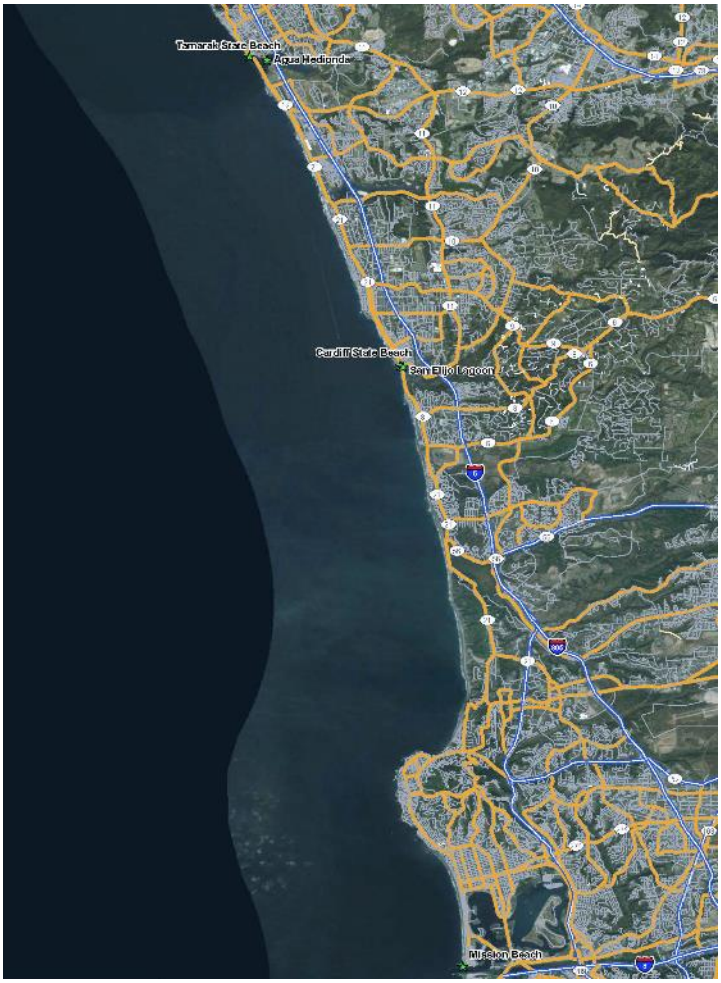
EPHEMERAL AND AMBIENT DATA COLLECTION PLAN
PACIFIC AREA LIGHTERING STATION
SAN DIEGO, CA

March 2022



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Resource Restoration Program

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LIST OF ABBREVIATIONS AND ACRONYMS

ACP	Area Contingency Plan
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CDFW-OSPR	California Department of Fish and Wildlife, Office of Spill Prevention and Response
EDCC	Ephemeral Data Collection Coordinator
EPA	U.S. Environmental Protection Agency
GPS	Global Positioning System
Ephemeral Data	Information that can only be collected within the narrow time frame of after a spill occurs and before the shoreline is impacted.
HAZWOPER	Hazardous Waste Operations & Emergency Response
ID	Identification
mL	Milliliter
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
PAHs	Polycyclic Aromatic Hydrocarbons
PAL	Pacific Area Lightering
PFD	Personal Floatation Devices
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
SAP	Sampling and Analysis Plan
TPH	Total Petroleum Hydrocarbons
USFWS	United States Fish and Wildlife Service
VOA	Volatile Organic Analysis
WCJAT	West Coast Joint Assessment Team

EXECUTIVE SUMMARY

This Ephemeral Data Collection Plan (plan) describes and prioritizes ephemeral data collection by the Natural Resources Damage Assessment (NRDA) team in the event of an accidental release of oil at or near the Pacific Area Lightering (PAL) station, located approximately 20 miles off the coast of north San Diego County, California. The NRDA team will consist of representatives of Chevron and the natural resource trustees (hereafter referred to as the 'Trustees'), which may include the California Department of Fish and Wildlife, Office of Spill Prevention and Response (CDFW-OSPR), the Department of the Interior (U.S. Fish and Wildlife Service [USFWS]), and/or the National Oceanic and Atmospheric Administration (NOAA). By developing and implementing this plan prior to an accidental release, it will ensure that the baseline condition data will be available if an accidental release occurs and will establish agreed upon sample locations and procedures to be implemented after a release. Chevron and the CDFW-OSPR prepared this plan, with review provided by the USFWS and NOAA.

Ephemeral data refer to information that may not be available if it is not collected within a narrow time frame. The primary goal of the plan is to collect ephemeral data that (1) documents existing, pre-oiling, conditions; (2) documents petroleum hydrocarbon concentrations in water, sediment, and selected marine organisms prior to and following an incident; and (3) determines concentrations of petroleum hydrocarbons in the water column under the impacted surface area.

The key to successfully collecting ephemeral data (i.e., petroleum hydrocarbon concentrations in environmental media) during an accidental release is a well-designed and implementable ephemeral data collection plan. Therefore, the primary purpose of this plan is to describe notification procedures, sampling locations, sample media, sampling procedures, and chemical analysis objectives in the event of an accidental release related to operations at PAL. Collection of ephemeral data aids in the understanding of environmental conditions prior to a release and is critical in identifying the need for, and scope of, subsequent environmental sampling and injury assessment. Having this plan in place prior to a release will facilitate the collection of critical environmental information during the early stages of response efforts.

A secondary purpose of this plan is to detail sampling locations, procedures, and chemical analysis objectives for optional biennial ambient monitoring of surface water, sediment, and tissues along the Southern California coastline between San Diego and Dana Point that may be performed to evaluate pre-incident ambient conditions. There are many anthropogenic and natural sources of hydrocarbons in the environment. Baseline or ambient conditions (i.e., petroleum hydrocarbon concentrations in various media not associated with an accidental release from PAL) should be assessed to gain an understanding of the existing conditions to allow a more accurate evaluation of impacts should an incident occur in the future. Chevron and the Trustees recognize that implementing an ephemeral data collection plan within hours of an incident may be problematic given the potential magnitude of released product (i.e., thousands of gallons of crude oil or refined fuels) and the limited resources and manpower available for this effort on a short 2-3 hour timeframe. Therefore, in order to provide basic information on baseline chemical conditions along the California coastline from San Diego to Dana Point, the NRDA team agreed that optional biennial monitoring of petroleum hydrocarbon concentrations in surface water, sediment, and tissues within this area beginning in the spring of 2012 would be appropriate.

Before implementing this plan, representatives of the NRDA team will determine if incident circumstances warrant implementation of the plan, and, if so, any modifications to the plan that may be required. Also, during an incident, the ephemeral data collection procedures detailed in this plan may be modified following lessons learned from future oil spill response drills or real-time responses to accidental releases at or near PAL.

Finally, Chevron and the Trustees recognize that other spills may occur along the Southern California coastline that may benefit from the sampling design and procedures described in this plan. In the event of a release that is not related to Chevron operations, the Trustees may choose to implement this plan to assist them during NRDA pre-assessment and assessment activities. However, if Trustees choose to implement the plan during a non-Chevron incident, Chevron shall have no obligation to conduct sampling or otherwise be responsible in any way for any obligations or deficiencies in the plan.

1.0 INTRODUCTION

1.1 PURPOSE, GOALS, OBJECTIVES, FOCUS, AND SCOPE OF THE PLAN

- **Purpose**: (1) To expedite and detail procedures for collection of ephemeral source oil, surface water, sediment, and tissue samples in the event of an accidental release of petroleum at or near the Pacific Area Lightering (PAL) station, located approximately 20 miles off the coast of north San Diego County, California, or potentially from another source or event. This plan describes notification procedures, sampling locations, sample media, sampling procedures, and chemical analysis objectives in the event of a large accidental release of oil related to operations at the PAL. (2) To detail procedures for collecting samples and analyzing petroleum hydrocarbon concentrations in surface water, sediment, and tissues for understanding baseline or ambient conditions present because of anthropogenic or natural releases of petroleum hydrocarbons at or near PAL that are not associated with spills.

- **Goals:** To obtain data that will assist in determining the source of oil(s); document petroleum hydrocarbon concentrations in water, sediment, and selected marine organisms prior to and following an incident; and determine concentrations of petroleum hydrocarbons in the water column.

- **Objectives:** (1) To collect source oil, water, sediment, and tissue samples within the first hours, days, and weeks after an accidental release of oil from the PAL or another source for petroleum hydrocarbon analysis; and (2) collect water, sediment, and tissue samples on a biennial basis for understanding baseline petroleum hydrocarbon concentrations along the part of the Southern California coastline that may be affected by a spill at PAL. During an incident, there is a narrow window of opportunity for collection of these data, and, accordingly, they are referred to as "ephemeral" data (i.e., if the samples are not collected, the opportunity to collect them will be lost permanently).Ephemeral and baseline data aid in understanding environmental conditions prior to an incident and can be critical in identifying the need for and scope of subsequent environmental sampling and injury assessment.

- **Focus of Sample Collection and Chemical Analysis:** The following types of samples will have the highest priority: (1) source oil(s) to confirm petroleum fingerprint and for possible toxicological testing; (2) water, sediment, and tissues in areas not yet impacted but likely to be impacted (baseline conditions); (3) water under the impacted surface area to obtain information on the concentration of selected petroleum constituents in the water column; and (4) sediment and tissues in oiled areas. Petroleum hydrocarbon analyses will be consistent with the U.S. Environmental Protection Agency (EPA) standard methods as described in Section 3.0.

- **Scope:** To have a scalable sampling plan to adjust to the size of the incident, with sample locations pre-identified in the plan.

- **Study Area:** San Diego (Mission Beach) to Carlsbad. Specific sampling locations within the study area are identified in Section 1.3.

1.2 FACTORS AFFECTING EPHEMERAL DATA COLLECTION PLAN IMPLEMENTATION

1.2.1 Study Area and Special Considerations

Vessels perform lightering operations approximately 20 miles, off the coast of north San Diego County, California. Here, Very Large Crude Carriers transfer millions of gallons of oil to smaller tankers. The lightering process consists of three phases (1) the approach, (2) the transfer and (3) the post-transfer. The approach consists of the vessels maneuvering alongside each other. The transfer process includes connecting hoses and transferring the oil, and the post-transfer phase consists of departure of the smaller tanker. The smaller tanker then transports the oil to terminals/refineries in California. Based on the location and multi-step process, an accidental release could impact coastal California, in particular San Diego County.

Coastal San Diego County is a dynamic environment consisting of sandy beaches, rocky intertidal areas, sea caves, sea cliffs/bluffs, coastal streams and rivers, bays, and coastal lagoons. The coastline also includes various Marine Protected Areas. The southward California Current, distributes colder waters along the coast and upwelling of cold sub-surface waters provides an environment suitable for whales, seabirds and fisheries. Thus, there is potential for released petroleum product, from lightering activities, to impact sensitive resources near and offshore and/or be dispersed along the San Diego County coastline.

During and after an incident, the NRDA focuses on four primary questions: (1) what was injured, (2) what is the spatial extent of injury, (3) what is the degree of injury, and (4) what is the duration of injury. In addition, the time for injured resources to recover to their original or pre-release "baseline" is a critical component of the assessment. Ephemeral data collected before, during, and after the release are essential to answer these questions. This plan provides a means to quantify pre-release "baseline" or "ambient" conditions before an area or coastline is impacted by an accidental release. Ambient conditions are represented by the chemical concentrations of anthropogenic (e.g., fossil fuel use) and naturally occurring oil or petroleum hydrocarbon constituents in water, sediment, and marine organisms (i.e., tissues). For example, storm water runoff, atmospheric deposition, boat traffic, and industrial releases of oil-related constituents onto the coastline between San Diego (Mission Bay) and Carlsbad or tributaries/storm drains that lead to the coast all contribute to ambient levels of these chemicals along the coast.

1.2.2 Physical and Temporal Factors

Implementation of the ephemeral data collection, as detailed in this plan, including sampling site priorities (Appendix 1) will depend on three primary factors: (1) volume released, (2) time period between the release and when field teams can be mobilized to collect samples, and (3) predominant tidal current at the time of the release. The coastline between San Diego

(Mission Bay) and Carlsbad is a dynamic environment, where the predominant force driving currents and water movement is the tide. Waves, wind, and storm water runoff are secondary forces, affected by seasonality and weather conditions. For purposes of implementing this plan, as discussed in Section 1.4, the NRDA Agency Leads will confer to decide whether the magnitude of the release warrants the deployment of field teams to implement the plan. In deciding how to implement this plan and deciding on sampling location priorities, the NRDA Agency Leads will consider the following:

- *Volume released*: If the volume of released product appears to have harmed or is likely to harm birds, fish, or other organisms, or appears to have compromised the usefulness of habitat for wildlife, it may be assumed that NRDA is a possibility and that trust wildlife resources may be affected. Field teams should be mobilized to begin gathering information and collecting time-critical data.

- *Time period between the release and when field teams can be mobilized to collect samples*: If field teams are unable to collect samples within 6 to 12 hours following the release, depending on the magnitude, duration, weather conditions, and tidal currents, it may not be possible to sample bay or ocean shorelines before it is impacted. Therefore, as a contingency, this plan also includes an optional biennial baseline or ambient data collection plan as described in Section 1.3.

- *Seasonal Worst Case Trajectories*: Seasonal, worst case oil trajectories that were prepared to support the Area Contingency Plan (ACP; CDFW-OSPR, 2014).

1.2.3 Safety

Safety is the most important consideration in plan implementation. Field teams may encounter oil during collection of water, sediment, or biological samples. Personnel collecting data in the field should be at least 24-hour Hazardous Waste Operations & Emergency Response (HAZWOPER) certified if oil is present and have received permission from the Unified Command Incident Site Safety Officer to enter impacted areas.

Before sampling in impacted areas, all field team members must read and be familiar with and follow the procedures specified in the site safety plan prepared by the Unified Command. Before going into the field, all field team members will receive a daily safety briefing from the Ephemeral Data Collection Coordinator (EDCC; discussed in detail in Section 1.4). Field team members collecting samples by boat will receive a boat safety briefing by the boat operator prior to leaving the dock. When on or near water, field team members will wear personal floatation devices (PFDs) at all times. Good judgment must be used at all times, particularly when considering fieldwork during inclement weather and collecting samples in the surf zone. No sampling will be conducted in the dark. While working on the shoreline, field team members should be mindful of slippery surfaces (e.g., rocks) and sharp objects. Field team members should wear sunglasses, sunscreen, appropriate footwear, and other personal protective equipment (PPE) as might be required by the safety officer.

PPE will depend on the specific hazardous petroleum materials and their concentrations. Under no circumstances should the field team enter uncharacterized, freshly impacted

shorelines without proper training (i.e., 40-hour HAZWOPER certification) and combustible gas/hydrogen sulfide meters. Likewise, sampling in the impacted area will not be done if respirators are required or the safety officer deems the area unsafe. When collecting water samples in the impacted area, field sampling team members will wear appropriate protective equipment (e.g., gloves, Tyvek, personal flotation device). Nitrile gloves and cut-resistant gloves will be worn when sampling any medium of interest and will be changed between each sampling site. See Appendix 5 for further discussion of sampling procedures and health and safety requirements.

1.3 BIENNIAL AMBIENT MONITORING

As part of the preparation of this plan, Chevron volunteered to collect initial samples to begin documenting ambient or baseline conditions in the Study Area. Doing so was based on concerns about conditions (e.g., time of day when a spill might happen, traffic, etc.) that may preclude or impede implementation of ephemeral data collection in the event of an actual accidental release. Future ambient data collection is considered to be optional and will be at Chevron's discretion and in consultation with CDFW-OSPR.

Initial samples were collected by CDFW-OSPR and Chevron in April 2012 and again in May 2014. The following locations (shown in Appendix 1 and 2), and sample types were collected:

Surface Water Grab Samples (1-liter sample per location)

- Dana Point Beach (N 33.46052° / W -117.70763°)
- Tamarack State Beach (N 33.145570° / W -117.345025°)
- Agua Hedionda (N 33.144105° / W -117.337670°)
- Cardiff State Beach (N 33.014459° / W -117.281072°)
- San Elijo Lagoon (N 33.013856° / W -117.279713°)
- Mission Beach (N 32.759487° / W -117.253434°)

Sediment Samples (two composite samples per location with one collected at the water line or mid intertidal and one collected at the wrack line or high intertidal; same general area as water samples)

- Dana Point Beach (N 33.46052° / W -117.70763°)
- Tamarack State Beach (N 33.145570° / W -117.345025°)
- Agua Hedionda (N 33.144105° / W -117.337670°)
- Cardiff State Beach (N 33.014459° / W -117.281072°)
- San Elijo Lagoon (N 33.013856° / W -117.279713°)
- Mission Beach (N 32.759487° / W -117.253434°)

Tissue Samples (each sample is a composite of 15-25 individuals (e.g., mussels))

- Dana Point Beach (N 33.46052° / W -117.70763°)
- Tamarack State Beach (N 33.145570°; W -117.345025°)
- Agua Hedionda (N 33.144105°; W -117.337670°)
- Mission Beach (N 32.759487°; W -117.253434°)

Procedures for collecting, storing, transporting, and documenting samples are detailed in Section 2. Chemical analyses are described in Section 3. Chevron and the Trustees have the common understanding that the interpretation of statistical comparisons of these data to spill data (in the event one occurs) must take into consideration the sample size and geographic coverage of the sampling effort.

1.4 COMMUNICATION AMONG AGENCY REPRESENTATIVES

After receiving notification of a release of greater than de minimis quantities, Chevron and CDFW-OSPR will notify the key Chevron and Natural Resource Trustee Agency Leads or their alternates (Section 5). Both Chevron and the Trustee Agency representatives will coordinate to assess the circumstances of the release and determine sampling priorities including what, if any, elements of the plan should be implemented, modified, or if additional monitoring elements should be considered. In the event of a large release that could potentially harm or threaten to harm birds, fish, or other organisms, or appears to have compromised or has the potential to compromise the usefulness of habitat for fish or wildlife, Chevron and the Trustee agencies will identify and mobilize the appropriate staff to initiate implementation of the plan. Key contacts for mobilizing field teams are identified in Section 5.0.

Chevron and Trustee Agency Leads, or their alternates (Section 5.0), will participate in an initial conference call to determine the specific plan elements to be implemented and to share needed contact and location information and then will assign their respective staffs to participate in sample collection activities as appropriate. A Trustee EDCC, appointed by the NRDA Agency Leads, will be assigned to provide project oversight and management. The EDCC will manage implementation of this plan and coordinate with the Unified Command for the response (see Section 1.5), via the NRDA Representative, for increased efficiencies in all aspects of data collection for the response and the damage assessment.

1.5 RELATIONSHIP AND COMMUNICATION WITH THE UNIFIED COMMAND

The NRDA for an incident is done in parallel with the incident response, but is separate from it. The goals of response and NRDA are different. The goals of spill response are to stop and stabilize the source of the spill, remove oil from the environment, protect the safety and health of the responders and the public, and to avoid or minimize harm to the environment. Whereas, the goal of NRDA is to identify the type and amount of restoration needed to restore injured natural resources.

Figure 1 details the response Incident Command Structure organization for a spill and the coordination points with NRDA. Since NRDA field assessment activities may overlap those of the response, close coordination and cooperation between the two efforts is necessary. The NRDA Agency Leads are responsible for establishing the communication link with the Incident Command (i.e., Unified Command if the incident is federalized) via the NRDA Representative or Liaison as described in the West Coast Joint Assessment Team (WCJAT) guidance document (WCJAT, 2017) and the CDFW-OSPR Policy 603-1, Communication and Coordination between Natural Resource Damage Assessment (NRDA) and Incident

Command Structure During Spill Response (2009). All communications with the Unified Command will be coordinated through the NRDA Representative.

The EDCC will prepare a General Message (*ICS 213*) to establish and document communications and resource requests between NRDA and the Planning Section (Environmental Unit) and the Operations Section (Wildlife Branch) of the Unified Command. This will allow for the coordination of environmental sampling and field data collection activities between NRDA and the response. For example, when NRDA ephemeral data collection field teams are directed to sample in impacted areas, health and safety must be addressed and permission to enter impacted areas must be coordinated through the NRDA Representative and the EDCC. A General Message (*ICS 213*) will be provided to the Unified Command daily throughout the duration of the field activities or as appropriate based on the incident.

1.6 FIELD TEAMS

The EDCC makes field assignments, reviews and disseminates health and safety procedures, monitors all field activities, and provides the field team leaders with information containing specific guidelines (e.g., health and safety, sampling locations and sites, sample collection procedures, etc.) for implementing the plan. All personnel involved in implementation of the ephemeral data collection plan are responsible for reporting progress and results to the EDCC. The EDCC also will verify that all field sampling team members have read and signed a copy of the incident health and safety plan.

NRDA field teams, including representatives of Chevron and/or the Trustees, will collect samples both offshore and onshore. To expedite the collection of samples, offshore and onshore field teams should be mobilized. The offshore teams should include an experienced boat operator and two other qualified people (i.e., people with experience or training for on-water sample collection): one to collect samples and the other to record notes and take photographs. The onshore sampling teams may consist of up to four people each: one to collect water and sediment samples, one to collect tissue, one to record notes, and one to photo-document the shoreline. A person designated by the Unified Command or Investigations Unit will collect the source oil sample, if present. All communications with the Unified Command will be coordinated through the NRDA Representative (Section 1.5). Key contacts for mobilizing field teams are identified in Section 5.0.

2.0 SAMPLING PROCEDURES

2.1 OVERVIEW

This section describes methods for collecting source oil or fuel (i.e. product), weathered product (i.e., tar balls), sheen, water, sediment, and tissue. The protocol described below is to be followed unless the NRDA Agency Leads decide otherwise and provide an alternative. This section provides a general overview of sample collection procedures. Appendix 1 provides maps of proposed pre-shoreline oiling sampling locations and biennial baseline or ambient monitoring locations. Appendix 2 provides photographs of sampling locations and

brief site descriptions. Appendix 3 provides a checklist for field sampling teams to consider before, during, and after planned field activities. Appendix 4 provides a list of equipment and supplies necessary for collecting and documenting samples. Appendix 5 is CDFW-OSPR's 'Template' Sampling and Analysis Plan (SAP) used during the ephemeral data collection phase of an NRDA.

This plan refers to sample "locations" and sample "sites". A sample "location" is the general vicinity where the sample is to be collected (e.g., Mission Beach). A sample "site" is the point referenced in decimal degrees by WGS84 datum where the sample is collected (e.g., points on a transect at Mission Beach).

At a minimum, the following information should be recorded in field notes by each field team: names of field team members, name of person collecting the sample, type of sample collected and time of sample collection, global positioning system (GPS) location of sampling site, photographic log, standard observations such as weather and presence of wildlife and beach users, and any unusual sample conditions. After collected, all samples should immediately be chilled in an ice cooler with frozen blue, crushed, or block ice. Chain-of-custody must be maintained for all samples collected (see Section 4.0 and Appendix 5).

One NRDA team member each day or each shift will be responsible for a quality assurance review of the data sheets to verify that they are completely and correctly documented.

2.2 SAMPLING FREQUENCY

2.2.1 Ephemeral Data Collection Following a Spill Event

A source sample and baseline (pre-oiling) shoreline samples should be collected as soon as possible after the release. To achieve these objectives, the NRDA team must have notification procedures in effect for the immediate mobilization of field teams (see Sections 1.4 and 5). In the event that pre-oiling shoreline samples cannot be collected in time then the biennial baseline / ambient monitoring samples will be utilized as a surrogate.

The frequency of sampling following the incident in impacted areas (i.e., daily, weekly, monthly) will depend on the magnitude of the incident, the type of product released, and the affected resource or habitat (e.g., rocky intertidal, water column, wetlands, sandy beach). The NRDA Agency Leads will evaluate conditions and determine a suitable frequency for subsequent sampling in areas impacted by the incident.

2.2.2 Ambient Monitoring

Samples may be collected on a biennial basis (every two years) to document and understand the potential magnitude of ambient petroleum hydrocarbon concentrations at the sites identified herein.

2.3 SAMPLING PRIORITY

Under ideal conditions (i.e., favorable weather and plenty of resources), collection of source oil samples and environmental samples identified below should occur in parallel and have first priority. Circumstances, and the timing of the mobilization of field teams, may prevent the collection of samples in the priority indicated below. Therefore, it is critical that the NRDA Agency Leads quickly evaluate circumstances and available resources to determine the appropriate priority of sample collection.

- **First Priorities:**
  I. Collection of source oil(s) from the point of release. CDFW-OSPR Oil Spill Prevention Specialists and Chevron representatives (with the approval of CDFW-OSPR) are the appropriate personnel to collect source oil samples.

  II. Collection of water, sediment, and tissue in areas that are not yet impacted but are likely to be impacted based on trajectory analyses and the professional judgment of the Unified Command Scientific Support Coordinator. See Section 1.2.2 and Appendix 1 for information and maps that detail sampling location priorities within various segments of the coastline.

  III. Collection of water, product (i.e., tar balls, floating fuel) or sheen samples in impacted areas, provided it is safe (i.e., respirators not required and other proper PPE is applied), and site access is coordinated with the Unified Command. Within the impacted areas, the first priority is to sample water under the impacted surface area followed by sampling at the leading margin where the oil has begun to break up. Sheen and product samples for petroleum hydrocarbon fingerprinting also should be collected on water, on structures, and on shorelines to document the extent of the release.

- **Second and Ongoing Priorities**: After first priority samples are collected in the days following the incident, additional sheen, product, water, sediment, and tissues samples may be collected for chemical analysis on a weekly, monthly, or annual basis as required for injury assessment purposes (Section 1.2.1).

2.4 SAMPLE DOCUMENTATION AND HANDLING PROCEDURES

2.4.1 Sample Labeling

All samples must be labeled for proper sample tracking, transport, chain-of-custody, and chemical analysis. Fill out a label for each jar, vial, bottle or foil/plastic bag with the following information: name of the incident/case; sample ID number; date, time, and location of sample collection; sample type and amount; and collector's name. Use a pen or permanent marker for labeling and cover label with clear plastic tape if the label is not printed on waterproof paper. Appendix 5 includes sample labels and provides more detailed sample labeling procedures, including unique codes used to identify the type of sample collected. For purposes of identifying the technical or resource NRDA field team involved with

sampling, the codes include "ED" for "Ephemeral Data Collection" and a one number code identifying the field team that collected the sample.

2.4.2 Contamination Precautions

A sample will be contaminated if the gloves you are wearing contacts oil. If a glove comes into contact with oil, do not sample, change gloves, and take another sample if necessary. Avoid sampling downwind of engine exhaust. Use certified pre-cleaned glassware. If glassware comes in contact with oil, discard and resample with a clean bottle. If oil is present, clean or cover boots between sampling locations as needed to avoid cross-contamination.

2.4.3 GPS

Record all sampling locations by location name and provide GPS coordinates (WGS84 datum in decimal degrees) in field notes for each sampling site.

2.4.4 Sample Storage

Store samples in a cooler with enough ice to chill and preserve the samples at approximately 4°C with ice. Sample holding times will vary, depending primarily on the matrix and type of sample collected (see Appendix 5), so if questions arise regarding holding times, contact the analytical laboratory (see Section 5.0). Transport as soon as practical (and within 12 hours) to the laboratory or a secure refrigerator where the samples can be stored at 4°C until a decision about subsequent analyses can be made. Use packing material to avoid breakage. Keep source oil sample(s) separate from other samples and from each other.

2.4.5 Decontamination

If samples are collected from multiple sources, clean non-disposable sampling equipment with Alconox followed by a distilled water rinse between each sample collection. Methanol may also be used to clean sampling equipment. Change gloves between sample collections. Collect rinse water in a container and dispose of appropriately following waste handling procedures described below.

2.4.6 Waste Handling

When decontaminating sampling equipment, wash and rinse over a plastic bucket with a lid. Store all oily rags, paper towels, gloves, and other contaminated material in a plastic bag. Dispose of rinse water and contaminated material in accordance with the waste management plan prepared by the Unified Command Environmental Unit.

2.4.7 Recordkeeping

Record the date, time, and location of sample collection, sample collection GPS waypoint(s) and coordinates, and name(s) of collector(s). Take a photograph of the area where the samples were collected.

2.4.8 Photo Documentation

Photograph or video the sampling site. Take video and/or the photos in both directions along the shore as well as from the waterline toward the backshore, and from the backshore to the waterline. Try to get permanent and distinctive landmarks in some photos and/or videos for future reference. The date, time, and GPS location of the photographs/video should be documented. Photographs should be processed so that sample locations are GPS-referenced on a map. See Appendix 5 for more detailed information.

2.5 SOURCE OIL SAMPLING

It is critical that all sources of released oil be identified and sampled at the point of release. This is typically, and most appropriately, done as part of the response activities directed by the Unified Command, not NRDA personnel. The NRDA Representative will coordinate with the state and federal incident investigators to confirm that sampling of the released material (e.g., oil) from its source will be conducted. The NRDA Representative also will brief the incident investigators and Unified Command regarding NRDA sampling activities and any special NRDA concerns. Source sample collection at the point of release is overseen by the State incident investigator (i.e., warden) and collections are normally done by CDFW-OSPR Oil Spill Prevention Specialists. Source sampling by NRDA personnel is usually not recommended because of the hazards and expertise needed to sample fuel tanks, pipelines, or vessels following a release.

Sampling of released oil, dispersed in the environment, is recommended for documenting the spatial extent of impacts and confirming the source of the oil. Provided safety considerations are met (Section 1.2.3), NRDA field teams may collect these types of samples.

Samples may be analyzed for petroleum fingerprinting purposes (Section 3).

2.5.1 General Procedure for Collecting Source Oil from Point of Release

- **Timing:** First priority; collect as soon as possible.

- **Sample Location:** To be coordinated by CDFW-OSPR Oil Spill Prevention Specialists and the Unified Command Incident Site Safety Officer.

- **Sampling Equipment:** Certified pre-cleaned, 1-liter wide-mouth glass bottle with an airtight Teflon®-lined cap. Paper, metal, or plastic funnel may be used to transfer oil. Under emergency conditions, a new metal or plastic bucket (least preferred) may be used after cleaning with soap and water.

- **Sample Volume:** 1-liter, minimum.

- **Number of Samples:** Sample quantity may be scaled for petroleum fingerprinting and toxicity assessment depending on the size of the release. The volume to collect should be determined by the NRDA Agency Leads and the EDCC.

- **Sampling Procedure:** Per CDFW-OSPR Oil Spill Prevention Specialists. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.5.2 General Procedures for Collecting Sheen or Oil on Shorelines or on Water

Rainbow sheen on water or structures

In cases where the released material is visible as a rainbow sheen either floating on water or coating structures, samples may be collected for petroleum fingerprinting purposes to define the extent of the release.

- **Timing:** Second priority; collect as directed by the NRDA Agency Leads.

- **Sample Location:** The locations and numbers of samples to collect are spill-specific and should be coordinated through the NRDA Agency Leads and the EDCC.

- **Sampling Equipment:** Four 12" fiberglass sheets. Certified pre-cleaned, 250-mL wide-mouth glass jar with an airtight Teflon®-lined cap.

- **Number of Samples:** At least one sample (four fiberglass sheets) should be collected that represents each location visited.

- **Sampling Procedure:** Sheen samples are collected by passing fiberglass sheets through the sheen floating on water or coating substrate, at approximately a 90-degree angle. Place the fiberglass into the glass jar and cap. See Appendix 5 for more detailed information. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

Oil on water, shoreline, or structures

In cases where the released material is highly viscous, concentrated, or weathered (e.g., fuel oil, crude oil), either floating on water, submerged, stranded on the beach, or coating structures, samples of product may be collected for petroleum fingerprinting purposes and to document the extent of the release.

- **Timing:** Second priority; collect as directed by the NRDA Agency Leads.

- **Sample Location:** The locations and numbers of samples to collect are spill-specific and should be coordinated through the NRDA Agency Leads and the EDCC.

- **Sampling Equipment:** Certified pre-cleaned, 250-mL wide-mouth glass jar with an airtight Teflon®-lined cap. Wooden tongue depressors.

- **Sample Volume:** At least one (25+ gram) sample should be collected that represents each location visited.

- **Number of Samples:** A 250-mL jar for each sample.

- **Sampling Procedure:** Product (i.e., tar balls) is collected by using a disposable wooden tongue depressor. Submerged product may need to be collected by oil adsorbing pom-poms or by other means. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.6 WATER SAMPLING

Water samples will be collected for analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), and polycyclic aromatic hydrocarbons (PAHs) (see Section 3 for analytical methods).

2.6.1 General Procedures and Sampling Locations

- **Timing:** First priority: areas that are not yet impacted. Second priority: areas under the floating oil, near or offshore. Collect as directed by NRDA Agency Leads.

- **Sample Location:** After evaluating circumstances and as health and safety conditions dictate, the NRDA Agency Leads may discuss the need to select sampling locations in addition to or different from those identified below, including offshore locations only accessible by boat. However, for the purposes of implementing this plan, the following shoreline locations (Appendix 1) should be sampled (see Section 6 for driving directions, and Appendix 2 for photographs of identified sampling areas):

Pre-impact Surface Water Sampling Priority Areas

- Dana Point Beach (N 33.46052° / W -117.70763°)
- Tamarack State Beach (N 33.145570° / W -117.345025°)
- Agua Hedionda (N 33.144105° / W -117.337670°)
- Cardiff State Beach (N 33.014459° / W -117.281072°)
- San Elijo Lagoon (N 33.013856° / W -117.279713°)
- Mission Beach (N 32.759487° / W -117.253434°)

Immediate Post-impact Priorities

- Along impacted shorelines, including beaches or rocky intertidal areas. Include sheen or surface floating oil sample for chemical fingerprinting.

- Water under floating oil slicks by boat. Include sheen or surface floating oil sample for chemical fingerprinting.

Alternate Sampling Areas

Depending on spill trajectory models, additional shoreline areas may require sampling.

- **Sampling Equipment:** For offshore samples, a subsurface grab sampler (e.g., Ben Meadows Subsurface Grab Sampler) with certified pre-cleaned 1-liter, wide-mouth amber glass bottles should be used. Onshore samples may be collected by hand with certified pre-cleaned, 1-liter, wide-mouth amber glass bottles. In beach environments

with high wave action, use a subsurface grab sampler with certified pre-cleaned, 1-liter, wide-mouth amber glass bottles to reach into the water. See Appendix 5 for more detailed information.

- **Sample Volume:** 1-liter, to be used for analyses of TPH and/or PAHs. 40-mL vials to be used for VOAs. See allocation procedures per Sections 2.6.2 and 2.6.3 below.

- **Number of Samples:**

  - Offshore Field Teams - Collect one 1-liter sample from each identified offshore sampling location. At each location, collect the sample from just below the impacted surface area (~ 0.5 foot). Depending on the type of material released, other depth intervals may be targeted for sampling per the direction of the NRDA Agency Leads.

  - Onshore Field Teams - Collect one 1-liter sample from each identified pier structure or beach location identified above.

  - Quality Assurance/Quality Control (QA/QC) Samples – Collect as directed by the NRDA Agency Leads. See Section 2.9 and Appendix 5 for further details.

- **Sampling Procedure:** Visible oil on the water surface should be moved aside with a water hose, compressed air, or paddle. Care should be taken not to disperse oil into the water column. The subsurface sampler should be opened at a depth of approximately six inches below the surface (or at specified depths determined by the NRDA Agency Lead). Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.6.2 VOA Samples

Volatile organic analysis (VOA) water samples are collected in glass vials and analyzed for BTEX (Section 3).

- **Timing:** Same as Section 2.6.1.

- **Sample Location:** Sheen in water or beach sand.

- **Sampling Equipment:** 40-mL screw-cap glass vials with Teflon®-faced silicone septum (hereafter referred to as 'VOA vials').

- **Sample Volume:** Three 40-mL vials.

- **Number of Samples:** Three per location or as directed by NRDA Agency Leads.

- **Sampling Procedure:** After collecting a 1-liter sample, gently pour water into a VOA vial to avoid bubble formation. Fill the vial until a meniscus forms over the vial's lip. Alternatively, the VOA sample may be collected directly, by hand, in the same manner as the 1-liter sample. Cover with the screw-cap lid, tighten the lid and invert the vial and tap the end to check for air bubbles. If bubbles are present, pour out the sample and

resample with a new VOA vial. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.6.3 TPH and PAH Samples

Water samples are collected and analyzed for TPH, PAH and alkylated PAH content (Section 3).

- **Timing:** Same as Section 2.6.1.
- **Sample Location:** Same as Section 2.6.1 and 2.6.2.
- **Sampling Equipment:** Certified pre-cleaned 1-liter, wide-mouth amber glass bottles.
- **Sample Volume:** 1-liter
- **Number of Samples:** One each per location or as directed by NRDA Agency Leads.
- **Sampling Procedure:** Collect a 1-liter sample, and after decanting water for the VOA sample, cover with screw-cap lid and tighten. See Appendix 5 for additional details. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.7 SEDIMENT SAMPLING

2.7.1 General Procedures and Sampling Locations

- **Timing:** First priority: areas that are not yet impacted. Second priority: areas where oil has stranded onshore. Collect as directed by NRDA Agency Leads.
- **Sample Location:** After evaluating circumstances and as health and safety conditions dictate, the NRDA Agency Leads may discuss the need to select sampling locations in addition to or different from those identified below. However, for purposes of implementing this plan, the following shoreline locations should be sampled (see Appendix 1 for maps and Appendix 2 for photographs of identified sampling areas):

Pre-impact Sediment Sampling Priority Areas

  - Dana Point Beach (N 33.46052° / W -117.70763°)
  - Tamarack State Beach (N 33.145570° / W -117.345025°)
  - Agua Hedionda (N 33.144105° / W -117.337670°)
  - Cardiff State Beach (N 33.014459° / W -117.281072°)
  - San Elijo Lagoon (N 33.013856° / W -117.279713°)
  - Mission Beach (N 32.759487° / W -117.253434°)

- **Sampling Equipment:** Pre-cleaned or disposable stainless steel or wooden spoon, certified pre-cleaned 250-mL screw-cap jar with Teflon®-lined lid, or certified pre-cleaned 1-liter wide-mouth amber glass bottles with Teflon®-lined lid.

- **Sample Volume:** Fill the jars, or bottles completely with sediment.
  Composite samples –1-liter bottle, to be used for analyses of TPH, and/or PAHs, TOC and grain size. The laboratory will split the sample for the appropriate analyses.

  Non-composite (individual) samples – individual 250-mL jars, one for each analysis (i.e., TPH and PAH). A re-sealable gallon bag, approximately one-third of the way full, for grain size and TOC analysis.

- **Number of Samples:** *Composite samples* - Three 1-liter composite samples per transect. *Non-composite (individual) samples* – one 250-mL jar per site. One gallon sized re-sealable bag (one-third of the way full) per transect.

- **Sampling Procedure:** At each location, three transects equally spaced and perpendicular to the shore should be established. Judgment must be applied as to how far to space these transects, with consideration given to characterizing an area that may later become impacted with the released material.

  Composite samples – If collecting composite samples, collect 1-liter samples from the low, mid, and high tide elevations. Each composite sample should include at least five subsamples collected within a 5-foot diameter from a point on the transect crossing each tidal elevation (see Figure 2). A separate re-sealable bag for grain size analysis does not need to be collected.

  Non-composite (individual) samples - If collecting non-composite samples, fill a 250-mL jar with sediment from each sampling location. Along with individual samples, a separate re-sealable bag, for grain size and TOC analysis is required. Collect sediment along each transect and composite it into a gallon sized re-sealable bag, approximately one-third of the way full (Appendix 5).

  For various petroleum releases, collect sediment at the following depths:
  - Fuel releases: ~1 foot deep sediment core;
  - Crude or fuel oil spills: ~2 centimeters deep surface grab sample.

  Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.8 TISSUE SAMPLING

Tissue samples should be collected to document the potential exposure to petroleum hydrocarbons. Species suitable for collection include mussels, clams, or crabs. Bivalves are generally preferable and collection details are provided below. Field teams without a CDFW representative during biennial sampling events must have a valid scientific collection permit and must coordinate collection with CDFW. Preferably, samples can be collected by a CDFW employee to avoid the necessity of obtaining a scientific collection permit. If a CDFW employee is not present to collect these tissue samples, then written authorization to the ephemeral data collection team will be provided by CDFW-OSPR to NRDA personnel

to collect such tissue samples on behalf of CDFW during this initial phase of the ephemeral data collection period.

2.8.1 General Procedures and Sampling Locations

- **Timing:** First priority: areas that are not yet impacted. Second priority: areas where oil has stranded onshore. Collect as directed by NRDA Agency Leads.

- **Sample Location:**

Pre-impact Tissue Sampling Priority Areas

  - Dana Point Beach (N 33.46043° / W -117.70721°)
  - Tamarack State Beach (N 33.145570° / W -117.345025°)
  - Agua Hedionda (N 33.144105° / W -117.337670°)
  - Mission Beach (N 32.759487° / W -117.253434°)

- **Sampling Equipment:** Pre-cleaned or disposable stainless steel trowel or shovel for exposing subsurface bivalves or stainless steel trowel, large knife or similar tools for removing surface bivalves. Aluminum foil and re-sealable baggies.

- **Sample Size:** From 15 to 25 individuals of the same species (enough for at least a 10-20 gram composite of soft tissue).

- **Sampling Procedure:** Remove the animals from the rocky shore or surface of the sediment, and, if necessary, rinse the debris and sediment from them using (in order of preference) distilled water, clean tap water, or clean seawater. Exterior rinses of shelled organisms (i.e., bivalves) are not usually necessary since only the tissue is extracted and analyzed. However, loosely adhered debris and sediment may be removed before wrapping samples. Place rinsed animals in heavy-duty aluminum foil (dull side to the animals), and wrap them in several layers. Place foil-wrapped organisms in a re-sealable bag with adhered label. Place a second zip-lock bag around the first bag to protect the label between the two bags. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

2.9 QA/QC SAMPLES

The types of samples collected for QA/QC purposes will be at the discretion of NRDA Agency Leads. More information can be found in the NRDA Sampling and Analysis Plan template (Appendix 5). The samples can be taken in VOA vial(s) for BTEX and 1-liter bottle(s) for TPH and PAH analyses, as directed by the NRDA Agency Leads and EDCC.

- **Timing:** As required by NRDA Agency Leads.

- **Sample Location:** As determined by NRDA Agency Leads.

- **Sampling Equipment:** Certified pre-cleaned, 1-liter, wide-mouth amber glass bottles with Teflon®-lined and 40-mL screw-cap glass vials with Teflon®-faced silicone septum. Uncontaminated, clean bottled water.

- **Sample Volume:** 40-mL and/or 1-liter depending on chemical analysis

- **Number of Samples:** As determined by NRDA Agency Leads. Minimum: one VOA vial and/or one 1-liter bottle

  Sampling Procedure: Fill the vial or bottle with uncontaminated clean bottled water and place into the ice chest with the samples. Field blanks, trip blanks, and field duplicate samples are collected as described in Appendix 5. Label, preserve, store, and ship samples as previously discussed (Section 2.4).

3.0 CHEMICAL ANALYSES

3.1 LABORATORIES

Send samples to either the Battelle Lab, the CDFW-OSPR Petroleum Chemistry Laboratory, or other designated laboratory based on the collective decision of Chevron and the Trustees (see Section 5.0 for addresses).

3.2 METHODS

The NRDA Agency Leads and the EDCC shall coordinate which chemical analyses are suitable for the collected samples. The following analyses and methods may be requested:

- **Water Samples:** PAHs and alkylated PAHs (EPA Method 8270-modified-GC/MS/SIM), TPH (EPA Method 8015, GC/FID, extended range), BTEX (EPA Method 8260 modified GC/MS/SIM).

- **Sediment Samples:** PAHs and alkylated PAHs (EPA Method 8270-modified-GC/MS/SIM), TPH (EPA Method 8015 modified, GC/FID, extended range). Request results on a dry weight basis.

- **Tissue Samples:** PAHs and alkylated PAHs (EPA Method 8270-modified-GC/MS/SIM), percent lipid content, and percent moisture. Request results as dry weight.

- **Source Oil, Sheen, and Product Samples:** Complete fingerprinting characterization, including PAHs, alkylated PAHs and petroleum biomarkers (EPA Method 8270-modified-GC/MS/SIM); total petroleum hydrocarbons (TPH or THE; EPA Method 8015-modified GC/FID).

  Additional methods that may be requested include: BTEX (EPA Method 8260 modified GC/MS/SIM), SARA (saturates, aromatics, resins and asphaltenes), PIANO (paraffins,

iso-paraffins, aromatics, naphthenics and olefins; may include BTEX), density, boiling curve (simulated distillation), metals and sulfur content.

Fingerprinting analysis may vary between laboratories. Contact the laboratory that will be analyzing these samples to determine which analysis to request.

4.0 CHAIN-OF-CUSTODY

Chain-of-custody must be maintained at all times. Chain-of-custody means that the sample or data are under the possession and control of the person identified on the chain-of-custody form for the period specified on the form. Possession and control mean in the possession of, within sight of, or in secure storage with access limited only to the person in possession. The person relinquishing the samples and the person taking control of the samples need to sign the chain-of-custody form.

Before shipping samples, make sure that each chain-of-custody form is filled out completely and properly. Check that the sample identifications on sample bottles match the sample identifications on the chain-of-custody. Verify that the date, time, type, matrix and container types, and analyses requested are clearly indicated.

After the chain-of custody has been checked and verified, sign where indicated in the "Relinquished By" box at the bottom of the form. Make sure that the date and time that you relinquished the samples are recorded on the chain-of-custody. Put the chain-of-custody forms in a re-sealable bag and tape the bag to the lid inside the ice chest. Remember to put ice in the ice chest and tape the lid shut with duct tape. Take the ice chest to an over-night mail service and ship the samples to the lab as directed by the EDCC. Shipped material must comply with all applicable hazardous shipping regulations. When the lab receives the ice chest, the person accepting the samples will sign his or her name in the "Received By" box on the bottom of the chain-of-custody form. The EDCC should receive a copy of each completed chain-of-custody form.

5.0 KEY CHEVRON AND NATURAL RESOURCE TRUSTEE REPRESENTATIVES AND CHEMICAL ANALYSIS/TECHNICAL SUPPORT CONTACT INFORMATION

For more information on the Contact Information, please contact CDFW-OSPR's NRDA Unit.

5.1 CHEVRON

5.2 CDFW-OSPR

5.3 USFWS

5.4 NOAA AGENCY

5.5 CHEVRON CHEMICAL ANALYSIS/TECHNICAL SUPPORT

Arcadis

Exponent

Battelle Analytical Lab

5.6 CDFW-OSPR CHEMICAL ANALYSIS/TECHNICAL SUPPORT

Department of Fish and Wildlife Petroleum Chemistry Laboratory

6.0 FEDEX SHIP CENTER ADDRESSES

FedEx Ship Center
1650 47th St
San Diego, CA 92102
Hours of Operation: M-F 09:00-19:00

FedEx Ship Center
9192 Kearny Villa Ct
San Diego, CA 92123
Hours of Operation: M-F 09:00-19:00

FedEx Ship Center
10585 Heater Ct
San Diego, CA 92121
Hours of Operation: M-F 09:00-19:00

7.0 DIRECTIONS TO SAMPLING LOCATIONS (FROM the USFWS Carlsbad Office – Northwest to Southwest)

- Dana Point Beach
  Take I-5 N to Exit 79 onto CA-1 N in Dana Point. Turn left onto Dana Point Harbor Dr. and follow the road until it ends at the Ocean Institute. Refer to Appendix 2, photographs 1-2.

- Tamarack State Beach
  Take El Camino Real to Tamarack Ave., turn left onto Tamarack Ave. Follow the road until it ends at Carlsbad Blvd. Cross Carlsbad Blvd and park in the parking lot. Walk south towards the jetty. Refer to Appendix 2, photographs 3-4.

- Agua Hedionda
  Take El Camino Real to Tamarack Ave., turn left onto Tamarack Ave. Turn left onto Garfield St., follow to the end of the road. Refer to Appendix 2, photographs 5-6.

- Cardiff State Beach
  Take I-5 S. Take Exit 40 and turn right onto Birmingham Dr. Left on San Elijo Ave., right on Chesterfield Dr. and left on S Coast Hwy 101. Park in the parking lot at the intersection of S Coast Hwy 101 and Cardiff State Beach. Refer to Appendix 2, photographs 7-8.

- San Elijo Lagoon
  Follow directions to Cardiff State Beach. Park in the parking lot at the intersection of S Coast Hwy 101 and Cardiff State Beach. Cross S Coast Hwy 101 to get to site. Refer to Appendix 2, photographs 9-10.

- Mission Beach
  Take I-5 S to Exit 21 Sea World Dr./Tecolote Rd in San Diego. Continue on Sea World Dr. to W Mission Bay Dr. Stay in the right lane and take the first exit onto W Mission Bay Dr. Take a left on Mission Blvd and follow until it ends, right on N Jetty Rd at stop sign. Park in the parking lot at the end of the road. Refer to Appendix 2, photographs 11-12.

8.0 REFERENCES

CDFW-OSPR. 2009. OSPR POLICY AND GUIDELINES MANUAL Subject: Communication and Coordination between Natural Resource Damage Assessment and Incident Command Structure During Spill Response Issued: September 21, 2009, Manual Section: Scientific\Damage Assessment Reference: 603-1.

CDFW-OSPR. 2014. San Diego Area Contingency Plan https://www.wildlife.ca.gov/OSPR/Contingency/SD-Spill-Contingency-Plan

West Coast Joint Assessment Team (WCJAT). 2017. Recommendations for Conducting Cooperative Natural Resource Damage Assessment. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=200743&inline

FIGURES

Figure 1 Spill Response Unified Command Structure*

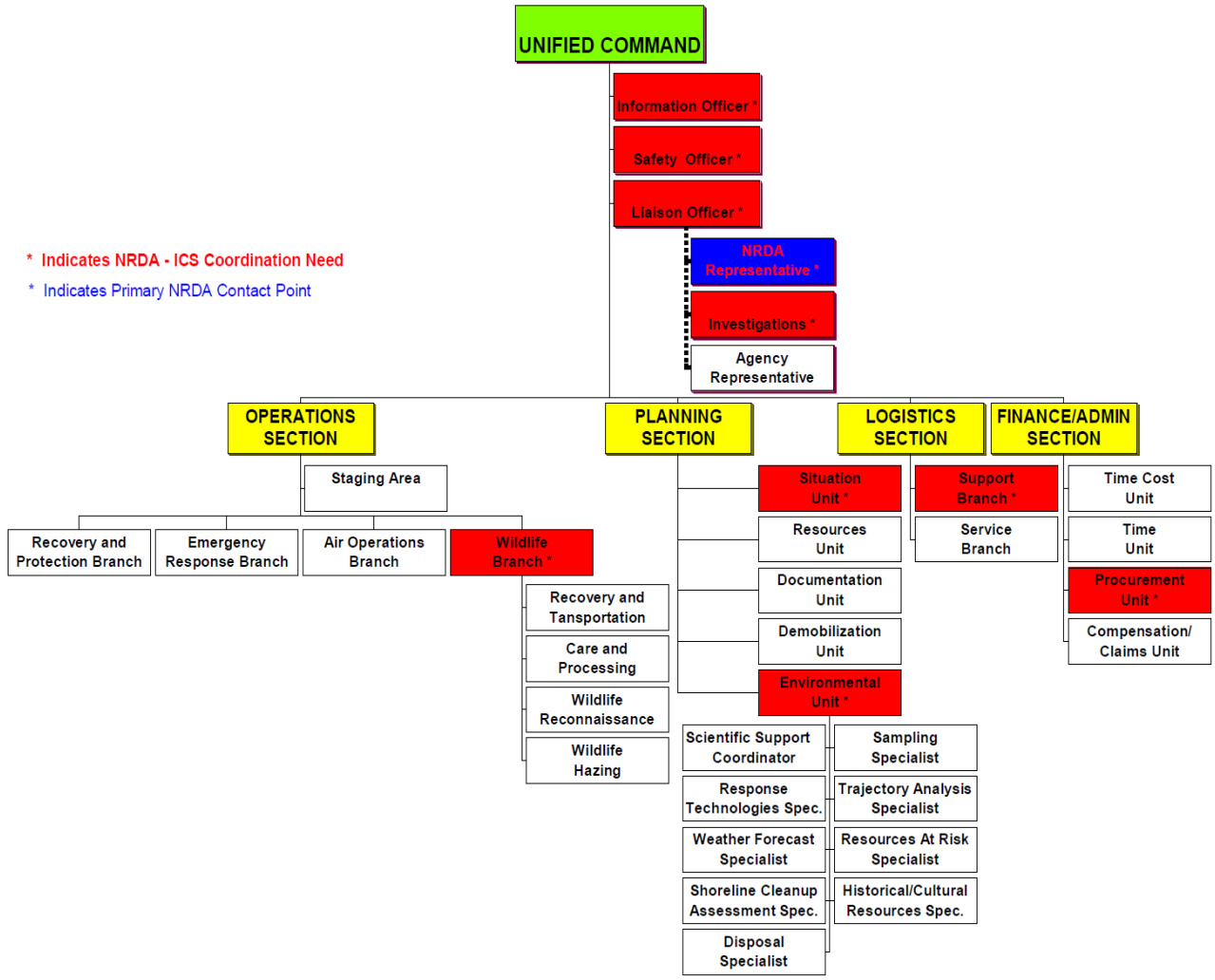
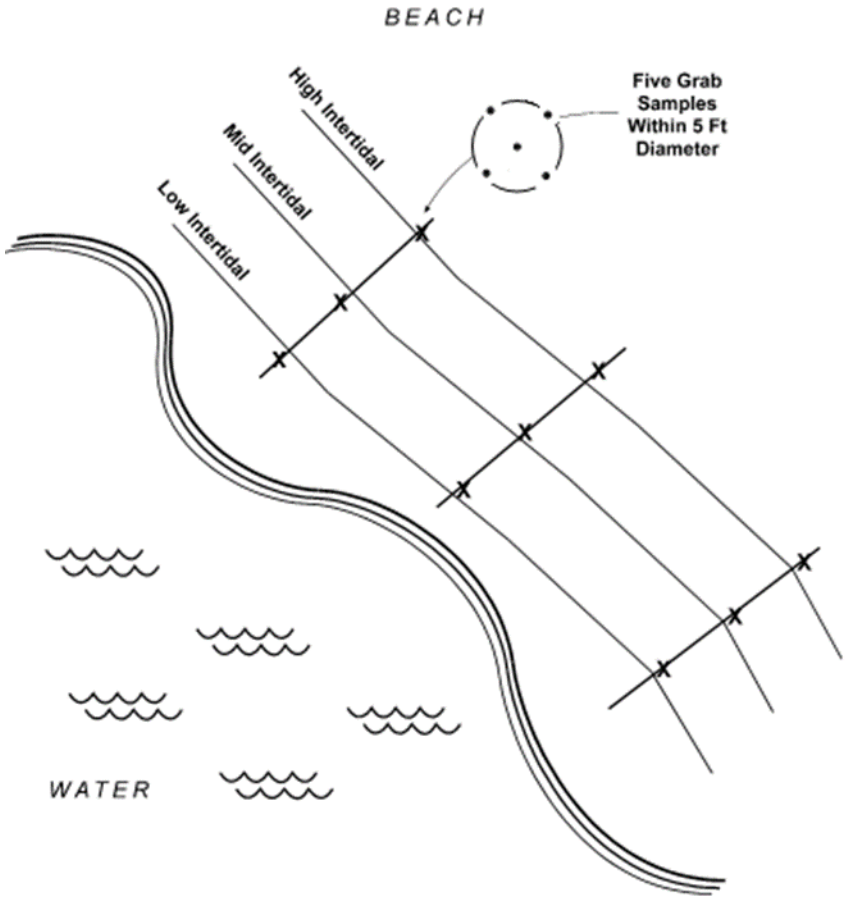


Figure 1. Spill Response Incident Command Structure Organization, Including Communication and Coordination Points with NRDA

** Includes communication and coordination points with NRDA*

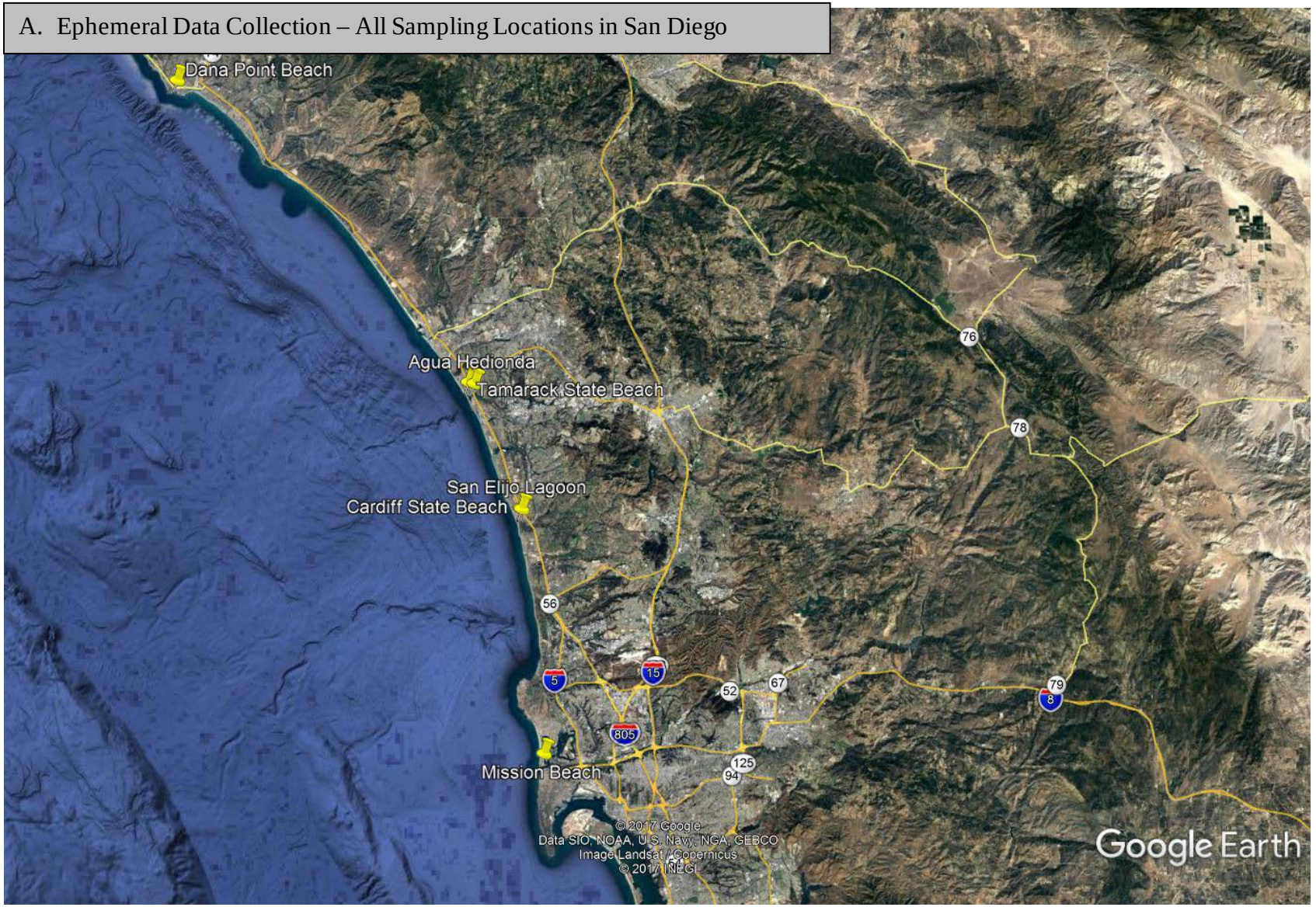
Figure 2 Example of Sediment Collection[1]



[1]Judgment must be applied as to how far to space these transects, with consideration given to characterizing an area that may later become contaminated with the spilled material.

APPENDIX 1 MAPS OF SAMPLING LOCATIONS SAN DIEGO

A. Ephemeral Data Collection – All Sampling Locations in San Diego

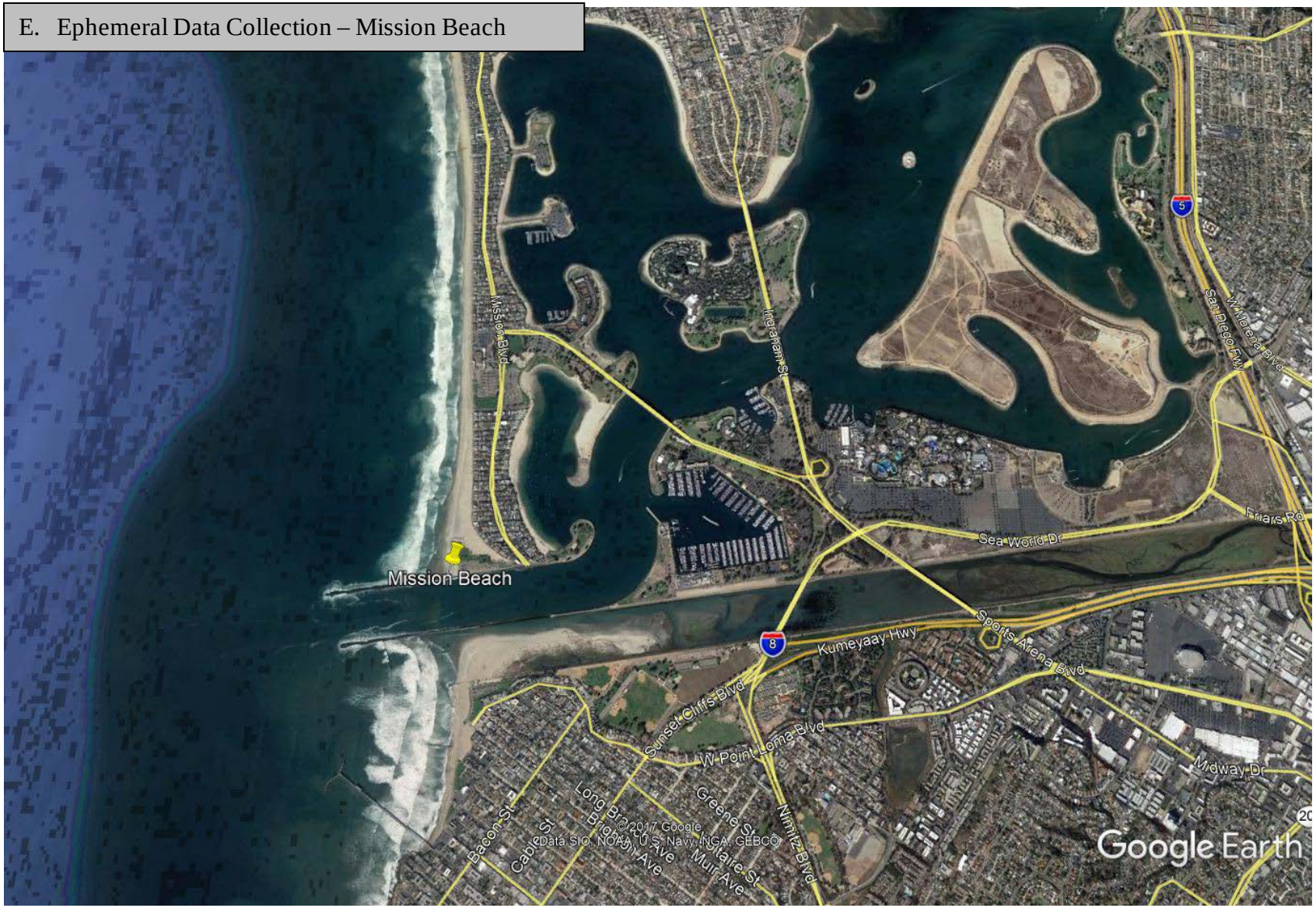


B. Ephemeral Data Collection – Dana Point Beach

C. Ephemeral Data Collection - Tamarack State Beach and Agua Hedionda

D. Ephemeral Data Collection - Cardiff State Beach and San Elijo Lagoon

E. Ephemeral Data Collection – Mission Beach



APPENDIX 2 PHOTOGRAPHS OF EPHEMERAL AND AMBIENT DATA COLLECTION SAMPLING LOCATIONS

Photograph 1
Overview of Dana Point Beach parking lot and sample location

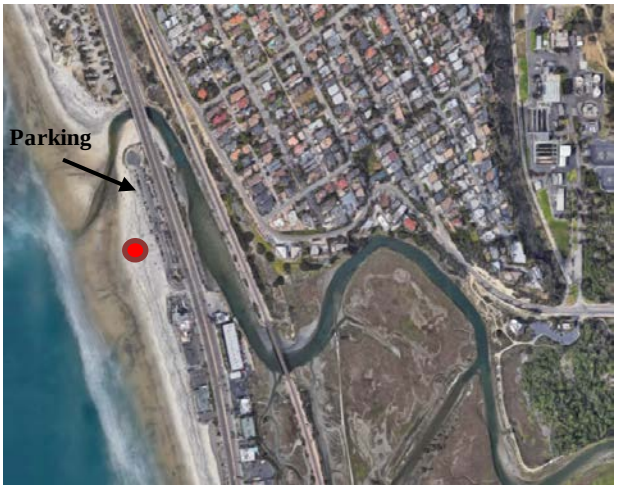
Photograph 2
Sampling area at Dana Point Beach

Photograph 3
Overview of Tamarack State Beach parking lot and sample location

Photograph 4
Sampling area at Tamarack State Beach

Photograph 5
Overview of Agua Hedionda street parking and sample location

Photograph 6
Sampling area at Agua Hedionda



Photograph 7
Overview of Cardiff State Beach parking lot and sample location

Photograph 8
Cardiff State Beach looking south.

Photograph 9
Overview of San Elijo parking lot and sample location.

Photograph 10
San Elijo sampling area.

Photograph 11
Overview of Mission Beach parking lot and sample location.

Photograph 12
Mission Beach water and tissue sampling area. Personal floatation device (PFD) must be worn. Potential high wave activity. Do not collect samples during high wave or storm conditions.

APPENDIX 3 CDFW-OSPR CHECKLIST FOR FIELD SAMPLING

NRDA FIELD CHECKLIST

Incident/Case:_____ **Field Team Name and #**:_____

Date (MMDDYY):_____

BEFORE FIELD

EQUIPMENT & SUPPLIES	
Forms/COCs: see **Table 1** for types and # of forms; clipboard (1 per team); sharpies, rite in the rain pen	
GPS & camera: 1 each per team; batteries (6 AA plus backup; check charge); photo scale	
Sampling equipment: see **Table** 3 for containers; freezer and trash bags; tongue depressors; spoons; may need sediment corer or pole water sampler	
Ice & coolers: 1+ large cooler for samples; get bagged ice prior to first sampling (3-4, 7-lb bags per cooler)	
Create trip blank for VOA: obtain DI water (from store), **fill and label 2, 40 mL VOA vials** (see Table 3), and store in sample cooler; record on COC	
Clothing: Wear clothes/hat with NRDA and/or agency logos	
PPE & monitors: outer & inner gloves; chemical resistant boots/covers; safety glasses; PFD; H_2S monitor; GPS Spot Tracker	
FIELD TEAM ASSIGNMENT	
Contacts & Training: Give phone numbers and HAZWOPER training info for all team members to NRDA Field Ops; confirm if 1+ person has 40-hr HAZWOPER	
Daily Field Team Form: complete Field Team Assignment and Objectives section; attach to ICS 213 General Message Form for Field Team Assignments and give to NRDA Representative	
SAMPLE PLANNING	
NRDA IDs: see **Table 2**; assign field team names and #s	
Access/Sites: Determine access points and directions; bring map/aerial image of the site; identify any site restrictions, access issues, sensitive species, and contacts	
Consider sub-surface sampling, depending on type of oil and substrate	
Contact lab: Make initial contact with selected analytical lab(s); arrange sample storage and transport	

IN THE FIELD

HEALTH & SAFETY	
GPS SPOT tracker: Turn on, press and hold the footprint (track progress button) until it flashes green	
Call NRDA Field Lead/Ops: at start and end of field activities, and if any health and safety incidents occur	
Health & Safety Plan: All team members review and sign Complete a "tailgate" Health & Safety Meeting at initial site setup; as necessary, assign tasks appropriate for level of HAZWOPER training	
PPE: sampler must wear eye protection and 2 pairs nitrile gloves - for water sampling by hand, wear smaller glove inside elbow-length; otherwise wear 2 pairs of smaller gloves (change outer pair between samples); secondary sample handler wear 1 pair of smaller gloves (change between sites)	
CAMERA/GPS	
Camera setup: record make, model, ID# and time zone on the **Photo Log**; clear previous photos; use continuous sequential numbering and daily folder; use max resolution; check battery charge; set camera time to match GPS time; take legible photo of current time on GPS and record on **Photo Log**; do NOT delete photos	
GPS setup: record make, model, ID# and time zone on the **Photo Log**; clear previous track/waypoints; turn on track log; set track log to 15 sec time interval & wrap when full; set WGS84 in decimal degrees; enable WAAS; check battery charge; take waypoint at setup and record on **Sample Collection Summary Form**; do NOT turn off	
PHOTO LOG and SAMPLING	
Sites: Take a waypoint at each site (with unique GPS lat/long) where sampling, observations, or other activities occur; record location and descriptions with sketch and observations on the **Sample Collection Summary Form**	
Photo: Take photos of sampling location (up-coast, offshore, down-coast, close up) and collected samples (incl. sample label and scale); record waypoint, camera photo #, description/keywords and sample ID on the **Photo Log**	

NRDA FIELD CHECKLIST

Incident/Case:_____ **Field Team Name and #**:_____

Date (MMDDYY):_____

Sample containers and amount: See **Table 3** for sample types, containers, and amounts	
Sample ID: FieldTeamName FieldTeam # Date SampleType Sample # (*e.g., RI1 022611 MU01*) See **Table 2**; use a unique sample ID for every sample; number samples in sequential order beginning with 01	
Sample labels: Fill out sample labels completely; include sample type and amount; Place label on glass jars or between 2 resealable bags (VOA & tissue samples) **Sample Summary Collection Form**: Fill out completely with field specific information including location name, waypoint, camera photo #, sample type, sampling method, sample ID**,** etc. **Photo Log**: include waypoint, camera photo #, description/keywords, and sample ID	
Sample storage: wrap jars in bubble wrap or foam sleeves; store on bagged ice between sampling locations	

AFTER FIELD / AT COMMAND POST

HEALTH & SAFETY	
Notify NRDA Field Lead/Ops and turn off spot tracker when leaving last field site	
Waste & Decon: check with NRDA Field Ops; dispose of used gloves and sampling wastes properly	
SAMPLES	
Storage: keep at 4°C in dark (in cooler on wet ice or in the fridge); maintain secure custody	
COC: fill out form; see Table 3 for analysis types; clearly identify instructions to lab (*e.g.*, hold, extract and hold, OR analyze); at sample transfer, both parties sign COC, original COC with samples, and copy to sampler	
Transport: Confirm transportation to and receipt by the analytical lab; use bagged ice and close drain for shipping; if shipping, follow air/ground shipping regulations	
EQUIPMENT/SUPPLIES	
Make sure all equipment is cleaned, stored; replace supplies and forms; recharge/replace batteries	
DATA INTAKE	
Coordinate location/time of data download with NRDA Field Lead/Ops	
Field Team: make sure all forms are complete; review and initial all forms	
File management: Scan/download forms/notes, GPS, and photos, save original and working copies in 2 locations; complete Data Intake section; organize files as shown below: - Daily folder (by field team and day): **FieldTeamNameFieldTeam#_Date** (*e.g. RI1_022611*) - Sub-folders by file type (GPS, photos, field forms) and status (original, working): **FieldTeamNameFieldTeam#_Date_FileType.Status** *(e.g., RI1_022611_Photo.Original)*	
GPS: save as .gpx, .gdb, and .txt files using Garmin MapSource™; clear waypoints and track from GPS	
Photos: Copy photos directly from memory card to "original" folder; copy to a "working" folder; do NOT change file names; clear photos from camera	
DATA MANAGEMENT	
Geotag: Match GPS and photos using GeoJot+ Core™; save output as .kml, tagged photos, & PDF	
Upload data: post GeoJot+ Core™ output (.kml & PDF) and scanned forms to CDFW Document Library	
Database: add sample info to Sample Tracking Sheet	
complete **Data Management** section of DFTF	

Table 1. FORMS

Form Name (Abbrev)	Use	#
Daily Field Team Form (DFTF)	Info on field team members, logistics, assignments and objectives; daily summary; data intake and management	1 - 2 per team
Sample Collection Summary Form	Record site and sample information	1 - 6 sites/sheet
Photo Log	Record photo descriptions and corresponding samples	> 1 site/sheet
Sample labels	Identify sample ID, date, location and collector	10 samples/sheet
Chain of custody (COC)	Record of sample custody; original stays with samples	10 samples/sheet

NRDA FIELD CHECKLIST

Incident/Case:_____ **Field Team Name and #**:_____

Date (MMDDYY):_____

Table 2. SAMPLE ID: (1)FieldTeamName (2)FieldTeam# (3)Date (4)SampleType (5)Sample#

(1) Field Team Name (2 letters)	
Agricultural Land	AG
Aquatic Vegetation	AV
Barren Land	BL
Birds	BD
Desert Land	DL
Dry Creek	DC
Ephemeral Data	ED
Fish	FI
Forest	FT
Marine Mammals	MM
Riparian Vegetation	RV
Rocky Intertidal/Rip-rap	RI
Salt Marsh/Mudflats/Lagoon	SM
Sandy Beach	SB
Subtidal	ST
Terrestrial Mammals	TM
Water Column	WC
Other	OT

(2) Field Team#
(1 number; by field team and day)

(3) Date
(date collected; MMDDYY)

(4) Sample Type
(2 letters)

Amphibian	AM	Other Tissue	OT
Aquatic Invertebrate	AI	Pore Water	PW
Aquatic Vegetation	AV	Reptile	RE
Beach Wrack	WR	Riparian Vegetation	RV
Clam	CL	Sediment	SD
Crab	CR	Sheen	SH
Dead Wildlife	DW	Surf Water	SW
Emerita/Sand Crab	EM	Terrestrial Invertebrate	TI
Fish	FI	Terrestrial Mammal	TM
Insect	IN	VOA	VO
Mussel	MU	Water	WT
Oil/Tarball	TB	Other:	

(5) Sample#
(2 numbers; sequential numbering beginning with 01; resets for each field team and day)

Table 3. ANALYTICAL CHEMISTRY SAMPLE INFORMATION (by sample type and analysis)

Sample Type	Type & Size of Container	Amount	Analysis	Holding condition & time (days)	Ok to freeze?
Water (WT)	1 L wide-mouthed amber glass bottle	Full; 1+ [1]	PAH [1]	4°C, dark: 7 to extract	No
VOA (VO)	40 mL VOA vial	Full; 3 (1 backup)	BTEX	4°C, dark: 7 to extract	No
Sheen (SH)	12" fiberglass sheets; 250 mL glass jar	4 sheets	Petroleum Fingerprint	Long-term	Yes
Tarball / Oil (TB)	250 mL glass jar	>1 tsp	Petroleum Fingerprint	Long-term	Yes
Sediment (SD)	Grab: 250 mL glass jar OR Composite - 1 L wide mouth bottle	Full; >30 g [1]	PAH [1] Grain size [2]; TOC [2]	4°C, dark: 7 to extract frozen: long-term	Yes
Tissue (varies)	Aluminum foil [3]	>10 g [1]	PAH; % lipid [2]	4°C, dark: 7 to extract frozen: long-term	Yes

[1] A single sample can be used to confirm petroleum hydrocarbons and for subsequent PAH analysis, but COC must clearly request both; otherwise 1 L for each analysis; TPH analysis not recommended unless petroleum product visible.
[2] Additional analytes by sample type. Sediment grain size analysis requires additional quart-sized bag if 250 mL sample.
[3] Double wrap tissue in aluminum foil with dull side to sample; place inside 2 plastic freezer bags with label in between.

APPENDIX 4 CDFW-OSPR EQUIPMENT & SUPPLY LIST FOR FIELD SAMPLING

Supplies in general "sampling kits" (October 2017)

Notes:

- *Most supplies are in 1 large grey bin, multiple boxes for jars, and 1 clear bin for with bubble wrap, bags, packing tape, etc.*
- *Glass bottle mouth size may vary*

Aluminum Foil (50' roll)	1
Bubble Wrap Sleeves	56
Clear Packing Tape Roll	1
Measuring Tape (30m or 50m length)	1
Paper Towel Roll	1
Tongue Depressors (set of 20 in foil)	1
Wet-Ones Wipes Container	1
Wooden Spoons	12
Clipboard (the following items inside)	1
Chain of Custody Forms (triplicates)	5
NRDA Field Team Check Lists	2
Sample Collection Summary Form Photo Log Form	12
Daily Field Team Forms	4
Sample Labels (1 per sample container)	56
Rite in the Rain Field Notebook	1
Rite in the Rain Pen	1
Ball Point Pen	1
Sharpies (or permanent markers)	2
Photo Scales	2
Bags	
Gallon Size Ziplocs	14
Quart Size Ziplocs	10
Kitchen Size Trash Bags	3
Large Black Trash Bag	1
Gloves	
Nitrile Inner Gloves (wrist length) S/M	2 boxes (50 pairs)
Nitrile Inner Gloves (wrist length) L/XL	2 boxes (50 pairs)
Outer Gloves (elbow length, green) S/M	4 pairs
Outer Gloves (elbow length, green) L/XL	8 pairs
Outer Gloves (shoulder length, blue) S/M	2 Pairs
Outer Gloves (shoulder length, blue) L/XL	2 Pairs
Sample Containers	
4 oz. VOA Vials (with septum lid)	12
250 mL Clear or Amber Containers	12
250 mL Sheen Containers	8
12" Fiberglass Sheets (4/container)	32
1 L Amber Bottles (wide mouth)	12
1 L Amber Bottles (narrow mouth)	12

APPENDIX 5 CDFW-OSPR NRDA SAMPLING AND ANALYSIS PLAN 'TEMPLATE'

For a copy of the Sampling and Analysis Plan, please contact CDFW-OSPR's NRDA Unit.