



FINAL

Adak Restoration Advisory Board (RAB)

Meeting Minutes

September 30, 2019

Monday, 30 September 2019
5:00 PM Adak, Reeve's High School Conference Room
and via Teleconference

1. WELCOME AND INTRODUCTIONS

Mr. Peach called the meeting to order at 5 PM local time and, following roll call, welcomed attendees to the meeting.

The following persons were in attendance:

Name	Affiliation	Location
Carrie Plant	RAB Member (Community Co-Chair)	Adak, AK
Justin Peach	Navy Co-Chair*	Adak, AK
Esther Bennett	RAB Member	Adak, AK
Layton Lockett	RAB Member	Adak, AK
Tom Spitler	RAB Member	Adak, AK
Chris Cora	RAB Member (EPA)*	Seattle, WA
Chris Generous	NAVFAC NW	Silverdale, WA
Doug Schicho	APTIM	NJ
Elani Floyd	APTIM/MedExpress	Adak, AK
Greg Burgess	AECOM	Seattle, WA
JoAnn Grady	Grady and Associates	Ashland, OR
Jody Lipps	Battelle	Columbus, OH
Judo Garcia-Lata	NAVFAC NW	Silverdale, WA
Shawn Majors	Battelle	Adak, AK

*non-voting RAB member

Mr. Peach began the meeting confirming a quorum of the RAB membership was present (minimum 1/3 of RAB [i.e., 3 members]). A list of current RAB members is provided in Attachment A.

Mr. Peach asked the current RAB members to feel free to invite interested parties to consider joining the RAB.

Mr. Peach requested approval of the agenda. The agenda was approved by those present.

2. APPROVAL OF PRIOR MEETING MINUTES / REVIEW OF PRIOR ACTION ITEMS

Review and Approval of Prior Meeting Minutes

Draft minutes from the April 23, 2019 RAB Meeting were circulated to RAB members and interested parties on May 16, 2019 (electronic) and again on September 4, 2019 (electronic and hard copy).

Mr. Peach inquired if there were any edits to the meeting minutes. There were none. Mr. Peach asked whether a motion could be made to approve the minutes. Mr. Lockett motioned to approve the minutes. The motion was seconded by Mr. Spittletr. The RAB voted to approve the minutes.

Review of Actions Items

Mr. Peach reviewed the action items from the April 23, 2019 RAB meeting. Mr. Peach reported that the one action item from the April meeting was to add the Fish Plant to the IC Education Program. Specifically:

Outstanding Action Item from the April 2019 RAB Meeting:

Action Item 1: Mr. Peach is to add the fish plant to the IC education program. Mr. Peach said he will visit the fish plant tomorrow (April 24) and provide posters and a box of hiking maps. He will also take the informational DVD to them to watch (at Ms. Bennett's request).

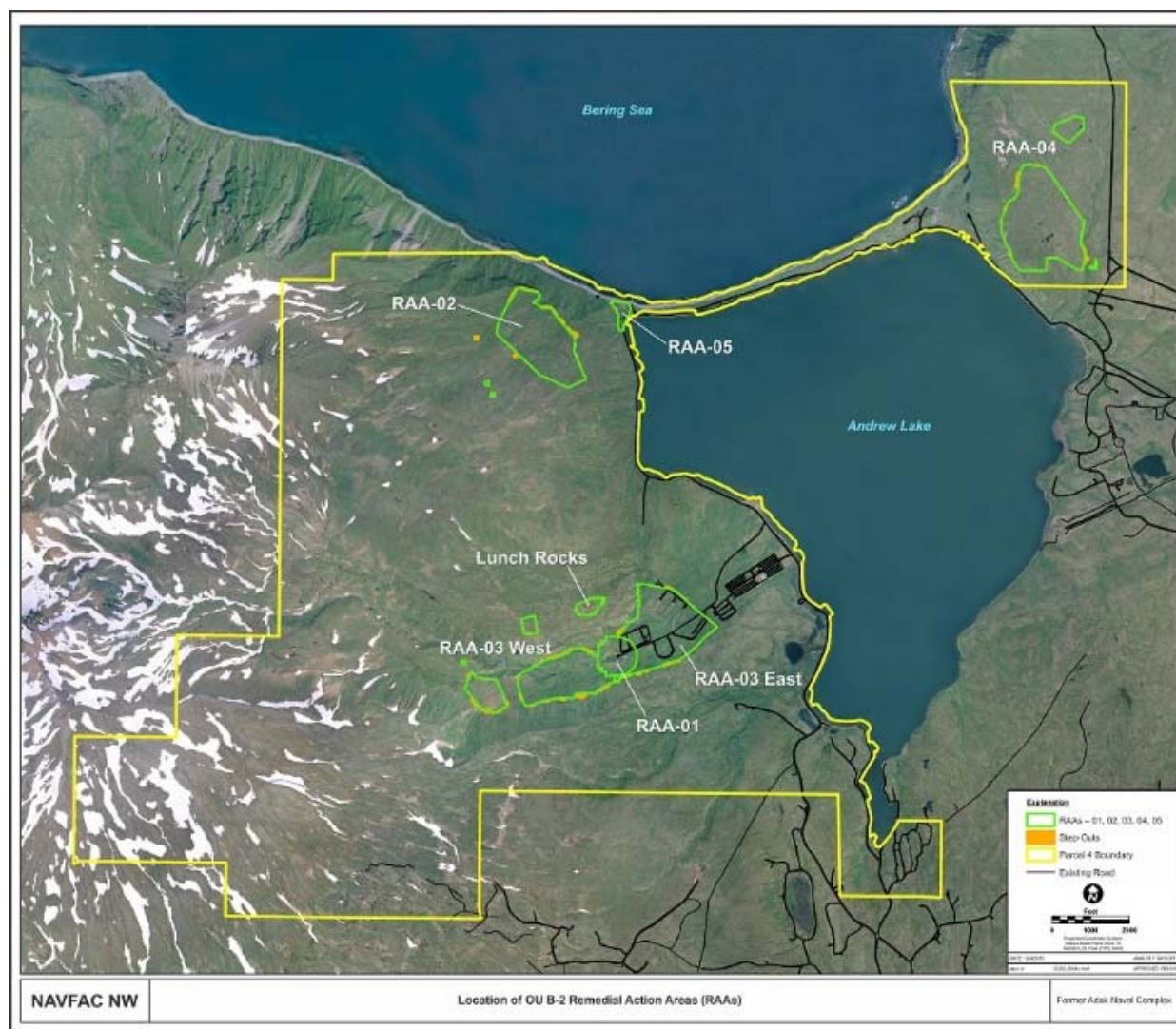
Status: Completed on April 24, the day after the RAB. Mr. Steve Skeehan made a follow-up visit on July 2 with additional materials provided.

Mr. Peach asked whether a motion could be made to close the Action Item. Mr. Lockett motioned to approve the minutes. The motion was seconded by Mr. Spitler. The RAB voted to approve the minutes.

3. MUNITIONS UPDATE

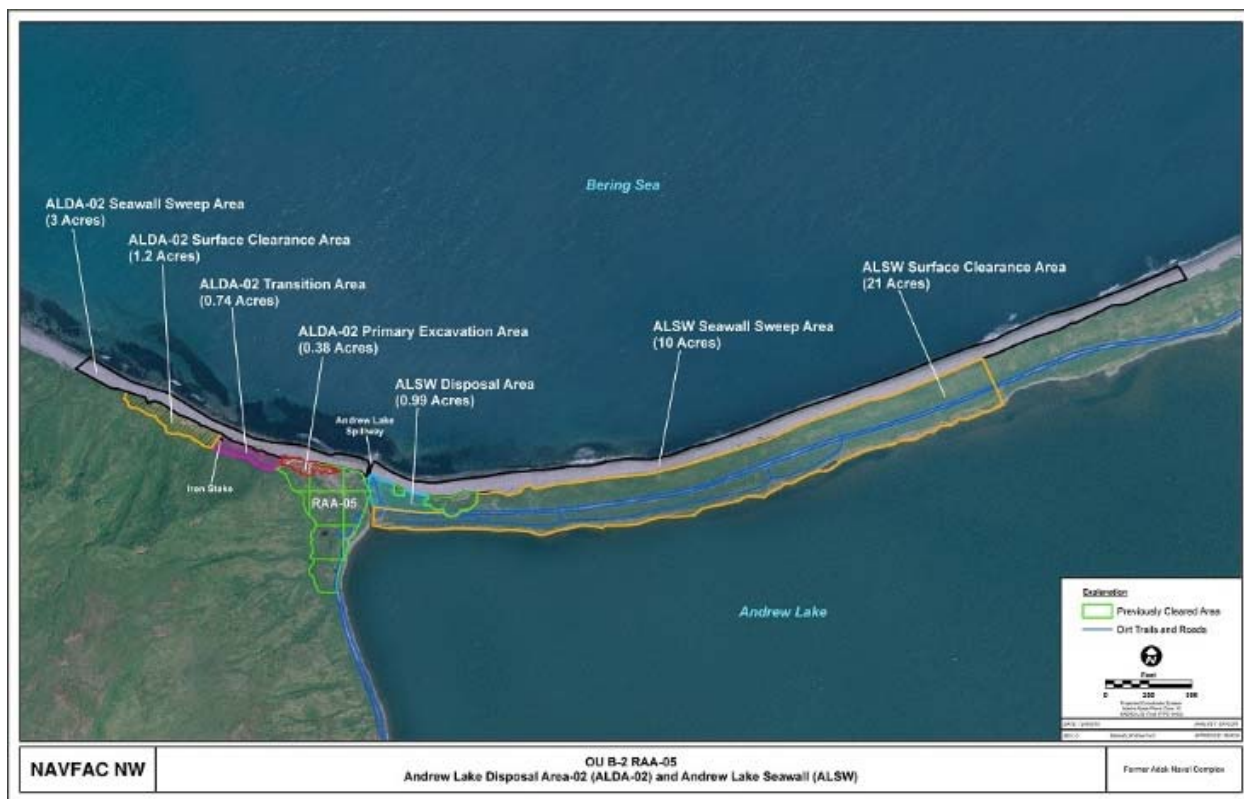
Mr. Peach provided an opening summary of the overall status of the munitions work in Parcel 4. The Non-Time Critical Removal Action (NTCRA) in Operable Unit B-2 (OU B-2) – Parcel 4 - began in 2013. Five Remedial Action Areas (RAAs -01 through -05)

were established and have been completed, however additional disposal areas were identified east and west on RAA-05.



2019 / 2020

Mr. Peach indicated that the current contractor, APTIM, has been active at the site since 2016 and that the Navy has been very pleased with the work they have accomplished. APTIM is midway through their current contract to continue work on the NTCRA through 2020. Work areas are shown on the graphic below.



2019/2020 – Task Order 4977

A summary presented by Mr. Doug Schicho, APTIM Project Manager. See Attachment B.

Mr. Schicho discussed the overall work areas (shown on the map above) and the associated acreages associated with each, then in specifics, the type of work and the challenges and accomplishments associated with each area.

All of the areas designated for surface clearance are 100% complete. The excavation at ALSW is approximately 90% complete.

The excavation at ALDA-02 was halted at 69% when a 500 pound bomb was encountered in August. The size of the bomb, larger than anything found on Adak to date, meant that excavation had to be stopped since the means of excavating, with an operator in an armored cab, would not be adequate to ensure the safety of the operator in the event of a catastrophic event. APTIM and the Navy are working together to rescope the work and how it can continue next year.

Mr. Schicho summarized munitions and debris removal, which is summarized at a higher level in the table below.

More information is discussed in detail in the attached presentation (Attachment B).

Mr. Peach added that a second 500 pound bomb was discovered on September 14 in the ALDA-02 area west of RAA-05. The Navy is just beginning to evaluate the impact of the second 500 pound bomb to the efforts to remediate the area and will present the results at the spring RAB meeting.

Mr. Peach summarized recoveries through the 2019 field season. The results are presented in the table below.

	2013	2014	2015	2016	2017	2018	2019	Total
MPPEH/ MEC¹ (items)	2,656	514	2,214	984	2,435	8,040	1,849	18,692
Muni- tions Debris (lbs)	22,084	22,250	10,495	7,733	23,387	18,356	30,422	134,727
Metal Debris (lbs)	80,316	22,850	24,633	62,998	45,401	25,040	59,765	321,003

Note 1: MPPEH is material potentially presenting an explosive hazard, MEC is munition and explosive of concern and could include discarded military munitions (DMM), and unexploded ordnance (UXO)

Seawall Sweeps

Results of Monthly Seawall Sweeps - 2013 through 2019

2013 Total		33
2014 Total		10
2015 Total		29
2016 Total		13
2017 Total		4
2018 Total		7
2019 Total		
April 18 (ALSW)	Projectile, 20mm, HE, Model Unknown (In one cluster)	7
April 22 (ALDA-02)	Mortar, 81mm, HE, Model Unknown	1
	Rocket, Warhead, 5-Inch, Model Unknown	1
	Flare, Model Unknown	1
May 6	Projectile, 40mm, APT, Model Unknown	1
	Projectile, 20mm, HE, Model Unknown (In one cluster)	4

June 27	Mortar, 60mm, HE, Model Unknown	1
July 27	Mortar, 81mm, HE, M43A1	1
August 24	No Recoveries	0
September 12	No Recoveries	0
2019 Total		17
Overall Total		113

Notes:

APT = Armor piercing tracer

HE = High explosive

Mr. Peach commented that the Navy has been tracking the annual recoveries and had anticipated a decreasing trend in seawall recoveries as the shoreline dump areas were removed. Although the number increased in 2019, two of the recoveries were in conglomerated clusters, and if those are viewed as single items (they were single blocks when found), then the model of decreasing finds is still valid.

EOD Mobile Unit 11

Mr. Peach indicated that EOD MU 11 Det from Whidbey Island NAS visited Adak in May and August 2019. Their scope included checking the Finger Bay shoreline for cartridge activated devices (CADs), a seawall sweep, and opening the spillway.

Other options are being considered for spring 2020 and will be discussed and approved by the USFWS and the City of Adak prior to being implemented.

4. FOURTH FIVE-YEAR REVIEW

Mr. Peach introduced the topic of the fourth five-year review which was completed in December 2016. Mr. Peach indicated that all requirements of the five-year review had been met, but that additional work requiring action had been identified at two of the four sites.

A. Collect vapor intrusion (VI) data to evaluate potential risks in the housing area

Completed. Closure summarized during April 2019 RAB.

B. Impacts of water level increases in Andrew Lake

Completed. Closure summarized during April 2019 RAB.

C. Per- and polyfluoroalkyl substances [PFAS]) sampling surface soil and groundwater

Sampling for the PFAS compounds in the soil and groundwater at Solid Waste Management Units (SWMUs) 16, 32, and 33 (the former Fire Fighting Training Areas) was conducted in August 2018. One or more PFAS compounds were detected over action levels in 7 of 7 groundwater samples and 2 of 4 soil samples.

A site investigation is being developed for the summer of 2020. The work will include:

- Define extent of impact
- Additional soil and groundwater sample collection
- Well point installation in case additional samples are required in the future

Mr. Peach indicated that the scope will be complete before the next RAB Meeting and will be reviewed with the RAB at that time.

D. East Canal

Completed the aspects required by the Five Year Review.

1. Removal action at East Canal, SWMU 62
2. Removal action at East Canal, T-1451
 - Excavation completed in 2016
 - Soil off-site in 2017
 - Closure Report completed by APTIM in April 2018

5.0 PETROLEUM UPDATE

Mx. Garcia-Lata began the petroleum update by introducing himself and thanking the RAB for their participation. He asked Mr. Greg Burgess of AECOM to summarize the work performed this year at Solid Waste Management Unit (SWMU) 60.

A. SWMU 60: Remedy Design

Mr. Burgess presented that SWMU 60 is located at the bend in Sweeper Creek as it moves east towards Sweeper Cove. At present, the remedy that is in place as stated in the OU A Record of Decision is monitored natural attenuation (MNA) of petroleum in the groundwater at the site and institutional controls (ICs). At present, booms are being used to control the sheen that is visible in surface water. The groundwater is monitored for free product six times a year as part of the Navy Free Product Recovery Program.

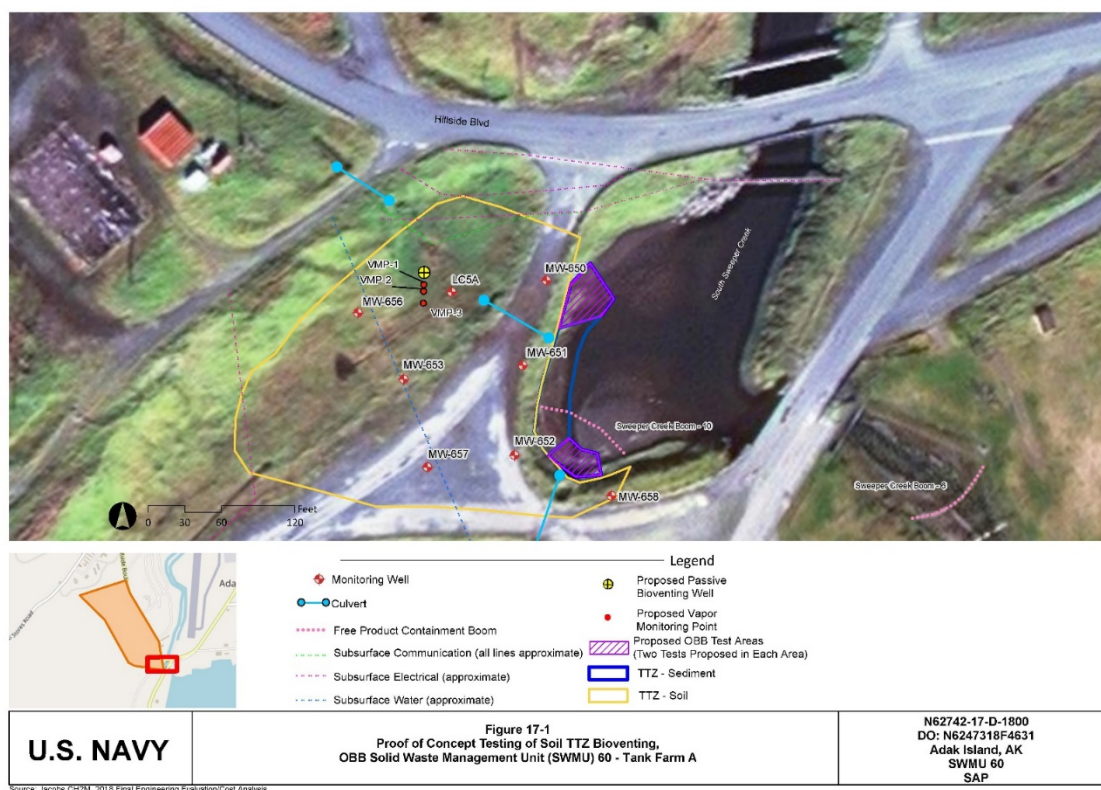
In April 2018 an Engineering Evaluation/Cost Analysis (EE/CA) was finalized, and identified a preferred remedy enhancement alternative applying an oleophilic

bio barrier (OBB) along the shoreline to mitigate sheen to surface water, wind-assisted bioventing adjacent to the roadway to stimulate biodegradation of petroleum products, and continued monitoring of natural attenuation.

- Proof-of-concept testing was conducted at SWMU 60 for the OBB and bioventing technologies July and August 2019. Following the testing period (30-60 days), the collected data will be evaluated to determine if wind-assisted passive bioventing and oleophilic bio-barrier are viable technologies and full-scale remedy design can proceed.

The work included:

- Installation of one wind-assisted bioventing well and three vadose zone monitoring points at a location with the highest known concentrations of contaminants in soil upgradient from South Sweeper Creek.
- Installation four 3-square-foot OBB test areas at locations with the highest known concentrations of contaminants in sediments at South Sweeper Creek.
- See the graphic below



The data collected during field evaluation is currently being analyzed. A report will be ready prior to the next RAB meeting that summarizes the results of the Proof of Concept testing.

Attachment C presents a detailed summary of the work performed.

B. OU A / OU B-1 / SAERA Closure Evaluation

Mx. Garcia-Lata indicated that some work associated with East Canal Petroleum was performed with the Five Year Review. However, there is more work remaining to be done. Surface water and soil impact and liquid phase hydrocarbon (free-product) remain.

The Navy completed a Conceptual Site Model for Light Non-Aqueous Phase Liquid and Dissolved Petroleum Constituents Report with the goal of creating a top down view of all of the impact in the area, irrespective of traditional site boundaries. The report was summarized during the April 2019 RAB and was finalized in May 2019.

CSM FOR LNAPL AND DISSOLVED PETROLEUM CONSTITUENTS
EAST CANAL, FORMER ADNAVAL COMPLEX
Naval Facilities Engineering Command Northwest

Revision No. 0
Date: December 2018



Figure 1-3. Key Features of the East Canal and Associated Petroleum Sites

The Navy has just awarded a scope of work to AECOM (who did the SWMU 60 work) to review all of the sites included in the CERCLA Records of Decision (RODs) for Operable Unit (OU) A and OU B-1, as well as the State Adak Environmental Restoration Agreement (SAERA). Closure goals, and the methods established to attain closure, for every site will be evaluated to determine where adjustments may be recommended, and confirm reasonable

timelines to closure. Areas will be prioritized for investigation and remediation with the idea of accelerating closure in the East Canal area.

An additional outcome of this evaluation will be to inform the input for the Fifth Five Year review, which will be finalized in 2021. The Fifth Five Year Review is expected to have action items with timelines based on this 2020 evaluation.

C. Free Product Recovery Program

Mx. Garcia-Lata reported that Sealaska Environmental, the Navy contractor working on the Free Product Recovery Program, has visited the island every month to inspect and maintain the boom on the surface water where free product sheen is present. As part of the program, Sealaska also monitors wells for free product six times a year, at six sites. The sites monitored include SWMU 60 (Tank Farm A), SWMU 62 (New Housing Fuel Leak), NMCB (Building T-14-16 Expanded Area), SA 80 (Steam Plant 4), South of Runway 18/36, and at Former Power Plant Building T-1451. Mx. Garcia-Lata noted that the field work associated with the current task order ends in September 2019. Field work associated with the next years task order will be performed from October 2019 through September 2020.

Mx. Garcia-Lata reviewed the free product amounts that were recovered during the previous 12 months field effort. Approximately 12.66 gallons have been recovered for 6 events, from October 2018 to August 2019, with annual recovery volumes generally decreasing over time.

Recovery volumes from previous 12-month periods and the current period to date:

Past 12-Month Recovery Periods	Total Product Recovered (gallons)
October 2014 to September 2015	66.5
October 2015 to September 2016	37.7
October 2016 to September 2017	11
October 2017 to September 2018	8.2
October 2018 to August 2019	12.7

6. LONG-TERM MONITORING UPDATE (LTM) AND INSTITUTIONAL CONTROLS (ICs)

A. Dig Permits

The Navy has processed four dig permits since the last RAB Meeting. The permits were forwarded to Mr. Lockett per Action Item 1 from the October 2016 RAB Meeting. As always, the Navy would like to thank the groups that have submitted the dig permits.

Date	Party	Purpose
April 5, 2019	City of Adak	Excavation of a Water Line
May 28, 2019	Adak Eagle Enterprises	Construction of a new building
June 14, 2019	AECOM	SWMU 60 Investigation and Testing
September 17, 2019	Adak Eagle Enterprises	Fiber Optic cable in the area of Building 213A

B. Marine Monitoring

Mx. Garcia-Lata reported that the next marine monitoring event is scheduled for 2020.

C. Comprehensive Monitoring Plan Update

Mx. Garcia-Lata reported that the next CMP, which will be Revision 8, is in process and will be finalized before the fall 2020 groundwater, surface water, and sediment sampling.

D. Institutional Control (IC) Materials

The following IC materials have been distributed:

Material Type	April & June 2019	April & July 2019	April 2019	April & August 2019	April & August 2019	August 2019	August 2019
	City Hall	Fish Plant	Great Sitkin	Airport	Aleutian Outfitters	School	Aleut Real Estate
Hiking Trail Maps	1 box	2 boxes	2 boxes	6 boxes	2 boxes		
Coloring Books					30	32	20
Large Magnets					30		
Posters - Laminated Map		2					

DVDs - Airport Message	12	4			20		
DVDs – Young People		4			20		
Laminated Fish Consumption Advisories		1					

Mr. Peach indicated that he will continue to send quarterly updates and thanked the RAB for the recent input to include Aleutian Outfitters, the Fish Plant, and the Adak Lodge. As always, if anyone needs anything during the period between quarterly updates, please let Mr. Peach know.

Mr. Peach indicated that more materials will be ordered in the coming year. People are not requesting bookmarks, small magnets, or general posters. Mr. Peach suggested re-upping with the items listed above that are requested, but requested RAB input.

The RAB agreed that more maps should be ordered. Discussion on whether the coloring books should be ordered followed.

Action Item One: Mr. Peach will review with the RAB members participating in the discussion as to whether the coloring books should be re-ordered.

Proposed for Closure: Mr. Peach contacted the RAB members who participated in the discussion on 1 October (the day after the RAB Meeting) and all parties agreed that ordering the coloring books so they are available to people who want them is appropriate.

E. Institutional Control Repairs and Inspections

Mr. Peach summarized the IC Repairs accomplished this year and planned for next year. As with the previous several years, APTIM has been contracted to complete the IC Repairs:

2019 – Roadway and sinkhole at Palisades Landfill, roadway and sinkhole repair at Finger Bay Landfill, swale repair at White Alice Landfill.

Mr. Peach indicated that Sealaska had completed their IC inspection task for 2019 and had identified 12 locations where signs had to be replaced, installed, or rehung. APTIM accomplished this work in September.

Mr. Peach also indicated that 2020 will be a big year for IC Repairs and as such, planning for the restoration work at Davis Road Landfill and Metals Landfill has also been awarded this year.

2020 – Removal of fencing at Parcel 4, and currently pending, Davis Road Landfill repairs and Metals Landfill repairs.

Mr. Peach indicated that the work Tetra Tech did on Metals Landfill in 2010 and 2015 was very good and in both cases, lasted 5 years. APTIM will do the work in 2020, and the Navy is certainly hopeful for 5 (or more) years from their efforts next year.

The work at the Davis Road Landfill, just south of the Rec Center, is to armor the lake face of that landfill so that, should the spillway no longer be opened and the lake level rise, the landfilled materials - and the lake – would remain protected. Mr. Peach went on to caution that the lake level would be unlikely to rise to the level of the landfill, but the wave action would encounter the landfill face, as it did in 2009, and expose debris.

Mr. Peach went on to add that the Navy expects to add swale repairs to the 2020 scope once the degree of erosion from the coming winter is established.

Beyond identifying physical repairs needed, Sealaska performed their overall evaluation of the effectiveness of ICs. Their report is expected to be final in May 2020.

Their scope included:

- Inspection of the Downtown Area for evidence of domestic well use or installation;
 - Review of IC excavation notifications on file with the Navy and the City of Adak that were processed between October 2018 and September 2019;
 - Inspection of the operation of the UXO Awareness videos at the school and airport; and
- Interview of on-island personnel regarding the Institutional Control Educational Awareness Program.

F. Ground Water / Surface Water / Soil Sampling

Mx. Garcia-Lata reported that the 2019 Monitoring event consisted of collecting groundwater, sediment, and surface water data at 4 sites this year: Area 303/GCI Compound, Former Power Plant, Building T-1451, and SWMU 62, Eagle Bay. Sealaska was on island for 3 weeks in August and September to perform this work (with the IC inspections and free-product recovery).

The work consisted of:

- . Sample at 4 Sites
- . 49 well inspections/monitoring
- . 38 groundwater samples (6 wells had product greater than or equal to 0.02' and were not sampled). This does not include QC samples like field duplicates, MS/MSD, etc.
- . 1 surface water sample
- . 2 sediment samples
- . 3 shoreline inspections
- . ICs - 65 sites inspected

7. INFORMATION REPOSITORY UPDATE

Mx. Garcia-Lata indicated that the last year of updates to the Repository are included in the meeting materials.

In December 2018, the following documents were added to the Adak Information Repository at City Hall.

- A. 2017 Annual Ground Water and Landfill Annual Monitoring Report
- B. 2017 Annual Free Product Recovery Summary Report
- C. 2018 SWMU 60 Engineering Evaluation Cost Analysis (EECA)
- D. 2018 Explanation of Significant Differences (ESD)
- E. 2018 Explanation of Significant Differences (ESD) Fact Sheet
- F. 2018 Comprehensive Monitoring Plan (CMP) Rev 7
- G. 2018 Institutional Controls Effectiveness Technical Memorandum
- H. 2018 Lake Andrew Inundation Model Technical Memorandum

In May 2019, the following documents will be added:

- A. 2018 Free Product Recovery Summary Report
- B. 2018 OU B-2 NTCRA Completion Report
- C. 2018 OU B-2 NTCRA Quality Assurance Surveillance Report (QSR)
- D. 2018 Long Term Monitoring (LTM) / Institutional Controls (ICs) Report
- E. 2019 Vapor Intrusion (VI) Tech Memo

Mx. Garcia-Lata indicated that there are not currently enough materials finalized to perform a repository update. There is currently one document in the queue: May 2019 Conceptual Site Model for Light Non-Aqueous Phase Liquid and Dissolved Petroleum Constituents Report. Therefore, the Navy is not planning on another update until approximately December 2019.

8. COMMUNITY REPORT

Mr. Lockett outlined a change to the Dig Permit process that the City of Adak is considering. The goal is to make it more like the (nearly) state-wide 811 (e.g. Call Before You Dig / DigSafe) program. The general idea is a central location for requests to come in, and then each entity would participate in the notification; whether it is the City, TAC, Alaska DOT, etc., for utilities and other features or the Navy for Institutional Controls and environmental and munitions concerns.

Mr. Peach added that he thought it was a great idea, as the Navy is commonly asked about utility clearances during preparation of the Navy dig permits.

9. REVIEW OF NEW ACTION ITEMS

One new action item was established during the RAB Meeting.

Action Item One: Mr. Peach will review with the RAB members participating in the discussion as to whether the coloring books should be re-ordered.

Proposed for Closure: Mr. Peach contacted the RAB members who participated in the discussion on 1 October (the day after the RAB Meeting) and all parties agreed that ordering the coloring books so they are available to people who want them is appropriate.

10. NEXT RAB MEETING

The RAB decided on Monday, April 20, 2020 at 5 PM Adak time for the next RAB Meeting.

Mr. Peach asked whether a motion could be made to accept the proposed RAB Meeting date and time. Mr. Lockett motioned to approve the minutes. The motion was seconded by Ms. Bennett. The RAB voted to approve the proposed meeting date and time.

11. ADJOURN

The RAB adjourned the meeting at 6 PM local time.

Attachment A

Current RAB Membership
September 2019

Name	Affiliation	Location	Voting Member
Carrie Plant	RAB member (Community Co-Chair)	Adak, AK	1
April Smiloff	RAB member	Adak, AK	2
Elaine Smiloff	RAB member	Adak, AK	3
Esther Bennett	RAB member	Adak, AK	4
Jack Stewart	RAB member	Adak, AK	5
Kim Turnbull (Mik)	RAB member	Adak, AK	6
Layton Lockett	RAB member	Adak, AK	7
Melvin Smith	RAB member	Anchorage, AK	8
Tom Spitler	RAB member	Adak, AK	9
Chris Cora	RAB member (EPA)*	Seattle, WA	
Darren Mulkey	RAB member (ADEC)*	Anchorage, AK	
Justin Peach	RAB member (Navy Co-Chair)*	Silverdale, WA	

* Non-voting member

A quorum to take action will consist of 1/3 of the RAB members.

Action items will be reviewed and approved by a 2/3 vote of RAB members participating in the meeting.

Additional members may be added to the RAB by a quorum present and a 2/3-majority vote of present RAB member.

**Attachment B
Munitions**

ADAK MMRP PROJECT UPDATE

CTO-4977 – 2019 Results and 2020 Path Forward

Presentation to the Adak Restoration Advisory Board – September 30, 2019

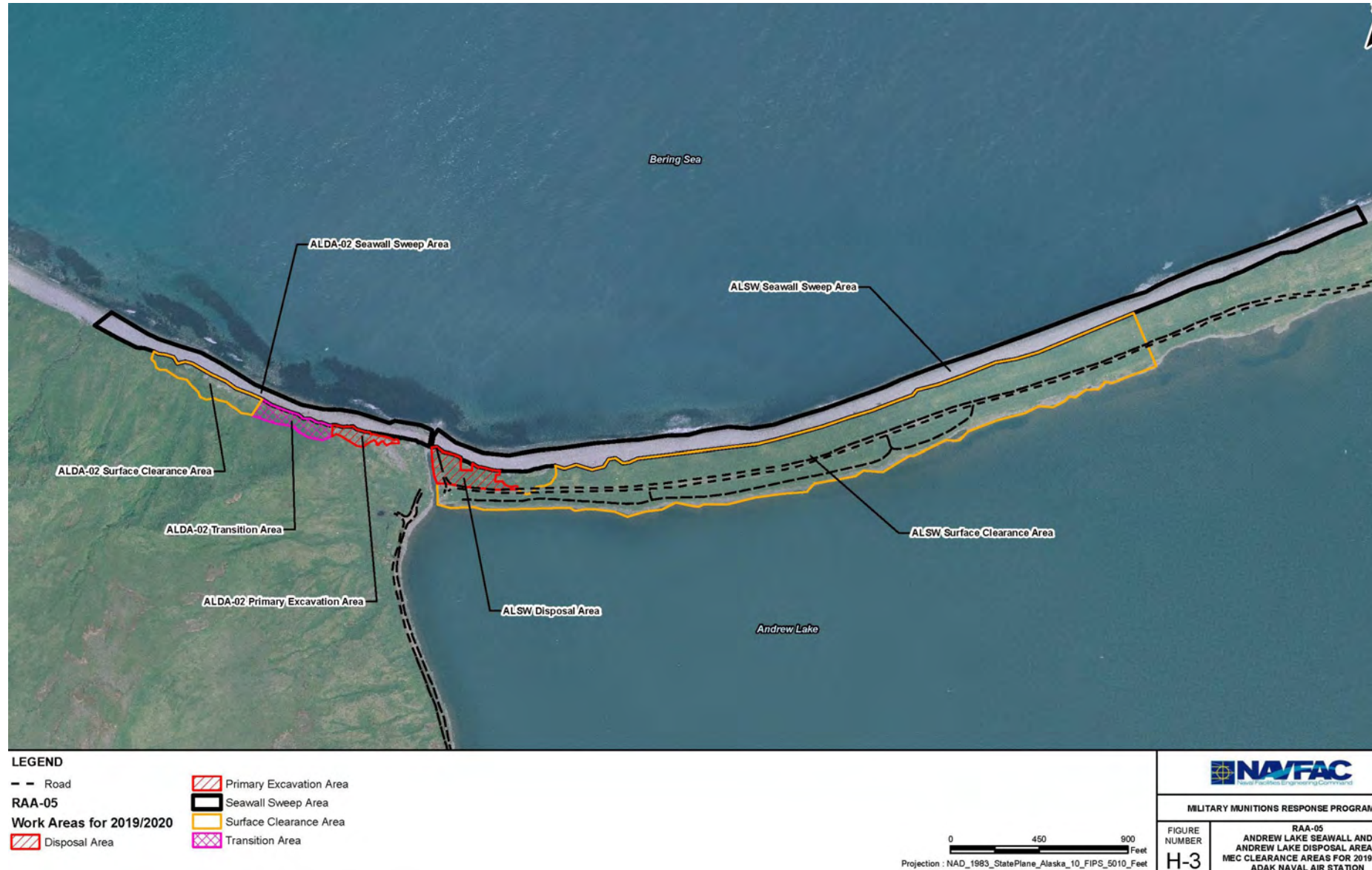


PRESENTATION OBJECTIVE

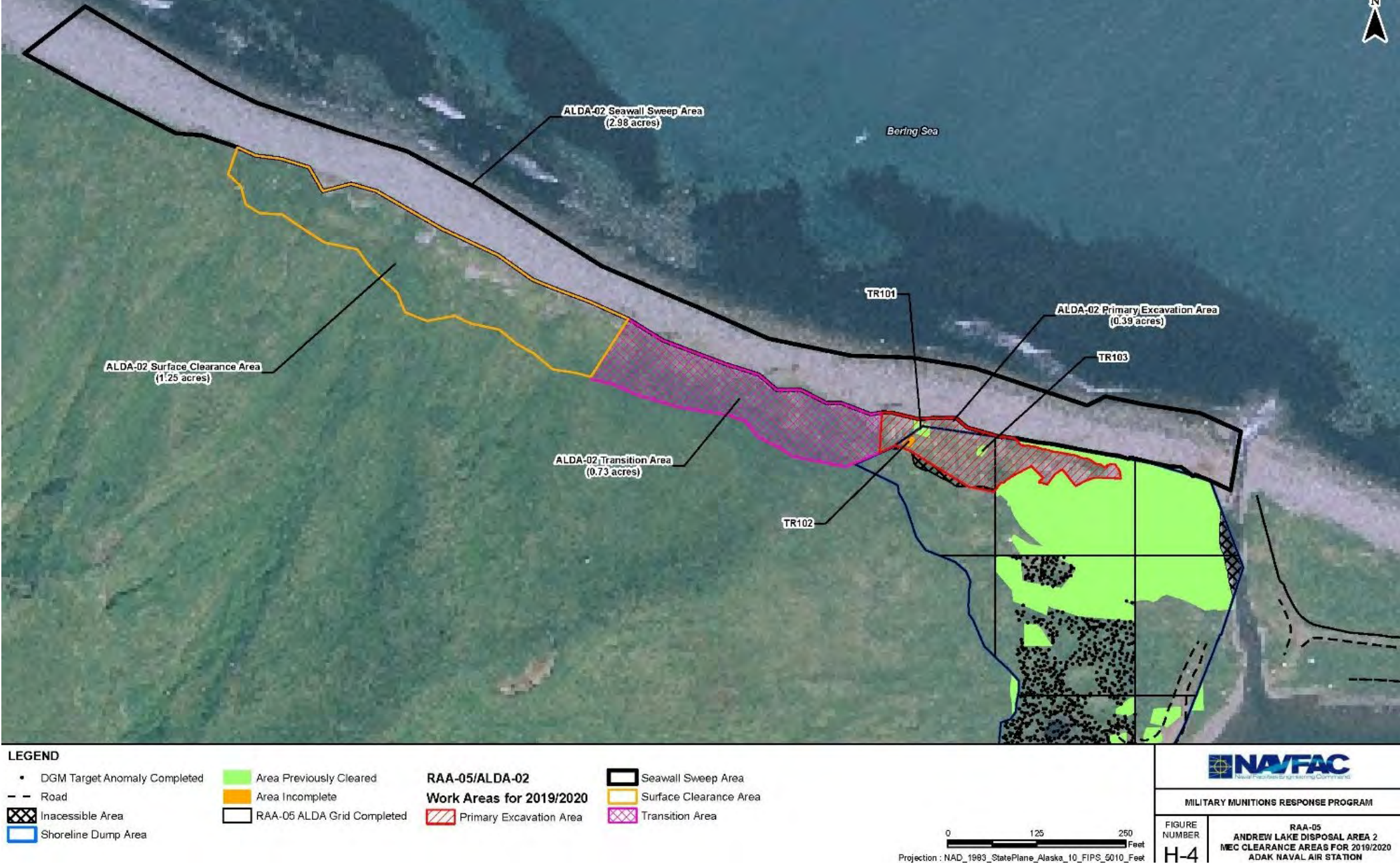
- ▶ Brief all stakeholders on MMRP work status
 - > Summarize what has been completed in 2019
 - > Discuss work scope for next season
 - > Discuss the 2020 staffing level and schedule



2019 AND 2020 WORK SITES



RAA-05 ALDA-02 WORK AREAS



RAA-05 ALSW WORK AREAS



2019 WORK COMPLETED

Acreage Completed

Site	Planned Excavation Area (acres)	Completed Percentage*	Planned Transition Area (acres)	Completed Acres and Percentage*	Planned Surface Clearance Area (acres)	Completed Acres and Percentage*
RAA-05 ALDA-02	0.39	69%	0.73	0%	1.26	16%
RAA-05 ALSW	1.00	84%	0	0%	20.94	81%

* - Completion Percentages Reported through August 31, 2019

Munitions and Metallic Scrap Removed

	Total Completed	MPPEH (each)	MEC (each)	MDAS (lbs.)	Other Debris (lbs.)
2019 Totals		412	1,320	26,086	43,032



CTO-4977 ALDA-02 FINDINGS

- ▶ Deep burial trenches with a significant number of MEC items
- ▶ 500 lb., general purpose bomb, AN-M64
 - Largest live munition encountered on Adak to date



ENCOUNTER OF 500 POUND BOMB – PROJECT IMPACT

- ▶ This item is larger than any MEC item anticipated in our explosive safety submission.
 - > The explosive safety submission had to be amended and resubmitted so work could continue
- ▶ This item is larger than can be safely mechanically excavated with an armored excavator in the manner APTIM has been excavating since 2016
- ▶ APTIM will plan the work to use robotic excavators so the excavations in ALDA-02 can be safely completed in 2020



CTO-4977 ALSW FINDINGS

- ▶ Shallower burial trenches with fewer MEC items



- ▶ Surface Clearance difficult due to thick vegetation



CTO-4977 SEAWALL SWEEP FINDINGS

- ▶ Five Monthly Seawall sweeps performed
- ▶ At least one item found in each month except August
- ▶ Total of 17 items



CTO-4977 SEAWALL SWEEP FINDINGS (CONTINUED)



REMAINING CTO-4977 PROJECT SCOPE

- ▶ Excavation and clearance of ALDA-02 Primary Excavation Area and completion of ALSW Disposal Area
- ▶ Completion of remaining surface clearance
- ▶ Clearance of transition area by either excavation or surface clearance (dependent on investigatory findings)
- ▶ Monthly seawall sweeps
- ▶ Potential for step outs
- ▶ Option for culvert and road removal to reduce access to RAAs
- ▶ Reporting



CTO-4977 PROJECT STATUS

- ▶ Plan to demobilize in late September 2019
- ▶ Remobilize in March 2020
 - > Duration of season in 2020 will be dependent on findings and amount of MEC found in transition area
 - Maximum staffing will be approximately 24
- ▶ Completion of reports in fall of 2020



QUESTIONS

Justin Peach

Senior Project Manager - Adak

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360-535-4594

Douglas Schicho

Project Manager

Aptim

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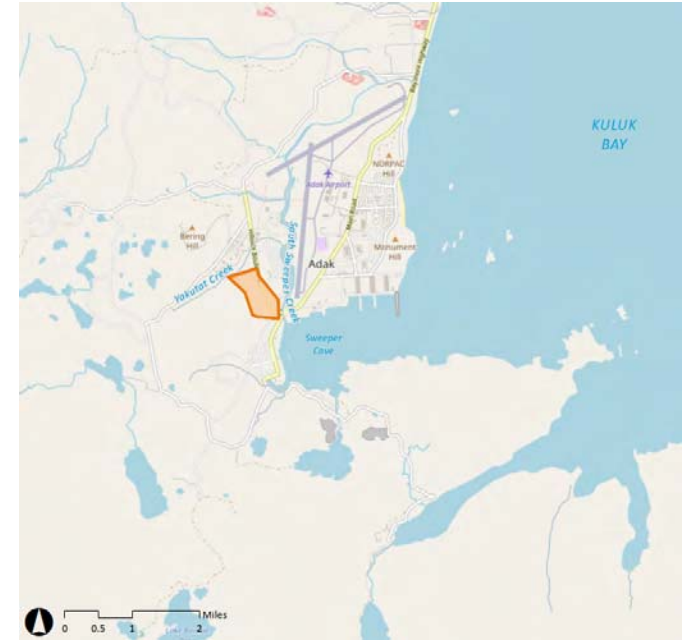
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Expect the Extraordinary.

**Attachment C
SWMU 60**



Tank Farm A SWMU 60 Proof of Concept Testing

Adak Island Alaska

Proof of Concept Testing for: Wind-Driven Passive Bioventing:

- Intent is to reduce petroleum hydrocarbons in soil and prevent migration to nearby South Sweeper Creek
- Wind blows air into the subsurface through a wind vane on top of the biovent well
- This pushes oxygen-rich air into the subsurface
- Oxygen stimulates and establishes petroleum consuming microorganisms
- Test well and vapor monitoring probes Installed within target treatment zone (TTZ) at location where groundwater was at least 5 ft deep and sheen was observed

Oliophyllic Bio-Barrier:

- Intent to the prevent migration of petroleum hydrocarbons on groundwater surface to nearby South Sweeper Creek
- 3' by 3' Square material to catch petroleum
- Microorganisms grow on it and consume the petroleum
- Placed where impacted sediment was identified



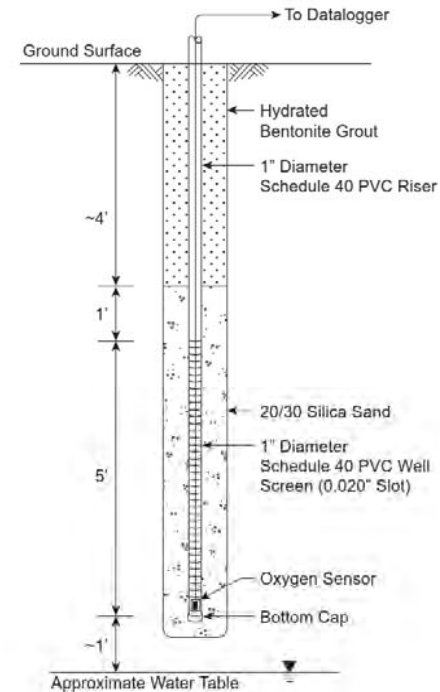
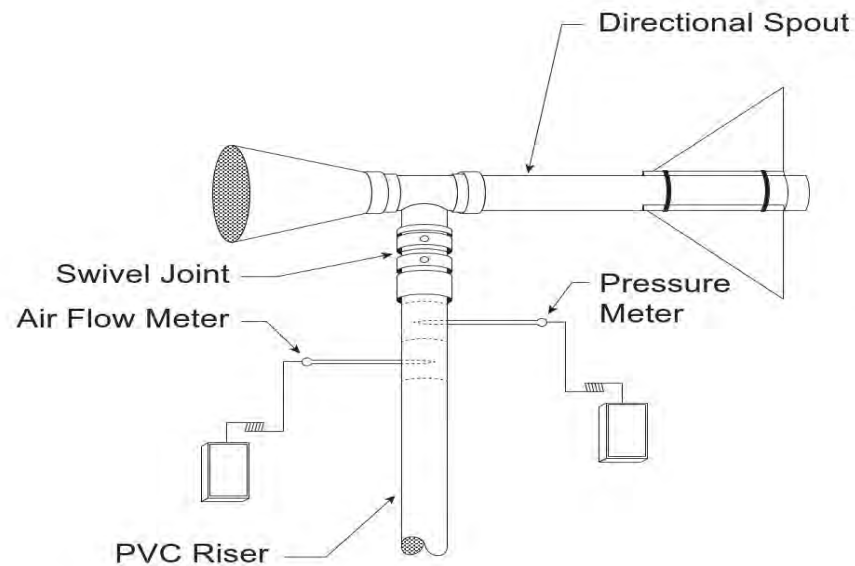
Work Accomplished Summer 2019

- Proof-of-concept testing completed
- Wind-driven passive bioventing test completed August 2019
 - One Bio-vent well and three vapor monitoring points (VMP) installed July 2019
 - Baseline and post proof of concept testing, soil sampling occurred July and August 2019
 - Biovent well and VMPs abandoned August 2019
- OBB testing conducted July to August 2019
 - Four OBB squares installed July 2019
 - Baseline and post proof of concept testing, sediment, sand and OBB sampling occurred July and August 2019
 - OBB squares abandoned August 2019

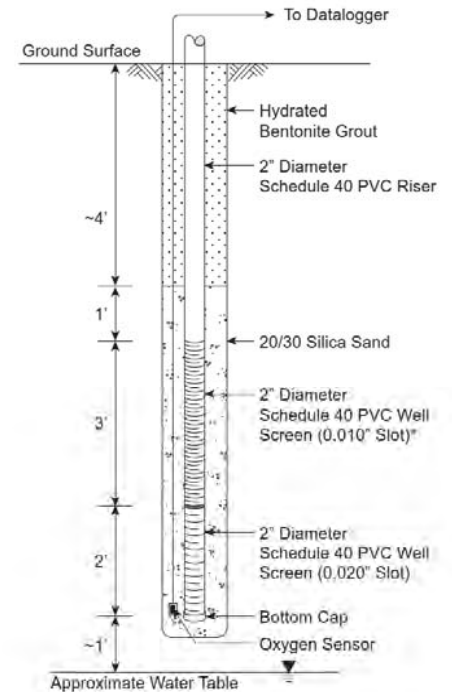


BV Well and VMP Schematics

- Directional spout directs air into the subsurface
- Air enters subsurface through well screen
- Low air flow rates provide enough oxygen to sustain microbial activity



Vapor Monitoring Point
Schematic



Bioventing Well
Schematic

Biovent Well and Vapor Monitoring Points

Installed Biovent Well and Vapor Monitoring Points

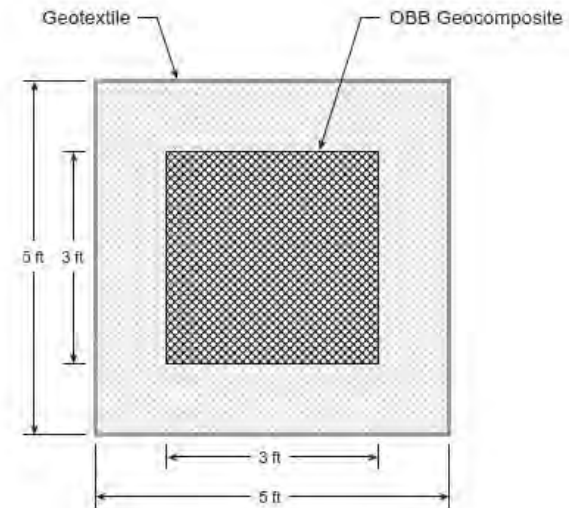


Installed Vapor Monitoring Point

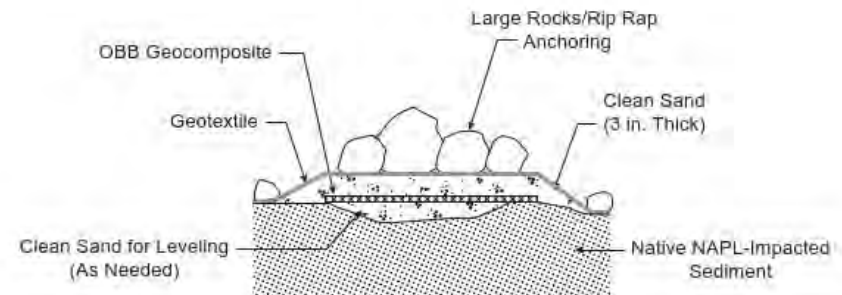


OBB Schematic

- Sand leveling layer placed to minimize surface irregularities
- Clean sand layer covers OBB and this is wrapped in geotextile
- Larger rocks (rip rap) used as anchoring so OBB layer stays in place
- LNAPL absorbs onto fabric as tides change
- Surface water provides oxygen
- Captured product is consumed by microorganisms



Plan View



Cross Section

OBB Site Photos

OBB prior to geotextile and anchor rock placement



Installed OBB



Preliminary Results

- Bio-vent Well
 - Based on increasing oxygen and visual field observations Bioventing well was capable of providing oxygen into the vadose zone.
 - Data is still being analyzed to evaluate the applicability of Bioventing wells as a suitable technology for the site
 - Awaiting results of soil sample analyses
- OBB
 - Based on visual observations OBB was capable of capturing impacted water at the site
 - Awaiting results of microorganism growth evaluation
 - Awaiting results of sediment and sand analyses
- Technical Memorandum presenting results due by end of year