

Union Pacific Railroad Company

**DRAFT**

# **FEATHER RIVER GEOGRAPHIC RESPONSE PLAN**

February 2016



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- B. UPRR Hazardous Material Emergency Response Plan
- C. BNSF Haz Mat Release Checklist
- D. Representative Water Flow Data – North Fork
- E. Native American Contact List

## ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis U.S., Inc.
BNSF	BNSF Railway Company
CDFW	California Department of Fish and Wildlife
cfs	Cubic Feet per Section
EU	Environmental Unit
FOSC	Federal On-Scene Coordinator
GRP	Geographic Response Plan
ICS	Incident Command System
NIMS	National Incident Management System
NRDA	Natural Resource Damage Assessment
FOSC	Federal On-Scene Coordinator
ppm	parts per million
RWQCB	Regional Water Quality Control Board
SOSC	State On-Scene Coordinator
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

## NOTIFICATION PHONE CALLS

**Local Emergency Response Agencies**

**9-1-1**



**UPRR – Response Management Communications Center**

**888-877-7267**



**UPRR Responder Track**



**Agency Notification Track**



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**CA Emergency Management Agency**

**800-852-7550 or 916-845-8911**



**National Response Center**

**800-424-8802**

### **Contracted Oil Spill Response Organizations & Response Contractors**

Patriot Environmental – 800-624-9136

NRC Environmental – 800-337-7455

Clean Harbors – 800-645-8265

United Pumping Services – 626-961-9326

H2O Environmental – 866-420-7745

**See Section 3 for General Reporting Procedures and Additional Notification Requirements**

## 1 INTRODUCTION

On behalf of Union Pacific Railroad (UPRR), Arcadis U.S., Inc. (Arcadis) has developed this Geographic Response Plan (GRP) for portions of the North Fork and the Middle Fork of the Feather River complex in Plumas and Butte Counties, California. This GRP presents plans, procedures, and field guides to be used by emergency response personnel to rapidly and efficiently address releases to the Feather River.

Geographic Response Plans are part of the hierarchy of plans that guide spill response, primarily focused on oil spills on water, though this GRP includes response information applicable to any spill response in the covered area. The GRP includes tactical response strategies tailored to the covered areas of the North Fork and Middle Fork of the Feather River. The GRP has two main objectives:

- To identify sensitive natural, cultural, or significant economic resources at risk of injury from an incident.
- To describe and prioritize response strategies in an effort to reduce injury to the resources at risk.

### 1.1 Area Overview Maps

The following figures provide a geographic overview of the area of the Feather River covered by the GRP. Response area maps in Section 4.3 provide data on specific areas identified for response actions and staging areas.

The following figures provide an overview of the GRP area:

Figure 1 – Site Vicinity Map

Figure 2 – GRP Study Area Map

Figure 3 – Railroad Division Map

Figure 4 – Response Strategy Location Map

### 1.2 Purpose of this Plan

This GRP was developed to facilitate response preparedness and to expedite incident response activities in the GRP coverage area. GRPs are intended to assist the response community in maximizing the value of the first 48 to 72 hours of response operations as a formal Unified or Incident Command structure is established and more detailed, incident-specific information is made available to guide response priorities.

This GRP provides access and response operation information to maximize avoidance of impacts to sensitive receptors and to facilitate a unified and consistent framework for response activities. Sensitive natural, cultural, and economic resources in the area are addressed, and logistical needs such as lodging and equipment resources, staging areas, and hospitals are identified.

### 1.3 Response Strategy Selection

The bulk of this plan is contained in Section 4, which describes GRP response strategies that should be implemented based on potential spill origin points and their proximity to sensitive resources. It is important to note that the nature of the steep-walled, narrow, Feather River Canyon significantly affects the response strategies presented in this GRP. In a traditional GRP, response strategies are prioritized based on proximity to sensitive receptors; the highest priority strategies are those that will protect the most sensitive receptors. For the Feather River GRP, the response strategies are largely prioritized by available access points. The ability to protect sensitive resources is dictated by the nearest point to access the river and to safely deploy containment and collection infrastructure in a timely manner.

Section 4 includes information on response areas, staging areas, and response techniques for various conditions. After a release occurs, the booming recovery strategies outlined in Section 4 should be implemented as soon as possible. The downstream movement of released material and the time it takes to mobilize response resources to deploy GRP strategies must always be considered when setting strategy implementation priorities.

The strategies discussed in this plan have been designed primarily for use with floating material. However, the use of bottom nets/seines, dredges, or other strategies to contain and recover materials that sink or suspend in the water column are equally applicable and the priority structure is the same because of the limited access to the river. Non-floating material is addressed in Section 6.1.2.

### 1.4 Plan Organization

This GRP is organized as follows:

- Section 1, Introduction, explains the GRP development process.
- Section 2, Site Description, describes the area covered by this GRP, including physical features, hydrology, river conditions and flow/currents, winds, climate, and risks.
- Section 3, Emergency Notification Procedures, Questions and Answers, and Contact Information, provides the contacts and contact procedures for response planning and implementation.
- Section 4, Response Strategies and Priorities, describes oil spill strategies, response priorities, and strategy maps.
- Section 5, Response Techniques and Selection, describes response techniques for various environmental conditions.
- Section 6, NOAA - Review/Select Potential Options and Products
- Section 7, Resources at Risk, describes the natural, cultural, and economic resources at risk from oil spills and discusses flight restriction zones, hazing, oiled wildlife, and shoreline pre-cleaning.
- Section 8, Logistics, identifies resources and provides the information needed to support logistical planning during the initial phase of an oil spill response.
- Section 9, References, lists the sources used in the preparation of this GRP.

Standardized response language is used throughout this GRP to avoid confusion in terminology. National Incident Management System (NIMS) Incident Command System (ICS) terminology definitions are provided in Appendix A.

## **1.5 Plan Development Methodology and Contributions**

**ContributorListToBeInserted**

### **General Response Plan Development Process**

GRPs are developed through communications and meetings with emergency response planning experts; response contractors; local, state, and federal resource agencies; industry; local governments; Native American representatives; and other stakeholders. Participants identify potential receptors in the area and develop response strategies to avoid and minimize impact to those resources, and to ensure an efficient and effective response operation.

After compiling information on sensitive resources in the North Fork and Middle Fork Feather River areas, site visits were conducted to gather data, assess site access, and determine response strategies. The anticipated effectiveness of various strategies was reviewed, modifications were made as necessary, potentially unsafe or ineffective strategies were removed from consideration, and new strategies were added to the plan. After receipt of comments on the draft plan by participating agencies, stakeholders, and the public, a final version of the GRP will be produced.

### **Contributors**

This GRP has been developed for portions of the Feather River complex through the efforts and cooperation of Union Pacific Railroad, BNSF Railroad, CA Department of Fish and Wildlife Office of Oil Spill Prevention and Response, and U.S. EPA. **TOBEADDED**

## 2 SITE DESCRIPTION

The Feather River is the principal tributary of the Sacramento River, in the Sacramento Valley of Northern California. The river's main stem is about 71 miles (114 km<sup>2</sup>) long. Its length to its most distant headwater tributary is about 220 miles (350 km<sup>2</sup>). Its drainage basin is about 6,000 square miles (16,000 km<sup>2</sup>). The main stem Feather River begins in Lake Oroville, where its four long tributary forks join together—the South Fork, Middle Fork, North Fork, and West Branch Feather Rivers. These and other tributaries drain part of the northern Sierra Nevada, and the extreme southern Cascades, as well as a small portion of the Sacramento Valley. The river's drainage basin above Lake Oroville is 3,222 square miles (8,340 km<sup>2</sup>), or about 53% of the whole.

This GRP addresses portions of the North Fork and the Middle Fork of the Feather River complex (Figure 1 and Figure 2). Each fork of the river can be traced up a naturally created river valley though numerous man-made reservoirs and dams have been created, particularly on the North Fork. Various streams and creeks feed into these forks extending further up into the mountains. The North Fork starts at Mount Lassen then pools into Lake Almanor before continuing down the mountain. It is then joined by the East Branch North Fork which empties out of Antelope Lake in the Diamond Mountains. The Middle Fork empties out of Lake Davis and Frenchman's Lake, both also in the Diamond Mountains. Below the Oroville dam, the Feather River is joined by the Yuba and Bear River before it empties into the Sacramento River near the axis of the Central Valley. From there, the Sacramento continues south where it and the San Joaquin River empty into the delta and eventually the San Francisco Bay to the west.

The Upper Feather River Watershed is the major source for the California State Water Project, which delivers water to more than 23 million Californians for urban, industrial, and agricultural water uses. Annual runoff provides over 1,400 MW of hydroelectric power.

The Feather River Basin watershed includes all land area where any and all of the water that is under it, or drains off of it, will eventually lead to the Feather River. This area spans over 6,000 square miles and encompasses a wide variety of terrain, climate, historic use, and flora and fauna. The mountainous regions of the watershed (approximately 75% of the total) are managed by the Plumas and Tahoe National Forests. The Sacramento Valley portion is predominantly privately owned by agricultural families and companies.

### 2.1 Physical Features

The Feather River Basin watershed lies almost entirely in the Sierra Nevada Mountain range, though some upper branches stretch beyond into the Diamond Mountains. The Sierra Nevada range is composed of a mostly plutonic core of Mesozoic granites surrounded by the partially metamorphic and sedimentary older host rock. Cenozoic volcanics related to the Cascade Range as well as Basin and Range extension cap the northern Sierras and Feather River Basin. The 400 mile (643km) long Sierra Nevada range was uplifted and dips (or tilts) to the west. Because of this, the range is marked by dozens of westerly flowing rivers and hundreds of smaller streams. The Feather River basin has reaches from approximately 9,000 feet (2743m) in elevation the east, to only 100 feet (30m) in the Central Valley to the west. Various ecosystems exist within the watershed which consists of mostly coniferous forest at higher elevations, the Foothill Chaparral zones, and Central Valley grasslands.

At higher elevations, the river and its valleys are often steep and full of boulders and occasionally cut directly into bedrock where deep pools are formed. Numerous dams and hydroelectric power plants can be found in almost every river valley within the watershed. These features pond the water and regulate seasonal and daily flow. Dams also may affect the upstream migration of spawning fish and act as a catchment for down-flowing sediments.

The river valleys are often also marked by roads for vehicle traffic, and wider valleys are often populated. The wider the valley, the more likely it is used for agriculture as well. The reservoirs are usually bounded by campsites and/or private residences.

## **2.2 Hydrology**

In the Feather River Basin, volcanic rocks dominate in the north and west, and granitic and sedimentary rocks dominate in the south (Durrell, 1987). The jointed and layered volcanic rocks have been shown to have a higher permeability (Freeze and Cherry, 1979), allowing deep percolation of water and greater ground-water flow contributions to tributaries in the northern part of the basin. The sedimentary formations have an intermediate permeability contributing to shallow groundwater flow and infiltration. In areas of igneous formations, direct contributions to waterways occurs mainly from surface runoff.

### **2.2.1 Flow Data**

PG&E maintains water flow data at numerous locations along the North Fork of the Feather River. The data is provided below. The USGS provides data on both the North Fork and numerous other points throughout the watershed, however there are no active or inactive USGS monitoring sites the Middle Fork in the area covered by the GRP. The most current USGS data is available using the National Water Information System:

Mapper at: <http://maps.waterdata.usgs.gov/mapper/index.html>.

Representative water flow data provided by PG&E from four locations (from west to east) on the North Fork at Pulga, Grizzly Creek, Rock Creek, and Rich Bar is provided in Appendix D.

## **2.3 Climate and Winds**

The Feather River Basin has a generally Mediterranean climate, with warm, dry summers and cool, wet winters and springs. Precipitation occurs mostly during the winter and spring as rain at lower elevations and as snow generally above 5,000 feet (1524m). Annual precipitation varies from more than 70 inches (178cm) on the wet western slopes to less than 12 inches (30.5cm) on the arid east side where a rain-shadow effect is seen. This allows for diverse vegetation which ranges from productive agricultural lands, grasslands, and oak savannah in the west to dense coniferous forests and riparian zones in the middle elevations, and sparse sage or alpine zones in the east. Prevailing winds from the west and northwest bring air and occasional storms down from higher latitudes. In summer, dry air from the Central Valley may form thunder clouds as it rises up the western face of the Sierra Nevada Range, dropping rain as it moves east.



Daily water flow rates is affected by the numerous dams, but inflowing water rates to the dams is heavily dependent on temperature, especially in the spring. This is when sunlight and air temperature can greatly vary the amount of snowmelt and small-stream movement at higher elevations.

## 2.4 Risk Assessment

The Feather River and its tributaries are important for ecological resources, cultural resources, and in the production of hydroelectricity, irrigation for agriculture, and recreation. Highways, rail lines, dams, logging and commercial facilities near the Feather River and its tributaries represent potential release source points. It's important to note that dams are not and should not be considered as barriers to released material.

**Feather River (North Fork):** There are three dams in addition to those associated with Lake Oroville and the Thermalito Diversion that cross the North Fork of the Feather River in the GRP area: the Rock Creek Dam (just southwest of Belden, CA), Cresta Dam (just southwest of Merlin, CA), and Poe Dam (just northeast of Pulga, CA). The railroad crosses the north fork two times along this stretch, once just southwest of Pulga, CA, and once north of Rock Crest, CA. The railroad also crosses the Thermalito Diversion at Oroville.

**Feather River (Middle Fork):** The Middle Fork is a designated Wild and Scenic River. There are no dams or railroad crossings located on the Middle Fork of the Feather River between the town of Clito and Lake Oroville. Rail lines run immediately adjacent to the river in many locations. Various commercial and industrial facilities are located on or near the Middle Fork of the Feather River near the resort towns of Blairsden and Graeagle. The majority of the Middle Fork in the GRP area is remote and undeveloped other than for logging.

**Creeks/Tributaries:** The railroad crosses creeks that feed into the Feather River 36 times within the GRP area, across 28 individual creeks. There are 36 crossings in the Canyon Subdivision. Additional minor surface flows occur throughout the area associated with the steep topography.

**Lake Oroville:** Lake Oroville is a water supply facility and is the second largest state reservoir in northern California with more than 167 miles of shoreline. Oroville Dam is the tallest dam in the United States, measuring 770 feet high. The lake is at the confluence of the North, Middle, and South Forks as well as the West Branches of the Feather River. There is a railroad crossing below the dam in the Thermalito Diversion.

## **3 EMERGENCY NOTIFICATION PROCEDURES, QUESTIONS AND ANSWERS, AND CONTACT INFORMATION**

This section describes the Notification Procedures for incident response. These procedures are more broadly applicable to anyone reporting a release, whereas the Notification Phone Calls provided above are based on UPRR employees reporting and addressing an incident.

### **3.1 Emergency Notification and Reporting Procedures**

The following information is excerpted directly from the California Hazardous Material Spill/Release Notification Guidance prepared by the California Office of Emergency Services (Cal OES). For additional information visit: <http://www.caloes.ca.gov/FireRescueSite/Pages/Spill-Release-Reporting.aspx>

#### *California Hazardous Material Spill/Release Notification Guidance*

This guidance summarizes pertinent emergency notification requirements. For precise legal requirements, review specific laws and regulations.

This guidance applies to all significant releases of hazardous materials. Refer to the Safe Drinking Water and Toxic Enforcement Act of 1986, better known as Proposition 65, and §9030 of the California Labor Code for additional reporting requirements.

#### **3.1.1 INCIDENT NOTIFICATION - Questions and Answers**

Q: What are the emergency notification requirements in case of a spill or release of hazardous materials?

A: All significant releases or threatened releases of a hazardous material, including oil and radioactive materials, require emergency notification to government agencies. The law specifies who must notify, what information is needed, which government agencies must be notified, when they must be notified, and the release quantity or basis for the report.

Q: Who is obligated to notify?

A: Requirements for immediate notification of all significant spills or threatened releases cover: Owners, Operators, Licensee, Persons in Charge, and Employers. Notification is required regarding significant releases from: facilities, vehicles, vessels, pipelines and railroads.

1. State law: Handlers, any employees, authorized representatives, agents or designees of handlers shall, upon discovery, immediately report any release or threatened release of hazardous materials (Health and Safety Code §25507).
2. Federal law: Notification to the National Response Center is required for all releases that equal or exceed federal reporting quantities:
  - (EPCRA) Owners and Operators to report; and
  - (CERCLA) Person in Charge to report

Q: What information is required?

A: State notification requirements for a spill or threatened release include (as a minimum):

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- Identity of caller
- Location, date and time of spill, release, or threatened release
- Location of threatened or involved waterway, stormdrains, or diversions.
- Substance, quantity involved, and isotope if necessary.
- Chemical name (if known, it should be reported if the chemical is extremely hazardous)
- Description of what happened

Federal notification requires additional information for spills (CERCLA chemicals) that exceed federal reporting requirements, which includes:

- Medium or media impacted by the release
- Time and duration of the release
- Proper precautions to take
- Known or anticipated health risks
- Name and phone number for more information

Q: Who must be notified?

A: Notification must be given to the following agencies:

- **The Local Emergency Response Agency: 9-1-1** or the Local Fire Department,
- **The Certified Unified Program Agency (CUPA) / Administering Agency (AA) / Participation Agency (PA)**, if different from local fire.

Note: The CUPA for Butte County and Plumas County may designate a call to the 911 emergency number as meeting the requirement to call the CUPA.

Local CUPA Phone Numbers (may not be staffed 24 hours/day):

PlumasCountyEnvironmentalHealth(CUPA)–(530)283-6355;AfterHours:(530)283-6300

ButteCountyEnvironmentalHealth(CUPA)–(530)538-7281

AND

- **The California Emergency Management Agency, California State Warning Center**  
**Phone:** (800) 852-7550 or (916) 845-8911

And, if appropriate:

- **The California Highway Patrol** - Phone: 9-1-1 (The California Highway Patrol must be notified for spills occurring on highways in the State of California.)

In addition, as necessary, one or more of the following:

1. **National Response Center**  
If the spill equals or exceeds CERCLA Federal Reportable Quantities:  
Phone: (800) 424-8802
2. **California Fish and Wildlife Service – Office of Spill Prevention & Response (OSPR)**  
Redding Office: (530) 225-2300  
Sacramento Office: (916) 445-9338

- 3. Public Utilities**  
Pacific Gas & Electric  
Caribou Control Center: (916) 283-4990  
Rock Creek Control Center: (916) 892-4502
- 4. Railroads**  
Union Pacific Railroad: Response Management Communication Center (RMCC): 888-877-7267  
BNSF: Resource Operations Hotline: (800) 832-5452
- 5. Regional Water Quality Control Board (RWQCB)**  
Release potentially affecting water: Phone appropriate DTSC Regional Office (Sacramento): (916) 255-3545
- 6. U.S. Environmental Protection Agency**  
Region 9 Duty Officer for oil or chemical spills: (800) 300-2193
- 7. California Occupational Safety and Health Administration (Cal/OSHA)**  
For Serious Injuries or Harmful Exposures to Workers: Cal/OSHA District Office (Redding, CA): (530) 224-4743
- 8. California Department of Public Health, Radiological Health Branch**  
All radiological incidents. Phone: California State Warning Center
- 9. Department of Toxic Substances Control (DTSC)**  
Hazardous waste tank system releases: Secondary containment releases: Phone appropriate DTSC Regional Office (Sacramento): (916) 255-3545
- 10. Department of Conservation, Division of Oil Gas and Geothermal Resources (DOGGR)**  
Release of Oil and Gas at a Drilling and Production Facility:  
Phone the appropriate DOGGR District Office (Sacramento): (916) 445-9686
- 11. Native American Representatives** – See Appendix E.

Notification must also be made to the California Emergency Management Agency, California State Warning Center for the following:

- Any spill or other release of one barrel or more of petroleum products at a tank facility
- Discharges of any hazardous substances or sewage, into or on any waters of the state
- Discharges that may threaten or impact water quality
- Any found or lost radioactive materials
- Discharges of oil or petroleum products, into or on any waters of the state
- Hazardous Liquid Pipeline releases and every rupture, explosion or fire involving a pipeline.

Q: When must emergency notification be made?

A: All significant spills or threatened releases of hazardous materials, including oil and radioactive materials, must be immediately reported. Notification shall be made by telephone. Also, written Follow-Up Reports are required within 7 days if the release equals or exceeds the Federal Reportable Quantities.

Q: When are written reports required?

A: Different laws have different time requirements and criteria for submitting written reports. After a spill or release of hazardous materials, including oil and radioactive materials, immediate verbal emergency

notification should be followed up as soon as possible with a Written Follow-Up Report, if required, to the following agencies:

1. California Emergency Management Agency, Section 304 Follow-up Report
2. The responsible regulating agency such as:
  - California Department of Public Health, Radiological Health Branch, Radiological Incident Reporting.
  - Department of Toxic Substances Control, Facility Incident or Tank System Release Report
  - Cal/OSHA, serious injury or harmful exposure to workers
3. U.S. DOT and DOE, transportation-related incidents.

Federal and state laws provide for administrative penalties of up to \$25,000 per day for each violation of emergency notification requirements. Criminal penalties may also apply.

Q: What statutory provisions require emergency notification?

A: Many statutes require emergency notification of a hazardous chemical release, including:

- Health and Safety Code §25270.8, 25507
- Vehicle Code §23112.5
- Public Utilities Code §7673 (PUC General Orders #22-B, 161)
- Government Code §51018, 8670.25.5 (a)
- Water Code §13271, 13272
- California Labor Code §6409.1 (b)
- Title 42, U. S. Code §9603, 11004

Q: What are the statutory provisions for Written Follow-Up Reports?

A: Written reports are required by several statutes, including:

- Health and Safety Code §25503 (c) (9)
- California Labor Code §6409.1 (a)
- Water Code §13260, 13267
- Title 42, U. S. Code §11004
- Government Code §51018

In addition to statutes, several agencies have notification or reporting regulations:

- Title 8, CCR, §342
- Title 13, CCR, §1166
- Title 14, CCR, §1722 (h)
- Title 17, CCR, §30295
- Title 19, CCR, §2703, 2705
- Title 22, CCR, §66265.56 (j), 66265.196 (e)
- Title 23, CCR, §2230, 2250, 2251, 2260
- Title 40, CFR, §263 esp. Section §263.30
- Title 49, CFR, §171.16

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State Regulations: <http://www.leginfo.ca.gov>

Federal Regulations: <http://www.gpo.gov/fdsys/>

Federal Reportable Quantities: <http://www.epa.gov/superfund/policy/release/rq/index.htm>

See California Labor Code §9030 and the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) for other reporting requirements.

Q: What is a “Hazardous Material”?

A: “Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or threatened hazard to human health and safety or to the environment, if released into the workplace or the environment” (Health and Safety Code, §25501 (S)).

Q: What is a release?

A: “Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency” (Health and Safety Code, §25501 (s) and CERCLA §101 (22))

Q: What hazardous material releases require notification?

A: All significant spills, releases, or threatened releases of hazardous materials must be immediately reported.

In addition, all releases that result in injuries, or workers harmfully exposed, must be immediately reported to Cal/OSHA (CA Labor Code §6409.1 (b)). Notification covers significant releases or threatened releases relating to all of the following:

1. “Hazardous Materials” as defined by §25501(S), California Health and Safety Code
2. “Hazardous Substances” as listed in 40 CFR §302.4; the Clean Water Act §307, §311; CERCLA §102; RCRA §3001; Clean Air Act §112; Toxic Substances Control Act §7 and as defined by California Health and Safety Code §25501 (q)
3. “Extremely Hazardous Substances” as required by: Chapter 6.95 Health and Safety Code, EPCRA §302
4. “Radioactive Materials” as required by Title 17 §30100.
5. Illegal releases of hazardous waste
6. Employee exposures resulting in injuries: California Labor Code §6409.1 (b)
7. “Sewage” as required by Title 23 §2250 (a) (Reportable quantity is 1,000 gallons or more for municipal and private utility waste water treatment plants).

### ACRONYMS:

AA	Administering Agency
Cal EMA	California Emergency Management Agency
Cal/OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations

CDPH	California Department of Public Health CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act (aka Superfund)
CFR	Code of Federal Regulations CHP - California Highway Patrol
CUPA	Certified Unified Program Agency DOGGR - California Division of Oil, Gas, and Geothermal Resources
DTSC	Department of Toxic Substances Control EPCRA - Emergency Planning and Community Right-to-Know Act (SARA Title III) PA - Participation Agency
PUC	Public Utilities Commission
RCRA	Resource Conservation and Recovery Act U.S.DOT - Federal Department of Transportation

## **3.2 Railroad Emergency Response Notification Procedures**

In the event of a derailment or fixed facility railroad incident, railroad personnel and officers shall contact the Union Pacific RMCC and BNSF ROC/SID to report incidents as described above.

All material releases should be reported to the UPRR Response Management Communication Center (RMCC) at 888-877-7267 and the BNSF Resource Operations Center (ROC) at 800-832-5452 and Service Interruption Desk (SID) at 817-352-2833. The UPRR RMCC and BNSF ROC/SID are responsible for notifying the appropriate federal, state, and local agencies. UPRR and BNSF responders may also need to coordinate response activities with local municipal, county, state, tribal, and/or stakeholder organizations (i.e., Pacific Gas and Electric).

In the event of a release, UPRR procedures require UPRR personnel, who first detect a release or are involved in the incident, to take immediate action to notify the RMCC at 888-877-7267 in accordance with UPRR Initial Response Actions-Notification Procedures form included in Appendix B.

In the event of an incident, BNSF's procedures require BNSF personnel, who first detect a release or are involved in the incident, to take immediate action to notify the BNSF ROC/SID, at 800-832-5452/817-352-2833, in accordance with the spill contingency procedures outlined in the BNSF Haz Mat Release Checklist included as Appendix C.

When contacting the either the UPRR RMCC or BNSF ROC/SID, reporting personnel should identify themselves, their affiliation, callback telephone number, and incident location, including rail milepost, nearest highway milepost, access locations, and surface water features. Immediate action should be taken to safeguard responders, the public, and the environment, where possible.

The UPRR RMCC and BNSF ROC/SID or other company representatives should follow procedures to contact federal, state, county, municipal entities as described in Section 3.1 and Section 3.1.1 above.

### **3.2.1 Media Requests for Railroad Incidents**

UPRR media requests should be forwarded to and addressed by the UPRR Regional Director of Public Affairs at 303-405-5010 or 402-544-5459.

BNSF media requests should be forwarded to and addressed by the BNSF Regional Director of Public Affairs at 817-867-6369 or 909-386-4140.

## 4 RESPONSE STRATEGIES AND PRIORITIES

### 4.1 Overview

The time-critical GRP strategies provided herein have been created to minimize the impact of a release on sensitive resources associated with the Feather River and its tributaries, reservoirs, and natural and built resources through pre-planning for first responders. These strategies are intended to be implemented immediately during the initial phase of incident response and may continue to be utilized as long as necessary at the discretion of the Incident Commander or Unified Command.

This section provides information on GRP response strategies. First responders should prioritize the order that they should be implemented based primarily on the release origin point and the nearest appropriate access point for response operations given the time required to mobilize and deploy response assets. Information on Response Areas, significant Staging Areas, response techniques and boat launch opportunities are provided in the Response Area information sheets in Section 4.3.

The downstream movement of the released material and the time it takes to mobilize response resources to deploy GRP strategies will dictate the response priorities.

#### 4.1.1 Onsite Considerations Before Deploying a GRP Strategy:

- **Are conditions safe?** Don't implement a response strategy unless it's safe to do so. Of particular concern are response strategies implemented during high water events, near dams, and those employing workboats to implement. Response managers and first responders must determine if the implementation of any strategy listed in this document poses an undue risk to worker safety or the public welfare, based on conditions at the time of the emergency. No strategy should be implemented if, beyond reason, it would pose an unwarranted threat of any kind to the safety of first responders or the public in general.
- **Has initial control and containment of the source been sufficiently achieved?** Control and containment of the source is always a higher priority than GRP strategy implementation when concurrent response activities are not possible.
- **How far downstream is material likely to travel before response resources are available to deploy GRP strategies?**

The volume and velocity of flow in the Feather River varies significantly between seasons and between years. For example, in water year 2010/2011 at the NF-23 station on the North Fork near Pulga, the minimum flow was 121 cubic feet per second (cfs) in October, and the maximum flow was 14,800cfs the following March. The potential for high flows, in areas with limited river access, has a significant impact on response strategy prioritization. In the time required to mobilize and deploy response infrastructure, the leading edge of the released material may flow a significant distance. The first priority response area will be one that can contain all released material upstream of the location. However, in some cases, response contractors may be advised to deploy response infrastructure in an area that will best facilitate capture of the majority of the released material even though the leading edge may be downstream of the containment area. This is particularly of interest in the event of an incident that may significantly expand beyond the initial release (for example, a derailment with a



minor initial release but with additional cars that have not yet been stabilized). In such a situation, it may be advisable to deploy response assets near the derailment location even if the initially released material has already moved farther downstream.

- ***Will equipment need to be staged on or near a state highway (HWY 70 or 89)?*** If so, traffic control may be required. Contact Caltrans for assistance.

**Table 4-1. Traffic Control Contacts**

Traffic Control Contact	Phone Number
Caltrans District 2 (Redding)	(530) 225-3426
Caltrans District 3 (Marysville)	(530) 741-4571

***Things to Remember During Strategy Implementation:***

- On-scene conditions (weather, river speed, changes in river elevation, debris flow, dam operations) may require that strategies be modified to maximize effectiveness. There is significant change in conditions through the seasons and from year to year. Response managers and first responders must remain flexible and modify the strategies provided in this chapter as needed to meet the challenges experienced during a response.
- Certain strategies may call for access points or staging areas that are not easily reached at all times of the year or in all conditions.
- Oil containment boom must be free of twists, gaps, and debris in order to remain effective (the deployment of oil containment boom is anticipated to be a component of response operations at all locations).
- A maximum 6-inch skirt is recommended for boom in high flow conditions to prevent entrainment of the boom and escape of released material.
- In some cases, access will be limited in certain flow conditions and access to both sides of the river may not be feasible. In some cases, use of a boom-vane or equivalent self-deploying boom infrastructure may be appropriate rather than use of a boat. In such cases, full containment boom may need to be replaced by a combination of deflection and containment booming that does not require use of a boat to deploy.
- In some cases, high flow booming strategies such as cascade booming may be required. Cascade booming will require additional length of boom to cover the overlap between segments.

**Things to Understand After Strategy Implementation:**

- Deployed containment boom and other infrastructure should be maintained and periodically monitored to ensure its continued effectiveness. Changes in river speed will likely require modifications to boom deflection angles and booming strategies (see Section 4.1.2).

- Although designed for implementation during the initial phase of an oil spill, GRP strategies may continue to be deployed and implemented throughout the entire lifespan of a response, as determined appropriate and necessary by the Incident Commander or Unified Command.

#### 4.1.2 Water Velocity

The velocity of flowing water significantly affects the selection of appropriate booming strategy. It is important to note that the velocity (speed) of moving water, is different than the flow (volume) of moving water. The velocity of water is the distance it moves with respect to time, and for a river, is typically measured in knots, feet per second, or meters per second. The flow of water is the volume of water moving through a specific area, and for a river, is typically measured in cubic feet per second or cubic meters per second. Converting between the two requires knowledge of the size of the flow channel (width and depth). As such, there is no standard or simple conversion between the two. The following discussions provide guidance to estimate water velocity and to use that information to appropriately select and deploy a booming strategy.

Water Velocity Affects Booming Angle – How to estimate water speed if a velocity meter is not available.

- To estimate water velocity, measure 100 feet along a straight portion of river bank or anchor a line with two floating buoy markers attached at a spacing 100 feet apart. Float debris from above the measured area, and measure the time it takes the debris to transit the 100-feet in seconds. Use the table shown below to estimate water speed.

**Table 4-2. Water Speed Drift Measurements & Boom Deployment**

Time to Drift 100 feet (seconds)	Velocity (feet/sec)	Velocity (meters/sec)	Velocity (knots)	Max Boom Angle (degrees)	Boom Required for 100-foot Profile to Current (feet)	General Boom Strategy
30	3.33	1.0	1.98	20	300	Cascading Deflection/Diversion Boom with Short Skirt (<6-inches)
60	1.7	0.5	1.0	45	150	Deflection/Diversion/Cascade Containment
90	1.1	0.34	0.65	>45	<150	Containment/Cascade Containment
120	0.83	0.25	0.49	>45	<150	Containment
180	0.55	0.16	0.32	90	100	Containment

Note: Surface velocity is higher than bottom velocity due to friction from bottom substrate.

- For a 100-foot section of boom perpendicular to a two-knot flow, the line force is greater than 250-pounds. Proper deployment angles to manage load and properly sized equipment (boat motor power) are essential for safe boom deployment.

## Boom Deployment Angles Based on Current Velocity

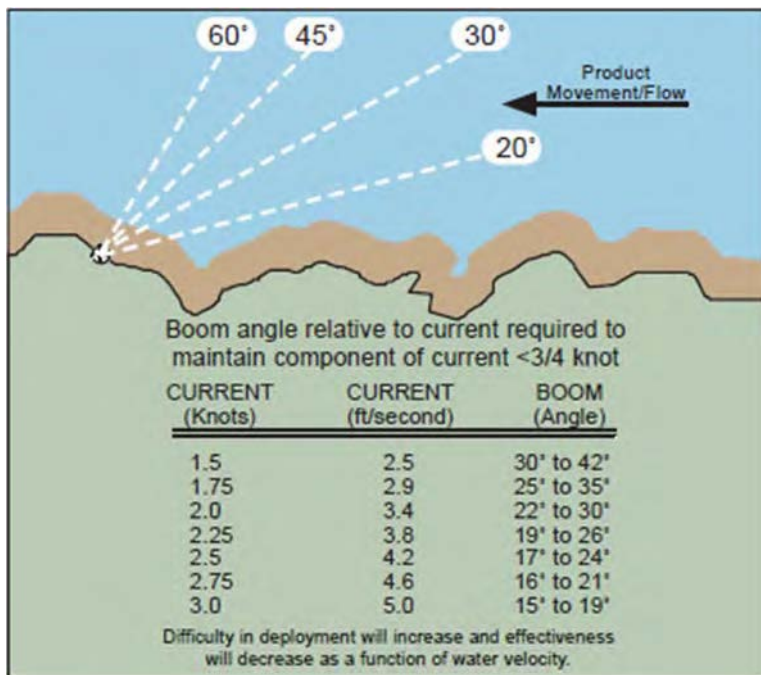


Figure Source: Southeast Alaska Petroleum Response Organization Responder Handbook

Water velocity in the Feather River varies significantly between reaches, during different seasons, and over different years. On the North Fork, velocity is further complicated by the hydroelectric dams and controlled discharges. The discharge (volumetric rates) range from 175 cubic feet per second (cfs) to extremes of more than 100,000 cfs such as in 1997/1998. The resultant surface velocity mirrors this variability.

For reference, a hypothetical channel 125 feet in width and 10 feet in depth with a discharge rate of 200 cfs would produce a velocity of 0.16 feet/second (very still). That same hypothetical channel at 2000 cfs would produce a velocity of 1.6 feet/second (1.1 mph or 0.95 kts). At 20,000 cfs, it would produce a velocity of 16 feet/second (11 mph or 9.5 kts). In natural settings, such calculations are inaccurate as they do not account for the friction of the water on various bottom and bank substrates. In natural settings, water at the surface moves more quickly than does water at the bottom of the channel where it is in contact with the bottom substrate. However, this general information is useful in making initial estimates of travel time for released materials until more accurate fate and transport data can be developed.

As indicated above, the distance covered by released material will depend on current flow conditions as well as the release location and downstream channel configuration and substrate characteristics. The table below provides generalized information to estimate the distance a release will cover during different flow conditions assuming a constant or average velocity.

Time to Drift 100 feet (seconds)	Average Velocity (feet/sec)	Average Velocity (knots)	Distance Covered in 6 Hours (miles downstream)	Distance Covered in 12 Hours (miles downstream)	Distance Covered in 24 Hours (miles downstream)
30	3.33	1.98	13.7	27.3	55
60	1.7	1.0	6.9	13.8	28
90	1.1	0.65	4.5	9	18
120	0.83	0.49	3.4	6.8	13.5
180	0.55	0.32	2.2	4.4	8.8

Based on the time required to deploy response assets in the field (e.g., booming, skimmers, etc.), the incident containment response strategy location should be selected based on a conservative estimate to ensure that there is adequate time to deploy prior to the arrival of the released material. For example, during a relatively high flow condition with an average velocity of 2 knots in the river, if it will take greater than 6 hours, but less than 12 hours to deploy response assets, a site approximately 27 miles downstream should be selected and prioritized to provide full containment (to contain the leading edge of the release). Secondary response strategies should be deployed closer to the release point to contain the majority of the release and/or to facilitate containment of a future expansion of the incident. Note that these containment priorities follow source control and containment which is always the first priority. Additionally, the dams on the North Fork significantly affect flow distance calculations (see Section 4.1.3 below). Prioritization of response strategies is discussed further in Section 4.1.6.

Current flow data is available for the Feather River and should be used to calculate travel distances for the first 6, 12, and 24 hours at the time of the release. Water data is available through numerous sources including the USGS: <http://maps.waterdata.usgs.gov/mapper/index.html>

### 4.1.3 Pacific Gas & Electric Company – Dams and Diversions

Annual runoff in the Feather River provides over 1,400 MW of hydroelectric power used to serve Northern and Central California by Pacific Gas & Electric Company (PG&E). The Upper North Fork Feather River System consists of three dams and reservoirs, five powerhouses, tunnels and penstocks connecting the reservoirs to the powerhouses, roads, recreational facilities, and administrative facilities. There are three dams in addition to those associated with Lake Oroville and the Thermalito Diversion that cross the North Fork of the Feather River in the GRP area: the Rock Creek Dam (just southwest of Belden, CA), Cresta Dam (just southwest of Merlin, CA), and Poe Dam (just northeast of Pulga, CA). In addition to the dams, there are diversions from their respective reservoirs that pipe water to downstream powerhouses. Diversion inlets occur in the Rock Creek, Cresta, and Poe Reservoirs.

PG&E and their infrastructure has a critical involvement in a release on the North Fork of the Feather River. The infrastructure itself and the continued safe generation of power is an economic resource at risk warranting significant protection strategies in the event of an incident. Additionally, the infrastructure provides important access for incident response as well as the ability to at least partially control or regulate flow in the river. Such operations may allow for a containment of an incident well upstream of

what would be expected were there no dams on the river. The reservoirs behind the dams provide large areas of slow moving surface water ideal for containment and collection of floating material. PG&E also can provide water access and incident response support. Note that PG&E requires specific health and safety training for work on or near PG&E infrastructure.

Prompt notification and coordination with PG&E is critical for effective incident response on the North Fork of the Feather River.

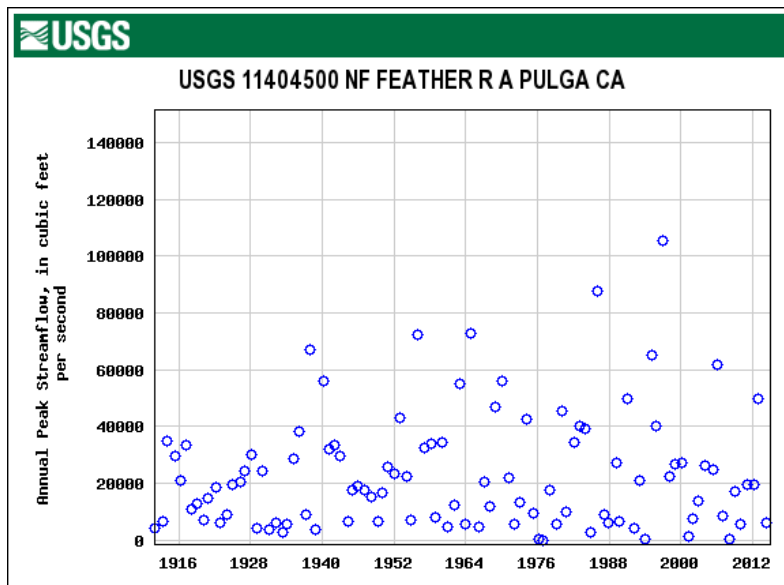
PacificGas&ElectricContactNumbers:

- Caribou Control Center: (916) 283-4990
- Rock Creek Control Center: (916) 892-4502

#### 4.1.4 Historical River Streamflow Ranges

The tables below provide annual peak streamflow data for the North Fork at three locations. Stream discharge is recorded in cubic feet per second (cfs). Average streamflow is lower. Current and historical flow data is available online from the USGS: <http://maps.waterdata.usgs.gov/mapper/index.html>

Table 4-3a. Annual Peak Streamflow – North Fork Feather River at Pulga



FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN  
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Table 4-3b. Annual Peak Streamflow – North Fork Feather River Near Grizzly Creek

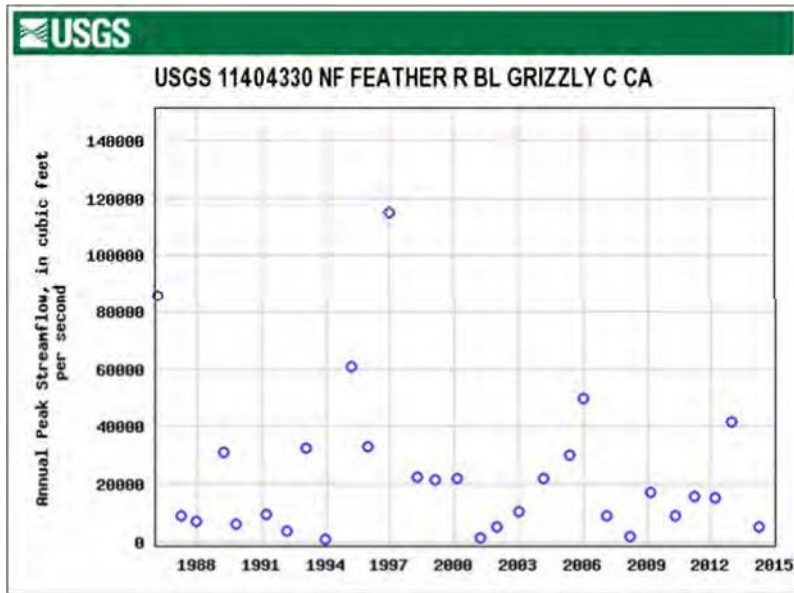
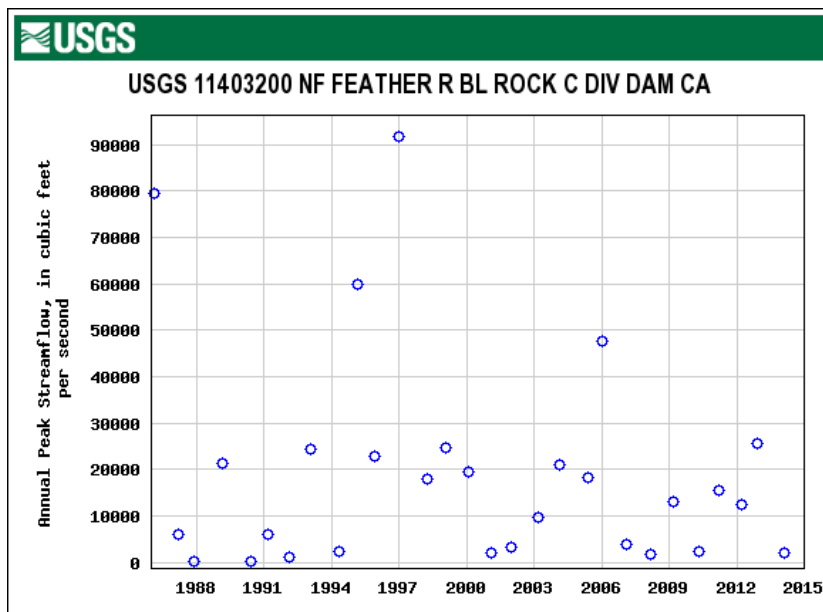


Table 4-3c. Annual Peak Streamflow – North Fork Feather River Below Rock Creek Diversion Dam



#### 4.1.5 General Response Priorities

The following list provides the order of response priorities during a release into the Feather River or one of its tributaries.

1. Safety is always the number one priority. Do not implement GRP strategies or take actions that will unduly jeopardize public, worker, or personal safety.
2. Make all appropriate notifications

3. Control and contain the source of the release; mobilize resources to the release location when safe to do so. Source control and containment is the highest priority.
4. Determine the priority or order GRP strategies that should be implemented based on the location of the release and the area affected in combination with the expected mobilization and deployment time as discussed above and in the context of the PG&E infrastructure. Priorities will primarily be based on river access relative to the release location. The limited access largely precludes the opportunity to prioritize response activities solely based on protection of individual resources along the river (see Section 4.3).
5. As response resources become increasingly available, implement the GRP strategies more broadly. As the response matures under an organized command structure, GRP strategies and priorities may be modified based on incident-specific conditions.

#### 4.1.6 Strategy Priorities Based on Incident Location

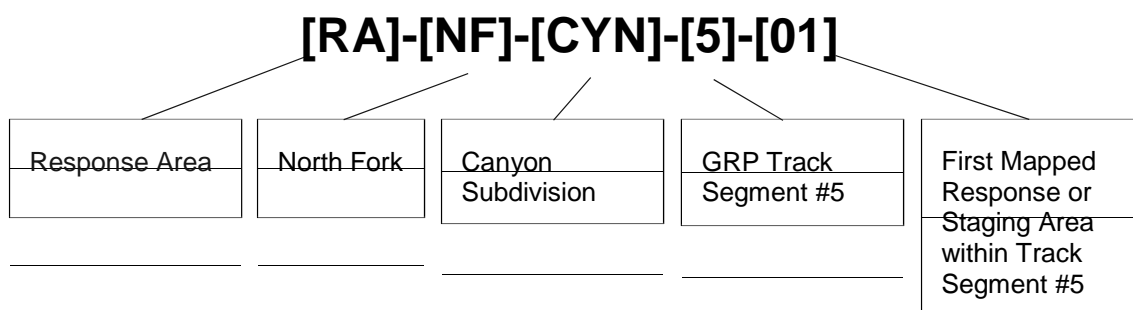
The steep terrain and limited access on the North Fork and Middle Fork of the Feather River will dictate the highest priority response strategy relative to the location of the release. The first priority is always control and containment of the release at the release location, as soon as it is safe to do so. Regarding containment and collection, in establishing response priorities, the downstream movement of released material and the time it takes to mobilize and deploy response resources should drive strategy selection. Generally, GRP strategies should first be implemented downstream, well beyond the furthest extent of the spill, and then continued upstream towards the spill source following the data in 4.1.2 and 4.1.3 above.

## 4.2 Response Strategy Information

### 4.2.1 Response Strategy Names/Numbers


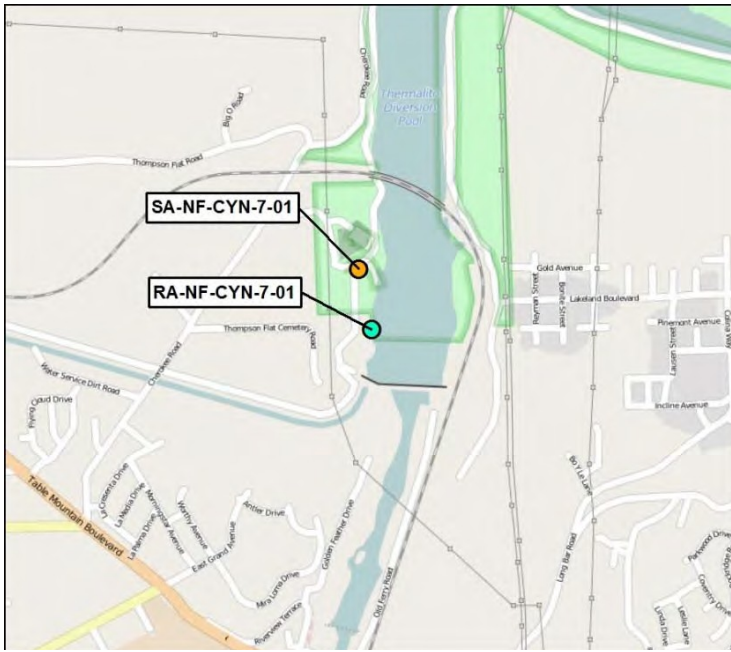
Each strategy in this document employs a standard naming convention. The first two letters note whether the location is a Response Area (RA) or a Staging Area (SA). The next two letters designate the watercourse: North Fork (NF), East Branch of the North Fork (EB), or Middle Fork (MF). The next code represents the railroad's geographic subdivision: Canyon Subdivision (CYN; note that one location on the Middle Fork is outside a railroad Subdivision and use the code RIV). Because the majority of the GRP Study Area is within the Canyon Subdivision, it was further divided into GRP Track Segments (1 – 10). The next number in the name is the GRP Track Segment Number. The last number is a sequential number that includes both Response Areas and Staging Areas within each Subdivision running from east to west in the GRP area.

EXAMPLE CODING: RA-NF-CYN-5-01





## 4.3 Response Area Strategy Detail Sheets


Thermalito Diversion Pool & Dam		ID No. RA-FR-CYN-1-01
<b>SITE LATITUDE/LONGITUDE</b>	 <p><b>Train bridge on Thermalito Diversion Pool – Large open water area for containment and recovery between train bridge and dam</b></p>	
39.53053, -121.546162		
<b>SITE CONTACT INFORMATION</b>		
CA Department of Water Resources Oroville Field Division (530) 534-2499		
<b>CLOSEST ADDRESS</b>		
54 Thompson Cemetery Road, Oroville, California, 95965		
<b>SITE IMAGE DESCRIPTION</b>		
Large area of calm water behind dam. Reservoir Width: 255m Headwaters of State Water Project		
<b>DRIVING DIRECTIONS</b>		
<b>From: Sacramento, California</b>		
<ul style="list-style-type: none"> <li>Take I-5N/HWY 99N</li> <li>Take CA-70 N to HWY 70 E/9<sup>th</sup> St in Marysville</li> <li>Continue on CA-70 N to Grand Ave (Oroville)</li> <li>Turn Right on Grand Ave</li> <li>Turn Left on 2<sup>nd</sup> St.</li> <li>Turn Right on Nelson Ave</li> <li>Turn Left on Cherokee Rd.</li> <li>Turn Right on Thompson Flat Cemetery Road</li> </ul>		
<b>End:</b> Near 54 Thompson Cemetery Road, Oroville		

ABOVE: Street Map





# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

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Thermalito Diversion Pool & Dam		ID No. RA-FR-CYN-1-01	
Site Latitude/Longitude	39.53053, -121.546162		
Strategy Objective	Collect and recover floating material on reservoir		
Implementation	Water is generally slow moving behind the dam offering good on water collection and recovery options. Access to both sides of the linear reservoir is available at this location. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest staging area other than at river access: SA-FR-CYN-1-01; Large staging area; Cell service available		
Field Notes	Large flat staging area near dam, access on both shores		
Protected Resources	Feather river fish hatchery is approximately 0.5 miles below the dam. Pink creamsacs, downstream riparian habitats, freshwater wildlife, avian resources (particularly in spring)		
Cultural Resources	Low risk		
Watercourse Description	Large reservoir behind dam. Water is slow moving behind dam.		
Shoreline Type	Maintained dirt banks with limited riparian vegetation.		
 <p>ABOVE: Site Overview</p>	SUGGESTED EQUIPMENT		
	Quantity		Description
	410ft / 125m		Open water booming on reservoir
	1		Work boat able to launch from ramp
	Event specific		Collection infrastructure (skimmers, tanks, etc.)
	SUGGESTED PERSONNEL		
	Quantity		Description
	2		Boat crew
	6		Worker

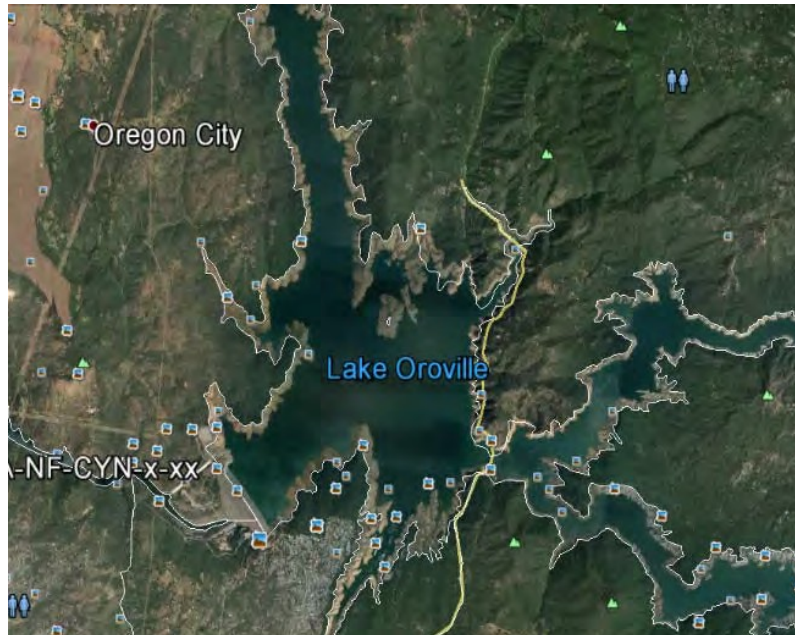
# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Lake Oroville		ID No. RA-MF-RIV-01
<b>SITE LATITUDE/LONGITUDE</b>		
39.55803, -121.458013		
<b>SITE CONTACT INFORMATION</b>		
CA Department of Water Resources Oroville Field Division (530) 534-2303		
<b>CLOSEST ADDRESS</b>		
Bidwell Canyon Marina 801 Bidwell Canyon Rd, Oroville, CA 95966		
<b>SITE IMAGE DESCRIPTION</b>		
Large Water Reservoir Numerous access and staging areas Open water recovery options North Fork and Middle Fork flow into lake	<p><b>ABOVE: Site Photo</b></p>	
		<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Sacramento, CA</b></p> <ul style="list-style-type: none"> <li>• Take I-5N/HWY 99N</li> <li>• Take CA-70 N to HWY 70 E/9<sup>th</sup> St in Marysville (40 mi)</li> <li>• Continue on CA-70 N to Ophir Rd (Oroville) (35.6 mi)</li> <li>• Turn Right on Foothill Blvd (1.8 mi)</li> <li>• Turn Right on Arroyo Dr (0.4 mi)</li> <li>• Turn Left onto Bidwell Canyon Road</li> </ul> <p><b>End:</b> 801 Bidwell Canyon Rd, Oroville, CA 95966</p>
<p><b>ABOVE: Street Map</b></p>		



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Lake Oroville		ID No. RA-MF-RIV-01	
Site Latitude/Longitude	39.55803, -121.458013		
Strategy Objective	Collect and recover floating material.		
Implementation	Lake Oroville supports significant response infrastructure such as marinas and boat launches, logistical and response resources in the City of Oroville, and space to maneuver. On-water collection and recovery is advised. If shoreline response is required, access is available from numerous locations around the lake as well as by water.		
Site Safety Notes	Slippery slopes when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Recreational marina, SA-MF-RIV-01		
Field Notes	Large water supply reservoir		
Protected Resources	Fish and amphibians, nesting birds in spring		
Cultural Resources	Low		
Watercourse Description	Large reservoir		
Shoreline Type	Steep earthen reservoir banks with minimal riparian vegetation in most locations		
 <p>ABOVE: Site Overview</p>	SUGGESTED EQUIPMENT		
	Quantity	Description	
	410ft / 125m	River collection boom; maximum 6-inch skirt	
	1	Work boat able to launch from sandy beach	
	2	BoomVane or equivalent self-deploying boom	
	Event specific	Collection infrastructure (skimmers, tanks, etc.)	
	SUGGESTED PERSONNEL		
	Quantity	Description	
	2	Boat crew	
	6	Worker (may need teams on either side of river)	

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

Beer Can Beach		ID No. RA-NF-CYN-3-01
<b>SITE LATITUDE/LONGITUDE</b>		
39.803640, -121.440990		
<b>SITE CONTACT INFORMATION</b>		
Not known		
<b>CLOSEST ADDRESS</b>		
13579 CA-70, Oroville, CA 95965	<p><b>ABOVE: Site Photo</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>— Low flow boom (245ft / 75m)</p> <p>— High flow boom (410ft / 125m)</p> <p>River Width: 165ft / 50m</p> <p>High flows may require cascade flow booming and additional boom</p> <p>Good beach access from HWY 70</p> <p>Trees provide boom anchors on far shore.</p> <p>Boat or rail access to far shore or vehicle access from (narrow) Pulgas Road</p>		
 <p><b>ABOVE: Street Map</b></p>		<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>• Turn left onto CA-70 West (105 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (21 miles)</li> </ul> <p><b>End: 113579 CA-70, Oroville, CA 95965</b></p>






# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Beer Can Beach		ID No. RA-NF-CYN-3-01		
Site Latitude/Longitude	39.803640, -121.440990			
Strategy Objective	Collect and recover floating material at beach.			
Implementation	<p>Launch light workboat from beach if possible with 125m boom. If high flow, recommend containment boom with maximum 6-inch skirt to prevent entrainment. Anchor to trees on far bank shown in photo based on flow characteristics. BoomVane or equivalent boom deployment methods may be effective if boat access is not feasible. If flow and/or distance prevents complete booming, a deflection boom may be effective on the northwest (rail) shoreline upstream to deflect floating material to a collection boom on southeast (HWY 70) bank for recovery. If cascade booming is utilized, additional length of boom will be required to cover overlap. Very high flows may limit the feasibility of this site. The river would also be wider in such situations requiring increased boom lengths.</p> <p>During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).</p>			
Site Safety Notes	Slippery slopes when wet or icy; trip & fall hazards; roadway hazards; water hazards			
Staging Area	Large dirt parking area above beach. Nearest Staging Area other than at site: SA-NF-CYN-3-01; Caltrans; No cell service (39.805483, -121.438500)			
Field Notes	Steep driveway down to large parking area above beach. Traffic control			
Protected Resources	White-stemmed clarkia, valley elderberry longhorn beetle, downstream habitats, freshwater wildlife including fish and amphibians; spotted owl habitat in forested areas.			
Cultural Resources	Medium Risk			
Watercourse Description	North Fork of Feather River. Long straight reach.			
Shoreline Type	Fine to medium grained, granitic, sand beach. Far bank is steep up to railroad tracks with large boulders in some places. Riparian vegetation along waterline.			
 <p>ABOVE: Site Overview</p>				
			SUGGESTED EQUIPMENT	
			Quantity	Description
			410ft / 125m	River collection boom; maximum 6-inch skirt
			1	Work boat able to launch from sandy beach
			2	BoomVane or equivalent self-deploying boom
			Event specific	Collection infrastructure (skimmers, tanks, etc.)
			SUGGESTED PERSONNEL	
			Quantity	Description
			2	Boat crew
6	Worker (may need teams on either side of river)			


# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Poe Dam (Poe Reservoir)		ID No. RA-NF-CYN-3-02
SITE LATITUDE/LONGITUDE		
39.809560, -121.431550		
SITE CONTACT INFORMATION		
Pacific Gas and Electric Company 916-283-4990, 916-892-4502		
CLOSEST ADDRESS		
13910 CA-70, Oroville, California, 95965		
SITE IMAGE DESCRIPTION		Site Photos looking upstream (left) and downstream (above).
<div>Boom location above dam (575ft / 175m)</div> <div>River Width: 330ft / 100m</div> <div>Dam shown in second photo is just left (downstream) of main image. Water access via stairs.</div>		
		<div>DRIVING DIRECTIONS</div> <div>From: Reno, Nevada</div> <div><ul style="list-style-type: none"><li>Merge onto US-395 N toward Susanville (23.9 miles)</li><li>Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li><li>Turn left onto CA-70 West (105 miles)</li></ul></div> <div>From: Oroville, California</div> <div><ul style="list-style-type: none"><li>Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li><li>Take exit toward CA-70 North (0.7 miles)</li><li>Continue onto CA-70 N (21.7 miles)</li></ul></div> <div>End: 13910 CA-70, Oroville, California, 95965</div>
ABOVE: Street Map		

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

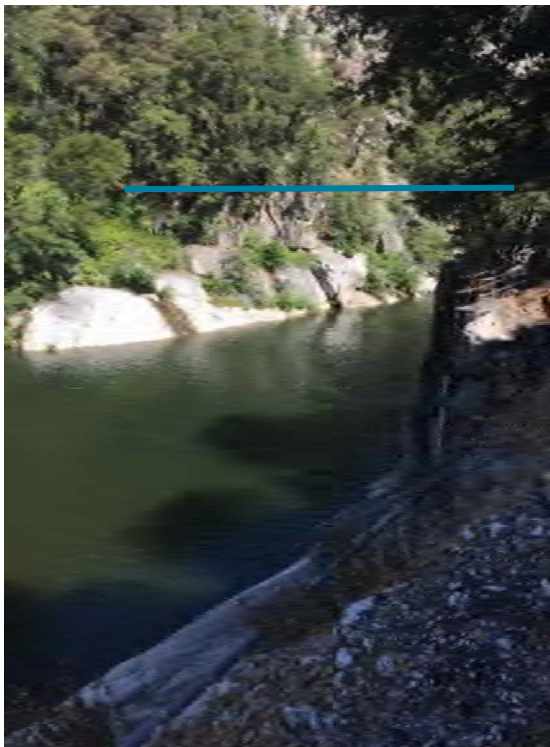

**DRAFT**

Poe Dam (Poe Reservoir)		ID No. RA-NF-CYN-3-02
Site Latitude/Longitude	39.809560, -121.431550	
Strategy Objective	Collect and recover floating material at water access point.	
Implementation	<p>Water is generally slow moving behind the dam offering good containment and recovery options. Access to both sides of the river is available at this location from the dam (with PG&amp;E permission). Recommend containment boom with no more than 6-inch skirt to prevent entrainment. Anchor to far side at or near buoy line anchor and collect floating material using skimmer at water access point.</p> <p>Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.</p>	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest staging area other than at river access: SA-NF-CYN-3-01; Large staging area; Caltrans; No cell service (39.805483, -121.438500)	
Field Notes	Parking is limited even if using the PG&E dam operations parking.	
Protected Resources	Mildred's clarkia, Butte County Fritillary, downstream habitats, freshwater wildlife	
Cultural Resources	Medium Risk	
Watercourse Description	North Fork of the Feather River. River width is approximately 100m in width. Water is slow moving behind dam.	
Shoreline Type	Steep dirt and boulder shorelines. May include placed boulders for bank stabilization.	
 <p>ABOVE: Site Overview</p>	SUGGESTED EQUIPMENT	
	Quantity	Description
	655ft / 200m	River collection boom
	1	Inflatable boat (with outboard) may be feasibly deployed if it can be hand-carried to water
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	SUGGESTED PERSONNEL	
	Quantity	Description
	6	Boom deployment and material recovery crew
	4	Boat crew



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

Station NF-56 (Cableway and Gauging Station)		ID No. RA-NF-CYN-4-01
SITE LATITUDE/LONGITUDE		 <p>Location of cableway over river</p>
39.852040, -121.392560		
SITE CONTACT INFORMATION		
Pacific Gas and Electric Company 916-283-4990, 916-892-4502		
CLOSEST ADDRESS		
14673 CA-70, Oroville, California, 95965		
SITE IMAGE DESCRIPTION		
<div><div></div> Cableway location across river at Gauging Station NF-56.</div> <p>River Width: 131ft / 40m</p> <p>Booming is possible at this location but access is poor due to steep slopes and boulders along bank.</p> <p>Consider alternative locations for booming (RA-NF-CYN-4-07 or RA-NF-CYN-4-01).</p> <p>Primary value of location is cableway</p>		
ABOVE: Site Photo		
		DRIVING DIRECTIONS
		<b>From: Reno, Nevada</b> <ul style="list-style-type: none"><li>• Merge onto US-395 N toward Susanville (23.9 miles)</li><li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li><li>• Turn left onto CA-70 West (100 miles)</li></ul>
		<b>From: Oroville, California</b> <ul style="list-style-type: none"><li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li><li>• Take exit toward CA-70 North (0.7 miles)</li><li>• Continue onto CA-70 N (26.2 miles)</li></ul>
		<b>End:</b> 14673 CA-70, Oroville, California, 95965
ABOVE: Street Map		







# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Station NF-56 (Cableway and Gauging Station)		ID No. RA-NF-CYN-4-01	
Site Latitude/Longitude	39.852040, -121.392560		
Strategy Objective	Collection and recovery or material transport. This site has significant access limitations but is included because of the cableway facilitating connectivity to the opposite bank.		
Implementation	Primary use of the site would be to employ the cableway to transport materials to the opposite bank. In high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Large boulders provide anchoring opportunities, but would challenge recover operations unless a skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest staging area other than site: SA-NF-CYN-4-01; small to mid-size; shady rest/day use area; no cell service. (39.848133, -121.393767)		
Field Notes	Cableway may be useful during response. Site also has a gauging station. Access from highway is limited by slopes and large boulders.		
Protected Resources	Clifton's eremogone, Mildred's clarkia, downstream habitats, freshwater wildlife; spotted owl habitat in forested areas.		
Cultural Resources	Medium to low risk given narrow granitic channel		
Watercourse Description	North Fork of the Feather River. Long straight reach.		
Shoreline Type	Large boulders and granite outcrops		
 <p>ABOVE: Site Overview</p>	SUGGESTED EQUIPMENT		
	Quantity	Description	
	245ft / 75m	River collection boom; maximum 6-inch skirt	
	1	BoomVane or equivalent self-deploying boom lead	
	Event specific	Collection infrastructure (skimmers, tanks, etc.)	
	SUGGESTED PERSONNEL		
	Quantity	Description	
		Based on need	


# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Cresta Dam & Reservoir		ID No. RA-NF-CYN-4-02
<b>SITE LATITUDE/LONGITUDE</b>	 	
39.876344, -121.372690		
<b>SITE CONTACT INFORMATION</b>		
Pacific Gas and Electric Company 916-283-4990, 916-892-4502		
<b>CLOSEST ADDRESS</b>		
4559 CA-70, Belden, California, 95915		
<b>SITE IMAGE DESCRIPTION</b>	<p>  Boom location above dam (575ft / 175m)            River Width: 330ft / 100m            Dam shown in second photo is just left (downstream) of main image. Water access via stairs.         </p>	
<p><b>ABOVE: Site Photo. Dam shown in second photo is just left (downstream) of main image</b></p>		
		<b>DRIVING DIRECTIONS</b>
<p><b>ABOVE: Street Map</b></p>		<p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>• Turn left onto CA-70 West (98 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (28.4 miles)</li> </ul> <p><b>End:</b> 4559 CA-70, Belden, California, 95915</p>

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


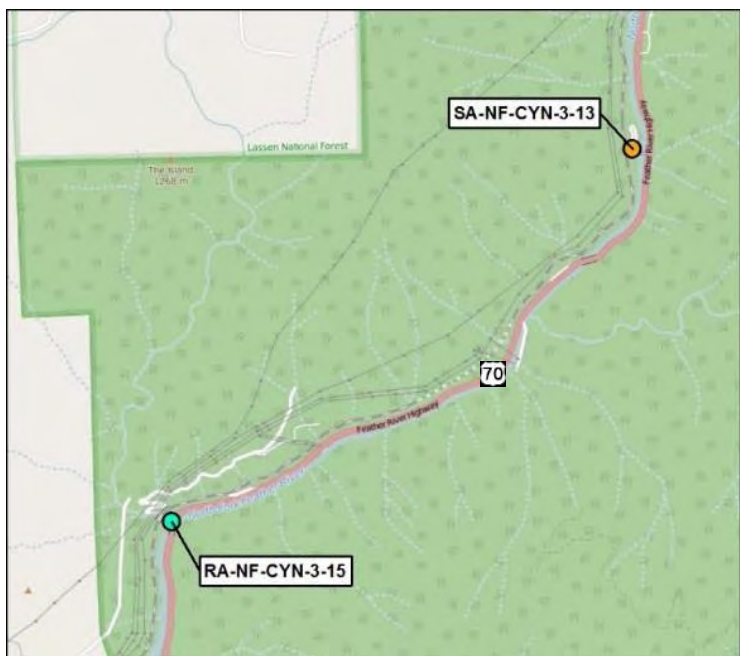
**DRAFT**

Cresta Dam & Reservoir		ID No. RA-NF-CYN-4-02	
Site Latitude/Longitude	39.876344, -121.372690		
Strategy Objective	Collect and recover floating material at water access point.		
Implementation	<p>Water is generally slow moving behind the dam offering good containment and recovery options. Access to both sides of the river is available at this location from the dam (with PG&amp;E permission). Anchor to far side at or near buoy line anchor and collect floating material using skimmer at water access point.</p> <p>Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.</p>		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest staging area other than site: SA-NF-CYN-4-01; small to mid-sized; shady rest/day use area; no cell service. (39.848133, -121.393767)		
Field Notes	PG&E has boat launch capability at this location. Limited staging area, may require lane closure on highway 70. Large reservoir for response activities.		
Protected Resources	Cantelow's lewisia, red-legged frog, spotted owl habitat (in forested area) near site location, downstream habitats, freshwater wildlife		
Cultural Resources	Medium Risk		
Watercourse Description	North Fork of Feather River. Large reservoir behind dam.		
Shoreline Type	Steep walled granitic gravel and boulder shorelines		
	SUGGESTED EQUIPMENT		
	Quantity	Description	
	655ft / 200m	River collection boom; maximum 6-inch skirt	
	1	Work boat able to launch by crane from hoist on dam	
	Event specific	Collection infrastructure (skimmers, tanks, etc.)	
	SUGGESTED PERSONNEL		
	Quantity	Description	
	6	Boom and recovery crew	
	4	Boat crew	
ABOVE: Site Overview			




# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Rock Creek Confluence		ID No. RA-NF-CYN-5-01
<b>SITE LATITUDE/LONGITUDE</b>		
39.900340, -121.359310		
<b>SITE CONTACT INFORMATION</b>		
Pacific Gas and Electric Company Rock Creek Control Center: (916) 892-4502		
<b>CLOSEST ADDRESS</b>		
4801 CA-70, California		
<b>SITE IMAGE DESCRIPTION</b>		
<div><div></div> Boom location above bridge (410ft / 125m)  River Width: 130ft / 40m  Collection point shown is immediately adjacent to highway 70, but has steep rock wall to river. The boom could be extended downstream and under bridge for alternate collection point as shown in inset photo.</div> <div></div> <div>ABOVE: Site Photo. Bridge in inset photo is immediately to right of frame in main photo. Collection may be easier on downstream side of bridge. Small boat launch is feasible at bridge location.</div>		
		<b>DRIVING DIRECTIONS</b>
<div>ABOVE: Street Map</div>		<div><b>From: Reno, Nevada</b><ul style="list-style-type: none"><li>• Merge onto US-395 N toward Susanville (23.9 miles)</li><li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li><li>• Turn left onto CA-70 West (96.1 miles)</li></ul><b>From: Oroville, California</b><ul style="list-style-type: none"><li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li><li>• Take exit toward CA-70 North (0.7 miles)</li><li>• Continue onto CA-70 N (30.3 miles)</li></ul><b>End: 4801 CA-70, California</b></div>


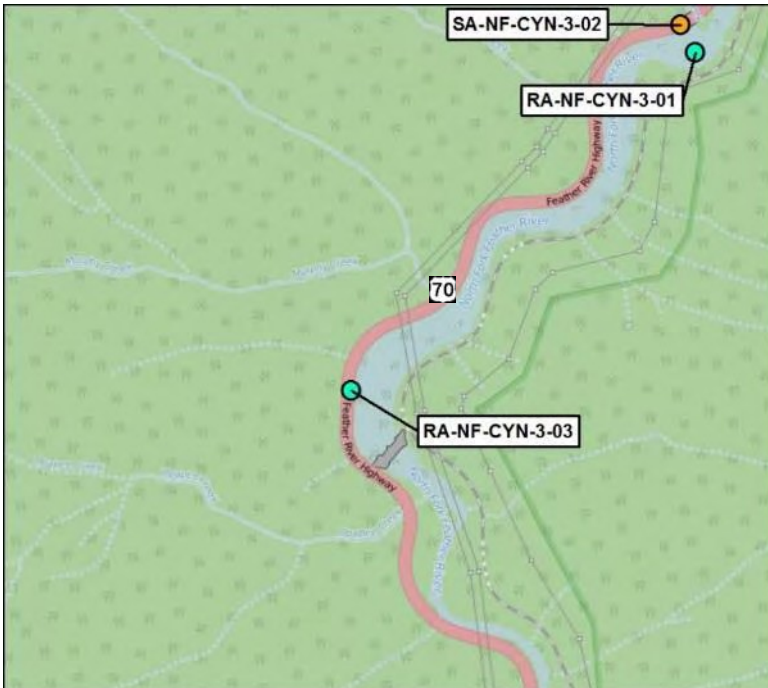
# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Rock Creek Confluence		ID No. RA-NF-CYN-5-01			
Site Latitude/Longitude	39.900340, -121.359310				
Strategy Objective	Collect and recover floating material at water access point.				
Implementation	<p>Water is generally slow moving in the reservoir (behind Cresta Dam) offering good containment and recovery options. Access to both sides of the river is available at this location from the bridge, though the recommended booming strategy would require a boat to reach upstream boom anchor location on shore.</p> <p>Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.</p>				
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards				
Staging Area	Nearest staging area other than at river access: SA-NF-CYN-5-01; small to mid-size Rock Creek Camp , no cell service (39.925871, -121.316810)				
Field Notes	Small boat launch from trailer is potentially feasible via steep ramp shown in inset photo above. Boom could be deployed across the bridge. Multiple layers of boom could be deployed between Rock Creek and Cresta Dam downstream.				
Protected Resources	Cantelow's lewisia, hardhead, downstream habitats, freshwater wildlife, red-legged frog and spotted owl habitat (in forested areas)				
Cultural Resources	Low risk due to steep slopes and flooded reservoir area				
Watercourse Description	North Fork of Feather River. Reservoir area behind Cresta Dam.				
Shoreline Type	Steep granite cliffs and areas with reinforced boulders.				
 <p>ABOVE: Site Overview</p>					
				SUGGESTED EQUIPMENT	
				Quantity	Description
				655ft / 200m	River collection boom; maximum 6-inch skirt
				1	Work boat able to launch at steep dirt
				Event specific	Collection infrastructure (skimmers, tanks, etc.)
				SUGGESTED PERSONNEL	
				Quantity	Description
				6	Boom and recovery crew
				4	Boat crew

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

Rock Creek Reservoir		ID No. RA-NF-CYN-5-02
<b>SITE LATITUDE/LONGITUDE</b>		
39.992349, -121.280336		
<b>SITE CONTACT INFORMATION</b>		
Not Known		
<b>CLOSEST ADDRESS</b>		
11927 CA-70, Belden, California, 95915	<p><b>ABOVE: Site Photo.</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>Boom location (492ft / 150m)</p> <p>River Width: 330ft / 100m</p> <p>Site is approximately 0.5 miles (0.8km) above Rock Creek Dam. Multiple layers of boom could be deployed in reservoir to ensure containment from an upstream incident at this location.</p> <p>Collection point is immediately adjacent to HWY 70, but above placed boulder bank.</p>	 <p><b>ABOVE: Street Map</b></p>	
		<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>• Turn left onto CA-70 West (86.9 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (39.4 miles)</li> </ul> <p><b>End:</b> 11927 CA-70, Belden, California, 95915</p>


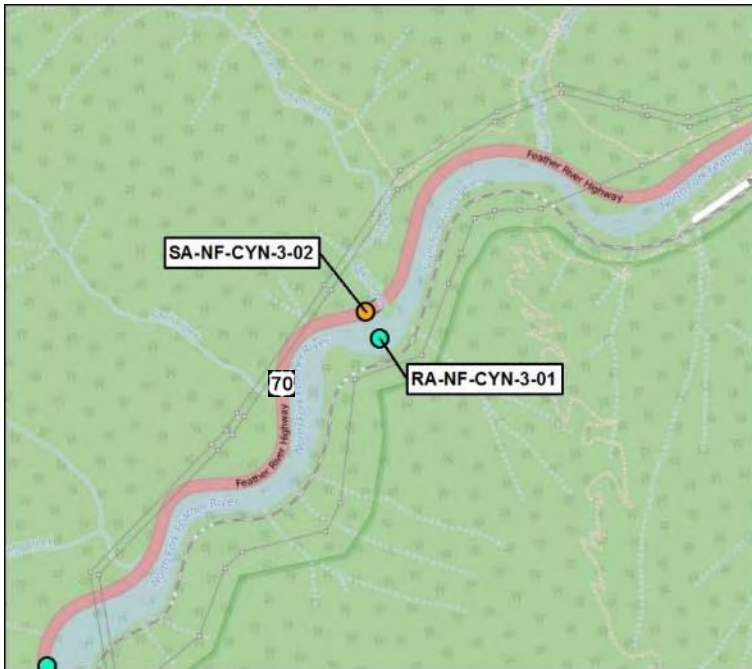


# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Rock Creek Reservoir		ID No. RA-NF-CYN-5-02		
Site Latitude/Longitude	39.992349, -121.280336			
Strategy Objective	Collect and recover floating material at water access point.			
Implementation	<p>Water is generally slow moving in the reservoir (behind Cresta Dam) offering good containment and recovery options. A boat can be launched approximately 1.5 miles upstream on Highway 70 at Chips Creek Confluence. Multiple layers of boom and collection infrastructure can be deployed on the reservoir.</p> <p>Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.</p>			
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards			
Staging Area	Nearest staging area other than at river access: SA-NF-CYN-5-02; Small to mid-size staging area; feasible boat launch; Chips Creek. (40.000267, -121.270817)			
Field Notes	Multiple layers of boom could be deployed in reservoir behind Rock Creek Dam downstream.			
Protected Resources	Flat-leaved bladderwort, Mildred's clarkia, downstream habitats, freshwater wildlife; red-legged frogs in immediate site area (reservoir); spotted owl habitat (in forested areas) in immediate vicinity of site.			
Cultural Resources	Low risk due to steep slopes and flooded reservoir area			
Watercourse Description	North Fork of the Feather River. Large Reservoir behind dam.			
Shoreline Type	Steep, placed boulders and natural dirt banks.			
 <p>ABOVE: Site Overview</p>				
			SUGGESTED EQUIPMENT	
			Quantity	Description
			575ft / 175m	River collection boom; maximum 6-inch skirt for medium/high flows
			1	Work boat
			Event specific	Collection infrastructure (skimmers, tanks, etc.)
			SUGGESTED PERSONNEL	
			Quantity	Description
			6	Boom and recovery crew
			4	Boat crew


**DRAFT**

Chips Creek Confluence		ID No. RA-NF-CYN-5-03
<b>SITE LATITUDE/LONGITUDE</b>		
39.999382, -121.270220		
<b>SITE CONTACT INFORMATION</b>		
Not Known		
<b>CLOSEST ADDRESS</b>		
13001 CA-70, Belden, California, 95915	<p><b>ABOVE: Site Photo</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>— Boom location (393ft / 120m)</p> <p>River Width: 220ft / 67m</p> <p>Access at Chips Creek inlet. High flow from Chips Creek could complicate booming at this location.</p> <p>Boom location shown here is below the Chips Creek confluence.</p> <p>Possible booming sites above Chips Creek, but access is more limited.</p> <p>Boat launch feasible from bank.</p>		
 <p><b>ABOVE: Street Map</b></p>	<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>• Turn left onto CA-70 West (85.7 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (40.7 miles)</li> </ul> <p><b>End:</b> 13001 CA-70, Belden, California, 95915</p>	





# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Chips Creek Confluence		ID No. RA-NF-CYN-5-03		
Site Latitude/Longitude	39.999382, -121.270220			
Strategy Objective	Collect and recover floating material at water access point.			
Implementation	The confluence provides good river access and boat launch opportunity. Boat required for booming or use of Boomvane or equivalent self-deploying boom. In high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. The inlet of Chips Creeks would complicate booming during medium or high flows. Recommend consideration of Rock Creek Reservoir locations immediately downstream in slower water. Boom may be deployed immediately above confluence though habitat is higher quality and banks are steeper.			
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards			
Staging Area	Nearest Staging Area: SA-NF-CYN-5-02; Small to mid-sized staging area; Chip's Creek; No cell service; (40.000267, -121.270817)			
Field Notes	Good access. Boat required to anchor boom on far shore.			
Protected Resources	Downstream habitats, Cantelow's lewisia, hardead, freshwater wildlife; red-legged frogs in immediate site area (reservoir); spotted owl habitat (in forested areas) in immediate vicinity of site.			
Cultural Resources	Medium to high risk associated with river confluence			
Watercourse Description	North Fork of Feather River. Confluence with Chips Creek			
Shoreline Type	Granitic gravel and medium grained alluvial sand beach. Vegetated granitic slopes			
<div></div> <p>ABOVE: Site Overview at Chips Creek Inlet</p>				
			SUGGESTED EQUIPMENT	
			Quantity	Description
			575ft / 175m	River collection boom; maximum 6-inch skirt for medium/high flows
			1	Work boat
			Event specific	Collection infrastructure (skimmers, tanks, etc.)
			SUGGESTED PERSONNEL	
			Quantity	Description
			6	Boom and recovery crew
			4	Boat crew


# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Belden Town Bridge		ID No. RA-NF-CYN-6-01
<b>SITE LATITUDE/LONGITUDE</b>		
40.006950, -121.249440		
<b>SITE CONTACT INFORMATION</b>		
Belden Town Resort and Lodge 14785 Belden Town Road Belden, CA, 95915 Phone: (530) 283-9662		
<b>CLOSEST ADDRESS</b>		
14723 CA-70, Belden, California, 95915	<p><b>ABOVE: Site Photo.</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>Boom (245ft / 75m)</p> <p>River Width: 130ft / 40m</p> <p>Bridge support structures could serve a variety of booming strategies for various flow conditions.</p> <p>Good staging and access from Belden. Bridge width is 4 meters</p>		
 <p><b>ABOVE: Street Map</b></p>	<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>• Turn left onto CA-70 West (84.3 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (42.1 miles)</li> </ul> <p><b>End:</b> 14723 CA-70, Belden, California, 95915</p>	

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


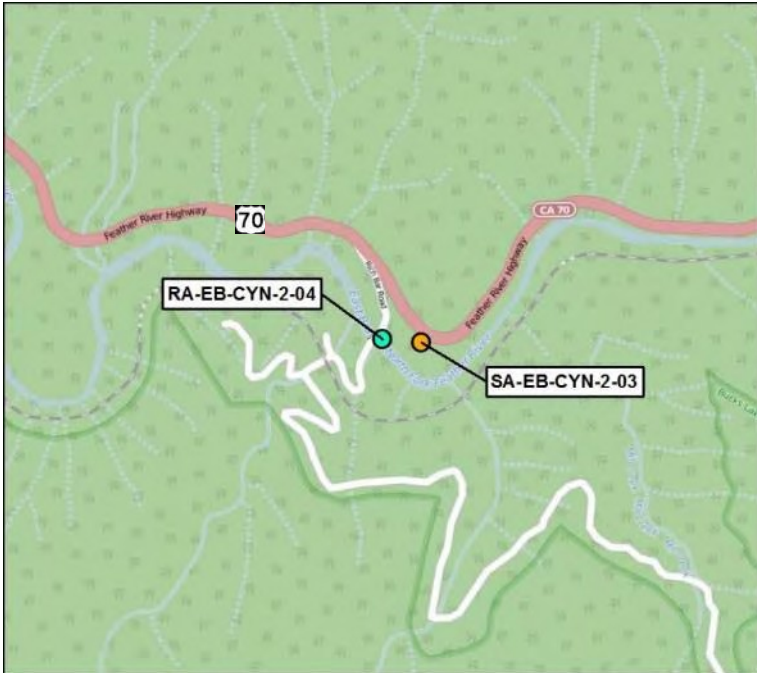
**DRAFT**

Belden Town Bridge		ID No. RA-NF-CYN-6-01
Site Latitude/Longitude	40.006950, -121.249440	
Strategy Objective	Collect and recover floating material at beach.	
Implementation	<p>Access to both sides of the river is available at this location from the bridge. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Anchor to bridge supports to contain and collect floating material at beach on Belden Town side of the river. If cascade booms are utilized, additional length of boom will be required to cover overlap.</p> <p>During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).</p>	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest staging area: SA-NF-CYN-6-01; Mid-sized staging area; Belden Town and Rest Area is suitable for Incident Command Center though equipment staging options are limited due to the bridge width. Cell service available. SA-NF-CYN-2-10; Mid to large size staging area. (40.006019, -121.250682)	
Field Notes	Belden Town Resort and Lodge could serve as ICC. Food, lodging, and cell phone reception are available. Bridge width may limit large equipment access.	
Protected Resources	Downstream habitats and freshwater wildlife; critical habitat area; known red-legged frog habitat immediately downstream; spotted owls known from conifers at site.	
Cultural Resources	Medium to high risk associated with confluence	
Watercourse Description	North Fork of the Feather River. Confluence with Yellow Creek and Belden Powerhouse	
Shoreline Type	Fine to medium grained granitic sediment beaches	
 <p>ABOVE: Boom Deployment Strategy</p>	<b>SUGGESTED EQUIPMENT</b>	
	Quantity	Description
	330ft / 100m	River collection boom; max 6-in skirt high flow
	2	BoomVane or equivalent self-deploying boom lead
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	<b>SUGGESTED PERSONNEL</b>	
	Quantity	Description
	6	Boom deployment and material recovery crew




# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Rich Bar		ID No. RA-EB-CYN-6-02
<b>SITE LATITUDE/LONGITUDE</b>		
40.009400, -121.192538		
<b>SITE CONTACT INFORMATION</b>		
Private Property		
<b>CLOSEST ADDRESS</b>		
18376 Rich Bar Road, Belden, California, 95915	<p><b>ABOVE: Booming location from bridge</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>Boom above bridge (295ft / 90m)</p> <p>River Width: 65ft / 20m</p> <p>Boom below rapids and collect at foot of bridge.</p> <p>Note that staging area shown on the map below (SA-EB-CYN-2-03) is not at river level. It is a pullout parking area for a historic marker along the highway with no direct river access. Access is by Rich Bar Road.</p> <p>Steep narrow road from Highway 70</p>		
 <p><b>ABOVE: Street Map</b></p>	<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>Take the CA-70 ramp to Portola/Quincy (1,500 feet)</li> <li>Turn left onto CA-70 West (80.4 miles)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li> <li>Take exit toward CA-70 North (0.7 miles)</li> <li>Continue onto CA-70 N (45.9 miles)</li> </ul> <p><b>End:</b> 18376 Rich Bar Road, Belden, California, 95915</p>	

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


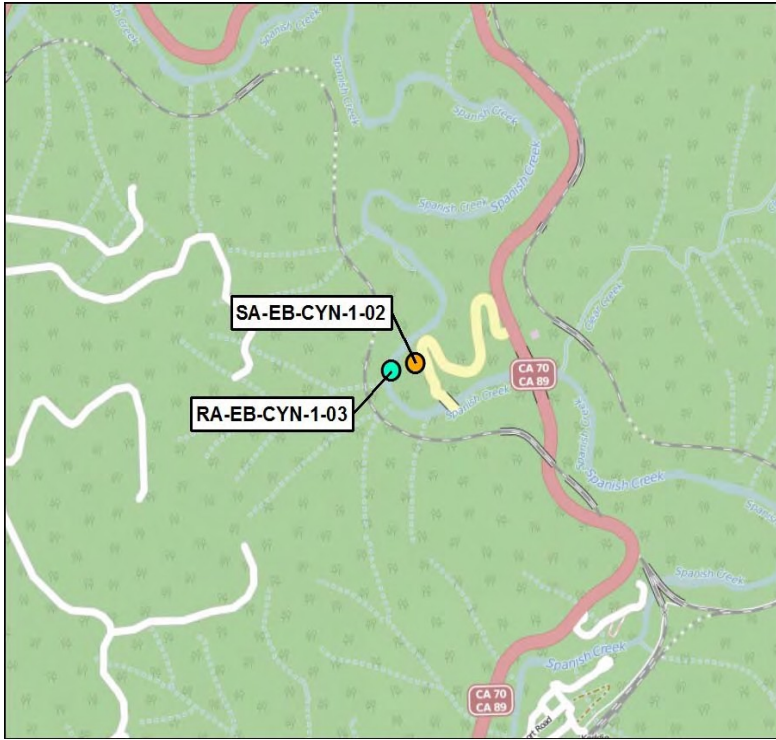
**DRAFT**

Rich Bar		ID No. RA-EB-CYN-6-02			
Site Latitude/Longitude	40.009400, -121.192538				
Strategy Objective	Collect and recover floating material.				
Implementation	Access to both sides of the river is available at this location. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).				
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards				
Staging Area	Closest Staging Area: SA-EB-CYN-6-02; Mid-sized; Rich Bar overlook parking area. Cell service (text) available. (40.009275, -121.190897)				
Field Notes	Boom below rapids and collect at foot of bridge. Private property				
Protected Resources	Downstream habitats, freshwater habitats; spotted owl in vicinity in site				
Cultural Resources	High – Known historic landmark (Rich Bar)				
Watercourse Description	North Fork of the Feather River, East Branch. Narrow sinuous stretch of river.				
Shoreline Type	Fine to medium grained granitic sand to boulders. High quality riparian habitat in areas.				
					
				SUGGESTED EQUIPMENT	
				Quantity	Description
				330ft / 100m	River collection boom; maximum 6-inch skirt if high flow
				Event specific	Collection infrastructure (skimmers, tanks, etc.)
				SUGGESTED PERSONNEL	
				Quantity	Description
				6	Boom deployment crew
ABOVE: Site Overview					




# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Spanish Creek Campground		ID No. RA-EB-CYN-7-01
<b>SITE LATITUDE/LONGITUDE</b>		
40.025986, -120.969178		
<b>SITE CONTACT INFORMATION</b>		
US Forest Service Spanish Creek Campground CA-70, Quincy, CA 95971 (530) 283-2050		
<b>CLOSEST ADDRESS</b>		
Not Known	<b>ABOVE: Aerial Site Image</b>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>■ Boom location (131ft / 40m)</p> <p>River width: 91ft / 28m</p> <p>USFS Campground. Good access, good staging area</p>		
 <p><b>ABOVE: Street Map</b></p>	<b>DRIVING DIRECTIONS</b> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Turn left onto CA-70 W (23.7 mi)</li> <li>• Follow CA-70 W to Spanish Creek Campground (23.7 mi)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 mi)</li> <li>• Take exit toward CA-70 North (0.7 mi)</li> <li>• Continue onto CA-70 N (62 mi)</li> <li>• Turn right into Spanish Creek Campground</li> </ul> <p><b>End: Spanish Springs Campground</b></p>	

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN



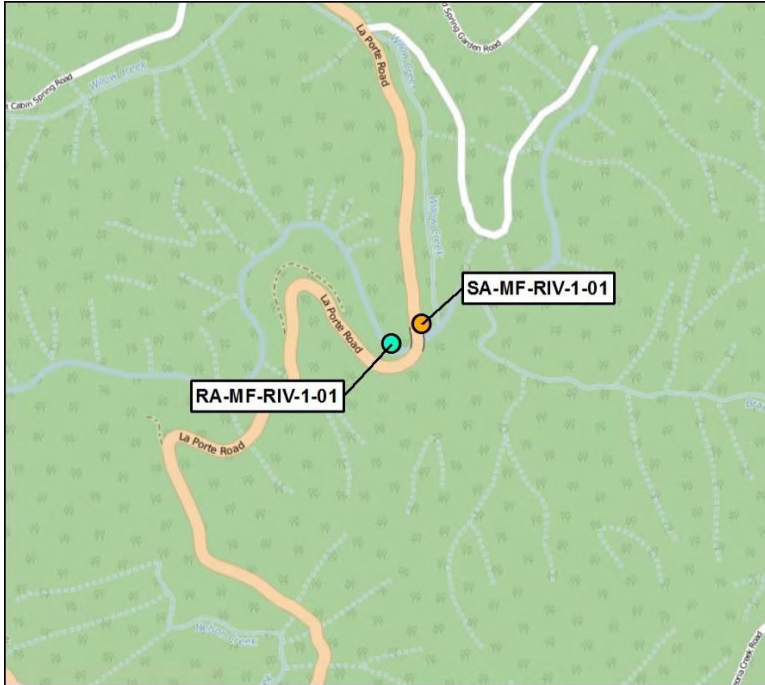
**DRAFT**

Spanish Creek Campground		ID No. RA-EB-CYN-7-01
Site Latitude/Longitude	40.025986, -120.969178	
Strategy Objective	Collect and recover floating material.	
Implementation	<p>The park offers good staging and reasonable river access. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Use small boat to access opposite bank.</p> <p>During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).</p>	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest Staging Area: SA-EB-CYN-7-01 at same location; Road from highway is steep but reasonable for equipment and trucks (40.026195, -120.968164)	
Field Notes	Excellent staging area. Small partial dam immediately downstream of site. Small boat launch feasible	
Protected Resources	Freshwater wildlife; riparian habitat, and spotted owl in nearby areas	
Cultural Resources	Low to medium in developed park	
Watercourse Description	East Branch of North Fork of the Feather River.	
Shoreline Type	Granitic medium and fine grained sand beach	
 <p>ABOVE: Site Overview</p>	<b>SUGGESTED EQUIPMENT</b>	
	Quantity	Description
	165ft / 50m	Collection boom
	1	Small work boat
	1	Boom vane or equivalent self-deploying boom
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	<b>SUGGESTED PERSONNEL</b>	
	Quantity	Description
	6	Boom deployment crew
	4	Boat crew



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**



La Porte Road Bridge		ID No. RA-MF-RIV-02
<b>SITE LATITUDE/LONGITUDE</b>		
39.859519, -120.850829		
<b>SITE CONTACT INFORMATION</b>		
US Forest Service CA-70, Quincy, CA 95971 (530) 283-2050		
<b>CLOSEST ADDRESS</b>		
Not Known		
<b>SITE IMAGE DESCRIPTION</b>		
<p>Boom location (230ft /70m)</p> <p>River width: 115ft / 35m</p> <p>Narrow access road from La Porte Road, then good staging area and river access.</p> <p>This is the last identified response area before Lake Oroville due to limited canyon access.</p> <p>High priority if released material could reach this location.</p>		
<b>ABOVE: Aerial Site Image</b>		
		<b>DRIVING DIRECTIONS</b>
		<b>From: Reno, Nevada</b>
		<ul style="list-style-type: none"> <li>Take US-395 N toward Susanville</li> <li>Take CA-70 W toward Portola Quincy (52.6 mi) to Quincy</li> <li>Turn Left on La Porte Road (8.2 miles) to bridge</li> </ul>
		<b>From: Oroville, California</b>
		<ul style="list-style-type: none"> <li>Turn right to merge onto CA-70 N (5.57 mi)</li> <li>Take CA-70 N (73.8 mi)</li> <li>Turn right onto La Porte Road (8.2 miles) to bridge</li> </ul>
<b>ABOVE: Street Map</b>		<b>End:</b> Campground on west side of road immediately before La Porte Bridge



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

La Porte Road Bridge		ID No. RA-MF-RIV-02		
Site Latitude/Longitude	39.859519, -120.850829			
Strategy Objective	Collect and recover floating material.			
Implementation	<p>This is the last identified response area on the Middle Fork before Lake Oroville due to very limited access in the canyon farther west. High priority for containment and collection at this location. The access road is narrow at La Porte Road, but opens up below at the small campground.</p> <p>For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment.</p> <p>During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).</p>			
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards			
Staging Area	Nearest Staging Area: SA-MF-RIV-02 at same location; Road from highway is steep but reasonable for equipment and trucks (39.859627, -120.848191)			
Field Notes	High priority to protect the Middle Fork between this location and Lake Oroville			
Protected Resources	Wild and Scenic River, western pearlshell, riparian habitat, aquatic wildlife			
Cultural Resources	Low to medium in campground			
Watercourse Description	Middle Fork of the Feather River.			
Shoreline Type	Granitic medium and fine grained sand beach			
<div></div> <div>ABOVE: Site Overview</div>			SUGGESTED EQUIPMENT	
			Quantity	Description
			245ft / 75m	Collection boom
			1	Small work boat
			1	Boom vane or equivalent self-deploying boom
			SUGGESTED PERSONNEL	
			Quantity	Description
			6	Boom deployment crew
			4	Boat crew

Sloat Poplar Valley Road Bridge		ID No. RA-MF-CYN-9-01
SITE LATITUDE/LONGITUDE		
39.860865, -120.727817		
SITE CONTACT INFORMATION		
Not Known		
CLOSEST ADDRESS		
340 Poplar Valley Road, Blairsden-Graeagle, California, 96103		ABOVE: Site Image
SITE IMAGE DESCRIPTION		
<div><div></div> Boom location (115ft / 35m) River width: 65ft / 20m Access to water's edge is across steep placed boulders as shown. Bridge support may be helpful for booming. Note that the floodplain along this stretch is approximately 500ft (150m) in width. High flow conditions will vary significantly from the conditions at the time of this photo and may require significantly more boom.</div>		
		DRIVING DIRECTIONS
ABOVE: Street Map		<b>From: Reno, Nevada</b> <ul style="list-style-type: none"><li>• Merge onto US-395 N toward Susanville (23.9 mi)</li><li>• Take the CA-70 ramp to Portola/Quincy (37.9 miles)</li><li>• Turn left onto Old Rd (0.9 mi)</li><li>• Turn left onto Sloat Rd (328 ft) then turn right onto Sloat Rd (725 ft)</li><li>• Turn left to stay on Sloat-Poplar Valley Rd. to bridge</li></ul> <b>From: Oroville, California</b> <ul style="list-style-type: none"><li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li><li>• Take exit toward CA-70 North (84 mi)</li><li>• Turn right onto Old Rd (0.9 mi)</li><li>• Turn left onto Sloat Rd (328 ft) then turn right onto Sloat Rd (725 ft)</li><li>• Turn left to stay on Sloat-Poplar Valley Rd. to bridge</li></ul> <b>End:</b> 340 Poplar Valley Road, Blairsden-Graeagle, California, 96103

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


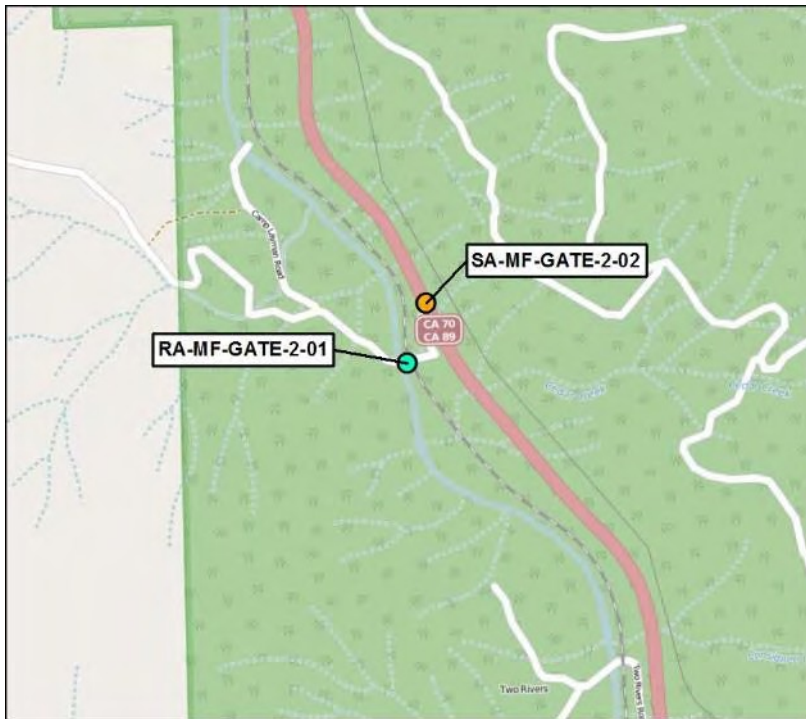
**DRAFT**

Sloat Poplar Valley Road Bridge		ID No. RA-MF-CYN-9-01
Site Latitude/Longitude	39.860865, -120.727817	
Strategy Objective	Collect and recover floating material.	
Implementation	<p>River width and flow may vary significantly between seasons and years. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge.</p> <p>During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).</p>	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest staging area: SA-MF-CYN-9-01; mid to large sized staging area; Shoulder of road, near rail line (39.862739, -120.727572)	
Field Notes	Bridge may be useful to for containment infrastructure. High quality riparian forest in adjacent floodplain.	
Protected Resources	Freshwater wildlife, downstream habitat, amphibians, critical habitat	
Cultural Resource Risk	Medium	
Watercourse Description	Middle Fork of the Feather River. Channel is within a broad floodplain	
Shoreline Type	Medium grained sand, gravel beach	
 <p>ABOVE: Site Overview</p>	<b>SUGGESTED EQUIPMENT</b>	
	Quantity	Description
	147ft / 45m	Collection boom – Flow may mandate additional boom
	1	Boom vane or equivalent self-deploying boom
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	<b>SUGGESTED PERSONNEL</b>	
	Quantity	Description
	6	Boom deployment crew




# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Camp Layman Bridge		ID No. RA-MF-CYN-9-02
SITE LATITUDE/LONGITUDE		
39.833032, -120.674509		
SITE CONTACT INFORMATION		
CLOSEST ADDRESS		
10 Camp Layman Road, Blairsden-Graeagle, California, 96103		<p><b>ABOVE: Booming Location</b></p>
SITE IMAGE DESCRIPTION		
<p>■ Boom location (115ft / 35m)</p> <p>River Width: 50ft / 15m</p> <p>Camp Layman Bridge – River access on both sides. Bridge supports may enhance booming. Boom location may be adjusted to incorporate bridge.</p> <p>Good staging area at Camp Layman</p> <p>Collect at west shore below bridge</p>		
		DRIVING DIRECTIONS
<p><b>ABOVE: Street Map</b></p>		<p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"><li>• Merge onto US-395 N toward Susanville (23.9 miles)</li><li>• Take the CA-70 West ramp to Portola/Quincy (37.9 miles)</li><li>• Turn left onto Camp Layman Road to bridge (1,000 ft)</li></ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"><li>• Turn right to merge onto CA-70 N/State Highway 70 North (6.92 miles)</li><li>• Continue onto CA-70 N (88.5 miles)</li><li>• Turn right onto Camp Layman Rd to bridge (1,000 ft)</li></ul> <p><b>End:</b> 10 Camp Layman Road, Blairsden-Graeagle, California, 96103</p>

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN



**DRAFT**

Camp Layman Bridge		ID No. RA-MF-CYN-9-02	
Site Latitude/Longitude	39.833032, -120.674509		
Strategy Objective	Collect and recover floating material.		
Implementation	River width and flow may vary significantly between seasons and years. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest staging area other than at river access: SA-MF-CYN-9-02; Small staging area; Camp Layman Road (39.834850, -120.673717)		
Field Notes	Good staging area near camp cabins. Could provide command post.		
Protected Resources	Pallid bat, freshwater wildlife, downstream habitat		
Cultural Resource Risk	Medium to Low		
Watercourse Description	Middle Fork of the Feather River.		
Shoreline Type	Constructed boulder slope on east (railroad) side. Alluvial granitic shore on west side.		
		SUGGESTED EQUIPMENT	
		Quantity	Description
		150ft / 45m	Collection boom – Flow may mandate additional boom
		1	Boom vane or equivalent self-deploying boom
		Event specific	Collection infrastructure (skimmers, tanks, etc.)
		SUGGESTED PERSONNEL	
		Quantity	Description
		6	Boom deployment crew
ABOVE: Site Overview			



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

Mohawk Highway Road Bridge		ID No. RA-MF-CYN-10-01
SITE LATITUDE/LONGITUDE		
39.782987, -120.635205		
SITE CONTACT INFORMATION		
CLOSEST ADDRESS		<p><b>ABOVE: Upstream and Downstream Booming Options Near Bridges</b></p>
254 Mohawk Highway Road, Blairsden-Graeagle, California, 96103		
SITE IMAGE DESCRIPTION		
<div>Boom location above bridge (80ft / 25m)</div> <div>Boom location below bridge (80ft / 25m)</div> <div>River Width: 50ft / 15m</div> <div>High quality wetland habitat above and below bridge on both banks</div>		
		
ABOVE: Street Map		
DRIVING DIRECTIONS		
<p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"><li>• Merge onto US-395 N toward Susanville (23.9 miles)</li><li>• Take the CA-70 West ramp to Portola/Quincy (33.7 miles)</li><li>• Turn left onto Mohawk Highway Road. Destination on left (0.34 miles)</li></ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"><li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 miles)</li><li>• Take exit toward CA-70 North (93.4 miles)</li><li>• Turn right onto Mohawk Hwy Rd (0.34 mi)</li></ul> <p><b>End:</b> 254 Mohawk Highway Road, Blairsden-Graeagle, California, 96103</p>		





# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Mohawk Highway Road Bridge		ID No. RA-MF-CYN-10-01
Strategy Objective	Collect and recover floating material.	
Implementation	High quality marsh and riparian vegetation along this reach. Minimize ingress and egress routes through vegetation. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest staging area other than at river access: SA-MF-CYN-10-01; mid to large staging area along CA-89; Approximately 5,000 feet of driving distance from site (39.781539, -120.621870)	
Field Notes	Booming options above and below bridge	
Protected Resources	Marsh and riparian vegetation in area. Flat-leaved bladderwort, Sierra Nevada mountain beaver. Avoid during spring if possible to avoid impacts to nesting and breeding resources. Minimize ingress and egress routes.	
Cultural Resources	Medium risk	
Watercourse Description	Middle Fork of the Feather River. Channel is within a wide floodplain and may significantly vary in width based on annual rainfall and snowmelt.	
Shoreline Type	Fine to medium grained granitic sand beach	
	<b>SUGGESTED EQUIPMENT</b>	
	Quantity	Description
	80ft / 25m	Collection boom – Flow may mandate additional boom
	1	Boom vane or equivalent self-deploying boom
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	<b>SUGGESTED PERSONNEL</b>	
	Quantity	Description
	6	Boom deployment crew
ABOVE: Site Overview		


# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Highway 89 Bridge near Blairsden		ID No. RA-MF-CYN-10-02
<b>SITE LATITUDE/LONGITUDE</b>		
39.778467, -120.621493		
<b>SITE CONTACT INFORMATION</b>		
Not known		
<b>CLOSEST ADDRESS</b>		
8505 CA-89, Blairsden-Graeagle, California, 96103	<p><b>ABOVE: Booming Location</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>■ Boom location (230 ft / 70m)</p> <p>River Width: 165ft / 50m</p> <p>High quality wetland habitat above and below bridge on both banks</p> <p>Bridge supports could be used for booming. Access is available on both sides of the bridge</p> <p>Sensitive wetland area immediately upstream and downstream</p>		
 <p><b>ABOVE: Street Map</b></p>	<b>DRIVING DIRECTIONS</b> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 West ramp to Portola/Quincy (33.1 mi)</li> <li>• Turn left onto CA-89 S (0.5 mi) to bridge</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/ (5.57 miles)</li> <li>• Take exit toward CA-70 North (0.7 miles)</li> <li>• Continue onto CA-70 N (93.4 miles)</li> <li>• Turn right onto CA-89 S (0.5 mi)</li> </ul> <p><b>End:</b> 8505 CA-89, Blairsden-Graeagle, California, 96103</p>	

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN




**DRAFT**

Highway 89 Bridge near Blairsden		ID No. RA-MF-CYN-10-02	
Site Latitude/Longitude	39.778467, -120.621493		
Strategy Objective	Collect and recover floating material.		
Implementation	Access to both sides of the river is available at this location from the bridge and booming could be deployed above or below bridge. Good water access from west side from dirt road. In high flow situations, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest staging area other than at river access: SA-MF-CYN-10-01; Mid to large sized staging area; 1,200 feet from boom location on CA-89 (39.781539, -120.621870)		
Field Notes	Sensitive wetland and riparian vegetation throughout location		
Protected Resources	Marsh and riparian vegetation in area. Flat-leaved bladderwort, marsh skullcap. Avoid vegetation during spring if possible to avoid impacts to nesting and breeding resources. Minimize ingress and egress routes.		
Cultural Resources	Medium Risk		
Watercourse Description	Middle Fork of the Feather River. This reach follows a broad floodplain and width may vary seasonally and from year to year.		
Shoreline Type	Medium sand, and gravel beaches		
 ABOVE: Site Overview	SUGGESTED EQUIPMENT		
	Quantity		Description
	245ft / 75m		River collection boom; maximum 6-inch skirt if high flows
	Event specific		Collection infrastructure (skimmers, tanks, etc.)
	SUGGESTED PERSONNEL		
	Quantity		Description
	6		Boom deployment and material recovery crew




# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Blairsden-Graeagle Road Bridge		ID No. RA-MF-CYN-10-03
<b>SITE LATITUDE/LONGITUDE</b>		
39.772993, -120.611676		
<b>SITE CONTACT INFORMATION</b>		
Not Known		
<b>CLOSEST ADDRESS</b>		
7620 CA 89, Blairsden-Graeagle, California 96103		
<b>SITE IMAGE DESCRIPTION</b>	<p>  Boom location (165ft / 50m)            River Width: 85ft / 26m            Good staging and resources at County Roads/Public Works yard west of bridge.         </p>	
<p><b>ABOVE: Aerial Site Image</b></p>		
 <p><b>ABOVE: Street Map</b></p>		<b>DRIVING DIRECTIONS</b> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Merge onto US-395 N toward Susanville (23.9 miles)</li> <li>• Take the CA-70 W ramp to Portola/Quincy (33.1 miles)</li> <li>• Turn left onto CA-89 S (758 feet)</li> <li>• Turn left at the 1<sup>st</sup> cross street onto Bonta St (0.923 miles) to bridge (249 feet)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N (5.57 miles)</li> <li>• Continue CA-70 North (93.4 miles)</li> <li>• Turn right onto CA-89 S (728 ft)</li> <li>• Turn left onto Bonta St (0.92 miles) to bridge</li> </ul> <p><b>End:</b> 7620 CA 89, Blairsden-Graeagle, California, 961</p>



# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Blairsden-Graeagle Road Bridge		ID No. RA-MF-CYN-10-03																												
Site Latitude/Longitude	39.772993, -120.611676																													
Strategy Objective	Collect and recover floating material.																													
Implementation	Access to both sides of the river is available at this location from the bridge and booming could be deployed above or below bridge. Good water access from west side from dirt road. In high flow situations, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).																													
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards																													
Staging Area	Nearest staging area other than at river access: SA-MF-CYN-10-02; Small to mid-sized staging area 300 feet from site. (39.773256, -120.610783)																													
Field Notes	There is a County Yard on the west side of the bridge and good river access.																													
Protected Resources	Marsh vegetation. Flat-leaved bladderwort. Avoid vegetation during spring if possible to avoid impacts to nesting and breeding resources. Minimize ingress and egress routes.																													
Cultural Resources	Medium																													
Watercourse Description	Middle Fork of Feather River part of long relatively straight reach.																													
Shoreline Type	Granitic gravel and medium grained sand beaches																													
<div><div><p>ABOVE: Site Overview</p></div><div><table><tr><th colspan="2">SUGGESTED EQUIPMENT</th></tr><tr><th>Quantity</th><th>Description</th></tr><tr><td>200ft / 60m</td><td>River collection boom; maximum 6-inch skirt if high flows</td></tr><tr><td>Event specific</td><td>Collection infrastructure (skimmers, tanks, etc.)</td></tr><tr><td></td><td></td></tr><tr><th colspan="2">SUGGESTED PERSONNEL</th></tr><tr><th>Quantity</th><th>Description</th></tr><tr><td>6</td><td>Boom deployment and material recovery crew</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table></div></div>			SUGGESTED EQUIPMENT		Quantity	Description	200ft / 60m	River collection boom; maximum 6-inch skirt if high flows	Event specific	Collection infrastructure (skimmers, tanks, etc.)			SUGGESTED PERSONNEL		Quantity	Description	6	Boom deployment and material recovery crew												
SUGGESTED EQUIPMENT																														
Quantity	Description																													
200ft / 60m	River collection boom; maximum 6-inch skirt if high flows																													
Event specific	Collection infrastructure (skimmers, tanks, etc.)																													
SUGGESTED PERSONNEL																														
Quantity	Description																													
6	Boom deployment and material recovery crew																													

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN


**DRAFT**

Clio Bridge		ID No. RA-MF-CYN-10-04
<b>SITE LATITUDE/LONGITUDE</b>		
39.741325, -120.580525		
<b>SITE CONTACT INFORMATION</b>		
<b>CLOSEST ADDRESS</b>		
264 Pine Street, Clio, California, 96106	<p><b>ABOVE: Aerial Site Image</b></p>	
<b>SITE IMAGE DESCRIPTION</b>		
<p>Boom location (145ft / 45m)</p> <p>River Width: 100ft / 30m</p> <p>This location is just below the confluence of the Middle Fork Feather River and Sulphur Creek. The confluence could create dynamic conditions during high flows</p>		
 <p><b>ABOVE: Street Map</b></p>	<p><b>DRIVING DIRECTIONS</b></p> <p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"> <li>• Turn left onto CA-70 W (23.7 mi)</li> <li>• Turn left onto South Gulling St (0.2 mi)</li> <li>• Turn right onto Commercial St (971 ft)</li> <li>• Turn right onto 3<sup>rd</sup> Ave (663 ft)</li> <li>• Turn left onto Colorado St (72 ft)</li> <li>• Turn right onto Portola McLeers Rd (7.68)</li> <li>• Turn right onto CA-89 North (1.44 mi)</li> <li>• Turn right onto Clio State 40A Rd/Lower Main St (410 ft)</li> </ul> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"> <li>• Turn right to merge onto CA-70 N/State Highway 70 North (5.57 mi)</li> <li>• Take exit toward CA-70 North (0.7 mi)</li> <li>• Continue onto CA-70 N (93.4 mi)</li> <li>• Turn right onto CA-89 S (4.12 mi)</li> <li>• Turn left onto Clio State 40A Rd/ Lower Main Street</li> </ul> <p><b>End:</b> 264 Pine Street, Clio, California, 96106</p>	




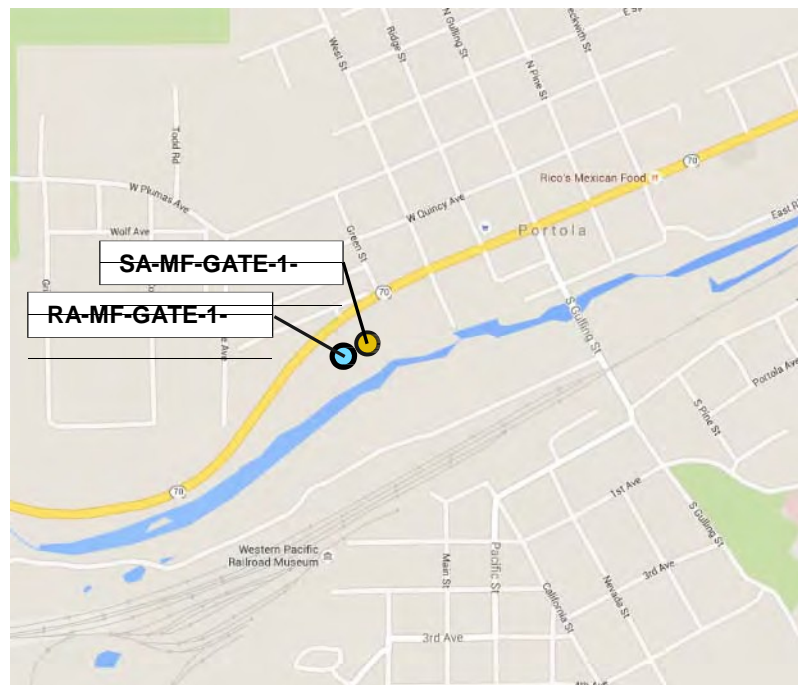
# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Clio Bridge		ID No. RA-MF-CYN-10-04	
Site Latitude/Longitude	39.741325, -120.580525		
Strategy Objective	Collect and recover floating material.		
Implementation	Access to both sides of the river is available at this location from the bridge. Booming strategy shown aligns with Sulphur Creek flow. Good water access from north bank. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).		
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards		
Staging Area	Nearest Staging Area: SA-MF-CYN-10-03; Small to mid-size staging area located in immediate vicinity of boom location. (39.741442, -120.580482)		
Field Notes	Location is at a confluence that could complicate hydrodynamics in high flow.		
Protected Resources	Marsh vegetation in area. Avoid vegetation during spring if possible to avoid impacts to nesting and breeding resources. Minimize ingress and egress routes.		
Cultural Resources	Medium		
Watercourse Description	Middle Fork of the Feather River at confluence with Sulphur Creek		
Shoreline Type	Granitic medium and fine grained sand beach		
 ABOVE: AERIAL VIEW	SUGGESTED EQUIPMENT		
	Quantity	Description	
	200ft / 60m	River collection boom; maximum 6-inch skirt if high flows	
	Event specific	Collection infrastructure (skimmers, tanks, etc.)	
	SUGGESTED PERSONNEL		
	Quantity	Description	
	6	Boom deployment and recovery crew	

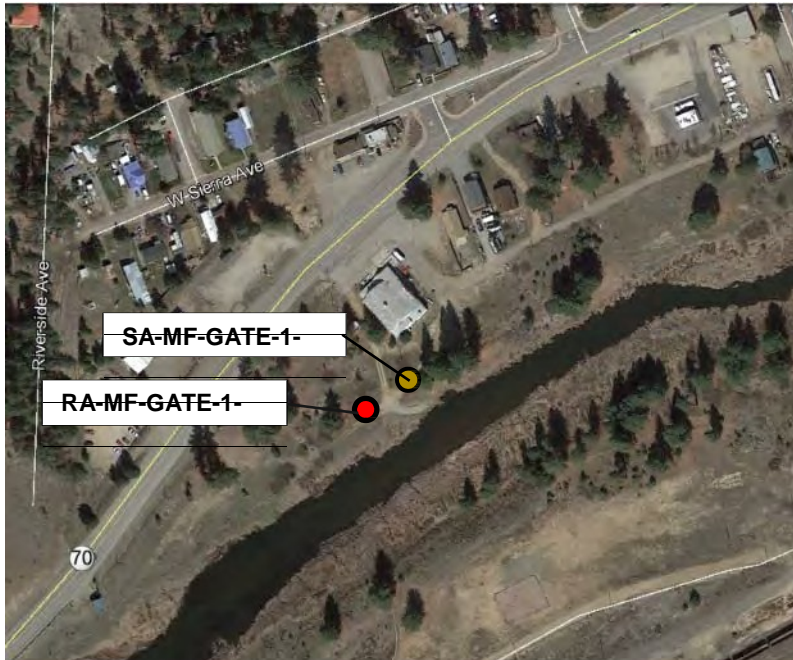
# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Portola Vet's Hall		ID No. RA-MF-CYN-10-05
SITE LATITUDE/LONGITUDE		
39.807625, -120.474271		
SITE CONTACT INFORMATION		
Portola Veteran's Hall (530) 832-4173		
CLOSEST ADDRESS		
449 W Sierra Ave, Portola, CA 96122		ABOVE: Booming Location
SITE IMAGE DESCRIPTION		
<div><div></div> Boom location (165ft / 50m)</div> <p>River Width: 82ft / 25m</p> <p>Relatively wide straight reach of river for booming and recovery. Good staging and water access.</p> <p>Dense grassland marsh along water is particularly sensitive during the spring breeding season for nesting birds. Minimize ingress and egress routes</p>		
		DRIVING DIRECTIONS
ABOVE: Street Map		<p><b>From: Reno, Nevada</b></p> <ul style="list-style-type: none"><li>Take I-80 E (1.2 mi)</li><li>Take US-395N Toward Susanville left onto South Gulling St (24 mi)</li><li>Take CA-70W to Portola/Quincy (24 mi)</li></ul> <p>Veteran's Hall on Left in Portola</p> <p><b>From: Oroville, California</b></p> <ul style="list-style-type: none"><li>Turn right to merge onto CA-70 N (5.57 mi)</li><li>Continue onto CA-70 N (102 mi)</li></ul> <p><b>End:</b> 449 W Sierra Ave, Portola, CA 96122</p>

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

**DRAFT**

Portola Vet's Hall		ID No. RA-MF-CYN-10-05
Site Latitude/Longitude	39.807625, -120.474271	
Strategy Objective	Collect and recover floating material.	
Implementation	Access to both sides of the river is available at this location from the S. Gulling Street bridge. Booming is feasible throughout this reach. Good water access from north bank at Vet's Hall. If cascade booming is utilized, additional length of boom will be required to cover overlap.  During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).	
Site Safety Notes	Slippery banks when wet or icy; trip & fall hazards; roadway hazards; water hazards	
Staging Area	Nearest Staging Area: SA-MF-CYN-10-04 (same location); Mid-size staging area located in immediate vicinity of boom location. (39.807861, -120.473953)	
Field Notes	Location is at a confluence that could complicate hydrodynamics in high flow.	
Protected Resources	Marsh vegetation in area. Willow flycatcher habitat. Avoid vegetation during spring if possible to avoid impacts to nesting and breeding. Minimize ingress and egress routes.	
Cultural Resources	Medium to Low	
Watercourse Description	Middle Fork of the Feather River through Portola	
Shoreline Type	Vegetated flat dirt banks	
 <p>ABOVE: Site Overview</p>	SUGGESTED EQUIPMENT	
	Quantity	Description
	200ft / 60m	River collection boom; maximum 6-inch skirt if high flows
	Event specific	Collection infrastructure (skimmers, tanks, etc.)
	SUGGESTED PERSONNEL	
	Quantity	Description
	6	Boom deployment and material recovery crew

#### **4.3.1 Boat Launch Locations**

Lake Oroville supports numerous commercial boat launch facilities. Launch facilities are informal (e.g., dirt ramps) throughout the rest of the GRP coverage area and are listed where observed in the Response Area strategy pages in section 4.3 above.

Response Plan strategy locations outlined in Section 4.3 are summarized in Table 4-4.



Table 4-4. Response Plan Strategy Locations

UP Response Strategy Location	Strategy Name (Nearest UP Milepost [MP])	Strategy Name (Nearest State Highway Postmiles [PM])	Location Owned and/or Operated by	Location Latitude/Longitude (decimal degrees)	Adjacent Receiving Waterbody	Next Downstream Strategy MP and (Downstream Direction Indicator)	Booming Strategy	Boom Length Recommended for Strategy Implementation (feet)	Nearest Staging Area	Site-Specific Notification Information and/or Strategy Implementation Notes
Honcut Headwaters-Lower Feather										
RA-FR-CYN-1-01	MP 211	PM 15.7 (Rte 70)		39.53053 / -121.546162	Feather River/Thermalito Diversion Pool	MP 205 (S)	Open water booming on reservoir	410	SA-FR-CYN-1-01	Water is generally slow moving behind the dam offering good on water collection and recovery options. Access to both sides of the linear reservoir is available at this location. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.
Northfork Feather										
RA-NF-CYN-3-01	MP 240	PM 42 (Rte 70)		39.80364 / -121.44099	North Fork Feather River	MP 239 (SW)	River collection boom; maximum 6-inch skirt	410	SA-NF-CYN-3-01	Launch light workboat from beach if possible with 410 ft boom. If high flow, recommend containment boom with maximum 6-inch skirt to prevent entrainment. Anchor to trees on far bank shown in photo based on flow characteristics. BoomVane or equivalent boom deployment methods may be effective if boat access is not feasible. If flow and/or distance prevents complete booming, a deflection boom may be effective on the northwest (rail) shoreline upstream to deflect floating material to a collection boom on southeast (HWY 70) bank for recovery. If cascade booming is utilized, additional length of boom will be required to cover overlap. Very high flows may limit the feasibility of this site. The river would also be wider in such situations requiring increased boom lengths. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-NF-CYN-3-02	MP 240	PM 42.7 (Rte 70)		39.80956 / -121.43155	North Fork Feather River	MP 240 (SW)	River collection boom	655	SA-NF-CYN-3-01	Water is generally slow moving behind the dam offering good containment and recovery options. Access to both sides of the river is available at this location from the dam (with PG&E permission). Recommend containment boom with no more than 6-inch skirt to prevent entrainment. Anchor to far side at or near buoy line anchor and collect floating material using skimmer at water access point. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.
RA-NF-CYN-4-01	MP 245	PM 47.1 (Rte 70)		39.85204 / -121.39256	North Fork Feather River	MP 244 (S)	River collection boom; maximum 6-inch skirt	245	SA-NF-CYN-4-01	Primary use of the site would be to employ the cableway to transport materials to the opposite bank. In high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Large boulders provide anchoring opportunities, but would challenge recover operations unless a skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-NF-CYN-4-02	MP 247	PM 1.2 (Rte 70)		39.876344 / -121.37269	North Fork Feather River	MP 246 (S)	River collection boom; maximum 6-inch skirt	655	SA-NF-CYN-4-01	Water is generally slow moving behind the dam offering good containment and recovery options. Access to both sides of the river is available at this location from the dam (with PG&E permission). Anchor to far side at or near buoy line anchor and collect floating material using skimmer at water access point. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.

FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN  
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Table 4-4. Response Plan Strategy Locations

UP Response Strategy Location	Strategy Name (Nearest UP Milepost [MP])	Strategy Name (Nearest State Highway Postmiles [PM])	Location Owned and/or Operated by	Location Latitude/Longitude (decimal degrees)	Adjacent Receiving Waterbody	Next Downstream Strategy MP and (Downstream Direction Indicator)	Booming Strategy	Boom Length Recommended for Strategy Implementation (feet)	Nearest Staging Area	Site-Specific Notification Information and/or Strategy Implementation Notes
RA-NF-CYN-5-01	MP 249	PM 3.1 (Rte 70)		39.90034 / -121.35931	North Fork Feather River	MP 248 (S)	River collection boom; maximum 6-inch skirt	655	SA-NF-CYN-5-01	Water is generally slow moving in the reservoir (behind Cresta Dam) offering good containment and recovery options. Access to both sides of the river is available at this location from the bridge, though the recommended booming strategy would require a boat to reach upstream boom anchor location on shore. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.
RA-NF-CYN-5-02	MP 258	PM 12.7 (Rte 70)		39.992349 / -121.280336	North Fork Feather River	MP 258 (S)	River collection boom; maximum 6-inch skirt for medium/high flows	575	SA-NF-CYN-5-02	Water is generally slow moving in the reservoir (behind Cresta Dam) offering good containment and recovery options. A boat can be launched approximately 1.5 miles upstream on Highway 70 at Chips Creek Confluence. Multiple layers of boom and collection infrastructure can be deployed on the reservoir. Slower water will allow for a variety of skimmer types and other collection mechanisms to best suit the material to be recovered.
RA-NF-CYN-5-03	MP 259	PM 3.5 (Rte 70)		39.999382 / -121.27022	North Fork Feather River	MP 259 (S)	River collection boom; maximum 6-inch skirt for medium/high flows	575	SA-NF-CYN-5-02	The confluence provides good river access and boat launch opportunity. Boat required for booming or use of Boomvane or equivalent self-deploying boom. In high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. The inlet of Chips Creeks would complicate booming during medium or high flows. Recommend consideration of Rock Creek Reservoir locations immediately downstream in slower water. Boom may be deployed immediately above confluence though habitat is higher quality and banks are steeper.
RA-NF-CYN-6-01	MP 263	PM 15 (Rte 70)		40.00695 / -121.24944	North Fork Feather River	MP 260 (VVVV)	River collection boom; max 6-in skirt high flow	330	SA-NF-CYN-6-01	Access to both sides of the river is available at this location from the bridge. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Anchor to bridge supports to contain and collect floating material at beach on Beldon Town side of the river. If cascade booming is utilized, additional length of boom will be required to cover overlap. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
East Branch North Fork Feather										
RA-EB-CYN-6-02	MP 265	PM 19 (Rte 70)		40.0094 / -121.192538	East Branch North Fork Feather River	MP 262 (W)	River collection boom; max 6-in skirt high flow	330	SA-EB-CYN-6-02	Access to both sides of the river is available at this location. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-EB-CYN-7-01	MP 280	PM 35.3 (Rte 70)		40.025986 / -120.969178	Spanish Creek	MP 279 (N)	Collection boom	165	SA-EB-CYN-7-01	The park offers good staging and reasonable river access. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Use small boat to access opposite bank. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).

FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN  
DRAFT

Table 4-4. Response Plan Strategy Locations

UP Response Strategy Location	Strategy Name (Nearest UP Milepost [MP])	Strategy Name (Nearest State Highway Postmiles [PM])	Location Owned and/or Operated by	Location Latitude/Longitude (decimal degrees)	Adjacent Receiving Waterbody	Next Downstream Strategy MP and (Downstream Direction Indicator)	Booming Strategy	Boom Length Recommended for Strategy Implementation (feet)	Nearest Staging Area	Site-Specific Notification Information and/or Strategy Implementation Notes
Middle Fork Feather										
RA-MF-CYN-9-01	MP 301	PM 57.6 (Rte 70)		39.860865 / -120.727817	Middle Fork Feather River	MP 301 (NW)	Collection boom – Flow may mandate additional boom	147	SA-MF-CYN-9-01	River width and flow may vary significantly between seasons and years. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-CYN-9-02	MP 305	PM 61.6 (Rte 70)		39.833032 / -120.674509	Middle Fork Feather River	MP 305 (N)	Collection boom – Flow may mandate additional boom	150	SA-MF-CYN-9-02	River width and flow may vary significantly between seasons and years. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-CYN-10- 01	MP 309	PM 65.9 (Rte 70)		39.782987 / -120.635205	Middle Fork Feather River	MP 309 (N)	Collection boom – Flow may mandate additional boom	80	SA-MF-CYN-10-01	High quality marsh and riparian vegetation along this reach. Minimize ingress and egress routes through vegetation. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Access to both sides of river available via bridge. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-CYN-10-02	MP 310	PM 8.3 (Rte 89)		39.778467 / -120.621493	Middle Fork Feather River	MP 310 (N)	River collection boom; maximum 6-inch skirt if high flows	245	SA-MF-CYN-10-01	Access to both sides of the river is available at this location from the bridge and booming could be deployed above or below bridge. Good water access from west side from dirt road. In high flow situations, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-CYN-10-03	MP 311	PM 67.5 (Rte 70)		39.772993 / -120.611676	Middle Fork Feather River	MP 310 (N)	River collection boom; maximum 6-inch skirt if high flows	200	SA-MF-CYN-10-02	Access to both sides of the river is available at this location from the bridge and booming could be deployed above or below bridge. Good water access from west side from dirt road. In high flow situations, recommend containment boom with no more than 6-inch skirt to prevent entrainment. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-CYN-10-04	MP 313	PM 4.5 (Rte 89)		39.741325 / -120.580525	Middle Fork Feather River	MP 313 (N)	River collection boom; maximum 6-inch skirt if high flows	200	SA-MF-CYN-10-03	Access to both sides of the river is available at this location from the bridge. Booming strategy shown aligns with Sulphur Creek flow. Good water access from north bank. Bridge supports may be helpful for booming. If cascade booming is utilized, additional length of boom will be required to cover overlap. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).

FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN  
DRAFT

Table 4-4. Response Plan Strategy Locations

UP Response Strategy Location	Strategy Name (Nearest UP Milepost [MP])	Strategy Name (Nearest State Highway Postmiles [PM])	Location Owned and/or Operated by	Location Latitude/Longitude (decimal degrees)	Adjacent Receiving Waterbody	Next Downstream Strategy MP and (Downstream Direction Indicator)	Booming Strategy	Boom Length Recommended for Strategy Implementation (feet)	Nearest Staging Area	Site-Specific Notification Information and/or Strategy Implementation Notes
RA-MF-CYN-10-05	MP 321	PM 75.6 (Rte 70)		39.807625 / -120.474271	Middle Fork Feather River	MP 321 (W)	River collection boom; maximum 6-inch skirt if high flows	200	SA-MF-CYN-10-04	Access to both sides of the river is available at this location from the S. Gulling Street bridge. Booming is feasible throughout this reach. Good water access from north bank at Vet's Hall. If cascade booming is utilized, additional length of boom will be required to cover overlap. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).
RA-MF-RIV-01	MP 211	PM 27.6 (Rte 162)		39.55803 / -121.458013	Lake Oroville	MP 211 (W)	River collection boom; maximum 6-inch skirt	410	SA-MF-RIV-01	Lake Oroville supports significant response infrastructure such as marinas and boat launches, logistical and response resources in the City of Oroville, and space to maneuver. On-water collection and recovery is advised. If shoreline response is required, access is available from numerous locations around the lake as well as by water.
RA-MF-RIV-02	NA	PM 54 (Rte 70)		39.859519 / -120.850829	Middle Fork Feather River	NA (W)	Collection boom	245	SA-MF-RIV-02	This is the last identified response area on the Middle Fork before Lake Oroville due to very limited access in the canyon farther west. High priority for containment and collection at this location. The access road is narrow at La Porte Road, but opens up below at the small campground. For high flows, recommend containment boom with no more than 6-inch skirt to prevent entrainment. During low and medium flows an in-line skimmer could be incorporated into the boom strategy (e.g., Elastec Circus skimmer or equivalent).

**Notes:**

The order of Booming/Notification strategies presented within each river system is organized based on river flow direction; not on railroad milepost numerical order. From the table top to bottom: Booming/Notification strategies within each river system proceed from upstream to downstream locations. As a result, Booming/Notification strategy milepost numbers may not ascend or descend numerically. Booming/Notification strategies for lower reaches of the Flathead river system are repeated within the Whitefish and Stillwater river system listings above [i.e. MP 1225.5 (MMR), on the Flathead River, is listed as a booming strategy for the Flathead River, Whitefish River and Stillwater river systems]. Strategies are repeated because spills occurring within the Whitefish and Stillwater river systems may impact the lower Flathead River. Stated alternatively, responses to spills occurring within the Whitefish and/or Stillwater river systems may also need to address the lower Flathead River due to upstream confluences.

- UPRR = Union Pacific Railroad
- WTP = water treatment plant
- NA = not applicable
- CDOT = Colorado Department of Transportation
- gpm = gallons per minute
- E.O.C. = Emergency Operations Center
- CR = county road
- CPW = Colorado Parks and Wildlife
- BLM = Bureau of Land Management
- WWTP = wastewater treatment plant
- USBR = U.S. Bureau of Reclamation
- GVWUA = Grand Valley Water Users Association
- USFWS = U.S. Fish and Wildlife Service
- OMID = Orchard Mesa Irrigation District



## 5 RESPONSE TECHNIQUES AND SELECTION

### 5.1 Overview

Shoreline countermeasure processes evolve to reflect increasingly efficient treatment techniques. Accordingly, the following information may change as new information is developed. The range of shoreline countermeasures extends from passive restoration (no active response measures) to active removal of soil, vegetation, and water. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) provides the organization structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants:

[http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr300\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr300_main_02.tpl)

The appropriate response technique for a given release on the Feather River will be dictated by the type and volume of material released, the location of the release and of the response actions, river and weather conditions, and the time required to implement the response strategy.

### 5.2 Response Methods

General response strategy descriptions for various inland shoreline types are provided in Appendix D in the NOAA publication Options for Minimizing Environmental Impacts of Freshwater Spill Response which is also available online:

[http://response.restoration.noaa.gov/sites/default/files/shoreline\\_countermeasures\\_freshwater.pdf](http://response.restoration.noaa.gov/sites/default/files/shoreline_countermeasures_freshwater.pdf)

Shoreline countermeasure processes evolve to reflect increasingly efficient treatment techniques. Accordingly, the following information may change as new information is developed. The range of shoreline countermeasures extends from passive restoration (no active response measures) to active removal of soil, vegetation, and water. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) provides the organization structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants:

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The appropriate response technique for a given release will be dictated by the type and volume of material released, the location of the release and of the response actions, river and weather conditions, and the time required to implement the response strategy.

Response strategies include the following:

#### *Physical Response Options*

- Natural Recovery
- Booming
- Skimming
- Barrier/Berm
- Physical Herding

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- Manual Removal/Cleaning
- Sorbents
- Vacuum/Dredging
- Debris Removal
- Sediment Reworking
- Vegetation Removal
- In-situ Burning
- Water Flooding
- Low-pressure, Cold-water Flushing
- Low-pressure, Hot-water Flushing
- High-pressure, Cold-water Flushing
- High-pressure, Hot-water Flushing
- Steam Cleaning
- Sand Blasting

*Chemical Response Methods*

- Dispersants
- Emulsion Treating Agents
- Visco-Elastic Agents
- Herding Agents
- Solidifiers
- Chemical Shoreline Pretreatment
- Shoreline Cleaning Agents – Lift and Float
- Shoreline Cleaning Agents – Dispersant

*Biological Response Methods*

- Natural Attenuation
- Microbial Enhancement for Bioremediation

NOAA has also developed an online tool that allows the user to input site-specific data through check-boxes and drop down menus to identify potentially appropriate technologies for a response:

<http://nrt-sg.sraprod.com/build/#>

NOAA Response Selection Guide information is provided below.

## **6 NOAA - REVIEW/SELECT POTENTIAL OPTIONS AND PRODUCTS**

### **Introduction**

This section of the Selection Guide provides the decision-maker with the means for evaluating detailed information for individual strategies and product categories for use when responding to spilled oil.

### **Purpose**

Review all strategies and products in a detailed manner and allow easy comparison of individual products and strategies to evaluate their potential value to the individual response-specific conditions. Worksheet 2 will be used to facilitate review and comparison of the products.

The general subsections for which summary information is presented for each technology category include:

- Mechanism of action (how it works, what it does)
- When to use
- Authority required
- Availability
- General application requirements
- Health and safety issues
- Limiting factors/environmental constraints
- Monitoring requirements/suggestions
- Waste generation and disposal issues

Within each strategy and product category, detailed, strategy/ product-specific information is presented in a table format in order to facilitate direct comparison of the various available products. This includes all the products on the NCP Product Schedule, plus others that are not required to be on the Schedule, such as sorbents. The table organization for each technology category is similar, with some variation, to reflect the most relevant decision issues of interest or concern.

### **Note**

To ensure that you are accessing the most current product pricing information, decision-makers should contact the supplier/vendor.

### **Step Action Table**

Follow the step action table below for Part B: Review/Select Potential Options and Products

STEP	ACTION
1.	<p>Obtain a blank copy of the Product Selection Worksheet (Worksheet 2) to record information for each product category. Worksheet 2 is on the next page. Another copy is in Appendix H for photocopying.</p> <p><b>Note:</b> If two product categories/strategies are being evaluated for an incident, fill out a separate Product Selection Worksheet for each category/strategy.</p> <p><b>Note:</b> If you are considering a category/strategy that does not involve the use of NCP listed products, such as fast water booming or water intake monitoring, this worksheet is not needed.</p>
2.	Record product category/strategy being evaluated on Line A of Worksheet 2. Review all information in the general category overview.
3.	<p>Identify up to three products in this category to be reviewed. Record a product name in each column on Line B.</p> <p><i>Use another copy of the worksheet if more than three products are being evaluated for a product category.</i></p>
4.	Complete questions C, D, E, and F for each product being considered. Record product-specific information in the space available for these questions.
5.	<p>Record the toxicity ratings for Inland Silversides (96h) and Mysid Shrimp (48h) for each product in Line G, where applicable.</p> <p><b>Note:</b> For more information on the toxicity and toxicity ratings and what they mean refer to Appendix E of this volume.</p>
6.	<p>Review product-specific information recorded and compare and contrast products. Rank the products in terms of value to the incident-specific response conditions. Identify those products that are not suitable at this time.</p> <p>Record this information in Line H.</p>
7.	Record any additional comments or information that is pertinent to this decision in Line I.
8.	<p>This worksheet is designed to assist in the decision-making process. In Line J, if a product(s) appears to add value to the response, the completed worksheets can be used to demonstrate consensus and can be FAXed to the incident-specific RRT for review and/or approval.</p>
	<p><b>NOTE:</b> Identifying potential products for use in the response requires additional evaluation criteria in terms of actually testing the product on the oil and developing monitoring capabilities to determine the extent of effectiveness and when to cease using a product. Continue on to Part C to complete your evaluation</p>



**DRAFT****WORKSHEET 2: PRODUCT SELECTION WORKSHEET**

This worksheet is intended to be photocopied for each product category evaluated and used during drills and incidents and Faxed to the Incident Specific RRT for review. This worksheet may be used to evaluate 1, 2 or 3 separate products in an individual category.

**Name:****Date:****Incident Name:**

<b>A:</b>	<b>Product Category Being Reviewed:</b>			
	<b>Products of Interest:</b>	<b>Product 1</b>	<b>Product 2</b>	<b>Product 3</b>
<b>B:</b>	<b>Product Name:</b>			
<b>C:</b>	<b>RRT Approval Required? (Y/N)</b>			
<b>D</b>	<b>Can Product Arrive in Time? (Y/N)</b>			
<b>E</b>	<b>Can Product be Applied in Time? (Y/N)</b>			
<b>F</b>	<b>Can Product be removed from the Environment? (Y/N)</b>			
<b>G</b>	<b>Toxicity</b>	<b>Inland silversides (96h):</b>  <b>Mysid Shrimp (48h):</b>	<b>Inland silversides (96h):</b>  <b>Mysid Shrimp (48h):</b>	<b>Inland silversides (96h):</b>  <b>Mysid Shrimp (48h):</b>
<b>H:</b>	<b>Mark as 1st, 2nd, or 3rd Choice or mark as Not Applicable for this incident</b>			
<b>I.</b>	<b>Additional Comments/Decisions/Recommendations:</b>			

### **6.1.1 Fast-Water Booming Strategy**

#### **Description**

- For the purposes of the Selection Guide, the term “fast water” is applied to any water body with currents of one to six knots.
- Oil containment boom loses oil due to entrainment when the water current normal (perpendicular) to the boom exceeds 0.75 to 1 knot (depending on the oil's specific gravity, viscosity, and other factors). Above this “critical velocity”, entrainment can be eliminated or reduced by deploying boom at an angle to the current to divert or deflect floating oil away from sensitive areas or toward areas of lower current velocity where the oil may be contained and recovered.
- With increasing current, the angle of the boom to the current must be reduced to control entrainment.
- Traditional containment booms can be positioned at sharp angles to the current (with great difficulty) to divert oil in up to two or three knots. With developing technologies, a current of six knots is considered the upper limit for controlling floating oil in the foreseeable future.

#### **When to Use**

- Fast-water booming strategies should be used whenever the current exceeds the critical velocity for the spilled oil, and entrains under the containment or deflection boom.
- Oil containment boom may fail to contain oil due to entrainment at currents above
- 0.75 to 1.0 knots. With a 1.5 knot current, a deflection boom must be angled at approximately 35 degrees to the current to prevent entrainment. At two-knots current velocity, the boom angle must be reduced to about 25 degrees and to about 15 degrees for a three-knot current. These sharp boom angles are very difficult to achieve and maintain.

#### **Authority Required**

- RRT approval is not required for employing fast-water booming techniques, but operations personnel should coordinate with appropriate state and local authorities with respect to shoreline private property issues, environmentally sensitive shorelines, and intertidal and subtidal areas when deploying mooring systems.
- Care should be enforced to ensure that particularly sensitive resources are not damaged by boom-mooring systems, by boats, or by personnel operating in shallow water areas.

#### **Availability**

- Specialized fast-water booms are available, but may not be immediately available in the project area.
- Fast-water booming techniques, addressed below, can be implemented using traditional booming equipment.

#### **General Application Requirements**

- Fast-water booming strategies to protect sensitive areas must be:
  - Well thought out;

- Practiced by well-trained, properly equipped, and experienced crews, under controlled conditions; and
- Refined, prior to implementation during an actual incident response.
- Improper implementation of fast-water booming strategies can seriously endanger boat crews in addition to jeopardizing the success of the operation. A towboat can easily be capsized and submerged when handling boom in a fast-water environment. For this reason alone, some of the newer booming techniques feature boom deployment and positioning using shore-tended lines should be considered where feasible. For example, Boom Vane or equivalent self-deploying boom may increase safety by keeping the deployment crew on the shore.

### **Health and Safety Issues**

- The following health and safety issues should be addressed prior to engaging in fast- water booming operations:
- The Safety Officer must personally address fast-water safety issues or assign a knowledgeable assistant to do so. The Site Safety Plan should specifically address fast-water booming issues.
- As noted above, fast-water booming operations should be well planned and implemented by experienced work crews. Personnel must receive thorough safety briefings stressing operational objectives, procedures, chain of command, potential safety hazards, and required personnel protective equipment.
- Small boat operations, and particularly towing operations, under high-current conditions can be hazardous and should be undertaken only by highly trained and experienced boat crews familiar with the operating area.
- During operations, shoreside work crews may be exposed to the same range of hazards as boat crews, but will likely have had less training/experience. Personnel wading in shallow, high current waters should be aware of the extreme hazard of foot entrapment and submersion by the current.
- Man-overboard procedures should be discussed and understood by all hands. Positioning a safety boat down current of the booming operations should be considered for potential man-overboard situations.
- Boom towlines and mooring lines can be subjected to very high loads in high-current conditions. Boom and line-safe working loads should be considered and the potential for parting and snap-back anticipated. Booming techniques, such as cascading, should be considered as appropriate to reduce boom and line loading.

### **Monitoring Requirements/Suggestions**

- Fast-water booming deployments must be continually monitored to ensure boom angles are appropriate to prevent entrainment, and to ensure that mooring system anchors have not dragged, lines parted, or other system components failed under load.
- Work crews must be prepared to make adjustments as required.

**Fast-Water Booming Strategy Options**

	Angled Deflection	Site Selection	Boom Selection
<b>Description</b>	<p>When the current exceeds the critical velocity and entrainment prevents effective oil containment, boom can be angled across the current to divert or deflect oil away from sensitive areas or toward lower current areas for recovery. Deflection may be effective in up to three knots of current, if a very sharp boom angle can be maintained across the current (about 15 degrees from the direction of current flow, for a 3 knot current).</p> <p>Newer boom designs and refinements in technique may extend this capability.</p>	<p>Select a protective booming site where current is minimized (e.g. at the widest and/or deepest point of a river or channel, or at the channel entrance or exit, etc.). Select an area where oil can be diverted to a natural collection point or eddy where current allows recovery using skimmers or pumps. A shoreside recovery point accessible by land-based heavy equipment is preferred, but not essential. Floating platforms may be positioned to support oil recovery and temporary storage. Do not select a boom site where booming is impractical due to current, sea state, logistics, etc.</p>	<p>Boom characteristics important for fast-water booming include shallow skirt depth (draft of 6 inches or less) to minimize entrainment, bottom tension member to prevent boom planing, curtain versus fence design for vertical flexibility, high buoyancy to weight ratio to prevent submersion, and sufficient tensile strength to prevent structural failure.</p> <p><b>Some manufacturers offer specially designed High Current Booms</b> incorporating the above features. Shallow draft deflection boom must transition to traditional deeper draft containment boom to hold diverted oil for recovery in the low-current oil collection area.</p>
<b>Equipment Availability</b>	<p>Any reasonably strong, relatively shallow draft, oil containment boom with a bottom tension member can be deployed in a deflection mode across a current. Adequate mooring systems are less readily available but can be assembled with adequate planning.</p>	N/A	<p>High current booms are not widely available at this writing. Any strong boom with a relatively shallow draft and a bottom tension member is a good candidate for fast-current booming</p>
<b>Logistical Needs</b>	<p>Launch site for tow boat(s) and boom near the area to be protected. One or more powerful towboats with adequate towing bits and sufficient deck space for mooring system stowage and deployment.</p>	N/A	<p>See Logistical needs for "Angled Deflection" (to the left) on this page</p>



**Fast-Water Booming Strategy Options**

	Adequate Moorings	Cascade Booming	Shore-Tended Boom
<b>Description</b>	Stretching a length of boom in a relatively straight line across a high current requires application of considerable opposing forces on the two ends of the boom. Once in position, the forces must be maintained, traditionally with mooring systems featuring anchors, which are heavy and/or highly efficient (have high holding power). All components of the boom and mooring systems must have adequate safe working loads to prevent structural failure. In some cases, additional mooring systems must be secured at intermediate points along the boom to overcome lateral forces tending to create boom catenary leading to entrainment.	In some cases, a series of two or more overlapping, “cascade”, deflection booms stretched across a high current waterway are more practical than a single long deflection boom spanning the same distance. The shorter, individual cascade boom sections will generate lesser loads in the current and will therefore require lighter rigging, smaller anchors, less powerful towboats, etc. On the other hand, cascade systems are more complex and system simplicity should be an objective to the extent possible. Multiple mooring systems in close proximity can result in fouling of anchors and related operational complications.	In relatively narrow rivers or channels, it may be feasible to rig single or cascade deflection boom sections using only shoreside anchor points. Shoreside anchor points may be trees, large rocks, or installed “deadmen”. Boom mooring lines secured to shoreside points are accessible and readily adjustable.  Envision a length of boom stretched in a fairly straight line, at a sharp angle across the current, from an upstream anchor point on one side of the river to a downstream anchor point on the opposite side of the river. In addition to the longitudinal mooring lines, other lines on the boom ends can be worked from the shore, at right angles to the boom, to control lateral positioning in the river.
<b>Equipment Availability</b>	Boom mooring systems with the high holding power necessary for deflection booming across a high current are not readily available from booming contractors. Suitable mooring system components can be assembled with adequate advance planning.	More mooring systems and rigging materials, and a little more boom will be required, but the moorings and rigging need not be as robust.	Shore-tended boom mooring systems can be readily assembled using appropriately sized line, shackles, snatch blocks, and other standard marine rigging materials.  These systems work best with specially designed high-current booms (See Boom Selection above).

**Fast-Water Booming Strategy Options**

<b>Logistical Needs</b>	Adequate mooring systems for fast-water booming are not readily available. Deployment and especially recovery of heavy anchors requires specially equipped workboats and experienced crews. Pre- spill installation of permanent boom mooring buoys and anchor points ashore, to protect sensitive areas, is highly recommended.	Logistic support to install the more complex cascade system may be of longer duration, but less demanding in terms of the installation of smaller mooring systems and lighter rigging. Smaller, less powerful towboats may be adequate for deployment and recovery of the lighter weight cascade system moorings.	A small boat, heaving line, or other means of passing a messenger line across the river to haul mooring lines and booms across. Winches, "come-alongs", 4-wheel drive vehicles, or other means of hauling, as required. A trained and experienced work crew with a qualified rigger is required.
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	Reduce Relative Velocity	New Innovations
<b>Description</b>	Fast-water booming in open-water areas may allow reducing water velocity relative to the boom by "going with the flow". Tow boats may sweep (U-configuration) oil collection boom through a slick at one knot relative to the slick, while being set back two knots "over the ground", by a three knot current. When filled with oil, the boom ends can be brought together in a "teardrop" configuration and allowed to drift with the current pending removal by skimming. Similarly, in open waters, a skimmer with V-configuration collection boom can recover an oil slick in a high current provided it proceeds at a slow speed through the slick while being set backward by the current.	A number of innovative new ideas have been proposed and tested with varying degrees of success to date. At the time of this writing it is not appropriate to include them in this Selection Guide. Operational systems are not yet available. The Coast Guard R&D Center in Groton, CT, and other sources may be contacted for further information on this subject.
<b>Equipment Availability</b>	Standard booms, skimmers, and towboats may be used, but specialized high-current booms and skimmers will enhance performance. "Open water" operation implies that equipment must be suitable for the sea state and other environmental conditions to be encountered.	
<b>Logistical Needs</b>	No unusual logistical needs would be anticipated beyond those required by offshore or open water operations.	

### **6.1.2 Non-floating Oil Strategies**

#### **Description**

- Non-floating oil can have complex behavioral patterns, depending on the API gravity of the oil, the density of the receiving water, and the physical setting of the spill site.
- Denser-than-water oil is expected to mix in the water column as oil drops rather than large, cohesive mats. Oil can accumulate on the bottom under low currents, so releases in harbors with dredged channels and berths in canals could readily sink and form pools of oil on the bottom.
- Releases in areas subject to riverine flow are likely to be kept in suspension in the water column by currents.
- Floating oil can sink after mixing with sand, either in the surf zone or after stranding onshore.
- Traditional methods for tracking, containment, and recovery are not effective for non-floating oil spills. Refer to the matrices to evaluate possible options for tracking, containing, and recovering oil suspended in the water column and on the bottom.

#### **Response Strategy**

General options and needs include:

- Mapping the extent of oil deposited on the bottom;
- Containing oil suspended in the water column;
- Manage dissolved oxygen levels in the water column to prevent fish kill (employ aeration if necessary), and
- Collecting oil from the bottom in seines, sinking sorbents, or with dredging/vacuums

#### **Authority Required**

Key regulatory issues associated with response to non-floating oil spills can include:

- Approval from the U.S. Army Corps of Engineers and Regional Water Quality Control Board for emergency dredging.
- Getting emergency decant authorization when handling large volumes of water during dredging.
- Contamination of bottom sediments that may require additional testing and disposal restrictions during future maintenance dredging operations.

#### **Availability**

- Varies widely by equipment type.

#### **Limiting Factors/Environmental Constraints**

- Human health and safety are of primary concern, particularly for dive operations in general and specifically contaminated-water diving.
- Existing methods for tracking oil suspended in the water column are ineffective; methods for mapping oil deposited on the bottom are slow and logistics-intensive.

- Strong currents limit the likelihood of oil accumulating on the bottom and diver operations.
- Poor water visibility limits ability to locate oil deposits and effectiveness of divers in directing recovery devices.
- Debris on the bottom may make the recovery of sunken oil difficult and could tangle or damage nets and other recovery equipment.

#### **Monitoring Requirements/Suggestions**

- Since there is limited documentation on the effectiveness and effects of containment and recovery of non-floating oils, monitoring is important.

#### **Waste Generation and Disposal Issues**

- There are numerous and complex waste disposal issues associated with disposal of both the liquids and solids collected during recovery of non-floating oil spills.
- Large volumes of collected water will have to be decanted and discharged on-scene during recovery operations.



## Response Options for Mapping of Oil Deposited on the Bottom

	Bottom Trawls	Photobathymetry	Geophysical/Acoustic Techniques
<b>Description</b>	Fish nets or trawling gear are towed on the bottom for set distance then inspected for presence of oil	Aerial stereo photography mapping technique to identify and map underwater features. A realistic scale is 1:10,000	Sonar system which uses the differential density and sound speeds in oil and sediment to detect oil layers on the bottom. A fathometer records a single line under the sounder; side-scan sonar records a swath.
<b>Equipment Availability</b>	Readily available in fishing areas	Available from most private aerial mapping companies, with specifications	Variable, and often not available locally; need trained personnel
<b>Logistical Needs</b>	Moderate; requires boat and operators to tow the nets; may need multiple vessels to cover large areas; may need many replacement nets as they become oiled	Aircraft specially equipped to obtain vertical aerial photography with GPS interface	Moderate; requires boat on which equipment can be mounted; need updated charts so that search area can be defined
<b>Coverage Rate</b>	Low; nets have a small sweep area and they have to be pulled up frequently for inspection	High	Moderate; data collected at speeds up to several knots
<b>Data Turnaround</b>	Quick	Slow; aerial photos can be produced in a few days in most places; data interpretation will take 1-2 + days	Medium; data processing takes hours, preliminary data usually available next day; potential sites need ground truthing
<b>Probability of False Positives</b>	Low; oil staining should be readily differentiated from other fouling materials	High; photograph identify potential sites, all of which will need ground truthing	High; identifies potential sites but all need ground truthing
<b>Operational Limitations</b>	Obstructions on the bottom can hang up nets; restricted to relatively shallow depths; sea conditions may restrict vessel operations; heavy debris in water can foul nets	Specifications call for low sun angles and calm sea state; water penetration is limited by water clarity; maximum penetration is 25 ft for very clear water; 2 ft for turbid water; best if baseline "before" photography is available for comparison	Sea conditions have to be relatively calm to minimize noise in the recording

**Response Options for Mapping of Oil Deposited on the Bottom**

<b>Pros</b>	Can provide data on relative concentrations on the bottom per unit trawl area/time; can survey in grids for more representative aerial coverage	Rapid assessment of large areas; high spatial resolution; good documentation and mapping	Can be used to identify potential accumulation areas; complete systems can generate high-quality data with track lines, good locational accuracy
<b>Cons</b>	Very slow; nets can fail from excess debris accumulation	Limited by water clarity, sun angle, and availability of pre-spill photography for comparisons	Data processing can be slow; requires extensive ground truthing; limited number of skilled operators

## Response Options for Containing Oil Suspended in the Water Column

	Air Curtains/Barriers	Net Booms	Silt Curtains
<b>Description</b>	Piping with holes is placed on the bottom and compressed air is pumped through it, creating an air bubble barrier	Floating booms with weighted skirts (3-6 ft) composed of mesh designed to allow water to pass while containing suspended oil	Silt curtains, as used during dredging operations, are deployed as a physical barrier to the spread of suspended oil; weighted ballast chains keep the curtain in place
<b>Equipment Availability</b>	Uses readily available equipment, though in unique configuration	There are commercially available net booms, developed and tested for containing spills of Orimulsion. Little availability in the U.S.	Not readily available; limited expertise in deployment and maintenance
<b>Logistical Needs</b>	Moderate: need system to deploy and maintain bubbler; piping has tendency to clog; high installation costs	Moderate; similar to deployment of standard booms, but with added difficulty because of longer skirt; can become heavy and unmanageable	Moderate; to properly deploy and maintain the silt curtains
<b>Operational Limitations</b>	Only effective in low currents (<0.5 knots), small waves, and water depths < 5 ft	In field tests, the booms failed in currents <0.75 knots. They will work under very few conditions	Only effective in very low currents (<0.5 knots); practical limits on curtain depth are 5-10 ft, which normally doesn't extend to the bottom
<b>Optimal Conditions</b>	To contain oil spilled in dead-end canals and piers; to protect water intakes	Will contain oil only in very low-flow areas, such as dead-end canals and piers	Still water bodies such as lakes; dead-end canals
<b>Pros</b>	Does not interfere with vessel traffic	Can be deployed similar to traditional booms	Can be deployed throughout the entire water column
<b>Cons</b>	Only effective under very limited conditions; takes time to fabricate and deploy, thus only effective where pre-deployed; little data to assess performance	Only contains oil suspended in the upper water column, to the depth of the mesh skirt; if sufficient oil is suspended in the upper water column to warrant the use of nets, then it is likely that the nets will become clogged and will need to be monitored and/or replaced	Only effective under very limited conditions, not likely to coincide with those where suspended oil needs containment; oil droplets are larger than silt and could clog curtain

## Response Options for Recovering Oil Deposited on the Bottom

	Manual Removal by Divers	Nets/Trawls	Pump and Vacuum Systems (Diver-directed)	Dredging
<b>Description</b>	Divers pick up solid and semi-solid oil by hand or with nets on the bottom, placing it in bags or other containers	Fish nets and trawls are dragged on the bottom to collect solidified oil	Divers direct a suction hose connected to a pump and vacuum system, connected to oil-water separator, and solids containers. Viscous oils require special pumps and suction heads. Even in low water visibility, divers can identify oil by feel or get feedback from top-side monitors of changes in oil recovery rates in effluents	Special purpose dredges, usually small and mobile, with ability for accurate vertical control. Uses land- or barge-based systems for storage and separation of the large volumes of oil- water- solids
<b>Equipment Availability</b>	Contaminated-water dive gear may not be locally available	Nets and vessels readily available in areas with commercial fishing industry	Readily available equipment but needs modification to spill conditions, particularly pumping systems, and capacity for handling large volumes of materials during oil- water- solids separation	Varies; readily available in active port areas; takes days/week to mobilize complete systems
<b>Logistical Needs</b>	Moderate; diving in contaminated-water requires special gear and decon procedures; handling of oily wastes on water can be difficult	Low; uses standard equipment, though nets will have to be replaced often because of fouling	High, especially if recovery operations are not very close to shore. On-water systems will be complicated and subject to weather, vessel traffic, and other safety issues	High, especially if recovery operations are not very close to shore, because of large volumes of materials handled. On- water systems will be complicated and subject to weather, vessel traffic, and other safety issues

**Response Options for Recovering Oil Deposited on the Bottom**

<b>Operational Limitations</b>	Water depths < 100 ft for routine dive operations; water visibility of 1-2 ft so divers can see the oil; bad weather can shut down operations	Water depths normally reached by bottom trawlers; obstructions on the bottom which will hang up nets; rough water conditions; too shallow for boat operations	Water depths < 100 ft for routine dive operations; water visibility of 1-2 ft so divers can see the oil; bad weather can shut down operations; solid oil which is not pumpable	Min/max water depths are a function of dredge type, usually 2 to 100 ft; not in rocky substrates; bad weather can shut down operations
<b>Optimal Conditions</b>	Shallow, protected areas where dive operations can be conducted safely; small amount of oil; scattered oil deposits	Areas where bottom trawlers normally work; solidified oil	Sites adjacent to shore, requiring minimal on-water systems; liquid or semi-solid oil; thick oil deposits, good visibility; low currents	Large volume of thick oil on the bottom; need for rapid removal before conditions change and oil is remobilized, buried by clean sediment, or will have larger environmental effects
<b>Pros</b>	Divers can be very selective, removing only oil, minimizing the volume of recovered materials; most effective method for widely scattered oil deposits	Uses available resources; low tech	Most experience is with this type of recovery; diver can be selective in recovering only oil and effective with scattered deposits	Rapid removal rates; can recover non-pumpable oil
<b>Cons</b>	Large manpower and logistics requirements; problems with contaminated-water diving and equipment decon; slow recovery rates; weather dependent operations	Not effective for liquid or semi-solid oil; nets can quickly become clogged and fail; can become heavy and unmanageable if loaded with oil; could require many nets which are expensive	Large manpower and logistics requirements, including large volumes of water-oil-solids handling, separation, storage, and disposal; problems with contaminated-water diving and equipment decon; slow recovery rates; weather dependent operations	Generates large volumes of water/solids for handling, treatment, disposal; large logistics requirements; could re-suspend oil/turbidity and affect other resources



## 6.2 Shoreline Types

Information on standard shoreline type classifications can be found in the Shoreline Assessment Job Aid available as a publication on National Oceanographic and Atmospheric Administration's web site at <http://response.restoration.noaa.gov>.

### 6.2.1 Shoreline Countermeasures

The appropriate shoreline countermeasure will be selected from NCP options based on the chemical and physical properties of the material to be cleaned, the substrate to be cleaned, the weather conditions, safety, and other factors.

Options range from no action (passive remediation) to removal of soil and vegetation. Shoreline cleaning agents with low toxicity intended for sensitive ecological areas (e.g., CytoSol BioSolvent) may enhance recovery of the affected area with minimal environmental impact. Conditions for removal of soil and vegetation should be assessed by the Environmental Unit in the Incident Command to develop adequate resource protection and restoration measures.

## 6.3 Applied Response Technologies & Oil Spill Cleanup Agents

Approval for the use of Applied Response Technologies (ART) on oil spills to state waters rests exclusively with the OSPR Administrator and the Region IX Regional Response Team (RRT), respectively. Response decision-making is triggered by federal (National Response Center) and state (Cal-Office of Emergency Services) spill reporting and is supported by state and federal ART Technical Specialists.

ART includes two categories of response technology: 1) The use of chemical or biologically based oil spill cleanup agents (OSCAs), which can include sorbents, surface washing agents, bioremediants, dispersants, herding agents, solidifying agents, and de-emulsifiers and, 2) The use of in-situ burning of oil on water or land. Not all OSCAs are formulated for use in all situations, so product selection is crucial to determining whether a net environmental benefit can be reasonably expected from the use of any particular product.

In some situations oil removal via mechanical means may not remove enough oil in hard-to-reach or sensitive areas, dynamic water environments, or shorelines and other hard surfaces. When appropriate, ARTs are evaluated as response tactics, and tailored to the needs posed by incident.

### 6.3.1 Sorbents

Sorbents are materials that soak up liquids. Those used for oil spills should be oliophilic and hydrophobic. Sorbent products are available in many forms, including roll, sheet, pad, blanket, or web; loose; and particulates or foam enclosed in boom, sock, pillow or other similar fabric or web-bound constructions, or strips bound into sorbent pom-poms to act as "sweeps". Criteria for selecting sorbents for a particular use may include consideration of 1) how oliophilic (oil attracting) and hydrophobic (water rejecting) the product is, 2) rate of sorption, 3) surface area, 4) buoyancy, 5) oil retention, 6) reusability, 7) ease of retrieval, 8) disposal options, 9) storage, and 10) cost.

The federal EPA offers a categorical exemption for all sorbents from the NCP Product Schedule, so generally no further federal or RRT approval is required before the use of an exempted sorbent in an oil spill response that affects water. However, both the State and the RRT have policies limiting or prohibiting the use of any sorbent in a loose and/or broadcast form, so additional RRT approval may be required before an otherwise federally exempt sorbent can be used loose.

### **6.3.2 Elasticity Modifying Agents**

Elasticity modifiers, vasoelastizers, solidifiers and gelling agents are products which, when mixed with oil, turn the oil into a more coherent mass. They are usually available in liquid or dry granular form, specifically designed to bond with petroleum. Unlike sorbents that physically soak-up liquid, the solidifiers and similar agents bond the liquid into a mass with minimal volume increase, and retain the liquid for easy removal.

The effectiveness of these types of products is based on the amount of product and time it takes to "fix" a given volume of oil. Effectiveness is likely to decrease for emulsified, weathered, thick, or heavy oils due to difficulties in mixing.

Final products can be solid mat (as with solidifiers), formed usually within one hour after application, but final consistencies may also range down to an incomplete, gel-like substance.

Similar to the policies related to sorbent use, the RRT IX and the State of California also have policies that restrict the use of particulate solidifiers; they cannot be used in a loose or broadcast form, but they can be used (and sometime pre-approved for use) if the same material is bound into a boom or other self-contained construction.

### **6.3.3 Surface Washing Agents (SWAs)**

The principal use of surface washing agents is to lift oil from surfaces (sand, rocks, constructed walls and surfaces) and flush it into areas where it can be more completely recovered. SWAs can be divided into two categories: those that could lift and *disperse* oil into a nearby water column (typically through surfactants and/or petroleum distillates), and those that lift and *float* the oil onto the water surface where it can be recovered. Only products that provide lift and float action are licensed for use in California.

The actual rate of mobilization of oil from substrates will depend on the type of oil spilled, the state of oil weathering, and the air and water temperature. Surface washing agents can be used alone, applied with mechanical equipment or hand sprayers, with either low- or high-pressure washing equipment, or with ambient or heated water.

Properly used, surface washing agents can effectively improve oil spill cleanup. Only two products (CytoSol, Accell Clean SWA) are currently licensed for use in or near California state waters. Both of these are "lift and float" products that are considered non-toxic to workers and environmental resources.

#### **6.3.4 Dispersants**

Dispersants are chemicals that are applied directly to spilled oil. Chemical dispersants assist with breaking up the oil into small particles facilitating the mixing of oil and water to prevent floating oil that may migrate to surface features or affect birds and other wildlife at the water surface.

Dispersants could theoretically be approved for use on freshwater lakes and reservoirs, however, there are also no dispersants currently licensed for use in California that are formulated for freshwater use, although if the need arose, a one-time emergency use of a freshwater dispersant that is on the NCP Product Schedule could be approved by the OSPR Administrator and the RRT.

#### **6.3.5 Bioremediants/Biodegradation Enhancement**

Use of biological countermeasures, or bioremediation, involves the use of hydrocarbon degrading organisms, or environmental or chemical enhancement of indigenous bacteria. They are used to break down oil more quickly than would occur without their introduction into the area. This approach is intended to accelerate the decomposition of petroleum hydrocarbons through natural processes.

#### **6.3.6 Other Miscellaneous OSCA Categories (Herding Agents, Emulsifiers, De-Emulsifiers)**

These categories of OSCAs are less commonly considered for use in oil spill response, so are not further described here. Further definitions and descriptions may be found in the OSPR “Procedures and Forms for the California State Licensing, Renewal and Exemption of Oil Spill Cleanup Agents (OSCA)”.

#### **6.3.7 In-Situ Burning**

In-situ burning means burning the oil in place as a means of removal. For on-water in-situ burn operations, oil must be contained in order to maintain a minimum burn thickness. As a result, the technology is limited by adverse weather or water conditions that limit oil containment. In-situ burning removes the surface oil through combustion. In-situ burning does have the potential to accelerate cleanup of spilled petroleum on the surface of the water or land, and at the same time reduce the risk of petroleum-related impacts on environmentally sensitive areas.

### **6.4 Federal and State Policies Directing the ART Use and Approval**

#### **6.4.1 Federal ART Approval**

The Unified Command can request the use of ARTs by submitting a formal request to the RRT. It is the policy of the RRT to respond to all such requests within 2 hours. During an oil spill, the Federal On-Scene Coordinator (FOSC) can request the use of an OSCA. This is done through a formal request by the FOSC to the Region IX RRT.

#### **6.4.2 State ART Approval**

OSPR is a member of the Region IX RRT, and will be one of the incident-specific members of the RRT approving use of applied response technologies (including use of OSCAs) when considered for use in, on, near or threatening state waters.

## 7 RESOURCES AT RISK

### 7.1 Purpose

The information presented in this chapter provides a summary of natural, cultural, and economic resources at risk, and gives general information on related topics of importance for the Feather River GRP area. The information is not comprehensive, but meant to give response managers and first responders enough detail to cover the initial phase of an oil spill and will be augmented by the Environmental Unit (EU) in the Planning Section of a Unified Command. During an incident, detailed information regarding natural, cultural, and economic resources at risk will be provided by the EU.

The information provided in this chapter is intended for use in:

- Providing resource-at-risk “context” to responders and clean-up personnel in the initial stages of a response.
- Briefing ICS personnel that may be unfamiliar with the general natural resource concerns related to the GRP area.
- Providing background information for personnel involved in media presentations and public outreach associated with a spill incident.

### 7.2 Ecological Resources at Risk

The Feather River regional supports a wide variety of common and sensitive ecological resources. The information below provides an overview of sensitive resources known to occur or potentially occur in the region, to facilitate initiation of the ICS 232 Resource at Risk form. Avoidance and minimization of impacts to sensitive resources should be prioritized as feasible during response operations.

#### 7.2.1 Rare Botanical and Wildlife Resources (California Native Natural Resources Database and USFWS Trust Resource List)

- Bald eagle (*Haliaeetus leucocephalus*)
- Bank swallow (*Riparia riparia*)
- Boggs Lake hedge-hyssop (*Gratula heterosepala*)
- Butte county meadowfoam (*Limnanthes floccose* ssp. *Californica*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- California red-legged frog (*Rana draytonii*)
- Chinook salmon (*Oncorhynchus tshawytscha*) – Include Critical Habitat
- Conservancy fairy shrimp (*Branchinecta conservation*)
- Delta smelt (*Hypomesus transpacificus*)
- Fisher – West Coast DPS (*Pekania pennant*)



- Giant garter snake (*Thamnophis gigas*)
- Gray wolf (*Canis lupus*)
- Great gray owl (*Strix nebulosi*)
- Greater sandhill crane (*Grus canadensis tabida*)
- Hartweg's golden sunburst (*Psuedobahia bahiifolia*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Sacramento Orcutt grass (*Orcuttia viscida*)
- Sierra Nevada yellow-legged frog (*Rana sierra*) – Includes Critical Habitat
- Slender Orcutt grass (*Orcuttia tenuis*)
- Steelhead – Central Valley DPS (*Oncorhynchus mykiss irideus*) – Includes Critical Habitat
- Swainson's hawk (*Buteo swainsoni*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*) – Includes Critical Habitat
- Vernal pool tadpole shrimp (*Lepidurus packardii*)
- Webber's ivesia (*Ivesia webberi*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

## 7.3 General Wildlife Protection Information

### 7.3.1 Flight Restriction Zones

Flight restriction zones, including aerial drone usage, may be recommended by the Environmental Unit for the purpose of minimizing disturbance that could result in injury to wildlife during an incident response. By keeping a safe distance or altitude from identified sensitive areas, pilots can minimize the risk of direct impacts such as collisions as well as indirect impacts associated with noise and movement, prevent the accidental hazing of wildlife into oiled areas, and avoid causing abandonment of nests during the breeding season. Implementation of Flight Restriction Zones will take place within the Air Operations Branch (Operations Section). Environmental Unit (Planning Section) staff will work with the Air Operations Branch Director to minimize potential impacts associated with those flight activities that are essential to the response effort.

### **7.3.2 Hazing**

The Wildlife Branch (Operations Section) is responsible for assessing and implementing the value of wildlife hazing operations. These are actions intended to minimize injuries to wildlife by attempting to keep wildlife away from affected areas and associated response operations. Hazing may include the use of acoustic or visual deterrent devices, boats, aircraft or other situation-appropriate tools. The Wildlife Branch will work in cooperation with appropriate state and federal agencies, as well as with the Environmental Unit in the Planning Section, in the process of evaluating hazing options.

### **7.3.3 Oiled Wildlife**

Attempting to capture oiled wildlife may be hazardous to both personnel and the affected animals. Incident personnel should not attempt to approach oiled wildlife but rather should report any observations to the Wildlife Branch (Operations Section) and/or the oiled wildlife hotline of the Oiled Wildlife Care Network: 1-877-UCD-OWCN (1-877-823-6926).

### **7.3.4 Pre-cleaning of Shorelines**

“Pre-cleaning” refers to the practice of removing debris (typically organic) from a shoreline prior to it becoming impacted by an oil spill. Prior to initiation of any beach pre-cleaning, the Environmental Unit (Planning Section) must be provided with a list of proposed areas (with location descriptions) being considered for this activity. The EU will consult with the Wildlife Branch and potentially the Natural Resource Damage Assessment (NRDA) group to determine whether the proposed pre-cleaning activities would conflict with other resource protection or NRDA objectives or activities. The EU will report back the results of these discussions to the requesting party.

## **7.4 Cultural Resources at Risk**

Cultural Resources along the Feather River were identified and generalized risk categories (low, medium and high risk) were assigned for each Response Area though in all cases Native American, archeological, and paleontological resources should be evaluated on a site specific basis. While additional information is available, cultural resources must remain protected and cannot be disclosed in a public GRP. A list of cultural resources will be provided to the Incident Commander and Cultural Resource specialist individuals in the event of a response.

The Feather River GRP area encompasses an extensively used cultural area that has been occupied for more than 13,000 years, though few prehistoric sites predate 5,000 years before present. Ethnographic and archaeological data documents hundreds of named village sites and hundreds if not thousands of archaeological sites throughout the region. Ancestors of and present day Maidu peoples (Nisenan, Konkow and Maidu) settled along the Feather River and its tributaries where they fished, hunted and gathered plants. Occupation sites are often marked by the occurrence of numerous bedrock milling areas with grinding slicks and mortars for processing grass and pine seeds, and acorns. Major villages within the valley regions were densely populated, affluent and developed some of the most elaborate material and social structures in prehistoric California.

The Native American culture was severely impacted as a result of exploration by descendants of European populations and the introduction of diseases to which the natives had no immunity. Impacts to the culture were exacerbated by the discovery of gold in 1848 and the subsequent rush of Americans into the region.

An inventory of known Native American cultural resources was obtained from the Native American Heritage Commission (NAHC) of September 17, 2015. The NAHC Sacred Lands File Search confirmed the presence of Native American cultural resources within the boundaries of Plumas County quadrangle of Crescent Mills (Greenville) and the Butte County quadrangle of Cherokee (Berry Creek). It should be noted that this inventory is incomplete and that additional resources are likely within the region.

The NAHC recommends contacting tribal groups represented within these areas for further details and to address any concerns regarding potential impacts to Native American resources. The NAHC provided a list of contacts within the Native American community (Appendix E).

Individual and industrial gold mining throughout the region impacted the landscape and natural resources in the area. Historic mines, tailings, processing and occupation sites are documented, though there are likely more undiscovered than discovered historic archaeological sites present. The bulk of these are directly associated with water courses.

In addition to ongoing gold mining, the mountain regions have since been the subject of extensive timber harvesting. Often the river and its tributaries supplied power to mills. Many of these sites were temporary in nature, lasting only as long as it took to clear-cut the surrounding area.

During the last century, many of the rivers have been utilized for hydro-electric projects requiring dams, generators and extensive transmission line construction, as well as ancillary developments including railroads and settlements.

#### **7.4.1 Discovery of Human Skeletal Remains**

Any human remains, burial sites, or burial-related materials that are discovered during a spill response must be treated with respect at all times.

- All work must be stopped immediately and the Incident Commander and Cultural Resource Specialist notified if any person monitoring work activities or involved in spill response believes that human skeletal remains have been discovered.
- The Incident Commander is responsible for taking appropriate steps to protect the discovery. The immediate area of discovery should be protected. Vehicles and equipment must not be permitted to traverse the discovery site. Exposed human remains should not be left unattended.
- The Incident Commander (or representative) must immediately report the discovery to local law enforcement (with jurisdiction), and the local coroner (with jurisdiction). The coroner (or medical examiner) will determine whether the discovery site is a crime scene or human burial.
- If the remains are determined to be non-Native American, or connected with criminal activity, local law enforcement will take charge of the discovery site and remains.

- If the remains are determined to be Native American, not related to a crime scene, the Native American representatives, State Historic Preservation Office, and Incident Commander will confer on a treatment plan for the remains.

#### **7.4.2 Procedures for the Discovery of Cultural Resources**

All work must be stopped immediately and the Incident Commander and Cultural Resource Specialist notified if any person monitoring work activities or involved in incident response believes that they have encountered cultural resources. The area of work stoppage must be adequate to provide for the security, protection, and integrity of the material or artifact(s) discovered.

Prehistoric Cultural Resources may include and are not limited to any of the following items:

- Lithic debitage (stone chips and other tool-making byproducts)
- Flaked or ground stone tools
- Exotic rock, minerals, or quarries
- Concentrations of organically stained sediments, charcoal, or ash
- Fire-modified rock
- Rock alignments or rock structures
- Bone (burned, modified, or in association with other bone, artifacts, or features)
- Shell or shell fragments
- Petroglyphs and pictographs
- Fish weirs and traps
- Culturally modified trees
- Physical locations or features (traditional cultural properties)

Historic cultural material may include any of the following items over 50 years old:

- Bottles, or other glass
- Cans
- Ceramics
- Milled wood, brick, concrete, metal, or other building material
- Trash dumps
- Homesteads, building remains
- Logging, mining, or railroad features
- Piers, wharves, docks, bridges, dams

If the Cultural Resources Specialist believes that the discovery is a cultural resource, the Incident Commander will take appropriate steps to protect the discovery site:

- The immediate area of the discovery site should be protected from disturbance to the maximum extent feasible.
- The Incident Commander (or representative) must arrange for the discovery to be evaluated by a professional archaeologist. The archaeologist will determine whether the discovery is potentially eligible for listing on the National Register of Historic Places. (36 CFR 60.4)
- If adverse impacts to an eligible site cannot be avoided, a treatment plan will be developed and implemented.

The Secretary of the Interior's Standards for Archaeological Documentation must be followed; including provisions for research design, reporting, and curation of recovered material and samples. The particular data recovery measures applied to any given historic property will depend on the development of research questions, and the design of excavation strategies to acquire the data needed to answer those questions. Field notes, maps, plans, profiles, and photographs will document the process.

## **7.5 Economic Resources at Risk**

Economic and social resources in the area include recreational fisheries; public beaches, parks, and rafting/kayaking opportunities and facilities; industrial and commercial drinking water and agricultural irrigation intakes, and hydroelectric facilities. Because of their association with the river, they could be significantly impacted if a spill were to occur on the Feather River. These resources should be prioritized for protection in the event of an incident.



## **8 LOGISTICS**

### **8.1 Introduction**

The logistical information contained in this chapter is meant to aid the response community during the initial phase of an oil spill. It may be particularly useful as the initial response transitions into a unified command. The information provided is not and should not be considered a comprehensive list of everything locally available to support a response. The lack of information under certain categories in this chapter does not mean no logistical resources exist; only that information regarding those resources was not found or verified before creating this chapter.

### **8.2 Logistical Resources**

This chapter contains information on the following logistical resources:

- Aircraft Support
- Airports and Air Fields
- Ambulance Services (Air and Ground)
- Command Posts (Fixed and Mobile)
- Fire Departments
- Food Services/Catering
- Hospitals and Medical Centers
- Hotels/Lodging
- Marinas, Ports, Docks
- Office Equipment Supply and Rental
- Oil Spill Response Contractors
- Outdoor Recreation Groups, Companies, and Organizations
- Park Facilities
- Rental Equipment - Industrial/Commercial
- Response Equipment Cache Locations
- River Guides
- Security Services
- Tribal Resources
- Transportation
- Wildlife Response Contractors
- Hardware Stores
- USFS

## 8.3 Logistical Resource Details

Table 8-1. Aircraft Support

Aircraft Support			
City / Location	Name / Information	Address	Contact / Other Information
Richvale, CA	A & P Helicopters Inc	1778 Richvale Hwy, Richvale, CA 95974	(530) 742-4119 <a href="http://www.aphelicopters.com/">http://www.aphelicopters.com/</a>
Reno, NV	Airlift Helicopters Inc	550 W Plumb Lane, Reno, NV 89509	(775) 825-4447 <a href="http://www.airlifthehi.com/">http://www.airlifthehi.com/</a>
Reno, NV	Heli-1 Corporation	1880 Gentry Way, Reno, NV 89502	(775) 825-1100 <a href="http://www.heli-1.com/">http://www.heli-1.com/</a>
Westwood, CA	Chester-US Forest Service Heliport	Westwood, CA 96137	

Table 8-2. Airports

Airports & Air Fields			
City / Location	Name / Information	Address	Contact / Other Information
Beckwourth, CA	Beckwourth Nervino Airport	82056 HWY 70 Beckwourth, CA 96129	(530) 283-6299 / (530) 832-6940
Calpine, CA	Totem Pole Ranch Airport	Calpine, CA 96124	(530) 994-3537
Quincy, CA	Gansner Field	560 Crescent St, Quincy CA 95971	(530) 283-6299
Paradise, CA	Paradise Skypark	4405 Airport Rd, Paradise, CA 95969	(530) 343-9600 <a href="http://paradiseairport.com/">http://paradiseairport.com/</a>
Westwood, CA	Rogers Field Airport	241 Mason Rd Chester CA 96020	(530) 283-6299
Westwood, CA	Westwood Airport	Westwood, CA 96137	

Table 8-3. Ambulance Services

Ambulance Services			
City / Location	Name / Information	Address	Contact / Other Information
All Areas	Ambulance Services		Dial 9-1-1

# FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

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**Table 8-4. Potential Command Posts (Established Locations)**

Command Posts			
City / Location	Name / Information	Address	Contact / Other Information
Rodgers Flat Highway 70 Between Tobin and Belden	Rogers Flat PG&E Maintenance Station	Rogers Flat, CA 95915	InformationNeeded
Belden Town	Belden Town and Resort	14785 Belden Town Rd, Belden, CA 95915	(530) 283-9662
Twain	InformationNeeded	InformationNeeded	InformationNeeded
Keddie	UPRR Rail Yard	InformationNeeded	InformationNeeded

**Table 8-5. Fire Departments**

Fire Departments – EMERGENCY Dial 9-1-1			
City / Location	Name / Information	Address	Contact / Other Information
	Beckwourth Fire Department	316 1st Ave, Portola, CA 96122	530-832-1008
	Beckwourth Fire Department – Grizzly Rd. Stn.		530-832-0121
Clio, CA	C Road Fire Department	1608 C Rd, Clio, CA 96106	530-836-2184
	Chester Fire Department		530-258-3456
Portola, CA	City of Portola Fire Department	316 1st Ave, Portola, CA 96122	530-832-3822
	Crescent Mills Fire		530-284-7110
	Delleker Fire		530-832-5626
	Eastern Plumas Rural Fire		
	Graeagle Fire		530-866-1340
Quincy, CA	Greenhorn Creek CSD-Fire	2049 Red Bluff Trail, Quincy, CA 95971	530-283-4588
	Hamilton Branch Fire		530-596-3458
	Indian Valley Fire		530-284-7224
	Lake Almanor West Fire		530-259-5112
	La Porte Fire		530-675-2557
	Long Valley Fire		530-836-2550
Meadow Valley, CA	Meadow Valley Fire Department	6913 Bucks Lake Rd, Meadow Valley, CA 95956	530-283-2620

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**Table 8-5. Fire Departments**

Fire Departments – EMERGENCY Dial 9-1-1			
City / Location	Name / Information	Address	Contact / Other Information
	Peninsula Fire		530-259-2306 or 530-259-2309
	Plumas Eureka Fire		530-836-0532
	Prattville Almanor Fire		530-259-3822
	Sierra Valley Fire		530-993-1111
	Taylorsville Fire		530-284-7747
	Whitehawk Ranch Volunteer Fire		530-836-0870
Quincy, CA	Quincy Fire Department	505 Lawrence St, Quincy, CA 95971	530-283-0870

**Table 8-6. Catering**

Food Services & Catering			
City / Location	Name / Information	Address	Contact / Other Information
Blairsden, CA	Mountain Cuisine	250 Bonta St, Blairsden, CA 96103	(530) 836-1300 <a href="http://www.mountaincuisine.com/">http://www.mountaincuisine.com/</a>
Quincy, CA	Backdoor Catering Co	204 Fairground Rd, Quincy, CA 95971	(530) 283-1708
Quincy, CA	Subway	23 Crescent St, Quincy, CA 95971	(530) 283-3303 <a href="http://www.subway.com/">http://www.subway.com/</a>
Portola, CA	Subway	24 W Sierra Ave #2, Portola, CA 96122	(530) 832-0222 <a href="http://www.subway.com/">http://www.subway.com/</a>
Stockton, CA	Hulcher Professional Services	1001 South B St. Stockton, CA 95205	(209) 546-1763 <a href="http://www.hulcher.com/">http://www.hulcher.com/</a>

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**Table 8-7. Hospitals**

Hospitals			
City / Location	Name / Information	Address	Contact / Other Information
Portola, CA	Eastern Plumas Health Care	500 1st Ave, Portola, CA 96122	(530) 832-6500 <a href="http://www.ephc.org/">http://www.ephc.org/</a>
Quincy, CA	Plumas District Hospital Clinic	1060 Valley View Dr, Quincy, CA 95971	(530) 283-5640 <a href="http://www.pdh.org/">http://www.pdh.org/</a>
Chester, CA	Seneca Hospital Almanor Clinic	199 Reynolds Rd, Chester, CA 96020	(530) 258-3672 <a href="http://www.senecahospital.org/">http://www.senecahospital.org/</a>
Paradise, CA	Feather River Hospital	5974 Pentz Rd, Paradise, CA 95969	(530) 877-9361 <a href="http://www.frhosp.org/">http://www.frhosp.org/</a>
Oroville, CA	Oroville Hospital	2767 Olive Hwy, Oroville, CA 95966	(530) 533-8500 <a href="http://www.orovillehospital.com/">http://www.orovillehospital.com/</a>

**Table 8-8. Hardware Stores**

Hardware Stores			
City / Location	Name / Information	Address	Contact / Other Information
Portola, CA	Plumas Ace Hardware Inc	184 W Sierra Ave, Portola, CA 96122	(530) 832-5208
Portola, CA	Sierra Mountain Pipe & Supply	365 W Sierra Ave, Portola, CA 96122	(530) 832-5850
Portola, CA	Longfellow True Value Building Supply	73815 S Delleker Rd, Portola, CA 96122	(530) 832-4444
Blairsden, CA	Mountain Hardware & Sports	282 Bonta St, Blairsden, CA 96103	(530) 836-2589
Quincy, CA	Mountain Building Supply	1947 Lee Rd, Quincy, CA 95971	(530) 283-0924
Quincy, CA	American Valley Hardware	30 E Main Street, Quincy, CA 95971	(530) 283-3088
Oroville, CA	Pines Yankee Hill Hardware	11300 Miller Flat Rd # A, Oroville, CA 95965	(530) 534-1265



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**Table 8-9. Lodging**

Hotels/Lodging			
City / Location	Name / Information	Address	Contact / Other Information
Belden, CA	Belden Town Resort and Lodge	14785 Belden Town Rd, Belden, CA 95915	(530) 283-9662
Blairsden, CA	Feather River Inn	65899 California 70, Blairsden, CA 96103	(530) 836-1253
Graeagle, CA	Graeagle Getaway	41 Aspen Cir, Blairsden-Graeagle, CA 96103	(925) 997-8346
Cromberg, CA	Long Valley Resort	59532 California 70, Cromberg, CA 96103	(530) 836-0754
Cromberg, CA	Sierra Sky Lodge	58585 California 70, Cromberg, CA 96103	(530) 836-2344
Graeagle, CA	River Pines Resort	8296 California 89, Graeagle, CA 96103	(530) 836-2552
La Porte, CA	Union Hill Sierra Retreat	1915 Main St, La Porte, CA 95981	(530) 675-2860
Oroville, CA	Motel 6	505 Montgomery St, Oroville, CA 95965	(530) 532-9400
Oroville, CA	Super 8 Oroville	1470 Feather River Blvd, Oroville, CA 95965	(530) 533-9673
Oroville, CA	Budget Inn	1475 Feather River Blvd, Oroville, CA 95965	(530) 533-2121
Oroville, CA	Villa Court Inn Oroville	1527 Feather River Blvd, Oroville, CA 95965	(530) 533-3930
Oroville, CA	Days Inn Oroville	1745 Feather River Blvd, Oroville, CA 95965	(530) 533-3297
Oroville, CA	Sunset Inn	1835 Feather River Blvd, Oroville, CA 95965	(530) 533-8201
Oroville, CA	Dahl's Motel	2010 Feather River Blvd, Oroville, CA 95965	(530) 534-7392
Oroville, CA	Holiday Inn Express & Suites	550 Oro Dam Blvd, Oroville, CA 95965	(530) 534-5566
Oroville, CA	Americas Best Value Inn	580 Oroville Dam Blvd E, Oroville, CA 95965	(530) 533-7070
Paradise, CA	Comfort Inn Paradise	5475 Clark Rd, Paradise, CA 95969	(530) 876-0191

FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN  
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**Table 8-9. Lodging**

Hotels/Lodging			
City / Location	Name / Information	Address	Contact / Other Information
Paradise, CA	Ponderosa Gardens Motel	7010 Skyway Rd, Paradise, CA 95969	(530) 872-9094
Paradise, CA	Lantern Inn	5799 Wildwood Ln, Paradise, CA 95969	(530) 877-5553
Paradise, CA	Paradise Inn	5423 Skyway Rd, Paradise, CA 95969	(530) 877-2127
Portola, CA	Sierra Motel	380 E Sierra Ave, Portola, CA 96122	(530) 832-4223
Portola, CA	Pullman House Inn	256 Commercial St, Portola, CA 96122	(530) 832-0107
Portola, CA	Sleepy Pines Motel	74631 California 70, Portola, CA 96122	(530) 832-4291
Portola, CA	Chalet View Lodge	72056 California 70, Portola, CA 96122	(530) 832-5528
Quincy, CA	Lariat Lodge	2370 E Main St, Quincy, CA 95971	(530) 283-1000
Quincy, CA	Ranchito Motel	2020 E Main St, Quincy, CA 95971	(530) 283-2265
Quincy, CA	Quincy Courtyard Suites	436 Main St, Quincy, CA 95971	(530) 283-1401
Quincy, CA	Ada's Place	562 Jackson St, Quincy, CA 95971	(530) 283-1954
Quincy, CA	Gold Pan Lodge	200 Crescent St, Quincy, CA 95971	(530) 283-3686
Quincy, CA	Spanish Creek Motel	233 Crescent St, Quincy, CA 95971	(530) 283-1200
Quincy, CA	Pine Hill Motel	42075 California 70, Quincy, CA 95971	(530) 283-1670
Quincy, CA	Evergreen Motel + Trailer Park	39300 California 70, Quincy, CA 95971	(530) 283-1765
Quincy, CA	Lakeshore Resort at Bucks Lake	16001 Bucks Lake Rd, Quincy, CA 95971	(530) 283-2848
Storrie, CA	Historic Tobin Resort	6162 California 70, Storrie, CA 95980	(530) 283-2225
Twain, CA	Pine Aire Motel Resort	26042 California 70, Twain, CA 95984	(530) 283-1730

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**Table 8-10. Marinas**

Marinas, Ports, Docks			
City / Location	Name / Information	Address	Contact / Other Information
Lake Oroville	Bidwell Canyon Marina	801 Bidwell Canyon Rd, Oroville, CA 95966	(530) 589-9175
Lake Oroville	Lake Oroville Marina	3428 Pentz Rd, Paradise, CA 95969	(530) 877-2414

**Table 8-11. Office Supplies**

Office Equipment Supply			
City / Location	Name / Information	Address	Contact / Other Information
Oroville, CA	Staples	2150 Feather River Blvd, Oroville, CA 95965	(530) 533-1718
Quincy, CA	Forest Stationers, Inc.	531 Main St, Quincy, CA 95971	(530) 283-2266
Chester, CA	Paper Stuff	426 Main St, Chester, CA 96020	(530) 258-3966

**Table 8-12. Spill Response Contractors**

Spill Response Contractors			
City / Location	Name / Information	Address	Contact / Other Information
Chico, CA	NRC Environmental Services Inc.	1111 Marauder St, Chico, CA 95973	(530) 343-5488 <a href="http://nrcc.com/">http://nrcc.com/</a>
Reno, NV	Clean Harbors Environmental	1200 Marietta Way, Sparks, NV 89431	(775) 331-9400 <a href="http://www.cleanharbors.com/">http://www.cleanharbors.com/</a>

**Table 8-13. Outdoor Recreation Groups**

Outdoor Recreation Groups			
City / Location	Name / Information	Address	Contact / Other Information
Plumas County	Plumas County Tourism, Recreation and Hospitality Council		(530) 412-1195
Quincy, CA	Explore Plumas County	520 Main St, Room 309, Quincy, CA 95971	<a href="mailto:info@exploreplumascounty.com">info@exploreplumascounty.com</a>

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**Table 8-14. Parks**

Park Facilities			
City / Location	Name / Information	Address	Contact / Other Information
Graeagle, CA	Jackson Creek Campground	Blairsden-Graeagle, CA	
Quincy, CA	Pioneer Park	Quincy, CA 95971	
Quincy, CA	Gansner Park	Quincy, CA 95971	
Quincy, CA	Spanish Creek Campground	CA-70, Quincy, CA 95971	(530) 283-2050
Twain, CA	Hallsted Campground	Twain, CA 95984	
Twain, CA	Gansner Bar Campground	Twain, CA 95984	
Belden, CA	Belden Campground		
Belden, CA	Injun Jim Campground	Belden, CA 95915	
Belden, CA	James Lee Campground	Belden, CA 95915	
	Cleghorn Bar Campground		
	Dan Beebe Campground		
Berry Creek, CA	Milsap Bar Campground	Berry Creek, CA 95916	

**Table 8-15. US Forest Service**

Forestry Department and Forest Service Ranger Stations			
City / Location	Name / Information	Address	Contact / Other Information
Blairsden, CA	US Forest Service Ranger Station	23 Mohawk Hwy Rd, Blairsden CA 96103	(530) 836-2575
Quincy, CA	US Forest Service Ranger Station	39696 CA-70, Quincy, CA 95971	(530) 283-0555
Quincy, CA	Forestry Department	171 Lawrence St, Quincy, CA 95971	(530) 283-1792
Berry Cree, CA	US Forestry Department	12815 Oroville-Quincy Hwy, Berry Creek, CA 95916	(530) 589-1331

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**Table 8-16. Equipment Rental**

Rental Equipment Companies			
City / Location	Name / Information	Address	Contact / Other Information
Paradise, CA	Ace Rentals	5810 Clark Rd, Paradise, CA 95969	(530) 877-4519
Oroville, CA	Jackson Equipment Services	8 Diamond Bar Ct, Oroville, CA 95966	(530) 589-1952
Oroville, CA	Cresco Equipment Rentals	2526 5th Ave, Oroville, CA 95965	(530) 534-9170
Rancho Cordova, CA	Enviro-Tech Services	11275 Sunrise Gold Cir, Rancho Cordova, CA 95742	(530) 852-8856

**Table 8-17. Response Equipment Stockpiles**

Response Equipment Cache Locations			
City / Location	Name / Information	Address	Contact / Other Information
PG&E Rogers Flat Hydro Service Center	Plumas County OES Oil Response Trailer	HWY 70, 5 miles East of Storrie	(530) 283-6355; After Hours: (530) 283-6300

**Table 8-18. River Guides**

River Guides			
City / Location	Name / Information	Address	Contact / Other Information
Colfax, CA	Tributary Whitewater Tours	Colfax, CA	(530) 346-6812 <a href="http://www.whitewatertours.com/">http://www.whitewatertours.com/</a>

**Table 8-19. Security Services**

Security Services			
City / Location	Name / Information	Address	Contact / Other Information
Chico, CA	Elite Universal Security	35 Heritage Lane #6, Chico, CA 95926	(530) 899-3751 <a href="http://eliteuniversalsecurity.com/">http://eliteuniversalsecurity.com/</a>
Reno, NV	AlliedBarton Security Services	Reno, NV	(775) 324-0328 <a href="http://www.alliedbarton.com/reno">http://www.alliedbarton.com/reno</a>
Reno, NV	ESI Security Services	8670 Technology Way, Reno, NV 89521	(775) 626-3000 <a href="http://www.esi-security.us/">http://www.esi-security.us/</a>



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**Table 8-20. Native American Contacts**

Tribal Resources			
City / Location	Name / Information	Address	Contact / Other Information
	SEE APPENDIX E	SEE APPENDIX E	SEE APPENDIX E

**Table 8-21. Transportation**

Transportation			
City / Location	Name / Information	Address	Contact / Other Information
Quincy, CA	Plumas Transit Systems	711 East Main St, Quincy, CA 95971	(530) 283-2538 <a href="http://www.plumastransit.com/">http://www.plumastransit.com/</a>
Paradise, CA	A Taxi In Paradise Service	Paradise, CA	(530) 877-7777
Oroville, CA	All Star Cab Company	Barnes Way, Oroville, CA 95966	(530) 532-4222

**Table 8-22. Oiled Wildlife Care**

Wildlife Response Contractors			
City / Location	Name / Information	Address	Contact / Other Information
Davis, CA	Oiled Wildlife Care Network	One Shields Ave, Davis, CA 95616	(530) 752-4167 <a href="http://www.vetmed.ucdavis.edu/owcn/">http://www.vetmed.ucdavis.edu/owcn/</a>

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## FEATHER RIVER NORTH FORK AND MIDDLE FORK GEOGRAPHIC RESPONSE PLAN

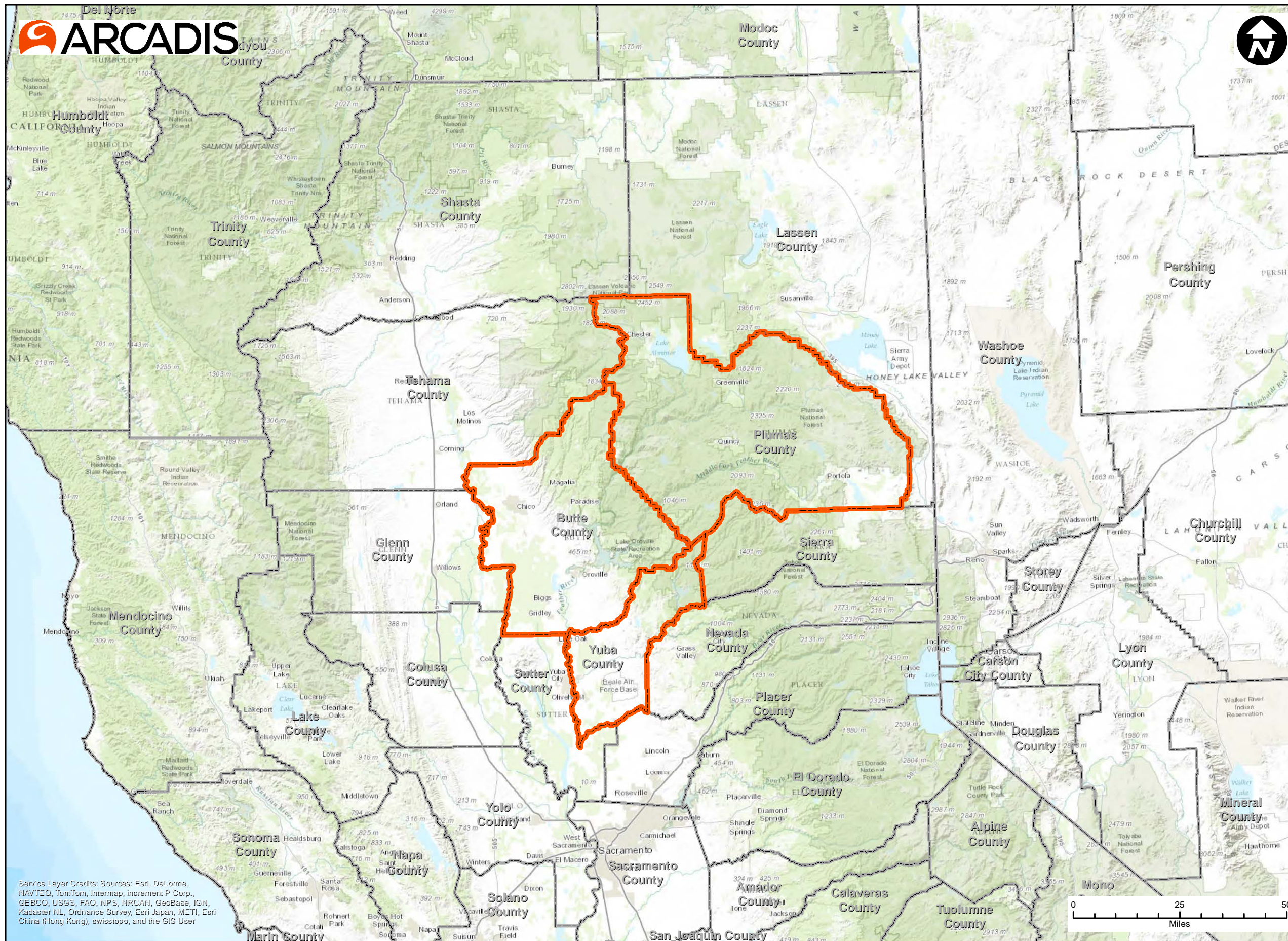
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# FIGURES







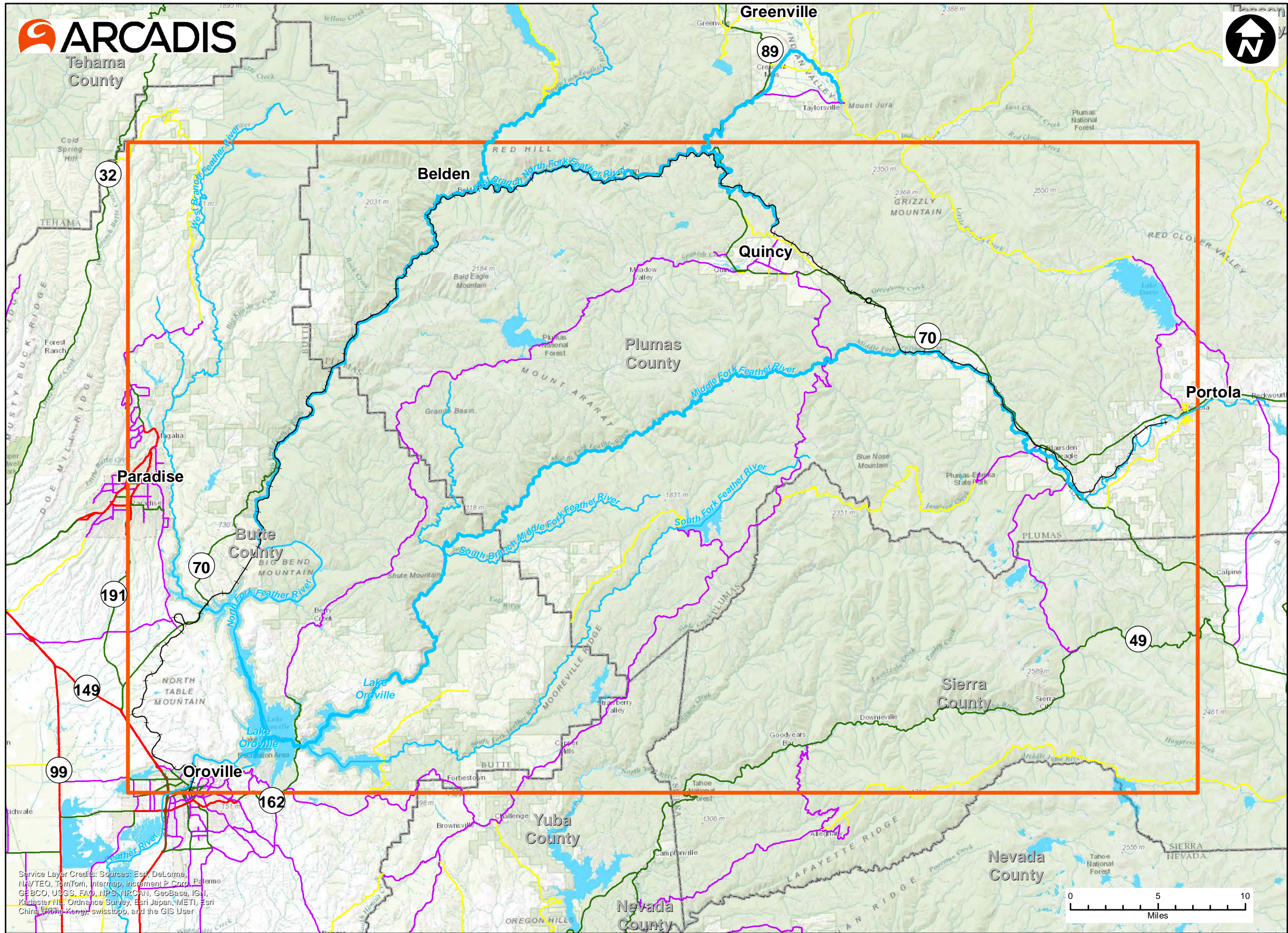
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- County Boundary

FEATHER RIVER  
GEOGRAPHIC RESPONSE PLAN

SITE VICINITY MAP

FIGURE: 1 | Date: 2/2/2016





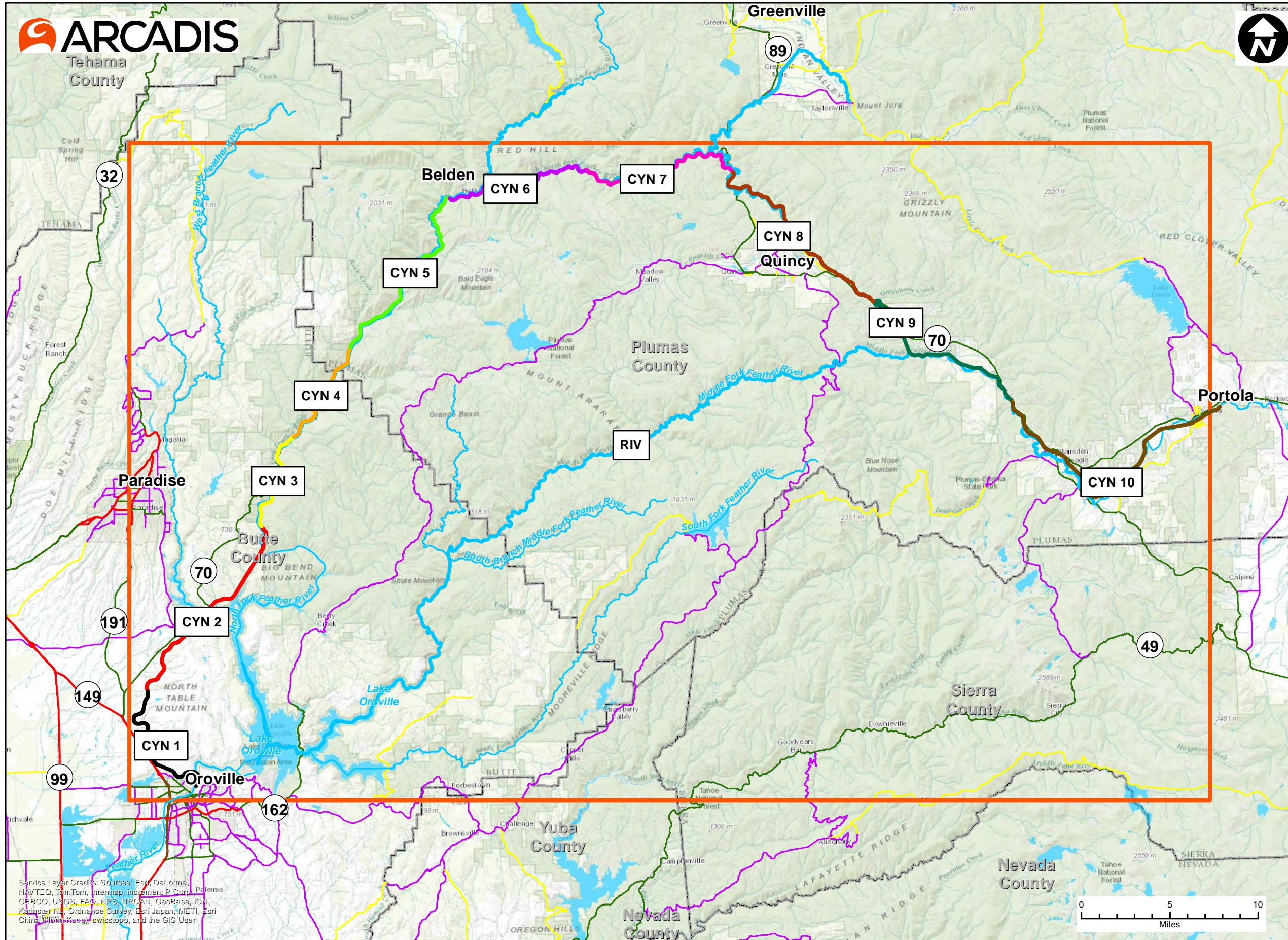
- Study Area
- Rail
- Feather River & Tributaries
- Lake/Pond
- County Boundary
- California Road System**
  - Other Freeway or Expressway
  - Other Principal Arterial
  - Minor Arterial
  - Major Collector
  - Minor Collector

FEATHER RIVER  
GEOGRAPHIC RESPONSE PLAN

GRP STUDY AREA MAP

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Beijing), Swisstopo, and the GIS User





- Study Area
- Feather River & Tributaries
- Lake/Pond
- County Boundary

#### Track Segments

- CYN 1
- CYN 2
- CYN 3
- CYN 4
- CYN 5
- CYN 6
- CYN 7
- CYN 8
- CYN 9
- CYN 10

#### California Road System

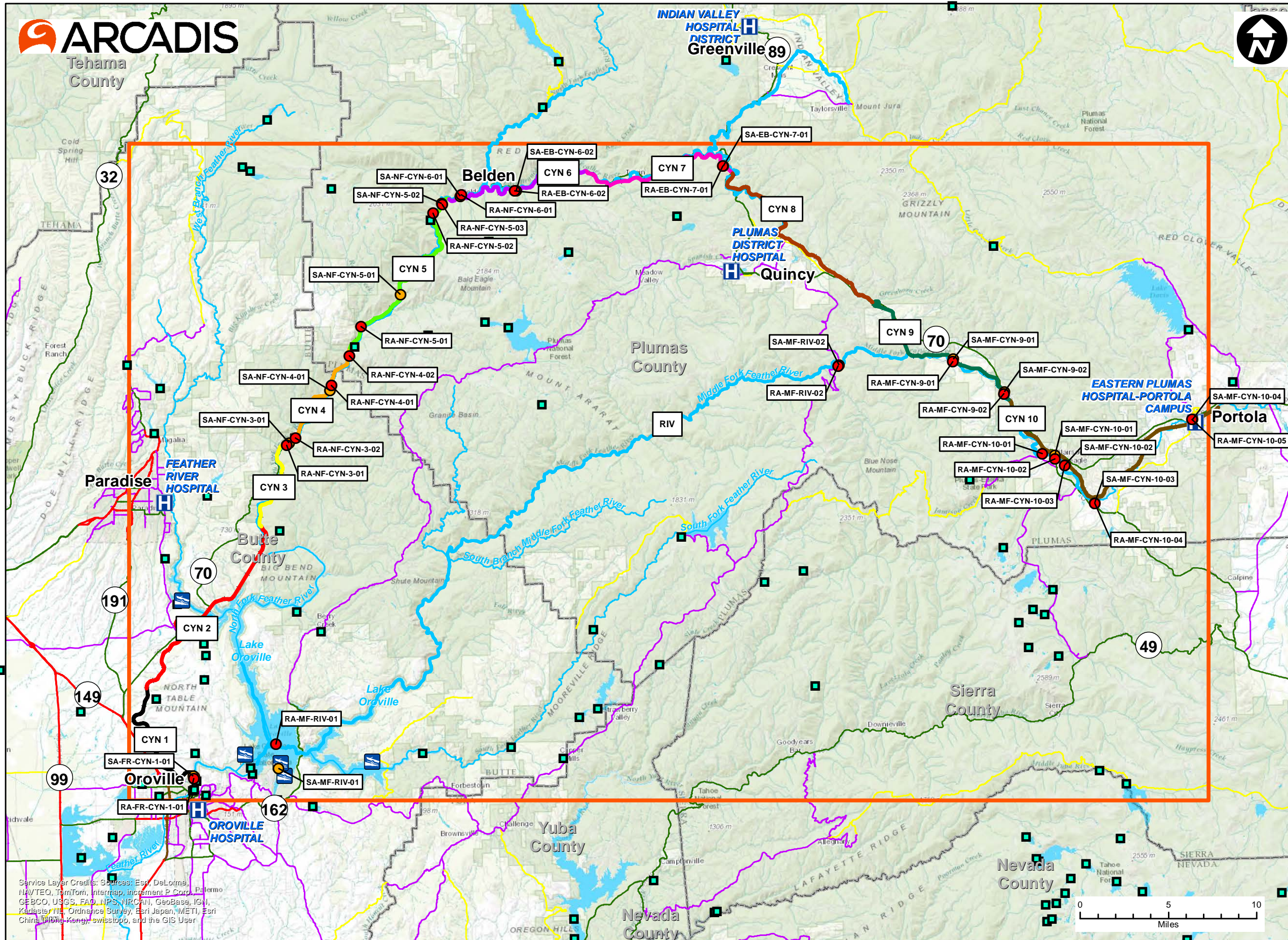
- Other Freeway or Expressway
- Other Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector

### FEATHER RIVER GEOGRAPHIC RESPONSE PLAN

### RAILROAD SEGMENT MAP

FIGURE: 3 | Date: 2/2/2016





- Potential Access with Boom Deployment
- Potential Staging Area
- Supporting Boom Deployment
- Study Area
- Rail
- Dam
- Feather River & Tributaries
- Lake/Pond
- Hospital
- Boat Launches
- County Boundary
- California Road System
  - Other Freeway or Expressway
  - Other Principal Arterial
  - Minor Arterial
  - Major Collector
  - Minor Collector

FEATHER RIVER  
GEOGRAPHIC RESPONSE PLAN  
**FEATHER RIVER GRP  
RESPONSE STRATEGY  
LOCATIONS**



# APPENDIX A

## Glossary of Common ICS Terms



**A**

**Action Plan:** See Incident Action Plan.

**Agency:** An agency is a division of government with a specific function, or a nongovernmental organization (e.g., private contractor, business, etc.) that offers a particular kind of assistance. In ICS, agencies are defined as jurisdictional (having statutory responsibility for incident mitigation) or assisting and/or cooperating (providing resources and/or assistance). (See Assisting Agency, Cooperating Agency, Jurisdictional Agency, and Multiagency Incident.)

**Agency Administrator or Executive:** Chief executive officer (or designee) of the agency or jurisdiction that has responsibility for the incident.

**Agency Dispatch:** The agency or jurisdictional facility from which resources are allocated to incidents.

**Agency Representative:** An individual assigned to an incident from an assisting or cooperating agency who has been delegated authority to make decisions on matters affecting that agency's participation at the incident. Agency Representatives report to the Incident Liaison Officer.

**Air Operations Branch Director:** The person primarily responsible for preparing and implementing the air operations portion of the Incident Action Plan. Also responsible for providing logistical support to helicopters operating on the incident.

**Allocated Resources:** Resources dispatched to an incident.

**All-Risk:** Any incident or event, natural or human-caused, that warrants action to protect life, property, environment, and public health and safety, and minimize disruption of governmental, social, and economic activities.

**Area Command (Unified Area Command):** An organization established to oversee the management of (1) multiple incidents that are each being handled by an ICS organization, or (2) large or multiple incidents to which several Incident Management Teams have been assigned. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources according to priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multijurisdictional. Area Command may be established at an emergency operations center facility or at some location other than an Incident Command Post.

**Assigned Resources:** Resources checked in and assigned work tasks on an incident.

**Assignments:** Tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan.

**Assistant:** Title for subordinates of the Command Staff positions. The title indicates a level of technical capability, qualifications, and responsibility subordinate to the primary positions.

**Assisting Agency:** An agency or organization providing personnel, services, or other resources to the agency with direct responsibility for incident management.

**Available Resources:** Resources assigned to an incident, checked in, and available for a mission assignment, normally located in a Staging Area.



**B**

**Base:** The location at which primary Logistics functions for an incident are coordinated and administered. There is only one Base per incident. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base.

**Branch:** The organizational level having functional or geographic responsibility for major parts of the Operations or Logistics functions. The Branch level is organizationally between Section and Division/Group in the Operations Section, and between Section and Units in the Logistics Section. Branches are identified by the use of Roman numerals or by functional name (e.g., medical, security, etc.).

**C**

**Cache:** A pre-determined complement of tools, equipment, and/or supplies stored in a designated location, available for incident use.

**Camp:** A geographical site, within the general incident area, separate from the Incident Base, equipped and staffed to provide sleeping, food, water, and sanitary services to incident personnel.

**Chain of Command:** A series of management positions in order of authority.

**Check-In:** The process whereby resources first report to an incident. Check-in locations include: Incident Command Post (Resources Unit), Incident Base, Camps, Staging Areas, Helibases, Helispots, and Division Supervisors (for direct line assignments).

**Chief:** The ICS title for individuals responsible for functional Sections: Operations, Planning, Logistics, and Finance/Administration.

**Clear Text:** The use of plain English in radio communications transmissions. No Ten Codes or agency-specific codes are used when utilizing clear text.

**Command:** The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. May also refer to the Incident Commander.

**Command Post:** See Incident Command Post.

**Command Staff:** The Command Staff consists of the Public Information Officer, Safety Officer, and Liaison Officer. They report directly to the Incident Commander. They may have an Assistant or Assistants, as needed.

**Communications Unit:** An organizational Unit in the Logistics Section responsible for providing communication services at an incident. A Communications Unit may also be a facility (e.g., a trailer or mobile van) used to provide the major part of an Incident Communications Center.

**Compacts:** Formal working agreements among agencies to obtain mutual aid.

**Compensation/Claims Unit:** Functional Unit within the Finance/Administration Section responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident.

**Complex:** Two or more individual incidents located in the same general area that are assigned to a single Incident Commander or to Unified Command.

**Cooperating Agency:** An agency supplying assistance other than direct operational or support functions or resources to the incident management effort.

**Coordination:** The process of systematically analyzing a situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The coordination process (which can be either intra- or interagency) does not involve dispatch actions. However, personnel responsible for coordination may perform command or dispatch functions within the limits established by specific agency delegations, procedures, legal authority, etc.

**Coordination Center:** A facility that is used for the coordination of agency or jurisdictional resources in support of one or more incidents.

**Cost Sharing Agreements:** Agreements between agencies or jurisdictions to share designated costs related to incidents. Cost sharing agreements are normally written but may also be oral between authorized agency or jurisdictional representatives at the incident.

**Cost Unit:** Functional Unit within the Finance/Administration Section responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures.

**Crew:** See Single Resource.

## D

**Delegation of Authority:** A statement provided to the Incident Commander by the Agency Executive delegating authority and assigning responsibility. The Delegation of Authority can include objectives, priorities, expectations, constraints, and other considerations or guidelines as needed. Many agencies require written Delegation of Authority to be given to Incident Commanders prior to their assuming command on larger incidents.

**Demobilization Unit:** Functional Unit within the Planning Section responsible for assuring orderly, safe, and efficient demobilization of incident resources.

**Deputy:** A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior and therefore must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors.

**Director:** The ICS title for individuals responsible for supervision of a Branch.

**Dispatch:** The implementation of a command decision to move a resource or resources from one place to another.

**Dispatch Center:** A facility from which resources are ordered, mobilized, and assigned to an incident.

**Division:** Divisions are used to divide an incident into geographical areas of operation. A Division is located within the ICS organization between the Branch and the Task Force/Strike Team. (See Group.) Divisions are identified by alphabetic characters for horizontal applications and, often, by floor numbers when used in buildings.

**Documentation Unit:** Functional Unit within the Planning Section responsible for collecting, recording, and safeguarding all documents relevant to the incident.

## E

**Emergency:** Absent a Presidentially declared emergency, any incident(s), human-caused or natural, that requires responsive action to protect life or property. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, an emergency means any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.

**Emergency Management Coordinator/Director:** The individual within each political subdivision that has coordination responsibility for jurisdictional emergency management.

**Emergency Operations Centers (EOCs):** The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines (e.g., fire, law enforcement, and medical services), by jurisdiction (e.g., Federal, State, regional, county, city, tribal), or some combination thereof.

**Emergency Operations Plan (EOP):** The plan that each jurisdiction has and maintains for responding to appropriate hazards.

**Event:** A planned, non-emergency activity. ICS can be used as the management system for a wide range of events, e.g., parades, concerts, or sporting events.

## F

**Facilities Unit:** Functional Unit within the Support Branch of the Logistics Section that provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, etc.

**Federal:** Of or pertaining to the Federal Government of the United States of America.

**Field Operations Guide:** A pocket-size manual of instructions on the application of the Incident Command System.

**Finance/Administration Section:** The Section responsible for all incident costs and financial considerations. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and Cost Unit.

**Food Unit:** Functional Unit within the Service Branch of the Logistics Section responsible for providing meals for incident personnel.

**Function:** Function refers to the five major activities in ICS: Command, Operations, Planning, Logistics, and Finance/Administration. The term function is also used when describing the activity involved, e.g., the planning function. A sixth function, Intelligence, may be established, if required, to meet incident management needs.

**G**

**General Staff:** A group of incident management personnel organized according to function and reporting to the Incident Commander. The General Staff normally consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

**Ground Support Unit:** Functional Unit within the Support Branch of the Logistics Section responsible for the fueling, maintaining, and repairing of vehicles, and the transportation of personnel and supplies.

**Group:** Groups are established to divide the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division. (See Division.) Groups are located between Branches (when activated) and Resources in the Operations Section.

**H**

**Hazard:** Something that is potentially dangerous or harmful, often the root cause of an unwanted outcome.

**Helibase:** The main location for parking, fueling, maintenance, and loading of helicopters operating in support of an incident. It is usually located at or near the incident Base.

**Helispot:** Any designated location where a helicopter can safely take off and land. Some Helispots may be used for loading of supplies, equipment, or personnel.

**Hierarchy of Command:** See Chain of Command.

**I**

**Incident:** An occurrence or event, natural or human-caused, that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.

**Incident Action Plan (IAP):** An oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.

**Incident Base:** Location at the incident where the primary Logistics functions are coordinated and administered. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base. There is only one Base per incident.

**Incident Commander (IC):** The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.

**Incident Command Post (ICP):** The field location at which the primary tactical-level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities and is normally identified by a green rotating or flashing light.



**Incident Command System (ICS):** A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.

**Incident Communications Center:** The location of the Communications Unit and the Message Center.

**Incident Complex:** See Complex.

**Incident Management Team (IMT):** The Incident Commander and appropriate Command and General Staff personnel assigned to an incident.

**Incident Objectives:** Statements of guidance and direction necessary for the selection of appropriate strategy(ies), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

**Incident Types:** Incidents are categorized by five types based on complexity. Type 5 incidents are the least complex and Type 1 the most complex.

**Incident Support Organization:** Includes any off-incident support provided to an incident. Examples would be Agency Dispatch Centers, Airports, Mobilization Centers, etc.

**Initial Action:** The actions taken by resources that are the first to arrive at an incident site.

**Initial Response:** Resources initially committed to an incident.

**Intelligence Officer:** The intelligence officer is responsible for managing internal information, intelligence, and operational security requirements supporting incident management activities. These may include information security and operational security activities, as well as the complex task of ensuring that sensitive information of all types (e.g., classified information, law enforcement sensitive information, proprietary information, or export-controlled information) is handled in a way that not only safeguards the information, but also ensures that it gets to those who need access to it to perform their missions effectively and safely.

## J

**Joint Information Center (JIC):** A facility established to coordinate all incident-related public information activities. It is the central point of contact for all news media at the scene of the incident. Public information officials from all participating agencies should collocate at the JIC.

**Joint Information System (JIS):** Integrates incident information and public affairs into a cohesive organization designed to provide consistent, coordinated, timely information during crisis or incident operations. The mission of the JIS is to provide a structure and system for developing and delivering coordinated interagency messages; developing, recommending, and executing public information plans and strategies on behalf of the Incident Commander; advising the Incident Commander concerning public affairs issues that could affect a response effort; and controlling rumors and inaccurate information that could undermine public confidence in the emergency response effort.

**Jurisdiction:** A range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority. Jurisdictional authority at an incident can be political or geographical (e.g., city, county, tribal, State, or Federal boundary lines) or functional (e.g., law enforcement, public health).

**Jurisdictional Agency:** The agency having jurisdiction and responsibility for a specific geographical area, or a mandated function.

## K

**Kinds of Resources:** Describe what the resource is (e.g., medic, firefighter, Planning Section Chief, helicopters, ambulances, combustible gas indicators, bulldozers).

## L

**Landing Zone:** See Helispot.

**Leader:** The ICS title for an individual responsible for a Task Force, Strike Team, or functional unit.

**Liaison:** A form of communication for establishing and maintaining mutual understanding and cooperation.

**Liaison Officer (LNO):** A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies. The Liaison Officer may have Assistants.

**Logistics:** Providing resources and other services to support incident management.

**Logistics Section:** The Section responsible for providing facilities, services, and materials for the incident.

**Local Government:** A county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; an Indian tribe or authorized tribal organization, or in Alaska a Native village or Alaska Regional Native Corporation; a rural community, unincorporated town or village, or other public entity. See Section 2 (10), Homeland Security Act of 2002, Public Law 107-296, 116 Stat. 2135 (2002).

## M

**Major Disaster:** As defined under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122), a major disaster is any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act to supplement the efforts and available resources of States, tribes, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

**Management by Objective:** A management approach that involves a four-step process for achieving the incident goal. The Management by Objectives approach includes the following: establishing overarching objectives; developing and issuing assignments, plans, procedures, and protocols; establishing specific, measurable objectives for various incident management functional activities and directing efforts to fulfill them, in support of defined strategic objectives; and documenting results to measure performance and facilitate corrective action.

**Managers:** Individuals within ICS organizational Units that are assigned specific managerial responsibilities, e.g., Staging Area Manager or Camp Manager.

**Medical Unit:** Functional Unit within the Service Branch of the Logistics Section responsible for the development of the Medical Emergency Plan, and for providing emergency medical treatment of incident personnel.

**Message Center:** The Message Center is part of the Incident Communications Center and is collocated or placed adjacent to it. It receives, records, and routes information about resources reporting to the incident, resource status, and administrative and tactical traffic.

**Mitigation:** The activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. Mitigation measures may be implemented prior to, during, or after an incident. Mitigation measures are often formed by lessons learned from prior incidents. Mitigation involves ongoing actions to reduce exposure to, probability of, or potential loss from hazards. Measures may include zoning and building codes, floodplain buyouts, and analysis of hazard-related data to determine where it is safe to build or locate temporary facilities. Mitigation can include efforts to educate governments, businesses, and the public on measures they can take to reduce loss and injury.

**Mobilization:** The process and procedures used by all organizations (Federal, State, and local) for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

**Mobilization Center:** An off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment.

**Multiagency Coordination (MAC):** The coordination of assisting agency resources and support to emergency operations.

**Multiagency Coordination Systems (MACS):** Multiagency coordination systems provide the architecture to support coordination for incident prioritization, critical resource allocation, communications systems integration, and information coordination. The components of multiagency coordination systems include facilities, equipment, emergency operations centers (EOCs), specific multiagency coordination entities, personnel, procedures, and communications. These systems assist agencies and organizations to fully integrate the subsystems of the NIMS.

**Multiagency Incident:** An incident where one or more agencies assist a jurisdictional agency or agencies. May be single or unified command.

**Mutual-Aid Agreement:** Written agreement between agencies and/or jurisdictions that they will assist one another on request, by furnishing personnel, equipment, and/or expertise in a specified manner.

## N

**National Incident Management System (NIMS):** A system mandated by HSPD-5 that provides a consistent nationwide approach for Federal, State, local, and tribal governments; the private sector; and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, local, and tribal capabilities, the NIMS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the ICS; multiagency coordination systems; training; identification and management of resources (including systems for classifying types of resources); qualification and certification; and the collection, tracking, and reporting of incident information and incident resources.

**O**

**Officer:** The ICS title for the personnel responsible for the Command Staff positions of Safety, Liaison, and Public Information.

**Operational Period:** The period of time scheduled for execution of a given set of operation actions as specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours.

**Operations Section:** The Section responsible for all tactical operations at the incident. Includes Branches, Divisions and/or Groups, Task Forces, Strike Teams, Single Resources, and Staging Areas.

**Out-of-Service Resources:** Resources assigned to an incident but unable to respond for mechanical, rest, or personnel reasons.

**P**

**Planning Meeting:** A meeting held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations, and for service and support planning. On larger incidents, the Planning Meeting is a major element in the development of the Incident Action Plan.

**Planning Section:** Responsible for the collection, evaluation, and dissemination of information related to the incident, and for the preparation and documentation of Incident Action Plans. The Section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident. Includes the Situation, Resources, Documentation, and Demobilization Units, as well as Technical Specialists.

**Preparedness:** The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from domestic incidents. Preparedness is a continuous process. Preparedness involves efforts at all levels of government and between government and private-sector and nongovernmental organizations to identify threats, determine vulnerabilities, and identify required resources. Within the NIMS, preparedness is operationally focused on establishing guidelines, protocols, and standards for planning, training and exercises, personnel qualification and certification, equipment certification, and publication management.

**Preparedness Organizations:** The groups that provide interagency coordination for domestic incident management activities in a nonemergency context. Preparedness organizations can include all agencies with a role in incident management, for prevention, preparedness, response, or recovery activities. They represent a wide variety of committees, planning groups, and other organizations that meet and coordinate to ensure the proper level of planning, training, equipping, and other preparedness requirements within a jurisdiction or area.

**Prevention:** Actions to avoid an incident or to intervene to stop an incident from occurring. Prevention involves actions to protect lives and property. It involves applying intelligence and other information to a range of activities that may include such countermeasures as deterrence operations; heightened inspections; improved surveillance and security operations; investigations to determine the full nature and source of the threat; public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and, as appropriate, specific law enforcement operations aimed at deterring, preempting, interdicting, or disrupting illegal activity and apprehending potential perpetrators and bringing them to justice.

**Procurement Unit:** Functional Unit within the Finance/Administration Section responsible for financial matters involving vendor contracts.

**Public Information Officer (PIO):** A member of the Command Staff responsible for interfacing with the public and media or with other agencies with incident-related information requirements.



## R

**Recognition Primed Decisionmaking:** A model that describes how experts make decisions under stressful situations that are time critical and rapidly changing.

**Recorders:** Individuals within ICS organizational units who are responsible for recording information. Recorders may be found in Planning, Logistics, and Finance/Administration Units.

**Reinforced Response:** Those resources requested in addition to the initial response.

**Reporting Locations:** Location or facilities where incoming resources can check in at the incident. (See Check-In.)

**Resources:** Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an EOC.

**Recovery:** The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private-sector, nongovernmental, and public-assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; postincident reporting; and development of initiatives to mitigate the effects of future incidents.

**Resource Management:** Efficient incident management requires a system for identifying available resources at all jurisdictional levels to enable timely and unimpeded access to resources needed to prepare for, respond to, or recover from an incident. Resource management under the NIMS includes mutual-aid agreements; the use of special Federal, State, local, and tribal teams; and resource mobilization protocols.

**Resources Unit:** Functional Unit within the Planning Section responsible for recording the status of resources committed to the incident. The Unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

**Response:** Activities that address the short-term, direct effects of an incident. Response includes immediate actions to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans and of mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes. As indicated by the situation, response activities include applying intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice.

## S

**Safety Officer:** A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety. The Safety Officer may have Assistants.

**Section:** The organizational level having responsibility for a major functional area of incident management, e.g., Operations, Planning, Logistics, Finance/Administration, and Intelligence (if established). The section is organizationally situated between the Branch and the Incident Command.

**Segment:** A geographical area in which a Task Force/Strike Team Leader or Supervisor of a single resource is assigned authority and responsibility for the coordination of resources and implementation of planned tactics. A segment may be a portion of a Division or an area inside or outside the perimeter of an incident. Segments are identified with Arabic numbers.

**Service Branch:** A Branch within the Logistics Section responsible for service activities at the incident. Includes the Communication, Medical, and Food Units.

**Single Resource:** An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work Supervisor that can be used on an incident.

**Situation Unit:** Functional Unit within the Planning Section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the Planning Section Chief.

**Span of Control:** The number of individuals a supervisor is responsible for, usually expressed as the ratio of supervisors to individuals. (Under the NIMS, an appropriate span of control is between 1:3 and 1:7.)

**Staging Area:** Location established where resources can be placed while awaiting a tactical assignment. The Operations Section manages Staging Areas.

**Standard Operating Procedure (SOP):** Complete reference document or an operations manual that provides the purpose, authorities, duration, and details for the preferred method of performing a single function or a number of interrelated functions in a uniform manner.

**State:** When capitalized, refers to any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States. See Section 2 (14), Homeland Security Act of 2002, Public Law 107-296, 116 Stat. 2135 (2002).

**Strategy:** The general direction selected to accomplish incident objectives set by the Incident Commander.

**Strategic:** Strategic elements of incident management are characterized by continuous long-term, high-level planning by organizations headed by elected or other senior officials. These elements involve the adoption of long-range goals and objectives, the setting of priorities, the establishment of budgets and other fiscal decisions, policy development, and the application of measures of performance or effectiveness.

**Strike Team:** A specified combination of the same kind and type of resources with common communications and a Leader.

**Supervisor:** The ICS title for individuals responsible for a Division or Group.

**Supply Unit:** Functional Unit within the Support Branch of the Logistics Section responsible for ordering equipment and supplies required for incident operations.

**Support Branch:** A Branch within the Logistics Section responsible for providing personnel, equipment, and supplies to support incident operations. Includes the Supply, Facilities, and Ground Support Units.

**Supporting Materials:** Refers to the several attachments that may be included with an Incident Action Plan, e.g., Communications Plan, Map, Safety Plan, Traffic Plan, and Medical Plan.

**Support Resources:** Nontactical resources under the supervision of the Logistics, Planning, or Finance/Administration Sections, or the Command Staff.

**T**

**Tactical Direction:** Direction given by the Operations Section Chief that includes the tactics required to implement the selected strategy, the selection and assignment of resources to carry out the tactics, directions for tactics implementation, and performance monitoring for each operational period.

**Tactics:** Deploying and directing resources on an incident to accomplish incident strategy and objectives.

**Task Force:** A combination of single resources assembled for a particular tactical need with common communications and a Leader.

**Team:** See Single Resource.

**Technical Specialists:** Personnel with special skills that can be used anywhere within the ICS organization.

**Threat:** An indication of possible violence, harm, or danger.

**Time Unit:** Functional Unit within the Finance/Administration Section responsible for recording time for incident personnel and hired equipment.

**Type:** A classification of resources in the ICS that refers to capability. Type 1 is generally considered to be more capable than Types 2, 3, or 4, respectively, because of size, power, capacity, or, in the case of Incident Management Teams, experience and qualifications.

**Tools:** Those instruments and capabilities that allow for the professional performance of tasks, such as information systems, agreements, doctrine, capabilities, and legislative authorities.

**Tribal:** Any Indian tribe, band, nation, or other organized group or community, including any Alaskan Native Village as defined in or established pursuant to the Alaskan Native Claims Settlement Act (85 Stat. 688) (43 U.S.C.A. and 1601 et seq.), that is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

**U**

**Unified Area Command:** A Unified Area Command is established when incidents under an Area Command are multijurisdictional. (See Area Command and Unified Command.)

**Unified Command:** An application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command, often the senior person from agencies and/or disciplines participating in the Unified Command, to establish a common set of objectives and strategies and a single Incident Action Plan.

**Unit:** The organizational element having functional responsibility for a specific incident Planning, Logistics, or Finance/Administration activity.

**Unity of Command:** The concept by which each person within an organization reports to one and only one designated person. The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective





# APPENDIX B

## UPRR Hazardous Material Emergency Response Plan





**UNION PACIFIC RAILROAD COMPANY**

**HAZARDOUS MATERIAL  
EMERGENCY RESPONSE  
PLAN**

**October 1, 2009**

**PB-20850**



**TO: All Union Pacific Railroad Company Employees**

**FROM: R. Grimaila, Sr. VP Safety & Environment  
M. Hemmer, Sr. VP Law & General Counsel**

The Union Pacific Railroad Company's Hazardous Materials Emergency Response Plan (HMERP) has been revised. The revised HMERP will become effective on October 1, 2009.

Managers must ensure that their employees receive HMERP training and that relevant training is documented in the Union Pacific Plateau system.



**TO:** All Union Pacific Railroad Company Employees

**FROM:** R. Grimaila, Sr. VP Safety & Environment  
M. Hemmer, Sr. VP Law & General Counsel

Effective immediately, the Hazardous Materials Emergency Response Plan (HMERP) is amended as follows:

- The requirement for HZ-90 training is no longer required. HZ-90 is not required to support implementation of the HMERP.

For more information, contact Mark Maday at 8-544-3313.





## INTRODUCTION

This Hazardous Material Emergency Response Plan (HMERP) has been established to provide emergency response information to personnel who may become involved in a hazardous materials incident. It is designed to be consistent with the emergency response plan provisions set forth by the Occupational Safety and Health Administration (OSHA) under 29 C.F.R. 1910.120(q). For purposes of this HMERP, the term “hazardous materials” shall include “hazardous materials” as defined by the U.S. Department of Transportation (DOT), and “hazardous substances and hazardous wastes” as defined by the U.S. Environmental Protection Agency (EPA). If there is any doubt concerning the classification of a particular material, *i.e.*, whether it is “hazardous material,” and/or whether it is covered by this HMERP, contact the Response Management Communication Center (RMCC) at 888-877-7267, 1-888-UPRR COP, or company line 8-544-RMCC.

## DISTRIBUTION

This HMERP is distributed throughout the Union Pacific Railroad network through the company’s intranet web site where it is available for printing and posting. The HMERP is also supplemented with a site-specific emergency response information addendum at eighty-three facilities listed in *Section VI, Attachment B* of this HMERP (*List of Union Pacific Railroad Facilities With Supplemental Site-Specific Emergency Response Information*). For those facilities, a template for the site-specific emergency response information addendum is attached (*Section VI, Attachment C*). The template is completed by the Hazardous Materials Manager for each facility and attached to the HMERP. A copy of the entire HMERP is posted in an area where it is readily accessible to all employees, and in digital form, on the facilities’ internal websites, if one is available.

This HMERP may be made available for inspection and copying by employees, their representatives, and OSHA personnel. Copies may also be forwarded to local emergency planning commissions and other legally authorized emergency response entities.

**ORGANIZATION**

This HMERP is divided into six (6) sections:

- Section I - Scope of the HMERP
- Section II - Initial Observers and Other Employees – Roles, Responsibilities & Training
- Section III - Managers – Roles, Responsibilities & Training
- Section IV - Emergency Response Personnel – Roles, Responsibilities & Training
- Section V - Miscellaneous
- Section VI - Attachments:
  - HMERP Training Guide
  - List of Union Pacific Railroad Facilities With Site-Specific Emergency Response Information Addendum
  - Site-Specific Emergency Response Information Addendum Template

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***HMERP Amendment 01***  
***Effective Date: 07/15/2010***

**SECTION I**

**SCOPE OF THE HMERP**

This Hazardous Materials Emergency Response Plan (HMERP) describes the emergency response procedures that will apply to a “non-incidental” release or threatened release of hazardous materials from a locomotive, railcar, vessel, or facility under the jurisdiction, custody or control of the Union Pacific Railroad Company. It applies to a non-incidental release that occurs anywhere within Union Pacific Railroad’s system, including off-site track and other right-of-way.

A response to an “incidental” release of hazardous materials which can be absorbed, neutralized, or otherwise controlled at the time of the release by employees in the immediate release area, or by maintenance personnel, is not considered an emergency response within the scope of this HMERP (or the OSHA standard requiring the development of this HMERP). A response to a release of hazardous materials where there is no potential safety or health hazard (such as fire, explosion or chemical exposure) is not considered an emergency response under OSHA’s definition of emergency response, and may be handled in a manner most suitable to the circumstances, taking into account the health and safety of on-the-scene personnel and other relevant legal requirements, but without initiating the Railroad’s incident command structure.

An incidental release of a hazardous material, where there is no significant safety risk or health hazard to the employee cleaning it up, or to employees in the immediate vicinity, and which has no potential to become an emergency in a short time frame, may be cleaned up by employees who are familiar with the hazards. No emergency response is required if the employees are knowledgeable, capable, and properly equipped to contain and mitigate the hazard, and there is no significant threat to human health, safety or the environment.

*See 29 C.F.R. 1910.120(a)(3) – Definitions: “Emergency Response;” and Appendix E: “Releases of Hazardous Substances that Require an Emergency Response.”*



## SECTION II

### INITIAL OBSERVERS AND OTHER EMPLOYEES ROLES, RESPONSIBILITIES & TRAINING

#### A. SCOPE

The provisions of this Section apply to “Initial Observers” and other employees in an affected area. Initial observers and other employees are individuals who are trained to initiate the emergency response sequence by notifying the proper authorities, and can assist in certain defensive response activities outside the zone of danger, but they do not assist in offensive emergency response operations. In the event of a hazardous materials incident, personnel that fall within this group are expected to “Protect, Alert, Notify, and Follow Instructions.”

#### B. EXPECTATIONS

When a release of hazardous materials is observed or discovered, the following actions should be taken by the Initial Observer and other employees in the affected area:

##### *1. Protect yourself and Alert Others*

- Move upwind and uphill a safe distance away from the release.
- Avoid contact with material and vapors.
- Warn bystanders to stay away.
- Eliminate ignition sources (do not smoke or use fuses).
- Alert others in the affected area.
- Use yard specific alarm systems if available; follow emergency radio procedures if necessary and appropriate.

##### *2. Initiate the Notification Process*

- Contact 911 if there is imminent risk of death, injury or damage to persons, property or the environment, or if there are other circumstances requiring immediate assistance.
- Contact the RMCC at 888-877-7267 (888-UPRR COP) and provide the requested information. The RMCC will notify federal, state and local emergency response authorities. Do not wait to make this notification. Provide whatever information is available at the time. Other information can be provided as it becomes available.
- Notify the local railroad command center, yardmaster, dispatcher, facility manager or local manager, as appropriate. If a telephone is not available, follow emergency radio procedures, as identified in the General Code of Operating Rules (GCOR), *i.e.*, Rule 2.10.

##### *3. Follow Instructions.*

- Turn to a designated radio channel or contact your supervisor directly for instructions.
- If ordered to evacuate, proceed to do so in a safe manner, as directed.
- If ordered to take refuge, proceed in a safe manner to the designated place of refuge.
  - For maximum protection at place of refuge, turn off all air handling equipment and close all windows and doors.
  - When safe to do so (supervisor will advise), open windows and doors and exit the building.

##### *4. Provide Limited Assistance*

- Stay within the limits of training and authorization.

- Assist as required in implementing defensive measures (e.g., use sandbags to erect a containment structure to protect a nearby waterway), but stay outside the zone of danger.
- Do not assist in offensive emergency response operations.

### C. TRAINING

Since Union Pacific is a transporter of hazardous materials, the Company trains all employees to the “first responder awareness level.” First responders at the awareness level are individuals who are expected to initiate the emergency response sequence by notifying the proper authorities.

The preferred training mechanism for this group of employees is the “*Hazardous Materials Emergency Response Plan Training Guide*.” The *Training Guide* identifies various classes of hazardous materials, recognition techniques, documentation requirements, and initial observer actions delineated in the HMERP. Employees who regularly work at one of eighty-three (83) facilities identified in the list of facilities delineated by *Section VI, Attachment B* are further directed to review a supplemental site-specific emergency response information addendum for that facility. The site-specific information addendum establishes awareness of local warning systems, evacuation routes, areas of refuge, the location of windsocks, flags, showers and eyewash stations, and the telephone numbers of local emergency response agencies, *i.e.*, fire department, police department, and emergency medical personnel.

The *Training Guide* is delivered electronically or by regular mail to all Union Pacific employees on an annual basis. The site-specific information addendum is posted in common areas at each facility. It can also be acquired from facility managers, and/or downloaded and printed from the company’s intranet web site.

Delivery of the *Training Guide* is documented for each employee in the Union Pacific Plateau system. HZ89 is the training code to record distribution of the *Training Guide*. A copy of the *Training Guide* and a template for the site-specific information addendum are attached to Section VI of this HMERP (*Attachments A and C*).

## SECTION III

### MANAGERS IN THE AFFECTED AREA ROLES, RESPONSIBILITIES & TRAINING

#### A. SCOPE

This Section applies to managers in the affected area who observe or discover a release or have news of a release reported to them by a subordinate. Managers are trained to initiate the emergency response sequence by notifying the proper authorities, and can assist in certain defensive response activities outside the zone of danger, but cannot participate in offensive emergency response operations. In addition to the expectations that apply to the Initial Observer and other employees (*i.e.*, protect, alert, notify and follow instructions) they are expected to account for the safety of their employees and contractor personnel, arrange for first-aid if required by subordinates, coordinate facility-based evacuations, and assist in defensive response activities outside the zone of danger.

#### B. EXPECTATIONS

When a release of hazardous materials is observed, discovered or reported by a subordinate, Managers in the affected area should initiate the following actions:

##### 1. *Protect Yourself and Alert Others*

- Adhere to the provisions of Section II of this HMERP to protect yourself.
- Accurately record information provided by an Initial Observer.
- Contact 911 if there is imminent risk of death, injury or damage to persons, property or the environment, or if there are other circumstances requiring immediate assistance.
- Alert all employees and other persons in the affected area:
  - Sound the designated warning signal for a general emergency.
  - Implement GCOR Rule 2.10 and broadcast the following message:

**This is a hazardous materials emergency broadcast.**

**There is a hazardous materials emergency at indicate location.**

**Do not enter this area. Anyone in this immediate area should move away from the incident. Go upwind to safety. Contact your supervisor."**

##### 2. *Initiate the Notification Process*

- Contact the RMCC at 888-877-7267 (888-UPRR COP) and provide the requested information. Table 1 (see below) references relevant RMCC information protocol. The RMCC will notify federal, state and local emergency response authorities. Do not wait to make this notification. Provide whatever information is available at the time. Other information can be provided as it becomes available.
- Notify the local railroad command center, yardmaster, dispatcher, facility manager or local manager, as appropriate. If a telephone is not available, follow emergency radio procedures, as identified in the GCOR, Rule 2.10.
- Notify arriving and departing train crews; provide instruction on appropriate safety precautions and/or evacuation, if necessary.

##### 3. *Provide Limited Assistance*

- Provide emergency response officials with a copy of the train list or shipping papers. For a transportation incident, obtain shipping description entries and other pertinent emergency

response information from the TCS system. Logon to TCS10 and enter ***TTH car initials and number*** (all together) or for train information, enter ***BC Train identification date D***.  
Example: *TTHGATX1234* or *BC MPCRO 30 D*.

- Guide emergency response personnel to the location of the incident, if safe to do so. Identify access routes, staging areas, and other pertinent information.

*4. Account for All Employees and Other Personnel*

- Account for all direct-report employees and contractor personnel in the affected area.
- Report immediately to the ranking on-scene emergency response official or the RMCC if any employee or contractor personnel are not accounted for.

*5. Coordinate Evacuation of Employees & Other Facility Personnel*

- If evacuation is necessary, note wind direction and use available broadcast resources (e.g., radio, telephone, or facility sound system) to instruct all non-emergency response personnel to evacuate the area or proceed to an appropriate place of refuge, located upwind and outside the danger zone.
- If necessary, consult the site-specific information addendum to this HMERP for the location of windsocks and/or flags, safety showers, evacuation routes, and places of refuge.
- Direct all subordinate management officials, *i.e.*, supervisors and/or foremen, to account for all direct-report employees and contractor personnel.
- Report to the ranking on-scene emergency response official or the RMCC if any employee or contractor personnel cannot be accounted for at the designated place of refuge.

*6. Arrange for First-Aid to be Provided to Injured Personnel*

- If personnel have been injured, arrange for first-aid or on-site medical evaluation and treatment.
- If first aid and/or medical services are not available on site, transport injured personnel to a nearby first-aid or medical treatment facility, if safe to do so.
- If available, provide relevant hazardous material information (e.g., MSDS) to first aid/medical personnel engaged in evaluation and/or treatment.
- If injured personnel are transported off-site, record the name, address and telephone number of the receiving medical treatment facility.

*7. Stay within Authorized Limits of Training and Scope of Duties*

- Assist as required in implementing defensive emergency response measures (e.g., erect a containment structure using sandbags to protect a nearby waterway), but stay outside the zone of danger.
- Direct non-emergency response activities from a safe location until relieved by a more senior Railroad official.
- Stay within the limits of training and authorization. Do not assist in offensive emergency response operations.

**TABLE 1**  
**RMCC Information Protocol**

Contact the RMCC to initiate the notification process. The information in the table below will be helpful to the RMCC. Provide as much information as possible, but do not delay notification. Provide what information is available at the time, and supplement it as more information becomes available.

<b>Information about yourself (<i>the observer/caller</i>).</b>	Name Location (place where you will meet responders) Means of contact (telephone number, radio frequency, etc.)
<b>Type of emergency.</b>	
<b>Location of emergency.</b>	Mile post County/parish City Subdivision Name of facility/yard or track Street address, etc. Special instructions for emergency responders, if needed
<b>Status of employees and others in area.</b>	Deaths, injuries, and numbers and names, if known.
<b>Date and time emergency occurred.</b>	
<b>Equipment involved (rail, other).</b>	Car initial and number Unit number Name and quantity of hazardous material Hazard class
<b>Description of surroundings.</b>	Proximity to populated buildings, other important or occupied buildings, important roads, bridges, drainage ditches, streams, waterways, bodies of water, and drains.
<b>Resources Required to Manage.</b>	Fire Ambulance Law enforcement
<b>Resources Currently Available.</b>	
<b>Initial actions taken.</b>	Emergency response agencies on the scene. UPRR personnel responding Defensive Operations initiated (e.g., evacuation, control of released materials, etc.).
<b>Initial notifications made.</b>	Identify any prior notifications (i.e. RMCC, 911, etc.).
<b>Weather conditions.</b>	
<b>Effect on train operations.</b>	

### **C. TRAINING**

In addition to HZ89 training, managers also complete an online course of instruction referred to as HZ90. The HZ90 training module is a more comprehensive version of the HZ89, and includes an online examination. The objective of the HZ90 is to provide managers with a more comprehensive understanding of the HMERP. Once completed, documentation of training is automatically recorded in Plateau. HZ90 refresher training is performed annually. Note that HZ90 does not qualify managers to initiate or direct a defensive or offensive emergency response operation. Managers are authorized to coordinate evacuations of facility personnel, and may assist in the implementation of defensive emergency response operations, but only outside the zone of danger, and only under the direction of properly trained emergency response personnel.



## SECTION IV

### EMERGENCY RESPONSE PERSONNEL ROLES, RESPONSIBILITIES & TRAINING

#### A. SCOPE

The provisions of this Section apply to individuals who are trained and authorized to engage in both “defensive” and “offensive” emergency response operations.

##### 1. *Defensive Operations:*

“Defensive” emergency response operations, as defined by OSHA regulations, are distinct from “offensive” emergency response operations. The individuals who perform defensive operations do not attempt to approach the point of a release. They may take action to contain a release from a safe distance, and try to prevent exposures, but do not try to stop a release. Their objective is to prevent further injury or damage to nearby persons, property and/or the environment. The individuals who perform this function for Union Pacific are Environmental Management Group (EMG) personnel, special agents/hazardous materials, and other properly-trained personnel who are first to arrive at the scene.

##### 2. *Offensive Operations:*

Individuals who are trained to engage in “offensive” emergency response operations are referred to by OSHA regulations as *Hazardous Materials Technicians* and *Hazardous Materials Specialists*. The *Technician* is trained, equipped and authorized to approach the point of a release in order to plug, patch or otherwise stop the release. The *Specialist* responds with and provides support to the Technician. The duties of the Specialist parallel those of the Technician, but require a more comprehensive understanding of the hazardous materials they may be called upon to address. Within Union Pacific, most EMG personnel are trained to the hazardous materials technician level. A select group of individuals, including hazardous materials managers, special agents/hazardous materials and certain other EMG personnel, are trained to the hazardous materials specialist level.

##### 3. *HAZMAT Incident Commander:*

The highest ranking properly trained official designated by the Railroad to take charge of the Railroad’s emergency response operations is the *HAZMAT Incident Commander*. The role of the HAZMAT Incident Commander is limited to managing the personnel, equipment and resources associated with emergency response operations. Other functions incident to Railroad operations are typically outside the scope of his or her authority.

If the functions of the HAZMAT Incident Commander are assumed by an Incident Commander designated by federal, state or local authorities (e.g., local fire or police chief, EPA on-scene coordinator, FEMA coordinator, etc.), the HAZMAT Incident Commander must relinquish authority over emergency response operations to the Government’s Incident Commander and cooperate as necessary to complete emergency response operations. Under such circumstances, the HAZMAT Incident Commander may continue to perform liaison functions to the Government’s Incident Commander, or be asked to stand down by Union Pacific management to allow another senior Railroad official, i.e., the *Railroad Operations Commander*, to perform the liaison function.

## **B. EXPECTATIONS**

### *1. Protocol for Defensive Operations:*

When a release of hazardous materials is reported, the following actions may be taken by individuals authorized to initiate and/or direct “defensive” emergency response operations:

- Take action to protect yourself and others.
- Confirm that notification protocols have been initiated.
- Identify the hazardous material(s) involved in the incident.
- Identify potential human and ecological receptors.
- Contact 911 if immediate assistance is required to abate an imminent risk to human health or the environment.
- Identify available resources that can be used for basic control, containment and/or confinement operations.
- Mobilize available resources and utilize personal protective equipment.
- Initiate basic control, containment and/or confinement operations if safe to do so, consistent with available resources and personal protective equipment.
- Communicate conditions on the ground to the HAZMAT Incident Commander, facility manager(s) and/or federal, state and local authorities.
- Do not approach the point of release or otherwise attempt to plug, patch or stop the release.

### *2. Protocol for Offensive Operations:*

The following protocol should be adhered to by individuals who engage in “offensive” emergency response operations:

- Operate within the Railroad Incident Command structure (identified below).
- Identify the hazardous material(s) involved in the incident.
- Utilize personal protective equipment that are appropriate to the incident.
- Utilize field survey instruments and other equipment, as required.
- Locate the point of release and identify damage to containment structures and/or associated device(s).
- Identify equipment and other resources needed to perform repairs and/or stop the release.
- Communicate site conditions to the HAZMAT Incident Commander, facility manager(s) and/or federal, state and local authorities.
- Inform the HAZMAT Incident Commander immediately if assistance is required to abate an imminent risk to human health or the environment.
- Repair existing containment structures and/or associated devices and perform other functions as required to abate a release or threatened release.

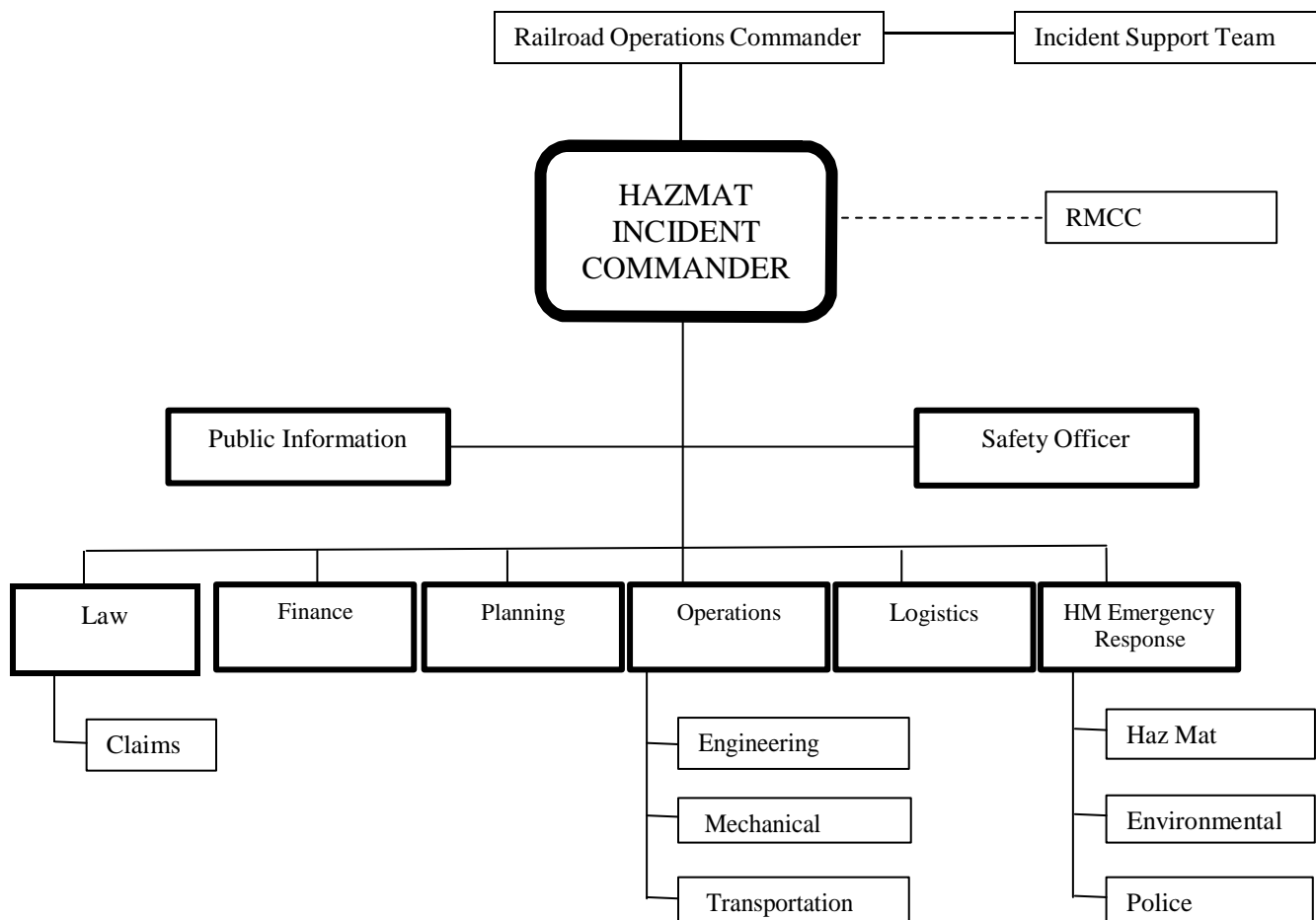
### *3. Functions of the HAZMAT Incident Commander:*

The HAZMAT Incident Commander is responsible for initiating the Railroad’s Incident Command Structure (depicted below) and for implementing the HMERP. In doing so, the HAZMAT Incident Commander performs the following functions:

- Identify the hazardous materials present at the location of a hazardous materials incident and the conditions that pose a risk to emergency response personnel, and based on this assessment, plan and implement an emergency response operation to contain and stop the release, repair existing containment structures and/or associated devices, and address continuing risks to human health, property and/or the environment.
- Ensure that emergency response personnel utilize appropriate personal protective equipment.

- Designate a safety official who is familiar with the operations to be implemented at the emergency response site. This individual will be responsible for identifying hazards, evaluating risks, and making recommendations to enhance safety. This individual will also have the authority to alter, terminate or suspend emergency response operations if he or she suspects conditions exist that pose imminent danger.
- Ensure that offensive emergency response activities are performed in groups of two or more.
- Ensure that backup personnel are available with equipment ready to provide assistance or rescue.
- Ensure that advanced first-aid personnel are available with medical equipment and transportation capability.
- Ensure that non-employee support personnel are properly briefed and equipped with appropriate personal protective equipment before performing emergency support work.
- Ensure that appropriate decontamination procedures have been implemented after emergency response operations are terminated.

### RAILROAD INCIDENT COMMAND STRUCTURE



### C. TRAINING

#### 1. Defensive Operations:

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October 1, 2009

Employees authorized to engage in defensive emergency response operations must be trained to the “First Responder Operations Level,” as defined by OSHA. First responders at the operations level must receive at least eight (8) hours of training **or** have sufficient experience to demonstrate competency in the following areas (in addition to those listed for the First Responder Awareness Level):

1. Knowledge of basic hazard and risk assessment techniques.
2. Ability to properly select and use personal protective equipment.
3. An understanding of basic hazardous materials terms.
4. Ability to initiate basic control, containment and/or confinement operations.
5. Ability to initiate basic decontamination procedures.
6. Understanding of standard operating and termination procedures.

Within Union Pacific, the individuals who perform this function receive forty (40) hours of comprehensive HAZWOPER training.

## *2. Offensive Operations:*

Employees authorized to engage in “offensive” emergency response operations must be trained to the “Hazardous Materials Technician” or “Hazardous Materials Specialist” level. This involves a minimum of twenty-four (24) hours of training and a demonstration of various core competencies.

The Technician must demonstrate competency in the following areas:

1. Utilize field survey instruments and other equipment to ascertain the classification, identification and verification of known and unknown hazardous materials.
2. Be able to implement the HMERP.
3. Be able to function effectively within the Railroad Incident Command Structure.
4. Be able to properly select and utilize appropriate personal protective equipment.
5. Understand hazard and risk assessment techniques.
6. Be able to perform advanced control, containment and/or confinement operations.
7. Understand and implement decontamination procedures.
8. Understand termination procedures.
9. Understand basic chemical and toxicological terminology and behavior.

The Specialist must demonstrate a more comprehensive understanding of the Technician’s core competency areas, and in addition, demonstrate the following:

1. Know how to implement the emergency response plan of the local jurisdiction.
2. Know of the State’s emergency response plan.
3. Be able to develop a site safety and control plan.

Within Union Pacific, individuals who perform the duties of a hazardous material technician receive forty (40) hours of comprehensive HAZWOPER training. Individuals who perform the duties of a hazardous materials specialist receive eighty (80) hours of relevant training, consisting of the forty (40) hour HAZWOPER program and a forty (40) hour TANK CAR SAFETY program unique to Railroad operations.

## *3. HAZMAT Incident Commander Training:*

Employees who will assume the role of HAZMAT Incident Commander must have at least twenty-four (24) hours of training, and in addition, demonstrate competency in the following core areas:

1. Know how to implement the HMERP.

2. Know and be able to implement the Railroad's incident command structure.
3. Understand the hazards and risks that employees face when working in chemical protective clothing.
4. Know how to implement the emergency response plan of the local jurisdiction.
5. Know of the State emergency response plan and the Federal Regional Response Team.
6. Know and understand the importance of decontamination procedures.

Within Union Pacific, qualified individuals receive a minimum of forty (40) hours of HAZWOPER training or greater.

4. *Other Personnel within the Railroad Incident Command Structure:*

The roles of other individuals in the Railroad Incident Command Structure are outlined in Section D (see below). Training of other personnel within the Railroad Incident Command Structure will be based upon the duties and functions to be performed by each employee.

5. *Refresher Training:*

All employees will receive annual refresher training of sufficient content and duration to maintain their competencies.

6. *Records Management:*

Documentation of initial and annual refresher training shall be noted and maintained in the Union Pacific Plateau system.



**Table 2**  
**Summary of Railroad Emergency Response Training**

<b>Role of Employee Group</b>	<b>Employee Group</b>	<b>Regulatory Training Requirement</b>	<b>UPPR Training Protocol &amp; Documentation</b>
Protect, Alert, Notify & Follow Instructions	All Union Pacific employees.	First Responder Awareness plus annual refresher training.	HZ89 for all employees; documented in Plateau.
Account for Subordinates, Assist and Coordinate as Directed	Field managers.	First Responder Awareness plus annual refresher training.	HZ90; documented in Plateau.
Defensive Operations	Select EMG personnel; special agents/hazardous materials; and other properly-trained personnel.	Minimum 8 hours <b>or</b> experience sufficient to demonstrate core competencies plus annual refresher training.	40 Hour HAZWOPER (HZ94) plus annual refresher (HZ95); documented in Plateau.
Offensive Operations/Hazardous Materials Technician	Select EMG personnel; special agents/hazardous materials.	24 hours <b>and</b> experience sufficient to demonstrate core competencies plus annual refresher training.	40 Hour HAZWOPER (HZ94) plus annual refresher (HZ95); documented in Plateau.
Offensive Operations/Hazardous Materials Specialist	Select EMG personnel and special agents/hazardous materials.	24 hours <b>and</b> experience sufficient to demonstrate core competencies plus annual refresher training.	40 Hour HAZWOPER (HZ94) plus annual refresher (HZ95) & 40 Hour Tank Car Safety (HM06); documented in Plateau.
HAZMAT Incident Commander	Highest ranking properly-trained EMG official or special agent/hazardous materials.	24 hours <b>and</b> experience sufficient to demonstrate core competencies plus annual refresher training.	40 Hour HAZWOPER (HZ94) plus annual refresher (HZ95) & NIMS (HZ97A, B & C); documented in Plateau.
Railroad Operations Commander	Senior Railroad official with or without hazardous materials training.	Not addressed by regulation.	None

#### D. OTHER PERSONNEL IN THE RAILROAD INCIDENT COMMAND STRUCTURE

The roles of various Railroad personnel within the framework of the Railroad Incident Command Structure are described below. All individuals must comply with the direction of the Railroad Incident Commander when engaged in activities designed to support emergency response operations. The roles assigned to particular personnel, if any, will depend upon the nature of the emergency.

<i>Group/Position</i>	<i>Role</i>
<b>Response Management Communications Center (RMCC)</b>	Initiates notification of relevant federal, state and local emergency response authorities and Railroad personnel. Provides updates as needed.
<b>Dispatching Centers HDC (Harriman), SDC (Southern), WDC (Western)</b>	Conducts internal notifications to other departments, as necessary.
<b>Law Department</b>	Provides legal support and other resources to Railroad emergency response personnel.
<b>HAZMAT Incident Commander</b>	Implements the HMERP. Performs associated command functions. Coordinates with Incident Commander appointed by Government entity, if one is designated.
<b>Public Information Officer</b>	Disseminates emergency-related information to third parties.
<b>Assigned or Designated Safety Officer</b>	Identifies and evaluates hazards and provides appropriate direction with respect to all matters relating to operational safety, including health and safety of employees and contractors.  Arranges for advanced first aid personnel and transportation when local resources are not available.  Safety Officer has the authority to alter, suspend, or terminate operations if there is imminent risk of danger to health and safety.
<b>Finance</b>	Maintains information on cost issues.
<b>Claims</b>	Directs efforts to minimize impact on the community; manages and investigates all claims.
<b>Engineering</b>	Rebuilds damaged track, subgrade, bridges and culverts, signals, and other railroad structures associated with the emergency.
<b>Mechanical</b>	Rerails, repairs, or disposes of damaged rail equipment and non-hazardous lading associated with the emergency.
<b>Transportation</b>	Maintains local railroad operations that are not impacted by and/or do not impact emergency response operations.
<b>Hazardous Materials</b>	Responds to a hazardous material release incident with properly trained personnel.
<b>Environmental</b>	Directs efforts to address environmental aspects that may be associated with hazardous material release. Supports hazardous materials emergency response efforts.
<b>Police</b>	Manages site security in conjunction with local, state, and federal law enforcement agencies.
<b>Damage Prevention (Freight Claims)</b>	Transfers, salvages, or disposes of non-hazardous commodities associated with the emergency.
<b>Derailment Prevention</b>	Directs efforts for investigation of cause of the emergency.
<b>Tele-communications</b>	Provides and maintains required communications.

## Section V

### MISCELLANEOUS

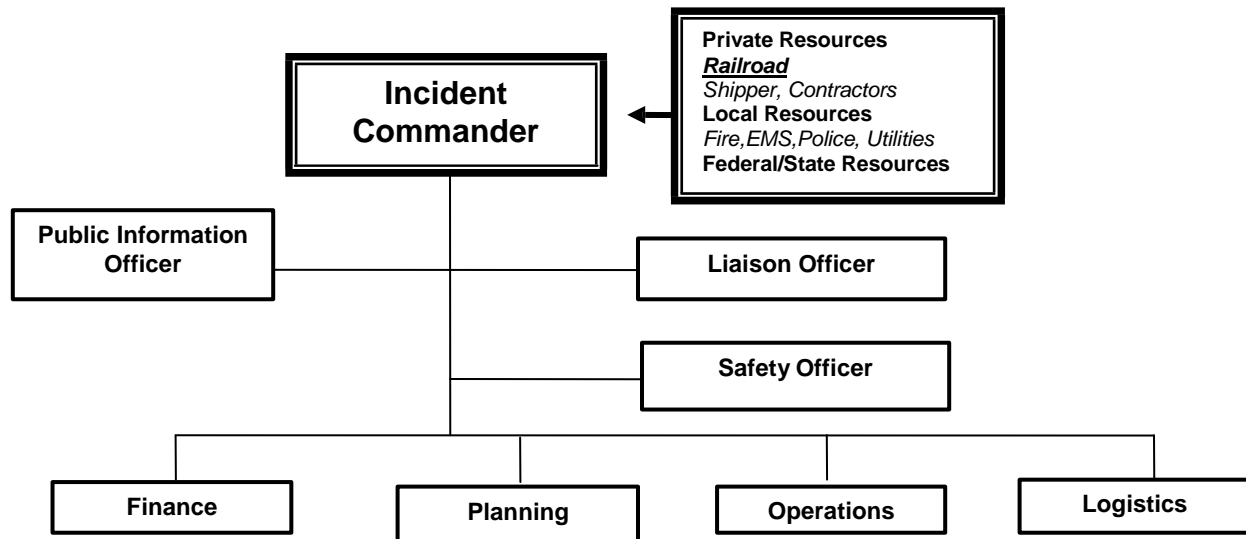
#### A. PRE-EMERGENCY PLANNING

The Railroad provides emergency response training specific to Railroad operations to local first responders throughout the Railroad's geographic area of operations. Hazardous materials information is provided to local emergency response authorities pursuant to the Emergency Planning and Community Right-to-Know Act (EPCRA). In addition, the Railroad cooperates and actively participates with local communities through various outreach initiatives, i.e., LEPC meetings, Responsible Care Initiatives, and TransCAER events, to enhance coordinated emergency response activities. The HMERP is provided to local fire departments upon request.

#### B. COORDINATION WITH NON-RAILROAD EMERGENCY RESPONSE PERSONNEL

- If the functions of the HAZMAT Incident Commander are assumed by an Incident Commander designated by federal, state or local authorities (e.g., local fire or police chief, EPA on-scene coordinator, FEMA coordinator, etc.), the HAZMAT Incident Commander shall relinquish authority over emergency response operations to the Government's Incident Commander and cooperate as necessary to complete emergency response activities.
- The HAZMAT Incident Commander may continue to perform liaison functions consistent with the National Incident Management Structure (NIMS) identified below, or may be asked to stand down to allow other Railroad officials to perform this function, i.e., the Railroad Operations Commander.

#### NATIONAL INCIDENT MANAGEMENT STRUCTURE (NIMS)



**C. COMMUNICATIONS**

- Notifications to federal, state and local authorities will be initiated by the Response Management Communications Center (RMCC).
- The HAZMAT Incident Commander will establish internal communication protocol and advise emergency response personnel regarding radio frequencies, telephones and other means of communication that will be made available during emergency response operations.

**D. EMERGENCY RECOGNITION AND PREVENTION**

- All Union Pacific employees receive annual training at the first responder awareness level through the *HMERP Training Guide*. The *Training Guide* identifies classes of hazardous materials, recognition techniques, documentation requirements, and initial observer actions delineated in the HMERP. Individuals engaged in offensive and defensive emergency operations receive more comprehensive training.
- Railroad personnel perform hazardous materials inspections at various stages of the transportation cycle.

**E. SAFE DISTANCES/PLACES OF REFUGE AND EVACUATION ROUTES/PROCEDURES**

- A site-specific emergency response information addendum has been developed for eighty-three facilities listed in Section VI, Attachment B. This document is posted in common areas at each facility, and may be obtained from the facility manager, and/or downloaded from the company's intranet web site.

**F. SITE SECURITY AND CONTROL**

- Railroad police are authorized to address general security issues on Railroad property, including those that may arise during emergency response operations. If local law enforcement officials become involved in an incident response, Railroad police coordinate with local law enforcement officials to manage site security and control.

**G. DECONTAMINATION PROCEDURES**

- The HAZMAT Incident Commander shall determine and instruct emergency response personnel on appropriate decontamination methods relevant to a particular chemical hazard.

**H. EMERGENCY MEDICAL TREATMENT AND FIRST AID**

- Managers at the first responder awareness level arrange for first-aid and/or medical treatment of injured non-emergency response personnel.
- The HAZMAT Incident Commander arranges for advanced first aid/medical treatment of injured emergency response personnel.
- The HAZMAT Incident Commander will communicate information pertaining to chemical materials and other hazards to first-aid/medical personnel as necessary to facilitate appropriate treatment of injuries.

## I. INCIDENT CRITIQUE AND FOLLOWUP ACTIONS

- An incident analysis shall be performed and documented for non-incidental emergency response actions which involve mobilization of a HAZMAT Incident Commander.
- The HAZMAT Incident Commander shall ensure that copies of the incident analysis are retained for future reference and/or inspection.
- Follow-up actions, including appropriate amendments to governing documents, shall be implemented as required to address deficiencies in the implementation of emergency response operations or other provisions of the HMERP.

## J. PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Determination of appropriate PPE levels will be based on an evaluation of the characteristics of the PPE relative to the requirements of the site, the task, and the hazards identified.



**SECTION VI**  
**ATTACHMENTS**

- A. HMERP Training Guide
- B. List of Union Pacific Railroad Facilities With A Site-Specific HMERP Addendum
- C. Site-Specific HMERP Addendum Template

**Attachment A**

*HZ-89*

*Hazardous Materials Emergency Response Plan Training Guide*

*RESERVED*

*RESERVED*

*RESERVED*



**Attachment B**

**UNION PACIFIC RAILROAD FACILITIES WITH A  
SITE-SPECIFIC EMERGENCY RESPONSE INFORMATION ADDENDUM**

<b>STATE</b>	<b>LOCATION</b>
AR	Little Rock
AR	Pine Bluffs
AZ	Nogales
AZ	Phoenix
AZ	Tucson
AZ	Yuma
CA	Bakersfield
CA	City of Industry
CA	Commerce-Los Angeles
CA	Dolores
CA	Fresno
CA	LATC-Los Angeles
CA	ICTF Yd-Long Beach
CA	Martinez
CA	Oakland
CA	Roseville (potential OPA 2005)
CA	Stockton
CA	West Colton
CA	Yermo
CO	36th Street-Intermodal-Denver
CO	Burnham-Denver
CO	North Yard-Denver
CO	Grand Junction
IA	Cedar Rapids
IA	Clinton
IA	Council Bluffs
IA	Des Moines
ID	Nampa
ID	Pocatello
IL	Canal Street-Intermodal
IL	Dupo
IL	East St. Louis(A&S)
IL	Global 1
IL	Global III
IL	Melrose Park-Proviso-Global II
IL	Yard Center-Dolton
KS	Coffeyville
KS	Kansas City (Armourdale, 18th, Armstrong, Fairfax)
KS	Topeka
KS	Wichita
LA	Alexandria

(continued)

<b>STATE</b>	<b>LOCATION</b>
LA	Avondale
LA	Lake Charles

LA	Livonia
LA	Hollywood-Shreveport
MN	St. Paul
MO	Neff-Kansas City
MO	Lesperance-St. Louis
NE	Fremont
NE	Grand Island
NE	North Platte
NE	South Morrill
NV	Elko
NV	Sparks
OR	Albina
OR	Barnes
OR	Eugene
OR	Hermiston-Hinkle
OR	Brooklyn-Portland
TN	Memphis
TX	Angleton
TX	Beaumont
TX	Bloomington-Victoria
TX	Dallas Street-El Paso
TX	Alfalfa-El Paso
TX	Davidson (Ft. Worth)
TX	Hearne
TX	LaPorte-Strang-Houston
TX	Englewood-Houston
TX	Settegast-Houston
TX	Longview
TX	Ney
TX	Kirby-San Antonio
TX	East Yard-San Antonio
TX	SoSan Yard-San Antonio
UT	Ogden
UT	Roper
UT	Salt Lake
WA	Argo-Seattle
WI	Butler-Milwaukee
WY	Cheyenne
WY	Green River
WY	Rawlins

## Attachment C

### SITE-SPECIFIC EMERGENCY RESPONSE INFORMATION ADDENDUM

Hazardous Materials Managers shall complete this HMERP addendum for each of the facilities identified in Section VI, Attachment B. The entire HMERP, including this addendum, must be posted in an area of the facility which is easily accessible to employees. It should also be made available on the company's local intranet website.

#### Local Emergency Contact Numbers:

Fire Department .....

Police Department .....

First-Aid/Emergency Medical Services .....

Response Management Communications Center .....

Emergency Evacuation Route(s) (attach map): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Places of Refuge & Special Instructions: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Location of Emergency Alarm System /Sirens: \_\_\_\_\_

\_\_\_\_\_

Emergency Radio Channel(s): \_\_\_\_\_

Location of Emergency Showers/Eyewash: \_\_\_\_\_

\_\_\_\_\_

Location of Available Wind socks and/or Flags: \_\_\_\_\_

\_\_\_\_\_

Access Points: \_\_\_\_\_

\_\_\_\_\_

Staging Areas: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Command Post Location: \_\_\_\_\_

\_\_\_\_\_

List Equipment that may be used to Facilitate Emergency Response: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

***HMERP Amendment 01***

***Effective Date: 07/15/2010***

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Location of Equipment that may be used to Facilitate Emergency Response: \_\_\_\_\_

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Other Relevant Information: \_\_\_\_\_

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# APPENDIX C

## BNSF Haz Mat Release Checklist





**BNSF Haz Mat Release Checklist:**

*This document is for Non-Accident Reporting (NAR).*

*If an accident is involved, reporting is to be completed on the Incident Report.*

<b>Reported by:</b>				
<b>Time SID notified:</b>		<b>Date SID notified:</b>		
<b>Division:</b>		<b>Subdivision:</b>		
<b>MP:</b>		<b>Station, State:</b>		
<b>County:</b>		<b>Train / Track:</b>		
<b>How was incident discovered? By whom? Time?</b>				
<b>Is the release a solid, liquid, or gas?</b>				
<b>Estimated amount of product released:</b>				
<b>Is the product pooling on the ground / soaking?</b>				
<b>What smells, if any, were noted?</b>				
<b>Is the car being isolated? Where?</b>				
<b>Any sewers/waterways nearby? Contaminated?</b>				
<b>How is released product being contained?</b>				
<b>Any crew, civilian injuries? (Names and craft.) If BNSF employee exposed to a hazardous substance, call the BNSF Industrial Hygiene Help Desk at 888-634-1011.</b>				
<b>Any evacuations or road closures?</b>				
<b>Local weather conditions:</b>				
<b>Has Haz remediation contractor been contacted?</b>				
<b>Train delays? (Symbols / amount of delays)</b>				
<b>Main Track disruption expected &gt;3 hours? Has following link's report been accomplished?</b> <a href="http://ftwaxwfc001/approot/ncs_derail/load_derail_logon.htm">http://ftwaxwfc001/approot/ncs_derail/load_derail_logon.htm</a> TSS = TJS    Then A, symbol, PF9. Then select the next forward TJS station (next station not "yellowed"). Run STN and use the 3-3-3 station name.				
<b>Car Number:</b>	<b>Commodity:</b>	<b>Shipper:</b>	<b>Tank Capy.</b>	<b>Location of Leak:</b>
<b>Brief Narrative of the Incident:</b>				
<b>Time/Date notified:</b>	<b>Notified:</b>	<b>Name and their ETA, etc.</b>	<b>Your initials:</b>	
	ROC			
	CNS Desk      593-4670 (If Main Trk out of service)			
	CHEMTREC      (US) 800-424-9300			
	CANUTEC      (Canada) 613-996-6666			
	Shipper			
	State or Local Government			
	State or Local Government (CA – CUPA)			
	Assoc. of Amer. Railroads 202-639-2910			
	NRC / NTSB   800-424-8802			
	AGST			
	Corridor Superintendent			
	Divn. General Manager			
	Divn. GDT			
	Supt. Operations			
	Terminal Superintendent			
	BNSF Environmental	ETA		
	BNSF Haz Responder	ETA		
	BNSF Mechanical NOC and/or Field	ETA		

	<b>Blackberry to Haz Group:</b> Brady, Patrick M; Chapman, Ed R; Clark, David C (Topeka) Horn, Howard T; Lowman, Wm Brock; Repola, Robert E.; Schulze, Mark A; Stegman, Allen M; Williams, Tom G.		
	<b>Industrial Hygiene / Med.</b> <b>888-634-1011.</b> Notify them if a BNSF employee is exposed to a hazardous substance.		
	<b>Division Engineer</b>		
	<b>Trainmaster</b>	<b>ETA</b>	
	<b>Roadmaster</b>	<b>ETA</b>	
	<b>BNSF Corporate Relations</b>		
	<b>BNSF Corp. Relations</b> <b>Steve Forsberg (all incidents)</b>		
	<b>Rogerson, David L</b> <b>Gen. Dir. Transp. Support</b> Major incidents only		
Alpha Page protocol for Pat Brady and Ed Chapman: Provide the following information - date, time, location, commodity, shipper, amount of release, injuries (if any), evacuations (if any) and status. If a call back is required, numeric page.			
Pat Brady or Ed Chapman should be contacted <u>directly</u> by the best means available if:			
• An evacuation is involved.		• Personal injury results (employee or civilian).	
• A derailment caused a release.		• There are response difficulties or complexities.	
• Difficulty with outside agencies occur.		• Technical assistance is needed.	
	<b>Work:</b>	<b>Cellular:</b>	<b>Pager / PIN:</b>
Ed Chapman	740 - 7254	817 - 371 - 6300	Blackberry
Pat Brady	740 - 7358	817 - 821 - 1325	817 - 740 - 2659

# APPENDIX D

Representative Water Flow Data – North Fork



## Appendix D – Representative Water Flow Data – North Fork

### North Fork at Pulga – Flow Data

Pacific Gas and Electric												USDAY V106	Output 02/18/20
Summary Report													
Site: NF23 North Fork Feather River At Pulga													
USGS #: 11404500													
Beginning Date: 10/01/2013													
Ending Date: 09/30/2014													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2013 to Sep 2014													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Total	3856	3511	3148	3084	4399	9346	4106	3612	3467	3553	3492	3504	
Mean	124	117	102	99.5	157	301	137	117	116	115	113	117	
Max	130	131	109	103	931	2570	195	123	120	120	117	125	
Min	117	100	95	95	102	111	119	110	98	110	109	112	
Acres-Ft	7650	6960	6240	6120	8730	18540	8140	7160	6880	7050	6930	6950	
Pacific Gas and Electric												USDAY V97	Output 02/20/20
Summary Report													
Site: NF23 North Fork Feather River At Pulga													
USGS #: 11404500													
Beginning Date: 10/01/2012													
Ending Date: 09/30/2013													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2012 to Sep 2013													
Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Total	3422	22769	121408	4506	3641	5289	3966	3742	3585	3611	3740	3708	
Mean	110	759	3916	145	130	171	132	121	120	116	121	124	
Max	121	17000	32400	187	161	1040	144	124	141	121	126	130	
Min	105	105	158	130	123	123	122	116	113	112	115	120	
Acres-Ft	6790	45160	240800	8940	7220	10490	7870	7420	7110	7160	7420	7350	
Pacific Gas and Electric												USDAY V91	Output 11/08/20
Summary Report													
Site: NF23 North Fork Feather River At Pulga													
USGS #: 11404500													
Beginning Date: 10/01/2011													
Ending Date: 09/30/2012													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2011 to Sep 2012													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Total	4066.09	9039.01	4202.28	6824.83	3549.17	62915.42	63537.09	34972.54	7505.44	3827.40	3237.70	3147.37	
Mean	131.16	301.30	135.56	220.16	122.39	2029.53	2117.90	1128.15	250.18	123.47	104.44	104.91	
Max	157.36	580.11	568.45	2627.73	133.06	11928.9	8453.19	3024.91	279.30	250.38	111.64	110.92	
Min	122.34	116.25	115.03	115.44	115.47	123.77	332.69	230.91	232.84	100.06	101.02	100.72	
Acres-Ft	8064.97	17928.6	8335.10	13536.9	7039.68	124791	126024	69367.0	14886.8	7591.54	6421.88	6242.72	

# Appendix D – Representative Water Flow Data – North Fork

Pacific Gas and Electric					USDAY V91 Output01/23/2012								
Summary Report													
Site: NF23 North Fork Feather River At Pulga													
USGS #: 11404500													
Beginning Date: 10/01/2010													
Ending Date: 09/30/2011													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Total	5138	6390	109150	57330	23630	132079	147710	102327	65239	4467	4095	3918	
Mean	166	213	3521	1849	844	4261	4924	3301	2175	144	132	131	
Max	1230	1710	11600	2620	3950	14800	7880	5840	4280	272	135	136	
Min	121	124	1550	1250	147	182	2250	876	264	132	128	127	
Acre-Ft	10190	12670	216500	113700	46870	262000	293000	203000	129400	8860	8120	7770	
Pacific Gas and Electric					USDAY V71 Output01/19/2011								
Summary Report													
Site: NF23 North Fork Feather River At Pulga													
USGS #: 11404500													
Beginning Date: 10/01/2009													
Ending Date: 09/30/2010													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2009 to Sep 2010													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Total	4328	13956	26557	59618	47012	8297	15256	9145	6785	4188	4203	3990	
Mean	140	465	857	1923	1679	268	509	295	226	135	136	133	
Max	588	734	1200	4380	2850	1860	3680	979	826	139	141	139	
Min	118	113	629	757	210	156	167	162	140	130	131	126	
Acre-Ft	8580	27680	52680	118300	93250	16460	30260	18140	13460	8310	8340	7910	

## Appendix D – Representative Water Flow Data – North Fork

### North Fork Below Grizzly Creek – Flow Data

Pacific Gas and Electric										USDAY V106			Output 02/17/20	
Summary Report														
Site: NF56 N.F. Feather River Blw Grizzly Creek														
USGS #: 11404330														
Beginning Date: 10/01/2013														
Ending Date: 09/30/2014														
Daily Mean Discharge in Cubic feet/second Water Year Oct 2013 to Sep 2014														
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
-----														
Total	10489	9503	8334	10064	10401	13057	6654	6120	5809	6841	7125	6788		
Mean	338	317	269	325	371	421	222	197	194	221	230	226		
Max	435	349	287	779	1150	2430	324	222	219	233	249	261		
Min	67	298	246	266	271	176	178	178	177	183	215	195		
Acre-Ft	20800	18850	16530	19960	20630	25900	13200	12140	11520	13570	14130	13460		
Pacific Gas and Electric														
										USDAY V97			Output 02/19/20	
Summary Report														
Site: NF56 N.F. Feather River Blw Grizzly Creek														
USGS #: 11404330														
Beginning Date: 10/01/2012														
Ending Date: 09/30/2013														
Daily Mean Discharge in Cubic feet/second Water Year Oct 2012 to Sep 2013														
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
-----														
Total	11772	27860	93729	12236	9946	14256	10918	20887	15523	10669	10841	10779		
Mean	380	929	3024	395	355	460	364	674	517	344	350	359		
Max	425	14600	28500	874	893	1400	428	779	575	437	361	381		
Min	84	389	373	299	215	224	304	601	484	325	333	330		
Acre-Ft	23350	55260	185900	24270	19730	28280	21660	41430	30790	21160	21500	21380		
Pacific Gas and Electric														
										USDAY V91			Output 11/15/20	
Summary Report														
Site: NF56 N.F. Feather River Blw Grizzly Creek														
USGS #: 11404330														
Beginning Date: 10/01/2011														
Ending Date: 09/30/2012														
Daily Mean Discharge in Cubic feet/second Water Year Oct 2011 to Sep 2012														
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
-----														
Total	12839.51	14009.99	11868.45	15831.23	15317.39	36104.89	19675.50	22840.35	16671.26	10954.66	10899.35	10679.68		
Mean	414.18	467.00	382.85	510.69	528.19	1164.67	655.85	736.79	555.71	353.38	351.59	355.99		
Max	530.20	516.37	426.21	1280.14	1392.34	8698.15	5078.35	1214.75	595.90	382.65	368.67	409.85		
Min	98.32	421.56	356.20	367.78	388.40	251.77	256.58	618.56	504.32	333.26	319.04	335.14		
Acre-Ft	25466.8	27788.4	23540.7	31400.8	30381.6	71613.0	39025.8	45303.2	33067.0	21728.3	21618.5	21182.8		



## Appendix D – Representative Water Flow Data – North Fork

Pacific Gas and Electric				USDAY V91 Output 03/06/2012								
Summary Report												
<b>Site: NF56 N.F. Feather River Blw Grizzly Creek</b>												
USGS #: 11404330												
Beginning Date: 10/01/2010												
Ending Date: 09/30/2011												
Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	15430	14083	55177	15488	15583	76810	132410	100020	72007	17089	14261	13653
Mean	498	469	1780	500	557	2478	4414	3226	2400	551	460	455
Max	2510	608	8940	1410	1340	11700	7310	5790	4490	731	506	504
Min	75	424	362	393	385	408	1540	1100	357	481	439	425
Acre-Ft	30600	27930	109400	30720	30910	152400	262600	198400	142800	33900	28290	27080
Pacific Gas and Electric				USDAY V71 Output 01/20/2011								
Summary Report												
<b>Site: NF56 N.F. Feather River Blw Grizzly Creek</b>												
USGS #: 11404330												
Beginning Date: 10/01/2009												
Ending Date: 09/30/2010												
Daily Mean Discharge in Cubic feet/second Water Year Oct 2009 to Sep 2010												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	12174	10765	9462	16075	12475	23732	47516	26311	20821	18488	14913	13652
Mean	393	359	305	519	446	766	1584	849	694	596	481	455
Max	875	398	399	1970	1090	3580	5280	1280	841	649	612	496
Min	340	305	268	261	324	391	496	668	620	534	439	425
Acre-Ft	24150	21350	18770	31880	24740	47070	94250	52190	41300	36670	29580	27080

## Appendix D – Representative Water Flow Data – North Fork

### North Fork Below Rock Creek Diversion Dam – Flow Data

Pacific Gas and Electric												USDAY V106	Output 02/18/20
Summary Report													
Site: NF57 N. F. Feather River Blw Rock Cr Diversion Dam													
USGS #: 11403200													
Beginning Date: 10/01/2013													
Ending Date: 09/30/2014													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2013 to Sep 2014													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
-----													
Total	8172	9202	11228	12366	10885	7527	4449	6098	6300	7814	7967	7436	
Mean	264	307	362	399	389	243	148	197	210	252	257	248	
Max	383	319	385	926	1000	820	347	217	221	609	643	603	
Min	45	273	340	337	332	136	135	178	202	206	223	183	
Acre-Ft	16210	18250	22270	24530	21590	14930	8820	12100	12500	15500	15800	14750	
Pacific Gas and Electric													
												USDAY V97	Output 11/19/20
Summary Report													
Site: NF57 N. F. Feather River Blw Rock Cr Diversion Dam													
USGS #: 11403200													
Beginning Date: 10/01/2012													
Ending Date: 09/30/2013													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2012 to Sep 2013													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
-----													
Total	9258	19538	102640	23761	14143	18804	16712	12341	9381	8269	9110	9411	
Mean	299	651	3311	766	505	607	557	398	313	267	294	314	
Max	695	10100	21300	1020	1040	1740	1910	461	1200	642	662	753	
Min	55	274	460	168	355	362	408	363	252	229	246	259	
Acre-Ft	18360	38750	203600	47130	28050	37300	33150	24480	18610	16400	18070	18670	
Pacific Gas and Electric													
												USDAY V91	Output 11/19/20
Summary Report													
Site: NF57 N. F. Feather River Blw Rock Cr Diversion Dam													
USGS #: 11403200													
Beginning Date: 10/01/2011													
Ending Date: 09/30/2012													
Daily Mean Discharge in Cubic feet/second Water Year Oct 2011 to Sep 2012													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
-----													
Total	11180.17	37004.61	25954.90	16670.54	15749.12	41386.27	78304.86	55388.11	33986.83	9132.71	8811.78	9194.68	
Mean	360.65	1233.49	837.26	537.76	543.07	1335.04	2610.16	1786.71	1132.89	294.60	284.25	306.49	
Max	663.21	2001.55	1949.15	1351.03	1222.60	7835.46	5905.55	3076.50	1471.15	687.55	293.17	666.51	
Min	58.30	375.29	470.97	447.72	442.13	183.51	1519.80	826.28	286.84	260.14	278.34	265.71	
Acre-Ft	22175.5	73397.6	51480.8	33065.5	31237.9	82088.5	155315	109861	67411.9	18114.5	17477.9	18237.4	

## Appendix D – Representative Water Flow Data – North Fork

Pacific Gas and Electric				USDAY V91 Output 02/13/2012								
Summary Report												
<b>Site: NF57 N. F. Feather River Blw Rock Cr Diversion Dam</b>												
USGS #: 11403200												
<b>Beginning Date: 10/01/2010</b>												
<b>Ending Date: 09/30/2011</b>												
Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	10813	10799	26741	17274	16047	99453	164380	111582	56018	11869	12053	12054
Mean	349	360	863	557	573	3208	5479	3599	1867	383	389	402
Max	699	409	5900	1560	1550	12500	9800	6320	4670	824	840	867
Min	56	340	430	465	473	510	2660	469	328	325	343	355
Acre-Ft	21450	21420	53040	34260	31830	197300	326000	221300	111100	23540	23910	23910
Pacific Gas and Electric				USDAY V71 Output 02/07/2011								
Summary Report												
<b>Site: NF57 N. F. Feather River Blw Rock Cr Diversion Dam</b>												
USGS #: 11403200												
<b>Beginning Date: 10/01/2009</b>												
<b>Ending Date: 09/30/2010</b>												
Daily Mean Discharge in Cubic feet/second Water Year Oct 2009 to Sep 2010												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	9871	9625	12149	13250	12277	13333	14026	13131	11771	11624	11758	11709
Mean	318	321	392	427	438	430	468	424	392	375	379	390
Max	337	334	426	941	927	795	1920	490	1240	915	822	913
Min	304	308	353	378	350	392	330	328	340	328	335	335
Acre-Ft	19580	19090	24100	26280	24350	26450	27820	26040	23350	23060	23320	23220

## Appendix D – Representative Water Flow Data – North Fork

### North Fork Below Rich Bar – Flow Data

Site:	NF51 E.B. Of N.F Feather River Near Rich Bar											
USGS #:	11403000											
Beginning Date:	10/01/2013											
Ending Date:	09/30/2014											
Daily Mean Discharge in Cubic feet/second Water Year Oct 2013 to Sep 2014												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	2756	3507	3567	3639	8628	19502	15587	4803	1691	1146	1267	1193
Mean	88.9	117	115	117	308	629	520	155	56.4	37.0	40.9	39.8
Max	120	154	120	186	1420	2540	1320	240	75	43	65	48
Min	75	107	106	109	124	222	264	79	44	33	35	34
Acre-Ft	5470	6960	7080	7220	17110	38680	30920	9530	3350	2270	2510	2370
Pacific Gas and Electric												
										USDAY V97 Output 12/16/20		
Summary Report												
Site:	NF51 E.B. Of N.F Feather River Near Rich Bar											
USGS #:	11403000											
Beginning Date:	10/01/2012											
Ending Date:	09/30/2013											
Daily Mean Discharge in Cubic feet/second Water Year Oct 2012 to Sep 2013												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	2939	12230	63857	18454	19265	40500	24810	8884	3735	2000	1428	2059
Mean	94.8	408	2060	595	688	1306	827	287	125	64.5	46.1	68.6
Max	170	4920	9920	1380	892	2640	1370	417	177	102	53	111
Min	56	140	596	400	498	510	432	189	96	48	39	42
Acre-Ft	5830	24260	126700	36600	38210	80330	49210	17620	7410	3970	2830	4080
Pacific Gas and Electric												
										USDAY V91 Output 11/19/20		
Summary Report												
Site:	NF51 E.B. Of N.F Feather River Near Rich Bar											
USGS #:	11403000											
Beginning Date:	10/01/2011											
Ending Date:	09/30/2012											
Daily Mean Discharge in Cubic feet/second Water Year Oct 2011 to Sep 2012												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----												
Total	6428	6510	6268	9503	7319	39648	52773	22356	6065	2821	1940	1814
Mean	207	217	202	307	252	1279	1759	721	202	91.0	62.6	60.5
Max	326	246	215	1170	297	6340	3500	1800	339	129	72	72
Min	143	197	179	173	226	249	968	300	122	69	56	53
Acre-Ft	12750	12910	12430	18850	14520	78640	104700	44340	12030	5600	3850	3600

# APPENDIX E

## Native American Contact List



## " NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., BOOM 100  
West SACRAMENTO, CA 95691  
(916) 373-3710  
Fax (916) 373-5471



September 17, 2015

Brian Glenn  
ARCADIS U.S. Inc.  
P.O. Box 578  
Julian, CA 92036-0578

Email to: [Brian.Glenn@arcadis-us.com](mailto:Brian.Glenn@arcadis-us.com)

RE: SB 18 Consultation, Feather River Geographical Response Plan, Yuba, Plumas and Butte Counties.

Dear Mr. Glenn,

Government Code §65352.3 requires local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NARC) for the purpose of protecting, and/or mitigating impacts to cultural places in creating or amending general plans, including specific plans. Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above project.

As a part of consultation, the NARC recommends that local governments conduct record searches through the NARC and California Historic Resources Information System (CHRIS) to determine if any cultural places are located within the area(s) affected by the proposed action. A *Sacred Lands File* search was completed and sites were found in the Plumas County Quadrangle of Crescent Mills (Greenville) and the Butte County Quadrangle of Cherokee (Berry Creek), please contact the tribes on the attached list. Local governments should be aware that records maintained by the NARC and CHRIS are not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a cultural place.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address:  
[Katy.Sanchez@nahc.ca.gov](mailto:Katy.Sanchez@nahc.ca.gov).

Sincerely, (1

[Signature]

Katy Sanchez

Associate Government Program Analyst



**Native American Trib I Consultation List  
Yuba County  
September 17, 2015**

”

Enterprise Rancheria of Maidu Indians  
Glend? Nelson, Chairperson  
2133 Monte Vista Avenue      Maidu  
Oroville                      , CA 95966  
info@enterpriserancheria.com '  
(530) 532-9214

United Auburn Indian Community of the Auburn Rancheria  
Gene Whitehouse, Chairperson  
10720 Indian Hill Road      Maidu  
Auburn                      , CA 95603      Miwok  
(530) 883-2390 Office

Mooretown Rancheria of Maidu Indians  
Gary Archuleta, Chairperson  
#1 Alverda Drive      Maidu  
Oroville                      , CA 95966      KonKow /Concow  
frontdesk@mooretown.org  
(530) 533-3625

Strawberry Valley Rancheria  
Cathy Bishop, Chairperson  
P.O. Box 667      Maidu  
Marysville                      , CA 95901      Miwok  
catfrmsac2@yahoo.com  
. (916) 501-2482

T' si-Akim Maidu  
Grayson Coney, Cultural Director  
P.O. Box 1316      Maidu  
Colfax                      , CA 95713  
(530) 383-7234

T' si-Akim Maidu  
Don Ryberg, Chairperson  
P.O. Box 1246      Maidu  
Grass Valley                      , CA 95945  
(530) 274-7497

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq. Feather River Geographical Response Plan, Yuba, Plumas and Butte Counties.

**Native American Tribal Consultation List  
Plumas County  
September 17, 2015**

Enterprise Rancheria of Maidu Indians  
Glenda Nelson, Chairperson  
-2133 Monte Vista Avenue-e      Maidu  
Oroville      , CA 95966  
info@enterpriserancheria.com  
(530) 532-9214

T' si-Akim Maidu  
Don Ryberg, Chairperson  
P.O Box1246      Maidu  
Grass Valley      , CA 95945  
(530) 274-7497

Greenville Rancheria of Maidu Indians  
Kyle Self, Chairperson  
P.O. Box 27.9      Maidu  
Greenville      , CA 95947  
ksself@greenvillerrancheria.com  
(530) 284-7990

Washoe Tribe of Nevada and California  
Darrell Kizer, Chairperson  
919 Highway 395 South      Washoe  
Gardnerville      , NV 89410  
ktrovato@washoetribe.us  
(775) 265-4191 Office

Mooretown Rancheria of Maidu Indians  
Gary Archuleta, Chairperson  
#1 Alverda Drive      Maidu  
Oroville      , CA 95966      KonKow /Concow  
frontdesk@mooretown.org  
(530) 533-3625

Susanville Indian Rancheria  
Stacy Dixon, Chairperson  
745 Joaquin Street      Paiute  
Susanville      , CA 96130      Maidu  
sirtribalchair@citlink.net      Pit River  
(530) 257-6264      Washoe

T' si-Akim Maidu  
Grayson Coney, Cultural Director  
P.O. Box 1316      Maidu  
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(530) 383-7234

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq. Feather River Geographical Response Plan, Yuba, Plumas and Butte Counties.

**Native American Tribal Consultation List  
Butte County  
September 17, 2015**

Berry Creek Rancheria of Maidu Indians  
James Edwards, Chairperson  
5 Ty-me Way - Tyme Maidu  
Oroville, CA 95966  
jedward@berrycreekrancheria.com  
(530) 534-3859

Mooretown Rancheria of Maidu Indians  
Gary Archuleta, Chairperson  
# Alverda Drive Maidu  
Oroville, CA 95966 KonKow /Concow  
frontdesk@mooretown.org  
(530) 533-3625

Enterprise Rancheria of Maidu Indians  
Glenda Nelson, Chairperson  
2133 Monte Vista Avenue Maidu  
Oroville, CA 95966  
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(530) 532-9214

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Greenville Rancheria of Maidu Indians  
Kyle Self, Chairperson  
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ksself@greenvillerrancheria.com  
(530) 284-7990

T' si-Akim Maidu  
Don Ryberg, Chairperson  
P.O. Box 1246 Maidu  
Grass Valley, CA 95945  
(530) 274-7497

KonKow Valley Band of Maidu  
Wallace Clark-Wilson, Chairperson  
PO Box 5850 KonKow /Concow  
Oroville, CA 95966 Maidu  
(530) 533-1504

Mechoopda Indian Tribe of Chico Rancheria  
Dennis E. Ramirez, Chairperson  
125 Mission Ranch Blvd Mechoopda Maidu  
Chico, CA 95926 Concow  
dramirez@mechoopda-nsn.  
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