

Prince William Sound Oil Surrogate Workgroup Whittier Field Deployment

Exercise Plan

September 2016

The Exercise Plan (ExPlan) gives elected and appointed officials, observers, media personnel, and players from participating organizations information they need to observe or participate in the exercise. Some exercise material is intended for the exclusive use of exercise planners, controllers, and evaluators, but players may view other materials that are necessary to their performance. All exercise participants may view the ExPlan.

EXERCISE OVERVIEW

Exercise Name	Prince William Sound Field Deployment
Exercise Date	September 21, 2016 (with several back-ups for weather contingency)
Scope	Full Scale Exercise
Objectives	<ol style="list-style-type: none">1. Conduct a deployment in PWS that includes one or more oil surrogates to practice tracking and targeting oil slick for collection2. Evaluate whether surrogate use enhances deployment
Scenario	Spill in Whittier. Oil surrogate released to mimic oil movement.
Sponsor	Prince William Sound Regional Citizens' Advisory Council
Participating Organizations	<p>Invited participants include:</p> <ul style="list-style-type: none">• Alaska Department of Environmental Conservation• U.S. Coast Guard• National Oceanic and Atmospheric Administration• U.S. Environmental Protection Agency• U.S. Department of Interior• Prince William Sound Regional Citizens' Advisory Council• Alaska Chadux Corporation• Nuka Research and Planning Group, LLC (Nuka Research)
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GENERAL INFORMATION

Exercise Objectives

1. Conduct a field deployment in Prince William Sound that includes the release of one or more oil surrogates to practice tracking and targeting oil slicks for collection.
2. Evaluate whether surrogate use enhances deployment.

Surrogate Release Parameters

See Surrogate Use Plan in Appendix D.

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APPENDIX A: EXERCISE SCHEDULE

Time	Personnel	Activity	Location
Day 1: September 21, 2016			
0900	All	Operations and Safety Briefing	Staging Area/boat ramp
0920	Responders	Underway	Depart boat ramp for deployment site
0930	Observers/evaluators	Underway	Depart boat ramp for deployment site
0945	All	On-site for deployment	Deployment site
1000-1300	Responders	Deploy on-water tactics, deploy surrogates	Deployment site
1000-1300	Observers/evaluators	Observe and evaluate deployment	Deployment site
1315	All	Demobilize	Depart deployment site for Staging Area
1430	All	Reconvene for Debrief	Staging Area/boat ramp
1430-1530	All	Debrief and evaluation	Staging Area/boat ramp
1530	All	Adjourn	

APPENDIX B: EXERCISE PARTICIPANTS

Participating Organizations	Participant Count
ADEC	TBD
USCG	TBD
NOAA	TBD
USEPA	TBD
USDOJ	TBD
PWSRCAC	TBD
Chadux	TBD
Nuka Research	1
Other agencies (including local)	TBD
TOTAL	

APPENDIX C: EXERCISE EQUIPMENT

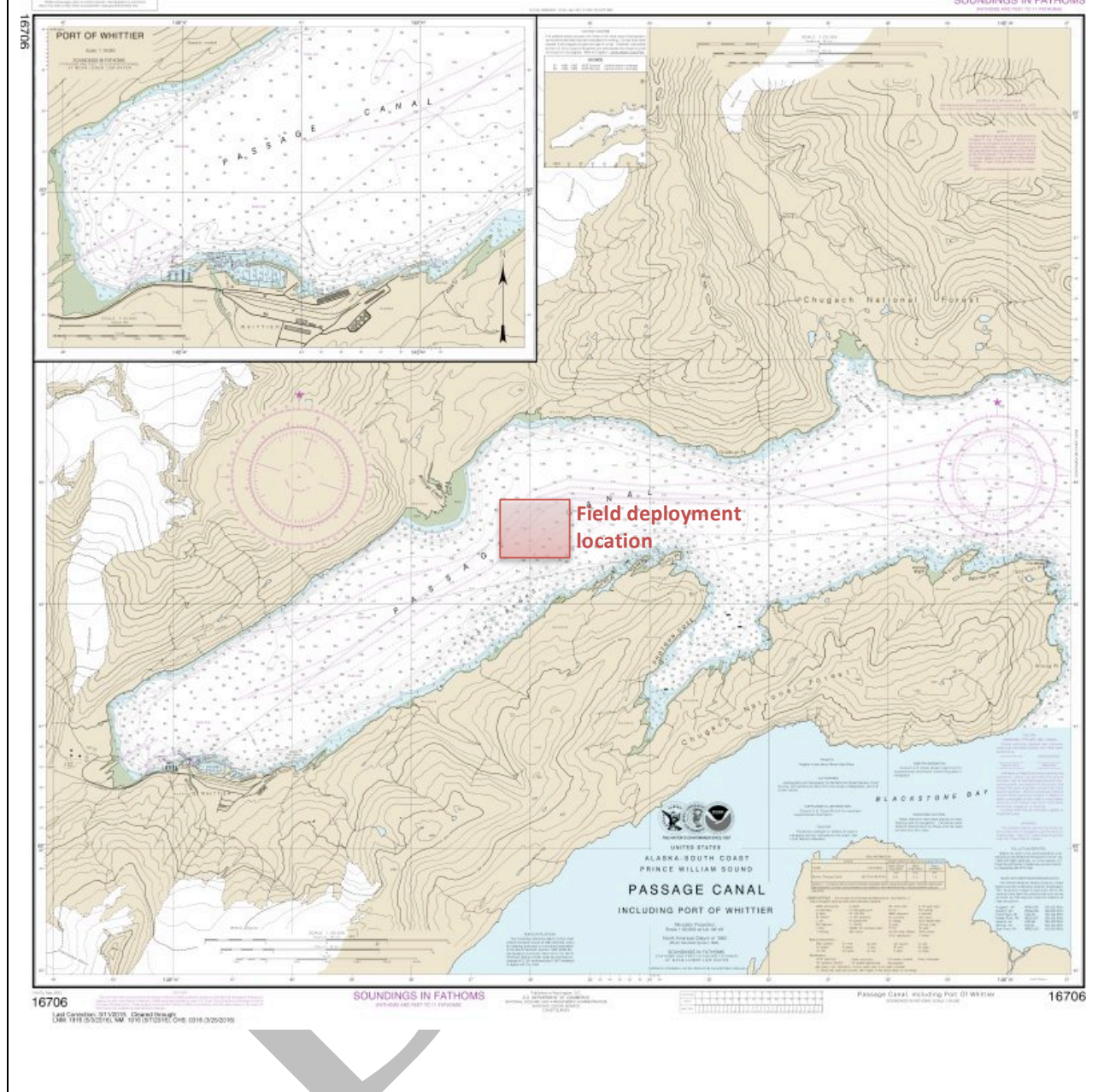
Organization	Equipment Type	Description (length, horsepower, spec capability)
Alaska Chadux	Response Vessel	<i>Chadux Responder – 38 ft vessel with oil skimming/recovery system</i>
	Workboat	<i>22 ft Chadux work boat</i>
PWSRCAC	Surrogates	Peat moss (up to 4 of 2.2 cubic foot bales) Pedigree brand dog food (one 40-lb bag) Locally sourced wood chips (up to 20 gallons in 5-gallon tote increments)
	Observer vessel	TBD
	Surrogate release vessel	Workboat

APPENDIX D: SURROGATE RELEASE PLAN

Basic Information

<p>Name of activity/proposed release: PWS Field Exercise – Whittier</p>	
<p>Date: September 21, 2016 (primary) September 22, 27 or 28 (backup)</p>	
<p>Lead organization: Prince William Sound Regional Citizens' Advisory Council</p>	<p>Other Organization(s) involved:</p> <ul style="list-style-type: none"> • Alaska Department of Environmental Conservation • U.S. Coast Guard • National Oceanic and Atmospheric Administration • U.S. Environmental Protection Agency • U.S. Department of Interior • Alaska Chadux Corporation • Nuka Research and Planning Group, LLC (Nuka Research) • Others TBD
<p>Location of release: Whittier.</p>	<p>Jurisdictional authorities:</p>
<p>Type of waterbody: Fjord</p>	<p>Distance from nearest shoreline: To be determined</p>
<p>Material intended for release:</p> <ul style="list-style-type: none"> • Dog food • Wood chips • Peat moss 	<p>Type of material</p> <p><input type="checkbox"/> Simulant</p> <p><input checked="" type="checkbox"/> Surrogate</p>
<p>Source of material: To be procured from local and commercial sources by PWSRCAC</p>	<p>Intended release volume:</p> <ul style="list-style-type: none"> • up to 4 of 2.2 cubic foot bales of peat moss • one 40-lb bag peat moss • up to 20 gallons of locally sourced woodchips in 5-gallon tote increments

Map or sketch of release area:



Purpose

<p>What is the purpose of this release?</p> <p><input type="checkbox"/> Research & Development</p> <p><input type="checkbox"/> Fate & Behavior Study</p> <p><input checked="" type="checkbox"/> Drill and/or Exercise</p>
<p>What are the study objectives?</p> <ol style="list-style-type: none">1. Conduct a deployment in PWS that includes one or more oil surrogates to practice tracking and targeting oil slick for collection2. Evaluate whether surrogate use enhances deployment
<p>Have alternatives to simulant or surrogate release been considered?</p> <p>No, because the objectives of the exercise are directly linked to use of surrogate</p> <p>If so, explain.</p>
<p>How will simulant or surrogate release contribute to study objectives?</p> <p>Two ways:</p> <ol style="list-style-type: none">1. Surrogate release will provide a “target” for responders to practice equipment and tactics deployment2. Surrogate release will be evaluated to determine how it does or does not enhance the value of the deployment for training and responder preparedness.3. Surrogate release will be used to evaluate surface transport.
<p>Identify any precursor work that is relevant to the proposed release.</p> <p>A work group was formed by PWS RCAC to develop the exercise objectives and surrogate release plan. Work group members, representing state and federal agencies, OSROs, and industry, have all agreed that surrogates should have a place in oil spill preparedness and training exercises in PWS. Website: http://www.nukaprojects.com/#!/pws-surrogates/aoc2r (password: valdez)</p> <p>In 2015, the U.S. Bureau of Safety and Environmental Enforcement (BSEE) funded a national Oil Spill Simulants Workgroup to foster consensus and consolidate existing knowledge about oil simulant and surrogate materials and federal regulatory requirements for releasing them in U.S. waters. A decision-making tool was developed with input from NOAA, USCG, BSEE, SCAA, and APICOM. It includes basic terminology, characteristics of various simulant and surrogate substances, and several flow charts to guide decision-making regarding the type of surrogate to use based on the purpose of the release and the physical and environmental parameters. The National Response Team Science and Technology Committee reviewed the tool and received it favorably. https://www.bsee.gov/research-record/osrr-1032-permitting-use-oil-spill-simulants-identifying-options-and-building</p> <p>In 2013, PWSRCAC convened a high level workgroup of spill response and marine environmental experts from Alaska and around the U.S. to identify preferred substances for use as simulants in on-water oil spill response training and exercises. Additional funding and support was provided by OSRI and SCAA. This workshop was the impetus for the BSEE-funded follow-on project.</p>

Suitability of Selected Material

Describe the activities to be evaluated. (Check all that apply)

- Systems
- Technologies
- Tactics

Additional details.

Alaska Chadux responders will deploy On-Water Free Oil Recovery tactics to practice targeting and containing surrogate materials for recovery with skimmers. Skimmers will not be operated, but crews will attempt to maximize recovery of surrogate materials using nets or other collection measures, as feasible based on safety and logistics.

Each of the surrogate materials will be deployed separately in independent trials that will evaluate each material against a set of standard criteria to evaluate the suitability of the material to enhance PWS spill response training and exercises. A small volume of materials will be released proximate to the on-water recovery systems, which will then target the surrogate for containment and recovery. Each trial release will last for approximately 1 hour, and will be completed when the materials have been contained and recovered to the extent feasible. These will be conducted during a single 1-day deployment under similar conditions.

Which oil properties will the material mimic? (Check all that apply)

- Spreading
- Clumping
- Buoyancy
- Trajectory
- Emulsification
- Visibility

Explain how the properties of the selected simulant/surrogate material are suited to the study objectives as well as the technologies, tactics, or systems involved.

Three surrogates are proposed for release:

- Dog food (Pedigree brand Adult Complete Nutrition)
- Wood chips (locally sourced from pile in Valdez)
- Peat moss (from home improvement store)

The three types of surrogate that will be deployed in this exercise are floating particulates with slightly different characteristics. All are expected to initially float and to spread similar to an oil slick. The three will be compared for their relative advantages/disadvantages related to (1) trajectory (influence of wind/current, etc.); (2) visibility to responders; (3) visibility to observers; (4) buoyancy (length of time that surrogate is observed to float); (5) proxy for oil behavior (i.e. slick dynamics, potential entrainment) and (6) recoverability.

The use of floating particulates will provide a target for responders and will allow for the evaluation of on-water recovery tactics and equipment. Skimmers will not be operated because

of potential for inadvertent damage from running particulate surrogates through skimmers.

The decision to use three different materials for this exercise was made in order to inform the objective of comparing the suitability of readily available, environmentally benign materials to enhance on-water deployments. It is possible that a recommendation coming out of this exercise will relate to the suitability (or not) of each material for use in Prince William Sound.

Ingredients for Pedigree Dog Food

(note, comparative study of dog foods evaluated for this exercise is available upon request)



CALORIE CONTENT (APPROX.):

3429 KCAL ME/KG

316 KCAL ME/CUP

GROUND WHOLE GRAIN CORN, MEAT AND BONE MEAL (SOURCE OF CALCIUM), CORN GLUTEN MEAL, ANIMAL FAT (SOURCE OF OMEGA 6 [PRESERVED WITH BHA & CITRIC ACID]), SOYBEAN MEAL, NATURAL FLAVOR, CHICKEN BY-PRODUCT MEAL, DRIED PLAIN BEET PULP, GROUND WHOLE GRAIN WHEAT, SALT, POTASSIUM CHLORIDE, BREWERS RICE, CHOLINE CHLORIDE, DRIED PEAS, ZINC SULFATE, DL-METHIONINE, VITAMIN E SUPPLEMENT, NIACIN [VITAMIN B3], BIOTIN, DRIED CARROTS, L-TRYPTOPHAN, BHA & CITRIC ACID (A PRESERVATIVE), BLUE 2, YELLOW 5, YELLOW 6, D-CALCIUM PANTOTHENATE [SOURCE OF VITAMIN B5], RIBOFLAVIN SUPPLEMENT [VITAMIN B2], RED 40, PYRIDOXINE HYDROCHLORIDE [VITAMIN B6], COPPER SULFATE, SODIUM SELENITE, POTASSIUM IODIDE, VITAMIN A SUPPLEMENT, THIAMINE MONONITRATE [VITAMIN B1], VITAMIN B12 SUPPLEMENT, VITAMIN D3 SUPPLEMENT, FOLIC ACID

Peat Moss

There are a number of commercially available brands of peat moss. We will use a brand that is locally available and which is made up of 100% sphagnum with no added chemicals or fertilizers.



Practical Considerations

Deployment and Recovery

<p>What is the deployment method?</p> <p>All surrogates will be deployed manually by PWSRCAC personnel from a support vessel.</p>		
<p>What equipment is required for deployment, if applicable?</p> <p>No special equipment required.</p>		
<p>Justification for intended release volume: The intended release volumes are as follows:</p> <ul style="list-style-type: none"> • up to 4 of 2.2 cubic foot bales of peat moss • one 40-lb bag peat moss • up to 20 gallons of locally sourced woodchips in 5-gallon tote increments <p>It is possible that less, but not more, of each material will be released. These volumes were selected by the multi-agency work group and the response contractor (Chadux) to try to balance the need to have enough material on the water to be able to target/contain with the desire to minimize the amount of materials introduced into the environment.</p> <p>Part of the after action report will include an evaluation of how the volume of materials released influenced the overall exercise and will include any recommendations that may come forward regarding selecting appropriate volumes of surrogate to enhance the exercise while also maximizing recovery of the materials from the receiving environment.</p>		
<p>Describe any monitoring activities that are planned to track the volume released, its movement, and potential recovery?</p> <p>Once released, surrogates will be tracked visually by personnel on response and observation vessels. The observed movement, trajectory, and fate of the surrogates will be documented with photographs, video, and GPS tracking. All reasonable attempts will be made to maximize recovery.</p>		
<p>Particle Size</p> <p><input checked="" type="checkbox"/> Large (1 cm or more)</p> <p><input checked="" type="checkbox"/> Medium (mm to 1 cm)</p> <p><input type="checkbox"/> Small (microns)</p>	<p>Recoverability of material</p> <p><input type="checkbox"/> High</p> <p><input checked="" type="checkbox"/> Moderate</p> <p><input checked="" type="checkbox"/> Low</p>	<p>Degradability of material</p> <p><input type="checkbox"/> High</p> <p><input checked="" type="checkbox"/> Moderate</p> <p><input checked="" type="checkbox"/> Low</p>
<p>Describe primary plan for recovery, if applicable.</p> <p>Materials that are contained within on-water recovery systems to be recovered by responders using nets and similar means, as safe and practicable.</p>		

What volume or quantity of material must be recovered to satisfy recovery plan?

Goal will be to recover all visible, floating materials within the limits of safety and practicability.

Describe the method used to account for total amount of material recovered.

The amount of material deployed and recovered will be measured and compared against the original volume released to determine an approximate percentage recovery and to estimate the total volume of materials left in the marine environment. The recoverability of a material will be one of the evaluation factors and may lead to a recommendation going forward that one or more materials are more or less suitable to support future exercises and training.

For materials that will not be recovered, describe the short- and long-term persistence of material (on surface & in water column), potential for shoreline stranding, and other considerations with long-term fate.

Peat moss – Floating materials will be recovered to the maximum extent possible. Total quantity deployed will be limited to no more than 4 bales (2.2 cu ft each, 8.8 cu ft total). Any unrecovered materials are expected to scatter and either strand on shore or submerge. There is no known toxicity from peat moss to marine life, and these materials have been deployed as surrogates in Alaska and elsewhere in the U.S.

Wood chips - Wood chips will be procured from a local wood pile in Valdez, representing native tree species. Floating materials will be recovered to the maximum extent possible. Total quantity deployed will be limited to no more than 4 5-gallon totes (20 gallons total). Any unrecovered materials are expected to spread and some may wash ashore. There is no known toxicity from peat moss to marine life, and these materials have been deployed as surrogates in Alaska and elsewhere in the U.S.

Dog food – Pedigree brand dog food was selected during an initial series of bench tests conducted by PWSRCAC to evaluate several different brands of dog food. Pedigree was selected for several reasons, including the fact that the dog food does not give off any visible sheen, and that individual dog food particles remained floating and intact for approximately 30 hours, and then began to show signs of degradation. Floating materials will be recovered to the maximum extent possible. Total quantity deployed will be limited to one 40-lb bag or less. Any unrecovered materials are expected to dissolve over time (the food begins to break down in calm seas by about 30 hours post release). There is no known toxicity from dog food to marine life, although there is a possibility that fish or birds will ingest or that the dog food will act as an attractant to marine life. Various brands of dog food have been deployed elsewhere in U.S., including at the 2014 International Oil Spill Conference as part of an on-water deployment exercise approved by state and federal agencies.

Environmental and Wildlife Considerations

<p>Is material organic or synthetic?</p> <p>Peat moss and wood chips are organic. Dog food is synthetic, made up of both natural and synthetic ingredients.</p>
<p>Is material naturally present in the local environment?</p> <p>Wood chips are naturally present in the local environment. The others are not.</p>
<p>Cite published references on environmental or eco-toxicity, and provide documentation.</p> <p>There are internet references that discuss the use of peat moss (sphagnum) in salt water aquariums as a water softener. There are no documented toxic effects to aquarium species. Sphagnum may absorb heavy metals and may excrete tannins. The volume of sphagnum to be released relative to the size of the water body is unlikely to have any measurable effect on water chemistry.</p> <p>No known publications on toxicity of wood chips to marine organisms. Wood debris is common to most Pacific Northwest waterbodies from both natural and manmade (logging) sources.</p> <p>No known publications on toxicity of dog food to marine species, although there has been significant work done on toxic components of dog food. Five that are cited in the popular media as being potentially toxic to pets are: ethoxyquin, the preservatives BHA (butylated hydroxyanisole) and BHT (butylated hydroxytoluene), propylene glycol, tetrasodium pyrophosphate (TSPP), and dicalcium phosphate (DCP). Of these, the only ingredient listed in the Pedigree Adult Complete Nutrition is BHA.</p>
<p>Published information on human health effects. (e.g. SDS, toxicity assays, etc.)</p> <p>No known publications.</p>
<p>Describe receiving environment. (Type of water body, climate zone, water depth and sea conditions, etc.)</p> <p>The receiving environment for the surrogate materials during this deployment will be in Passage Canal within Prince William Sound. The canal is a steep sided fjord approximately 1.25 miles wide and 8.5 miles long located in the Northwestern Zone of the Sound.</p> <p>Shoreline in the immediate area consists of primarily of gravel beaches intermixed with exposed wave cut platforms, sheltered and exposed rocky shoreline and exposed tidal flats. Charted depths in the middle of the canal are consistently over 90 fathoms from the entrance to the head of the bay. Passage Canal generally maintains navigable depths within 20 yards of the shoreline</p>

where the water depth shallows rapidly. The bottom is characterized by rocky and broken bottom with areas charted as mud. The diurnal range of tide at Whittier is 12.3 feet and currents have little velocity in Passage Canal.

The weather conditions at the scheduled deployment time are typical coastal Alaska maritime. Dominated by cool temperatures and overcast cloud cover. In September, mean temperature ranges from 45° to 53°F. The wind is most often out of the south and southwest at a mean velocity of 8 mph. Typical sea states calls for 0-1ft. seas.

Distance and estimated travel time from release site to shoreline:

If the winds are typical for this time of year they will be around 12 km an hour coming from the S-SW. Using this wind direction and releasing the materials in the middle of the canal the distance from to shore is 1500 meters. Winds are the primary driver of the surrogate materials and the projection for drifting oil of 3% of apparent wind speed. This yields a drift of 360 meters per hour. If not recovered, surrogate material may impact the shoreline in a little over 4 hours.

Identify other sensitive receptors or environments that are within the proposed release area.

Near-shore areas in Passage Canal provide year round habitat for sea otters. Waterfowl migrate through the area March through May. The area also provides nesting for Black-legged Kittiwakes and Pigeon Guillemots from June-September. There are anadromous streams that support primarily pink, coho and chum salmon spawning.

The Port of Whittier is a commercial port with rail and road access. Whittier provides a starting point for much of the recreational use for Northwestern PWS.

List any seasonal considerations for the proposed release. (e.g. Presence of migratory wildlife, sensitive life stages, etc.)

There may be migratory waterfowl present.

List all wildlife that could come into contact with material and potential adverse impacts. (e.g., Sea birds, marine mammals, finfish or shellfish)

- Birds-Murrelets, Pigeon guillemot, Black-legged Kittiwakes, Bald Eagle
- Marine mammals-Humpback, Sei, Fin, Minke, and Orcas whales are in PWS. Steller sea lions occur in the area along with harbor seals but no designated haul outs or rookeries for the 2 species are in the area. Sea otters are present throughout the region.
- Fish-Coho, Pink and Chum Salmon spawn in nearby streams.

Identify any threatened or endangered species that may be present in the area at the time of release.

Steller sea lion, Humpback whales

Describe measures that will be taken to protect sensitive wildlife or environments from potential adverse impacts from release.

Trustee agencies have been invited to participate in the planning process and will be included as invited observers/evaluators during the deployment. In addition, Alaska Chadux staff are trained as wildlife observers during spill response. If any sensitive wildlife are observed in the vicinity of the intended surrogate release at the time of the exercise, the exercise plan will be adjusted to relocate or cease surrogate deployment operations. Any and all impacts or interactions – actual or potential – will be documented and described in the exercise after action report.

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Permit Considerations

Identify all authorities to be notified of release:

Alaska Regional Response Team members will be notified of the release through distribution of the HSEEP-compliant Exercise Plan at least 4 weeks prior to the exercise.

What documentation must be provided prior to the release, and to whom?

There are no known regulatory requirements for documentation or permitting. An important goal of this exercise is to ensure that regulatory agencies have an awareness of the planned activity.

What documentation must be provided after the release, and to whom, if applicable?

There are no known regulatory requirements for documentation, but the Exercise Planning Team intends to publish an HSEEP-compliant After Action Report that includes a documentation of action items and lessons learned.

APPENDIX E: COMMUNICATIONS PLAN

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APPENDIX F: SAFETY MESSAGE/PLAN

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APPENDIX G: INCIDENT BRIEFING (ICS 201)

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Evaluator Instructions

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