NAS KEY WEST RESTORATION ADVISORY BOARD

20 JULY 2016 MEETING SUMMARY

LOCATION: Florida Keys Eco-Discovery Center, Key West, Florida

RESTORATION ADVISORY BOARD MEMBERS

Ron Demes	NAS Key West, Community Co-Chair	305-293-2886 Ron.Demes@navy.mil
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* Absent

OTHER PARTICIPANTS/COMMUNITY ATTENDEES

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These minutes are a summary based on informal notes taken at the meeting. They are not intended as a verbatim transcript and may not have captured everything that was discussed.

LOCATION: Florida Keys Eco-Discovery Center, Key West, Florida

John McMahon	Key West Resident	
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WELCOME AND INTRODUCTIONS

Ron Demes brought the meeting to order at 6:00 PM with the Pledge of Allegiance. It was requested that everyone please sign in since the Navy uses the information to send announcements to keep the public informed. Ron asked that the presenters be allowed to give their presentation without interruption. The Restoration Advisory Board (RAB) members will be invited to ask their questions followed by questions from the general audience. Ron asked the attendees to state their name and association before asking each question for the minutes. Ron informed the audience that the meeting and questions will be noted in the RAB meeting summary. If it is not possible to answer a question during the meeting, answers will be researched and provided at a later date.

The RAB members were introduced.

Ed Russell joined the RAB in attendance as the NAS Key West Installation Restoration Manager.

REVIEW OF LAST MEETING

Ron asked if there were any corrections to the minutes. Ed Russell had a comment to the minutes on Page 6. The answer referenced stated not below 2 feet, and the correct answer should have been not above 2 feet. The minutes from the July 2015 RAB meeting minutes were approved with the correction on Page 6.

DEFENSE REUTILIZATION MARKING OFFICE (DRMO) SLIVERS, AMY TWITTY, AGVIQ-CH2M

The project consists of two former DRMO land slivers adjacent to the City-owned portion of the former DRMO on Truman Annex. The land slivers were retained by the Navy during the Base Realignment and Closure (BRAC) in 2002. The DRMO was formerly used as a storage facility for new and used military equipment. The south DRMO sliver is approximately 600 feet long by 25 feet wide; the north DRMO sliver is approximately 200 feet long by 30 feet.

According to the Base Master Plan, the north DRMO sliver is zoned for commercial/industrial use, and the south DRMO sliver is zoned for residential land use (military housing nearby). Soil samples were collected at both slivers in November 2010 and June 2011 and analyzed for arsenic, lead, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). Samples from the north DRMO sliver exceeded the Residential standards, but were less than Industrial standards; samples at south DRMO sliver exceeded both residential and industrial standards in some locations.

A soil removal action was conducted in September and October 2012. The soil was removed to meet Residential standards at both slivers. Confirmation samples collected at the walls of the excavations in 2012 indicated some residual soil contamination exists. Further soil sampling was conducted in an effort to delineate residual contamination (August 2013, March 2014, and December 2014). Background samples were also collected to assess the background concentration for PAHs.

A risk evaluation was conducted for soil at both slivers. Soil results were combined from the following sampling events from November 2010 through December 2014:

- November 2010 – pre-excavation sampling
- June 2011 – pre-excavation sampling
- October 2012 – confirmation sampling during excavation
- August 2013 – post-excavation sampling
- March 2014 – post-excavation sampling
- December 2014 – post-excavation sampling

All of the "excavated" samples were removed from the data set, and a risk-based screening evaluation was conducted for the residual soil. Using the soil samples representative of residual concentrations in both slivers, risks were calculated for PAHs, PCBs, arsenic, and lead. Based on the results of the risk evaluation, additional soil removal actions were recommended at the south DRMO sliver. No removal actions were recommended for the north DRMO sliver.

A second soil removal action was conducted in January and February 2016. The soil was removed to meet Residential standards at the south DRMO sliver including a portion of the roadway. Approximately 55 tons of contaminated soil (four truckloads) were transported offsite to Waste Management's Medley Landfill in Medley, Florida for disposal. Vegetative cover was replaced where necessary, and the roadway was resurfaced in the areas impacted by the excavation activities.

A Project Completion Report has been submitted to the Florida Department of Environmental Protection (FDEP) summarizing the 2016 removal action. A Memorandum of Decision (MOD) has been submitted to the FDEP summarizing the cleanup activities of the DRMO and the DRMO Slivers requesting a Site Rehabilitation Completion Order (SRCO) from the FDEP.

***Questions, Answers, and Comments**:*

Q: Adam Linhardt, Key West Citizen Reporter. Has the State said the North Sliver is fine?
A: Amy Twitty, AGVIQ-CH2M. An interim report was submitted showing the analysis, which has been approved by the FDEP. Based on that report, the Work Plan was approved, and the current report is in review for approval by the FDEP.

Ron added when the park is finished, the North Sliver will remain on Navy property and will not accessed by the public.

LOCATION: Florida Keys Eco-Discovery Center, Key West, Florida

BASE CLOSURE AND REALIGNMENT (BRAC) UPDATE, AMY TWITTY, AGVIQ-CH2M

Truman Annex

Portions of Truman Annex were transferred in 2002 as part of the BRAC process. Some areas were transferred with environmental restrictions applied including the following:

- Former DRMO, City Owned portion
- Parcel K, City Owned portion
- Parcel E
- Current reuse plan is to develop a +/- 32-acre park (referred to as Truman Waterfront Park)

DRMO

Subsequent to the 2002 transfer, additional soil contamination was discovered. The Navy conducted a number of soil removals from 1999 to 2009. DRMO soil was cleaned up to allow unrestricted use (meets FDEP residential use criteria). A follow-up groundwater investigation was conducted in 2014. The groundwater meets unrestricted use although it is not considered potable due to saline conditions.

A report summarizing history of the DRMO cleanup and demonstrating remediation completion was submitted to the FDEP in April 2015. The report requested No Further Action (NFA) for soil and groundwater at the site (unrestricted use). The FDEP concurred and issued an approval letter for the city-owned portion of the DRMO on August 26, 2015. The Navy provided and the City recorded a Release of Deed Restrictions for the city-owned portion the DRMO former on November 24, 2015.

City Owned Portion of Parcel K

In April 2009 the City collected soil samples in which there were exceedances of lead, PCBs, and petroleum constituents. The Navy delineated the soil contamination and worked with the FDEP to develop recreation soil cleanup levels. The Navy conducted soil removal in January and February 2012. The FDEP asked for groundwater sampling in the highest lead area and along the site perimeter, and lead concentrations were within acceptable levels for unrestricted use.

The Navy submitted Site Rehabilitation Completion Report (SRCR) to the FDEP in April 2014 that recommend NFA with Land Use Controls (LUCs). Residential use is prohibited; however, recreation use (proposed park) is acceptable. The FDEP concurred with the SRCR recommendation on June 4, 2014. The Navy provided and the City recorded a Release and Modification of Deed Restrictions for city owned portion of Parcel K on July 7, 2015. On August 14, 2015, FDEP issued a Conditional SRCO.

The Navy submitted a revised Draft Land Use Control (LUC) Implementation Plan (LUCIP) for Parcel K to the FDEP on May 5, 2016. The FDEP issued an approval letter for the Parcel K LUCIP in June 2016. The Navy will monitor remaining LUCs and conduct Five-Year Reviews.

Parcel E

Parcel E consists of the following sites:

- Building 102 – Former Torpedo Overhaul and Storehouse
- Building 103 – Former Central Power Plant
- Building 104 – Former Battery Overhaul and Storage

- Building 136 – Former Shipfitters/Plate and Mold Shop
- Building 189 – Former Navy Exchange (NFA, 2001)

Building 103 – The soil around the building was cleaned to depths of 2 to 6 feet including PCBs.

Former Buildings 102 and 104 – The soil was cleaned to depth of 2 feet for PAHs.

Former Building 136 – The soil was cleaned to depth of 2 feet for arsenic, iron, and PAHs; contaminants under the road required special handling. Last contaminant (arsenic) was removed in a 2007 excavation.

Building 189 was adjacent to an area affected by a petroleum leak from an underground pipeline. The site received an SRCO from the FDEP in 2001.

The Navy provided and the City recorded a Release and Modification of Deed Restrictions for Parcel E1 (Building 189) on November 24, 2015. The Navy submitted a draft LUCIP for Parcel E to the FDEP on April 6, 2016 (currently under review). The City of Key West will monitor remaining LUCs and conduct Five-Year Reviews.

***Questions, Answers, and Comments**:*

Q: Mark Songer, RAB Member. Building 103 – if the city were to start using the building, are there any concerns?
A: Amy Twitty, AGVIQ-CH2M. No subslab samples were taken from the site. PCB contamination inside the building has been clean. A small petroleum plume was underneath the building, and it has been cleaned as well.

Q: Oliver Kofoid, NAS Key West Resident. So, the City is responsible for the Five-Year Review?
A: Amy Twitty, AGVIQ-CH2M. Yes, because they own the property.

Q: Oliver Kofoid, NAS Key West Resident. What are the conditions of the Five-Year Review?
A: Amy Twitty, AGVIQ-CH2M. To ensure LUCs are being maintained (i.e., No daycares, no residences, etc.).

Ron added the City has been conducting Five-Year Reviews for other previous Navy properties they own.

DEMOLITION KEY SRCO, AMY TWITTY, AGVIQ-CH2M

Demolition Key is composed of two land masses separated by a narrow channel and is used as a visual landmark for training. Originally, Demolition Key consisted of approximately 24 acres of dredge/spoils material from waterways proximal to Key West in the late 1930s to early 1940s. The channel between the two land masses was formed by military training and testing activities involving ordnance detonation and by subsequent storm and sea erosion.

This former open burning/open detonation (OB/OD) unit was operated by the Navy in compliance with the Department of Defense (DoD) and Navy requirements for management and disposal of munitions and explosives during its active life (1965 to 1989 and 1994 to 1995.

The unit is a 940-square-foot portion of Demolition Key on the southeastern side of the northern islet. The unit was compose of an open, earthen pit measure 10 feet in diameter.

1993 Remedial Investigation

Following issuance of a Hazardous and Solid Waste Amendments (HSWA) permit for NAS Key West in 1991, environmental sampling was conducted in 1993 in areas with evidence of historic munitions-related contamination. Constituents of concern were identified as antimony, arsenic, copper, and lead. Additional soil sampling was recommended. Two sediment samples were collected in the channel, and the results were less than sediment screening criteria.

1998 Closure Activities

In July 1998, soil and other materials were excavated, characterized, and disposed. No live ordnance was encountered. Ninety-eight drums of material were removed (80 drums of soil and 18 drums of metal). The 10-foot diameter pit was enlarged to roughly 30 feet with a depth up to 18 inches or less to the water table. Six metals were identified (antimony, arsenic, barium, copper, lead, and manganese). One explosive (2,4-dinitrotoluene) exceeded soil screening criteria and leachability. Eight metals (antimony, arsenic, cadmium, copper, lead, manganese, strontium, and zinc) exceeded groundwater screening criteria. The Navy recommended final closure by backfilling with clean soil and vegetative cover of native species to provide a cap followed by post-closure monitoring. Closure Permit Number HF44-290798 was issued on September 4, 1998. The FDEP concurred that the permit may be modified to include post-closure care requirements.

2002 Closure Activities

In May 2002, an FDEP-approved Closure Plan was implemented for closure activities to be conducted prior to ongoing post-closure care and monitoring. Closure activities included tasks to secure and clear the former OB/OD unit prior to backfilling, completion of topographical surveys of backfill and the addition of a vegetative soil layer and vegetative cover, and certification of closure submittal to the FDEP (completed June 17, 2002). Continued post-closure care and monitoring were then implemented per an FDEP-approved Post-Closure Plan (dated July 2001). Post-Closure Permit #63302-HF-002 was issued on May 19, 2004 (with an expiration date of September 4, 2013). Post-Closure Permit #63302-HF-003 (renewal permit) was issued on July 23, 2013 (with an expiration date of September 4, 2023).

2014 Soil Excavation

The Navy conducted a soil sampling event in December 2014 to evaluate soil conditions at the site. Ten confirmation soil samples were collected directly above the water table within and around the perimeter of the site on approximately 10-foot centers. Soil samples were analyzed for metals and explosives. Additionally, three soil samples from the center of the site were analyzed to determine leachability of metals and explosives.

Soil analytical results were compared to FDEP soil criteria. Nine metals and two explosives were detected, but none of the detected concentrations exceeded the soil screening criteria. Leachate analytical results were compared to FDEP groundwater criteria. Although some detected leachate results exceeded various groundwater screening criteria, none of the leachate concentrations exceeded the low yield/poor quality (LY/PQ) values.

Remediation Completion

Soil meets unrestricted use. Operations of the former OB/OD unit are no longer occurring. Concentrations of metals and explosives are less than the FDEP Residential Direct Exposure Soil Cleanup Target Levels. Site soil is not considered contaminated.

Groundwater meets unrestricted use. No freshwater lens exists on Demolition Key, and site groundwater contains elevated salinity; therefore, potable use is not relevant. The source of contamination was removed from the site in 1998; therefore, there is no continuing source to the groundwater/seawater beneath Demolition Key, and this groundwater/seawater is not a source of drinking water to human and ecological receptors. Although some leachability results from soil samples collected in December 2014 indicated some metals detections exceeded the potable drinking water criteria, none of the leachability results exceeded the associated LY/PQ values.

Surface water meets unrestricted use. No surface water features are present on Demolition Key, but it is surrounded by Florida Bay. To evaluate the potential impact to the Florida Bay surface water, NAS Key West initiated a seawater monitoring program in 2002. Based on seven quarters of data, the FDEP authorized NAS Key West to discontinue the seawater monitoring program on November 8, 2004. Although some leachability results from soil samples collected in December 2014 indicated copper and lead detections exceeding screening criteria protective of marine life, copper and lead were not detected in surface water collected off Demolition Key in the final quarters of the seawater monitoring program; therefore, no pathways are complete for site soil or groundwater migration to surface water.

Sediment meets unrestricted use. Two sediment samples were collected in the channel between the two Demolition Key land masses in 1993 in areas likely to receive surface water runoff from the former OB/OD unit; all results were less than sediment screening criteria.

Based on remediation efforts completed at the former OB/OD unit, the overall objective of reducing/eliminating site contamination to levels suitable for unrestricted use was achieved per Chapter 62-780, Florida Administrative Code (F.A.C.). As indicated during the 2014 soil evaluation, residual soil contaminant levels are less than residential use-based target levels, seawater analytical results are less than action levels, and sediments are not affected. The Navy submitted an SRCR in December 2015 requesting an SRCO without restrictions for the former OB/OD unit. The SRCO was granted on April 13, 2016.

***Questions, Answers, and Comments**:*

Q: Adam Linhardt, Key West Citizen Reporter. Does the army, Special Forces, or visiting Team use the property?
A: Ron Demes, NAS Key West. Currently, the island is not used for any detonation. The island is used for training. The Navy withdrew the permit for open detonation. However, under an emergency scenario, an emergency detonation permit could be issued. The Navy had to close the permit, which required sampling to determine if any contamination was onsite. The rest of the island has historically and still is used for training. Only the explosive arc was under review.

MUNITIONS RESPONSE PROGRAM (MRP) UPDATE, MIKE IRVINE, RESOLUTION CONSULTANTS

A non-time-critical removal action (NTCRA) was conducted at the A950 Spoils Pile and the A22 Drainage Ditch sites. The A950 Spoils Pile was a contractor lay down area where dredge spoils were staged. Munitions were observed on and at the base of the spoils pile. The A22 Drainage Ditch site is a Stormwater drainage ditch locate don an active airfield. Munitions were observed in and adjacent to the drainage ditch. Munitions encountered at the site include 5-inch high velocity aerial rockets (HVAR) warheads and small arms ammunition.

Removal actions included mobilization and site preparation, manual removal of large munitions (18-inch lifts), armored equipment excavation/transport of material, screening plant removal of small munitions, and munitions constituent sampling. The removal action took place from June through October 2015.

Approximately 1,700 pounds of munitions debris and small arms ammunition were removed, and approximately 28,000 pounds of metallic cultural debris (pipe, wire, hardware, fencing, car/appliance parts, miscellaneous scrap, etc.) were removed.

The After Action Report is in the process of being finalized.

Upcoming MRP activities include the Fleming Key Dredge Spoils Area expanded site inspection confirmation sampling and the North Boca Chica Skeet and Pistol Ranges remedial investigation and Feasibility Study.

***Questions, Answers, and Comments**:*

Q: Mimi Strafford, RAB Member. Is the dredge spoil from the harbor excavation?
A: Ron Demes, NAS Key West. It was from the 2004 harbor dredging. Suitable fill was redeposited back to the ocean, and non-suitable fill was deposited on an uncontaminated site, which was A950.

FIVE-YEAR REVIEW UPDATE, TODD HAVERKOST, RESOLUTION CONSULTANTS

Federal regulations require five-year reviews at sites where the remedial action leaves hazardous substances on a site at levels that do not allow for unrestricted use, unrestricted exposure and the remedial action is expected to take more than 5 years to complete. The process is triggered by the date of the earliest remedial action that left hazardous substances in place which, in the case of 12 sites address during this review, occurred in 1999.

The object if the Five-Year Review is to determine if remedies remain protective of human health and the environmental by a technical assessment that examines the following three questions:

- Is the remedy functions as intended?
- Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives still valid?
- Has any other information come to light that could call into question to protectiveness of the remedy?

Based on the outcome of the technical assessment, there are the following five protectiveness categories:

- Protective
- Short-term protective
- Will be protective
- Protectiveness deferred
- Not protective

The Five-Year Review covers the following Installation Restoration (IR) sites:

- Area of Concern (AOC) B – Big Coppitt Key Abandoned Civilian Refuse Disposal Area. The site is protective, there are no issues, and LUCs remain in place.
- IR 1 – Truman Annex Refuse disposal Area. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016.
- IR 3 – Truman Annex dichlorodiphenyltrichloroethane (DDT) Mixing Area. The site is protective, there are no issues, and the asphalt cap and LUCs are maintained.

- IR 7 – Former Fleming Key North Landfill. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016.
- IR 8 – Former Fleming Key South Landfill. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016.
- IR 21 – Truman Annex Seminole Battery. The site is protective, there are no issues, and LUCs remain in place.

The Five-Year Review also covers the following Solid Waste Management Unit (SWMU) sites:

- SWMU 1 – Boca Chica Open Disposal Area. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016. Arsenic in groundwater near S1MW-07 will be evaluated.
- SWMU 2 – Boca Chica DDT Mixing Area. The site is protective, there are no issues, and LUCs remain in place. Sampling frequency will be reduced in 2016.
- SWMU 3 – Boca Chica Fire Fighting Training Area. The site is protective, there are no issues, and LUCs remain in place.
- SWMU 5 – Boca Chica AIMD Building A-990 Sand Blasting Area. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016.
- SWMU 7 – Boca Chica Temporary Hazardous Waste Storage Area. The site is protective, there are no issues, and LUCs remain in place. The sampling frequency will be reduced after 2016.
- SWMU 9 – Boca Chica Jet Engine Test Cell. The site is protective, and there are no issues. NFA will be pursued.

The Five-Year Review was signed by the Commanding Officer of NAS Key West on April 25, 2016. The FDEP approved the document on June 21, 2016. The next Five-Year Review is due on April 25, 2021.

***Questions, Answers, and Comments**:*

There were no questions.

BOCA CHICA JET ENGINE TEST CALL, SWMU 9/BOCA CHICA FLYING CLUB, UST 9 UPDATES, TODD HAVERKOST, RESOLUTION CONSULTANTS

SWMU 9 Operational History and Releases

The facility was used for testing repaired jet engines from 1969 to 1995. Engines were fueled by a 5,000-gallon aboveground storage tank (AST) storing JP-5 fuel. Two document spills included the following:

- 1989 fuel filter leak released approximately 700 gallons of JP-5 fuel.
- A lubrication oil drum overturned in 1992.

Organic solvents were also reportedly used to clean jet engines.

Investigation and Remedial History

Site investigations initiated in 1993 identified petroleum hydrocarbons in groundwater. Subsequent investigations identified chlorinated solvent compounds in groundwater. The following remedial actions performed to date:

- Groundwater pump and treat system (1996)
- Monitored natural attenuation (MNA) initiated in 1998
- Enhanced bioremediation (2001)

Groundwater monitoring continued through 2016.

Site Closeout Strategy

Pursue NFA with controls per Florida's Risk Based Corrective Action (RBCA), Risk Management Option (RMO) Option IID, Chapter 62-780.680 (2)(c)4. F.A.C. This can be achieved because of the following:

- Contaminants of concern (COCs) in soil are less than Cleanup Target Levels (CTLs).
- COCs can remain in groundwater at concentrations exceeding CTLs provided that:
  a) It is demonstrated the COCs are contained within the site boundary.
  b) The source area is less than ¼ acre.
  c) There are no onsite impacts to surface water.

The next steps for SWMU 9 include the following:

- The collection of two more rounds of groundwater samples in 2016.
- The preparation and submittal of a MOD.
- The issuance of a SRCO by the FDEP.

UST 9 Operational History and Releases

Former operations included airplane parking and refueling with underground storage tanks (USTs) and ASTs; the tanks were removed in 1992. Past practices of overfilling and possible tank leaks (both aviation and motor vehicle fuel) are the suspected cause of contamination at the site.

Investigation and Remedial History

Site investigations initiated in 1994. The following remedial actions were performed onsite:

- Soil removal (1998)
- Air sparge/soil vapor extraction (AS/SVE) treatability study (2002)
- MNA initiated in 2003

Long-term groundwater monitoring was conducted from 1994 through 2016. An additional round of soil and groundwater sampling was performed in 2016.

Site Closeout Strategy

Pursue NFA with controls per Florida's RBCA, RMO Option IID, Chapter 62-780.680 (2)(c)4., F.A.C. This can be achieved because of the following:

- COCs in soil are less than CTLs.
- COCs can remain in groundwater at concentrations exceeding CTLs provided that:
  a) It is demonstrated the COCs are contained within the site boundary.
  b) The source area is less than ¼ acre.
  c) There are no onsite impacts to surface water.

The next steps for UST 9 include the following:

- The preparation and submittal of a MOD.
- The issuance of a SRCO by the FDEP.

***Questions, Answers, and Comments**:*

There were no questions.

POTENTIAL TOPICS FOR NEXT MEETING (JULY 2017), RON DEMES

The potential topics requested by the public and RAB members for the next meeting included the following:

- BRAC Cleanup Status
- Munitions Response Program
- Site 22, Geiger Key Hawk Missile Site

A community member, Lucy Page, asked about the single-walled pipeline from the Coast Guard to the installation. Ron stated the pipeline is owned by a private party and undergoes astringent testing standards.

MEETING ADJOURNMENT

Ron acknowledged many audience members and provided information on Navy and BRAC Team members who were unable to attend the meeting.

Ron reminded the attendees that contact information is included in the minutes, and the community can contact RAB members if they have questions that do not pertain to the topics in this meeting.

Information about the cleanup and other activities can be found at the following website: http://cnic.navy.mil/regions/cnrse/installations/nas_key_west.html.

Ron Demes thanked everyone for coming to the meeting. The meeting was adjourned at 7:25 PM.

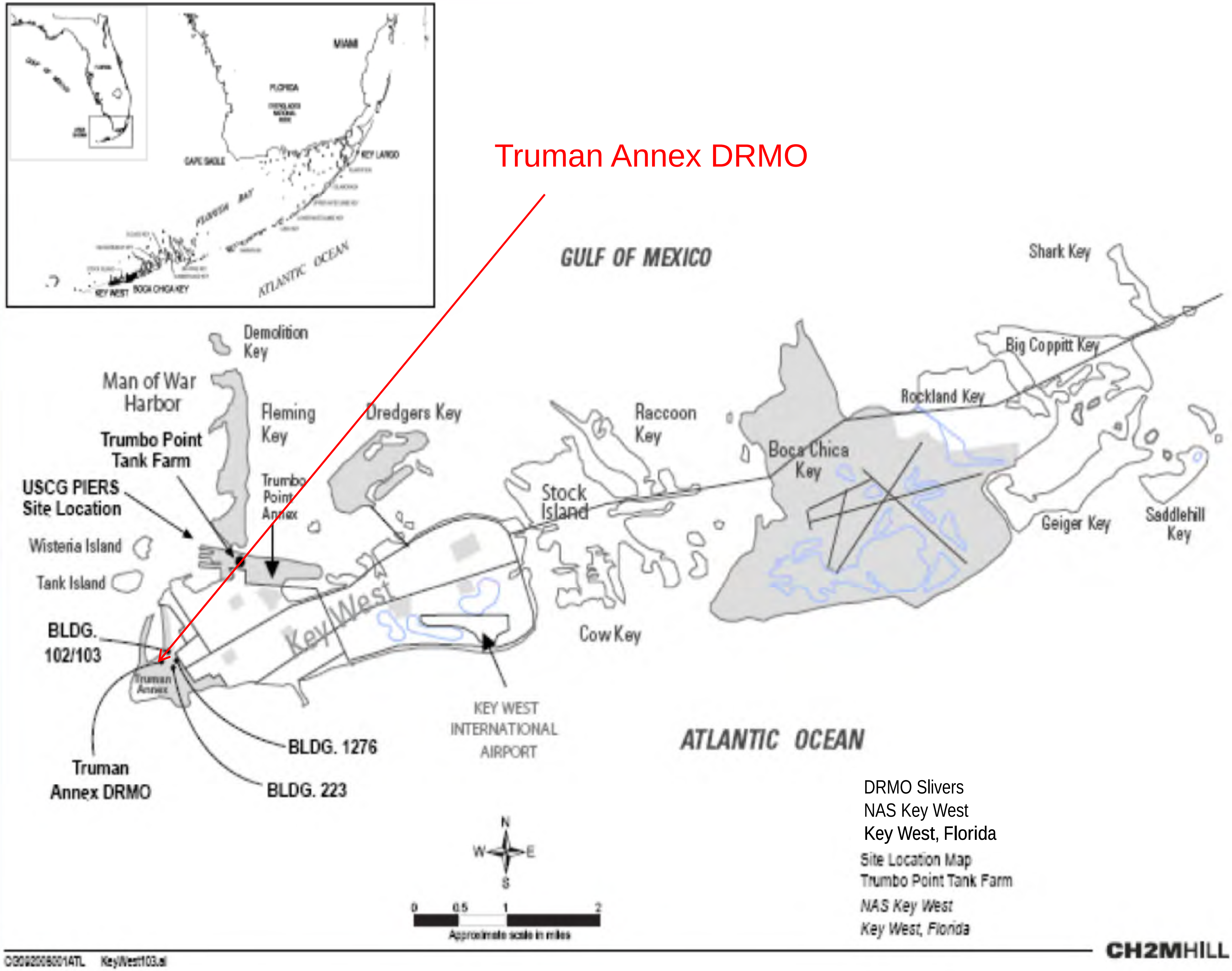
An informal question and answer period was conducted after the meeting concluded.

Defense Reutilization Marketing Office (DRMO) Slivers

Site Investigation/ Non-Time Critical Removal Action

Amy Twitty, P.G./CH2M HILL

July 2016



Truman Annex DRMO
MIAMI
FLORIDA
KEY LARGO
CAPE SABLE
FLORIDA BAY
ATLANTIC OCEAN
KEY WEST
BOCA CHICA KEY
GULF OF MEXICO
Shark Key
Big Coppitt Key
Rockland Key
Demolition Key
Man of War Harbor
Fleming Key
Dredgers Key
Raccoon Key
Boca Chica Key
Trumbo Point Tank Farm
USCG PIERS Site Location
Trumbo Point Annex
Stock Island
Geiger Key
Saddlehill Key
Wisteria Island
Tank Island
Key West
BLDG. 102/103
Truman Annex
Cow Key
KEY WEST INTERNATIONAL AIRPORT
ATLANTIC OCEAN
BLDG. 1276
Truman Annex DRMO
BLDG. 223
N
W
E
S
0
0.5
1
2
Approximate scale in miles
DRMO Slivers
NAS Key West
Key West, Florida
Site Location Map
Trumbo Point Tank Farm
NAS Key West
Key West, Florida
KeyWest103.ai
CH2MHILL

Site Location

Site Background

- The project consists of two former DRMO land slivers adjacent to the City-owned portion of the former DRMO on Truman Annex
- The land slivers were retained by the Navy during the Base Realignment and Closure (BRAC) in 2002
- The DRMO was formerly used as a storage facility for new and used military equipment
- The south DRMO sliver is approximately 600 feet long by 25 feet wide; the north DRMO sliver is approximately 200 feet long by 30 feet

1999 DRMO


Feb 24, 1999
Old Fence Line
© 2010 Europa Technologies
Image U.S. Geological Survey
© 2010 Google
Google
Imagery Date: Feb 25, 1999
24°32'56.46" N
81°48'29.40" W
elev 7 ft
Eye alt 624 ft

2009 DRMO


Dec 30, 2009
New Fence Line
© 2010 Europa Technologies
© 2010 Google
Google
Imagery Date: Mar 5, 2009
24°32'56.46" N 81°48'29.40" W elev 7 ft
Eye alt 624 ft

DRMO Slivers

- According to the base master plan, the north DRMO sliver is zoned for commercial/industrial use and the south DRMO sliver is zoned for residential land use (military housing nearby)
- Soil samples were collected at both slivers in November 2010 and June 2011 and analyzed for arsenic, lead, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs)
- Samples from the north DRMO sliver exceeded the Residential standards but were below Industrial standards; Samples at south DRMO sliver exceeded both residential and industrial standards in some locations

2012 Remedial Action

- Soil removal action was conducted in September – October 2012. The soil was removed to meet Residential standards at both slivers
- Confirmation samples collected at the walls of the excavations in 2012 indicated some residual soil contamination exists
- Further soil sampling was conducted in an effort to delineate residual contamination (August 2013, March 2014, and December 2014)
- Background samples were also collected to assess the background concentration for PAHs

Risk Evaluation

- A risk evaluation was conducted for soil at both slivers. Soil results were combined from the various sampling events from November 2010 through December 2014:
  - November 2010 – pre-excavation sampling
  - June 2011 – pre-excavation sampling
  - October 2012 – confirmation sampling during excavation
  - August 2013 – post-excavation sampling
  - March 2014 – post-excavation sampling
  - December 2014 – post-excavation sampling

Risk Evaluation

- All of the “excavated” samples were removed from the data set and a risk-based screening evaluation was conducted for the residual soil
- Using the soil samples representative of residual concentrations in both slivers, risks were calculated for PAHs, PCBs, arsenic, and lead
- Based on the results of the risk evaluation, additional soil removal actions were recommended at the south DRMO sliver
- No removal actions were recommended for the north DRMO sliver

2016 Remedial Action

- A second soil removal action was conducted in January – February 2016. The soil was removed to meet Residential standards at the south DRMO sliver including portion of the roadway
  - Approximately 55 tons of contaminated soil (four truckloads) were transported offsite to Waste Management's Medley Landfill in Medley, Florida, for disposal
  - Vegetative cover was replaced where necessary and the roadway was resurfaced in the areas impacted by the excavation activities

Excavation Area 0 – 0.5 ft bls

Legend

- Soil Boring (0 - 0.5' Sample)
- Soil Boring (0 - 0.5' and 0.5' - 2' Samples)
- Soil Boring (0.5' - 2' Sample)
- Previous Soil Boring
- Soil Boring to be Removed
- Proposed Excavation 0 - 0.5 feet (2,125 square feet)
- Communications Line
- Electric Line
- Water Line
- 0.5 feet Deep Excavation (2,387 square feet)
- 2 feet Deep Excavation (8,680 square feet)
- Water Vault

Notes:

BEQ = Benzo(a)pyrene Equivalent
BTV = Background Threshold Value
J = Estimated Value
ND = Not Detected
Google Earth Aerial 3/7/2013

0 15 30 Feet

N

SCREENING STANDARDS

Analyte	Residential SCTL	Residential 3X SCTL	BTV (Background UCL) 0 - 0.5 feet	BTV (Background UCL) 0.5 - 2 feet
Arsenic	2.1	6.3	---	---
BEQ	0.1	0.3	0.35	0.093
Aroclor-1260	0.5	1.5	---	---
Lead	400	1,200	---	---

All units in milligrams per kilogram

Figure 1
Proposed Excavation Boundary (0 - 0.5 feet)
South DRMO Land Sliver
Former DRMO Slivers, Truman Annex
NAS Key West
Key West, Florida

\\CREOLE\GROUPS\GIS\00_PROJ\N\NASKEYWEST\MXD\TRUMAN ANNEX\FIGURE1_PROPOSEDEXCAVATIONBOUNDARY_SOUTHSLIVER.MXD SSTEWAR8 6/8/2015 2:30:04 PM

Excavation Area 0.5 – 2 ft bls

Legend

- Soil Boring (0 - 0.5' Sample)
- Soil Boring (0 - 0.5' and 0.5' - 2' Samples)
- Soil Boring (0.5' - 2' Sample)
- Previous Soil Boring
- Soil Boring to be Removed
- Proposed Excavation 0.5 - 2 feet (112 square feet)
- Communications Line
- Electric Line
- Water Line
- 0.5 feet Deep Excavation (2,387 square feet)
- 2 feet Deep Excavation (8,680 square feet)
- Water Vault

Notes:

BEQ = Benzo(a)pyrene Equivalent
BTV = Background Threshold Value
J = Estimated Value
ND = Not Detected
Google Earth Aerial 3/7/2013

0 15 30 Feet

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SCREENING STANDARDS

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Aroclor-1260	0.5	1.5	---	---
Lead	400	1,200	---	---

All units in milligrams per kilogram

Figure 2
Proposed Excavation Boundary (0.5 - 2 feet)
South DRMO Land Sliver
Former DRMO Slivers, Truman Annex
NAS Key West
Key West, Florida

\\CREOLE\GROUPS\GIS\00_PROJ\N\NASKEYWEST\MXD\TRUMAN ANNEX\FIGURE2_PROPOSEDEXCAVATIONBOUNDARY_SOUTHSLIVER.MXD SSTEWAR8 6/8/2015 12:53:17 PM

Utility Markings

Common Fill Material

Pre-Excavation Limits

2 Feet Deep Excavation

6 Inch Deep Excavation

Night Work

Night Work

Excavated Soil

Backfilling

Plate Compactor

Post-Excavation Cleanup

Roadway Maintenance

Topsoil Placement

Erosion Control

Road Repair

Site Restoration

Current Status

- A Project Completion Report has been submitted to the Florida Department of Environmental Protection summarizing the 2016 removal action TA1
- A Memorandum of Decision has been submitted to the Florida Department of Environmental Protection summarizing the cleanup activities of the DRMO and the DRMO Slivers requesting a Site Rehabilitation Completion Order from the FDEP TA2

Slide 30

TA1 As of 6/13/16 not submitted yet but should be by RAB mtg
Twitty, Amy/NVR, 6/13/2016

TA2 As of 6/13/16 not submitted yet but should be by RAB mtg
Twitty, Amy/NVR, 6/13/2016

Questions/Comments?

Base Realignment and Closure (BRAC)
Truman Annex Update
July 2016 RAB
Key West, FL

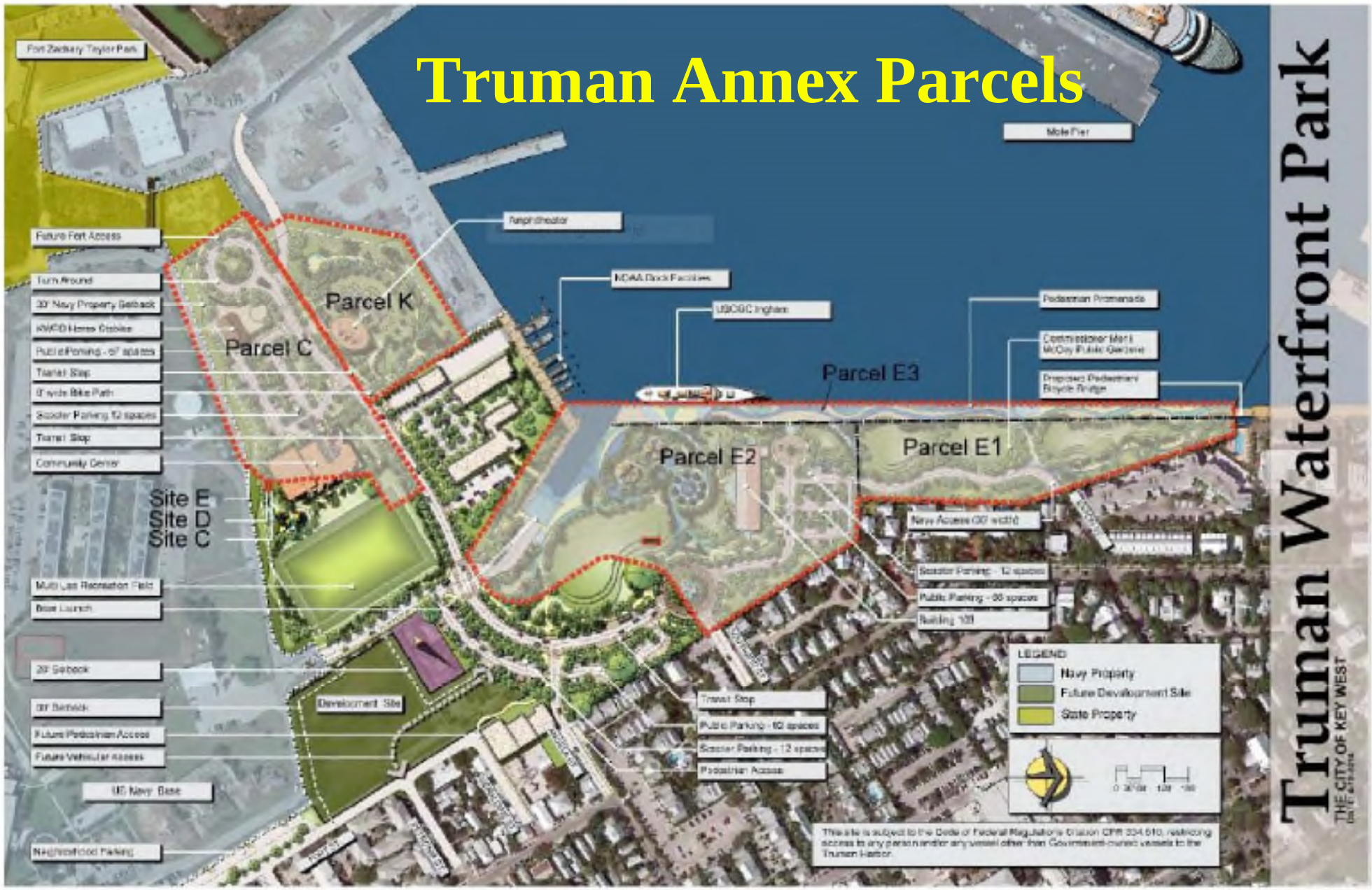
Greg Preston – Director, BRAC PMO East

Amy Twitty – CH2M HILL

Truman Annex

- Portions of Truman Annex were transferred in 2002 as part of the BRAC process. Some areas were transferred with environmental restrictions applied including:
  - Former Defense Reutilization and Marketing Office (DRMO), City Owned portion
  - Parcel K, City Owned portion
  - Parcel E
- Current reuse plan is to develop a +/- 32-acre park referred to as Truman Waterfront Park

Truman Annex Parcels



E Sciences, Incorporated FL Engineering Lic. #8691 234 S.E. 9th Street Fort Lauderdale, FL 33316 www.esciencesinc.com Phone: 954-484-8500 Fax: 954-484-6146	Truman Waterfront Park Section 6, Township 68S, Racnge 25E Key West, Monroe County, Florida	Proposed Development Plan September 2014	FIGURE 4		
DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 7-0070-002	SCALE: NTS	DATE: 10/8/2014	

Former Defense Reutilization and Marketing Office (DRMO) Site

Truman Annex

DRMO Location

History

- Subsequent to the 2002 transfer, additional soil contamination was discovered
- The Navy conducted a number of soil removals 1999-2009
  - DRMO soil was cleaned up to allow unrestricted use (meets Florida Department of Environmental Protection [FDEP] residential use criteria)
- A follow-up groundwater investigation was conducted in 2014. The groundwater meets unrestricted use although it is not considered potable due to saline conditions

Recent Activities

- A report summarizing history of the DRMO cleanup and demonstrating remediation completion was submitted to the FDEP in April 2015
- The report requested No Further Action for soil and groundwater at the site (unrestricted use)
- FDEP has concurred and issued an approval letter for the city-owned portion of the DRMO on August 26, 2015
- The Navy provided and the City recorded a Release of Deed Restrictions for the city-owned portion the DRMO former on November 24, 2015

City Owned Portion of Parcel K

Truman Annex

Parcel K (city owned) Location

History

- In April 2009 the City collected soil samples
  - Lead, PCBs (polychlorinated biphenyls), petroleum constituents exceedances
- Navy delineated the soil contamination and worked with FDEP to develop recreational soil cleanup levels
- Navy conducted soil removal in January and February 2012
- FDEP asked for groundwater sampling in the highest lead area and along the site perimeter
- Lead concentrations were within acceptable levels for unrestricted use

Recent Activities

- **Navy submitted Site Rehabilitation Completion Report (SRCR) to FDEP in April 2014**
  - **Recommend No Further Action with Land Use Controls (LUCs)**
    - ➔ residential use prohibited
    - ➔ acceptable for recreational use (proposed park)
- **FDEP concurred with SRCR recommendation June 4, 2014**
- **The Navy provided and the City recorded a Release and Modification of Deed Restrictions for city owned portion of Parcel K on July 7, 2015**
- **On August 14, 2015, FDEP issued a Conditional Site Rehabilitation Completion Order**

Current Activities

- The Navy submitted a revised Draft Land Use Control Implementation Plan (LUCIP) for Parcel K to the FDEP on May 5, 2016. FDEP issued an approval letter in June 2016
- The City of Key West will monitor remaining Land Use Controls and conduct 5 Year Reviews

Parcel E

Truman Annex

Parcel E

- Parcel E consists of several sites including:
  - Building 102 - Former Torpedo Overhaul and Storehouse
  - Building 103 - Former Central Power Plant
  - Building 104 - Former Battery Overhaul and Storage
  - Building 136 - Former Shipfitters/Plate and Mold Shop
  - Building 189 - Former Navy Exchange (No Further Action; 2001)

- **Parcel E1 – Building 189**
- **Parcel E2 – Buildings 102, 103, 104 and 136**
- **Parcel E3 – Waterfront Sea Wall**

History

- Building 103 (Existing) - Soil around the building cleaned to depths of 2 to 6 feet including PCBs
- Former Buildings 102 and 104 – Soil around the buildings cleaned to depth of 2 feet for polycyclic aromatic hydrocarbons (PAHs)
- Former Building 136 – Soil around the building cleaned to depth of 2 feet for arsenic, iron, and PAHs; contaminants under the road required special handling. Last contaminant (arsenic) removed in 2007 excavation
- Building 189 – Was adjacent to an area affected by a petroleum leak from an underground pipeline. Received Site Rehabilitation Completion Order from FDEP in 2001

Current and Future Activities

- The Navy provided and the City recorded a Release and Modification of Deed Restrictions for Parcel E1 (Building 189) on November 24, 2015
- The Navy submitted a Draft LUCIP for Parcel E to the FDEP on April 6, 2016 (currently under review)
- The City of Key West received a Construction Permit from the BRAC Office
- The City of Key West will monitor remaining Land Use Controls and conduct 5 Year Reviews

Questions ?

Demolition Key Former Open Burning/Open Detonation Treatment Unit July 2016 RAB Meeting Key West, Florida

Amy Twitty – CH2M HILL

Key Location

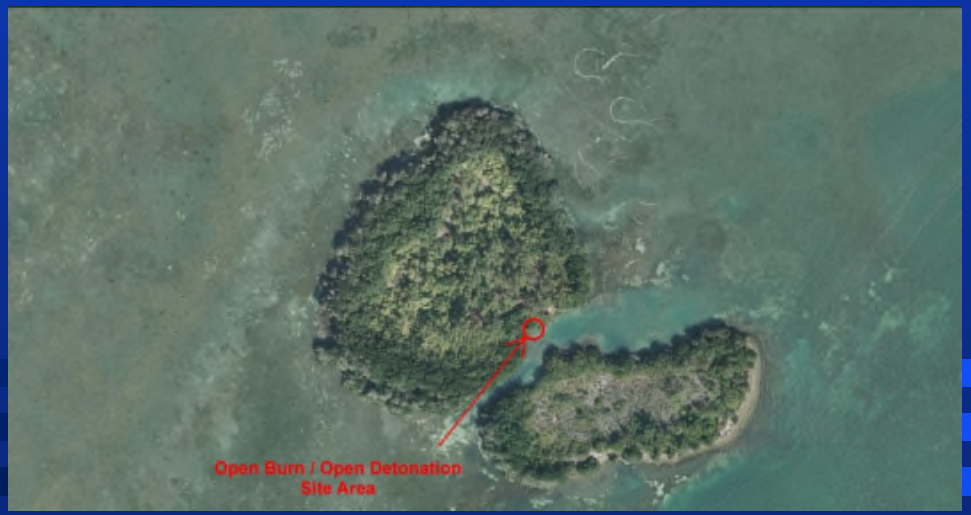
Site Description

- Demolition Key is composed of two land masses separated by a narrow channel and is used for training.
- Demolition Key originally consisted of approximately 24 acres of dredge/spoils material from dredging waterways proximal to Key West in the late 1930s to early 1940s.
- The channel between the two land masses was formed by military training and testing activities involving ordnance detonation and by subsequent storm and sea erosion.

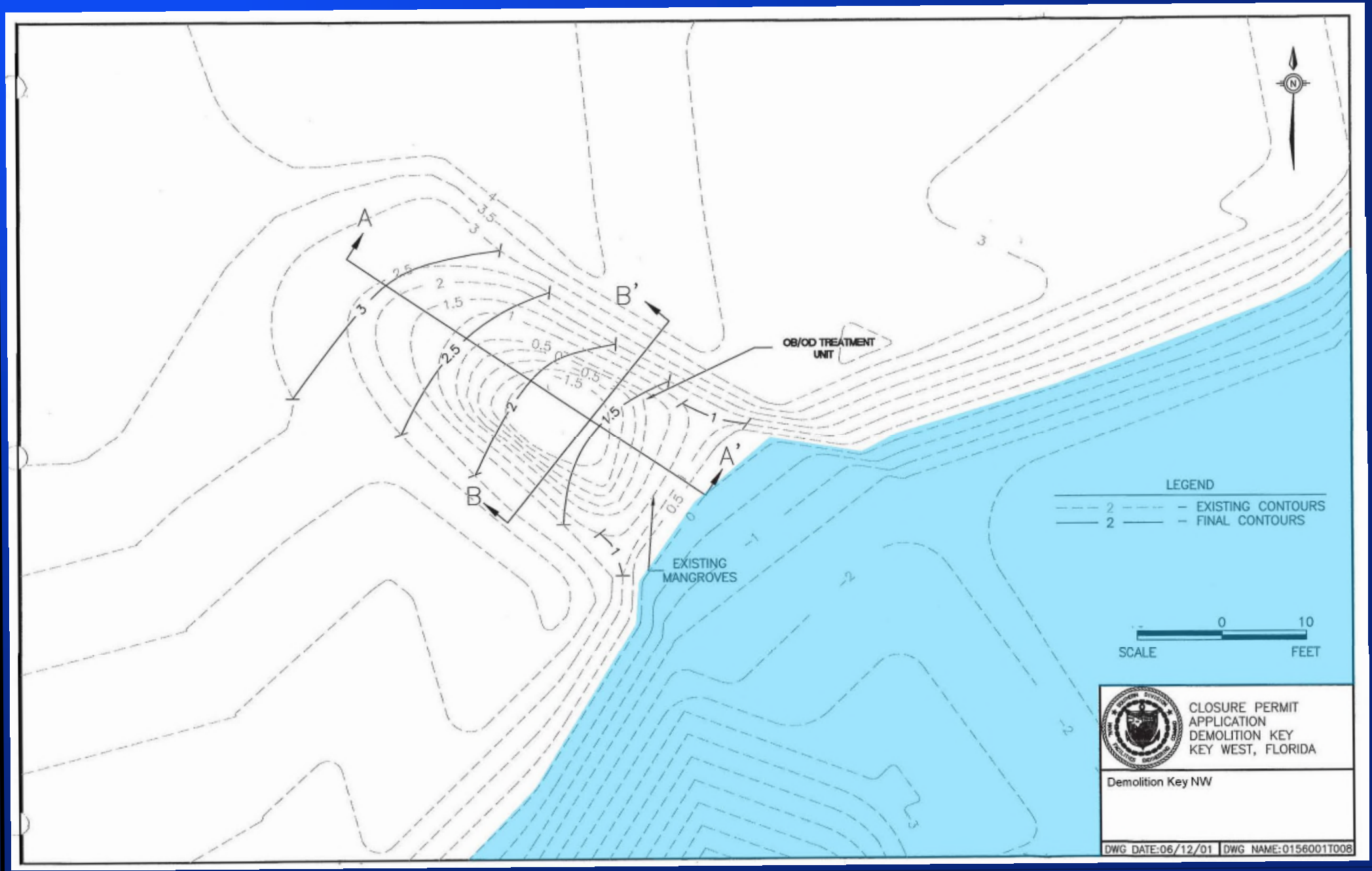
Operational History

- This former Open Burn/Open Detonation (OB/OD) unit was operated by the Navy in compliance with Department of Defense and Navy requirements for management and disposal of munitions and explosives during its active life (1965–1989 and 1994–1995).
- The unit is a 940 square foot portion of Demolition Key on the southeastern side of the northern islet. The unit was composed of a open, earthen pit measuring 10 feet in diameter.

Open Burn Open Detonation Unit Location



Site Layout


A
A'
B
B'
OB/OD TREATMENT UNIT
EXISTING MANGROVES
LEGEND
2 – EXISTING CONTOURS
2 – FINAL CONTOURS
0
10
SCALE
FEET
CLOSURE PERMIT APPLICATION
DEMOLITION KEY
KEY WEST, FLORIDA
Demolition Key NW
DWG DATE:06/12/01
DWG NAME:0156001T008

Remedial Investigation – 1993

- Hazardous and Solid Waste Amendments (HSWA) permit was issued for NAS Key West in 1991.
- Environmental sampling was conducted in 1993 in areas with evidence of historic munitions-related contamination.
  - Constituents of concern were identified as antimony, arsenic, copper, and lead.
    - ➔ Additional soil sampling was recommended.
  - Two sediment samples were collected in the channel.
    - ➔ Results were below sediment screening criteria.

Closure Activities – 1998

- Soil and other excavated materials were characterized and disposed in July 1998.
  - No live ordnance was encountered
  - 98 drums of material were removed (80 soil / 18 metal).
  - The 10 foot diameter pit was enlarged to roughly 30 feet with a depth up to 18 inches or less to the water table.
  - Six metals were identified (antimony, arsenic, barium, copper, lead, and manganese)
  - One explosive (2,4-dinitrotoluene) that exceeded soil screening criteria; also, leachability
  - Eight metals exceeded groundwater screening criteria (antimony, arsenic, cadmium, copper, lead, manganese, strontium, and zinc).
  - The Navy recommended final closure by backfilling with clean soil and vegetative cover of native species to provide a cap, followed by post-closure monitoring.
- Closure Permit #HF44-290798 was issued September 4, 1998.
- FDEP concurred the permit may be modified to include post-closure care requirements.

Closure Activities – 1998

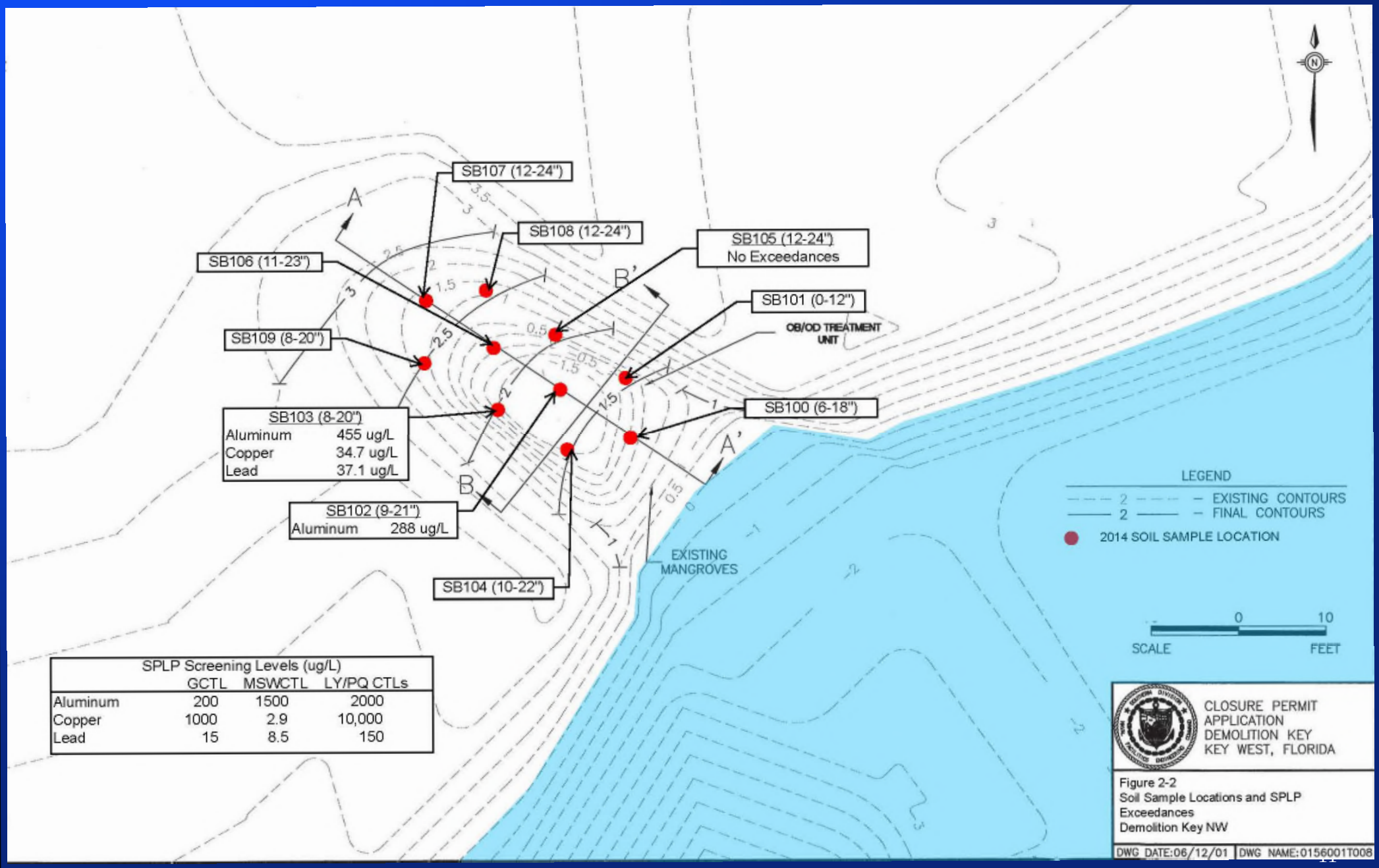
Closure Activities – 2002

- In May 2002, a FDEP approved Closure Plan was implemented for closure activities to be conducted prior to ongoing post-closure care and monitoring. Those activities included:
  - Secure and clear the former OB/OD unit prior to backfilling.
  - Topographical surveys of backfill and the addition of a vegetative soil layer, and vegetative cover .
  - Certification of closure submittal to FDEP (completed June 17, 2002).
- Continued post-closure care and monitoring were implemented per a FDEP-approved Post-Closure Plan (dated July 2001).
- Post-Closure Permit #63302-HF-002 was issued on May 19, 2004 (expiration date of September 4, 2013).
- Post-Closure Permit #63302-HF-003 (renewal permit) was issued on July 23, 2013 (expiration date September 4, 2023).

Proposed Site Closure & Soil Evaluation – 2014

- 2014 Navy proposed site closure to FDEP.
- Navy conducted a soil sampling in December 2014 to evaluate soil conditions at the site
  - 10 Confirmation soil samples were collected directly above the water table within and around the perimeter of the site on approximately 10-foot centers.
  - Soil samples were analyzed for metals and explosives.
    - ➔ Additionally, three soil samples from the center of the site were analyzed to determine leachability of metals and explosives.
  - Soil analytical results were compared to FDEP soil criteria.
    - ➔ Nine metals and two explosives were detected, but none of the detected concentrations exceeded the soil screening criteria.
  - Leachate analytical results were compared to FDEP groundwater criteria. Although some detected leachate results exceeded various groundwater screening criteria, none of the leachate concentrations exceeded the low yield/poor quality values.

Sample Locations/Results – 2014



Remediation Completion

- **Soil Meets Unrestricted Use**
  - Operations of the former OB/OD unit are no longer occurring.
  - Concentrations of metals and explosive constituents are below the FDEP Residential Direct Exposure Soil Cleanup Target Levels.
  - Site soil is not considered contaminated.
- **Groundwater Meets Unrestricted Use**
  - No freshwater lens exists on Demolition Key and site groundwater contains elevated salinity; therefore, potable use is not relevant.
  - The source of contamination was removed from the site in 1998; therefore, there is no continuing source to the groundwater/seawater beneath Demolition Key, and this groundwater/seawater is not a source of drinking water to human and ecological receptors.
  - Although some leachability results from soil samples collected in Dec-2014 indicated some metals detections above the potable drinking water criteria, none of the leachability results exceeded the associated low yield/poor quality values.

Remediation Completion (cont'd)

- **Surface Water Meets Unrestricted Use**
  - **No surface water features are present on Demolition Key, but it is surrounded by Florida Bay.**
  - **To evaluate the potential impact to the Florida Bay surface water, NAS Key West initiated a seawater monitoring program in 2002. Based on seven quarters of data, FDEP authorized NAS Key West to discontinue the seawater monitoring program on November 8, 2004.**
  - **Although some leachability results from soil samples collected in December 2014 indicated copper and lead detections above screening criteria protective of marine life, copper and lead were not detected in surface water collected off Demolition Key in the final quarters of the seawater monitoring program; therefore, no pathways are complete for site soil or groundwater migration to surface water.**
- **Sediment Meets Unrestricted Use**
  - **Two sediment samples were collected in the channel between the two Demolition Key land masses in 1993, in areas likely to receive surface water runoff from the former OB/OD unit; all results were below sediment screening criteria.**

No Further Action

- Based on remediation efforts completed at the former OB/OD unit, the overall objective of reducing/eliminating site contamination to levels suitable for unrestricted use was achieved per Chapter 62-780, F.A.C.
- As indicated during the 2014 Soil Evaluation, residual soil contaminant levels are below residential use-based target levels, seawater analytical results are below action levels, and sediments are not affected.
- The Navy submitted a Site Rehabilitation Completion Report (SRCR) in December 2015 requesting a Site Rehabilitation Completion Order (SRCO) without restrictions for the former OB/OD unit, and that request was granted on April 13, 2016.

Questions ?

FDEP 2015 Site Inspection Photo

NAS Key West
Munitions Response Program (MRP) Update

July 2016 RAB Meeting
Key West, Florida

Mike Ervine, PE

Resolution Consultants

Objective

1 - Review the munitions non-time-critical removal action (NTCRA) at the A950 Spoils Pile and A22 Drainage Ditch sites

2 - Review upcoming activities at:

- Fleming Key Dredge Spoils Area
- North Boca Chica Skeet & Pistol Ranges

A950 and A22 NTCRA

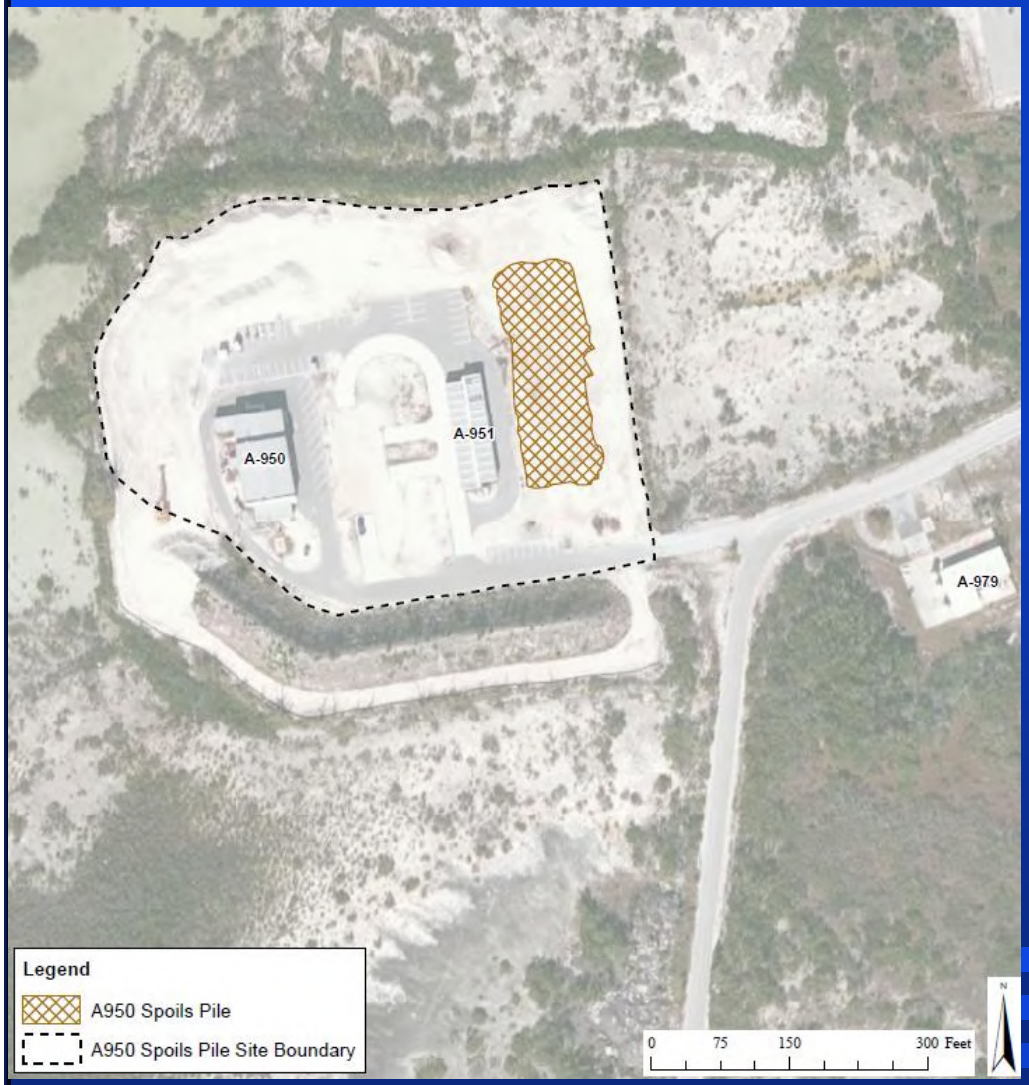
Site Setting and Contamination

- A950 Spoils Pile
  - ✓ Contractor lay down area where dredge spoils staged
  - ✓ Munitions observed on and at base of spoils pile
- A22 Drainage Ditch
  - ✓ Stormwater drainage ditch located on active airfield
  - ✓ Munitions observed in and adjacent to drainage ditch
- Munitions Encountered at Site
  - ✓ 5-inch high velocity aerial rockets (HVAR) warheads
  - ✓ Small arms ammunition

Photo of suspect bullet on south side of drainage ditch, west side of Taxiway D.

Site Location

A950 Spoils Pile



NAVAL AIR STATION KEY WEST FLORIDA

A22 Drainage Ditch

NTCRA Process

Removal Action Process - Overview

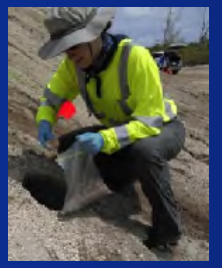
Mobilization / Site Prep →

Manual Removal of Large Munitions (18” lifts) →

Armored Equipment Excavation / Transport of Material →

Screening Plant Removal of Small Munitions →

Munitions Constituent Sampling



NTCRA Field Operations

June – October 2015

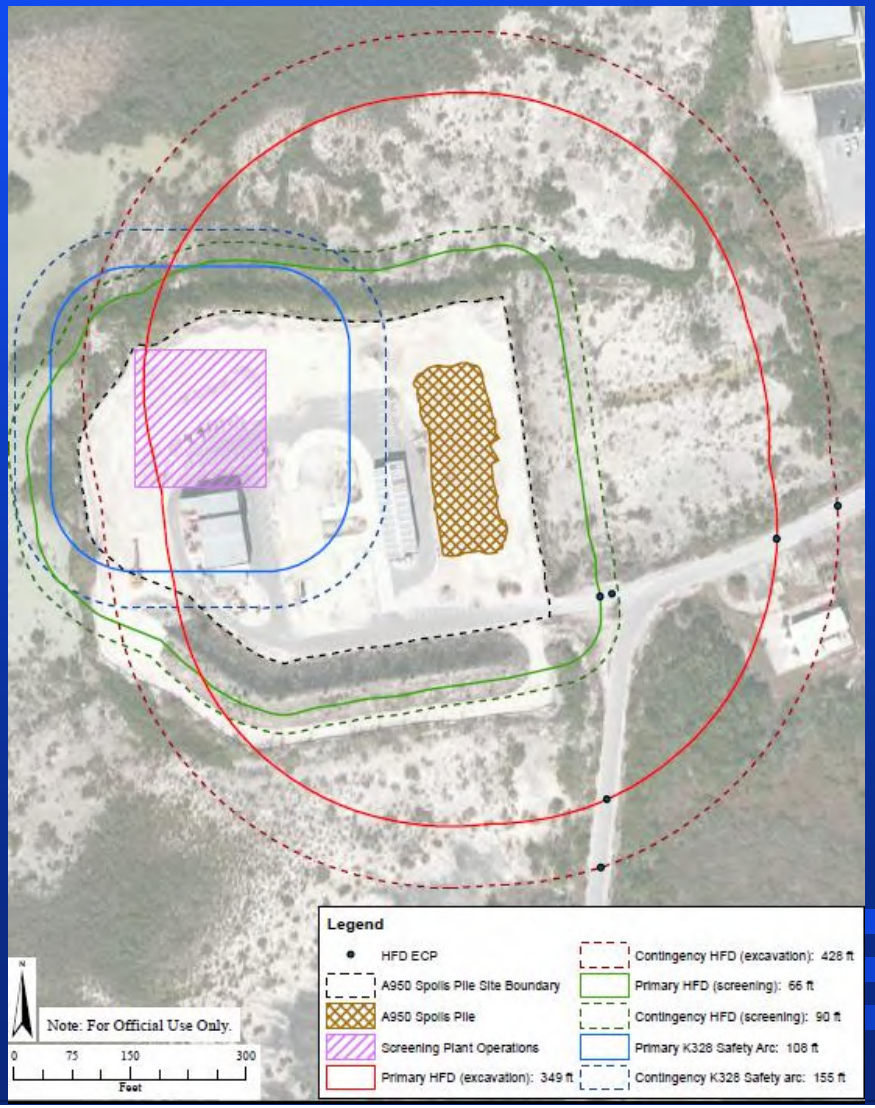
NTCRA Process

Mobilization / Site Preparation

- Exclusion Zones Established Based on Explosive Hazards
- Challenges of Equipment Mobilization to Key West
- Spoils Pile Vegetation Removal & Survey
- Re-Routing of Base Traffic Pattern
- Temporary Explosives Storage Magazine Setup
- A22 Drainage Ditch Dewatering

Exclusion Zones

- **Exclusion Zones Established Around Each Work Area**



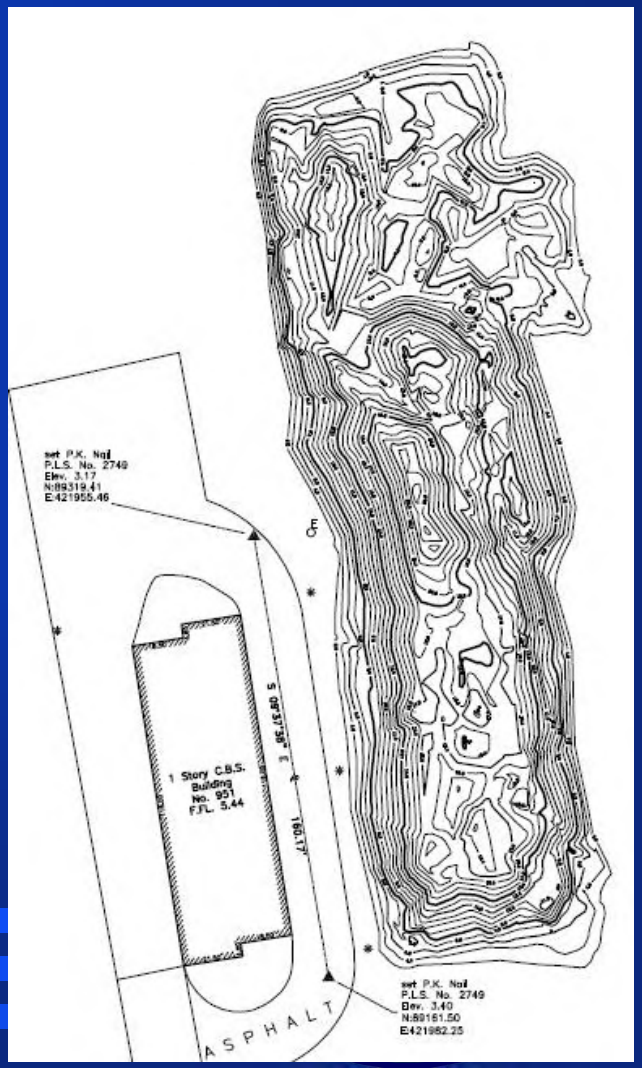
Mobilization Challenges

- **Heavy Equipment Mobilization to NAS Key West**
  - ✓ Weight limitations on the bridges of Overseas Highway 1
  - ✓ Barged screen plant and armored heavy equipment from mainland

Vegetation Removal

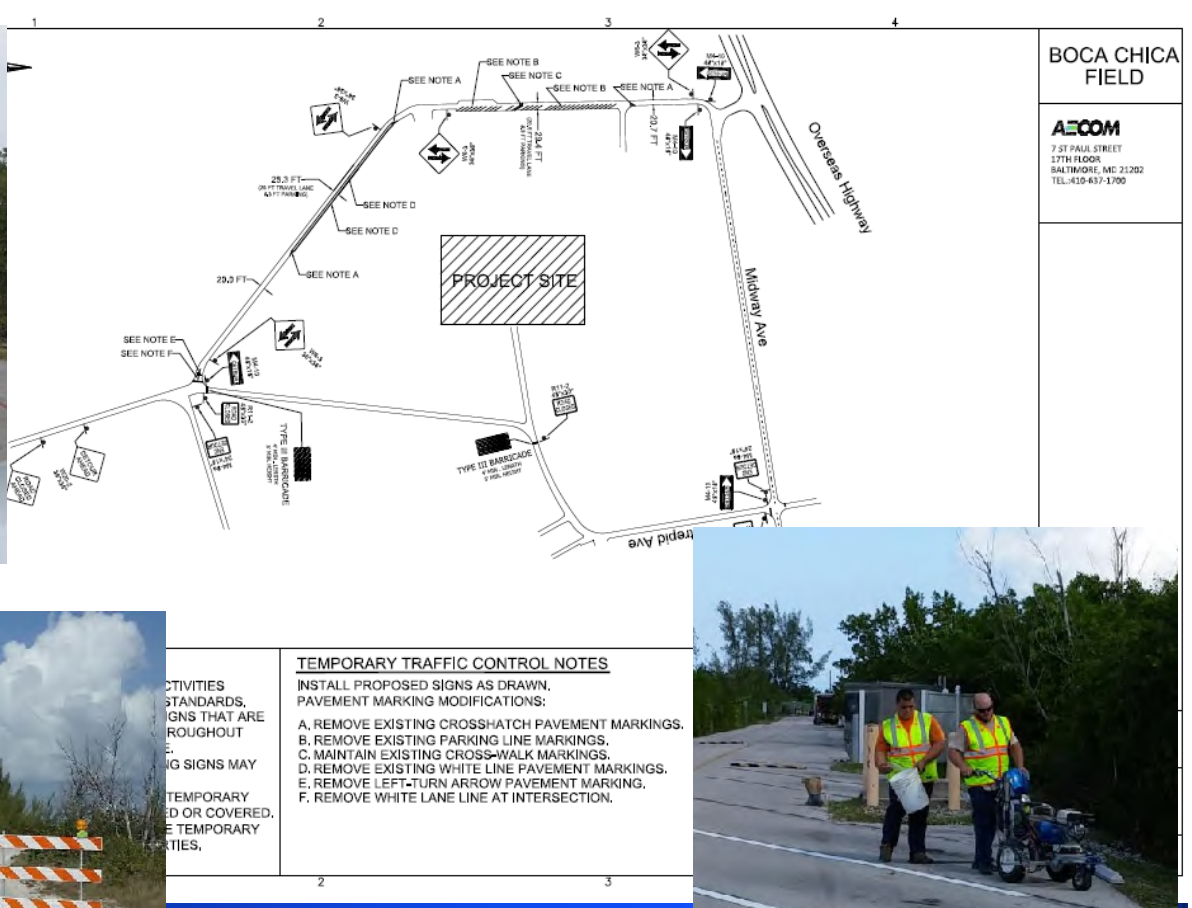
- **Spoils Pile Vegetation Removal**

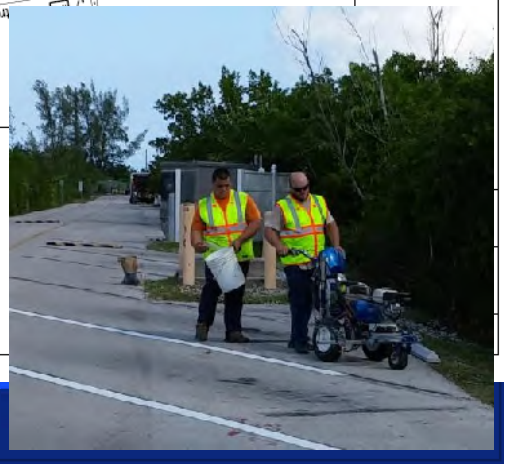
- Spoils Pile Survey
- ✓ ~9,000 cu yds



Traffic Control

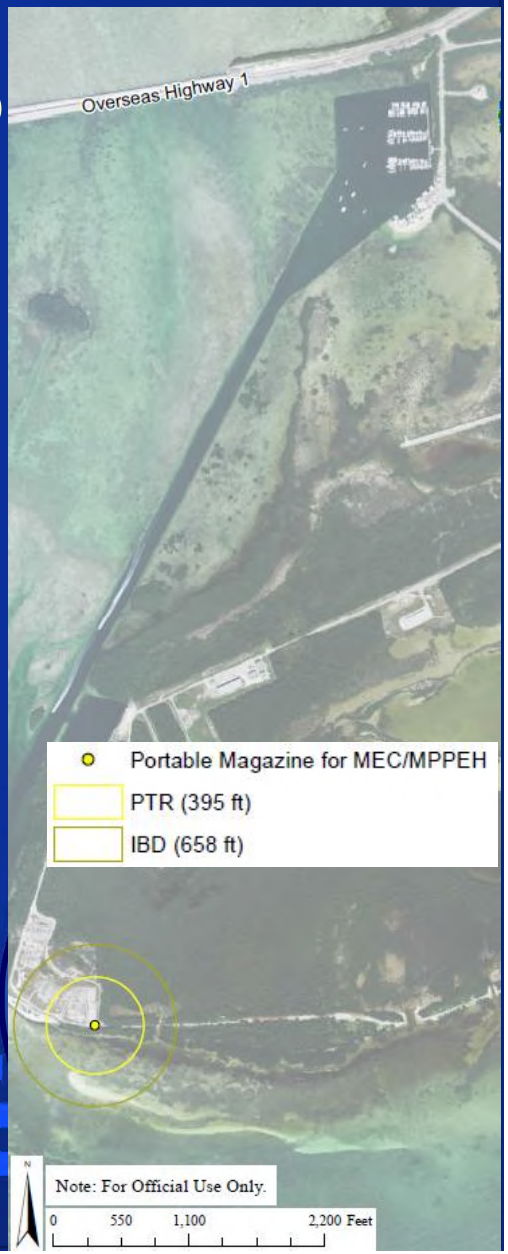
- **Temporary Traffic Control Plan Implementation**
  - ✓ Exclusion zone forced base road closure
  - ✓ Marina access roadway changed from one-way into two-way road





Explosives Storage Magazine

- **Temporary Explosives Storage Magazine Setup**
  - ✓ Storage of recovered munitions until disposal
  - ✓ Sited in southwest corner of base



Dewatering

- **A22 Drainage Ditch Dewatering**
  - ✓ Dewater to conduct removal operations
  - ✓ Segmented approach
  - ✓ Culvert plugs, portable dam, and pumps

Munitions Removal - Manual

- **Manual Removal of Large Munitions**
  - ✓ Manual removal required initially instead of mechanical excavation due to large munition blast overpressure hazard to equipment operators
  - ✓ Mag & Flag Dig Team
  - ✓ Search of pile & ditch in 18” lifts

Munitions Removal - Manual

Manual Removal of Large Munitions (cont.)

Munitions Removal - Mechanical

Mechanical Excavation / Transport Using Armored Equipment

- ✓ Following manual removal of large munitions, each 18” lift was mechanically removed
- ✓ Transported to and staged at screening plant
- ✓ Armoring to protect equipment operator required due to potential for small munitions

NAVAL AIR STATION KEY WEST ★ FLORIDA

Munitions Removal - Mechanical

Mechanical Excavation / Transport Using Armored Equipment (cont.)

Screening Plant

Screening Plant

- ✓ Vibratory feeder with 3” bar screen→ crusher→ magnet→7/16” vibratory screen → radial stacker
- ✓ Remotely operated and camera / video monitored

Screening Plant

Screening Plant (cont.)

- ✓ Lime mixed in with wet soils to dry feed material and limit screening plant clogging / downtime
- ✓ Three large piles of screened soils generated after processing was complete
- ✓ After screening of spoils completed, the large rock/concrete debris (>3“) stopped by the bar screen was directly feed into crusher to reduce size and process through the plant

Sampling

Munitions Constituents (MC) Sampling

- Samples collected from screened soils
- Metals and explosives analysis

NTCRA Results

Recovered Munitions and Explosives of Concern (MEC) Items

- **A950 Spoils Pile**
  - ✓ Removed 24 MEC items

Date Found	Qty	MEC Item
7/24/2015	1	AN-MK 23 Practice Bomb, 3 LB
7/30/2015	4	5" HVAR Warhead, MK1
7/31/2015	1	5" HVAR Warhead, MK1
8/3/2015	1	5" HVAR Warhead, MK1
8/7/2015	1	5" HVAR Warhead, MK1
8/10/2015	1	5" HVAR Warhead, MK1
8/14/2015	9	20MM Projectile
8/14/2015	2	5" HVAR Warhead, MK1
8/17/2015	1	Mk 76 Practice Bomb / MK4 Cartridge
8/25/2015	2	AN-MK 23 Practice Bomb, 3 LB
9/11/2015	1	5" HVAR Warhead, MK1

- **A22 Drainage Ditch**
  - ✓ No MEC items encountered

NTCRA Results

Recovered Munitions Debris and Cultural Debris

- ✓ Removed ~ 1,700 lbs of munitions debris and small arms ammunition
- ✓ Removed ~ 28,000 lbs of metallic cultural debris (pipe, wire, hardware, fencing, car/appliance parts, misc. scrap, etc.)

MC Sampling – No elevated metals or explosives

Next Step: Finalize After Action Report

Upcoming MRP Activities

Fleming Key Dredge Spoils Area

- Expanded Site Inspection Confirmation Sampling

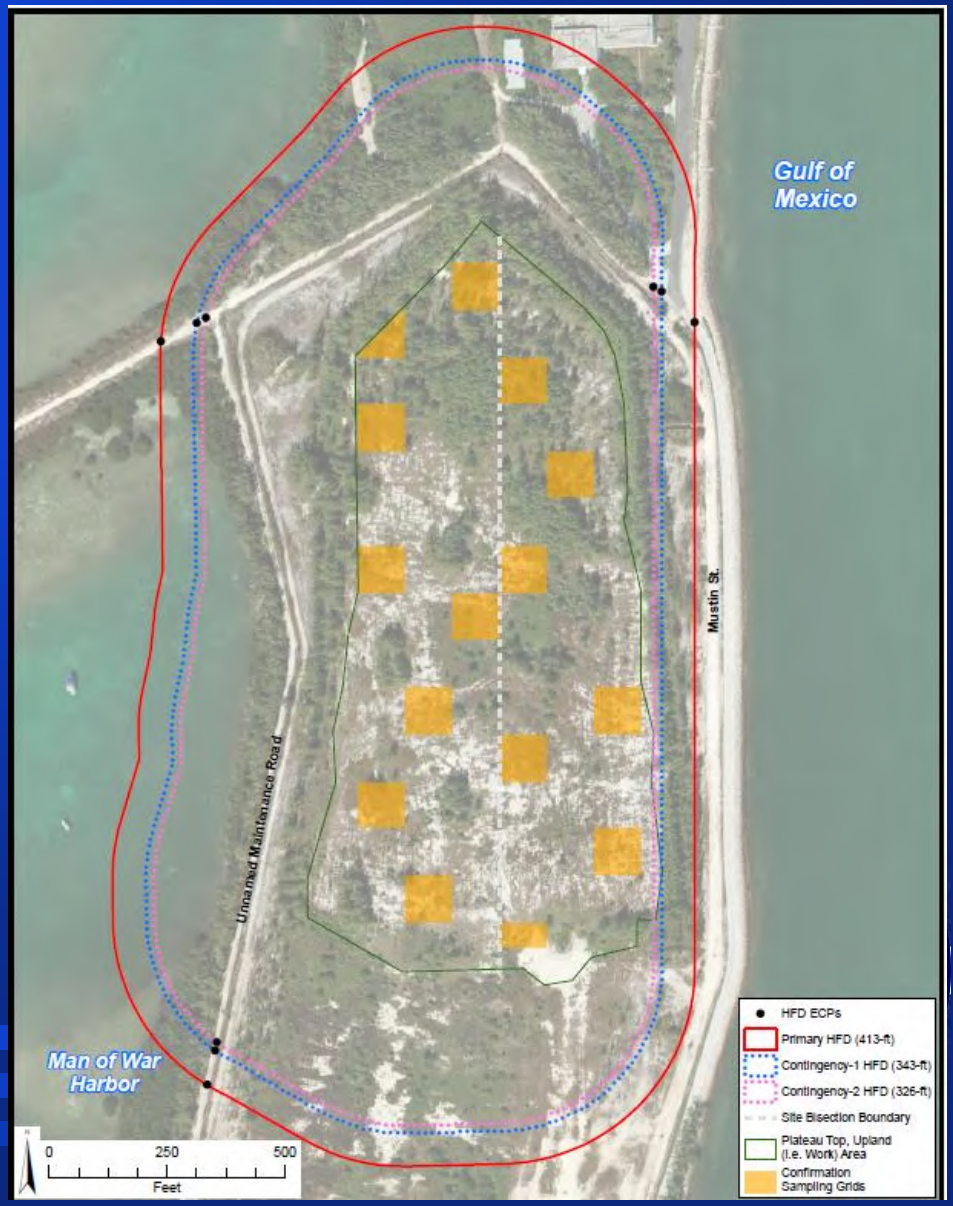
North Boca Chica Skeet & Pistol Ranges

- Remedial Investigation / Feasibility Study

NAVAL AIR STATION
KEY WEST ★ FLORIDA

Upcoming MRP Activities

Fleming Key Dredge Spoils Area



Upcoming MRP Activities

North Boca Chica Skeet & Pistol Ranges

Questions?

NAS Key West
Five-Year Review Update

July 2016 RAB Meeting
Key West, Florida

Todd Haverkost

Resolution Consultants

FIVE-YEAR REVIEW

What triggers the process?

- Federal regulations require five-year reviews at sites where the remedial action leaves hazardous substances on a site at levels that do not allow for unrestricted use, unrestricted exposure, and the remedial action is expected to take more than 5 years to complete.
- The process is triggered by the date of the earliest remedial action that left hazardous substances in place which, in the case of the 12 sites addressed during this review, occurred in 1999.

FIVE-YEAR REVIEW

Objective

Determine if remedies remain protective of human health and the environment by a Technical Assessment that examines three questions.

- ✓ **Question A: Is the remedy functioning as intended?**
- ✓ **Question B: Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives still valid?**
- ✓ **Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

FIVE-YEAR REVIEW

Protectiveness Determinations

Based on the Outcome of the Technical Assessment there are Five Protectiveness Categories:

- **Protective**
- **Short-Term Protective**
- **Will Be Protective**
- **Protectiveness Deferred**
- **Not Protective**

FIVE-YEAR REVIEW

Installation Restoration (IR) Sites

- Area of Concern (AOC) B – Big Coppitt Key Abandoned Civilian Refuse Disposal Area
- IR 1– Truman Annex Refuse Disposal Area
- IR 3 – Truman Annex DDT Mixing Area
- IR 7 – Former Fleming Key North Landfill
- IR 8 – Former Fleming Key South Landfill
- IR 21 – Truman Annex Seminole Battery

FIVE-YEAR REVIEW

Solid Waste Management Units (SWMUs)

- SWMU 1 – Boca Chica Open Disposal Area
- SWMU 2 – Boca Chica DDT Mixing Area
- SWMU 3 – Boca Chica Fire-Fighting Training Area
- SWMU 5 – Boca Chica AIMD Building A-990 Sand Blasting Area
- SWMU 7 – Boca Chica Temporary Hazardous Waste Storage Area
- SWMU 9 – Boca Chica Jet Engine Test Cell

SITE LOCATIONS

NAVAL AIR STATION KEY WEST ★ FLORIDA

PROTECTIVENESS STATEMENTS, ISSUES, AND RECOMMENDATIONS

Site	Protectiveness Determination	Issues?	Recommendations
AOC B	Protective	No	• Land use controls (LUCs) remain in place
IR 1	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
IR 3	Protective	No	• Maintain asphalt cap and LUCs
IR 7	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
IR 8	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
IR 21	Protective	No	• LUCs remain in place

PROTECTIVENESS STATEMENTS, ISSUES, AND RECOMMENDATIONS

Site	Protectiveness Determination	Issues?	Recommendations
SWMU 1	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016 • Evaluate arsenic in groundwater near S1MW-07
SWMU 2	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
SWMU 3	Protective	No	• LUCs remain in place
SWMU 5	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
SWMU 7	Protective	No	• LUCs remain in place • Reduce sampling frequency after 2016
SWMU 9	Protective	No	• Pursue no further action

FIVE-YEAR REVIEW
Approval and Next Review

- Signed by the Commanding Officer, Naval Air Station Key West on April 25, 2016
- Approved by the Florida Department of Environmental Protection on June 21, 2016
- Next Five-Year Review due April 25, 2021

QUESTIONS ?

NAS Key West
Solid Waste Management Unit (SWMU) 9
Boca Chica Jet Engine Test Cell
and
Boca Chica Flying Club/UST 9
Update

July 2016 RAB Meeting
Key West, Florida

Todd Haverkost

Resolution Consultants

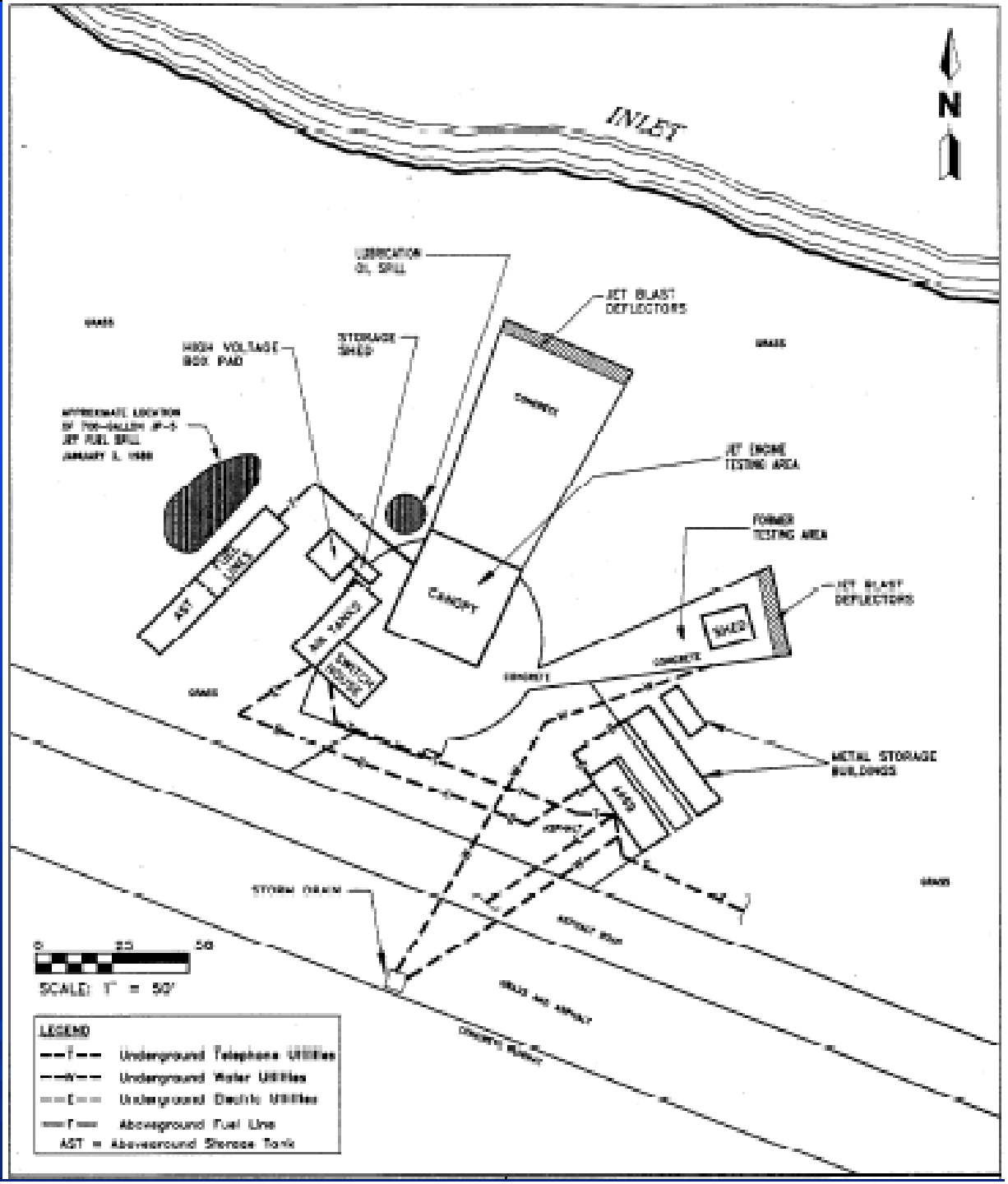
Site Locations

SWMU 9
Boca Chica Jet Engine Test Cell

Operational History and Releases

- The facility was used for testing repaired jet engines from 1969 to 1995.
- Engines were fueled by a 5,000 gallon aboveground storage tank (AST) storing JP-5 fuel.
- Two documented spills:
  - 1989 fuel filter leak released approximately 700 gallons of JP-5 fuel.
  - A lubrication oil drum overturned in 1992.
- Organic solvents were also reportedly used to clean jet engines.

Site Layout and Spill Areas



Investigation/Remediation History

- Site investigations initiated in 1993 identified petroleum hydrocarbons in groundwater.
- Subsequent investigations identified chlorinated solvent compounds in groundwater.
- Several remedial actions performed to date:
  - Groundwater pump and treat system (1996)
  - Monitored natural attenuation (MNA) initiated in 1998
  - Enhanced bioremediation (2001)
- Groundwater monitoring has continued through 2016.

Site Closeout Strategy

- **Pursue No Further Action (NFA) with controls per Florida's Risk Based Corrective Action (RBCA), Risk Management Option (RMO) Option IID, Chapter 62-780.680 (2)(c)4. F.A.C.**
  - Contaminants of concern (COCs) in soil are less than cleanup target levels (CTLs).
  - COCs can remain in groundwater at concentrations greater than CTLs provided that:

    a) Constituents are contained within the site boundary.

    b) The source area is less than ¼ acre.

    c) No onsite impacts to surface water.

Groundwater Plume Defined

Next Steps

- Collect two more rounds of groundwater samples.
- Navy will prepare and submit a Memorandum of Decision (MOD).
- When FDEP approves the MOD, a Site Rehabilitation Completion Order (SRCO) will be issued.

Boca Chica Flying Club/UST 9

Site Layout


Big Coppitt Key
East Rockland Key
Overseas Hwy
BCFC
Saddlehill Key
Geiger Key
Boca Chica Key
Naval Air Station Key West
Miles
0
0.5
1
MW53
MW31D
MW32
A-126
MW41
MW49
Monitoring Wells
MW39
MW43
MW38
MW40
MW37D
MW48D
MW52D
MW47D
MW34D
MW33
MW35
A-133
MW42
MW50
MW45
MW54D
MW36
MW46
Runway
MW44
MW51

Operational History and Releases

- Former operations included airplane parking and refueling with both underground storages tanks (USTs) and ASTs. The tanks were removed in 1992.

- Overfilling and possible tank leaks are the suspected cause of the releases at the site; both aviation and motor vehicle fuel.

Investigation/Remediation History

- Site investigations initiated in 1994.
- Several Remedial Actions performed onsite:
  - Soil removal (1998)
  - Air sparge/soil vapor extraction (AS/SVE) treatability study (2002)
  - Monitored Natural Attenuation (MNA) initiated in 2003
- Long term groundwater monitoring from 1994 through 2016.

Site Closeout Strategy

- **Pursue NFA with RMO IID:**
  - COCs in soil are less than CTLs.
  - COCs can remain in groundwater at concentrations greater than CTLs provided that:

    a) Constituents are contained within the site boundary.

    b) The source area is less than ¼ acre.

    c) No onsite impacts to surface water.

Soil and Groundwater Impacts Defined

Next Steps

- **Navy will prepare and submit a MOD.**
- **When FDEP approves the MOD, an SRCO will be issued.**

Questions?