MEETING MINUTES
FORMER NANSEMOND ORDNANCE DEPOT (FNOD)
RESTORATION ADVISORY BOARD (RAB)

To: RAB Members, Interested Parties
From: Adriane James, U.S. Army Corps of Engineers (USACE)
FNOD RAB Government Co-Chair
Patsy Hosner, FNOD RAB Support Contractor
Re: September 3, 2015 FNOD RAB Meeting Minutes

RAB Members Present	Affiliation
Adriane James	RAB Government Co-Chair, USACE
Marian "Bea" Rogers	RAB Community Co-Chair, Sleepy Hole
Greg Byrd	City of Suffolk
Frank Dunn	TCCREF
Stephen Mihalko	VDEQ
Sarah Newman	Ashley Capital
Dave Saunders	Bennett's Creek
Cherie Walton	Greenbrier - Chesapeake

RAB Members Absent	Affiliation
Art Collins	Riverfront Community
Chris Cowan	VDOT
Donald Hintz	Dominion Power
Bruce Johnson	Respass Beach
Katie Moore	Community Member
Jules Robichaud	Hampton Roads Sanitation District
Bob Shriver	Lockheed Martin
Rob Thomson	USEPA

Technical Support Present	Affiliation
Ivy Chan for Patsy Hosner	RAB Support
Debbie McKinley	USACE
Hamid Rafiee	USACE
Gerald Rogers for Kerry Solan	USACE
Butch Wardlaw	RAB Support
Sher Zaman	USACE, Project Manager

Others Present	
Karen Jones	Burbage Grant
Marina Liacouras	TCC

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Introductions and Welcome

Call to Order

The meeting was held at the Courtyard Marriott Hotel in Suffolk, Virginia. Butch Wardlaw welcomed the RAB members to the meeting. This was followed by self-introductions. Karen Jones has offered to become a new RAB member representing Burbage Grant and replacing Katie Moore as the Burbage Grant representative. Ms. Moore plans to remain on the RAB as a general community representative. This was Ms. Jones' first meeting. She recently retired after 24 years with the U.S. Coast Guard. Mr. Wardlaw reviewed the meeting handouts. He added out news articles that were provided by Bea Rogers.

RAB Business

RAB Co-chair Comments

Government Co-chair Adriane James welcomed the RAB members and thanked Ms. Rogers for attending the Change of Command on July 16 for COL Jason Kelly. Ms. James has asked COL Kelly to attend the RAB meeting in March 2016. Ms. Rogers, Community Co-chair, also welcomed everyone in attendance.

Landowner Updates – none

Other RAB Business

RAB Meeting Minutes

Mr. Wardlaw asked for comments on the June Meeting Minutes. The June RAB meeting minutes were approved by acclamation.

FNOD Update

Mr. Wardlaw asked RAB members if the *FNOD Update* newsletter is being sent out too often. Currently the newsletter is published and distributed eight times each year. Several RAB members responded that they receive the *Updates*, read them, and share the information with others. They feel the information is helpful. Frank Dunn pointed out that when the Public Involvement Plan was reviewed during the June RAB meeting, USACE indicated that they planned to implement other forms of communication in addition to the *Updates*. There was more discussion about the *Updates*.

Mr. Wardlaw summarized the discussion. He said the RAB members believe the *Updates* are useful; however, the number of *Updates* can be reduced. The RAB members agreed to have the *Updates* produced at the mid-point between RAB meetings, unless there is an urgent need for an update. *FNOD Updates* will be produced approximately six weeks after each RAB meeting, which is the mid-point between meetings. The next *FNOD Update* will be produced in mid-October, which is the mid-point between the September and December RAB meetings.

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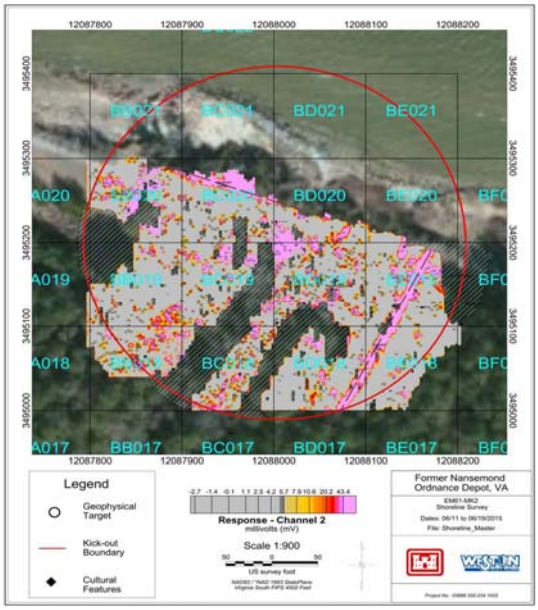
FNOD Technical Update/USACE Update

Munitions and Explosives of Concern (MEC) Shoreline Fieldwork, Hamid Rafiee

Mr. Rafiee showed an aerial photo (at right) depicting the areas where the Phase I fieldwork occurred for two weeks in June—June 8 through 19. During the first week, USACE conducted the investigation in transects across the top of the parking lot using geophysical survey equipment (EM-31). The focus of the survey was to determine if large disposal pits were located beneath the parking lot. USACE also cleared vegetation from the other areas. During the second week, USACE used geophysical survey equipment (EM-61) to conduct the investigation in six yellow square areas and in the circular areas which encompass Areas of Interest (AOI) 36 and 37.

USACE conducted a full coverage Digital Geophysical Mapping (DGM) survey using a EM-31MK2 detector in seven areas. The largest open area (1,320 feet by 360 feet) was associated with the parking lot. It was identified based on historical aerial imagery and historical personnel reports as an area with ground disturbance and the potential for containing munitions-related items and debris. The six smaller yellow square areas, located in the vegetated portion of FNOD (three are 150 feet by 150 feet and three are 100 feet by 100 feet), were also identified on historical aerial photographs as areas with potential staining or potential land disturbance. Mr. Rafiee showed a close-up aerial of the geophysical surveys.



Mr. Rafiee added that full coverage EM61-MK2 DGM surveys will be conducted in the circular feature, as shown in the photo to the right. The area of approximately 2.7 acres is associated with AOI-36 and AOI-37. It is anticipated that there is a fragmentation distance of 200 feet for the munitions items found at AOI-36 and AOI-37. The red areas in the photo will be the primary focus of the investigation as USACE looks for metal objects.

Greg Byrd asked about the difference between the types of survey instruments. The EM-31 is a metal detector that maps subsurface features or contaminants associated with ground conductivity. It detects buried items, such as pipelines, drums, Underground Storage Tanks (USTs), and subsurface contamination. The EM-61 metal detector detects both ferrous and nonferrous metals and is used primarily for detecting USTs, drums, pipelines, and Unexploded Ordnance (UXO). The EM31-MK2 is an updated version of the EM-31. David Saunders asked how deep the instruments can detect. Sher Zaman answered that the survey instruments can detect metals as deep as 20 feet.

Mr. Rafiee said that based on the findings of the geophysical investigation and a review of previous geophysical shoreline data in the vicinity of AOI-36 and AOI-37, additional AOIs may be identified for intrusive investigation. A Technical Memorandum will be prepared after the geophysical surveys are complete to provide a summary of results, to present "targets" recommended for intrusive investigation, and to discuss sampling requirements for Munitions Constituents (MC). Analog data will be collected from grids while the intrusive investigation is conducted in other areas. The tentative plan is to prepare the Technical Memorandum and perform the field work by mid-October.

TNT Technical Memorandum No. 1, Debbie McKinley

Ms. McKinley provided the history of how the TNT Area Technical Memorandum No. 1 evolved. USACE issued a Remedial Final Data Gaps Evaluation Work Plan in October 2014. The Work Plan outlined an investigation to fill in data gaps identified in the Draft Final Remedial Investigation Update (2012). The data obtained from the investigations outlined in the Work Plan will be used to support the evaluation of Feasibility Study alternatives. Technical Memorandum No. 1 was developed to present the results of the Work Plan investigations, along with recommendations for future work.

The scope of the investigation discussed in Technical Memorandum I consisted of soil sampling, geological investigations, and groundwater sampling. Geological investigations were performed to determine if perched groundwater conditions are present. The soil and groundwater sampling and the geological investigations were conducted in October 2014.

Soil sampling was conducted to:

- Delineate areas of elevated lead, dieldrin, and explosives;
- Characterize the dark-stained soil at soil boring (SB) -30 observed at seven feet below ground during the Remedial Investigation (RI); and
- Characterize test pit observations of stained soil, creosote, and burning.

The test pits were excavated during the time-critical removal action (TCRA), but the focus of the TCRA was on munitions and not chemical contamination.

Ms. Rogers asked what perched groundwater was. Ms. McKinley said it is water that has collected below ground over a clay layer that is located above the typical shallow groundwater at FNOD.

Due to the number of groundwater-related questions raised by the RAB, Ms. McKinley digressed from the order of her prepared presentation to discuss the groundwater results presented in Technical Memorandum No. 1 and there was further discussion about groundwater.

One RAB member asked about the studies performed by Virginia Tech regarding the migration of TNT in the groundwater toward the Nansemond River. Mr. Zaman explained that Virginia Tech conducted three interrelated studies for the Main Burning Ground (MBG). One study was a groundwater flow model. The aim of the model was to predict the migration and concentrations changes of TNT and amino-4,6-dinitrotoluene (ADNT) in the groundwater. The second study was a bench scale study to evaluate the potential for *in s*itu bioremediation of TNT in groundwater. The third study was focused on whether monitored natural attenuation (MNA) and enhanced bioremediation of TNT and ADNT in groundwater could potentially be viable technologies for evaluation in the Feasibility Study.

The groundwater flow model showed that, even after 100 years, the TNT and ADNT plumes migrated only as far as the parking lot and did not reach the Nansemond River. Using the results from the bench scale study, it was determined that, under MNA, the mass of TNT and ADNT in groundwater would decrease by 28 percent and 40 percent, respectively, within 50 years and by 49 percent and 63 percent, respectively, after another 50 years (total duration of 100 years). Enhanced anaerobic bioremediation (rate times 5) accelerated the decrease in the mass of TNT and ADNT in groundwater such that, after 50 years, the total mass of TNT and ADNT was reduced by approximately 65 percent after 50 years and by approximately 95 percent after 100 years. Enhanced anaerobic bioremediation (rate times 10) reduced the total mass of TNT and ADNT by approximately 90 percent in 50 years and 99 percent in 100 years.

Ms. McKinley summarized the TNT Area groundwater sampling results as follows:

- Ten temporary wells were installed: five perched water wells and five shallow Columbia Aquifer wells.
- The purpose of the wells was to determine the extent of shallow clay unit and collect groundwater samples for explosives. The shallow clay unit is what was thought to be creating perched water conditions at the TNT Area.
- Data from the temporary wells show there is no shallow clay unit that would cause perched water. The clay layer observed at temporary well (TW) 02 and TW04 is just shallower that the same clay layer seen in other wells.

Based on the groundwater sampling data, the following additional groundwater investigations are proposed in Technical Memorandum No. 1:

- Install five new temporary wells and collect groundwater samples to further refine extent of explosives in the shallow groundwater.
- Sample the existing shallow Columbia Aquifer wells and analyze the samples for explosives.
- Sample the existing deep Yorktown Aquifer wells and analyze samples for explosives.
- Based on the above sampling results, install new permanent wells in the Columbia and Yorktown Aquifers.

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Ms. McKinley then summarized the TNT Area soil sampling results presented in Technical Memorandum No. 1:

- The data provided spatial coverage of lead and explosives contamination.
- The extent of lead and explosives contamination has been determined.
- There are no remaining data gaps relative to lead and explosives in soil.

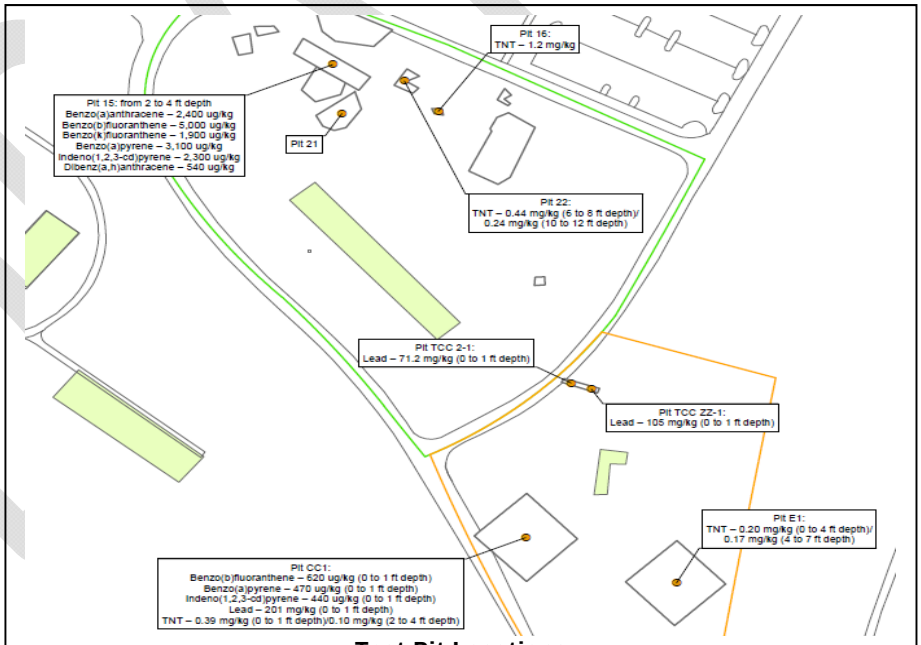
Ms. McKinley also summarized the results of the TNT Area dieldrin soil sampling:

- Dieldrin results indicate the need to collect additional surface soil data to fully define the extent of dieldrin contamination in surface soil.
- The extent of subsurface dieldrin contamination has been defined.
- USACE will collect four surface soil samples to determine horizontal extent of dieldrin contamination.

Ms. McKinley presented a figure showing the locations of the four proposed dieldrin surface soil samples.

SB-30 is located in the soccer field portion of the TNT Area. Dark-stained soil was observed at six to eight feet below ground during the RI, but was not sampled due to adverse weather conditions. Results of the October 2014 soil sampling showed PAHs, dieldrin, antimony, arsenic, and lead exceeded one or more screening levels. USACE plans to sample four soil borings near SB-30 to define the horizontal extent of PAHs, dieldrin, and metals.

Soil samples were collected at TCRA test pit locations where stained soil, creosote, or burning residue was observed in the subsurface. The chemical analysis performed on each sample depended on observed indicators (i.e., stained soil, creosote, and/or burning residue). Ms. McKinley presented a figure showing the test pit and soil sampling locations as well as the sampling results. Based on the test pit soil sampling results, future soil sampling is proposed in Technical Memorandum No. 1. The proposed future soil sampling is as follows:



Test Pit Locations

- Pit 15 – Complete four soil borings around the sampling location to better define the extent of PAH contamination.

- Pits 16, 21, 22, E-1, TCC 2-1, CC1, TCC ZZ-1 – No additional sampling is proposed because TNT concentrations were lower than the ecological exposure point concentration (EPC)
- Pit CC1 – No additional sampling is proposed because the extent of PAHs, metals, explosives, and pesticides are already defined in the area of Pit CC1.

At the end of her presentation, Ms. McKinley provided the current status of Technical Memorandum No. 1. USACE received comments from USEPA on the Memorandum on June 1, 2015. USACE is working with their contractor Weston to formulate responses to the USEPA comments and revise the Memorandum. USACE plans to submit their responses to USEPA's comments and the revised Memorandum to USEPA in October 2015. USACE plans to discuss their responses with USEPA at a meeting scheduled in three weeks.

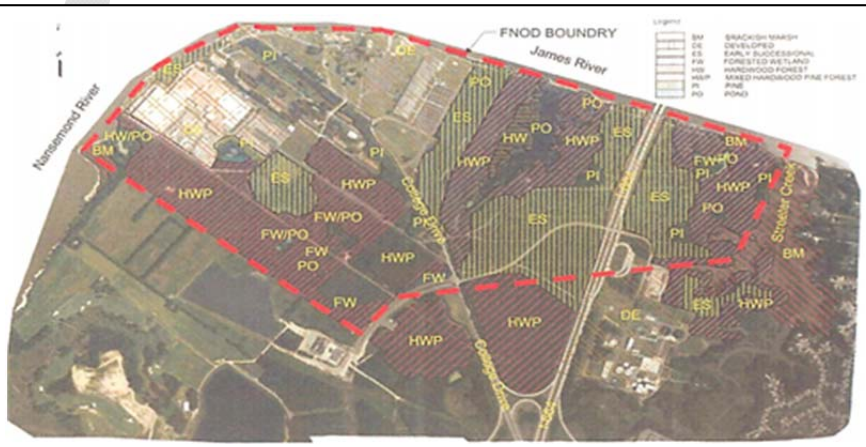
Baseline Ecological Inventory at the Main Burning Ground (MBG), Hamid Rafiee
Mr. Rafiee reported that USACE is in process of finalizing a Work Plan for a Supplemental Site Characterization at the MBG. It is in response to a U.S. Environmental Protection Agency (USEPA) comment regarding the date of last Baseline Ecological Inventory at the site (May 2001) of flora and fauna at MBG.

The purpose of the survey was to determine the presence or absence of rare, threatened, and endangered (RTE) species within the MBG before any intrusive work can begin at the site. A baseline Ecological Inventory of the MBG's biological and ecological information is needed to support the environmental investigations at FNOD. USACE, Baltimore Biologists conducted a site visit and inventory on August 24, 2015.

The survey will provide a means of describing the community structure and will serve as a basis for developing site-wide conceptual models for an ecological risk assessment. It was performed by walking throughout the MBG. USACE visually assessed whether disease or malformations were occurring in the vertebrates and identified any areas with stressed plant community vegetation.

USACE found that there were no known RTE species at the MBG. This finding was expected and was based on two factors:
1. Lack of suitable habitat
2. No previous of RTE species occurring on-site

The baseline biological inventory will help USACE classify the vegetation communities, map their general boundaries, and identify any species of concern, such as any federally-listed threatened or



FNOD Wildlife and Habitat Map
Baseline Ecological Survey and Inventory - 2001

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endangered (T&E) species or any Commonwealth of Virginia Natural Heritage Program (VNHP) species of concern. USACE will complete the field survey inventories for small mammals, breeding birds, amphibians, and reptiles to identify any species using the site.

FNOD's habitat and wetland map is important for identifying those areas of habitat that are believed to be essential to the species' conservation. Those areas may be proposed for designation as critical habitat. Mr. Rafiee noted that a critical habitat designation does not necessarily restrict further development. Federal agencies must make special efforts to protect the important characteristics of these areas. USACE shall re-visit the habitat and update the map if any changes to flora and fauna occur. To date, USACE has concluded that no RTE species have been observed.

Public Comment / Questions and Answers

Ms. Jones asked about the process of applying for RAB membership and she was provided with a RAB Application.

Action Items

- Add Karen Jones to the RAB mailing and email lists – Patsy Hosner
- Send the new *FNOD Update* publication schedule to RAB members – Patsy Hosner

Agenda Topics for December Meeting

- Election of Community Co-chair, review of Operating Procedures, vote on new member(s)
- Technical Memorandum update
- MEC shoreline investigation
- Delisted and to-be delisted sites
- Website Demonstration (Kerry Solan)
- Funding for FY 2015 and FY 2016
- Contract for Horseshoe Pond
- Nansemond River Beachfront Work Plan

The next meeting is scheduled for Thursday, December 3, 2015.

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