Fishing vessels participate in Prince William Sound on-water training. Oil surrogate materials could enhance the training value by providing a target for response vessels.

Prince William Sound Oil Surrogates Workgroup

Final Report to Prince William Sound Regional Citizens' Advisory Council

Prepared by Nuka Research and Planning Group, LLC

January 2017

Abstract

This report summarizes the process and outcomes from the 2016 Prince William Sound Oil Surrogates Workgroup. The workgroup was convened to establish consensus among spill response professionals and regulators regarding the release of oil surrogate materials to support oil spill response training and exercises in the Prince William Sound region. The workgroup met four times over a nine month timeframe, and a subset of the workgroup held an additional two meetings to develop an exercise plan for an equipment deployment in Passage Canal, near Whittier that would incorporate the use of two surrogates: peat moss and wood chips. The exercise, which was scheduled for September 2016, was eventually cancelled due to contracting issues associated with the indemnification of spill responders. Despite this fact, the workgroup was successful in addressing the study questions that PWSRCAC set out for this project, which included: arriving at consensus about the usage of a surrogate for an on-water exercise; documenting the process; selecting one or more appropriate substances to release; establishing parameters for the release; and identifying any hurdles or unanswered questions generated through this process.

Introduction

Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) formed a workgroup in early 2016 to discuss the potential use of oil spill surrogates in conjunction with training events in Prince William Sound. The project built on past work by PWSRCAC and related projects supported by the Oil Spill Recovery Institute (OSRI), Spill Control Association of America (SCAA), and Bureau of Safety and Environmental Enforcement (BSEE). PWSRCAC hired Nuka Research and Planning Group, LLC (Nuka Research) to support and facilitate the Prince William Sound Oil Surrogates Workgroup. This report is the final deliverable (Deliverable #4) under contract 7090.16.01.

Terminology

For the purpose of this report, the following terminology is defined:

- **Oil Simulant:** A non-oil substance with physical and/or chemical characteristics that closely mimic the fate and behavior of oil released to a water body. Oil simulants are not petroleum oil, but may include non-petroleum oils, and are generally liquid based. Examples might include fish oils or vegetable based cooking oils.
- **Oil Surrogate:** A substance that does not necessarily share the physical or chemical characteristics of oil but when released into the environment would represent the movement of oil released to a water body. Oil surrogates may be liquid or particles, but are more commonly particle based. Examples that have reportedly been used in some parts of the U.S. include peat moss, oranges, rice hulls, popcorn, dog food, and current study drift cards.

Background

In some parts of the world, most notably Norway, intentional oil spills are conducted in order to develop and test oil spill response technologies. The practice of intentionally releasing oil is not accepted in the U.S.; instead, surrogate materials are sometimes released in place of actual oil to provide a target for responders and to evaluate the effectiveness of response equipment and techniques.

PWSRCAC has been interested in the topic of oil simulants and surrogates for many years, and in 2008, commissioned a literature review report identifying different substances that could be used as surrogates or simulants, summarizing their characteristics and identifying key regulatory considerations for releasing these materials to the environment. PWSRCAC followed up on that project by convening a workshop in 2013 to engage regulators and spill response experts in a discussion about the regulatory framework for releasing simulants into U.S. marine waters.[1] A

[1] http://www.pwsrcac.org/programs/oil-spill-response/oil-simulants/

consensus report from that workshop confirmed a general agreement that oil simulant or surrogate materials had value for enhancing oil spill response technologies and training responders. The workshop also exposed uncertainty with the regulatory requirements for permitting oil surrogate or simulant releases. While it was clear that oil surrogate and simulant materials are in use in some parts of the U.S. for various purposes, the framework for permitting a release appeared to be *ad hoc*, with no clear national guidance or process.

To advance the discussion regarding oil surrogate permitting, the Bureau of Safety and Environmental Enforcement funded a follow-up project in 2014-2015, convening a national workgroup of high-level experts to explore the federal permitting requirements for oil surrogate releases in U.S. waters.[2] The BSEE group was unable to identify an existing federal permitting process, and instead focused their efforts on synthesizing knowledge about oil surrogate and simulant use in the U.S.,[3] and developing information that could provide a foundation for decisions about whether surrogates or simulants should be released. The group developed an Oil Surrogate Release Decision-Making Tool[4] and envisioned that this tool could be used to support decision-making by relevant authorities and to foster a standardized and consistent approach to evaluating the benefits and drawbacks of a surrogate release. The Decision-Making Tool was not intended as national policy or standard, but was considered as a means to standardize the way that local or state authorities might evaluate a proposed oil surrogate or simulant release.

Prince William Sound Oil Surrogates Workgroup

Purpose

In 2016, PWSRCAC initiated the Prince William Sound Oil Surrogates Workgroup to continue to explore the issues raised by the BSEE workgroup, but focusing the discussion at a local level by clarifying the pathway for permitting a surrogate release into a planned field exercise in Alaska. PWSRCAC's project goal was to establish consensus among Prince William Sound's local response community, regulators, and resource trustees on the following:

- Identifying appropriate oil surrogate materials for release in Prince William Sound waters to enhance on-water training and exercises; and

[2] This group included several of the participants from the 2013 workshop that PWSRCAC sponsored.
[3] https://www.bsee.gov/research-record/osrr-1032-permitting-use-oil-spill-simulants-identifying-options-and-building
[4] The final report from the BSEE project, which contains the Decision-Making Tool as an appendix, is available at https://www.bsee.gov/sites/bsee.gov/files/osrr-oil-spill-response-research//1032aa.pdf

- Identifying the parameters for surrogate(s) releases in Prince William Sound (materials, volume, location, etc.).
- Conducting a Prince William Sound field trial where one or more oil surrogates was released as part of the exercise.

Participants

PWSRCAC initiated the workgroup by inviting a core group to attend a kick-off meeting in Valdez in February 2016. Participants represented regulators, spill response organizations, and the oil industry. PWSRCAC intended for the group to be inclusive of knowledge-holders and stakeholders, while limiting the size of the group to allow for meaningful participation. As shown in the table below, 11 organizations (plus a contractor) participated in the project, with multiple personnel involved from several organizations. Typical workgroup meetings had around 10-12 participants, and they were encouraged to then communicate back within their organizations on the proceedings of the workgroup and the project.

Organization	Participants		
Alaska Chadux	Chris Burns	Sean Decker	Matt Melton
Alyeska/SERVS	Mike Day	Scott Hicks	Stacia Miller
Alaska Department of Environmental Conservation	Rick Bernhardt	John Engles	Steve Russell
Conoco Phillips/Polar Tankers	Montgomery Morgan		
Cook Inlet RCAC	Steve (Vinnie) Catalano		
National Oceanic and Atmospheric Administration	Catherine Berg		
Oil Spill Recovery Institute	Scott Pegau		
Prince William Sound RCAC	Roy Robertson	Jeremy Robida	
U.S. Coast Guard	CDR Joe Lally	LT Jason Scott	MSTC Wesley Wofford
U.S. Department of Interior	Lori Verbrugge		
U.S. Environmental Protection Agency	Marcia Combes		
Nuka Research (facilitator)	Elise DeCola	Mark Janes	

The workgroup did not include representation from local government; however, it was noted later in the process that future exercise planning for surrogate releases should include representatives of the

local community to ensure that their local knowledge of logistics and environmental sensitivities are considered in designing a surrogate release.

Meetings

The workgroup met four times between February and October 2016. A subset of participants met for two additional meetings that focused on exercise planning and logistics. A password-protected project website was created as a central repository for workgroup materials, background information, and workgroup member contact lists.[5]

Appendix A to this report contains the full workgroup meeting record, including agendas and meeting summaries. Additional information about this project and PWSRCAC's past work on oil surrogates and simulants may be obtained by contacting the Valdez PWSRCAC office.

Process and Outcomes

Study Questions

Five broad study questions were established for this project:

1. Did the workgroup reach consensus and understanding concerning usage of a surrogate for spill response training and exercise activity in Prince William Sound?
2. Did the workgroup generate a memorandum of understanding or other documentation to proceed with surrogate(s) usage in Prince William Sound?
3. What surrogate(s) were deemed suitable by the group for use in Prince William Sound and waters where Alyeska's Ship Escort Response Vessel System (Alyeska/SERVS) conducts training-related activities? How did factors such as costs, availability, bio-degradability, appearance on the water, etc. play into this decision?
4. What usage parameters for said surrogate(s) were agreed upon?
5. If the workgroup was not able to fully address the questions above, the Council requests that the Consultant document and discuss why the questions could not be answered, indicating any hurdles that may have prevented answers and recommendations on how to get these questions answered.

This section of the report considers each of these (not in sequential order), and summarizes key discussion topics and workgroup consensus or lack thereof as it relates to each. Note that this discussion synthesizes interactions that occurred over a 9-month period across multiple meetings, and

[5] http://www.nukaprojects.com/#!pws-surrogates/aoc2r (password: valdez)

does not necessarily represent a chronology. The workgroup summaries in Appendix A provide a record of discussion from each meeting.

Consensus on Surrogate Use in Prince William Sound (Study Question 1)

The workgroup agreed early in the process that oil surrogates could be incorporated into on-water oil spill response exercises and training to enhance realism and provide an opportunity to assess the effectiveness of on-water tactics and strategies. The workgroup discussed at length whether there was a permitting process through which to seek approval to release a surrogate, but could not find a specific requirement under state or federal jurisdiction.[6]

The workgroup elected to use the Oil Surrogate Release Decision-Making Tool developed by the BSEE project to help shape discussion and plan an exercise involving a surrogate release. This tool provided the framework for the group to reach consensus on exercise dates, surrogates, and other logistics for a field deployment that was planned for September 21, 2016 in Whittier (with a few backup dates for weather).

Exercise Plan

To move forward, the workgroup agreed to establish an Exercise Planning subcommittee to work through a detailed Exercise Plan, which would then be reviewed by the broader workgroup. The Exercise Plan followed the Homeland Security Exercise Evaluation Plan (HSEEP) format. Two objectives were established:

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.

The Exercise Plan provided a schedule of events, identified participants, and listed key equipment and resources to support the deployment. The Exercise Plan included a detailed Surrogate Release Plan, which followed the format developed through the 2014-2015 BSEE project. The Surrogate Release Plan identified three materials for release: dog food (up to one 40-lb bag), wood chips (up to 20 gallons), and peat moss (up to four 2.2 ft^3 bales). The justification for releasing surrogates was summarized:

- Surrogate release will provide a "target" for responders to practice equipment and tactics deployment.

[6] The State of Alaska does have a permitting process for intentional releases of oil under 18 AAC 75.800-830, but this is not applicable to oil surrogates, which are not petroleum products.

- Surrogate release will be evaluated to determine how it does or does not enhance the value of the deployment for training and responder preparedness.
- Surrogate release will be used to evaluate surface transport.

The Surrogate Release Plan described how surrogates would be used to evaluate On-Water Free Oil Recovery tactics as described in the Spill Tactics for Alaska Responders (STAR) manual.[7] Alaska Chadux, a non-profit, member-funded oil spill response organization (OSRO) was intended to provide vessels, equipment, and personnel to support the deployment, under contract to PWSRCAC. The surrogates would be used to evaluate the effectiveness of containment, but skimmers would not be operated because of the potential for inadvertent damage from running particulates through them. The Surrogate Release Plan also addressed surrogate retrieval, with the goal of minimizing the potential for surrogates to remain in the environment after the exercise was concluded.

Selection of Suitable Materials (Study Question 3)

There was considerable discussion throughout the project, among the workgroup and the smaller Exercise Planning Team, about which materials should be included in the exercise. The group ended up settling on peat moss, wood chips, and dog food, with the understanding that the ARRT member review of the Draft Exercise Plan could result in rejection of one or more of these materials.

The Surrogate Use Plan contained detailed information about how the materials were selected, how they would be sourced, and why they were considered suitable for the purpose of this exercise. The three types of surrogates proposed are floating particulates with slightly different characteristics. All were expected to initially float and to spread similar to an oil slick. During the exercise, the materials were to 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 exercise plan specified the volume of surrogates to be deployed. 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 with the desire to minimize the amount of materials introduced into the environment.

[7] http://dec.alaska.gov/spar/PPR/star/docs.htm

Wood Chips

The wood chips proposed for release were to be locally sourced from a pile in Valdez, representing native tree species. The Plan proposed releasing up to 20 gallons of wood chips, in increments of five-gallon totes, with the intent for recovery to the maximum extent possible. Any unrecovered materials were expected to spread and perhaps wash ashore. Wood chips are an organic material without known toxicity to marine life. Wood debris is common to most Pacific Northwest waterbodies from both natural and manmade (logging) sources. These materials have been deployed as surrogates in Alaska and elsewhere in the U.S.

Peat Moss

The Plan noted that there are a number of commercially available brands of peat moss, with the intent that responders would deploy a brand that is locally available and which is made up of 100% sphagnum with no added chemicals or fertilizers. As with wood chips, it was intended that floating materials would be recovered to the maximum extent possible. The total quantity deployed would be limited to no more than 4 bales (2.2 ft^3 each, 8.8 ft^3 total). Any unrecovered materials were expected to scatter and either strand on shore or submerge.

Peat moss is an organic material and there is no known toxicity from peat moss to marine life. 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 was considered unlikely to have any measurable effect on water chemistry. These materials have been deployed as surrogates in Alaska and elsewhere in the U.S.

Dog Food

The dog food proposed for release was Pedigree brand Adult Complete Nutrition, based on an *ad hoc* experiment by PWSRCAC staff. Pedigree was selected between the four options for several reasons, including the fact that the dog food did not give of any visible sheen, and individual dog food particles remained floating and intact for approximately 30 hours after being placed into a bucket of room temperature seawater before showing signs of degradation. A copy of that report is included as Appendix C.

As with the other proposed surrogate materials, it was intended that floating dog food would be recovered to the maximum extent possible. The total quantity to be deployed was to be limited to one

40-lb bag or less. Any unrecovered materials were expected to dissolve over time, based on the seawater/bucket tests.

There is no known toxicity from dog food to marine life, although there is a possibility that fish, birds, or marine life will ingest it or be attracted by it. 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.

Various brands of dog food have been deployed elsewhere in the U.S., including at the 2014 International Oil Spill Conference as part of an on-water deployment exercise conducted with participation from state and federal agencies.

Parameters for Surrogate Release (Study Question 4)

The Exercise Plan included details about how and where the surrogates would be released. In addition to determining the maximum volume of each material to be released during the exercise (summarized in the previous section), the plan also described the marine environment where the release would occur. The exercise was planned for Passage Canal, near Whittier, a steep-sided fjord in northwest Prince William Sound that is approximately 1.25 miles wide and 8.5 miles long. Charted depths mid-channel exceed 90 fathoms, and the shorelines range from wave cut platforms and exposed rocky shore to exposed tidal flats. Based on prevailing weather patterns for September, the plan estimated that unrecovered surrogate might impact shorelines within 4 hours, assuming that they drifted at 3% of the apparent wind speed.

The Exercise Plan also identified environmental sensitivities and wildlife that might be present in the region. These included sea otters, waterfowl, anadromous fish, migratory birds, and marine mammals. Stellar sea lions and Humpback whales are the only listed species potentially present in the area. To evaluate any potentially adverse wildlife impacts, the plan proposed that trustee agencies would be included as invited observers or evaluators during the deployment. If any sensitive wildlife were observed in the vicinity of the intended surrogate release at the time of the exercise, the exercise plan would be adjusted to relocate or cease surrogate deployment operations. Any and all impacts or interactions – actual or potential – would be documented and described in the exercise after action report.

Documentation to Proceed with Surrogate Use (Study Question 2)

Absent a clear permitting pathway, the workgroup decided to pursue "permission" for the surrogate release by developing an Exercise Plan that included a detailed description of and rationale for the inclusion of surrogate materials, and distributing the Exercise Plan to members of the Alaska Regional Response Team (ARRT) for review and comment. ARRT membership includes the following state and federal regulators and trustee agencies: U.S. Environmental Protection Agency; U.S. Coast Guard; U.S. Forest Service; National Oceanic and Atmospheric Administration, U.S. Air Force, U.S. Department of Energy; Centers for Disease Control and Prevention; U.S. Department of the Interior; U.S. Department of Justice; U.S. Department of Labor; U.S. Department of State; Federal Aviation Administration; U.S. General Services Administration; and Alaska Department of Environmental Conservation.

ARRT Review Process

The PWS Surrogates workgroup included participants from five of the agencies (one state, four federal) represented on the ARRT, so to a certain degree, the exercise planning received a level of agency vetting and review from the onset. However, the ARRT was identified as a body that should be invited to review and comment on the plan more directly, as this organization includes a broader representation from state and federal regulators.

On August 10, 2016, PWSRCAC staff circulated an e-mail to the ARRT that included a draft Exercise Plan (included as Appendix B to this report). Each ARRT member was asked to circulate the Exercise Plan internally as appropriate, and to respond with any comments, questions, or suggestions regarding its contents. ARRT feedback was requested by the end of the month to ensure enough time to make any requisite changes to the exercise plan.

Direct feedback was received from several ARRT members, and was generally positive in nature. The ARRT members who responded with comments were supportive of the concept. The internal procedures through which individual ARRT agencies reviewed the Exercise Plan were not entirely visible to the workgroup. Based on e-mail correspondence and phone discussions, it appears that the following regulator/permitting processes were evaluated or applied by ARRT members in their decision-making:

- **Endangered Species Act Consultation.** The U.S. Coast Guard indicated that they would coordinate with the National Marine Fisheries Service (NMFS) on potential impacts to listed

species and critical habitat to determine whether Section 7 consultation under the Endangered Species Act (ESA) would be required.[8]

- **Bald and Golden Eagle Protection Act.** U.S. Department of Interior (DOI) Fish and Wildlife Service (FWS) indicated concerns over the potential for dog food to attract eagles or other wildlife. Eagles are common in the proposed release area, and any activity that affects an eagle's feeding behavior or otherwise alters the bird's activities could potentially be viewed as a "disturbance" under the Bald and Golden Eagle Protection Act. This could occur as a result of attracting other birds or fish into the area, since eagles prey on both. For this reason, FWS recommended that dog food be excluded from the exercise. If it were to be included, a hazing permit would be required (though not necessarily approved). The timeline for a hazing permit is typically 60-90 days.

- **Marine Mammal Protection Act (MMPA).** Sea otters may be present in the deployment area, and they are protected under both the ESA (though not in Prince William Sound) and MMPA. To comply with the MMPA, vessel operators in the area must observe the protocols for avoiding disturbance of sea otters (published by FWS Anchorage office).

- **Scientific Permit for Mammal, Bird or Reptile.** The Alaska Department of Fish and Game (ADF&G) requires agencies or researchers who wish to capture, collect, or repeatedly disturb wild Alaska mammals, birds, or reptiles for scientific purposes to acquire a scientific permit and submit annual reports about their activities to ADF&G. This process can take up to 30 days, but input received from ADF&G on the surrogate release Exercise Plan indicated that this permit would only be required for the exercise if live handling of birds was intended. Since it was not, this permit was not required.

From the workgroup's perspective, the ARRT review of the Exercise Plan and subsequent adjustment (removing dog food from the materials to be deployed) satisfied the objective to generate documentation that would support the surrogate release. While there was no formal memorandum of agreement or other document promulgated by the ARRT as a body, no objections to the exercise plan were received from either the ARRT or individual regulatory agencies. While the workgroup would have preferred to have a permit or written authorization in hand prior to conducting the exercise, they concluded that the lack of objection suggested that the benefits of incorporating surrogates into the

[8] E-mail correspondence from M. Everett (USCG), August 18, 2016.

exercise would outweigh the risks. The workgroup agreed to proceed with the exercise as planned for September 21, 2016, using only peat moss and wood chips[9] as surrogates.

Challenges and Unresolved Issues

During the final weeks leading up to the exercise, an unexpected challenge arose that ultimately led to the cancellation of the exercise. The core of the issue was a concern that a third party lawsuit could be filed surrounding this activity. Though the ARRT had reviewed the exercise plan and there appeared to be general support for the concept, there had been no written permit or permission granted by any regulatory authority explicitly allowing the release. This created some concern for both PWSRCAC and Alaska Chadux, the response organization that PWSRCAC had intended to contract with to deploy the on-water recovery tactics. To mitigate this concern, Alaska Chadux requested full indemnification from PWSRCAC as part of the contractual arrangement between the two organizations. Indemnification of Chadux would have required PWSRCAC to be the responsible party for the discharge and to assume potential liability for pollution or other unknown risks associated with the activity, which was still technically unpermitted. PWSRCAC's standard insurance policy does not include pollution coverage and obtaining pollution liability insurance was deemed to be prohibitively expensive given the limited nature of this project. After extensive internal discussion, PWSRCAC concluded that the potential risks and expense outweighed the benefits of assuming liability for the exercise.

The contracting/indemnification issue could not be resolved. As a result, the September 21st exercise was put on hold and ultimately cancelled. Instead, the workgroup convened in early October to discuss the situation and consider next steps.

Lessons Learned and Next Steps

Achievements

The Prince William Sound Oil Surrogates Workgroup was not successful in conducting an on-water exercise that involved an oil surrogate, but the group had several interim accomplishments.

1. The PWS Surrogates workgroup was successful in applying the BSEE Decision-Making Tool to evaluate a potential release to Prince William Sound. The BSEE group developed the tool as a

[9] While this did not come up during the ARRT review, during final review of this report, it was noted that there are general permits in place that allow logging companies to discharge wood chips as part of their operations. Because of the relatively small quantity of wood chips that would have been released for this project, a permit would not be required under 18 AAC 70.020.

suggested approach to assist with selecting a material and planning for the deployment, and the PWS Surrogates workgroup demonstrated that this tool is a useful approach to organizing decision-making, guide discussion, and cue consideration of key issues.

2. The PWS Surrogates workgroup successfully identified preferred materials. Peat moss and wood chips were both determined to be acceptable materials for release in PWS to support oil spill training or exercises. Conversely, dog food was ruled out as problematic because of potential wildlife impacts.

3. The PWS Surrogates workgroup successfully planned a field deployment exercise for Whittier and developed an Exercise Plan, inclusive of Surrogate Release Plan, that was reviewed by ARRT members.

4. The PWS Surrogates workgroup identified responder immunity and indemnification as a key consideration that had not been explored in depth during previous discussions and past efforts. The practical exercise of planning of a field deployment and subsequent contracting process helped highlight this as a major issue of concern to response organizations that will need to be addressed if professional response contractors are expected to be involved in future oil surrogate releases in Alaska, and possibly other parts of the U.S.

Opportunities for Improvement

The process of working through the exercise and surrogate use planning in a workgroup setting allowed for the consideration of a variety of perspectives and highlighted a few areas where more work is needed:

1. The permitting authority and process for releasing oil surrogate materials to Alaska's marine waters was not resolved. This remains an important question, because the lack of written permission to proceed and a more formal paper trail was a contributing factor to the indemnity/contracting issue that ultimately stalled the exercise.
2. Local authorities were not included in the exercise planning process, but if future efforts move forward, they should be brought to the table to contribute to exercise objectives and, if possible, assist with logistics. The workgroup acknowledged after the fact that Whittier should have been invited to participate in the exercise planning and design process.
3. The ARRT review of the Exercise Plan could have been documented more clearly, and this may be an issue for further discussions with the ARRT co-chairs. For example, there was confusion about whether or not an ESA consultation had been conducted or would be required. Discussing each ARRT member agencies' internal review considerations might inform future efforts.

Next Steps

The workgroup identified several options for moving forward with a future effort to conduct a field deployment that incorporates oil surrogates.

1. Reschedule the field exercise with an agency lead such as ADEC or the USCG driving the process, rather than PWSRCAC with a response contractor. During workgroup discussions, it became clear that surrogates have been and continue to be released in U.S. waters, including Alaska. PWSRCAC remains interested in supporting follow-on work in the region, and has indicated a willingness to seek funding to provide support to future exercises (for example, by purchasing surrogate materials, assisting with development of a surrogate release plan, and providing observer vessels to support the exercise).
2. Explore the indemnification issue further and determine whether this is a universal concern among response contractors in Alaska. If it is a common concern, there may be value in identifying options that would remove this disincentive for response contractor participation.
3. Contact ARRT co-chairs with a letter or e-mail that summarizes what happened, and request feedback on the concept of indemnity and permitting oil surrogate releases.
4. In advance of a potential future exercise, send a representative to an ARRT meeting and schedule an agenda item that includes the proposed surrogate release in the public notices for the meeting, to try to reach any potentially concerned members of the public.
5. Ask the ARRT to take on the issue of oil surrogates more explicitly, and potentially establish some policy for statewide use, including a more direct sign-off process to document ARRT acceptance of a planned surrogate release.

Conclusion

While it was disappointing that the September exercise was cancelled, the workgroup achieved measurable progress in considering the types of surrogate materials and parameters for their release, and fine-tuning the considerations for use in Prince William Sound and Alaska. The process confirmed that there is interest among Alaska planholders and regulators to incorporate oil surrogates into oil spill training and exercises, and identified several actionable items to continue to move the discussion forward. The workgroup participants were earnest and engaged throughout the process, and this body could be re-engaged in the future to plan another oil surrogate exercise.

PWSRCAC's end goal in sponsoring this project was to clarify the pathway for surrogate releases in Prince William Sound and, potentially, Alaska. This project moved the process forward, but still left some questions unresolved. PWSRCAC intends to continue to build on this progress with the hope that use of surrogates can become an accepted practice with appropriate oversight. It is still unclear whether this could be accomplished via the proposal of an exercise as was conceived during this project, or whether a more explicit policy or process must be established under a regulatory agency or multi-agency body like the ARRT.

Appendix A: Workgroup Record

Agendas and meeting summaries are enclosed from all workgroup and Exercise Planning meetings.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP INITIAL MEETING

February 10, 2016 9:00am – 3:30pm
PWSRCAC Conference Room - Valdez

*Participants who cannot travel to the workshop will have the option to participate via teleconference or webinar.

WORKGROUP GOALS

Prince William Sound RCAC has formed a workgroup to establish consensus among the local response community, regulators, and resource trustees on the following issues:

- Identification of surrogate materials that are appropriate for release in Prince William Sound waters, for the purpose of improving on-water training and exercises.
- Develop parameters for surrogate release in Prince William Sound (materials, volume, location, other conditions).

This project builds on recent, related efforts funded by PWSRCAC, OSRI, and BSEE.

WORKSHOP PURPOSE

This workshop is the initial meeting of the workgroup. The purpose is to:

- Review current state-of-knowledge on oil surrogate use, focusing on training and exercises.
- Establish consensus on workgroup goals and process.
- Develop a work plan.

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

Participant survey:

http://goo.gl/forms/RrBbK1KGsu

Suggested background reading:

Final Report BSEE Permitting Oil Simulants Project (2015)

Decision-making tool for Oil Surrogate or Simulants Use (2015)

PWSRCAC/OSRI/SCAA Oil Simulants workshop final report (2013)

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP INITIAL MEETING

AGENDA

9:00 am	**WELCOME & INTRODUCTIONS**	D. Schantz, PWSRCAC
9:15 am	**PROJECT BACKGROUND & GOALS**	J. Robida, PWSRCAC
9:30 am	**WORKSHOP PURPOSE & OVERVIEW**	E. DeCola, Nuka Research
9:45 am	**PRESENTATION: State of Knowledge & Practice** Summary of recent efforts by PWSRCAC, BSEE, and others to compile knowledge about simulant and surrogate use, clarify regulatory context, and establish guidance for how and when to use simulants for R&D, training and exercises, and fate/behavior studies.	E. DeCola, Nuka Research
10:30 am	**BREAK**	
10:45 am	**GROUP DISCUSSION** Group discussion to consider how current state of knowledge and gaps applies to PWS. Review experiences, questions, and concerns of all participants. Discussion topics: • Participants experience with surrogates in PWS or elsewhere • Potential use in training/exercises • Available materials • Environmental concerns • Permit/regulatory context	Group
12:00 pm	**LUNCH**	
1:00 pm	**WRAP-UP** Review key outcomes from morning discussion. These should help lay the foundation for the development of workgroup goals and work plan.	
1:15 pm	**WORK SESSION: Workgroup Goals** Establish consensus on workshop goals and process. What does each participant want to achieve through this process? What are the desired outcomes? What are the potential hurdles?	Group

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP INITIAL MEETING

2:00 pm	**BREAK**	
2:15 PM	**WORK SESSION: Work plan** Develop a work plan that outlines project goals and milestones, timeline and general meeting schedule/frequency, and schedule of deliverables.	Group
3:15 PM	**WRAP-UP** Action items, next steps, next meeting	
3:30 PM	**ADJOURN**	

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
INITIAL MEETING SUMMARY

February 10, 2016 9:00am – 3:30pm

PWSRCAC Conference Room - Valdez

WORKGROUP GOALS

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This project builds on recent, related efforts funded by PWSRCAC, OSRI, and BSEE.

MEETING PURPOSE

This workshop is the initial meeting of the workgroup. The purpose is to:

- Review current state-of-knowledge on oil surrogate use, focusing on training and exercises.
- Establish consensus on workgroup goals and process.
- Develop a work plan.

ATTENDEES

R. Bernhardt, ADEC*
J. Engles, ADEC
S. Russell, ADEC*
M. Day, Alyeska/SERVS
S. Hicks, Alyeska/SERVS
S. Miller, Alyeska/SERVS
V. Catalano, CIRCAC*
M. Combs, EPA*
**via teleconference*

C. Berg, NOAA SSC*
M. Morgan, Polar Tankers
R. Robertson, PWSRCAC
J. Robida, PWSRCAC
J. Lally, USCG
C. Wallen, USCG
W. Wofford, USCG
L. Verbrugge, USFWS*
E. DeCola, Nuka Research

SUMMARY OF DISCUSSION

The meeting was held as a combined webinar and in-person discussion. Due to other simultaneous meetings, some participants dropped in/out of both the physical meeting room and/or the webinar as their schedule dictated. Some discussion topics were covered more than once. They are summarized thematically here, rather than as a chronological narrative of discussion.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
INITIAL MEETING SUMMARY

Project Background

Jeremy Robida and Roy Robertson welcomed the group and presented an overview of Prince William Sound RCAC's interest in oil surrogate and simulant materials and a summary of related past efforts. These past efforts were funded by PWSRCAC and/or the federal government.

- 2008 Literature review to catalogue surrogate/simulant materials (funded by PWSRCAC)
- 2013 Workshop in Seattle to establish consensus among national experts and state/federal agencies regarding use of oil surrogates (funded by PWSRCAC, OSRI, Spill Control Association of America)
- 2014-2015 High-level workgroup to explore permitting considerations and develop tool to guide decision-making about oil surrogate releases (BSEE)

This group builds on previous work, but will focus specifically on the use of oil surrogate materials in Prince William Sound to enhance on-water training, drills, and exercises.

Goals

Prior to the meeting, a brief survey was distributed to query the participants about their past experience with oil surrogates, and to frame the discussion based on the priorities and concerns of participants. Eight anonymous responses were received. Elise DeCola presented a brief summary of the survey results.

- 56% of respondents had some firsthand experience releasing oil surrogate or simulants
- Materials that were mentioned included dyes, dog food, oranges, apples, wood chips, blocks, sawdust, cottonseed hulls, sunflower seeds, tracking buoys, peat moss, rice hulls, ping pong balls, and hula hoops
- Benefits:
    - Enhance exercises with visual feedback on effectiveness, a target for responders, more realistic practice environment
    - Visualize movement of oil and water, fate and effects
    - Reduced toxicity over oil
- Challenges and drawbacks:
    - Overcoming misconceptions or adverse public opinion about "dumping" substances in the water
    - Permitting process uncertain and inconsistent
    - Limitations of available materials – there is no perfect proxy for oil
    - Potential for adverse impacts if not well controlled
    - Potential for surrogate use to become a "requirement" rather than an enhancement, or to use surrogates to score exercises or penalize responders
- Participant goals:
    - Create a catalog of simulant materials that can be used in PWS exercises

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
INITIAL MEETING SUMMARY

- Dispel misconceptions
- Enhance responder proficiency and improve drills

State of Knowledge & Practice Presentation

Elise DeCola gave a presentation summarizing the state of knowledge and practice regarding surrogate use, the regulatory context, and a recently developed tool for surrogate release decision-making.

Key points included:

- Introduction of standard terminology developed by BSEE project, with general agreement among the PWS workgroup that this terminology would work.
- Review of the 19 substances identified as potential simulants/surrogates during the BSEE project, and review of the "fact sheets" developed to summarize known facts about the physical and chemical properties of surrogate materials, practical considerations, and their history of use in the U.S.
- Review of the 4-step decision-making process outlined in the BSEE decision-making tool, focusing on surrogate releases for the purpose of exercises and training. There was general agreement that the questions and considerations laid out in the BSEE decision-making tool would be appropriate for use in PWS, with some possible modifications.

Group Discussion: State of Knowledge and Technology

After the initial presentation, the remainder of the meeting was discussion-based. Major discussion points, consensus items, and action items are summarized.

Major Discussion Topics

- Types of surrogates and their appropriateness or not for use in Alaska/PWS based on participant experience.
- Logistics of a release – collection, decontamination of equipment, fate of surrogate materials.
- Potential for adverse impacts to wildlife or environment, and how to mitigate those or address them during the planning process
- "Chicken and egg" conundrum – how to get started given unclear legal/regulatory context.

Consensus Items

- There is merit to attempting to incorporate a surrogate release into a PWS on-water response exercise or training.
- This group seeks to develop a plan to incorporate a surrogate release into an upcoming (2016 if possible) on-water exercise in Valdez, with full agency concurrence (state and federal).
- In order for this group to be successfully, we need to include industry, OSROs, and

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
INITIAL MEETING SUMMARY

agencies – no one group can tackle this alone.

- The BSEE decision-making tool is a reasonable starting point, but will need some customization, particularly for wildlife/environmental considerations based on input from trustee agencies.
- A reasonable approach is to start with a clearly defined, small-scale "pilot" release to determine the feasibility. If we are successful in developing an exercise plan that includes a surrogate release in Port Valdez, this may provide a model that could be used for larger scale exercise and/or in other parts of PWS and Alaska.
- There are state regulations for scientific discharges of oil (18 AAC 75.800). Federal policy on this topic is under internal agency review.
- There is value in centralizing the collection of knowledge/information about surrogate releases.
- There is probably not a single "best" option/choice of surrogate material, as there are many variables to each situation.
- A few "guiding principles" were suggested:
    - Do not cause any environmental harm
    - Do not violate the law (this was a particular concern to the regulated community)
    - Ensure that permission to release surrogates does not morph into requirement to do so with all training, drills, and exercises.

Unresolved Items

- Is there a need to consult with or notify potentially affected landowners?

Action Items

- Follow up with University of Utah researchers regarding the "environmentally benign oil simulant" that they have developed and its potential for release.
- Each participating agency will work internally to better delineate regulatory and permitting context for a small-scale surrogate release in PWS as conceived by the work group.
- Incorporate outreach and education into surrogate release so that public, stakeholders, and media understand the benefits and potential trade-offs.
- Poll industry about interest in utilizing surrogates, ask for them to consider outcomes and benefits.

Next Steps

- Establish a steering committee (subgroup of this workgroup) to develop a scenario and exercise plan for a small-scale surrogate release as part of an on-water exercise in Port

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
INITIAL MEETING SUMMARY

Valdez, preferably for the fall of 2016.

- PWSRCAC and Nuka will query the group for interested members & set up a call in late February/early March.
- Adapt the "Use Plan" in the BSEE decision-making tool for initial proof-of-concept review.
- Propose a few different substances to use as surrogates.
- Steering committee brings plan back to larger workgroup for feedback.
- Submit exercise plan, once vetted through this workgroup, through the typical exercise plan review process (USCG/ADEC and trustees).

- Identify appropriate opportunity to incorporate surrogates into an exercise or training.
  - Consider smaller OSROs or operators
  - Possibly include fishing vessels
  - Potential for PWSRCAC to contribute funding
- Develop surrogate use plan for review/evaluation by trustees and regulatory agencies.
  - Each agency determines whether permission needed, under what authorities
  - Test the process of gaining approval/permission as appropriate

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

Participant survey:

http://goo.gl/forms/RrBbK1KGsu

Suggested background reading:

Final Report BSEE Permitting Oil Simulants Project (2015)

Decision-making tool for Oil Surrogate or Simulants Use (2015)

PWSRCAC/OSRI/SCAA Oil Simulants workshop final report (2013)

PRINCE WILLIAM SOUND
OIL SURROGATES WORKGROUP

EXERCISE PLANNING TEAM
INITIAL PLANNING MEETING

Tuesday, March 8, 2016 – 3:00 pm
PWSRCAC Valdez office or via teleconference (dial 866-740-1260)

MEETING PURPOSE

This is an Initial Planning Meeting (IPM) for the Exercise Planning Team, a sub-group of the PWS Oil Surrogates Workgroup. The Planning Team will meet periodically to develop the scenario and exercise plan for an intended field release of oil surrogate materials as part of an on-water exercise or training in Port Valdez.

Our approach to exercise planning will follow the Homeland Security Exercise and Evaluation Program (HSEEP), a standard approach to exercise design and implementation that is widely used across the U.S., particularly by federal and state agencies. We will use a modified Exercise Plan that follows the basic approach outlined in HSEEP, but adapted for our purposes.

For more information about HSEEP, go to: http://www.fema.gov/media-library-data/20130726-1914-25045-8890/hseep_apr13_.pdf

INITIAL PLANNING MEETING OBJECTIVES

- Define exercise objectives
- Identify relevant tactics to be tested
- Develop exercise scenario
- Develop parameters for surrogate release
- Identify participating organizations
- Define roles & responsibilities of exercise planners, participants, evaluators
- Define evaluation criteria

KEY OUTCOMES

- Information and decisions to feed into first draft of Exercise Plan
- Schedule exercise time, location
- Timeline and milestones for exercise planning
- Tasking for Exercise Planning Team members

AGENDA & DISCUSSION QUESTIONS

1. **Review initial workgroup meeting outcomes**
   - Feedback from other organizations
2. **Exercise objectives**
   - SMART – Specific, measurable, achievable, relevant, time-bound
3. **Scenario**
   - What happened? What are we trying to accomplish?
4. **Surrogate release parameters**
   - Type(s), volume (quantity), source, deployment method (equipment), collection
5. **Participating organizations**
   - Roles for each – planner, participant, evaluator
6. **Tactic(s) to be exercised**
   - STAR Manual
7. **Exercise evaluation criteria**
   - What are we trying to test?
8. **Schedule**
   - Target date(s) for deployment
   - Planning process – planning meetings, agency notification, etc.
   - Critical path
9. **Review draft EXPLAN**
   - We should have all the information needed to fill this in and distribute to wider work group for review prior to next Exercise Planning meeting
10. **Next Steps**
    - Full workgroup meeting end of March
    - Next EXPLAN meeting
    - Tasking
11. **Adjourn**

PROJECT MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r
(password protected, password to be distributed to participants via e-mail)

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP

INITIAL EXERCISE PLANNING MEETING SUMMARY

Tuesday March 8, 2016 via teleconference

MEETING PURPOSE

This was an Initial Planning Meeting (IPM) for the Exercise Planning Team, a sub-group of the PWS Oil Surrogates Workgroup. The Planning Team will meet periodically to develop the scenario and exercise plan for an intended field release of oil surrogate materials as part of an on-water exercise or training in Port Valdez.

Our approach to exercise planning follows the Homeland Security Exercise and Evaluation Program (HSEEP), a standard approach to exercise design and implementation that is widely used across the U.S., particularly by federal and state agencies. We will use a modified Exercise Plan that follows the basic approach outlined in HSEEP, but adapted for our purposes.

For more information about HSEEP, go to: http://www.fema.gov/media-library-data/20130726-1914-25045-8890/hseep_apr13_.pdf

ATTENDEES

C. Berg, NOAA SSC
R. Bernhardt, ADEC
S. Decker, Chadux
E. DeCola, Nuka Research
J. Engle, ADEC
M. Melton, Chadux
R. Robertson, PWSRCAC
J. Robida, PWSRCAC
W. Wofford, USCG

SUMMARY OF DISCUSSION

Review initial workgroup meeting outcomes

The group reviewed the outcomes of the initial work group meeting, the most substantial being the decision to continue with this process and plan for a field exercise that incorporates a surrogate deployment in late 2016.

Exercise objectives

Two objectives were established:

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.

Scenario

- For the purpose of the exercise, a basic scenario involving a diesel spill (1,000 bbl) in Port Valdez will be presented. One or more oil surrogates will be deployed to mimic the oil.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP

INITIAL EXERCISE PLANNING MEETING SUMMARY

Surrogate release parameters

Materials that may be considered for release:

- Dog food
- Wood chips
- Spruce needles
- Peat moss
- Dye (rhodamine or fluorescence) – ADEC has a gallon in stock

Participation in the Exercise

The following people and equipment were identified as possibly participating in the exercise. No firm commitments are in place at this time.

- Everyone in the workgroup will have some role – participant, observer, evaluator, facilitator
- RCAC has potential funding to support contracting a vessel for deployment or observers
- Detection/tracking of surrogate movement (possible):
  - City of Valdez drone
  - OSRI aerostat balloon
- Boom:
  - Chadux (possibly time deployment in conjunction with August hub visit/training)
  - ADEC

Tactics to be Exercised

- STAR manual will likely be used for tactic reference
- Precise tactic(s) tested TBD

Evaluation criteria

- How does inclusion of surrogates impact (benefit/hinder) the exercise?
  - Training value, particularly to responders who do not have the opportunity to work with actual oil very often or at all
- After action report to include specific information about logistics to inform future activities:
  - How much did it cost? Where did materials come from? How challenging to deploy and retrieve? Etc.
  - Try to inform the broader question of "can/should surrogates be integrated into exercise/training in PWS"?

Schedule

- Target late summer/early fall

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP

INITIAL EXERCISE PLANNING MEETING SUMMARY

- Coordinate with Chadux/SERVS boom training if possible
- Need a minimum of 2 months to get agency approval of exercise plan – which means planning needs to be in place before June.

Exercise Plan

- Begin populating exercise plan
- Discuss at next full work group meeting

Next Steps

Outstanding questions:

- Should we do some proof-of-concept testing using surrogate materials & different equipment in tanks before hand? (i.e. how long do various materials remain floating in PWS conditions, can you run peat moss through a skimmer, etc.)
- Public communications/perception concerns

Workgroup meeting:

- Input on which surrogate material(s) to include in this exercise

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

PRINCE WILLIAM SOUND
OIL SURROGATES WORKGROUP MEETING

March 31, 2016 11:00am – 12:30pm

Teleconference dial in: 866-740-1260 code: 8345030

PWSRCAC Conference Room – Valdez

MEETING PURPOSE

This is the second meeting of the workgroup. The purpose is to:

- Review outcomes of initial workgroup meeting (Feb 10)
- Review draft exercise plan for surrogate deployment in Port Valdez
- Refine surrogate release plan (select materials)
- Review timeline and milestones for exercise planning

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

Draft Exercise Plan:

AGENDA

1. **Review initial workgroup meeting outcomes**
2. **Review draft exercise plan:**
   - Format/approach (HSEEP, exercise planning team)
   - Objectives
   - Scenario and tactics
   - Participants & roles
   - Evaluation criteria
3. **Refine surrogate release plan**
4. **Timeline and milestones**
   - Target date(s) for deployment
   - Exercise planning process – planning meetings, agency notification, etc.
   - Next meeting of full workgroup

WORKGROUP PURPOSE

Prince William Sound RCAC has formed a workgroup to establish consensus among the local response community, regulators, and resource trustees on the following issues:

- Identification of surrogate materials that are appropriate for release in Prince William Sound waters, for the purpose of improving on-water training and exercises.
- Develop parameters for surrogate release in Prince William Sound (materials, volume, location, other conditions).

This project builds on recent, related efforts funded by PWSRCAC, OSRI, and BSEE.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP

MEETING SUMMARY

March 31, 2016 11:00am – 12:30pm
PWSRCAC Conference Room – Valdez
Teleconference dial in: 866-740-1260 code: 8345030

WORKGROUP GOALS

Prince William Sound RCAC has formed a workgroup to establish consensus among the local response community, regulators, and resource trustees on the following issues:

- Identification of surrogate materials that are appropriate for release in Prince William Sound waters, for the purpose of improving on-water training and exercises.
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MEETING PURPOSE

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- Review draft exercise plan for surrogate deployment in Port Valdez
- Refine surrogate release plan (select materials)
- Review timeline and milestones for exercise planning

ATTENDEES

C. Berg, NOAA SSC
S. Catalano, CIRCAC
S. Decker, Chadux
E. DeCola, Nuka Research
J. Engle, ADEC
S. Miller, Alyeska/SERVS
R. Robertson, PWSRCAC
J. Robida, PWSRCAC
W. Wofford, USCG
L. Verbrugge, USFWS

SUMMARY OF DISCUSSION

The meeting was held as a teleconference, with a small group participating from the Valdez PWSRCAC office.

1. Review initial workgroup meeting outcomes

The group reviewed the outcomes of the initial work group meeting, the most substantial being the decision to continue with this process and plan for a field exercise that incorporates a surrogate deployment in late 2016.

2. Review draft exercise plan

A draft Exercise Plan was reviewed by the group. The Exercise Plan was developed with input from the Exercise Planning Group during the March 8th Initial Planning Meeting.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
MEETING SUMMARY

Format/Approach:

The organization of the exercise planning is being carried out using the Homeland Security Exercise Evaluation Program (HSEEP) process, which is a standard approach across government and industry in much of the U.S. An exercise planning team – a sub-group of this full workgroup – has been meeting between full workgroup meetings to flesh out the contents and approach.

Objectives:

Two objectives were established, and these were accepted by the work group.

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.

Location and Timing:

During the Exercise Planning meeting, a tentative plan to conduct the exercise in Valdez in August was discussed. The full work group suggested that this timing would be difficult and offered an alternative of September/October in Whittier. This was generally agreeable, since Whittier is relatively easy to access from both Valdez and Anchorage. Specific dates were identified later in the meeting.

Scenarios and Tactics:

The group discussed scenarios and tactics, and agreed that for the purpose of this exercise, it is not necessary to have a specific or prescriptive scenario (i.e. specify product, volume, etc.). Instead, the Exercise Planning Group will focus on identifying one or more tactics that will be deployed and used to evaluate how the surrogate contributes to the overall objectives.

Participants and Roles:

Chadux may be able to contribute vessels and/or boom from Whittier or Anchorage. PWSRCAC may have funding to contract additional resources.

3. Refine surrogate release plan

A draft surrogate release plan was developed as part of the Exercise Plan using an adapted version of the template from the BSEE project, which had been presented and reviewed at the initial full work group meeting. The group discussed its contents and suggested revisions, which will be reflected in the next draft of the Exercise Plan.

Materials:

The group discussed surrogate materials generally – liquid vs. particulate – and there was general agreement that a particulate surrogate would be a focus, with the possibility of also including a dye. There was some difference of opinion on whether a dye would enhance the primary objective of evaluating surrogates for on-water recovery operations.

The group discussed several specific materials: dog food, wood chips, peat moss, spruce needles, dye, peanuts and oranges. Spruce needles were ruled out due to visibility and challenges in procuring them in large amounts. Peanuts were discussed but there were significant concerns about potential toxicity from a mold that is known to grown on them.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
MEETING SUMMARY

Oranges were ruled out as a primary surrogate because of the expense associated with acquiring large quantities.

The two materials that were considered most favorably are dog food and wood chips.

Justification:

The surrogate release plan includes a justification for how surrogates will benefit or enhance the exercise. The group came up with three major points:

1. Surrogate release will provide a "target" for responders to practice equipment and tactics deployment.
2. 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 provide information on surface movement of simulated oil slick that may inform planning and response.

Logistics:

When the final materials are selected, the group will need to come up with a more detailed plan for deploying and retrieving the materials, including a method for measuring how much of the material is released and deployed, considering potential for changes to weight/volume once it is released to the water. The group agreed that part of the exercise planning should include some informal tests with the intended materials and sea water to help us to anticipate how they will behave and identify the best method of retrieving them.

Agency Notifications:

The group agreed that once the exercise plan is fleshed out, it will be circulated to all of the ARRT agencies with the expectation that they will circulate further internally or identify additional external review requirements, if needed.

4. Timeline and milestones

Target Exercise Dates:

Two weeks in September were identified: the week of September 12th or September 19th. The group agreed that it would be necessary to identify contingency dates for weather.

Next Meeting Dates:

The group agreed to set the next meeting dates via e-mail. Subsequently, an Exercise Planning Group meeting was set for April 28th at 10:00am via teleconference, with materials to follow. Next work group meeting date will be set for mid-late May.

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

PRINCE WILLIAM SOUND
OIL SURROGATES WORKGROUP
EXERCISE PLANNING TEAM MEETING

Thursday April 28, 2016 – 10:00am

PWSRCAC Valdez office or via teleconference (dial 866-740-1260)

MEETING OBJECTIVES

- Identify relevant tactics to be tested
- Develop parameters for surrogate release
- Define evaluation criteria

AGENDA & DISCUSSION QUESTIONS

1. **Review March workgroup meeting outcomes**
   - Feedback from other organizations
2. **Exercise specifics**
   - Tactics to be tested
   - Equipment
   - Refine dates, consider logistics
3. **Surrogate release parameters**
   - Type(s), volume (quantity), source, deployment method (equipment), collection
4. **Exercise evaluation criteria**
   - What are we trying to test?
5. **Next Steps**

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

PRINCE WILLIAM SOUND
OIL SURROGATES EXERCISE
WORKGROUP MEETING

Monday, July 25, 2016 – 10:00am

PWSRCAC Valdez office or via teleconference (866-740-1260 code: 8345030)

MEETING OBJECTIVES

- Review exercise planning and logistics
- Develop parameters for surrogate release
- Define evaluation criteria

AGENDA & DISCUSSION QUESTIONS

1. **Project update**
2. **Exercise specifics**
   - Date & location
   - Tactics & equipment
   - Participation – observers & evaluators
3. **Surrogate release parameters**
   - Type(s), volume (quantity), source, deployment method (equipment), collection
4. **Exercise evaluation criteria**
   - What are we trying to test?
5. **Circulation of exercise plan to agencies**
6. **Next Steps**

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password distributed to participants via e-mail)

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP

MEETING SUMMARY

July 25, 2016 10:00am

PWSRCAC Conference Room – Valdez

Teleconference dial in: 866-740-1260 code: 8345030

WORKGROUP GOALS

Prince William Sound RCAC has formed a workgroup to establish consensus among the local response community, regulators, and resource trustees on the following issues:

- Identification of surrogate materials that are appropriate for release in Prince William Sound waters, for the purpose of improving on-water training and exercises.
- Develop parameters for surrogate release in Prince William Sound (materials, volume, location, other conditions).

This project builds on recent, related efforts funded by PWSRCAC, OSRI, and BSEE.

MEETING PURPOSE

This is the third meeting of the workgroup. The purpose is to:

- Review exercise planning and logistics
- Develop parameters for surrogate release
- Define evaluation criteria

ATTENDEES

C. Berg, NOAA SSC
C. Burns, Chadux
M. Combs, EPA
S. Decker, Chadux
E. DeCola, Nuka Research
M. Janes, Nuka Research
S. Miller, Alyeska/SERVS
J. Robida, PWSRCAC
W. Wofford, USCG
L. Verbrugge, USFWS

SUMMARY OF DISCUSSION

The meeting was held as a teleconference, with a small group participating from the Valdez PWSRCAC office.

1. Project update

Since the last full work group meeting, PWSRCAC and Chadux have met, with Nuka Research participation, to develop a contract and scope of work for Chadux to provide field support for the fall exercise.

2. Exercise specifics

An updated draft of the Exercise Plan was reviewed.

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
MEETING SUMMARY

Date and location:

Target date for exercise: September 21, 2016

Backup dates: September 22, 27 or 28, 2016. It was pointed out that September 27-28 is the ARRT meeting, which will create a conflict for some potential agency attendees.

Tactics and equipment:

On-water recovery tactics will be implemented by Chadux responders using Chadux resources as outlined in Exercise Plan. The group agreed that while Chadux will make every reasonable attempt to recover surrogates, it is possible that some of the materials deployed will not be recoverable. This will be clearly explained in the Exercise Plan.

Participation:

Each organization will provide estimated participant numbers, for the purpose of logistics planning. Observers/evaluators will be on vessels.

3. Surrogate release parameters

A draft surrogate release plan was developed as part of the Exercise Plan. The group discussed its contents, which have been updated based on discussions at the last meeting and information provided by Chadux and Nuka Research.

Materials:

The three materials that may be deployed are wood chips, peat moss, and dog food. Each material will be deployed separately at different times. PWSRCAC staff committed to conduct a qualitative experiment to evaluate different dog foods. The results of that analysis are included as an attachment to this meeting summary. Proposed quantities of materials were agreed upon, as summarized in the Exercise Plan.

The Exercise Plan specifies how the materials are intended to be released and collected, but the group acknowledged that there is some uncertainty. Part of the exercise purpose will be to evaluate the feasibility and suitability of each surrogate deployed, and the after action report will clearly identify the pros and cons of each, to inform future exercises. The quantity of each substance that is released for this exercise will be relatively low.

Agency Notifications and Approvals:

The group agreed that once the exercise plan is fleshed out, it will be circulated to all of the ARRT agencies with the expectation that they will circulate further internally or identify additional external review requirements, if needed. Draft plan will be circulated the week of August 8th with a 3-week review window to allow for sufficient time to adjust exercise plans if needed.

4. Evaluation criteria

The group agreed that the evaluation criteria would focus on evaluating the suitability of each surrogate to enhancing the exercise. Evaluation questions may include:

- How do on-scene conditions influence the trajectory of each material?

PRINCE WILLIAM SOUND OIL SURROGATES WORKGROUP
MEETING SUMMARY

- Does the material enhance the exercise, and how?
- Does the material entrain when towing?
- Does the material mimic oil behavior? How?
- How difficult was the material to deploy/recover?
- How visible was the material?
- Did the material attract wildlife? Were there any adverse interactions?
- Did the material contaminate equipment?

5. Circulation of exercise plan

The workgroup participants were provided with an updated exercise plan on July 29, with a one-week review period. The plan was updated based on workgroup comments, and a revised version dated August 8 has been posted to the project website. This version will be distributed to ARRT member agencies for review/comment by the end of August.

6. Next steps

The next steps will depend upon comments/feedback on the exercise plan.

MEETING MATERIALS

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password to be distributed to participants via e-mail)

PRINCE WILLIAM SOUND
OIL SURROGATES EXERCISE
WORKGROUP MEETING

Monday, October 3, 2016 – 12:00 pm

PWSRCAC Valdez office or via teleconference (866-740-1260 code: 8345030)

MEETING OBJECTIVES

- Discuss issues with conducting exercise
- Consider next steps for this project

AGENDA & DISCUSSION QUESTIONS

1. **Project update**
2. **September Exercise (cancelled)**
   - Parameters for release
   - ARRT and workgroup feedback
   - Contracting issue
3. **Implications of liability and indemnity for responders in surrogate exercises**
   - Review Chadux and PWSRCAC concerns
   - Consider options for addressing these to move forward
4. **Next Steps for Project**
   - Potential for another exercise?
   - Lessons learned to date

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r

(password protected, password distributed to participants via e-mail)

PRINCE WILLIAM SOUND
OIL SURROGATES EXERCISE
WORKGROUP MEETING SUMMARY

Monday, October 3, 2016 – 12:00 pm

PWSRCAC Valdez office or via teleconference (866-740-1260 code: 8345030)

MEETING OBJECTIVES

- Discuss issues with conducting exercise
- Consider next steps for this project

ATTENDEES

C. Berg, NOAA SSC	M. Janes, Nuka Research
R. Bernhardt, ADEC	M. Melton, Chadux
S. Catalano, CIRCAC	S. Miller, Alyeska/SERVS
M. Combes, EPA	J. Robida, PWSRCAC
S. Decker, Chadux	L. Verbrugge, USFWS
E. DeCola, Nuka Research	W. Wrede, PWSRCAC

SUMMARY OF DISCUSSION

The meeting was held as a teleconference, with a small group attending from the PWSRCAC office in Valdez.

1. Project update

The group was informed that because of the September exercise cancellation, the group was convening to decide where to go with the project.

2. September Exercise (cancelled)

Jeremy Robida (PWSRCAC) informed the group of the events that had played out over the course of September. While the ARRT had provided favorable feedback indicating that they would support the planned exercise as long as dog food was not released, the exercise had been cancelled. Concerns over indemnification from third party complaints had prevented PWSRCAC and Chadux from successfully negotiating a contract for the responder to run the deployment.

Chadux had asked for PWSRCAC to indemnify the responder and assume any risks associated with potential third party complaints over the release of the surrogate materials as part of the exercise. PWSRCAC, as a non-profit organization that does not typically engage in pollution response, lacked adequate insurance coverage to satisfy this condition. Despite earnest efforts by staff from both organizations, a compromise could not be reached.

Chadux's administrative staff indicated that without an explicit permit from a regulatory

PRINCE WILLIAM SOUND
OIL SURROGATES EXERCISE
WORKGROUP MEETING SUMMARY

authority stating that the surrogate release was sanctioned, Chadux could not assume the liability for the release. This situation was somewhat unexpected because the workgroup had sought and received the blessing of the ARRT, which some in the group thought equivalent to a permit. In the end, the group ended up wrestling with the same challenge that they had faced from the first meeting, and which had also been an issue during previous projects – the lack of a defined permitting process or authority to approve or deny the release of oil surrogate materials to the marine environment.

Workgroup participants discussed other options for moving forward with the exercise at a later date. A suggestion was made that the group could perhaps go a step farther with the ARRT by bringing a future Exercise Plan to an ARRT meeting so that members of the public present at the meeting would have a chance to comment, and potentially forestall any opposition to the release. Another suggestion was to pursue an Alaska Department of Fish and Game scientific collection permit, although the permit is not a perfect fit for surrogate releases, as it only applies in the event that the release disrupts wildlife.

The group discussed consultation under the Endangered Species Act and it was later confirmed that there was an informal determination that the exercise would not impact endangered species but not a formal consultation.

The group discussed whether the Clean Water Act (CWA) would apply and if so, whether the EPA could issue a letter exempting the exercise from the need for a CWA permit. However, the proposed exercise location was within closing lines, which would make EPA unlikely to provide an exemption since the release was not to open ocean.

3. Implications of liability and indemnity for responders in surrogate exercises

This agenda item was included in the discussion of item 2.

4. Next Steps for Project

The group discussed potentially rescheduling the exercise using different resources to deploy the equipment, and this was identified as one potential way to move forward. The group also discussed whether the indemnity issue could be addressed if a state or federal agency took the lead in organizing and running the exercise, rather than PWSRCAC.

The group discussed returning to the ARRT, this time by scheduling an agenda item and including the proposed surrogate release in the public notices for the meeting to try to reach any potentially concerned members of the public. The group considered asking the ARRT to take on the issue of oil surrogates more explicitly, and potentially establish some policy, but it was pointed out that the ARRT is a small organization with no

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OIL SURROGATES EXERCISE
WORKGROUP MEETING SUMMARY

budget, and there are a number of other initiatives in place that are taking up most of their time and attention.

The group identified the follow as potential next steps:

- Reschedule the exercise with an agency lead and using alternate resources/responders (e.g. SOS Team in Seldovia)
- Contact ARRT tri-chairs with a letter or e-mail that summarizes what happened and requests feedback on the concept of indemnity and permitting oil surrogate releases.

The group acknowledged that while it was frustrating that the exercise got cancelled, the workgroup had achieved measurable progress in considering the types of surrogate materials and parameters for their release, and fine-tuning the considerations for use in Prince William Sound and Alaska. The process confirmed that there is interest among Alaska planholders and regulators in incorporating oil surrogates into oil spill training and exercises.

Project website: http://www.nukaprojects.com/#!pws-surrogates/aoc2r
(password protected, password distributed to participants via e-mail)

Appendix B: Exercise Plan

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.

Rev. April 2013
HSEEP-DD06

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	**1.** Conduct a deployment in PWS that includes one or more oil surrogates to practice tracking and targeting oil slick for collection *2.* 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	Invited participants include: • 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)
Point of Contact	Jeremy Robida, PWS RCAC 907-834-5040 office jeremy.robida@pwsrcac.org

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.

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
USDOI	TBD
PWSRCAC	TBD
Chadux	TBD
Nuka Research	1
Other agencies (including local)	TBD
TOTAL	

APPENDIX C: EXERCISE EQUIPMENT

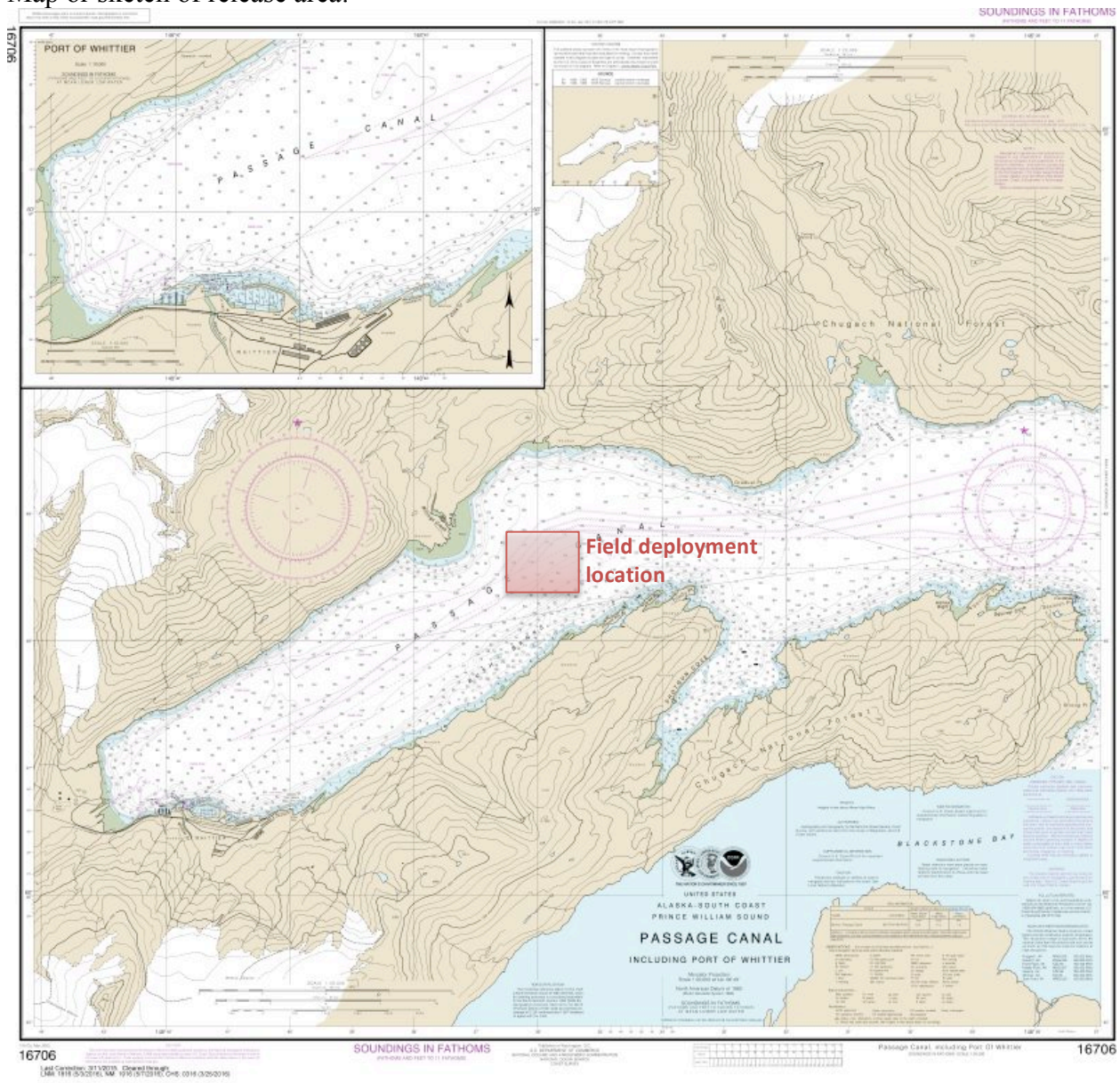
Organization	Equipment Type	Description (length, horsepower, spec capability)
Alaska Chadux	Response Vessel	*Chadux Responder – 38 ft vessel with oil skimming/recovery system*
	Workboat	*22 ft Chadux work boat*
PWSRCAC	Surrogates	Peat moss (up to 4 of 2.2 cubic foot bales) Pedigree brand dog food (one 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

Name of activity/proposed release: PWS Field Exercise – Whittier	
Date: September 21, 2016 (primary) September 22, 27 or 28 (backup)	
Lead organization: Prince William Sound Regional Citizens' Advisory Council	Other Organization(s) involved: • 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
Location of release: Whittier.	Jurisdictional authorities:
Type of waterbody: Fjord	Distance from nearest shoreline: To be determined
Material intended for release: • Dog food • Wood chips • Peat moss	Type of material ☐ Simulant ☒ Surrogate
Source of material: To be procured from local and commercial sources by PWSRCAC	Intended release volume: • 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

What is the purpose of this release?

- ☐ Research & Development
- ☐ Fate & Behavior Study
- ☒ Drill and/or Exercise

What are the study objectives?

1. Conduct a deployment in PWS that includes one or more oil surrogates to practice tracking and targeting oil slick for collection
2. Evaluate whether surrogate use enhances deployment

Have alternatives to simulant or surrogate release been considered?
No, because the objectives of the exercise are directly linked to use of surrogate
If so, explain.

How will simulant or surrogate release contribute to study objectives?
Two ways:

1. Surrogate release will provide a "target" for responders to practice equipment and tactics deployment
2. 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.

Identify any precursor work that is relevant to the proposed release.
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)

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

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.

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

What is the deployment method?

All surrogates will be deployed manually by PWSRCAC personnel from a support vessel.

What equipment is required for deployment, if applicable?

No special equipment required.

Justification for intended release volume:
The intended release volumes are as follows:

- 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

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.

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.

Describe any monitoring activities that are planned to track the volume released, its movement, and potential recovery?

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.

Particle Size	Recoverability of material	Degradability of material
☒ Large (1 cm or more)	☐ High	☐ High
☒ Medium (mm to 1 cm)	☒ Moderate	☒ Moderate
☐ Small (microns)	☒ Low	☒ Low

Describe primary plan for recovery, if applicable.

Materials that are contained within on-water recovery systems to be recovered by responders using nets and similar means, as safe and practicable.

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 of 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

Is material organic or synthetic? Peat moss and wood chips are organic. Dog food is synthetic, made up of both natural and synthetic ingredients.
Is material naturally present in the local environment? Wood chips are naturally present in the local environment. The others are not.
Cite published references on environmental or eco-toxicity, and provide documentation. 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. 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. 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.
Published information on human health effects. (e.g. SDS, toxicity assays, etc.) No known publications.
Describe receiving environment. (Type of water body, climate zone, water depth and sea conditions, etc.) 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. 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

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 45º 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.

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

TBD

APPENDIX F: SAFETY MESSAGE/PLAN

TBD

APPENDIX G: INCIDENT BRIEFING (ICS 201)

TBD

Evaluator Instructions

TBD

Appendix C: Dog Food Trial Documentation

PWS Surrogates Dog Food Trials

An informal bench-scale study was conducted by PWSRCAC Staff in July 2016 to evaluate four commercially available dog food brands for suitability for use in a planned September 2016 Oil Surrogate Exercise in Whittier.

Each brand of dog food (selected based on local availability and with an attempt to represent different price points, kibble size, and nutritional profiles) was evaluated in dry form, and then 1 cup of each brand placed in a 5-gallon bucket with seawater collected in Valdez. Qualitative observations were collected at 30-minute intervals for 8 hours. A 24-hour observation was collected at the conclusion of the study.

Observations are summarized in the tables below. The recommendation was to use the Pedigree Adult Total Nutrition brand during the Whittier field deployment, because of its visibility, lack of sheening, and multiple colors (making it potentially easier to visually detect and track).

Dog Food Information

Type / Brand	Purchase Location	Cost Information	Notes on dry food	Notes on when it initially hits water.	Does it Sheen?	Does it clump together or stay separate?	Tendancy to Breakdown?	Total Float Time?	Other notes
Iams	Costco	50 lb bag approx $45	Dime sized chunks about 1/4 inch thick and flatter looking. Firm and dry feeling. Brown color.		Yes, sheen developed after say hour 5	Staying separate		was sinkage by hour 24	
Pedigree Brand Adult complete nutirition	Costco	55lb bag approx $25-$30	just under dime sized chunks. Mostly brown, but also some greens, oranges, yellow/tan.	Staff liked the different colors and felt it would offer more visibility on the water.	Was cleanest water of group and no obvious scum on bucket sides	Staying separate	Held shape perhape well enough through hour 24	Minimal sinkage at hour 24	Multi-colored piecesd should offer better visibility.
Kirkland Adult	Costco	40lb bag approx $30?	most pellet like of three choices, brown in color		Seems to have most film associated with it.	Staying separate	Seems to be mushiest at hour 24 of the options		

Type / Brand	Purchase Location	Cost Information	Notes on dry food	Notes on when it initially hits water.	Does it Sheen?	Does it clump together or stay separate?	Tendancy to Breakdown?	Total Float Time?	Other notes
Taste of the Wild	???	??? Was on the pricier side of the price spectrum	Thinner flattish discs. Brown color.		yes, sheen developed about 4 hours in	Staying separate		was sinkage by hour 24	Had richest and meatiest smell of the group

Hourly Observations from Dog Food Trials

Time	General Comments	Iams	Pedigree	Kirkland	Taste of the Wild
9:00	No immediate sheen from ANY when they hit the water				
9:30					
10:00	Not all are 100% saturated yet	Densest feeling of bunch yet	most dirty filmy looking water, softest feeling texture of all, but still holding shape		
10:30			various colors have not faded or changed		
11:00		Water getting filmy		Water getting filmy	
11:30					
12:00	all are fully waterlogged, but still holding shape	took longest to fully waterlog		Scum on bucket sides forming	
1:00				most ragged looking of group, but still holding shape	Water getting filmy, scum on bucket sides
1:30					
2:00					
2:30		Scum developing on bucket sides			

Time	General Comments	Iams	Pedigree	Kirkland	Taste of the Wild
3:00					
3:30					
4:00	all still holding general shape and not breaking down			Most mushy feeling between group	
4:30					
5:00					
9am / 24 hours later	All generally holding shape, but likely to see things start breaking apart with wave energy or trying to scoop via fine mesh net.	Water in bucket was scummy, some sank	Colors generally faded, but still holdig shape, still floating, and water was cleanest of the bunch.	Water in bucket was scummy, some sank	Water in bucket was scummy, residual oil on bucket sides, some sank overnight

Pictures of dry food

Iams

Largest chunks among the group

Pedigree Adult Complete Nutrition

RCAC staff thought the different colors would help with visibility on the water. These colors didn not seem to fade/change with soaking

Kirkland Brand

Smallest size pellets of the group and tended to break down the fastest

Taste of the Wild

Unsure about actual ingredients, but this one smelled the most “meaty” and rich among the group.

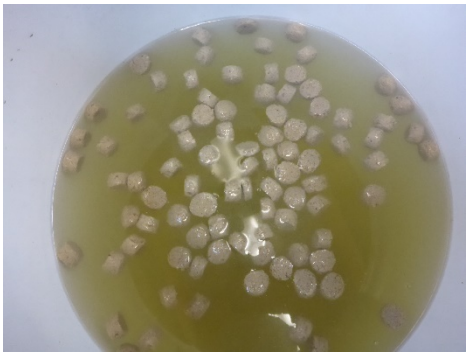
Pictures of wet food / at 24 hours into the soak

Iams

About half of the chunks sank through the evening. Those that remain floating are still holding their shape are semi-fragile. Colors have continued to fade some.

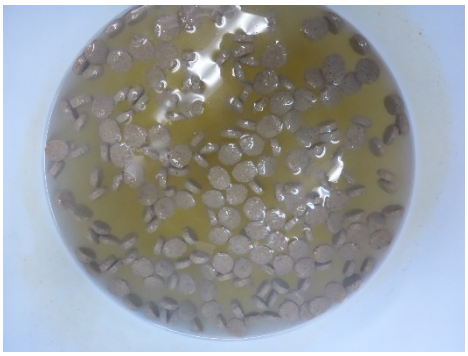
Pedigree Adult Complete Nutrition

Seems like majority is still floating. Colors have continue to fade. Texture is soft, but still holding its shape. Scooping things with a fine net might be enough to cause some of the chunks to break-apart. Water looks the least scummy of the group.



Kirkland Brand

Some sank through the evening. What remains floating is holding it's shape, but is the mushiest texture and most fragile of the group.



Taste of the Wild

Some of the chunks also sank through the evening. This food had the firmest texture of the group at hour 24.