacts and risk

Issues

- Potential impacts to water quality in the South Fork Merced due to fire retardant
- Public water supply intake possibly impacted by post-fire sediment mobilization via overland flow and debris flows
- Possible flood and debris flow impacts to NPS and private houses
- Potential impacts to other infrastructure including roads, bridges, and utilities

Observations

The BAER watershed team investigated fire impacts to watershed processes such as runoff, sediment transport, and debris flows and then assessed potential impacts to identified resources at risk due to these processes. They began their assessment by assembling available watershed data such as climate, geology, soils, physiography, and hydrology. Yosemite staff conducted initial field observations on August 23rd to gather a list of values at risk and identify BAER team needs. The BAER watershed team conducted field observations from August 29 – 31.

Geology, physiography, and climate

The area is located in the upper foothills to higher elevations of the Sierra Nevada Mountains south of Yosemite Valley in the South Fork Merced watershed. Elevations range from approximately 4,000 feet above sea level (ASL) in Wawona to over 8,400 feet ASL near the northern fire boundary. Average slopes in the area are generally over 40%. The area is underlain chiefly by granitic rocks of the Sierra Nevada. Repeated glaciation has resulted in deep steep-walled canyons upstream of the Wawona area, though glaciated terrain accounts for only 18% of the fire area. It should be noted that evidence of post-glacial debris flows is present in the analysis area.

The climate of Yosemite National Park is dominated by distinct wet (winter) and dry (summer) seasons. Large synoptic fall and winter storms sweep in from the Pacific Ocean from October through April providing the majority of the annual precipitation. While these events can produce many inches of water, the intensity is often very low and the resultant runoff is driven by the proportion of the basin receiving snow rather than rain. Occasional warm winter storms bring rain to the highest elevations in the park causing ‘rain-on-snow’ events that can result in significant flooding. At least five such floods have been recorded

since river gaging began on the Merced River in Yosemite Valley in 1916, the most recent of which was in 1997.

Summer precipitation is limited to isolated and often high-intensity thunderstorms derived from northward excursions of the southwest monsoon. Average precipitation in the burn area ranges from 43 inches at the lowest elevation (Wawona) to 48 inches at the higher elevations (PRISM 2012). Snowline is generally around 5700 feet ASL. Areas above this elevation tend to remain snow-covered throughout the winter. Below this elevation, significant snowfall can occur in the burned area, though it generally melts completely between storm events. Summers tend to be very warm and dry reaching the mid-90's (Fahrenheit) at the lower elevations, mid-eighties at the upper elevations. Winters are generally mild with lows in the 20's and highs in the 40's at the lower elevations, and 5-10 degrees cooler at the higher elevations.

Soil burn severity

An assessment of post-fire watershed conditions and likely runoff response began with field observations and acquisition of the Burned Area Reflectance Classification (BARC). The BARC is used to create a soil burn severity (SBS) map, which is useful to estimate post-fire watershed response. The BARC consisted of a normalized difference reflection product derived from Landsat data collected prior to the fire (September 1, 2016) and after (August 26, 2017). The USGS Earth Resources Observation and Science Center used these images to produce a new image, classifying the burned area into four categories: unburned, low severity, moderate severity, and high severity. It should be noted that the BARC does not include classification data for:

- An area in the southeast portion of the fire which was obscured by a cloud at the time of post-fire satellite image collection; and
- Areas of the fire that burned after the post-fire satellite imagery was collected, 2017.

Based on the fire perimeter as of August 31, 2017, BARC classification data was not available for 881 acres within the burned area. In order to produce a soil burn severity map, BAER team members made field observations on August 29-31, 2017 using the method of Parsons et al. (2010). Field reconnaissance was limited to the southwestern portion of the fire due to access constraints. The team evaluated field-observable parameters such as the amount and condition of surface litter and duff remaining, soil aggregate stability, amount and condition of fine and very fine roots remaining, hydrophobicity, and amount of woody plant material remaining. These parameters are compared to similar soils under unburned conditions to estimate the degree of change caused by the fire. Burned area hydrologists made observations classifying soil burn severity as high, medium, or low at 26 locations, which were used to calibrate the BARC.

The BARC was found to over-estimate the amount of moderate soil burn severity and underestimate the amounts of low and high soil burn severity. It was adjusted to align with field observations. The final Soil Burn Severity Map is presented in the maps section of this report. In general, areas classified as high exhibited hydrophobicity similar to unburned areas with infiltration taking 10-30 seconds at the mineral soil surface and greater than 30 seconds at 1 cm. Soil burn severity classification by watershed is presented on the Soil Burn Severity Map and in Table 1.

Table 1. Soil burn severity by watershed

	Total area (ac)	South Fork Merced River watershed to Wawona water intake (ac)	Chilnualna watershed (ac)
Low SBS	2654	2311	153
Moderate SBS	767	668	91
High SBS	394	339	85
Unclassified / unburned / undetected change	811	NC	NC
Area within fire perimeter	4626	3318	329

Examples of low, moderate, and high soil burn severity are shown in Photos 1-4. The highest soil burn severity in the area that the team was able to access was observed on a south-facing slope near Swinging Bridge in the southwest portion of the fire above the South Fork Merced River (Photo 4) and in small gullies above East Wawona where backfires were lit from the bottom of the slope to protect the town (Photo 3). Areas of high soil burn severity with largely intact canopy in gullies above East Wawona were narrower than a 30m Landsat pixel and, as a result, did not show up on the BARC and are not represented on the soil Burn Severity Map.



Photo 1. Low soil burn severity observed in the vicinity of Swinging Bridge.



Photo 2. Typical moderate soil burn severity on the slope above East Wawona. Handline is visible on the left side of the photo.



Photo 3. High soil burn severity in a gully above East Wawona.



Photo 4. High soil burn severity observed on south facing slope above the South Fork Merced River in the southwest portion of the fire.

The team was not able to access the area where BARC classification data is missing. Information on likely soil burn severity in that area was gathered based on:

1. Field reports from crews working in that area;
2. Information on the rate of fire growth gathered using remote sensing (fast fire growth → more extreme fire behavior → higher SBS); and
3. Local knowledge about the amount of rock in the unmapped area.

Based on the information sources listed above, the BAER team assumed low soil burn severity over the majority of the unmapped area.

Soil burn severity in riparian areas within the fire perimeter was variable. The effects of post-fire riparian conditions on the South Fork Merced River will be tempered by the fact that only small spot fires occurred on the south side of the river and thus, the riparian area on that side of the river is almost entirely intact. On the north side of the river, the fire did burn down to the river in places and the lack of a buffer will likely exacerbate increased sediment delivery along those reaches. In the vicinity of the Wawona water supply intake, the area immediately adjacent to the river was protected by a handline along an existing trail, thereby leaving a small filter strip in place.

Debris flow history

Evidence of historic debris flows was observed in two drainages upgradient of the Wawona water intake (Photo 5), and is assumed to be present in additional watersheds that the team was not able to access. According to Yosemite Park geologist, Greg Stock, these debris flows likely occurred immediately following glacial retreat over 10,000 years ago.



Photo 5. Debris flow levees upstream of water diversion.

Furthermore, evidence of gullies was indicated by 1-meter LiDAR data on the slope above East Wawona. These gullies may have originated as small landslide scarps that transitioned to debris flows and are of concern given their proximity to Values at Risk (i.e. the homes in East Wawona) (See Chilnualna Houses of Concern Map). Additionally, floatable debris is present in the largest of the three gullies, which would exacerbate any debris flows that might occur.

Fire retardant

Multiple loads of fire retardant were dropped on the South Fork Fire. Some of the drops were close to waterways and drift across the South Fork Merced River was observed by the READ (See South Fork Fire Retardant Drops Map). Thus, there is a potential for chemicals in the retardant to enter the stream system.

Values at risk

The town of Wawona is immediately west and downstream of the South Fork fire burn area. No structures were damaged by the fire. The town is a checkerboard of NPS and privately owned lands on both the north and south sides of the South Fork of the Merced River. Given that the area of the fire is small compared to the overall area of the basin upstream of Wawona (8%) and that the majority of the soil burn severity was low, a significant change in the magnitude of large floods is unlikely and the identification of values at risk focuses on infrastructure that may be

affected by flows equal to or less than a 25-year event

Water quality. Water quality has the potential to be impacted by suspended silt and ash particles as well as possible input from fire retardant, particularly during the first few storms following the fire. The Wawona water system intake on the South Fork Merced is located in the river channel below a significant portion of the burned area and could be subject to highly turbid flows.

Water infrastructure. The NPS owns and operates the town water and sewer systems. Except for lift stations and the inlet, most infrastructure appears to be outside of the 1 in 100 year floodplain. The inlet may be vulnerable to siltation or damage due to post-fire flooding. Lift stations appear to be located beyond the 1 in 10 year flood boundary and are probably at low risk to post-fire conditions.

NPS and private housing. Several homes are located downhill of burned areas east of Chilnualna Creek (See Chilnualna Houses of Concern Map). One major gully drains into the housing area. There is concern of flooding or debris flows down this gully potentially impacting homes, outbuildings, and propane tanks. Nuisance flooding may affect several homes. Other housing close to the South Fork Merced appears to be located well above the 1 in 10 year floodplain and are thus not likely to be affected by post-fire augmented flows.

Other infrastructure. Roads, bridges, and other utility systems such as power, water and waste water systems (except as noted above), and telecommunications equipment do not appear to be at risk from post-fire conditions.

Natural resources. There are no known federally designated rare or endangered species that would be adversely affected by post-fire watershed processes.

Cultural resources. Potential impacts to cultural resources are addressed in a separate section of this report.

Assessments and recommendations

To assess risk, both probability of an event and the magnitude of the consequences are evaluated. The BAER and BAR post-fire programs address immediate and short term needs. This risk screening considers the probability of an event up to a 1 in 25-year frequency. The nature of BAER activities must allow for rapid assessment and rapid implementation of treatments to protect human lives, property, and critical natural and cultural resources. Design of treatments and implementation of treatments beyond 25-year storm events usually requires complex engineering and implementation that exceeds the rapid implementation of such treatments. This section is comprised of a general assessment of post- relative to pre-fire watershed conditions with respect to runoff, erosion, and debris flow potential, followed by risk assessments for the specific areas identified in the preceding section.

Watershed response

Soil burn severity and field observations were complemented by watershed modeling to estimate

effects on values at risk.

Water discharge and sediment flux modeling.

Estimates of post-fire watershed response including runoff and sediment transport were derived using models of watershed processes. Design storm depth was acquired from NOAA Atlas 14 precipitation frequency data for the Wawona Ranger Station (04-9482). A rainfall accumulation return interval of 25 years, at the one-hour duration, was chosen as the design storm for this analysis. This storm has 1.33 inches of accumulated precipitation. The design storm was temporally disaggregated as a SCS type II storm. A hydrologic analysis that utilizes a centroid spatial distribution over the fire was used to estimate flow and perform inundation analysis at the locations of select values at risk.

Post-fire watershed modeling utilized geospatial datasets, field observations, scientific literature, and professional judgment of site-specific conditions. The Automated Geospatial Watershed Assessment tool (AGWA) was used as a part of this process. This tool uses a Digital Elevation Model (DEM) to define a watershed, and break it up into modeling elements. These elements are then intersected with soil (STATSGO, Soil Survey Staff) and land cover (2011 National Land Cover Dataset, Homer et al., 2015) in order to derive requisite model input parameters. Once parameters were assigned, the KINEROS2 model was used to estimate rainfall runoff response in both an unburned and a burned condition to calculate the anticipated change. AGWA is designed to provide rapid estimates of runoff and erosion relative to landscape change. It cannot provide reliable quantitative estimates of runoff and erosion without careful calibration. It is also subject to the assumptions and limitations of its component hydrologic models (Goodrich et al, 2005).

The AGWA tool was used to model post-fire watershed response for the South Fork Merced River watershed delineated to NPS-owned Comfort house, and for a portion of the South Fork Merced River watershed delineated to the Wawona water intake. Using the design storm discussed above, model results predict a mild to moderate percent increase in peak flow and sediment yield for watersheds that were impacted by the fire (Table 2).

Table 2. Risk analysis: flow magnitude changes.

Watershed	Flow increase 25-year event (%)	Sediment increase 25-year event (%)
Wawona Water Intake	193	856
Comfort House	94	131

AGWA results provided a percent increase and the U.S. Geological Survey StreamStats online tool was used to estimate quantitative flows up to the one in 25-year event (Q25). It should be noted that Q25 is not equivalent to the streamflow produced by a 25-year one-hour precipitation event. The application of the relative percent increases generated by AGWA to the Q25

generated by StreamStats to conduct inundation analysis is a conservative approach in that the Q25 would be a much larger flow event than the one produced by a 25-year one-hour precipitation event.

Inundation analysis was estimated using WinXSPro, a U.S. Forest Service software package that applies channel hydraulic equations to calculate the height and velocity of water given peak flow rates estimated by StreamStats. This analysis was conducted for two specific locations (VAR) within and downstream of Yosemite National Park. Results indicate that the risk of inundation for VAR has not changed, given the expected margin of error in both models (Table 3). Visual representations of the increase in river stage at each cross section are presented in the Maps and Figures section of this report.

Table 3. 25-year flood inundation analysis results.

Location	Pre-fire flow (cfs)	Post-fire flow (cfs)	Pre-fire water surface inundation (ft)	Post-fire water surface inundation (ft)	Critical surface inundation (ft)
Wawona Water Intake	6760	19807	4196	4202	NA
Comfort House	8340	16180	4031	4032	4037

Debris flow modeling. Debris flow modeling was performed by USGS debris flow specialist Dr. Dennis Staley. Based on evidence of past debris flows in the watershed, a modeling effort was warranted to investigate the potential for increased risk of debris flow due to the fire. A majority of the burn area is estimated to have a rather low level of debris-flow hazard. However, some of the more severely burned watersheds along the southern flank of the burn area are predicted to have moderate to high debris-flow hazard, with higher likelihood values (> 40%) in response to a relatively modest 15-minute peak storm intensity of 24 mm h⁻¹ (See South Fork Storm Response Map). Predicted magnitudes for the more severely burned trunk streams may be problematic as volumes are estimated to be > 10,000 m³ for many of the larger watersheds (See South Fork Storm Response – Sediment Map).

Debris flows may impact the Wawona water intake in two ways:

1. Episodic: A debris flow reaching the intake may damage or bury it. This was considered very unlikely.
2. Chronic: A debris flow upstream may deliver a large amount of sediment to the stream system, which could flush through over time, increasing turbidity at the intake for a period of time. Given the position of the intake just downstream of several watersheds of concern for debris flow, the Wawona water intake is likely to experience some issues with turbidity.

A risk of debris flow not captured by the model was identified on the slope above East Wawona. As discussed in the observations section, two small and one larger gully are present on this slope and exhibit characteristics of historic debris flow activity. The southernmost gully is largest and of greatest concern. The mouth of the gully sits between two privately owned residences (Houses

2 and 3) (See Chilnualna Houses of Concern Map), and two propane tanks are installed in the center of the gully with additional water infrastructure immediately down gradient. The corner of house 3 is in the flowpath for the gully. Floatable debris present in the gully could exacerbate a debris flow.



Photo 6. Propane tanks and water infrastructure installed in the bottom of a gully in East Wawona.



Photo 7. The corner of house 3 sits in the flowpath of the gully. Propane tanks in the mouth of the gully are visible to the right of the house.

Based on the steepness of the slope (average gradient = approximately 50%) and the soil burn severity observed, the residences at the toe of the slope are at risk for flooding and debris from a storm event of magnitude equal or lesser to the design storms discussed above.

Risk assessment, specifications, and recommendations

Of the VAR's investigated in the watershed assessment, housing in East Wawona and water utility infrastructure were deemed to be at risk due to post-fire watershed conditions.

Housing. There are four houses located in East Wawona on the north side of Chilnualna Creek Road that are directly downslope of burned area. The houses are in an east/west row (and are termed the 'east/west houses' for this report). All houses are privately owned except for the east-most house, which is owned by the NPS. Several other houses lie downstream of the east/west houses.

Because of burned canopy, bushes and ground vegetation and post-fire soil impermeability, there is potential for mud or debris flow from a significant rainfall or snowmelt event to impact homes in this area. Some of the east/west homes have propane tanks that could be mobilized during a

flood representing risk to the homes or other downstream homes. The east/west homes have large felled timber located in the backyards and uphill from the homes.

Summary post-fire risk: **High**

General non-specification management recommendations:

- 1) Alert NPS law enforcement of the need to monitor the area during flood events.
- 2) Point protection for the private residences is recommended. NPS has communicated these risks to the area engineer for the Natural Resources Conservation Service via email and phone calls as of the writing of this report and is engaged in trying to schedule a field inspection of the area with NRCS officials, which has been delayed due to access issues associated with road closures and surrounding fires. NRCS will be responsible for contacting the affected homeowners and evaluating the appropriate path forward for each privately owned structure.

Recommendations and specifications, Risk mitigation for the eastern NPS house:

- 1) Place a temporary V-shaped sandbag dike in the back of and upstream from the house (W1).
- 2) Post a sign in the house describing the additional post-fire risk of flooding at the house and the need to be alert and evacuate during major rain events.
- 3) Remove floatable debris from channel between houses (W2).

Water utilities. The town of Wawona relies on the South Fork Merced River for its water supply and it is essential for the community. The water utility is owned and operated by the NPS. The source for the water supply is a small diversion dam in the river about ½ mile upstream from the town. The dam is a masonry gravity dam about 4-feet high and 55-feet long.



Photo 8. Water supply diversion dam from north bank.

Water from the river enters a T-shaped inlet, 8-inch diameter pipe. The top of the “T” is a stainless steel screen. Two large boulders have been placed adjacent to the inlet screen in an effort to keep rocks and other debris from damaging the screen. However, the screen has been bent in the past due to debris impacting the screen.

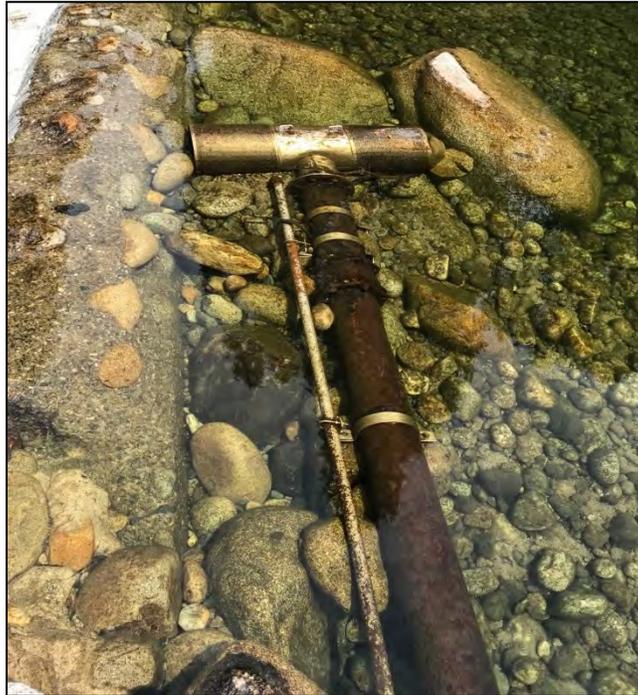


Photo 9 T-shaped inlet screen and pipe. Water flows from right to left and then over the dam.

The 8-inch diameter pipe is constructed of ductile iron and connected to an enclosed rock masonry settlement basin on the south shore. From the settlement basin the water enters an approximately 1 mile pipe and flows to where it is pumped across the river via the Wawona Road Bridge to the NPS water treatment plant on the north side of the river. Once treated, the water is pumped to 4 storage tanks on the south side of the river. The total storage capacity is about 1 million gallons.

Post-fire debris flows or sediment-carrying flows through the reservoir area are likely over the next several years. These flows could have the following impacts to the water intake system:

1. The intake screen has been damaged in the past and it is likely that new debris-carrying floods would damage the inlet.
2. Debris or sediment would clog the inlet screen and/or pipe to the sediment basin.

Summary post-fire risk: **High**

Recommendations and Specifications

- 1) Lower and extend the screened inlet to provide better protection from debris from the existing two boulders. Specification W3-A.
- 2) Core-drill five 8-inch diameter holes in the upstream side of the sediment basin. This will allow water to flow into the structure if the screened inlet pipe is clogged with

sediment/debris. Specification W3-B.

- 3) Place additional boulders just upstream and downstream from the inlet pipe to direct debris up and over the dam. Specification W3-C.
- 4) If the inlet is clogged with debris or sediment, dispatch staff or contracted labor to clear the area. Specification W4.

Bridges. There are four bridges in the Wawona area. The Swinging Bridge and the Covered Bridge have passed many major floods in the past decades. The Wawona Road and Chilnualna Creek bridges are relatively new structures and meet modern bridge engineering standards. There is high confidence that all bridges will pass post-fire frequent floods (e.g. 1:25 chance-per-year). While loss of the bridges would have a major impact on the community, the probability of failure due to post failure impacts is very unlikely.

Summary post-fire risk: **Low**

Other houses and structures (except several homes in East Wawona – see previous section). There are approximately 300 homes and other structures within the Wawona area. Other structures include several commercial business and municipal buildings. Most builds are located away from and above the river channel. However, some structures are located within the 1:100 chance-per-year flood inundation zone (see <https://map1.msc.fema.gov/idms/IntraView.cgi?KEY=62155703&IFIT=1>).

The river channel through the town of Wawona safely passes floods up to and including the 1:25 chance-per-year flood both pre- and post-fire. It is very unlikely that a post-fire conditions would change the risk that a flood of less than a 1:25 chance-per-year frequency poses to homes or other structures.

Summary post-fire risk: **Low**

Roads. No roads are at risk from increased flooding from the South Fork Merced River due to post-fire conditions. Neighborhood roads in east Wawona below the burned area could have some erosion damage from flooding or debris flow but there are not culverts or other road infrastructure that should be made more resilient.

Summary post-fire risk: **Low**

Other utilities. Other utilities include wastewater, TV cable, telephone, and electric power. There are no reports of these utilities being damaged as a result of the fire. There is several wastewater lift stations located close to the river channel, but they are located well above the 1:10 chance-per-year flood. Several of these utilities pass over the river through the new Wawona Road Bridge but they are not exposed to flood waters.

Summary post-fire risk: **Low**

Recreation, swimming. There are no developed swimming areas in the river channel. During warm days, some people hike down to the river and bathe in swimming holes in the river.

Recommendation: Inform park rangers of the need to patrol this area during large rainstorm events.

Consultations

Josh Keyes: Yosemite Utilities Chief

Jim Allen: Yosemite Facilities Operations Specialist

Joe Davis: Wawona Utilities Chief

Greg Stock: Yosemite Park Geologist

David Krietemeyer: Area Engineer, Natural Resources Conservation Service, Fresno, CA

Dennis Staley: Landslide Hazards Program, U.S. Geological Survey

Jerald Meadows: Warning Coordination Meteorologist, National Weather Service, Hanford, CA

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TRAIL AND ROAD WARNING SIGN ASSESSMENT

OBJECTIVES

- Inform residents and visitors that they will be entering a recently burned area and unmarked hazards may be encountered

ISSUES

- Unmarked hazards on roads and trails such as debris flow, nuisance flooding, and hazard trees
- Visitors and residents may not be aware of the hazards of entering a burn area

ASSESSMENT

For many visitors exploring the trails in the South Fork Fire this may be the first time they have ever entered a recently burned area. Travelers should be made aware of the additional hazards such as hazard trees, washed out sections of trail, and debris and fallen trees on the trail.

RECOMMENDATIONS

- Place signs at all trailheads where the trail enters the burn area that warn of post-fire hazards.
- Place sign off Chilnualna Creek Road at the Chilnualna Creek Bridge to warn people they are approaching a recently burned area and may experience downslope impacts.

NON-SPECIFICATION RECOMMENDATIONS

- Employees entering the closure area should notify supervisors of travel plans.
- Employee wilderness travel plans should be filled out for all day and overnight trips.

Written by: Kristen Shive, DOI BAER Team Vegetation Specialist, Yosemite National Park, El Portal CA

TRAIL ASSESSMENT

OBJECTIVES

- Assess, stabilize, and restore damaged trails

ISSUES

- Fallen snags and trees across trails
- Blocked swales and increased trail erosion caused from increased run-off
- Resprouting brush growing over the trail
- Survey trail infrastructure in burned area

ASSESSMENT

Observations of trails affected by the fire were made by walking the Swinging Bridge Trail and through a GIS exercise to examine the upper reaches of Chilnualna Creek. The South Fork Fire burned an estimated three miles of trail in Yosemite National Park. However, at the time assessment was being written, the fire was burning towards the trail between the Chilnualna Falls trail and Buck Camp. If the fire burns over the trail, the number of miles of requiring treatment would increase.

FINDINGS

Trees and snags that burned may fall across the trail and hinder passage by hikers and stock. Hikers and stock will either go over or around logs and debris. As people create informal trails around the debris, the true trail can be degraded. In areas where fallen trees and snags block trails hikers and stock may become lost trying to return to the trail. This places not only hikers and stock users at greater risk, but also may create more Search and Rescue Incidents.

Clearing logs and debris from trails immediately after the burn will reduce risk of trail users getting lost or entering more hazardous terrain. After other Yosemite fires, on average 15-20 trees were cleared for each mile of trail. Based on these estimates, 45-60 trees could be expected to fall across the trail.

Trail infrastructure may have been exposed to more stressors than they were designed for and may be damaged. Trail infrastructure was not assessed while the BAER team was in the field due to a lack of access. Prescriptions to fix any structures damaged by the fire were not possible. Reconnaissance of structures damaged by the fire should be made in the spring of 2018 after more hazard trees have fallen.

RECOMMENDATIONS

- 1) Place signs at all affected trailheads that warn of post-fire hazards (see Warning Sign Assessment)
- 2) Cut wafers out large trees and remove small trees that fall on the trail to allow passage.
- 3) Remove debris from the trail and clear swales.
- 4) Brush trail to remove shrubs growing over the trail.

- 5) Assess infrastructure on trails that is was affected by the fire or that has the potential to be affected by post-fire storms.
- 6) Document any damage with GPS, photos, and site sketches. Prescribe treatments as necessary.

NON-SPECIFICATION RECOMMENDATIONS

Trail work should not occur in the winter of 2017/2018 to allow winter storms to push over hazard trees. This will decrease the number of return trips necessary to clear the trails and more importantly can potentially reduce worker exposure to hazardous standing trees.

Written by: Garrett Dickman, DOI BAER Team Vegetation Specialist, Yosemite National Park, El Portal CA

VEGETATION RESOURCE ASSESSMENT

OBJECTIVES

- Evaluate and assess fire impact to vegetation resources
- Determine monitoring, early detection and control of non-native invasive plants to support native plant recovery

ISSUES

- Potential for invasive plant impacts on the ecological integrity of native plants, wildlife communities and cultural resources within the burn area and around the fire perimeter where fire suppression activities occurred.
- Potential for the expansion of existing invasive plant seed banks and the introduction of novel invasive plants.
- Re-establishment of native plants in severely burned areas and in locations of fire suppression activities.

OBSERVATIONS

Reconnaissance

READs documented disturbance and noted potential invasive non-native plant habitat during the incident. The fire was scouted by the BAER team on 8/29/2017-8/30/2017. Invasive non-native plants (hereafter “invasive plants”) were found throughout the Wawona area, including areas surrounding homes that were staffed for protection by fire personnel. Observations were also gathered from Yosemite’s digital invasive plants spatial database, which has fairly up-to-date mapping of invasive weed populations. An estimate of the extent of potential habitat and thus the level of monitoring necessary was performed in ArcGIS.

Invasive Plants

Invasive plants are one of the primary threats to natural and cultural resources in Yosemite (Invasive Plant Management Plan Update Environmental Assessment for Yosemite National Park 2010; hereafter, IPMP). Many non-native invasive plants are well-adapted to establish and expand their populations after fires (Brooks et al. 2004). A few invasives are adapted to alter fire regimes and are considered among the most influential agents in changing ecosystem structure and function because they compete with native species and “alter the fundamental rules of existence for all organisms in the area” (Vitousek 1990). Invasive plants pose a serious threat to the stability and function of native ecosystems as they rapidly colonize after disturbance and can reduce natural plant communities in both abundance and diversity. Natural and human-caused disturbances create the environment where invasive weeds can establish and remain viable for years. Treating invasive plants mitigates the threat of displacing native ecosystems.

Table 1. High and moderate priority invasive plants identified within or near the burn area during the vegetation assessment

Scientific Name	Common Name	Wildland impact
<i>Brassica nigra</i>	Black mustard	Moderate
<i>Bromus tectorum</i>	Cheatgrass	High
<i>Carduus pycnocephalus</i>	Italian thistle	High
<i>Centaurea solstitialis</i>	Yellow star-thistle	High
<i>Cirsium arvense</i>	Canada thistle	High
<i>Cirsium vulgare</i>	Bull thistle	Moderate
<i>Cytisus scoparius</i>	Scotch broom	High
<i>Digitalis purpurea</i>	Foxglove	Moderate
<i>Festuca arundinacea</i>	Tall fescue	Moderate
<i>Hedera helix</i>	Common ivy	Moderate
<i>Holcus lanatus</i>	Velvet grass	High
<i>Humulus lupulus</i>	Hops	Moderate
<i>Hypericum perforatum</i>	St. John's wort	Moderate
<i>Lathyrus latifolius</i>	Perennial sweetpea	Moderate
<i>Leucanthemum vulgare</i>	Oxeye daisy	Moderate
<i>Linaria dalmatica</i>	Dalmatian toadflax	High
<i>Ranunculus repens</i>	Creeping buttercup	High
<i>Robinia pseudoacacia</i>	Black locust	High

FINDINGS

The fire created numerous areas for the establishment and spread of invasive weeds. Heavy equipment activity and hand line construction created disturbed areas where invasive weeds may germinate from the seedbank and/or seed-in from nearby populations.

Non-local fire equipment may have introduced invasive plants not already present in the area. The bulldozer was cleaned before entering the park and was inspected by the READ, but no other vehicles were cleaned or inspected because there was very little travel off of paved roads. However, the dozer and extensive tree falling work created intense ground disturbance that is adjacent to roads and parking areas, where there was heavy vehicular fire traffic. The potential for invasive plant species of concern to the park (Table 1) to establish in disturbed areas is high, and could have far reaching and negative impacts on native vegetation communities.

Additionally, an estimated 285,556 gallons of fire retardant was used during initial attack. Fire retardant is known to increase the amount of nitrogen and phosphorus available to plants. Many invasive plants are able to take advantage of the nutrient flush.

RECOMMENDATIONS

Survey and control of invasive plants within the South Fork Fire is recommended because:

- 1) Established invasive plant populations occurred in the area prior to the fire
- 2) Habitat suitability for invasive plants is high throughout the area, especially areas identified in Table 2 and IPMP 2010.

- 3) Firefighters routinely moved between invasive plant-free areas and areas with established invasive plant populations.
- 4) The presence of off-park fire personnel and equipment increases the potential for new invasive species introductions.

Therefore, it is recommended that managers’ survey for and control known invasive plants in areas that were disturbed as part of fire operations as well as burned areas adjacent to ground disturbing activities. Areas with retardant drops should also be surveyed for invasive response since the retardant can act as a fertilizer, and many retardant drop areas are adjacent to ground disturbance (hand line). Use integrated invasive management techniques (mechanical and/or herbicides) as appropriate to prevent the establishment and spread of present and novel invasive plant populations within the fire area. Follow the strategies and actions within the IPMP (2010).

Table 2. Probability of invasive plant occurrence

Probability of invasive plant occurrence	Survey effort for features	Disturbance, Vector, or Habitat	Features
Highest	All features surveyed	-Any combination of high/medium probability features, e.g. Dozer line through a wet area	
High	All features surveyed	Fire operations	-Dozer lines -Hand lines -Drop points -Sling sites -Retardant drops -Spike camps
		Transportation corridors	-Roads
		Perennial disturbance	-Campgrounds -Parking lots
Medium	Targeted and stratified	High quality habitat	-Wet areas (e.g. streams, seeps) -Meadows -Recently opened canopy -Exposed mineral soil
Low	Inspected periodically	Low quality habitat	-Dry areas -Closed canopy forest -No recent human disturbance

- 1) Survey targeted areas in spring 2018 as plants emerge and can be identified.
- 2) Maintain records (documentation, maps, photos, GPS Coordinates, voucher specimens) of invasive plants present in the affected area. Prioritize survey efforts based on the probability of occurrence (Table 2), and locations noted in the Suppression Repair Plan.

- 3) Treat invasive plants with the most appropriate techniques for the species and location. If herbicide is used, chemical storage, transportation, application and disposal will be conducted in strict accordance with manufacturer's label directions, federal regulations, and NEPA compliance documents including the Minimum Requirements Analysis for treatments in Wilderness.
- 4) If possible, apply treatments prior to seed set. Any mature seed heads should be collected, bagged and properly disposed.
- 5) Maintain treatment area records using GPS. Maintain records on species, location, extent of infestation, treatment method and detection and treatment dates.
- 6) Periodically re-survey all identified sites and apply appropriate treatments during the following spring and summer.

REFERENCES

Brooks, M.L., C.M. D'Antonio, D.M. Richardson, J.B. Grace, J.E. Keeley, J.M. DiTomaso, R.J. Hobbs, M. Pellant, and D. Pyke. 2004. Effects of invasive alien plants on fire regimes. *BioScience*. (54)7:677-688.

Invasive Plant Management Plan Update Environmental Assessment for Yosemite National Park. 2010.

Vitousek, P.M. 1990. Biological Invasions and Ecosystem Processes: Towards an Integration of Population Biology and Ecosystem Studies. *Oikos*, 57:7-13

Written by: Kristen Shive and Garrett Dickman, DOI BAER Team Vegetation Specialists, Yosemite National Park, El Portal, CA

HAZARD TREE ASSESSMENT

OBJECTIVES

- Identify and evaluate fire-related impacts to forest vegetation and related safety hazards
- Determine rehabilitation needs

ISSUES

- Tree hazards near houses
- Tree hazards along trails
- Tree debris cleanup

ASSESSMENT

Observations of the burn area were made by the BAER team by walking within the fire perimeter where accessible and by using binoculars from Wawona Point to assess vegetation mortality. The fire burned primarily through mixed conifer forest of ponderosa pine, black oak, live oak, incense-cedar and Douglas-fir at lower elevations (4,000-6,000 feet). At higher elevations, above 6,000 feet, the fire burned in red fir and lodge pole pine mixed with huckleberry oak. Vegetation mortality appeared to roughly correspond to the BARC map

Observations of hazard trees were made by the park forester in East Wawona and passed on to the BAER team during the week of August 21st. He conducted a brief walk-through for hazard tree surveillance. Hazard trees are defined as a tree structurally weakened by the fire that could strike a target and are rated for likelihood of failure using the National Park Service hazard tree guideline.

Trails in Wilderness were not assessed for hazard trees as hazard trees along trails are not removed in Yosemite Wilderness.

FINDINGS

The four houses in East Wawona below the active fire perimeter were assessed for fire weakened trees by the park forester. Many trees on private property within striking distance of the house were observed to be dead, but were not affected by the fire. During fire operations, snags and fire weakened trees within the fire perimeter were removed by contract fallers to protect firefighter safety.

The second area identified with potential for hazard trees was along the trail to Swinging Bridge from the parking lot in East Wawona. This area was also heavily snagged by contract fallers during fire operations. Snags remain in this area, but at a low density as compared to the rest of the fire.

Snags and fire weakened trees are abundant throughout the fire area. However, the majority of the burn area is in wilderness where the park does not remove hazard trees.

RECOMMENDATIONS

No removal of hazard trees is recommended at this time as many of the potential snags and fire weakened trees were removed during fire suppression.

NON-SPECIFICATION RECOMMENDATIONS

A hazard tree specialized or licensed forester should resurvey the burned area above the homes in East Wawona after winter storms have passed through to see if any trees were further weakened.

Debris and logs created from tree removal during suppression should be removed and cleaned up as part of suppression repair. PG&E will also be working in the area removing hazard trees. Log removal should be coordinated to reduce repeated entries of heavy equipment in the area. This will reduce the potential for invasive plant introduction and establishment and encourage native plant recovery.

Due to low hazard tree density after hazard tree removal during suppression along the Swinging Bridge Trail, more snags do not need to be removed. Winter storms may still bring down trees, which may be removed to allow visitor access. Slash piles left over from suppression should be burned this winter.

Along the Chilnualna Creek trail, seasonal winds and snow will bring down imminent hazards and allow for a more natural appearance. Signage will be prescribed to warn trail users of threats and to not stop or congregate in burned areas. See the trails assessment and warning signs assessment sections for further recommendations.

CONSULTATIONS

Brian Mattos, Forester, Yosemite National Park

Written by: Garrett Dickman, DOI BAER Vegetation Specialist, Yosemite National Park, El Portal CA

CULTURAL RESOURCE ASSESSMENT

OBJECTIVES

- Determine if known or incidentally encountered cultural resources within, adjacent to or downstream of the South Fork Fire were impacted by the fire and/or are threatened by post-fire conditions.
- If applicable, prescribe emergency stabilization treatments or activities to minimize, negate, or mitigate those impacts.
- Meet all Federal cultural resources legal mandates, including consultation with appropriate American Indian Tribes.

ISSUES

- Numerous cultural resources including prehistoric and historic sites exist in the area.
- Some of these resources are important to American Indian Tribes and groups with strong traditional values linking them to lands impacted by the South Fork Fire and related operations.
- The South Fork Fire burned large areas in watersheds that are above or include various cultural resources, which may have an increase in the potential for surface water runoff, erosion and sedimentation on cultural resources.
- Fire itself can impact/damage cultural resources.
- Several known sites were not assessed for fire impacts due to active fire across much of the fire area burning in wilderness.
- Emergency stabilization treatments that may be implemented as part of BAER recommendations for other resources have the potential to impact known sensitive cultural resources, especially if ground disturbing activities are required.

OBSERVATIONS

Cultural Resource Values Overview

The South Fork of the Merced River corridor has been home to people for many hundreds of years. Cultural resource values in the fire vicinity include extensive prehistoric and historic archeological sites, including village sites, hunting sites, lithic scatters, isolated milling features, dumps and structural ruins. Many of these properties have religious and cultural significance to traditionally associated American Indian tribes and groups.

Potential impacts to cultural resources include suppression activities (such as hand or dozer line construction through archeological sites) and fire effects on artifacts where sites burned. Impacts such as these require documentation of impacts and an update to both archeological site records and entered into ASMIS. There has been extensive archaeological survey in and around Wawona and along trails in the wilderness. The remaining majority of the burned area is unsurveyed.

Emergency Response and Regulatory Notifications

NPS Resource Advisors (READ) and archeologists (ARCH) were assigned to the incident and worked with fire personnel on assessing suppression actions. The park formally notified via email, the American Indian Council of Mariposa County, Inc. (aka Southern Sierra Miwuk Nation), the Bishop Paiute Tribe, the Bridgeport Indian Colony, the Tuolumne Band of Me-Wuk Indians, the Chicken Ranch Rancheria of Me-Wuk Indians, the Mono Lake Kutzadikaa Tribe, the North Fork Rancheria of Mono Indians of California, and the Picayune Rancheria of the Chukchansi Indians, of the fire on August 25th, with status reports on subsequent dates, pursuant to 36 CFR 800.12 governing Emergency Situations.

Reconnaissance

The Yosemite Archeology Office compiled maps and site records on file for all known cultural resources in the vicinity of the fire. Using this information, the ARCH and READ walked all hand and dozer lines prior to construction and flagged any known sites in the vicinity so that they could be avoided. They then walked these lines after construction. Archeologists also assessed known sites within and adjacent to the fire edge on the southern end of the fire. Field assessments for remaining sites were not possible given unsafe conditions, and are programmed for assessment as part of the BAER plan implementation in FY 18. The assessment will focus on damage assessments and evaluation of the potential for post-fire effects from increased runoff, erosion, tree fall, collapse, or illegal collection.

FINDINGS

Two prehistoric archeological sites were damaged by hand-line construction. Damage was limited to using hand tools to scrape to mineral soil and chainsaws to limb and remove trees. Although this action disturbed the site soil matrix, damage to individual artifacts was not observed. These hand lines will be rehabbed as part of suppression repair, under the supervision of an archeologist.

Several prehistoric sites in the river corridor burned and were assessed. The archeologists did not record any damage to artifacts or features at these sites other than some light charring on rock features. Site records were updated and the Archeological Sites Management Information System (ASMIS) damage assessments were completed. In consultation with the BAER Hydrologist, sites in the river corridor are at low risk of erosion during a flood event. They may be at risk of increased sediment input from the above slopes, but this is unlikely to be high enough to warrant mitigation measures.

There are also three sites that burned in the fire that have not yet been assessed for damage. This includes one collapsed historic cabin that firefighters tried to protect but that reportedly partially burned. In addition, this fire is not being contained on the northern edge, where it continues to grow. Depending on growth patterns, an additional 8-10 known archeological sites could burn over before the fire is out. These sites would then also need to be assessed for damage and the potential for post-fire erosion impacts.

RECOMMENDATIONS

Emergency Stabilization:

Archeological Resources:

- Conduct post-fire damage assessments at the three sites that burned but could not be assessed because they were unsafe to access. Damage and erosion threat assessments will occur in FY 18.
- Use final fire perimeter to assess if additional archeological sites burned. Assess damage and erosion threats in FY 18.
- Prescribe post-fire stabilization measures as necessary and appropriate, based on FY 18 assessments.

Historic Structures:

- Conduct post-fire damage assessment at historic collapsed cabin.
- Prescribe post-fire stabilization or safety/hazard abatement measures as necessary and appropriate.

Treatments considered but not recommended:

Sandbags around prehistoric sites that may experience increased sediment input after the fire from the burned slopes above.

- Treatment was not recommended for two reasons. First and foremost, the potential input is expected to be relatively small. Second, mitigation measures such as sandbagging have the potential to cause further damage to the site. This is because sandbagging concentrates and routes sediment to other areas, potentially resulting in increased sedimentation and rilling. Given that we do not know the extent of the site below the soil surface, we cannot ensure that these measures will not further impact the site.

CONSULTATIONS

American Indian Council of Mariposa County, Inc. (aka Southern Sierra Miwuk Nation)

Bishop Paiute Tribe

Bridgeport Indian Colony

Tuolumne Band of Me-Wuk Indians

Chicken Ranch Rancheria of Me-Wuk Indians

Mono Lake Kutzadikaa Tribe

North Fork Rancheria of Mono Indians of California

Picayune Rancheria of the Chukchansi Indians

Writer: Kristen Shive, Fire and Aviation Management, Yosemite National Park;

Contributing: Jun R. Kinoshita and Molly Baptista, Archeologists, Yosemite National Park

Scott Carpenter, Cultural Resources Program Manager, Yosemite National Park

TREATMENT SPECIFICATIONS



TREATMENT/ACTIVITY NAME	Point Protection of Northeast Wawona Homes	PART E SPECIFICATION #	W1
NFPORS TREATMENT CATEGORY*	Facility & Infrastructure	FISCAL YEAR(S) (list each year):	2017, 2018
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Wawona, CA	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description:

Several homes in northeast Wawona are downstream from a steep burned area. The steep burned area includes a prominent channel. The channel continues from the burned area down across an old road (fire line) and down adjacent to a privately owned home. The channel contains woody debris from fire line suppression and other downed timber. The concern is that rainstorms or snowmelt will cause floods in the channel that will float and mobilize material in the channel. This material could smash into vehicles, homes or other infrastructure downstream. The most likely events to potentially damage the home are rainstorms/snowmelt that produce low level overland flow. This project is to install a temporary V-shaped sandbag levee so that if there are large rains over the next few years, flood flows will be directed around each side of the home. It should be noted that larger storms are less likely but possible. These storms could produce floods which overtop the levee – but again, these are judged unlikely.

B. Location/(Suitable) Sites:

The site is the backyard, uphill and adjacent to NPS home 81- 77 in northeast Wawona on the north side of Chilnualna Falls Rd.

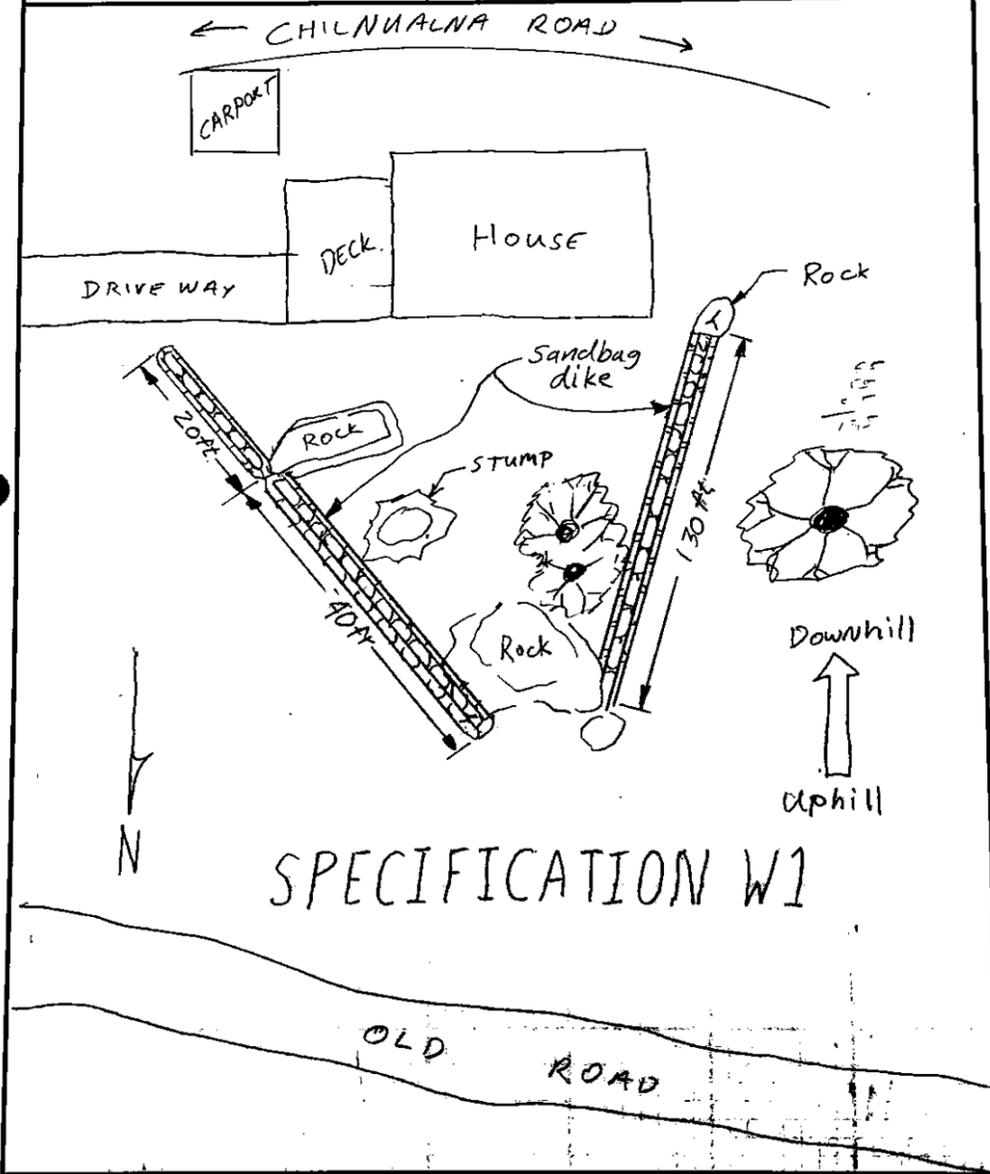
C. Design/Construction Specifications:

This project is to send a team of laborers and a foreman to construct



Figure: Levee placement location

Park	YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet	/
Area	WAWONA			of	/
Project	SOUTH FORK FIRE BARN	By	M. BAKER	Checked	
Feature	NPS HOUSE 81-77 W1	Date	9/4/17	Date	
				Pkg.	
				Account	



GPO: U.S. GOVERNMENT PRINTING OFFICE: 2012-561-040

Figure: Levee placement location drawing

D. Purpose of Treatment Specifications:

The purpose of the treatment is to direct potential small flooding around the home and prevent water damage.

E. Treatment Effectiveness Monitoring Proposed:

Inspect the treatment following large rain or snow runoff events.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
1 foreman, WL10-5 @ \$46/hr x 4 hours	\$184
2 labors, WG5-5 @ \$32/hour x 8 hours	\$512
TOTAL PERSONNEL SERVICE COST	\$696

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
N/A	0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Sandbags \$6.00 per bag filled with sand. 400 bags.	\$2,400
TOTAL MATERIALS AND SUPPLY COST	\$2400
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$0
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL COST	\$6,192

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
0	N/A	N/A					\$0
TOTAL							\$0

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	M
2.	Documented cost figures from similar project work obtained from local agency sources.	Yes
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	P
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$6,196
	TOTAL COST	\$6,196

TREATMENT/ACTIVITY NAME	Remove Floatable Debris	PART E SPECIFICATION #	W2
NFPORS TREATMENT CATEGORY*	Facility & Infrastructure	FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	WUI? Y/N	Yes
IMPACTED COMMUNITIES AT RISK	Wawona, CA	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description:

Several homes in northeast Wawona are downstream from a steep burned area. The steep burned area includes a prominent channel. The channel contains woody debris from fire line suppression and other downed timber. The concern is that rainstorms or snowmelt will cause the debris to be mobilized. This material could smash into vehicles, homes or other infrastructure downstream. This material was created by suppression actions and the incident has been requested to remove it.

B. Location/(Suitable) Sites:

The gully uphill and adjacent to NPS home 81- 77 in northeast Wawona on the north side of Chilnualna Falls Rd.

C. Design/Construction Specifications:

This incident management team is to send resources to remove the material as shown in the attached drawing.

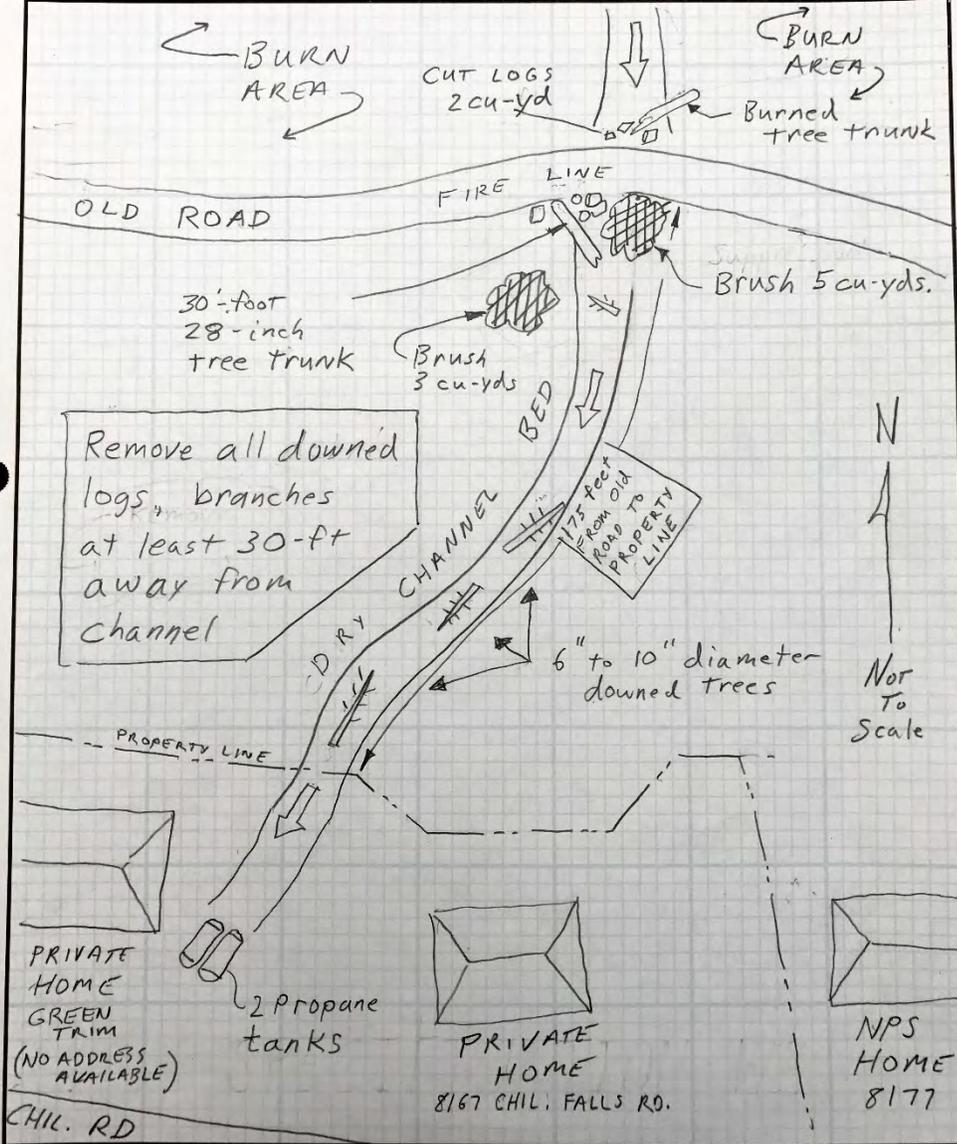
U.S. GOVERNMENT PRINTING OFFICE: 2011/11777

GENERAL MESSAGE (ICS 213)

1. Incident Name (Optional): South Fork		
2. To (Name and Position): READ Richard Schwab, BAER Team Leader		
3. From (Name and Position): Richard Schwab, BAER Team Leader		
4. Subject: Removal of floatable debris - Suppression Damage Repair	5. Date: 9/4/17	6. Time: 1100
7. Message: Per the attached map. Remove suppression caused fuels and debris above a NPS property. It lies in a channel and can be mobilized during intense rain storms thus damaging the house and adjacent properties. Failure to do so will be a liability to the NPS Contact: Richard Schwab 208 830 4791 Work to be done by suppression resources for suppression damage repair.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply: Provided to Kristen Shine, READ 7/7/17 Mark Baker		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		

ICS 213 (1/14)
NFES 001336

Park	YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet
Area	WAWONA			of
Project	SOUTH FORK FIRE BAER	By	M. BAKER	Checked
Feature	DEBRIS REMOVAL IN CHANNEL	Date	9/4/17	Date
				Pkg.
				Account



GPO U.S. GOVERNMENT PRINTING OFFICE: 2012-561-040

Figure: Remove Floatable Debris Drawing

D. Purpose of Treatment Specifications:

The purpose of the treatment is to remove floatable debris that may cause damage.

E. Treatment Effectiveness Monitoring Proposed:

Inspect the treatment following completion.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
NOT ESTIMATED, WILL BE PERFORMED BY FIRE CREW BEFORE INCIDENT CLOSE-OUT	
TOTAL PERSONNEL SERVICE COST	0
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
	0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$0
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
0	N/A	N/A					\$0
TOTAL							\$0

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	M
2.	Documented cost figures from similar project work obtained from local agency sources.	Yes
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	P
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	Not Estimated
	TOTAL COST	Not Estimated

TREATMENT/ACTIVITY NAME	Water Inlet Protection	PART E SPECIFICATION #	W3
NFPORS TREATMENT CATEGORY*	Facility & Infrastructure	FISCAL YEAR(S) (list each year):	2017, 2018
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Wawona, CA	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description:
 To provide additional protection to the inlet of the Wawona, CA water supply. The intake is located adjacent to a small diversion dam in the South Fork of the Merced River. The inlet is at risk because of the potential for high flood flows, flood flows carrying debris, or debris flows. This project will make the screened inlet more protected, protect the pipe from the screened inlet where it is exposed in the river, and provide for drawing the reservoir at a higher elevation if debris clogs the reservoir.

B. Location/(Suitable) Sites:
 At the Wawona water supply diversion dam about 1 mile east of the town on the South Fork of the Merced River.

C. Design/Construction Specifications:

Notes:

1. Work must be performed at times of low water in the river.
2. Specifications W3-A and W3-B must be performed before W3-C.
3. All work must be reviewed for environmental and historical impacts. A US Army Corps of Engineers should be consulted to confirm that the work is at an existing maintained facility and does not require a permit. The post-fire emergency nature of the work should be emphasized in all compliance communications.
4. Schedule the work so that the inlet can be shut off during construction activity so as to prevent sucking material stirred up during construction into the water supply.
5. Develop and review the Job Hazard Analysis to safely plan and perform the work.

Specification W3-A Changes to Inlet Screen
 See design sketch 1 of 4 below.
 Achieve better protection of the screened inlet by extending it about 18-inches toward the north and lowering the inlet about 4 inches. This will put the inlet more behind two large boulders that were previously installed for inlet protection. The work involves removal of cobbles under the pipe, extension of the 2 inch compressed air line, and loosening the coupling. Chipping of the concrete anchors may be required.

Specification W3-B Sediment Basin Changes
 See design sketch 2 of 4 below.
 Rent an 8-inch rock/concrete boring tool to construct five holes in the east side of the sediment settling basin. The specific locations of the holes will be identified by NPS Wawona water utility staff. Hole locations should consider minimum and maximum water withdrawal elevations required and adequate distance between holes to minimize cracking during drilling. Five plugs shall be installed from inside the settlement basin. The outside east end of the holes shall be covered with a 1/8th inch stainless steel screen. The screen shall be mounted to the masonry wall with steel strap.

Build and install a new screen for the placement into the sediment settlement basin. The screen shall be removable. Fabricate a steel frame with additional vertical and horizontal members to support a stainless steel screen. The screen shall be constructed of stainless steel with small openings (e.g. 1/16th inch). Water utilities staff should verify dimensions of all members in the field.

Specification W3-C Inlet Boulder Armoring
 See design sketches 3 & 4 of 4 below.
 Locate 5 to 7 suitable large 1 cubic-yard large boulders. Transport them to the site via a dump truck which can access the narrow and rough 4WD road to the dam. Locate and transport 4 cubic-yards of small boulders sized 12 to 15 inches.

All work in the river should avoid damage or movement of the T-shaped inlet pipe and screened inlet.

Prepare the riverbed by removing small cobbles less than 8-inches in diameter down to firm rock foundation. Place a number of the small boulders such that placement of the large boulders will result in the large boulders being in a stable pocket and that the top of the large boulders will be just below the crest of the dam (not sticking out of the river).

Carefully transport the large boulders down the rock slope. The large boulders shall be lowered by cables or other means and not allowed to tumble down the rock slope. The rock slope shall be protected so the boulder transport does not chip, crack or scratch the rock slope. Move the boulders from the bottom of the slope, into the river, and to the final location just upstream of the inlet pipe. Rotate the boulders so that an angled/top surface of the rock dips to the upstream so that any debris does not get caught on the rock and is more likely to be carried up and over the inlet pipe and dam.

Between the dam and the inlet pipe place the small boulders minimizing the space between. The top of these boulders shall also be below the crest of the dam and shall not stick up above the surface.

D. Purpose of Treatment Specifications:

The purpose of the treatment is to provide one-time modifications to several components of the water inlet system so that the system can more likely survive and recover from floods/floods carrying debris and debris flows associated with the post-fire watershed.

Specification W3-A will locate the screened water inlet more behind two previously installed large boulders installed for inlet protection.

Specification W3-B will allow water to be withdrawn and screened for different elevation if the reservoir fills with sediment or debris.

Specification W3-C will make the inlet pipe which extends perpendicular and just upstream from the dam less likely to be impacted from floods and debris. Debris is more likely in the post-flood environment.

E. Treatment Effectiveness Monitoring Proposed:

Inspect the treatment before and following large rain or snow runoff events.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
1 foreman, WL10-5 @ \$46/hr x 80 hours	\$3680
1 equipment operator, WG10-5 @ \$42/hr x 80 hours	\$3360
1 vehicle operator, WG8-5 @ \$40/hr x 80 hours	\$3200
4 labors, WG5-5 @ \$32/hour x 4 people x 80 hours	\$10,240
1 pipefitter, WG5-5 @43/hr x 40 hours	\$1720
1 fabricator, WG5-5 @43/hr x 40 hours	\$1720
TOTAL PERSONNEL SERVICE COST	\$23,920
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
8-inch hole boring machine. Three days/\$400 per day.	\$1200
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$1200
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Stainless steel screen 1/8" perforations, \$40 per square foot, six square ft	\$240
Stainless steel screen 1/16" perforations, \$40 per square foot, 12 square ft	\$600
8-inch plugs. \$23/each	\$264
TOTAL MATERIALS AND SUPPLY COST	\$2,830
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$0
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL COST	\$27,950

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
0	N/A	N/A					
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	Yes
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	M & P
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

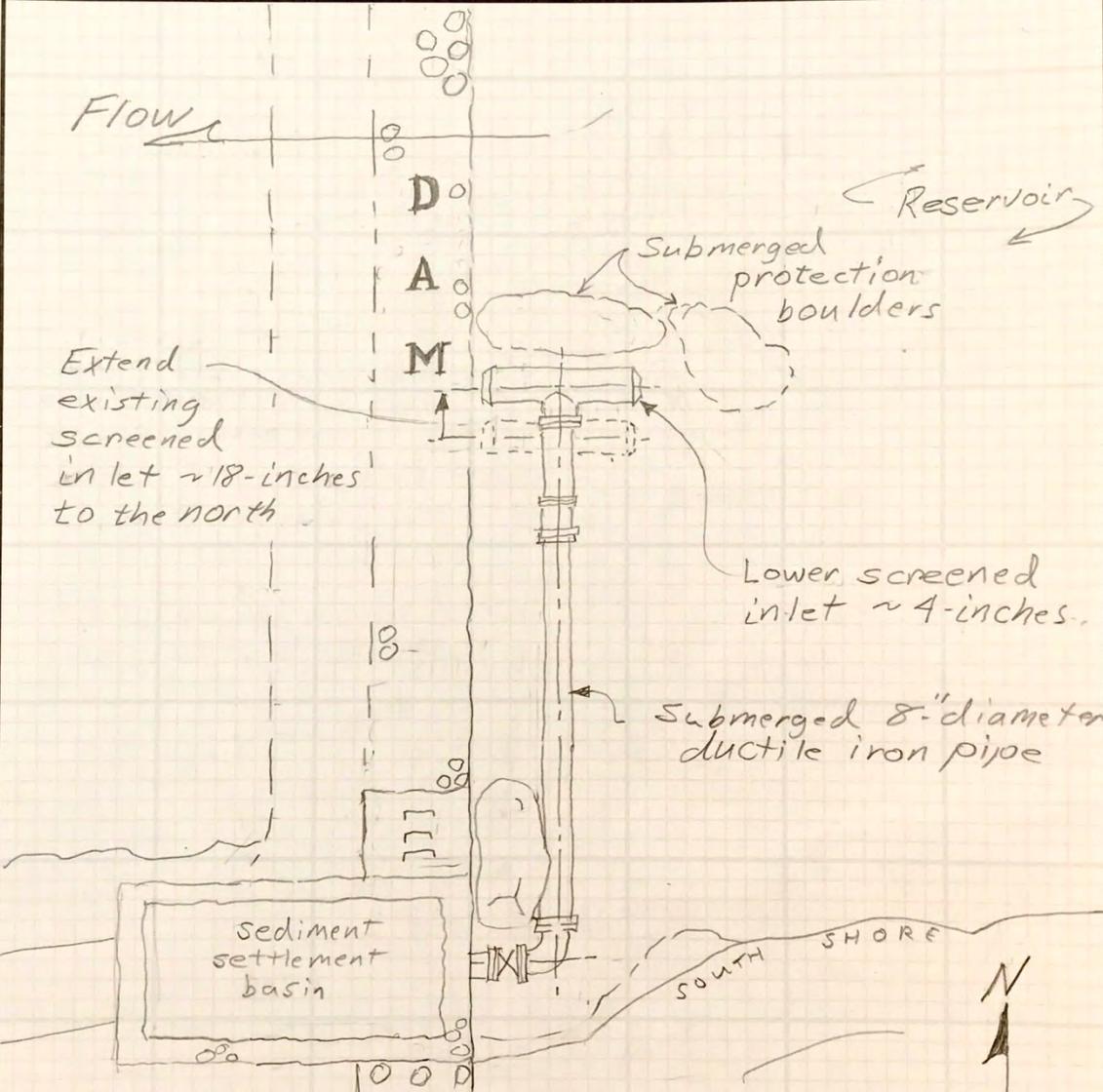
RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See attached drawings.

TOTAL COST BY JURISDICTION

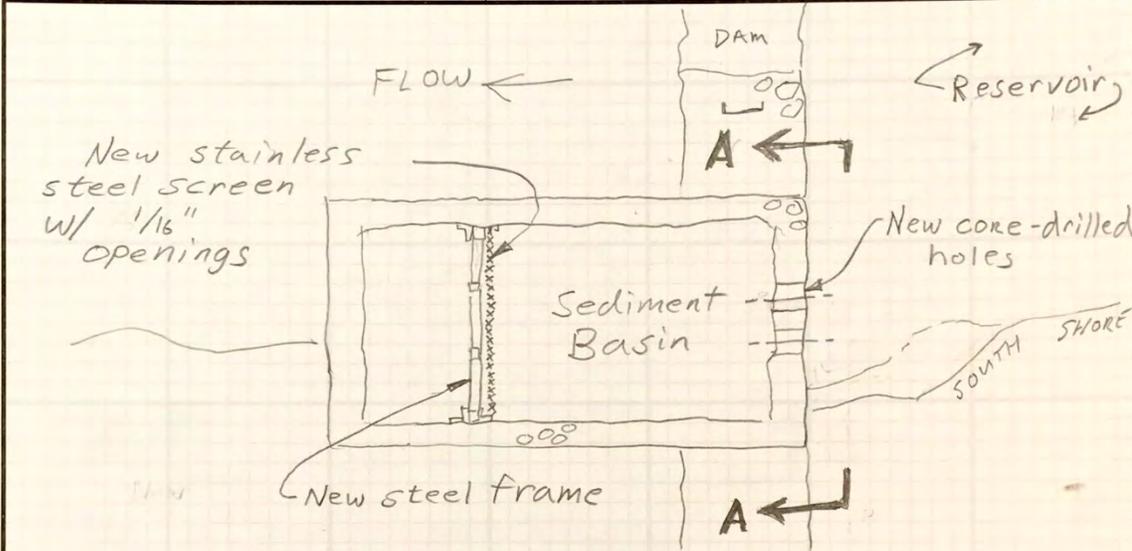
JURISDICTION	UNITS TREATED	COST
NPS		\$27,950
	TOTAL COST	\$27,950

Park	YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet	1
Area	WAWONA			of	4
Project	SOUTH FORK FIRE	By	M. BAKER	Checked	Pkg.
Feature	H ₂ O INLET SPECIFICATION	Date	9/2/17	Date	Account

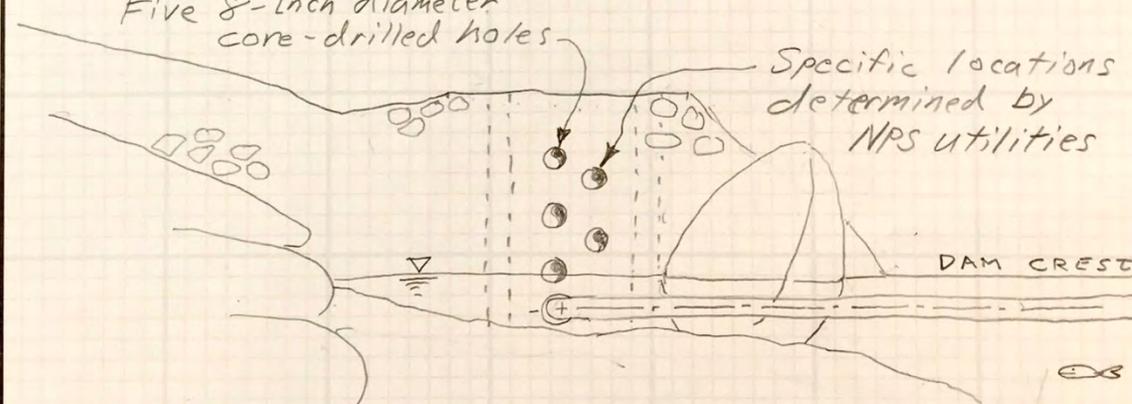


SPECIFICATION W3-A
 Changes to Inlet Screen
 PLAN
 N.T.S.

Park	YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet	2
Area	WAWONA			of	4
Project	SOUTH FORK FIRE	By	M. BAKER	Checked	
Feature	H ₂ O INLET SPECIFICATION	Date	9/3/17	Date	
				Pkg.	
				Account	



PLAN



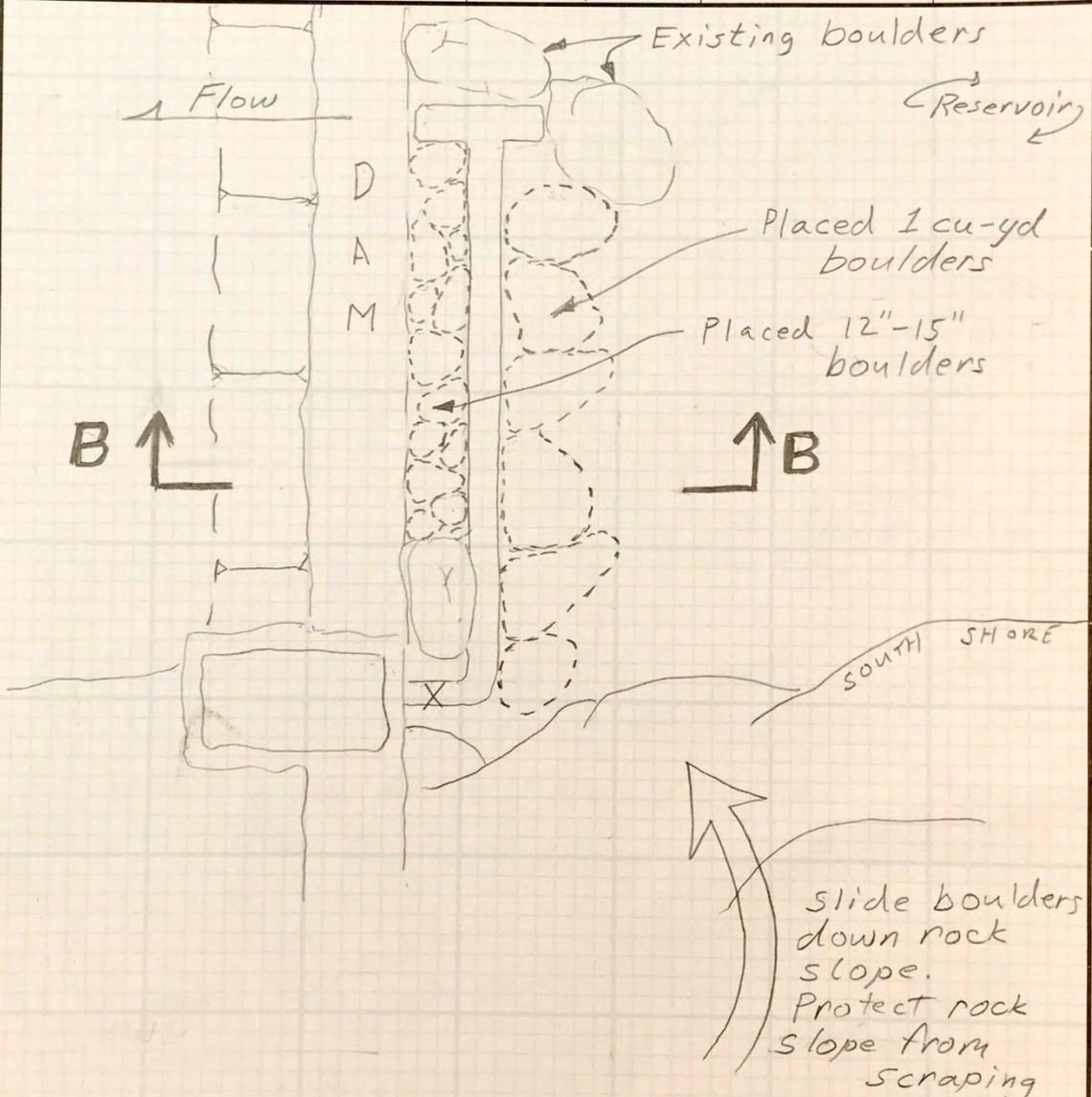
SECTION A-A

SPECIFICATION W3-B

Sediment Basin Changes

N. T. S.

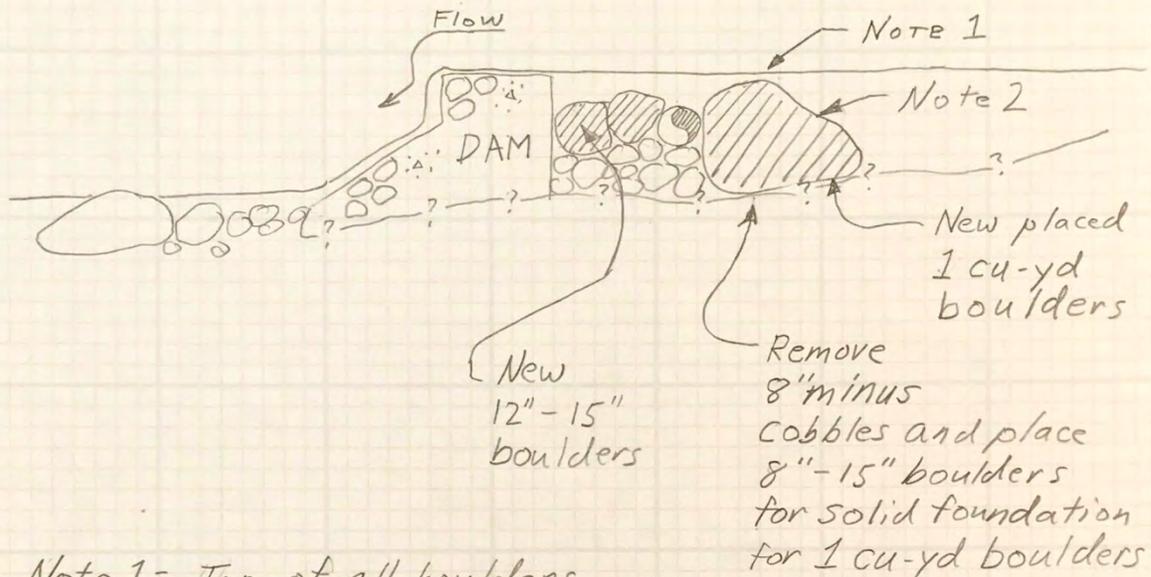
Park	YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet	3
Area	WAWONA			of	4
Project	SOUTH FORK FIRE	By	M. BAKER	Checked	Pkg.
Feature	H ₂ O INLET SPECIFICATION	Date	9/3/17	Date	Account



SPECIFICATION W3-C (1 of 2)
 Inlet Boulder Armoring
 N.T.S.

4WD ROAD

Park YOSE	NATIONAL PARK SERVICE DENVER SERVICE CENTER		Sheet 4
Area WAWONA			of 4
Project SOUTH FORK FIRE	By M. BAKER	Checked	Pkg.
Feature H ₂ O INLET SPECIFICATION	Date 9/3/17	Date	Account



Note 1 - Top of all boulders shall be submerged and below top of dam.

Note 2 - When possible face angled boulder surface upstream to direct debris up and over the dam.

SPECIFICATION W3-C (2 of 2)
Inlet Boulder ARMORING
N.T.S.

TREATMENT/ACTIVITY NAME	Post-Flood Impoundment Cleanout	PART E SPECIFICATION #	W4
NFPORS TREATMENT CATEGORY*	Facility & Infrastructure	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Wawona, CA	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Large rain events over the next several years are expected to create debris- or silt-laden flows down the steep slopes of the north side of the Merced River South Fork. The inlet is at risk because of the potential for high flood flows, flood flows carrying debris, or debris flows depositing materials in the reservoir which supplies water to the town of Wawoma. The project will enable park staff to dispatch staff to remove debris and sediment which would likely prevent water from entering the water system. The park may clean the inlet one or more times in the funded period up to the available budget.</p> <p>B. Location/(Suitable) Sites: At the Wawona water supply diversion dam about 1 mile east of the town on the South Fork of the Merced River.</p> <p>C. Design/Construction Specifications: This project is to send a team of laborers and a foreman to the dam should a flood deposit silt or debris in the reservoir. The staff will remove materials with saws, shovels and other tools/small equipment. There is potential for debris flows to deposit many feet of debris requiring large equipment to remove the debris, however the likelihood is deemed unlikely and is not covered by this specification.</p> <p>D. Purpose of Treatment Specifications: The purpose of the treatment is to fund park trails crew or other staff to remove debris or silt from the small diversion dam inlet area to maintain the water supply to the town.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Inspect the treatment following large rain or snow runoff events.</p>
--

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
1 foreman, WL10-5 @ \$46/hr x 80 hours	\$3680
8 labors, WG5-5 @ \$32/hour x 80 hours	\$20,480
TOTAL PERSONNEL SERVICE COST	\$24,160
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
N/A	0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
N/A	0
TOTAL MATERIALS AND SUPPLY COST	\$0
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$0
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL COST	\$24,160

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
0	N/A	N/A					\$0
TOTAL							\$0

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	Yes
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	P
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$24,160
	TOTAL COST	\$24,160

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Assess retardant impacts to water quality on the South Fork of Merced	PART E Spec-#	W5
NFPORS TREATMENT CATEGORY*	Assessment	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Risk Assessment	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description:
 This work will consist of collecting and analyzing instream water samples from the South Fork of the Merced River in the vicinity of Wawona from an NPS managed municipal water intake. Samples are to be analyzed for nitrate/nitrite, ammonia, total phosphorous, and turbidity compared to applicable drinking water standards. If measured values exceed standards, warnings are to be issued to users of these water sources.

B. Location/(Suitable) Sites:
 Sample site is the Wawona municipal water intake.

C. Design/Construction Specifications:

Alert affected public that water quality sampling will be taking place and how they may access the results. Establish method for disseminating results.

Three samples must be collected at the water intake location prior to the onset of fall rains to establish baseline conditions. These samples may be collected weekly or biweekly once funding is allocated. In addition, three peak flow samples should be collected at the site during the first three storms of the year. Collect two samples following each of the three storm events to establish base flow concentrations for fall and winter runoff. The total number of samples is 12. Water quality parameters such as temperature and conductivity should be measured as a part of sampling.

Each sample will include a sample for one for nitrate and nitrite (NO3/NO2), one for ammonia (NH3), and one for total phosphorous (P). The minimum required analyses are as follows:
 Nitrate, by CFA (SM 4500-NO3 F)
 Nitrite, by CFA (SM 4500-NO2-F)
 Ammonia, CFA (SM 4500-NH3)
 Phosphate, by CFA (SM 4500-P)

For each sample run, include one travel blank. Prepare at least one duplicate sample during the course of the project.

Lab results should be made available to the public as soon as possible following each sampling event.

In addition, measurement of nitrate/nitrite, ammonium, and total phosphorous should be done in the field using a portable spectrophotometer (such as Hach DR1900) as well as measurement of turbidity to allow immediate determination of any problems.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire):

The purpose of this monitoring is to determine if contaminants from fire retardant dropped on the South Fork fire raise ammonia, nitrate/nitrite or phosphorous levels in the South Fork of the Merced to levels that exceed applicable state maximum contaminant levels in drinking water. If concentrations exceed regulatory limits, the park would be required to advise residents who derive their drinking water from the river or from wells closely associated with the river to cease drinking the water and provide for alternative sources of drinking water until monitoring indicates that the hazard has abated.

E. Treatment consistent with Agency Land Management Plan (identify which plan):

Yosemite General Management Plan – Provide for public safety

F. Treatment Effectiveness Monitoring Proposed:

Monitor results in a timely manner such that regulatory exceedances may be reported to affected residences as soon as feasible.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Water System Operator (WG10/5 @ \$42.00/hour X 120 hours)	\$5,040
Water System Operator (WG8/5 @ \$40.00/hour X 96 hours)	\$3,840
Administrative assistance – payroll, HR (5% of personnel costs = 5% X \$8,880)	\$444
TOTAL PERSONNEL SERVICE COST	\$9,324
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Vehicle rental (\$1000 month X 2 months X 1 FY = \$2000)	\$2,000
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$2,000
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Ice Chests for sample shipment (1 @ \$25)	\$25
Shipment for samples (12 shipments @ \$50/shipment X = \$600)	\$600
Laboratory supplies (gloves, filters, forms, sample bottles, blue ice, zip lock bags)	\$500
TOTAL MATERIALS AND SUPPLY COST	\$1,125
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
Water Quality Analysis (Nitrate/nitrite) (\$60/sample X 12 samples)	\$720
Water Quality Analysis (Total phosphorous) (\$60/sample X 12 samples)	\$720
Water Quality Analysis (Ammonia) (\$60/sample X 12 samples)	\$720
TOTAL CONTRACT COST	\$2,160

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2018	10/1/2018	7/1/2018	F	Study	\$14,609	1	\$14,609
						TOTAL	\$14,609

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C, P, M, E
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$14,609
TOTAL COST		\$14,609

INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Install warning signs	Spec-#	T1
NFPORS TREATMENT CATEGORY*	Protection and Warning	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Warning signs	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

** See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: Install warning signs informing visitors and employees about risks from post-fire rock fall, hazard trees, and potential flooding. During the first few years post-fire these areas have an elevated potential for hazard treefall and rock fall. Signs should be placed at trailheads for trails that enter the burn area near Wawona and off the Glacier Point Road. A sign should also be placed after the bridge on Chilnualna Falls Road in easternmost Wawona as it is immediately under the burn area.</p> <p>B. Location (Suitable) Sites:</p> <ul style="list-style-type: none"> • Chilnualna Creek Bridge (East Wawona) • Chilnualna Falls Trailhead (from Chilnualna Falls Road) • Swinging Bridge Trailhead (from Chilnualna Falls Road) • Swinging Bridge Trailhead (from Forest Drive) • Alder Creek Trailhead (from Glacier Point Road) • Bridalviel Creek Trailhead (from Glacier Point Road) • Ostrander Trailhead (from Glacier Point Road) <p>C. Design/Construction Specifications: Road signs should conform to NPS and Federal Department of Transportation standards and address public safety for rock fall, hazard trees, and localized flooding during storm events. Signs should be attached to existing posts when possible. Avoid mounting to historic or rustic signs. Archaeologists should review and approve all sign installations to ensure protection of archaeological and historic resources.</p> <p>D. Purpose of Treatment Specifications (relate to damage/change caused by fire): Danger to visitors and employees exists from rock fall, hazard trees, and flooding due to post-fire watershed conditions.</p> <p>E. Treatment consistent with Agency Land Management Plan: Supports public safety initiatives.</p> <p>F. Treatment Effectiveness Monitoring Proposed: Signs to remain for at least one year.</p>
--

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
WG-9 Sign Maker @ \$38/hr x 80 hrs x 1FY	\$3,040
WG-5 (2) Laborers (sign placement) @ \$22/hr x 40 hrs x 1 FY	\$1,760
GS-11 Archeologist @ \$45/hr x 30 hr x 1 FY	\$1,350
TOTAL PERSONNEL SERVICE COST	\$6,150
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Sign materials @ 20%	\$1,230
TOTAL MATERIALS AND SUPPLY COST	\$1,230
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
1 vehicle @ \$1,200/month x 0.25 months	\$300

TOTAL TRAVEL COST	\$300
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 18	04/15/2018	09/30/2018	F	Signs	\$1,097	7	\$7,680
TOTAL							\$7,680

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/E/T
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Trail and road warning sign assessment
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INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Clear trails	Spec-#	T2
NFPORS TREATMENT CATEGORY*	Trails	FISCAL YEAR(S) (list each year):	2018, 2019, 2020
NFPORS TREATMENT TYPE *	Trail repair	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: Clear fallen trees on trails, brush back resprouting vegetation, and maintain trail drainage structures within the perimeter of the burn to maintain visitor access. Around 3 miles of trails were impacted by the South Fork Fire. Based on previous post-fire work, and estimated 45-60 trees will need to be cleared. Survey and document any infrastructure damaged by the fire.</p> <p>B. Location (Suitable) Sites:</p> <ul style="list-style-type: none"> Swinging Bridge Trail Chilnualna Falls Trail within burn area <p>C. Design/Construction Specifications: Trail Construction and Maintenance Handbook.</p> <p>D. Purpose of Treatment Specifications (relate to damage/change caused by fire: Protect hikers from getting lost by clearing the trail instead of going around fallen logs. Protect recreational opportunities and water quality by maintaining trail drainage structures that clog from fire runoff and clear fallen fire-damaged trees to keep hikers and stock on hardened trail surface.</p> <p>E. Treatment consistent with Agency Land Management Plan: CE 2007 007</p> <p>F. Treatment Effectiveness Monitoring Proposed: Functional trail surface and drainage structures; logs cleared from hiking trails</p>
--

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
WS 5/1 Project supervisor @ \$41/hr X 60 hours X 1 person x 3 years	\$7,380
(4) WG 5 sawyers/swampers @ \$22/hr X 60 hours x 3 years	\$15,840
TOTAL PERSONNEL SERVICE COST	\$23,220
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
	\$0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Materials and Supplies @ 10% labor x 3 years	\$6,966
Stock support (feed, packers, etc.) \$1,500/year x 3 years	\$4,500
TOTAL MATERIALS AND SUPPLY COST	\$11,466
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
(1) vehicles @ \$1200 per month x 0.5 months x 3 years	\$1,800
Backcountry per diem @ \$20 per person per day x 5 people x 5 days x 3 years	\$1500
TOTAL TRAVEL COST	\$3,300
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 18	05/15/2018	09/30/2018	F	Miles	\$4,220	3	\$12,662
FY 19	05/15/2019	09/30/2019	F	Miles	\$4,220	3	\$12,662
FY 20	05/15/2020	09/30/2020	F	Miles	\$4,220	3	\$12,662
TOTAL							\$37,986

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/M/T
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P/M
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Trails Assessment and Warning Signs Assessment
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INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Invasive Plant Monitoring	Spec-#	V1
NFPORS TREATMENT CATEGORY*	Assessment	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Species/Habitat Inventory	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

** See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

- A. General Description:** This specification proposes invasive plant monitoring for the South Fork Fire. The purpose is to identify the establishment and monitor the spread of invasive plants. The most effective invasive plant control strategy is early detection and rapid response. Monitoring should begin in spring 2018 as soon as plant identification is possible. Priority should be given to areas impacted by fire management operations and known plant locations. The data collected for the invasive plant survey should include species, location, area infested and density. Treatments should be prescribed to control the invasion and spread.
- B. Location (Suitable) Sites:** Assess known locations of invasive plants and areas based on motor vehicle use and heavy equipment impacts used during fire suppression and mop-up activities. Areas prone to plant establishment are:
- Parking area at trailhead to Swinging Bridge trail; dozer impacts and intensive snagging
 - Areas of intensive snagging throughout East Wawona
 - Bill's Hill Road where dozer improved the road
 - Dozer lines and handlines
 - Fire perimeter where mop-up occurred; primarily handlines
 - Parking/staging areas; throughout Wawona, Porcupine Creek Trailhead
 - Drop points
 - ICPs: Badger Pass and Wawona Fire Station
- C. Implementation Specifications:**
1. Survey for presence / absence of invasive plant species during the green up period and at future, selected intervals of time.
 2. Inventory, photo document and map novel infestations of invasive plants using GPS.
 3. Sampling should determine species composition, density and quantify the area affected (e.g. square feet, acres).
 4. Initiate agency approved control measures where detection demonstrates the establishment or expansion of invasive plant populations. Integrated plant management strategies should be used to control / mitigate establishment and spread of invasive plants.
- D. Purpose of Treatment Specifications (relate to damage/change caused by fire):** Monitoring is required on all emergency stabilization plans. The level of monitoring should be commensurate with the complexity of the project, level of concern and the objectives of the plan. The purpose of this specification is to detect and control the invasion and spread of non-native invasive plant species and prescribe treatments that will control the spread into susceptible burn areas. Early detection and control will help minimize the establishment of non-native invasive species within the burn area.
- E. Treatment consistent with Agency Land Management Plan:** Completion of Emergency Stabilization treatments are described in, and are consistent with, the Yosemite National Park Fire Management Plan (2004). Control of non-native species is also consistent with the NPS mission and the Invasive Plant Management Plan Update Environmental Assessment for Yosemite National Park, 2010.
- F. Treatment Effectiveness Monitoring Proposed:** Control and detection of invasive plant species in burned areas will be monitored according to the strategy outlined in the specification. Control will be considered successful upon determination that invasive plants have not spread beyond their pre-fire locations. Monitoring is required to determine whether vegetative recovery of habitat has, as anticipated, occurred. Additional treatments may be proposed if monitoring determines that the criteria for re-vegetation success are not achieved.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
GS-11 Program manager @ \$45/hour x 20 hours x 3 years	\$2,700
GS-9 Data manager @ \$33/hour x 20 hours x 3 years	\$1,980
GS-7 botanist @ \$24/hour x 100 hours x 3 years	\$7,200
GS-6 botanist @ \$20/hour x 100 hours x 3 years	\$6,000
TOTAL PERSONNEL SERVICE COST	\$17,880
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
	\$0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Miscellaneous field supplies @ \$500/year x 3 years	\$1,500
(2) annual GPS license \$200 per unit x 3 years	\$1,200
TOTAL MATERIALS AND SUPPLY COST	\$2,700
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
(1) vehicles @ \$1,200 per month x 1 month x 3 years	\$3,600
2 days backcountry per diem per 2 people @ \$20/day x 3 years	\$240
TOTAL TRAVEL COST	\$3,840
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 18	04/15/2018	09/30/2018	F	Miles	\$339	24	\$8,140
FY 19	04/15/2019	09/30/2019	F	Miles	\$339	24	\$8,140
FY 20	04/15/2020	09/30/2020	F	Miles	\$339	24	\$8,140
TOTAL							\$24,420

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/E/T
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Vegetation Assessment and Specification V2 Invasive Plant Control and APPENDIX XX MAPS

INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Invasive Plant Control	Spec-#	V2
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Chemical Treatment	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

** See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: This specification proposes invasive plant treatment for the South Fork Fire. Use integrated pest management techniques (herbicides and mechanical) according to the Invasive Plant Management Plan EA Update (2010) to prevent the spread and establishment of invasive plants within the areas affected by the South Fork Fire.</p> <p>B. Location (Suitable) Sites: Treat locations of invasive plants and areas based on motor vehicle use, heavy equipment impacts and hand crews used during fire suppression and mop-up activities. Areas vulnerable to invasive plant establishment are:</p> <ul style="list-style-type: none"> • Parking area at trailhead to Swinging Bridge trail; dozer impacts and intensive snagging • Areas of intensive snagging throughout East Wawona • Bill's Hill Road where dozer improved the road • Dozer lines and handlines • Fire perimeter where mop-up occurred; primarily handlines • Parking/staging areas; throughout Wawona, Porcupine Creek Trailhead • Drop points • ICPs: Badger Pass and Wawona Fire Station <p>C. Implementation Specifications: Treatments will be implemented in accordance with the following:</p> <ol style="list-style-type: none"> 1. Locate known infestation areas (see Invasive Plant Monitoring Specification) 2. When invasive plants are in proper treatment phenology, use backpack sprayers, truck mounted sprayers or mechanical tools to control invasive plants. Applicators must be familiar with native plant species and must avoid spraying them to the greatest extent possible. 3. Apply control treatments prior to seed-set. Any mature seed heads should be collected and bagged for disposal. 4. Monitor site for effectiveness of initial treatment and for germination of successive cohorts of invasive plants. 5. If successive cohorts of invasive plants are encountered, treat as appropriate. <p>D. Purpose of Treatment Specifications (relate to damage/change caused by fire): Control invasive plants to minimize spread into non-infested areas of the burn. Invasive plants can increase fire return intervals, reduce native species diversity, decrease wildlife habitat and impact cultural resources.</p> <p>E. Treatment consistent with Agency Land Management Plan: Completion of Emergency Stabilization treatments are described in, and are consistent with, the Yosemite National Park Fire Management Plan (2004). Control of non-native species is also consistent with the NPS mission and the Invasive Plant Management Plan Update Environmental Assessment for Yosemite National Park, 2010.</p> <p>F. Treatment Effectiveness Monitoring Proposed: Biologists will perform monitoring of invasive plant sites to ensure control methods are meeting management objectives. This is especially important for invasive plant populations that are sprayed to ensure effectiveness of herbicide application. Results are incorporated by park staff into the integrated pest management program and geospatial database. Follow-up treatments may be necessary if additional non-native populations are found or if treatment was ineffective.</p>

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
GS-11 Program manager @ \$45/hour x 20 hours x 3 years	\$2,700
GS-9 Data manager @ \$33/hour x 20 hours x 3 years	\$1,980
GS-7 Crew Leader @ \$24/hour x 50 hours x 3 years	\$3,600
GS-5 (4) Spray Crew @\$16/hour x 50 hours x 3 years	\$9,600
TOTAL PERSONNEL SERVICE COST	\$17,880
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
	\$0
	\$0
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Herbicide @ \$400 per year x 3 years	\$1,200
Miscellaneous supplies @ \$750/ year x 3 years	\$2,250
TOTAL MATERIALS AND SUPPLY COST	\$3,450
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
Backcountry per diem @ \$20/person/day x 5 people x 2 days x 3 years	\$600
(1) vehicles @ \$1,200 month x 1 month x 3 years	\$3,600
TOTAL TRAVEL COST	\$4,200
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 18	04/15/2018	09/30/2018	F	Gross infested acres	\$607	14	\$8,510
FY 19	04/15/2019	09/30/2019	F	Gross infested acres	\$607	14	\$8,510
FY 20	04/15/2020	09/30/2020	F	Gross infested acres	\$607	14	\$8,510
TOTAL							\$25,530

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/E/T
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Vegetation Assessment and Specification V1 Invasive Plant Monitoring and APPENDIX XX MAPS
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PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Cultural Resource Evaluation	PART E BIA Spec-#	CR1
NFPORS TREATMENT CATEGORY*	Assessment	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Fire Damage Assessment	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

** See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: This specification addresses cultural resources at risk from impacts from fire, fire suppression and post-fire related effects, such as increased runoff, erosion, tree fall, collapse, or illegal collection. These sites were unsafe for field assessment as part of the initial BAER effort and have been postponed until FY 18. A cultural resource assessment would focus on prehistoric and historic archeological sites. Site visits to these locations would allow staff to assess existing and potential damage to cultural resources and prescribe treatments for the stabilization of the sites and structures from adverse effects from post-fire erosion, fire related effects, and emergency stabilization and rehabilitation actions. Park managers would consult with California State Historic Preservation Officer, American Indian tribes and groups, Tribal Historic Preservation Officers prior to prescribing treatments to minimize or mitigate post-fire related effects to cultural resources.</p> <p>B. Location (Suitable) Sites: A map of suitable sites is not included to protect the location of the culturally sensitive resources. Sites are in backcountry locations that will require backcountry travel to access.</p> <ul style="list-style-type: none"> • 3 known archaeological sites in the wilderness • There is potential for additional assessment needs since the fire is continuing to burn into the wilderness, which may burn an additional 8-10 sites. A supplemental request will be prepared in the case that those resources need assessment. <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 5. Assess and prescribe treatments to stabilize damaged archaeological sites as well as sites likely to be threatened by post-fire erosion processes. 6. Consult with State Historic Preservation Officer, American Indian tribes and groups and Tribal Historic Preservation Officers on any proposed treatments. <p>D. Purpose of Treatment Specifications (relate to damage/change caused by fire: Assessment is necessary to evaluate fire effects on cultural resources, as well as the risk to cultural resources from the effects of post-fire flooding, debris flows, severe erosion, looting of exposed artifacts, and emergency stabilization.</p> <p>E. Treatment consistent with Agency Land Management Plan: Treatment consistent with Agency Land Management Plan: 36 CFR part 800 F.</p> <p>F. Treatment Effectiveness Monitoring Proposed: Evaluate sites and prescribe treatments as appropriate.</p>

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
GS-9 Arch Lead @ \$33/hour x 40 hours x 1 year	\$1,320
GS-5 Arch tech @ \$16/hour x 40 hours x 1 year	\$640
Tribal representative @ \$50/hour x 40 hours x 1 year	\$2,000
TOTAL PERSONNEL SERVICE COST	\$3,960

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	\$0
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
Vehicle @ \$1,200 per month x 0.25 months x 1 year	\$300
2 days backcountry per diem per 2 people @ \$20/day x 1 year	\$80
TOTAL TRAVEL COST	\$380
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 18	04/15/2018	09/30/2018	F	Sites assessed	\$1,446	3	\$4,340
TOTAL							\$4,340

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/E/T
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Cultural Resource Assessment

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	ES Plan	PART E Spec-#	P1
NFPORS TREATMENT CATEGORY*	Assessment	FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *	Risk Assessment	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: Assess burned areas on the South Fork Fire at Yosemite National Park and prepare the Burned Area Emergency Stabilization & Rehabilitation Plan. Conduct aerial and ground reconnaissance. Prepare resource assessments for watershed, vegetation, wildlife, cultural, trails and travel corridors.</p> <p>B. Location/ (Suitable) Sites: Assessment areas are throughout the South Fork Fire. Duty Station will be at Yosemite National Park.</p> <p>C. Design/Construction Specifications: Conduct a detailed assessment of burn severity, its impacts to lands and the threats to life and property; protect critical cultural and natural resources; identify and mitigate suppression impacts; and identify potential threats to human safety. Prepare treatment specifications based on findings of assessments. Document findings through reports and GIS data layers. Plan for approval and secure funding from appropriate sources.</p> <p>D. Purpose of Treatment Specifications (relate to damage/change caused by fire): To prepare a comprehensive BAER Plan to manage or mitigate the fire impacts in order to protect life, property, and critical cultural and natural resources.</p>

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).								COST / ITEM
POSITION	BASE 8 RATE /w EBC	BASE 8 HOURS	BASE RATE PAY	OVER TIME RATE	OVER TIME HOURS	OVERTIME PAY	ESTIMATED TRAVEL	TOTAL
BAEL	\$ 78.47	40	\$ 3,138.80	\$ 69.00	53	\$ 3,657.00	\$ 2,200.00	\$ 8,995.80
BAHY	\$ 48.14	64	\$ 3,080.96	\$ 67.06	61	\$ 4,090.66	\$ 623.00	\$ 7,794.62
BABO	\$ 31.73	64	\$ 2,030.72	\$ 47.60	61	\$ 2,903.60	\$ 623.00	\$ 5,557.32
GISS	\$ 50.57	64	\$ 3,236.48	\$ 56.19	61	\$ 3,427.59	\$ 2,000.00	\$ 8,664.07
BAHY (T)	\$ 42.74	64	\$ 2,735.36	\$ 39.39	61	\$ 2,402.79	\$ 2,000.00	\$ 7,138.15
BABO (T)	\$ 36.25	64	\$ 2,320.00	\$ 35.78	61	\$ 2,182.58	\$ 623.00	\$ 5,125.58
BAES	\$ 74.12	64	\$ 4,743.68	\$ 82.35	61	\$ 5,023.35	\$ 2,000.00	\$ 11,767.03
TOTAL PERSONNEL SERVICE COST								\$55,043
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.								
None								
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST								0
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):								
None								
TOTAL MATERIALS AND SUPPLY COST								0
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):								
See table above								
TOTAL TRAVEL COST								0

CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
None	
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2017	Immediately		F				\$55,043
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

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TOTAL COST BY JURISDICTION

JURISDICTION				UNITS TREATED	COST
NPS					\$55,043
TOTAL COST					\$55,043

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Implementation Leader & Administrator	PART E Spec-#	P2
NFPORS TREATMENT CATEGORY*	Administration	FISCAL YEAR(S) (list each year):	2018
NFPORS TREATMENT TYPE *	Contract Administration	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Wawona	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>E. General Description: Leader and administrative supervision position for the coordination and oversight of the South Fork Fire BAER Plan for NPS lands in Yosemite National Park.</p> <p>F. Location/ (Suitable) Sites: Treatment areas are distributed throughout the burned area. Duty Station will be at Yosemite National Park.</p> <p>G. Design/Construction Specifications: The Project Implementation Leader is responsible for the oversight of the BAER plan. The Leader will write Statements of Work for contracts or agreements; provide oversight and program review; write proposed plan revisions; and solicit supplemental funding requests. They will also facilitate coordination between all the different specifications, contractors, park and regional staff.</p> <p>H. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to facilitate the early stages of the South Fork Fire BAER to include requisitioning, and contracting.</p>
--

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
One GS-11/5 at four pay periods with 27% employee benefit costs	\$10,200
TOTAL PERSONNEL SERVICE COST	\$10,200
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2018	10/1/2018	9/30/2018	F				\$10,200
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

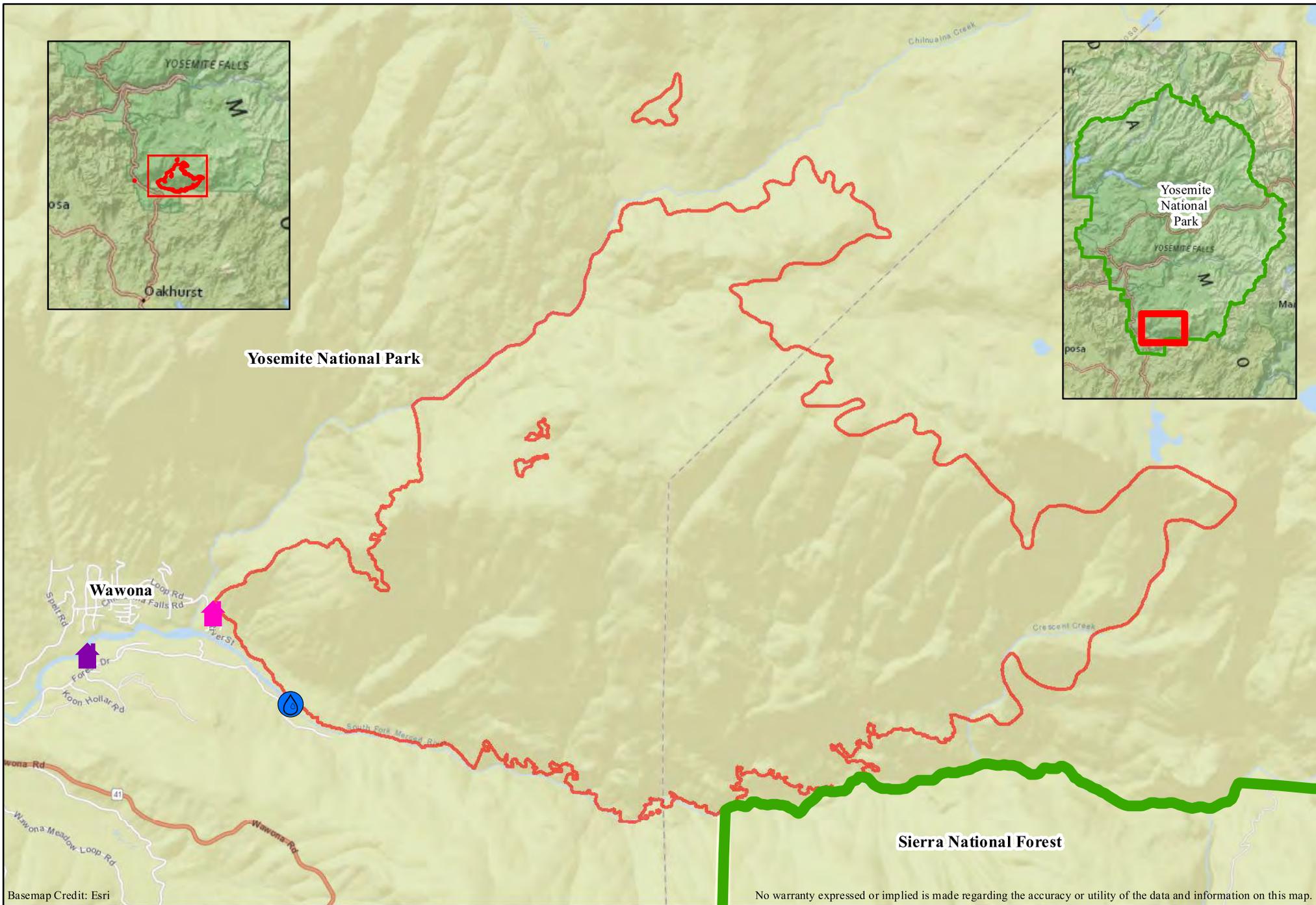
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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS		\$10,200
TOTAL COST		

MAPS AND FIGURES





Yosemite National Park

Sierra National Forest

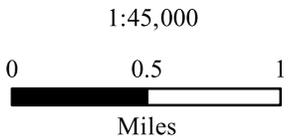
Wawona

Basemap Credit: Esri

No warranty expressed or implied is made regarding the accuracy or utility of the data and information on this map.

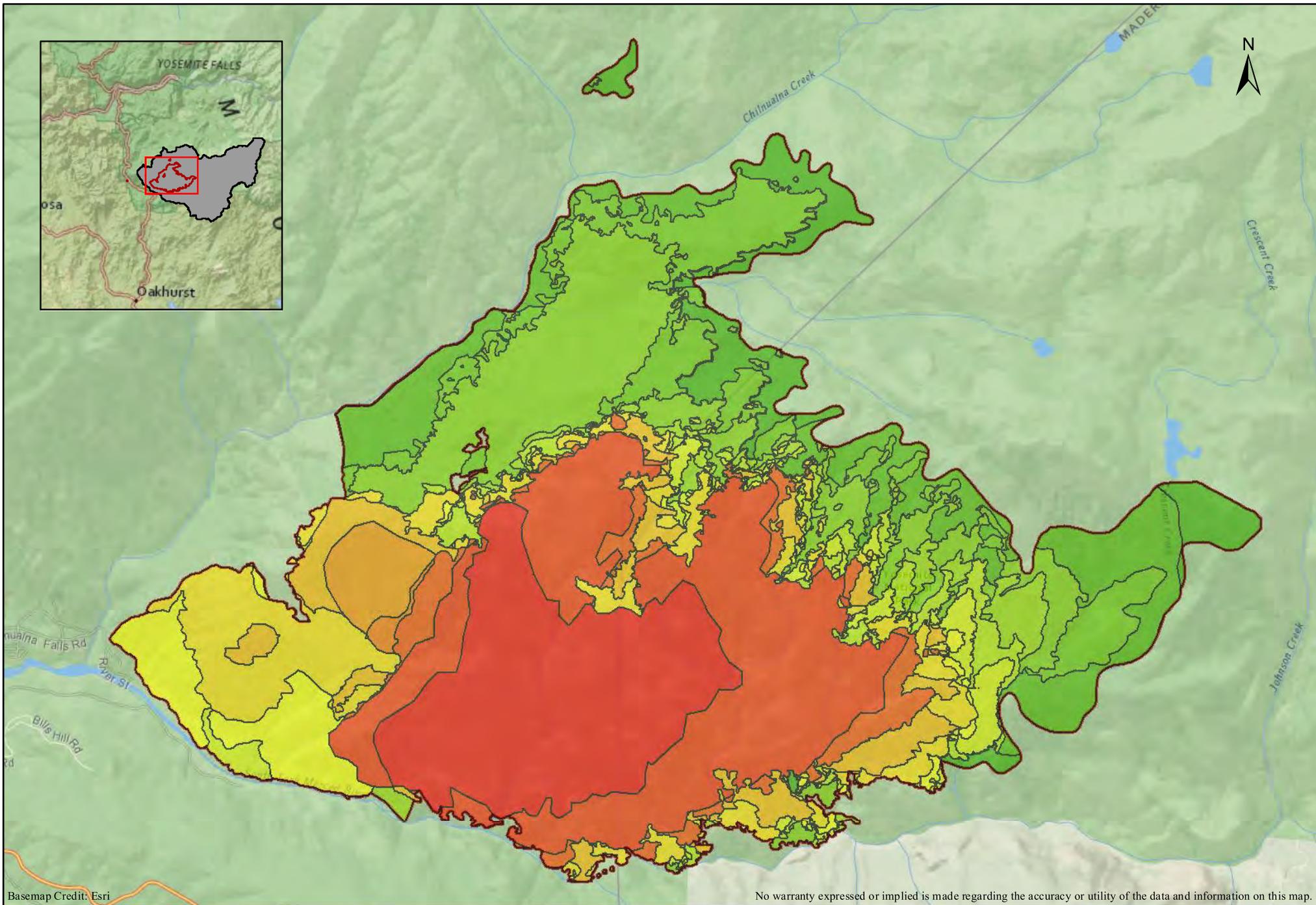


South Fork Fire Vicinity Map



- YOSE_boundary
- Fire Perimeter - 6,673 Acres

- ▲ Comfort House
- ▲ Homes
- 💧 Intake

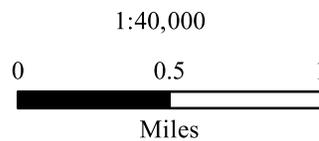


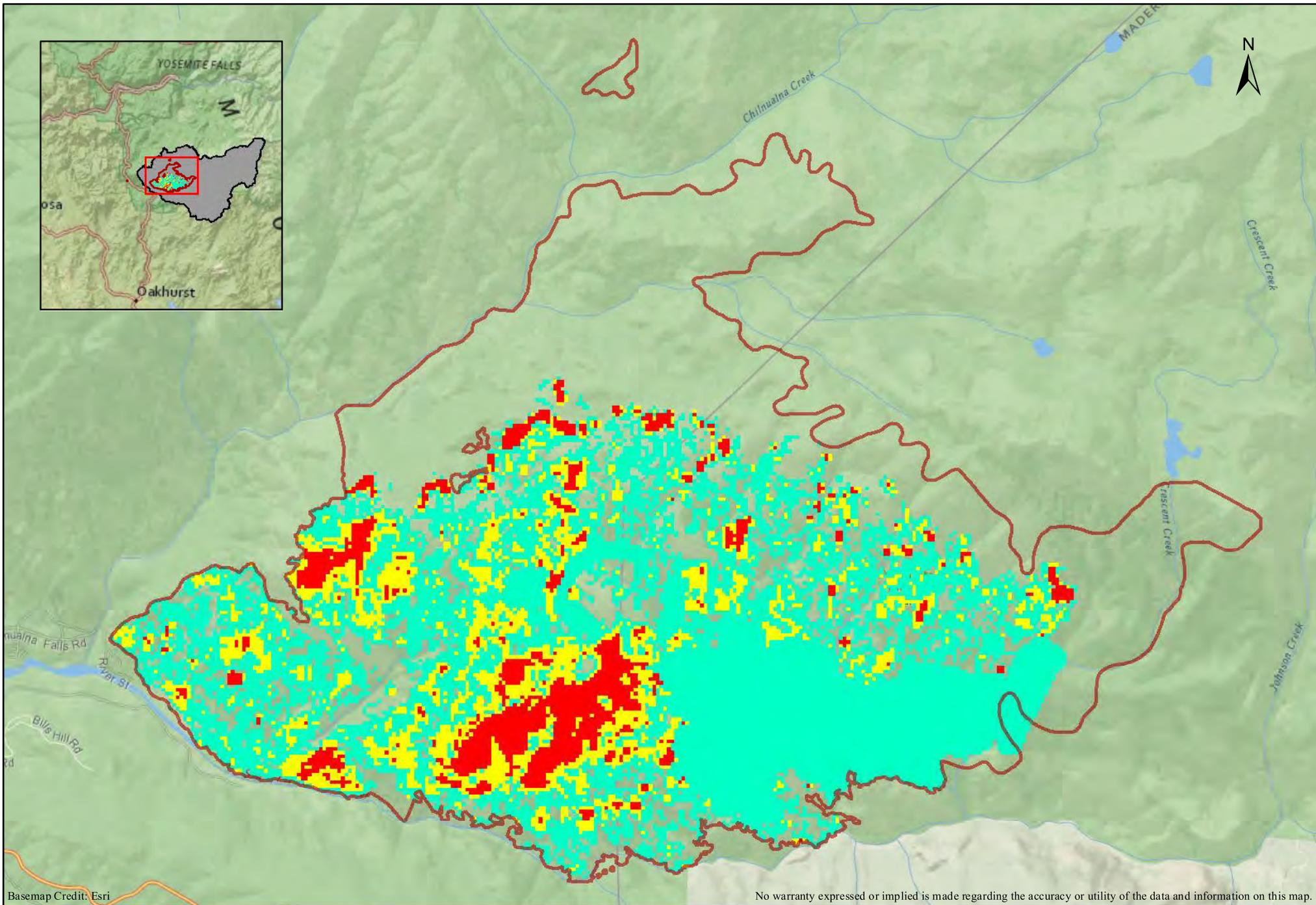
Basemap Credit: Esri

No warranty expressed or implied is made regarding the accuracy or utility of the data and information on this map.

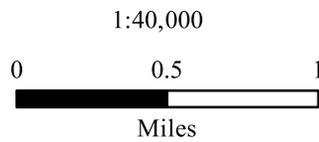


South Fork Fire Progression

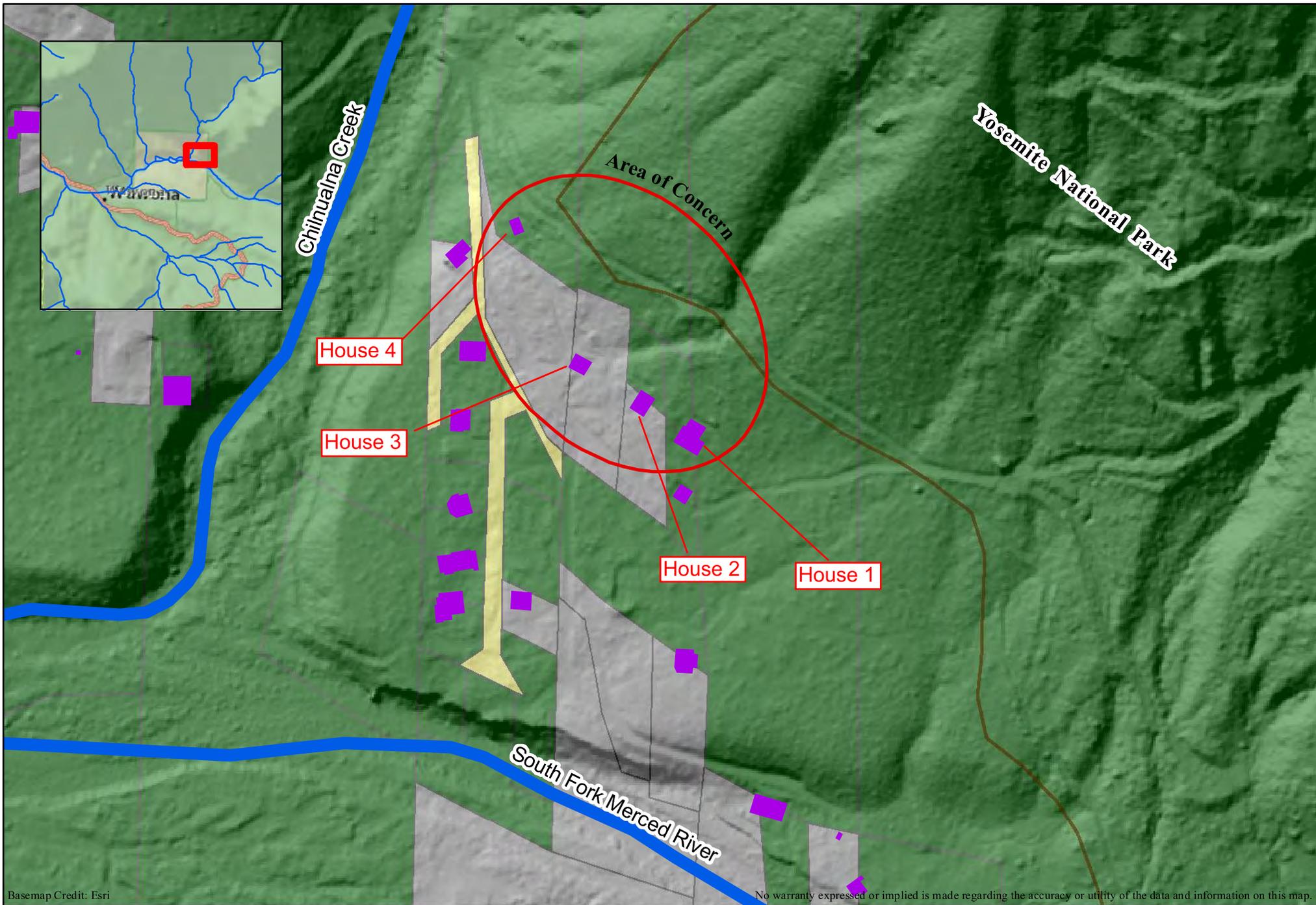




South Fork Fire Soil Burn Severity



- Fire Perimeter - 6,673 Acres
- Moderate Soil Burn Severity
- Low Soil Burn Severity
- High Soil Burn Severity

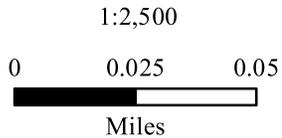


Basemap Credit: Esri

No warranty expressed or implied is made regarding the accuracy or utility of the data and information on this map.

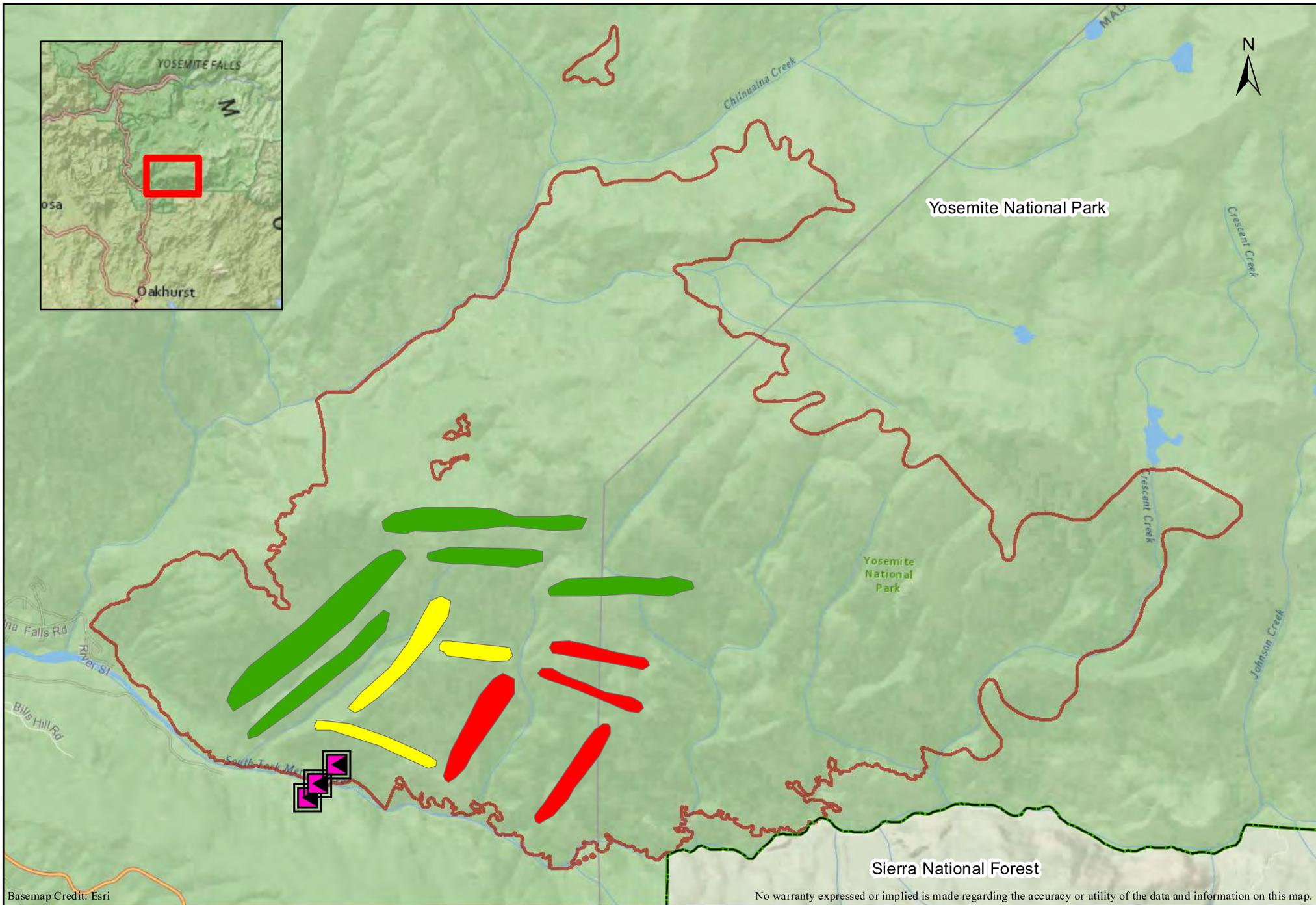


Chilnualna Houses of Concern

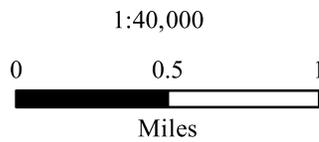


- Fire Perimeter - 6,673 Acres
- Flowline
- Buildings
- Federal Land
- Private Land
- Public Land

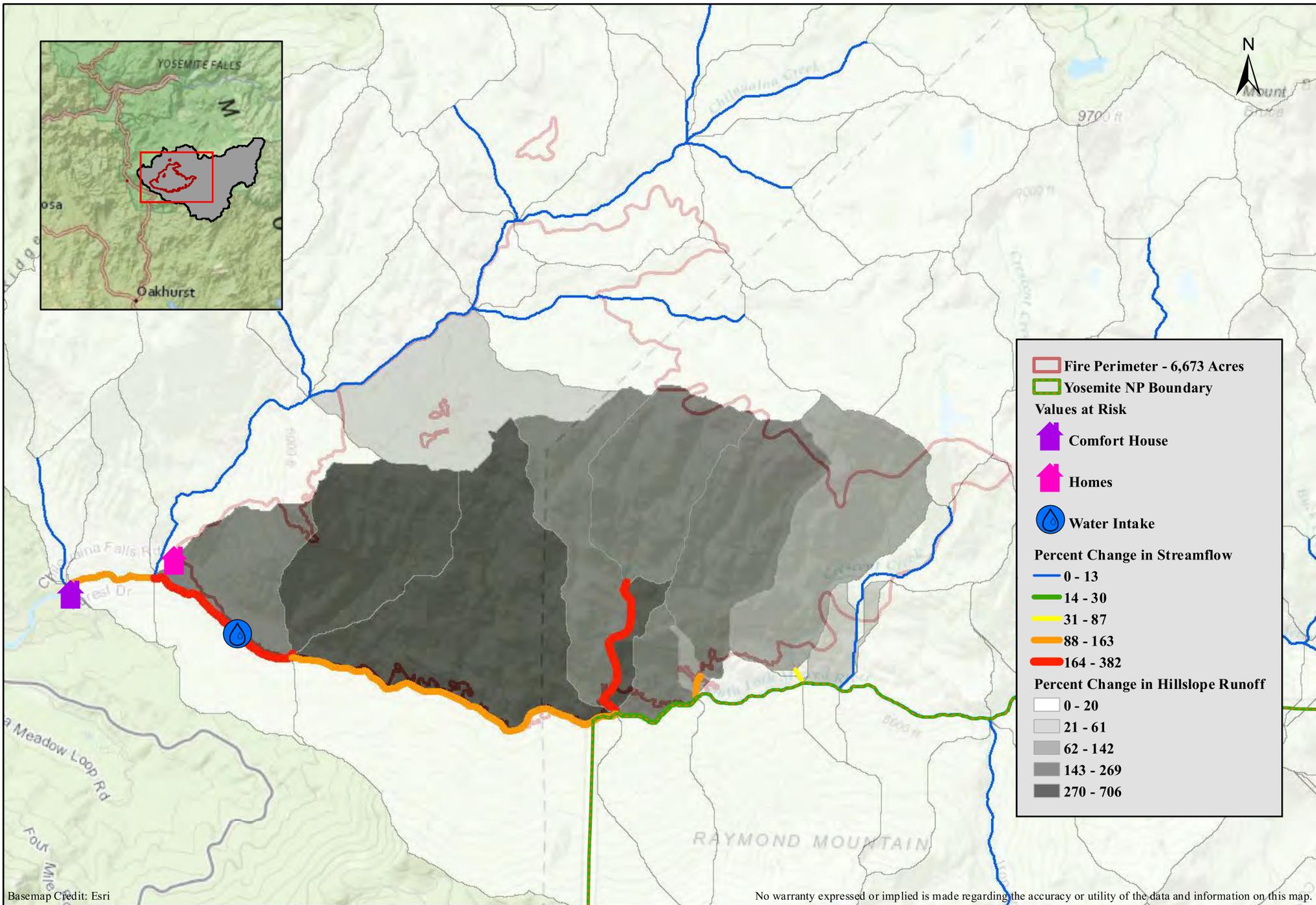




South Fork Fire Retardant Drops



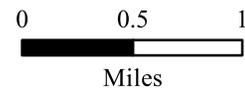
- Yosemite Boundary
- Fire Perimeter - 6,673 Acres
- 8/13/2017 Drops
- 8/14/2017 Drops
- 8/15/2017 Drops
- Retardant Detected

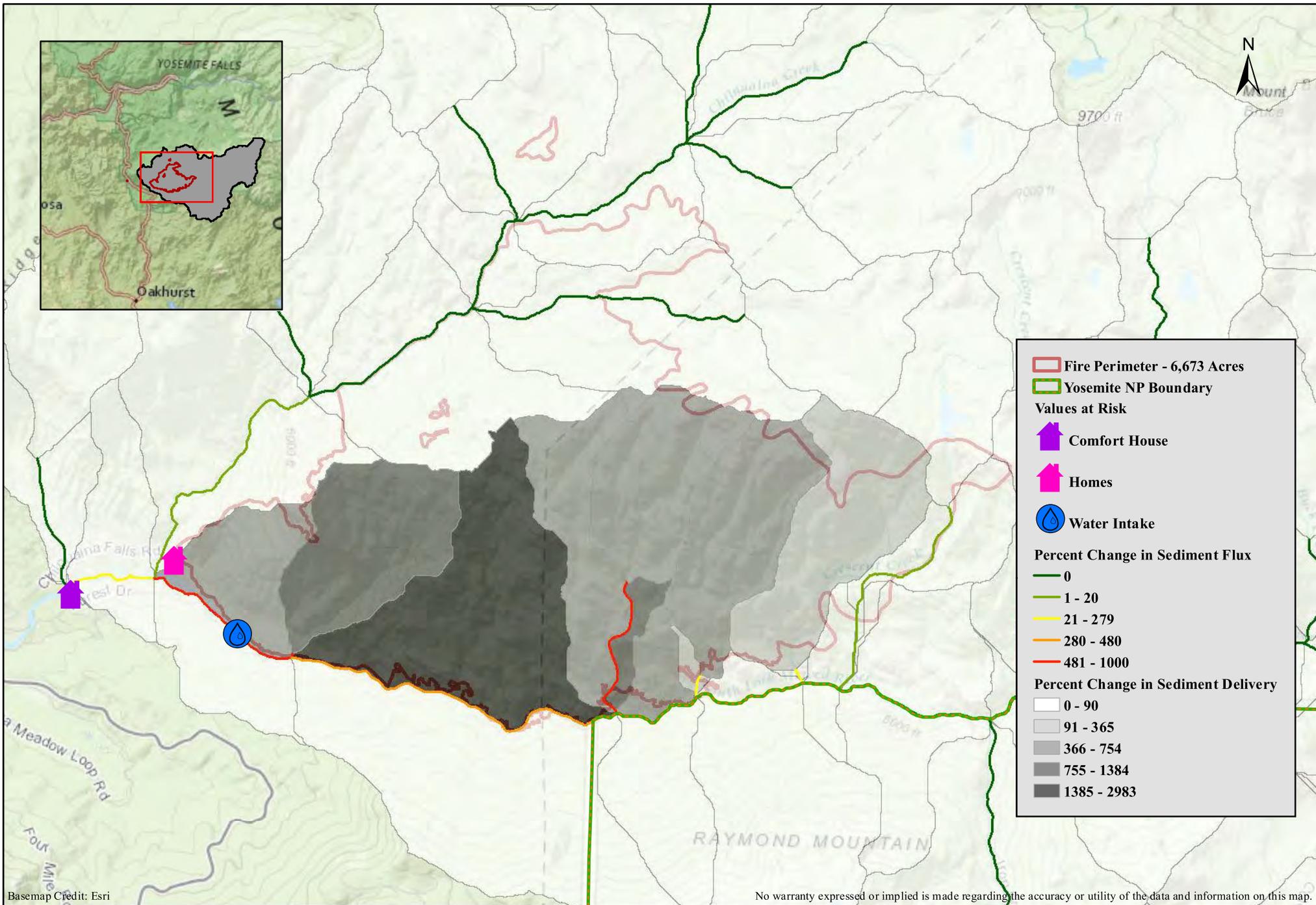


South Fork Storm Response

25 year 1 hour (1.33") Design Storm

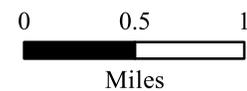
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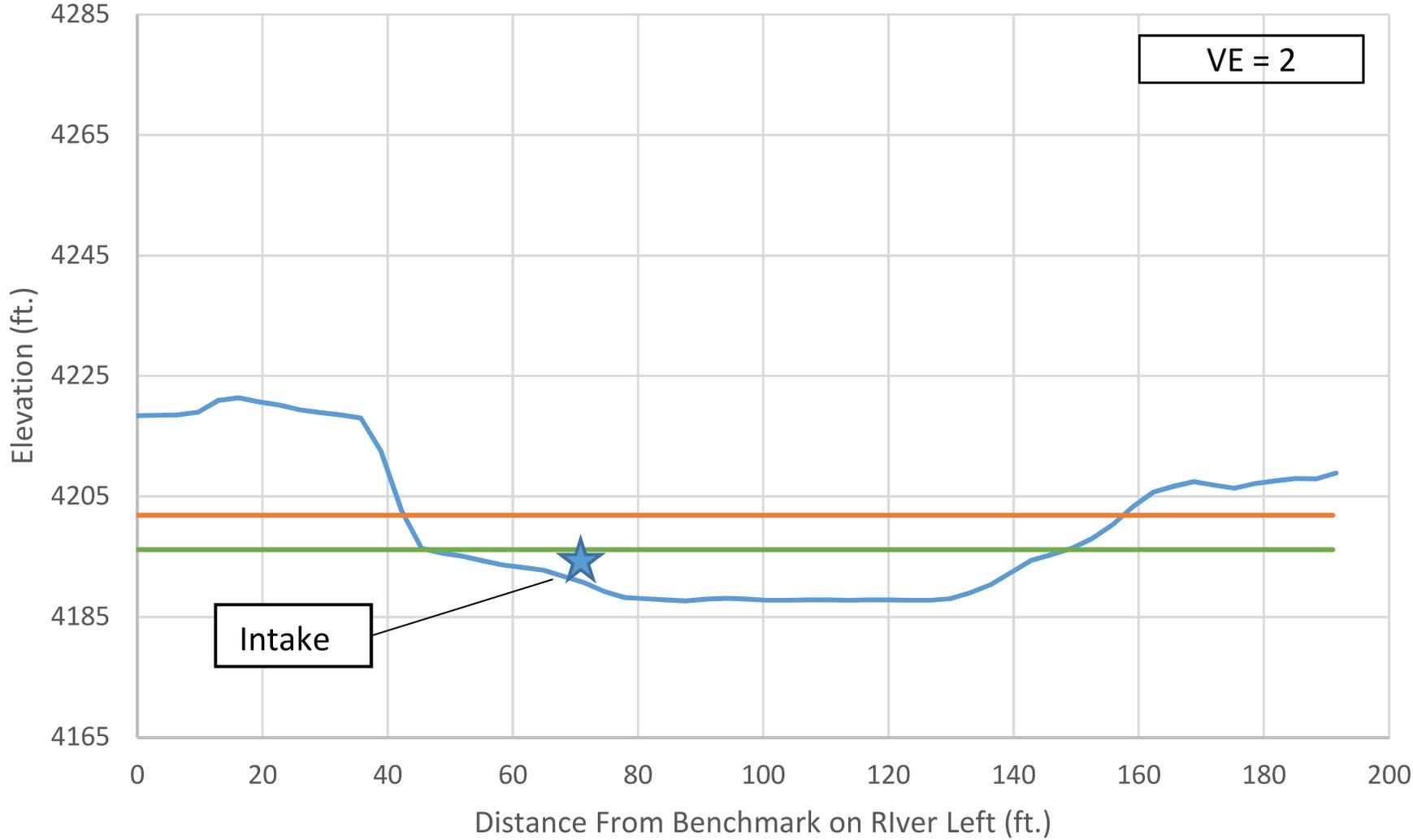


South Fork Storm Response - Sediment 25 year 1 hour (1.33") Design Storm

1:55,000

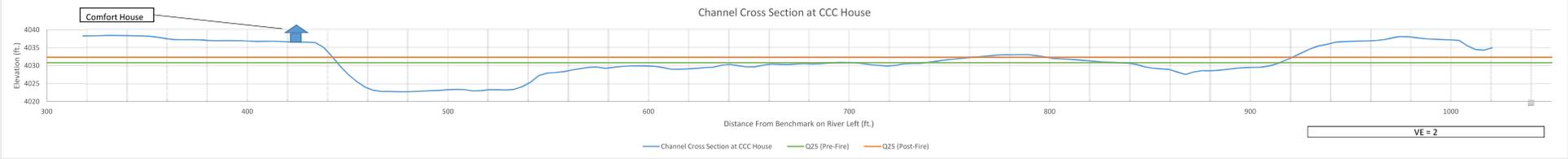


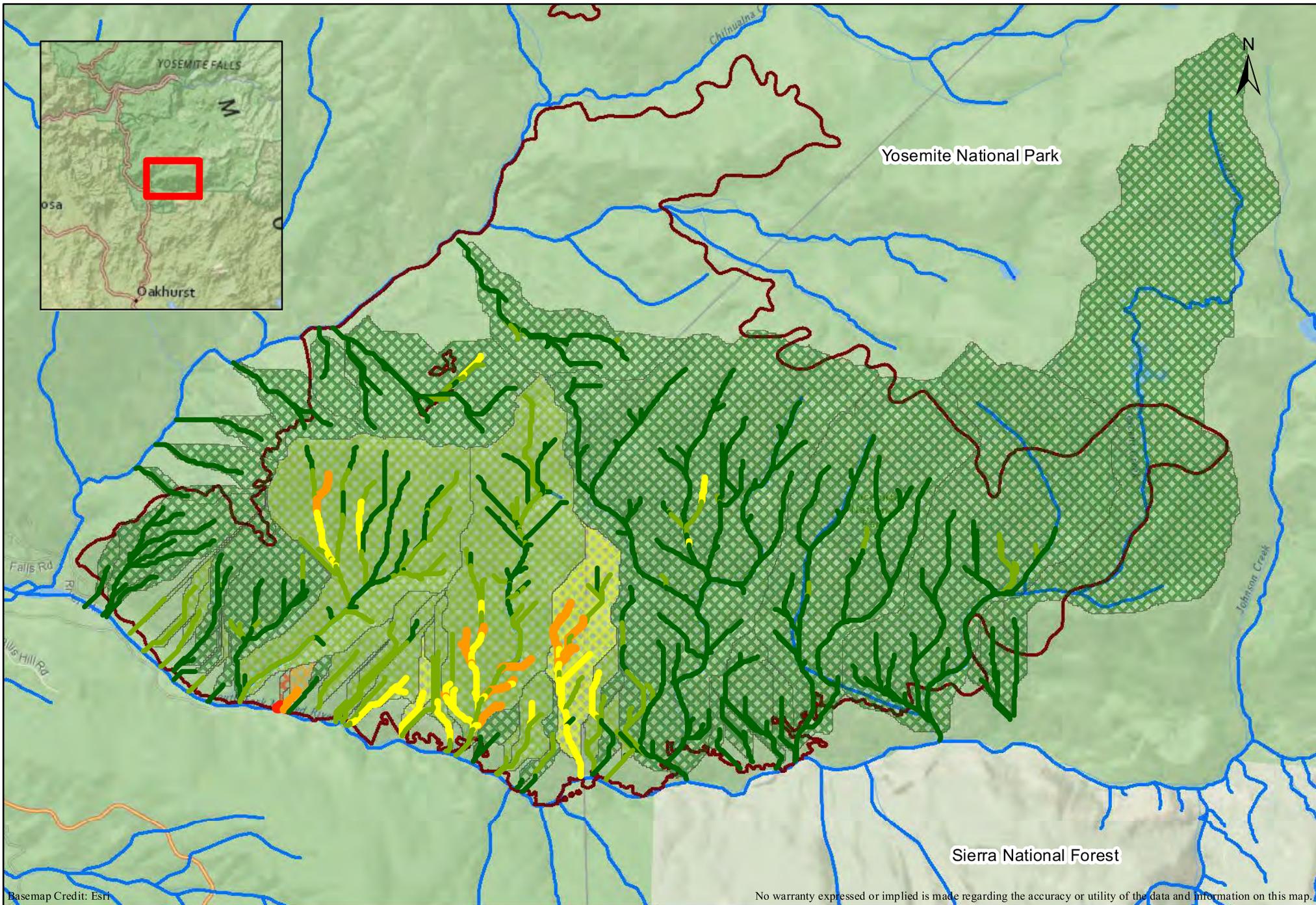
Channel Cross Section at Wawona Water Intake



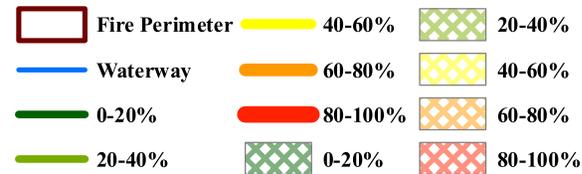
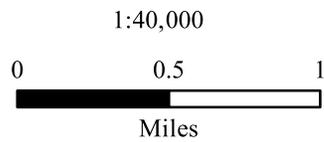
— Channel Cross Section at Intake — Q25 (Pre-Fire) — Q25 (Post-Fire)

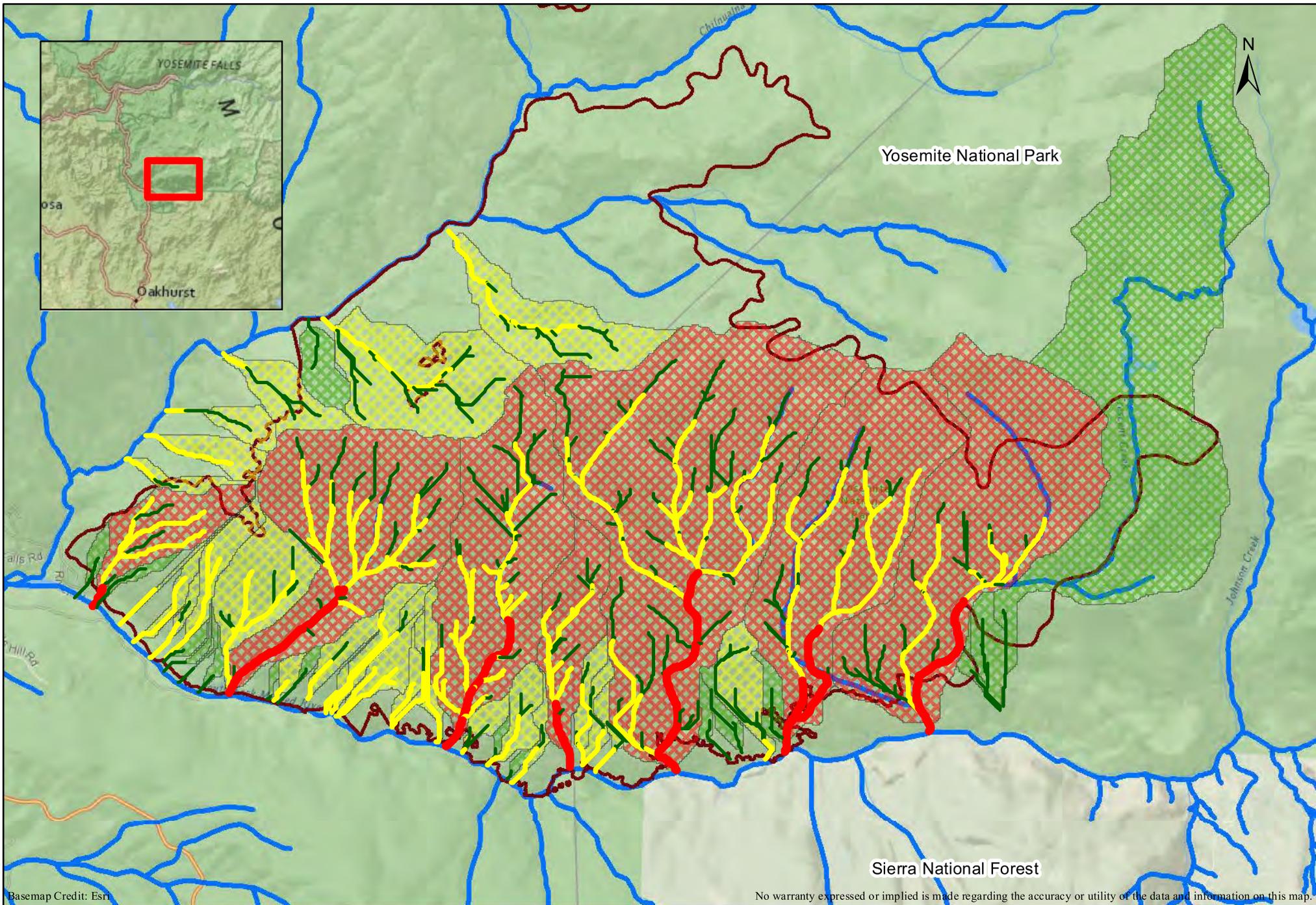
Channel Cross Section at CCC House



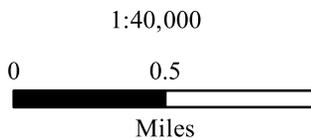


**South Fork Fire
Debris Flow Proability
15 minute 24 mm rainfall**

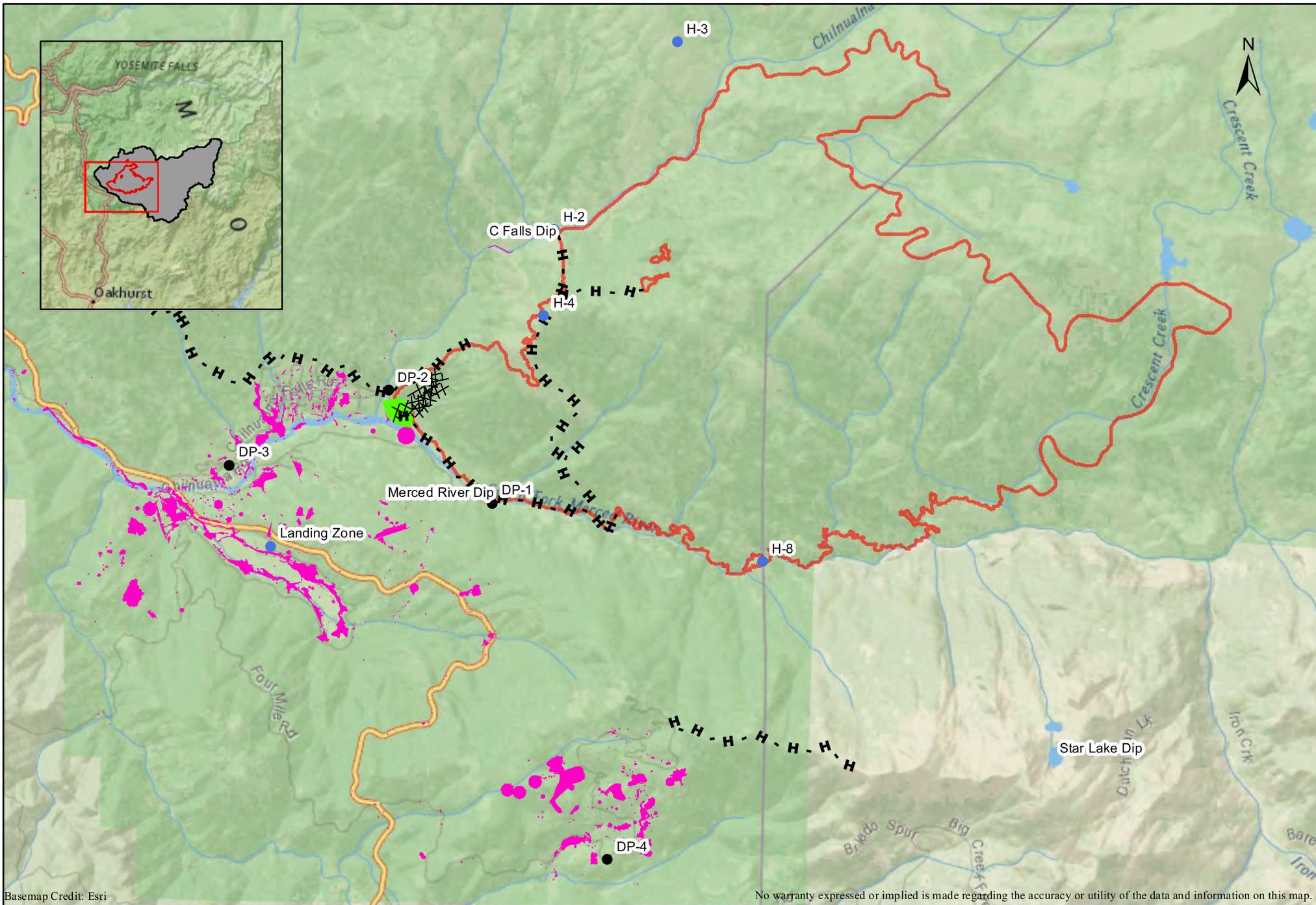




South Fork Fire
Debris Flow Volume Estimates
15 minute 24mm rainfall



- | | | |
|------------------------|-------------------------------|-------------------------------|
| Fire Perimeter | 1,000-10,000 m ³ | 1,000-10,000 m ³ |
| Waterway | 10,000-100,000 m ³ | 10,000-100,000 m ³ |
| < 1,000 m ³ | < 1,000 m ³ | |

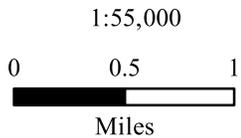


Basemap Credit: Esri

No warranty expressed or implied is made regarding the accuracy or utility of the data and information on this map.



South Fork Fire Invasive Species and Disturbance Map



- Drop Point
- Helispot
- XXXXX Completed Dozer Line
- H - H** Hand Line
- Highly Disturbed Area
- Known Invasive Plant Infestation
- Fire Perimeter - 6,673 Acres